National Aeronautics and
Space Administration

FY 2026 **BUDGET**
TECHNICAL SUPPLEMENT

FY 2026 PRESIDENT'S BUDGET REQUEST SUMMARY

Budget Authority ($ in millions)	Op Plan 2024	Enacted 2025	Request 2026	Fiscal Year 2027	2028	2029	2030
NASA Total	**24,877.0**	**24,838.3**	**18,809.1**	**18,809.1**	**18,809.1**	**18,809.1**	**18,809.1**
Exploration	**7,648.0**	**7,666.2**	**8,312.9**	**8,312.9**	**8,312.9**	**8,012.9**	**8,012.9**
Moon to Mars Transportation System	4,781.5	--	4,894.6	4,697.7	3,906.8	3,091.4	3,590.0
Moon To Mars Systems Development	2,772.4	--	2,815.4	2,864.2	2,650.5	2,435.8	2,490.2
Human Exploration Requirements & Architecture	94.1	--	602.9	751.0	1,755.6	2,485.7	1,932.7
Space Operations	**4,220.2**	**4,220.0**	**3,131.9**	**3,131.9**	**3,131.9**	**3,431.9**	**3,431.9**
International Space Station	1,240.6	--	920.1	920.1	920.1	920.1	920.1
Space Transportation	1,746.1	--	1,293.8	1,263.8	1,263.8	1,263.8	1,245.9
Space and Flight Support (SFS)	1,005.1	--	645.8	645.8	645.8	645.8	645.8
Commercial LEO Development	228.4	--	272.3	302.3	302.3	602.3	620.2
Space Technology	**1,100.0**	**1,100.0**	**568.9**	**568.9**	**568.9**	**568.9**	**568.9**
Science	**7,325.4**	**7,334.2**	**3,907.6**	**3,907.6**	**3,907.6**	**3,907.6**	**3,907.6**
Earth Science	2,138.9	--	1,035.9	1,055.9	1,081.9	1,106.9	1,077.9
Planetary Science	2,764.3	--	1,891.3	1,861.3	1,867.3	1,822.3	1,851.3
Astrophysics	1,529.7	--	523.0	543.0	501.0	521.0	521.0
Heliophysics	805.0	--	432.5	422.5	432.5	432.5	432.5
Biological and Physical Sciences	87.5	--	25.0	25.0	25.0	25.0	25.0
Aeronautics	**935.0**	**935.0**	**588.7**	**588.7**	**588.7**	**588.7**	**588.7**
STEM Engagement	**143.0**	**143.0**	**--**	**--**	**--**	**--**	**--**
Safety, Security, and Mission Services	**3,131.0**	**3,092.3**	**2,118.3**	**2,118.3**	**2,118.3**	**2,118.3**	**2,118.3**
Mission Services & Capabilities	2,042.6	--	1,498.0	1,671.8	1,671.8	1,671.8	1,671.8
Engineering, Safety, & Operations	1,088.3	--	620.3	446.5	446.5	446.5	446.5
Construction and Environmental Compliance and Restoration	**326.3**	**300.0**	**140.1**	**140.1**	**140.1**	**140.1**	**140.1**
Construction of Facilities	274.8	--	110.0	105.0	105.0	105.0	105.0
Environmental Compliance and Restoration	51.5	--	30.1	35.1	35.1	35.1	35.1
Inspector General	**48.1**	**47.6**	**40.7**	**40.7**	**40.7**	**40.7**	**40.7**
NASA Total	**24,877.0**	**24,838.3**	**18,809.1**	**18,809.1**	**18,809.1**	**18,809.1**	**18,809.1**

FY 2026 President's Budget Request Summary

Budget Authority ($ in millions)	Op Plan 2024	Enacted 2025	Request 2026	2027	2028	2029	2030
			Fiscal Year				
NASA Total	**24,877.0**	**24,838.3**	**18,809.1**	**18,809.1**	**18,809.1**	**18,809.1**	**18,809.1**
Exploration	**7,648.0**	**7,666.2**	**8,312.9**	**8,312.9**	**8,312.9**	**8,012.9**	**8,012.9**
Moon to Mars Transportation System	**4,781.5**	**--**	**4,894.6**	**4,697.7**	**3,906.8**	**3,091.4**	**3,590.0**
Orion Program	**1,283.7**	**--**	**1,370.7**	**1,370.7**	**500.0**	**--**	**--**
Crew Vehicle Development	1,266.8	--	1,363.2	1,363.2	500.0	--	--
Orion Program Integration and Support	16.8	--	7.5	7.5	--	--	--
Space Launch System	**2,600.0**	**--**	**2,001.3**	**1,801.3**	**600.0**	**--**	**--**
Block 1B Capability Upgrade	465.1	--	150.3	--	--	--	--
SLS Operations	2,060.5	--	1,793.0	1,743.2	600.0	--	--
Space Launch System (SLS)	1.5	--	--	--	--	--	--
SLS Program Integration and Support	72.9	--	58.0	58.2	--	--	--
Exploration Ground Systems	**897.9**	**--**	**658.4**	**700.6**	**500.0**	**--**	**--**
Exploration Ground Systems	883.2	--	658.4	700.6	500.0	--	--
EGS Program Integration and Support	14.7	--	--	--	--	--	--
Commercial Moon and Mars Infrastructure and Transportation	**--**	**--**	**864.1**	**825.0**	**2,306.8**	**3,091.4**	**3,590.0**
Moon To Mars Systems Development	**2,772.4**	**--**	**2,815.4**	**2,864.2**	**2,650.5**	**2,435.8**	**2,490.2**
Gateway	**854.5**	**--**	**304.2**	**212.9**	**--**	**--**	**--**
Gateway Initial Capability	447.5	--	267.3	212.9	--	--	--
xEVA and Human Surface Mobility Program	**358.4**	**--**	**641.6**	**741.6**	**732.1**	**715.4**	**748.2**
Human Landing System	**1,418.9**	**--**	**1,746.6**	**1,746.6**	**1,755.2**	**1,557.2**	**1,578.8**
HLS Initial Capability	584.0	--	509.5	596.5	437.1	553.9	962.1
Advanced Exploration Systems	**140.6**	**--**	**123.0**	**163.1**	**163.2**	**163.2**	**163.2**
Human Exploration Requirements & Architecture	**94.1**	**--**	**602.9**	**751.0**	**1,755.6**	**2,485.7**	**1,932.7**
Strategy and Architecture	**62.6**	**--**	**179.9**	**108.9**	**108.9**	**108.9**	**108.9**
Future Systems	**31.5**	**--**	**73.0**	**142.1**	**1,146.7**	**1,876.8**	**1,323.7**
Mars Technology	**--**	**--**	**350.0**	**500.0**	**500.0**	**500.0**	**500.0**
Space Operations	**4,220.2**	**4,220.0**	**3,131.9**	**3,131.9**	**3,131.9**	**3,431.9**	**3,431.9**
International Space Station	**1,240.6**	**--**	**920.1**	**920.1**	**920.1**	**920.1**	**920.1**
Space Transportation	**1,746.1**	**--**	**1,293.8**	**1,263.8**	**1,263.8**	**1,263.8**	**1,245.9**
Crew and Cargo Program	**1,635.5**	**--**	**1,212.7**	**1,182.7**	**1,182.7**	**1,182.7**	**1,164.8**
Commercial Crew Program	**110.6**	**--**	**81.0**	**81.0**	**81.0**	**81.0**	**81.0**
Space and Flight Support (SFS)	**1,005.1**	**--**	**645.8**	**645.8**	**645.8**	**645.8**	**645.8**
Space Communications and Navigation	**522.5**	**--**	**394.9**	**394.9**	**394.9**	**394.9**	**394.9**
Communications Services Program	**74.4**	**--**	**59.4**	**59.4**	**59.4**	**59.4**	**59.4**
Human Space Flight Operations	**106.5**	**--**	**80.0**	**80.0**	**80.0**	**80.0**	**80.0**
Human Research Program	**151.2**	**--**	**40.3**	**40.3**	**40.3**	**40.3**	**40.3**
Launch Services	**99.3**	**--**	**71.2**	**71.2**	**71.2**	**71.2**	**71.2**

FY 2026 PRESIDENT'S BUDGET REQUEST SUMMARY

Budget Authority ($ in millions)	Op Plan 2024	Enacted 2025	Request 2026	2027	2028	2029	2030
Rocket Propulsion Test	**48.2**	--	--	--	--	--	--
21st Century Space Launch Complex	**3.1**	--	--	--	--	--	--
Commercial LEO Development	228.4	--	272.3	302.3	302.3	602.3	620.2
Space Technology	1,100.0	1,100.0	568.9	568.9	568.9	568.9	568.9
SBIR and STTR	**217.8**	--	**169.0**	**169.0**	**169.0**	**169.0**	**169.0**
Space Transportation (GO)	**70.0**	--	**46.6**	**53.7**	**53.7**	**53.7**	**53.7**
Solar Electric Propulsion	8.5	--	7.7	6.6	5.7	1.7	--
Space to Surface Access (LAND)	**2.2**	--	**26.9**	**26.9**	**26.9**	**26.9**	**26.9**
Surface Infrastructure & Exploration (LIVE)	**16.2**	--	**55.7**	**62.7**	**62.7**	**62.7**	**62.7**
In-Space Infrastructure & Discovery (EXPAND)	**206.9**	--	**46.7**	**46.7**	**46.7**	**46.7**	**46.7**
Foundational Capabilities (ENABLE)	--	--	**49.4**	**49.4**	**49.4**	**49.4**	**49.4**
Catalysts & Innovative Mechanisms	**76.9**	--	**174.6**	**160.5**	**160.5**	**160.5**	**160.5**
Early Stage Innovation and Partnerships	**95.9**	--	--	--	--	--	--
Technology Maturation	**174.7**	--	--	--	--	--	--
Technology Demonstration	**239.5**	--	--	--	--	--	--
Science	7,325.4	7,334.2	3,907.6	3,907.6	3,907.6	3,907.6	3,907.6
Earth Science	2,138.9	--	1,035.9	1,055.9	1,081.9	1,106.9	1,077.9
Earth Science Research	**558.6**	--	**318.4**	**298.8**	**298.0**	**298.9**	**299.7**
Earth Science Research and Analysis	380.6	--	189.4	169.8	169.0	169.8	170.7
Computing and Management	178.0	--	129.0	129.0	129.0	129.0	129.0
Earth Systematic Missions	**794.6**	--	**333.5**	**330.8**	**338.2**	**348.6**	**320.5**
NASA-ISRO SAR	72.1	--	24.5	20.9	16.0	3.5	--
Sentinel-6	51.3	--	8.1	8.7	5.7	7.1	4.9
GRACE-Continuity	132.6	--	42.3	48.8	54.7	44.1	14.1
Other Missions and Data Analysis	538.6	--	258.7	252.4	261.8	293.9	301.5
Earth System Explorers	**15.4**	--	**5.0**	**61.8**	**84.9**	**43.4**	**39.4**
Responsive Science Initiatives	**51.4**	--	**92.9**	**89.9**	**89.2**	**89.9**	**89.2**
Earth System Science Pathfinder	**217.5**	--	**103.0**	**81.6**	**78.5**	**133.0**	**136.0**
Venture Class Missions	165.6	--	97.5	76.1	73.0	127.5	130.5
Other Missions and Data Analysis	51.9	--	5.5	5.5	5.5	5.5	5.5
Earth Science Data Systems	**311.5**	--	**114.6**	**114.6**	**114.6**	**114.6**	**114.6**
Earth Science Technology	**105.4**	--	**50.7**	**60.7**	**60.7**	**60.7**	**60.7**
Applied Sciences	**84.6**	--	**17.7**	**17.7**	**17.7**	**17.7**	**17.7**
Planetary Science	2,764.3	--	1,891.3	1,861.3	1,867.3	1,822.3	1,851.3
Planetary Science Research	**384.7**	--	**341.8**	**377.0**	**470.5**	**502.1**	**392.5**
Planetary Science Research and Analysis	219.1	--	158.2	182.1	201.3	204.4	199.8
Other Missions and Data Analysis	165.6	--	183.6	194.9	269.2	297.7	192.7
Planetary Defense	**296.7**	--	**304.2**	**346.3**	**81.0**	**84.1**	**74.0**
NEO Surveyor	255.7	--	266.3	305.5	37.1	33.1	33.0
Other Missions and Data Analysis	41.0	--	38.0	40.8	44.0	51.0	41.0
Lunar Discovery and Exploration	**363.4**	--	**137.3**	**169.0**	**195.8**	**219.2**	**219.6**

FY 2026 PRESIDENT'S BUDGET REQUEST SUMMARY

Budget Authority ($ in millions)	Op Plan 2024	Enacted 2025	Request 2026	2027	2028	2029	2030
Other Missions and Data Analysis	363.4	--	137.3	169.0	195.8	219.2	219.6
Discovery	**188.3**	**--**	**113.9**	**119.8**	**305.0**	**391.6**	**431.0**
Other Missions and Data Analysis	188.3	--	113.9	119.8	305.0	391.6	431.0
New Frontiers	**438.2**	**--**	**499.9**	**431.7**	**362.3**	**156.9**	**296.0**
Dragonfly	360.0	--	494.1	416.9	337.4	31.1	44.2
Other Missions and Data Analysis	78.2	--	5.8	14.8	24.9	125.8	251.8
Mars Exploration	**255.0**	**--**	**271.1**	**294.8**	**297.0**	**303.3**	**268.7**
Other Missions and Data Analysis	255.0	--	271.1	294.8	297.0	303.3	268.7
Mars Sample Return	**310.0**	**--**	**--**	**--**	**--**	**--**	**--**
Outer Planets and Ocean Worlds	**352.5**	**--**	**83.9**	**101.8**	**136.5**	**165.1**	**169.4**
Other Missions and Data Analysis	352.5	--	83.9	101.8	136.5	165.1	169.4
Radioisotope Power	**175.5**	**--**	**139.0**	**21.0**	**19.1**	**--**	**--**
Astrophysics	1,529.7	--	523.0	543.0	501.0	521.0	521.0
Astrophysics Research	**297.8**	**--**	**82.7**	**88.7**	**88.7**	**88.7**	**88.7**
Astrophysics Research and Analysis	116.7	--	48.7	48.7	48.7	48.7	48.7
Balloon Project	49.3	--	--	--	--	--	--
Science Activation	52.0	--	2.0	10.0	10.0	10.0	10.0
Other Missions and Data Analysis	79.9	--	32.0	30.0	30.0	30.0	30.0
Cosmic Origins	**339.0**	**--**	**234.0**	**229.0**	**229.0**	**214.0**	**214.0**
Hubble Space Telescope (HST)	93.3	--	85.0	80.0	80.0	75.0	75.0
James Webb Space Telescope	187.0	--	140.0	140.0	140.0	130.0	130.0
Other Missions and Data Analysis	58.6	--	9.0	9.0	9.0	9.0	9.0
Physics of the Cosmos	**196.3**	**--**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Other Missions and Data Analysis	196.3	--	1.5	1.5	1.5	1.5	1.5
Exoplanet Exploration	**461.8**	**--**	**159.9**	**179.8**	**138.6**	**160.0**	**137.0**
Nancy Grace Roman Space Telescope	407.3	--	156.6	170.6	91.4	78.5	73.0
Other Missions and Data Analysis	54.4	--	3.3	9.2	47.2	81.5	63.9
Astrophysics Explorer	**234.8**	**--**	**44.9**	**44.0**	**43.2**	**56.8**	**79.8**
Other Missions and Data Analysis	234.8	--	44.9	44.0	43.2	56.8	79.8
Heliophysics	805.0	--	432.5	422.5	432.5	432.5	432.5
Heliophysics Research	**247.4**	**--**	**134.0**	**136.0**	**135.0**	**130.0**	**130.0**
Heliophysics Research and Analysis	55.8	--	40.2	40.2	40.2	40.2	40.2
Sounding Rockets	73.1	--	30.0	30.0	30.0	30.0	30.0
Research Range	26.9	--	10.0	10.0	10.0	10.0	10.0
Other Missions and Data Analysis	91.6	--	53.9	55.8	54.8	49.8	49.8
Living with a Star	**107.4**	**--**	**70.5**	**67.5**	**77.0**	**72.8**	**72.8**
Other Missions and Data Analysis	107.4	--	70.5	67.5	77.0	72.8	72.8
Solar Terrestrial Probes	**191.7**	**--**	**42.4**	**26.1**	**18.0**	**17.5**	**17.5**
Interstellar Mapping and Acceleration Probe (IMAP)	137.4	--	39.5	23.9	15.3	15.0	15.0
Other Missions and Data Analysis	54.3	--	2.9	2.2	2.7	2.5	2.5
Heliophysics Explorer Program	**206.2**	**--**	**125.2**	**128.8**	**121.4**	**119.7**	**129.2**
Multi-Slit Solar Explorer	74.7	--	66.9	78.0	15.6	11.7	0.6
Other Missions and Data Analysis	131.5	--	58.4	50.8	105.8	108.0	128.6
Space Weather	**40.5**	**--**	**54.9**	**59.1**	**76.1**	**87.5**	**78.0**
Heliophysics Technology	**11.8**	**--**	**5.4**	**5.0**	**5.0**	**5.0**	**5.0**

FY 2026 PRESIDENT'S BUDGET REQUEST SUMMARY

Budget Authority ($ in millions)	Op Plan 2024	Enacted 2025	Request 2026	2027	2028	2029	2030
Biological and Physical Sciences	87.5	--	25.0	25.0	25.0	25.0	25.0
Aeronautics	935.0	935.0	588.7	588.7	588.7	588.7	588.7
Aeronautics	935.0	--	588.7	588.7	588.7	588.7	588.7
Airspace Operations and Safety Program	148.1	--	88.1	96.4	112.4	115.0	117.0
Advanced Air Vehicles Program	259.6	--	133.4	163.3	161.2	154.9	162.8
Integrated Aviation Systems Program	256.6	--	167.2	161.3	115.4	110.0	70.0
Low Boom Flight Demonstrator	42.6	--	67.2	41.3	5.4	--	--
Transformative Aeronautics Concepts Program	154.9	--	125.1	82.8	109.8	113.9	134.0
Aerosciences Evaluation and Test Capabilities	115.8	--	74.9	84.9	89.9	94.9	104.9
STEM Engagement	143.0	143.0	--	--	--	--	--
Safety, Security, and Mission Services	3,131.0	3,092.3	2,118.3	2,118.3	2,118.3	2,118.3	2,118.3
Mission Services & Capabilities	2,042.6	--	1,498.0	1,671.8	1,671.8	1,671.8	1,671.8
Information Technology (IT)	636.7	--	481.1	544.5	544.5	544.5	544.5
Mission Enabling Services	757.3	--	524.9	523.7	523.7	523.7	523.7
Infrastructure & Technical Capabilities	648.7	--	492.1	603.7	603.7	603.7	603.7
Engineering, Safety, & Operations	1,088.3	--	620.3	446.5	446.5	446.5	446.5
Agency Technical Authority	196.1	--	69.6	69.6	69.6	69.6	69.6
Center Engineering, Safety, & Operations	892.2	--	550.7	376.9	376.9	376.9	376.9
Construction and Environmental Compliance and Restoration	326.3	300.0	140.1	140.1	140.1	140.1	140.1
Construction of Facilities	274.8	--	110.0	105.0	105.0	105.0	105.0
Institutional CoF	208.6	--	100.0	105.0	105.0	105.0	105.0
Exploration CoF	28.7	--	--	--	--	--	--
Space Operations CoF	29.2	--	10.0	--	--	--	--
Science CoF	8.3	--	--	--	--	--	--
Environmental Compliance and Restoration	51.5	--	30.1	35.1	35.1	35.1	35.1
Inspector General	48.1	47.6	40.7	40.7	40.7	40.7	40.7
NASA Total	24,877.0	24,838.3	18,809.1	18,809.1	18,809.1	18,809.1	18,809.1

FY 2026 PRESIDENT'S BUDGET REQUEST SUMMARY

FY 2024 reflects the funding amount specified in Public Law 118-42, Consolidated Appropriations Act, 2024, as revised in NASA's FY 2024 final Operating Plan, September 2024. Amounts include a net transfer amount of $2.0 million; $4.5 million that was transferred from General Services Administration (GSA) and $2.5 million that was transferred to NASA's Information Technology Modernization Working Capital Fund.

FY 2025 reflects the funding amount specified in Public Law 119-4, Full-Year Continuing Appropriations and Extensions Act, 2025.

Totals may not add due to rounding.

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MESSAGE FROM THE ADMINISTRATOR

The President's Fiscal Year 2026 Budget Request for NASA reflects the Trump-Vance Administration's commitment to strengthening America's leadership in space exploration while exercising fiscal responsibility. With this budget, we aim to shape a Golden Age of innovation and exploration.

Charting the future of exploration takes focus, discipline, and the ability to adapt - qualities this agency has demonstrated time and again throughout its 66-year history as we continue to embrace the challenge of exploration. And behind every mission we launch and milestone we reach, there is a budget that reflects our priorities. Refining that budget is a strategic process that requires intentional decisions, and this year is no exception. With a leaner budget across all of government, we are all taking a closer look at how we work, where we invest, and how we adjust our methods to accomplish our mission.

At NASA, that means placing a renewed emphasis on human spaceflight - increasing investments in a sustainable plan to return to the Moon for long-term human exploration and accelerating efforts to send American astronauts to Mars. It includes $7 billion to focus our investments on sustainable human exploration of the lunar surface plus an additional $1 billion to prepare for human missions to Mars. This investment represents a clear path forward, backed by deliberate planning to achieve these ambitious goals.

This budget will enable an enduring Artemis campaign. New transportation services contracts will permit more frequent missions to the Moon while at the same time freeing up resources to invest in the infrastructure necessary to conduct longer stays on the lunar surface than ever before. An increase in funding to support crewed missions to Mars will bring NASA and our partners' expertise to bear - coordinating and aligning capabilities across mission directorates, the private sector, and international partners to conduct these ambitious missions.

This budget creates a new Commercial Mars Payload Services Program - modeled off the success of Commercial Lunar Payload Services - to deliver science and technology payloads to Mars through commercial partnerships. It also includes funding to test capabilities for a near-term human-class Mars lander, expands Mars communications relay capabilities through commercial partnerships, augments funding to begin crafting Mars-appropriate spacesuits, low-cost Mars robotic exploration missions and instrument payloads, and accelerates the development of low cost, high-performance space computers. Significant funds are provided for Mars-forward technologies and surface infrastructure that can be demonstrated on the Moon through the Artemis program.

We must continue to be responsible stewards of taxpayer dollars. That means making strategic decisions - including scaling back or discontinuing ineffective efforts not aligned with our Moon and Mars exploration priorities. Doing so will allow us to form a stronger NASA - one where we are allocating agency resources toward achieving our ambitious objectives in human space exploration and scientific discoveries.

As we make these strategic shifts, we remain committed to ensuring an orderly and responsible transition. This includes maximizing the utility of federal assets, preserving critical knowledge, and safeguarding the expertise of our workforce. From transferring or divesting specialized facilities and hardware to archiving data and lessons learned, our goal is to enable future missions to build on today's

MESSAGE FROM THE ADMINISTRATOR

investments. These transitions are complex, often unfolding over years, and require thoughtful planning and resources to minimize disruption and uphold our responsibility to the American people.

Starting with Artemis IV, this budget shifts our approach to transportation to the Moon - one informed by lessons learned from Artemis I and other NASA commercial programs - by retiring the Space Launch System (SLS) and Orion spacecraft. NASA will continue the Artemis campaign by procuring crew transportation services from U.S. companies, designed to minimize cost and reduce schedule risks with milestone-based planning and more streamlined operations. Additionally, NASA will sunset the Gateway - a planned lunar orbiting space station - to focus efforts on direct-to-surface exploration. We will explore opportunities for our commercial or international partners to repurpose elements of the Gateway.

Through SMD, NASA will continue to yield valuable scientific data that will generate an increased understanding of Earth, our solar system, and the universe, with an emphasis on streamlining their research efforts to benefit the broadest spectrum of American people and industries. Astrophysics missions like the Hubble Space Telescope and James Webb Space Telescope will continue to operate and uncover the secrets of the universe, making revolutionary discoveries along the way. NASA will pursue Earth science missions that will produce valuable data on natural hazards, ground water, and environmental phenomena that support various industries and stakeholders. The President's Budget maintains support for Heliophysics, ensuring continued research that strengthens the nation's ability to predict space weather that impacts the infrastructure and technologies we rely on every day.

This budget also marks a broader shift in our approach to Mars science. It ends the current, unaffordable Mars Sample Return Program and pivots to supporting lower-cost, competitively selected Mars science missions that can complement our long-term human exploration goals.

Elsewhere in planetary science, NASA will continue development of high-priority missions such as Dragonfly and the Near-Earth Object Surveyor, while ceasing support for the Rosalind Franklin Rover, DAVINCI, VERITAS, EnVision, OSIRIS-Apophis Explorer, and Juno missions.

SOMD and Biological and Physical Sciences will streamline their efforts in alignment with an overall reduction in the allocated budget. NASA will continue its work with industry partners on the development commercial space stations to provide cost- effective venues for NASA research and expand the economy in LEO. NASA continues its commitment to the safe operation of the ISS through its deorbiting in 2030.

The NASA budget request supports and streamlines ARMD and STMD, focusing on achieving strategic objectives while enhancing efficiency. Attention and resources for climate-focused "green aviation" projects and underperforming space propulsion projects will be diverted to support the development of air traffic control enhancements and technology projects that enable a transition to private sector research and development. Given that our near-term human exploration and science needs do not require nuclear propulsion, current demonstration projects will end. NASA will continue investments in small businesses via the Small Business Innovation Research and Small Business Technology Transfer grants, a sign of our ongoing engagement with the commercial space industry.

MESSAGE FROM THE ADMINISTRATOR

Amid these changes, NASA's workforce remains one of our greatest strengths. We are committed to ensuring our people are positioned to lead the agency into its next chapter with integrity, resilience, and excellence. To ensure we are positioned for long-term success, we will optimize our organization to enhance effectiveness and accountability, ensuring our workforce yields the greatest return for the American taxpayer. We will continue to reduce our facility footprint to improve operational efficiency and reduce costs.

This strategic framework provides clarity of purpose and accelerates progress, empowering NASA to operate in pursuit of our most ambitious goals. Along the way, we will inspire the world through scientific discovery, technological breakthroughs, and the first human mission beyond LEO in more than half a century - yielding knowledge that will benefit generations to come.

This budget represents not only an investment in space exploration, but also in American ingenuity, opportunity, and leadership on the global stage.

Janet E Petro

AGENCY FACT SHEET

($ in Billions)	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
NASA Budget	**24.9**	**24.8**	**18.8**	**18.8**	**18.8**	**18.8**	**18.8**

FY 2024 reflects the funding amount specified in Public Law 118-42, Consolidated Appropriations Act, 2024, as revised in NASA's FY 2024 final Operating Plan, September 2024. Amounts include a net transfer amount of $2.0 million; $4.5 million that was transferred from General Services Administration (GSA) and $2.5 million that was transferred to NASA's Information Technology Modernization Working Capital Fund.

FY 2025 reflects the funding amount specified in Public Law 119-4, Full-Year Continuing Appropriations and Extensions Act, 2025.

Totals may not add due to rounding.

The President's Fiscal Year 2026 Budget Request for NASA is $18.8 billion. With this proposed budget, NASA will fund the following efforts:

Agency Highlights

- Invests more than $1 billion in new funding to put the nation on a path to land the first humans on Mars. In addition to new funding, utilizes prior investments in smaller landers and existing capabilities (e.g., ISS and the Space Communications and Navigation program) to advance Mars exploration goals.
- Enables the agency's Artemis Campaign to return Americans to the Moon and then explore Mars with $8.3 billion investment in Exploration. Supports the transition of the Artemis Campaign to a more sustainable, cost-effective approach to lunar exploration by canceling the Gateway space station and upgrades to the Space Launch System (SLS) rocket, retiring the legacy SLS and Orion programs after Artemis III, and immediately beginning work on next-generation commercial systems that will support subsequent NASA Artemis lunar missions after Artemis III.
- Allocates $3.1 billion to advance U.S. led space infrastructure in LEO to lower costs, empower a commercial market, and expand access and services for government and industry. Supports ISS through end of life, prepares for safe deorbit, and funds the transition to commercial LEO destinations after ISS.
- Commits $570 million to fund projects that will shape the missions of the future with cutting-edge technologies and transformative capabilities that define and sustain U.S. leadership in space exploration by partnering with industry, government, and academia to accelerate high-risk, high-reward technologies.
- Provides $3.9 billion for a leaner, more focused Science program, eliminating over 40 lower-priority missions, while continuing to fund high-impact missions such as the James Webb, Hubble, and Roman Space Telescopes, the Dragonfly mission to Saturn's moon Titan, and the NEO Surveyor mission to detect hazardous asteroids.
- Provides $590 million addressing the highest priority challenges to the nation's global competitiveness in aviation, delivering advances through partnerships with the FAA and DoD.
- Invests $2.1 billion in agency-wide foundational business and technical services required to support NASA's evolving mission needs, including Informational Technology, Infrastructure, & Technical Capabilities, Mission Enabling Services, Technical Authority, and Center Engineering, Safety, and Operations, and invests $140 million to maintain and repair NASA's aging infrastructure.

AGENCY FACT SHEET

- Terminates funding for the Office of STEM Engagement. NASA's primary role is space exploration and, similar to prior generations that were inspired by the Apollo lunar landings, NASA will inspire the next generation of explorers through exciting, ambitious space missions.

EXPLANATION OF BUDGET TABLES AND SCHEDULES

FY 2024 reflects the funding amount specified in Public Law 118-42, Consolidated Appropriations Act, 2024, as revised in NASA's FY 2024 final Operating Plan, September 2024. Amounts include a net transfer amount of $2.0 million; $4.5 million that was transferred from General Services Administration (GSA) and $2.5 million that was transferred to NASA's Information Technology Modernization Working Capital Fund.

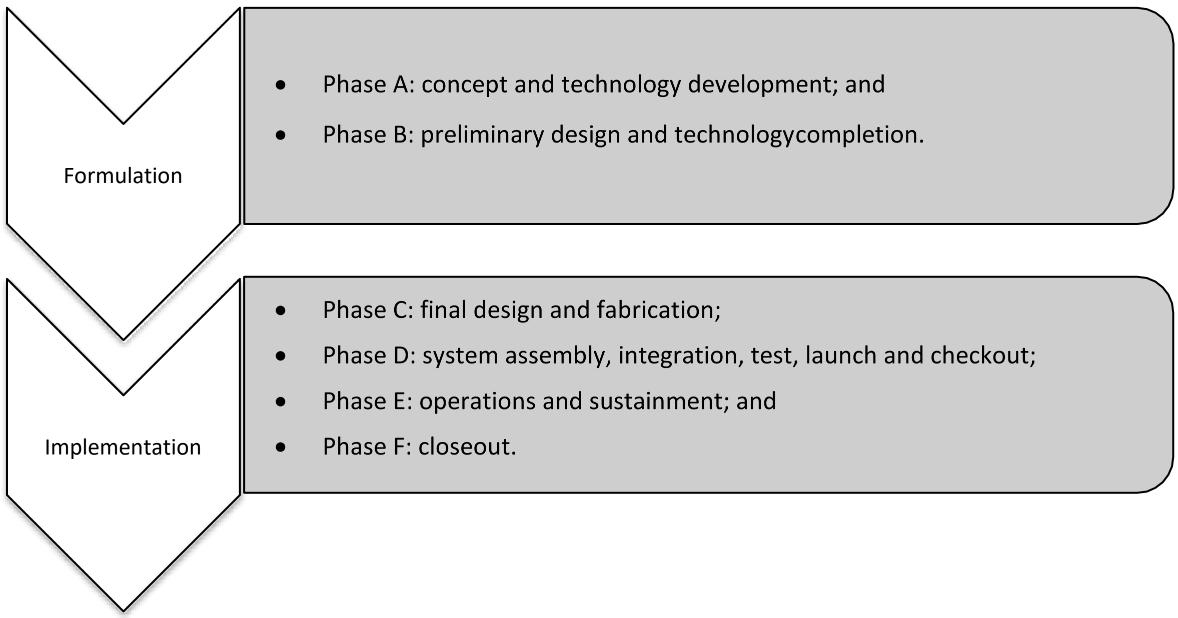
FY 2025 reflects the funding amount specified in Public Law 119-4, Full-Year Continuing Appropriations and Extensions Act, 2025.

Totals may not add due to rounding.

EXPLANATION OF BUDGET TABLES AND SCHEDULES

EXPLANATION OF PROJECT SCHEDULE COMMITMENTS AND KEY MILESTONES

Programs and projects follow their appropriate life cycle. The life cycle is divided into phases. Transition from one phase to another requires management approval at Key Decision Points (KDPs). The phases in program and project life cycles include one or more life cycle reviews, which are considered major milestone events.



A life cycle review is designed to provide the program or project with an opportunity to ensure that it has completed the work of that phase and an independent assessment of a program or project's technical and programmatic status and health. The final life cycle review in a given life cycle phase provides essential information for the KDP that marks the end of that life cycle phase and transition to the next phase if successfully passed. As such, KDPs serve as gates through which programs and projects must pass to continue.

The KDP decision to authorize a program or project's transition to the next life cycle phase is based on a number of factors, including technical maturity; continued relevance to agency strategic goals; adequacy of cost and schedule estimates; associated probabilities of meeting those estimates (i.e., confidence levels); continued affordability with respect to the agency's resources; maturity and the readiness to proceed to the next phase; and remaining program or project risks (e.g., safety, cost, schedule, technical, management, and programmatic). At the KDP, the key program or project cost, schedule, and content parameters that govern the remaining life cycle activities are established.

For reference, a description of schedule commitments and milestones is listed below for projects in formulation or implementation. A list of common terms used in mission planning is also included.

EXPLANATION OF BUDGET TABLES AND SCHEDULES

Formulation

NASA places significant emphasis on project formulation to ensure adequate preparation of project concepts and plans and mitigation of high-risk aspects of the project essential to position the project for the highest probability of mission success. During formulation, the project explores the full range of implementation options, defines an affordable project concept to meet requirements, and develops needed technologies. The activities in these phases include developing the system architecture; completing mission and preliminary system designs; acquisition planning; conducting safety, technical, cost, and schedule risk trades; developing time-phased cost and schedule estimates and documenting the basis of these estimates; and preparing the project plan for implementation.

Formulation Milestone	Explanation
KDP-A	The life cycle gate at which the decision authority determines the readiness of a program or project to transition into Phase A and authorizes formulation of the project. Phase A is the first phase of formulation and means that: • The project addresses a critical NASA need; • The proposed mission concept(s) is feasible; • The associated planning is sufficiently mature to begin activities defined for formulation; and • The mission can likely be achieved as conceived.
System Requirements Review (SRR)	The life cycle review evaluates whether the functional and performance requirements defined for the system are responsive to the program's requirements on the project and represent achievable capabilities.
System Definition Review or Mission Definition Review	The life cycle review evaluates the credibility and responsiveness of the proposed mission/system architecture to the program requirements and constraints on the project, including available resources, and determines whether the maturity of the project's mission/system definition and associated plans are sufficient to begin the next phase, Phase B.
KDP-B	The life cycle gate at which the decision authority determines the readiness of a program or project to transition from Phase A to Phase B. Phase B is the second phase of formulation and means that: • The proposed mission/system architecture is credible and responsive to program requirements and constraints, including resources; • The maturity of the project's mission/system definition and associated plans is sufficient to begin Phase B; and • The mission can likely be achieved within available resources with acceptable risk.
Preliminary Design Review (PDR)	The life cycle review evaluates the completeness/consistency of the planning, technical, cost, and schedule baselines developed during formulation. This review also assesses compliance of the preliminary design with applicable requirements and determines if the project is sufficiently mature to begin Phase C.

EXPLANATION OF BUDGET TABLES AND SCHEDULES

Implementation

Implementation occurs when agency management establishes baseline cost and schedule commitments for projects at KDP-C. The projects maintain the baseline commitment through the end of the mission. Projects are baselined for cost, schedule, and programmatic and technical parameters. Under Implementation, projects are able to execute approved plans development and operations.

Implementation Milestone	Explanation
KDP-C	The life cycle gate at which the decision authority determines the readiness of a program or project to begin the first stage of development and transition to Phase C and authorizes the Implementation of the project. Phase C is the first stage of development and means that: • The project's planning, technical, cost, and schedule baselines developed during formulation are complete and consistent; • The preliminary design complies with mission requirements; • The project is sufficiently mature to begin Phase C; and • The cost and schedule are adequate to enable mission success with acceptable risk.
Critical Design Review (CDR)	The life cycle review evaluates the integrity of the project design and its ability to meet mission requirements with appropriate margins and acceptable risk within defined project constraints, including available resources. This review also determines if the design is appropriately mature to continue with the final design and fabrication phase.
System Integration Review (SIR)	The life cycle review evaluates the readiness of the project and associated supporting infrastructure to begin system assembly, integration, and test. The life cycle review also evaluates whether the remaining project development can be completed within available resources, and determine if the project is sufficiently mature to begin Phase D.
KDP-D	The life cycle gate at which the decision authority determines the readiness of a project to continue in Implementation and transition from Phase C to Phase D. Phase D is the second phase in Implementation; the project continues in development and means that: • The project is still on plan; • The risk is commensurate with the project's payload classification; and • The project is ready for assembly, integration, and test with acceptable risk within its agency baseline commitment.
Launch Readiness Date (LRD)	The date at which the project and its ground, hardware, and software systems are ready for launch.

Other Common Terms for Mission Planning

Term	Definition
Decision Authority	The individual authorized by the agency to make important decisions on programs and projects under their authority.
Formulation Authorization Document	The document that authorizes the formulation of a program whose goals will fulfill part of the agency's strategic plan and mission directorate strategies. This document establishes the expectations and constraints for activity in the Formulation Phase.
KDP	The life cycle gate at which the decision authority determines the readiness of a program or project to progress to the next phase of the life cycle. The KDP also establishes the content, cost, and schedule commitments for the ensuing phase(s).
Launch Manifest	A list that NASA publishes (the "NASA Flight Planning Board launch manifest") periodically, which includes the expected launch dates for NASA missions. The launch dates in the manifest are the desired launch dates approved by the NASA Flight Planning Board and are not typically the same as the Agency Baseline Commitment schedule dates. A launch manifest is a dynamic schedule that is affected by real world operational activities conducted by NASA and multiple other entities. It reflects the results of a complex process that requires the coordination and cooperation by multiple users for the use of launch range and launch contractor assets. Moreover, the launch dates are a mixture of "confirmed" range dates for missions launching within approximately six months, and contractual/planning dates for the missions beyond six months from launch. The NASA Flight Planning Board launch manifest date is typically earlier than the Agency Baseline Commitment schedule date to allow for the operationally driven delays to the launch schedule that may be outside of the project's control.
Operational Readiness Review	The life cycle review evaluates the readiness of the project, including its ground systems, personnel, procedures, and user documentation, to operate the flight system and associated ground system(s), in compliance with defined project requirements and constraints during the operations phase.
Mission Readiness Review or Flight Readiness Review (FRR)	The life cycle review evaluates the readiness of the project, ground systems, personnel, and procedures for a safe and successful launch and flight/mission.
KDP-E	The life cycle gate at which the decision authority determines the readiness of a project to continue in Implementation and transition from Phase D to Phase E. Phase E is the third phase in Implementation and means that the project and all supporting systems are ready for safe, successful launch and early operations with acceptable risk.
Decommissioning Review	The life cycle review in which the decision authority evaluates the readiness of the project to conduct closeout activities. The review includes final delivery of all remaining project deliverables and safe decommissioning of space flight systems and other project assets.
KDP-F	The life cycle gate at which the decision authority determines the readiness of the project's decommissioning. Passage through this gate means the project has met its program objectives and is ready for safe decommissioning of its assets and closeout of activities. Scientific data analysis may continue after this period.

EXPLANATION OF BUDGET TABLES AND SCHEDULES

For further details, go to:

- NASA Procedural Requirement 7102.5F NASA Space Flight Program and Project Management Requirements: https://nodis3.gsfc.nasa.gov/npg_img/N_PR_7120_005F_/N_PR_7120_005F_.pdf
- NASA Procedural Requirement NPR 7123.1C - NASA Systems Engineering Processes and Requirements: https://nodis3.gsfc.nasa.gov/npg_img/N_PR_7123_001C_/N_PR_7123_001C_.pdf
- NASA Launch Services Web site: https://www.nasa.gov/kennedy/launch-services-program/

COMMON ACRONYMS AND ABBREVIATIONS

NASA Centers

ARC	Ames Research Center
AFRC	Armstrong Flight Research Center
GRC	Glenn Research Center
GSFC	Goddard Space Flight Center
HQ	Headquarters
JPL	Jet Propulsion Laboratory
JSC	Johnson Space Center
KSC	Kennedy Space Center
LaRC	Langley Research Center
MSFC	Marshall Space Flight Center
SSC	Stennis Space Center

Mission Directorates

ARMD	Aeronautics Research Mission Directorate
ESDMD	Exploration Systems Development Mission Directorate
MSD	Mission Support Directorate
SMD	Science Mission Directorate
SOMD	Space Operations Mission Directorate
STMD	Space Technology Mission Directorate

Federal Agencies

DoD	Department of Defense
DoE	Department of Energy
NOAA	National Oceanic and Atmospheric Administration
NSF	National Science Foundation

Partner Space Agencies

ASI	Italian Space Agency
CSA	Canadian Space Agency
DLR	German Aerospace Center
ESA	European Space Agency
ISRO	Indian Space Research Organization
JAXA	Japanese Aerospace Exploration Agency

Others

CDR	Critical Design Review
ISS	International Space Station
KDP	Key Decision Point
LCC	Life Cycle Cost
LEO	low-Earth orbit
PDR	Preliminary Design Review

EXPLORATION

EXPLORATION

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Moon to Mars Transportation System	4,781.5	--	**4,894.6**	4,697.7	3,906.8	3,091.4	3,590.0
Moon To Mars Systems Development	2,772.4	--	**2,815.4**	2,864.2	2,650.5	2,435.8	2,490.2
Human Exploration Requirements & Architecture	94.1	--	**602.9**	751.0	1,755.6	2,485.7	1,932.7
Total Budget	**7,648.0**	**7,666.2**	**8,312.9**	**8,312.9**	**8,312.9**	**8,012.9**	**8,012.9**

FY 2024 reflects the funding amount specified in Public Law 118-42, Consolidated Appropriations Act, 2024, as revised in NASA's FY 2024 final Operating Plan, September 2024. Amounts include a net transfer amount of $2.0 million; $4.5 million that was transferred from General Services Administration (GSA) and $2.5 million that was transferred to NASA's Information Technology Modernization Working Capital Fund.

FY 2025 reflects the funding amount specified in Public Law 119-4, Full-Year Continuing Appropriations and Extensions Act, 2025.

The FY 2026 President's Budget includes $8.3 billion for the Exploration Systems account, supporting America's return to the Moon and new investments for Mars-focused programs. The budget ensures that America’s human space exploration efforts remain unparalleled, innovative, and efficient. This funding directly supports the activities of the Moon to Mars (M2M) Program Office and the Strategy and Architecture Office (SAO), which are focused on returning Americans to the Moon and accelerating high priority technology development to enable American-crewed missions to Mars and beyond. The operational knowledge, technological advances, and scientific discoveries NASA gains from exploring the Moon will position the agency to take the next giant leap — sending astronauts to Mars and returning them safely back to Earth. The FY 2026 President’s Budget Request supports the Artemis II mission, the first launch returning humans to the lunar vicinity in fifty years, no later than April 2026 and the Artemis III mission, which will return humans to the surface of the Moon in mid-2027. The Space Launch System (SLS), Orion and Exploration Ground System (EGS) government programs government programs will be retired after Artemis III. The request supports the transition to commercial transportation services for the Artemis IV mission and beyond, improving the cost effectiveness and cadence of access to the Moon and fostering innovation and supporting U.S. industry leadership in human space exploration.

In line with the Administration's objectives of putting the first human on Mars, ESDMD's budget includes $930 million in new investments for Mars-focused programs. These investments will provide the technologies necessary for future Mars exploration and eventual crewed missions to Mars.

- Leveraging existing contracts, NASA will support a near-term entry, descent, and landing demonstration on Mars for a human-class Mars lander and begin early work on a space suit appropriate for use by astronauts on the Martian surface.
- Significant resources will be devoted to accelerating the development of high-priority technologies for crewed missions to Mars.
- ESDMD intends to initiate industry studies on transporting humans to and from Mars on future surface missions.

- ESDMD will also begin deployment of communications relay capabilities around Mars to provide more robust communication links between Mars and Earth, leveraging commercial capabilities to the maximum possible extent.
- A Commercial Mars Payload Service will begin launching precursor missions and technology demonstrators to the Martian surface. Near-term efforts will focus funding on the maturation of commercial robotic Mars lander concepts.

ESDMD will continue to collaborate with SMD to use robotic science missions to prepare for human Moon and Mars missions and to advance scientific objectives using human exploration missions. ESDMD will leverage STMD's technological investments as the basis for new capabilities and will coordinate with STMD on the new Mars technology investments. Finally, ESDMD will leverage SOMD's capabilities, such as ISS and the Space Communications and Navigation Program, as a technology and human system testbed and communication capability provider, respectively.

The Exploration Systems account consists of three themes which provide for the development of systems and capabilities needed for human exploration of deep space:

- M2M Transportation System
- M2M Systems Development; and
- Human Exploration Requirements and Architecture (HERA).

The M2M Transportation System theme consists of three programs and supports activities to enable the agency's Artemis Campaign to return Americans to the Moon and extend human presence to Mars. It will support the transition of the Artemis campaign to a more sustainable, cost-effective approach to lunar exploration by retiring the legacy SLS and Orion government programs after Artemis III and paving the way for more cost-effective, next-generation commercial systems that will support subsequent NASA lunar missions. Savings from the transition to commercial systems in FY 2028 and beyond will be reinvested in surface exploration and other capabilities that will help accelerate development of Mars-forward systems.

- The Orion Program is developing the spacecraft which will carry crew to deep space, sustaining the crew during space travel, providing emergency abort capability, and providing safe re-entry from deep space return velocities for the Artemis II and III missions.
- The Space Launch System (SLS) program is developing the human-rated launch system capable of sending the crewed Orion spacecraft to the Moon, which will be used in each of the Artemis II and III missions.
- The Exploration Ground Systems (EGS) program is developing and operating the systems and facilities necessary to process, integrate, transport, and launch NASA's SLS rocket, Orion spacecraft, and any co-manifested SLS payloads for Artemis II and III missions.

In order to execute Artemis missions IV and beyond after the SLS and Orion government programs are retired, NASA will initiate a new procurement to obtain commercial transportation services. The acquisition will leverage lessons learned from commercial acquisitions and will draw on NASA personnel with experience with the successful commercial acquisitions within human spaceflight and across the agency's missions. The new services contracts will be designed to achieve the best value for the government for the Moon-to-Mars Program. The acquisition will consider and allow a range of options that include services for different phases of the mission as well as end-to-end services in order to maximize the opportunity for competition and the benefits that have historically been realized as a result of competition.

In addition, in order to consolidate Moon and Mars transportation services within a single directorate, ESDMD will take on responsibility for the Commercial Lunar Payload Services (CLPS) program, and it will establish a new Commercial Mars Payload Services (CMPS) program to begin launching precursor missions and technology demonstrators to the Martian surface. In transferring CLPS from SMD, to ESDMD, NASA will ensure that the programs continue the practices that have led to CLPS' successes. Funding for development of lunar and Mars communications relay services are also included in this theme.

The M2M Systems Development theme consists of four programs that are evolving the systems that will ultimately be required to prepare for Mars exploration. Programs under this theme are developing and testing prototype systems and planning flight missions to the Moon to develop systems and operational practices that will enable a mission to Mars. M2M Systems Development is currently comprised of four programs: Exploration Extravehicular Activity and Human Surface Mobility Program (EHP); Human Landing System (HLS); Advanced Exploration Systems (AES); and Gateway. The work done by these programs will create the exploration infrastructure in lunar orbit and on the lunar surface that astronauts will utilize during Artemis missions and that will inform missions to Mars.

- EHP is developing the systems that NASA will use to explore the surface of the Moon providing lessons learned and expertise that will support Mars missions. These commercially provided surface systems include the Lunar Terrain Vehicle, the Pressurized Rover, and lunar and Martian surface suits.
- HLS utilizes commercial partnerships to develop and jointly deploy the integrated landing systems that will transport crew to and from the lunar surface and conduct a series of lunar missions using that capability. The budget provides funding for the HLS program to maintain competition for lunar landing services by supporting the development of multiple different lunar landing systems. In addition, existing HLS contracts will be leveraged to include one or more Mars human-class Entry, Decent and Landing demonstrations.
- AES will continue work to identify and address knowledge gaps and deliver fundamental capabilities to provide astronauts a place to live and work with integrated life support systems, radiation protection, food, fire safety, avionics and software, logistics management, and waste management systems.
- NASA will continue the orderly closeout of the Gateway program in 2026. Gateway was designed to be a platform that orbited the Moon and supported orbital activities, lunar landers, and surface activities. Gateway was to augment the Orion spacecraft's capabilities to support long-duration lunar surface missions as well as enable Mars forward deep space environmental testing and science. In 2026, funding will be used to close out the current contracts while alternative uses of the Gateway hardware are evaluated by commercial and international partners.

HERA is identifying the exploration infrastructure required for Artemis missions that will inform missions to Mars. It also works to ensure that lunar exploration systems are extensible to Mars exploration where technically feasible and cost-effective. HERA is comprised of the Strategy & Architecture Office (SAO), Future Systems, and Mars Technology.

- SAO manages the architecture strategy activity that supports mission manifest planning and overall architecture requirements and capability identification, including industry studies on transporting humans to and from the surface of Mars.

- Future Systems is conducting trade studies to reduce risk and identify required technologies to be utilized as part of the Artemis Campaign and act as precursor systems for missions to Mars. As savings are realized as a result of the transition to commercial transportation systems, additional resources will be channeled to further surface exploration and other essential capabilities.
- Mars Technology will accelerate the development of high-priority technologies for crewed missions to Mars.

EXPLANATION OF MAJOR CHANGES IN FY 2026

To fully implement the FY 2026 President's Budget Request, the following changes are being proposed:

- Orderly phase-out of SLS, Orion, and EGS procurements associated with flights after Artemis III.
- Procurement of commercial transportation services for Artemis IV and beyond through a competitive contract, incentivizing performance and promoting innovation and efficiency.
- Orderly shutdown of the Gateway program
- Transfer of management and funding for the CLPS program from SMD to ESDMD.
- New Mars-related initiatives, including:
  - Establishment of the CMPS program;
  - Leveraging existing HLS contracts to conduct a near-term entry, descent, and landing demonstration for a human-class Mars lander;
  - Investment in Mars Communications Relay services;
  - Initiation of activities to lay the groundwork for a Commercial Martian surface suit; and
  - Initiation of industry studies and acceleration of high priority technology development for crewed missions to Mars.

For more information, go to: https://www.nasa.gov/directorates/exploration-systems-development

ORION PROGRAM

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Crew Vehicle Development	1,266.8	--	**1,363.2**	1,363.2	500.0	0.0	0.0
Orion Program Integration and Support	16.8	--	**7.5**	7.5	0.0	0.0	0.0
Total Budget	**1,283.7**	**--**	**1,370.7**	**1,370.7**	**500.0**	**0.0**	**0.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Artemis II Orion spacecraft is shown here being transported to the Multi-Payload Processing facility at KSC.

The Orion spacecraft is a vehicle that carries crew to lunar orbit, sustains the crew during space travel, provides an emergency abort capability, and provides safe re-entry from lunar return velocities for the Artemis II and III missions.

Orion's design, development, test (including flight tests), and evaluation will have the spacecraft ready to carry crew for the first time on Artemis II no later than April 2026. The Artemis III's spacecraft development will be completed in mid-2027, including the incorporation of the Rendezvous, Proximity Operations, and Docking capability necessary to conduct the mission.

The FY 2026 President's Budget proposes an orderly phase out of the NASA Orion vehicle after Artemis III. NASA will initiate a new procurement to obtain commercial transportation services to conduct later Artemis missions. The acquisition will leverage lessons learned from commercial acquisitions and will draw on NASA personnel with experience with the successful commercial acquisitions within human spaceflight and across the agency's missions.

For more information, go to: http://www.nasa.gov/orion

Program Elements

ORION PROGRAM INTEGRATION AND SUPPORT

Orion Program Integration and Support activities manage the program interfaces between Orion and other elements of the Artemis mission. This effort is critical to ensuring the Orion systems' performance meets technical and safety specifications, and supports programmatic assessments key to achieving integrated technical, cost, and schedule management. In addition, the Orion integration effort is vital to managing interfaces with other ESDMD activities, including strategic studies, feasibility studies, and small-scale research tasks that feed into future human exploration. Coordination and timely integration across ESDMD are aimed at mitigating the impacts of potential design overlaps, schedule disconnects and delays, and cost overruns.

ORION PROGRAM

CREW VEHICLE DEVELOPMENT

See the Crew Vehicle Development section starting on the next page for additional details.

CREW VEHICLE DEVELOPMENT

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**1,266.8**	**--**	**1,363.2**	**1,363.2**	**500.0**	**0.0**	**0.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

PROJECT PURPOSE

Orion is a vehicle that is capable of transporting crew to lunar orbit, sustaining the crew during space travel, providing emergency abort capability, and providing safe re-entry from lunar return velocities for the Artemis II and III missions.

After the successful uncrewed launch of Artemis I on November 16, 2022, NASA is focusing on the completion of Artemis II, the first crewed Space Launch System (SLS) flight, and the preparation required for Artemis III. The Artemis I mission was the first integrated flight test of the Orion spacecraft, the SLS launch vehicle, and Exploration Ground Systems (EGS).

For more information, go to http://www.nasa.gov/orion

EXPLANATION OF MAJOR CHANGES IN FY 2026

NASA will continue supporting Artemis II and III under the current architecture while developing a more cost-effective commercial replacement for future Artemis missions. Due to the Artemis I launch delay, and to manage risk to the crew and ensure mission success, NASA re-assessed the Artemis II and Artemis III target launch dates. The current target dates are Artemis II no later than April 2026 and Artemis III in mid-2027.

NASA will conduct an orderly phase out of the Orion vehicle after Artemis III. NASA will initiate a new procurement to obtain commercial transportation services to conduct later Artemis missions. The acquisition will leverage lessons learned from commercial acquisitions and will draw on NASA personnel with experience with the successful commercial acquisitions within human spaceflight and across the agency's missions. NASA proposes to use unobligated balances previously appropriated to support the termination of these activities, including, but not limited to, ongoing administration, oversight, monitoring, and funding of procurements previously awarded by the Orion Program.

PROJECT PARAMETERS

Orion is the vehicle that will fly astronauts from Earth to orbit around the Moon and back again. Orion is able to carry a crew of four astronauts to cislunar space and beyond, as well as provide habitation and life support for up to 21 days. The spacecraft's four elements are the Crew Module (CM), the Crew Module Adapter (CMA), the European Service Module (ESM), and the Launch Abort System (LAS). Lockheed Martin is building the CM, also referred to as the capsule, providing a safe habitat from launch through landing and recovery. Lockheed Martin is also building the CMA, which connects the capsule to the ESM

CREW VEHICLE DEVELOPMENT

Formulation	Development	Operations

and houses electronic equipment for communications, power, and control. The European Space Agency (ESA) is designing and developing the ESM, which provides in-space propulsion for orbital transfer, power and thermal control, attitude control, and high-altitude ascent aborts. While the ESM is mated with the CM, it will also provide water and air to support the crew.

Orion's first mission was Artemis I, an uncrewed flight test that demonstrated many key Orion spacecraft capabilities. The capsule successfully splashed down on December 11, 2022. The next mission, Artemis II, is a crewed test flight, with a current mission profile that transports four crewmembers on a free return trajectory around the Moon. For Artemis III, the first Artemis mission to the Lunar surface, the Orion spacecraft will rendezvous and dock with the Human Landing System (HLS) spacecraft in lunar orbit.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

The first crewed flight test launch, Artemis II, is scheduled for no later than April 2026 and will send four astronauts around the Moon. The 10-day flight will primarily test life support and other Orion systems that were not tested during the Artemis I mission. Post-mission operations, disassembly, and refurbishment will be in progress through FY 2026.

Continued assembly, integration, and testing of the Artemis III CM and SM will culminate in the integration of the CM and SM into the CSM.

SCHEDULE COMMITMENTS/KEY MILESTONES

Milestone	Confirmation Baseline Date	FY 2026 PB Request
Artemis II Launch Readiness	Apr 2023	NLT Apr 2026

Development Cost and Schedule

Base Year	Base Year Develop-ment Cost Estimate ($M)	JCL (%)	Current Year	Current Year Development Cost Estimate ($M)	Cost Change (%)	Key Milestone	Base Year Milestone Data	Current Year Milestone Data	Milestone Change (months)
2013	6,768.4	70	2024	9,982.8	+42.2	Artemis II	Apr 2023	Apr 2026	36

The above revised baseline cost and Launch Readiness Date were approved by the Agency Program Management Council per section 103 of the NASA Authorization Act of 2005 (P.L. 109-155)

CREW VEHICLE DEVELOPMENT

Formulation	Development	Operations

Development Cost Details

Element	Base Year Development Cost Estimate ($M)	Current Year Development Cost Estimate ($M)*	Change from Base Year Estimate ($M)
TOTAL:	**6,768.4**	**9,982.8**	**+3,214.4**
Program Management	671.5	1,198.2	+526.7
Safety and Mission Assurance	191.4	238.5	+47.1
Spacecraft and Payload	3,205.1	6,506.5	+3,301.4
Systems Engineering and Integration	539.3	825.3	+286.0
Test and Verification	460.6	477.5	+16.9
Other Direct Project Costs	1,700.5	736.7	-963.8

Program unallocated future expenses (UFE) was held in "Other" category in the base year estimate and realigned to other elements as the program matured.

Project Management & Commitments

Element	Description	Provider Details
CM	Provides a safe habitat for the crew, storage for consumables and research instruments, and the docking port for crew transfers.	Provider: JSC Lead Center: JSC Performing Center(s): ARC, GRC, JSC, and LaRC Cost Share Partner(s): N/A
SM	Provides power, propulsion, thermal control, and other services to the CM from launch through separation before reentry.	Provider: ESA Lead Center: GRC Performing Center(s): ARC, GRC, JSC, and LaRC Cost Share Partner(s): ESA
LAS	Maneuvers CM to safety in the event of an emergency during launch or climb to orbit.	Provider: JSC Lead Center: LaRC Performing Center(s): JSC, LaRC, and MSFC Cost Share Partner(s): N/A

CREW VEHICLE DEVELOPMENT

Formulation	Development	Operations

Acquisition Strategy

NASA will conduct an orderly phase out of the Orion vehicle after Artemis III. NASA will initiate a new procurement to obtain commercial transportation services to conduct later Artemis missions. The acquisition will leverage lessons learned from commercial acquisitions and will draw on NASA personnel with experience with the successful commercial acquisitions within human spaceflight and across the agency's missions.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
Orion Design Development, Test, and Evaluation (DDT&E); Orion Production and Operations Contract (OPOC)	Lockheed Martin	Littleton, CO
Orion Main Engine	Aerojet Rocketdyne	Redmond, WA

INDEPENDENT REVIEWS

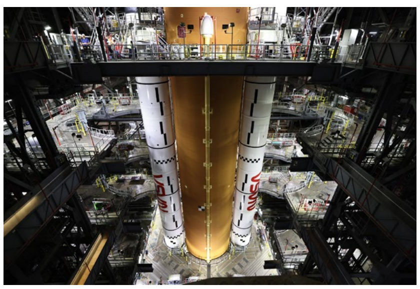
Review Type	Performer	Date of Review	Purpose	Outcome
Flight Readiness Review (FRR) for Artemis II	Independent Assessment (IA) / Independent Review Team (IRT)	Dec 2025	To evaluate the readiness of the project to operate the flight system and associated ground system; and support systems for safe and successful launch and flight/mission.	N/A

SPACE LAUNCH SYSTEM

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Block 1B Capability Upgrade	465.1	--	**150.3**	0.0	0.0	0.0	0.0
SLS Operations	2,060.5	--	**1,793.0**	1,743.2	600.0	0.0	0.0
Space Launch System (SLS)	1.5	--	**0.0**	0.0	0.0	0.0	0.0
SLS Program Integration and Support	72.9	--	**58.0**	58.2	0.0	0.0	0.0
Total Budget	**2,600.0**	**--**	**2,001.3**	**1,801.3**	**600.0**	**0.0**	**0.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



The Artemis II Core Stage is shown here lifted into High Bay 3 inside the Vehicle Assembly Building at KSC on March 23, 2025.

SLS is the human-rated launch system capable of sending the crewed Orion spacecraft to lunar orbit. The Artemis I mission was the first integrated flight test of the Orion spacecraft, the SLS launch vehicle, and associated ground systems. SLS will continue development for the Artemis II and III missions with current target Launch Readiness Dates of no later than April 2026 for Artemis II and mid-2027 for Artemis III. NASA will conduct an orderly phase out of the NASA SLS after Artemis III. NASA will initiate a new procurement to obtain commercial transportation services to conduct later Artemis missions. The acquisition will leverage lessons learned from commercial acquisitions and will draw on NASA personnel with experience with the successful commercial acquisitions within human spaceflight and across the agency's missions.

For more information, go to: http://www.nasa.gov/exploration/systems/sls/index.ht2

Program Elements

SLS PROGRAM INTEGRATION AND SUPPORT

SLS Program Integration and Support activities manage the program interfaces between SLS and other elements of the Artemis mission. This effort is critical to ensuring the SLS systems' performance meets technical and safety specifications, and supports programmatic assessments key to achieving integrated technical, cost, and schedule management. In addition, the SLS integration effort is vital to managing interfaces with other ESDMD activities, including strategic studies, feasibility studies, and small-scale research tasks that feed into future human exploration. Coordination and timely integration across ESDMD are aimed at mitigating the impacts of potential design overlaps, schedule disconnects and delays, and cost overruns.

SLS OPERATIONS AND BLOCK 1B CAPABILITY UPGRADE

See these sections in the subsequent sections for additional details.

BLOCK 1B CAPABILITY UPGRADE

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	465.1	--	150.3	0.0	0.0	0.0	0.0

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA will terminate the Space Launch System (SLS) Block 1B capability upgrade. The FY 2026 President's Budget funds the orderly shutdown of the SLS Block 1B.

PROJECT PURPOSE

The upgraded Block 1B variant was designed to increase the cargo capacity of the SLS. The development included a new and more powerful Exploration Upper Stage (EUS) to enable more ambitious missions beginning with Artemis IV. NASA will transition to procuring more cost-effective, next-generation commercial transportation services for Artemis IV and beyond.

For more information, go to: http://www.nasa.gov/exploration/systems/sls/index.html

EXPLANATION OF MAJOR CHANGES IN FY 2026

This budget funds the close-out of the Block 1B upgrade. NASA proposes to use unobligated balances previously appropriated to support the termination of these activities, including, but not limited to, ongoing administration, oversight, monitoring, and funding of procurements previously awarded by the SLS Program.

SLS OPERATIONS

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**2,060.5**	**--**	**1,793.0**	**1,743.2**	**600.0**	**0.0**	**0.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Space Launch System (SLS) launch vehicle currently serves as the primary crew launch capability for the Artemis Campaign. After the successful uncrewed launch of Artemis I on November 16, 2022, NASA has been focused on launching Artemis II, the first crewed SLS flight which will carry three astronauts from NASA and one from CSA. The Artemis II test flight will confirm all of the spacecraft's systems operate as designed with crew aboard in the actual environment of space.

The proposed funding levels allow the program to support Artemis II and III launches. Due to the Artemis I launch delay, and to manage risk to the crew and ensure mission success, NASA re-assessed the Artemis II and Artemis III target launch dates. The current target dates are Artemis II no later than April 2026 and Artemis III in mid-2027.

For more information, go to: http://www.nasa.gov/exploration/systems/sls/index.html

EXPLANATION OF MAJOR CHANGES IN FY 2026

NASA will conduct an orderly phase out of the NASA SLS vehicle after Artemis III. NASA will initiate a new procurement to obtain commercial transportation services to conduct later Artemis missions. The acquisition will leverage lessons learned from commercial acquisitions and will draw on NASA personnel with experience with the successful commercial acquisitions within human spaceflight and from across the agency’s missions.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

Final Artemis II vehicle integration is planned with Orion integration onto SLS in the VAB. Following final integration of Orion onto SLS in the VAB, the fully assembled vehicle will undergo final testing and preparation for launch. A tanking test at Pad 39B will be used test out updated tanking procedures, the integrated tanking system, and the new Pad B liquid hydrogen sphere.

Launch preparations for Artemis III are ongoing with the continuation of production of flight hardware and component testing.

NASA will conduct an orderly phase out of the NASA SLS vehicle after Artemis III. NASA will initiate a new procurement to obtain commercial transportation services to conduct later Artemis missions. The acquisition will leverage lessons learned from commercial acquisitions and will draw on NASA personnel with experience with the successful commercial acquisitions within human spaceflight and across the agency’s missions.

SLS OPERATIONS

Formulation	Development	Operations

Project Schedule

Date	Significant Event
NLT Apr 2026	Artemis II LRD
Mid-2027	Artemis III LRD

Project Management & Commitments

Element	Description	Provider Details
Booster	Responsible for development, testing, production, and support for the five-segment solid rocket motor to be used on flights.	Provider: MSFC Lead Center: MSFC Performing Center(s): MSFC Cost Share Partner(s): N/A
Engines	Responsible for development and/or testing, production, and support for both core stage (RS-25) and upper stage liquid engines (RL10).	Provider: MSFC Lead Center: MSFC Performing Center(s): MSFC and SSC Cost Share Partner(s): N/A
Stages	Responsible for development, testing, production, and support of hardware elements, including core and upper stages, liquid engine integration, and avionics integration.	Provider: MSFC Lead Center: MSFC Performing Center(s): MSFC/MAF and SSC Cost Share Partner(s): N/A
Spacecraft Payloads and Integration	Responsible for development, testing, production, and support of hardware elements for integrating the Orion spacecraft and payloads onto SLS, including the ICPS, OSA, LVSA, Universal Stage Adapter (USA), and payload fairings.	Provider: MSFC Lead Center: MSFC Performing Center(s): MSFC, LaRC, GRC, and KSC Cost Share Partner(s): N/A

Acquisition Strategy

NASA is using contracts with Aerojet Rocketdyne, Boeing Aerospace, Northrup Grumman Innovation Systems, Teledyne Brown Engineering Inc., and United Launch Alliance for the production and design, development, test, evaluation, and operation of the elements that make up the SLS launch vehicle. These

SLS OPERATIONS

Formulation	Development	Operations

elements include the Core and Upper stages, Solid Rocket Boosters, ICPS, the Core Stage Engines (RS-25s), the Upper Stage Engines (RL10s), USA, and the LVSA as applicable to the various SLS Block configurations.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
USA	Dynetics, Inc.	Huntsville, AL
Launch Vehicle Stage Adaptor	Teledyne Brown Engineering, Inc.	Huntsville, AL
Boosters	Northrop Grumman Innovation Systems	Magna, UT
Core Stage Engine	Aerojet Rocketdyne	Desoto Park, CA; SSC
ICPS	United Launch Alliance under contract to Boeing Aerospace	Huntsville, AL
Stages (Core and Upper)	Boeing Aerospace	New Orleans, LA
Upper Stage Engines	Aerojet Rocketdyne	West Palm Beach, FL

NASA will conduct an orderly phase out of the NASA SLS after Artemis III. NASA will initiate a new procurement to obtain commercial transportation services to conduct later Artemis missions. The acquisition will leverage lessons learned from commercial acquisitions and will draw on NASA personnel with experience with the successful commercial acquisitions within human spaceflight and across the agency's missions.

INDEPENDENT REVIEWS

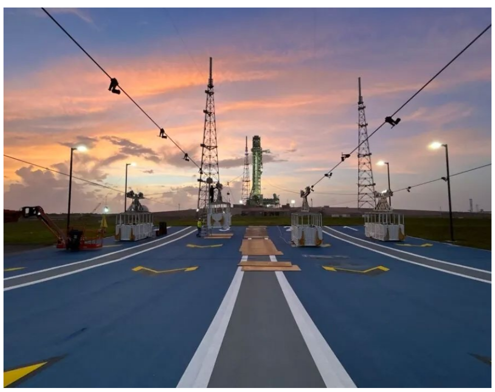
None.

EXPLORATION GROUND SYSTEMS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Exploration Ground Systems	883.2	--	**658.4**	700.6	500.0	0.0	0.0
EGS Program Integration and Support	14.7	--	**0.0**	0.0	0.0	0.0	0.0
Total Budget	**897.9**	**--**	**658.4**	**700.6**	**500.0**	**0.0**	**0.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



Shown here, EGS tested the emergency egress baskets on the mobile launcher at Launch Complex-39B. These baskets enable astronauts and pad personnel to quickly escape in a pad abort emergency.

The Exploration Ground Systems (EGS) program enables integration, processing, and launch of the Space Launch System (SLS) and Orion spacecraft. The EGS program, based at KSC, is responsible for developing and operating the systems and facilities necessary to process, integrate, transport, and launch NASA's SLS rocket, Orion spacecraft, and for landing and recovery activities of the Orion spacecraft flight elements in support of Artemis II and III.

After successfully supporting the uncrewed flight test of Artemis I, EGS continues to maintain the Launch Complex-39B (LC-39B), crawler-transporters, Vehicle Assembly Building (VAB), Launch Control Center's Young-Crippen Firing Room 1, Mobile Launcher-1 (ML-1), and other ground facilities for crewed operations.

NASA will conduct an orderly phase out of EGS after Artemis III. NASA will initiate a new procurement to obtain commercial transportation services to conduct later Artemis missions. The acquisition will leverage lessons learned from commercial acquisitions and will draw on NASA personnel with experience with the successful commercial acquisitions within human spaceflight and across the agency's missions.

For more information, go to: https://www.nasa.gov/exploration/systems/ground/index.html

Program Elements

EGS PROGRAM INTEGRATION AND SUPPORT

EGS Program Integration and Support activities manage the program interfaces between EGS and other elements of the Artemis mission. This effort is critical to ensuring the EGS systems' performance meets technical and safety specifications, and supports programmatic assessments key to achieving integrated technical, cost, and schedule management. In addition, the EGS integration effort is vital to managing interfaces with other ESDMD activities, including strategic studies, feasibility studies, and small-scale research tasks that feed into future human exploration. Coordination and timely integration across ESDMD are aimed at mitigating the impacts of potential design overlaps, schedule disconnects and delays, and cost overruns.

EXPLORATION GROUND SYSTEMS

EXPLORATION GROUND SYSTEMS OPERATIONS

See the Exploration Ground Systems Operations section on the following page for additional details.

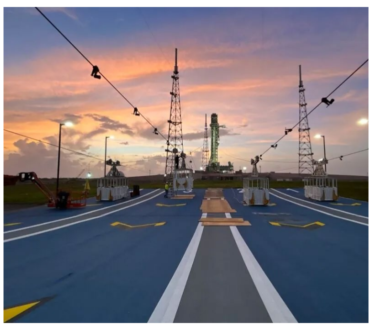
EXPLORATION GROUND SYSTEMS

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	883.2	--	658.4	700.6	500.0	0.0	0.0

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



Shown here, EGS tested the emergency egress baskets on the mobile launcher at Launch Complex-39B. These baskets enable astronauts and pad personnel to quickly escape in a pad abort emergency.

Exploration Ground Systems (EGS) is responsible for safely launching the Space Launch System (SLS) and Orion spacecraft in support of the Artemis II and III missions. EGS develops, upgrades, and maintains the necessary ground systems infrastructure and facilities required for assembly, test, and launch of SLS and Orion, along with the landing and recovery activities of Orion. This includes evolving several KSC infrastructure elements including the pad, known as Launch Complex-39B (LC-39B), the Vehicle Assembly Building (VAB), Mobile Launcher 1 (ML-1), and other smaller facilities to support Artemis missions. The modernization efforts maintain flexibility for LC-39B and VAB to accommodate other potential users and commercial partners. ML-1, VAB, and LC-39B are undergoing additional modifications to accommodate crewed flight in preparation for Artemis missions.

After the successful uncrewed launch of Artemis I, NASA is now focusing on execution of Artemis II (the first crewed SLS flight) and preparations for Artemis III. The Artemis I mission was the first integrated flight test of the Orion spacecraft, the SLS launch vehicle, and the EGS.

For more information, go to: http://go.nasa.gov/groundsystems

EXPLANATION OF MAJOR CHANGES IN FY 2026

The proposed funding levels allow the program to support Artemis II and III launches. Due to the Artemis I launch delay, and to manage risk to the crew and ensure mission success, NASA re-assessed the Artemis II and Artemis III target launch dates. The current target dates are Artemis II no later than April 2026 and Artemis III in mid-2027.

NASA will close out Mobile Launcher-2 development, as ML-2 will not be needed to support SLS due to the orderly shutdown of the SLS Block 1B upgrade. NASA proposes to use previously appropriated unobligated balances to support the termination of these activities, including but not limited to, ongoing administration, oversight, and monitoring.

NASA will conduct an orderly phase out of NASA EGS after Artemis III. NASA will utilize a commercial partnership through a competitive contract to transport crew for future Artemis missions.

EXPLORATION GROUND SYSTEMS

Formulation	Development	Operations

KEY ACHIEVEMENTS PLANNED FOR FY 2026

For the Artemis II launch, EGS will conduct the rollout for the tanking test, landing and recovery operations, post launch operations at the pad, and crew module de-servicing at the Multi-Payload Processing Facility. EGS will support the Orion and SLS integration scheduled for October 2025 to prepare for the fully stacked roll to pad tanking test. Following this test, the emergency egress demo will occur with the crew before the terminal countdown demonstration test occurs in the LCC. Once Artemis II is launched, EGS will deploy operations for landing and recovery.

For Artemis III, EGS will conduct integrated operations including flight software sustainment releases, booster stacking, core stage 3 mate and stacking of Orion, and emergency egress system crew training and certification.

COMMERCIAL MOON AND MARS INFRASTRUCTURE AND TRANSPORTATION

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**0.0**	**--**	**864.1**	**825.0**	**2,306.8**	**3,091.4**	**3,590.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Newly funded in FY 2026, the Commercial Moon to Mars (M2M) Infrastructure and Transportation Program will foster innovation and reduce costs by leveraging commercial capabilities and increasing investments necessary for crewed Mars exploration.

ESDMD will phase out the legacy human exploration transportation systems and replace the Space Launch System rocket and Orion capsule with a commercial system after their third flight. Building on the successful Commercial Orbital Transportation Services (COTS) model, which stimulated efforts within the private sector to develop and operate safe, reliable, and cost-effective commercial space transportation systems, the acquisition strategy will focus on competitive, contracts to ensure that taxpayer funding is incentivizing performance. The acquisition will consider and allow a range of options that include services for different phases of the mission as well as end-to-end services in order to maximize the opportunity for competition and the benefits that have historically been realized as a result of competition. Savings from the transition to commercial systems in FY 2028 and beyond will be reinvested in surface exploration and other capabilities that will advance lunar exploration and help accelerate development of Mars-forward systems.

Leveraging existing contracts, ESDMD will begin early work on a space suit appropriate for use by astronauts on the Martian surface. Funding for development of lunar and Mars communications relay services are also included here.

Previously funded under the SMD, the responsibility for Commercial Lunar Payload Services (CLPS) will transition to ESDMD. This transfer is intended to consolidate crewed and uncrewed lunar transportation services without altering CLPS' operational model. CLPS is an open competition to U.S. commercial providers of space transportation services, with the strategic goal of supporting affordable commercial operations on and near the Moon, consistent with the National Space Transportation Policy and Commercial Space Act. CLPS consists of a multi-vendor catalog and a 10-year indefinite delivery, indefinite quantity contract. NASA manages this effort through task order competitions for specific lunar surface transportation services of payloads with NASA being one of several customers. Likewise, ESDMD will fund a similarly structured Commercial Mars Payload Service with plans to begin launching precursor missions and technology demonstrators to the Martian surface. The near-term efforts will focus funding on supporting the maturation of commercial robotic Mars lander concepts.

EXPLANATION OF MAJOR CHANGES IN FY 2026

The Commercial Moon to Mars (M2M) Infrastructure and Transportation Program is a newly funded program in FY 2026. CLPS, previously funded by SMD, will now be the responsibility of ESDMD.

COMMERCIAL MOON AND MARS INFRASTRUCTURE AND TRANSPORTATION

KEY ACHIEVEMENTS PLANNED FOR FY 2026

FY 2026 will see the largest CLPS delivery to date with the large mass demonstration delivery by Astrobotic using its Griffin lander. CLPS expects to complete preparation for its first dual-destination delivery of payloads, Firefly's Blue Ghost Mission-2 flight to both the surface and orbit of the Moon, scheduled for FY 2026.

Also in early FY 2026, Intuitive Machines' third commercial delivery will include the first Payloads and Research Investigations on the Surface of the Moon (PRISM) payload. The first PRISM-1 payload, Lunar Vertex, is set to land in of FY 2026, alongside the STMD Cooperative Autonomous Distributed Robotic Exploration (CADRE) rovers and two international payloads, one from South Korea and the other from the European Space Agency (ESA).

ESDMD will continue to define the content of this new program and will brief Congress as soon as appropriate.

GATEWAY

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Gateway Initial Capability	447.5	--	**267.3**	212.9	0.0	0.0	0.0
Gateway	407.0	--	**36.9**	0.0	0.0	0.0	0.0
Total Budget	**854.5**	**--**	**304.2**	**212.9**	**0.0**	**0.0**	**0.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA will terminate the Gateway program, a small space station that was slated to orbit the Moon. In the legacy architecture, Gateway was to augment the Orion spacecraft's capabilities to support long-duration lunar surface missions as well as enable Mars forward deep space environmental testing and science. Due to the transition to commercial services for transportation to the lunar surface, and enabling earlier Mars technology development and demonstrations, Gateway is no longer required. This budget funds the orderly shutdown of the Gateway program. The American components produced to date have substantial potential value and NASA will explore transferring them to other potential users. International partners will be invited to join expanded opportunities for meaningful collaboration on the Moon and Mars.

For more information, go to: http://www.nasa.gov/gateway

EXPLANATION OF MAJOR CHANGES IN FY 2026

This budget funds the close-out of the Gateway program. NASA proposes to use unobligated balances previously appropriated to support the termination of these activities, including, but not limited to, ongoing administration, oversight, monitoring, and funding of procurements previously awarded by the Gateway program.

GATEWAY INITIAL CAPABILITY

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**447.5**	**--**	**267.3**	**212.9**	**0.0**	**0.0**	**0.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

This budget funds the orderly shutdown of the Gateway program, with the opportunity to potentially transfer already produced components to other users.

PROJECT PURPOSE

Gateway Initial Capability included the Power and Propulsion Element (PPE), the Habitation and Logistics Outpost (HALO), the commercial launch vehicle for initial launch, and a portion of Program Mission Execution (PME). PPE and HALO were planned to be integrated before launch on a Falcon Heavy as a single co-manifested vehicle.

PROJECT PARAMETERS

The PPE was designed to maneuver Gateway around the Moon. The PPE project leveraged Space Technology Mission Directorate investments in advanced electric propulsion systems. PPE was intended to demonstrate an advanced solar electric propulsion system (SEP), which combines 12kW and 6kW SEP thrusters.

The HALO module was designed to be the initial habitation element where astronauts would live, exercise, prepare meals, rest, prepare for lunar surface missions, and conduct research while visiting Gateway.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

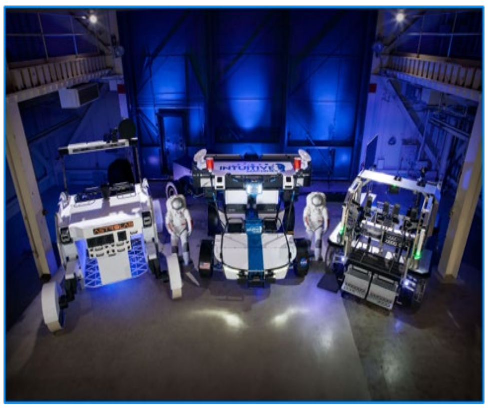
This budget funds the close-out of the Gateway, while NASA evaluates transferring the Gateway hardware to other users. International partners will be invited to join expanded opportunities for meaningful collaboration on the Moon and Mars. NASA proposes to use unobligated balances previously appropriated to support the termination of these activities, including but not limited to, ongoing administration, oversight, and monitoring.

xEVA AND HUMAN SURFACE MOBILITY PROGRAM

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**358.4**	**--**	**641.6**	**741.6**	**732.1**	**715.4**	**748.2**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



From left to right: Astrolab's FLEX, Intuitive Machines' Moon RACER, and Lunar Outpost's Eagle lunar terrain vehicle are displayed at NASA's JSC.

The NASA Extravehicular Activity (EVA) and Human Surface Mobility (HSM) Program (EHP) works with partners to advance the technologies associated with human mobility and surface infrastructure and ensures availability of critical operational capabilities in support of NASA's Artemis missions. The EHP vision provides safe, reliable, and effective EVA and HSM capabilities that allow astronauts to survive and work outside the confines of a spacecraft in space and on the Moon and Mars. Artemis missions will return humans to the surface of the Moon using innovative technologies to explore more of the lunar surface than ever before. The EHP will collaborate with commercial and international partners to establish the first long-term presence on the Moon and develop surface capabilities that can be used by the first American astronauts to land on Mars.

The EHP and partners will collaborate on developing lunar capabilities to increase the productivity of crews on the lunar surface during Artemis missions. EHP focuses on high-risk technologies for surface systems that will provide mission planners with more choices, thereby increasing mission success.

Artemis astronauts exploring the Moon's surface will wear new spacesuits to keep them safe and productive in the harsh lunar environment. NASA is embracing commercial collaborations to optimize spacesuit technology and inspire innovation in the space industry. NASA is advancing spacewalking capabilities by buying services that provide astronauts with next generation spacesuit and spacewalk systems to explore the lunar surface on Artemis missions and prepare for human missions to Mars. The Exploration Extravehicular Activity (xEVA) System, which is required for astronauts to conduct moonwalks on the lunar surface, includes the Exploration Extravehicular Mobility Unit (xEMU) spacesuit development, vehicle interfaces to suit equipment, system servicing equipment, and specialized tools for these moonwalks.

The Lunar Terrain Vehicle (LTV) is an unpressurized surface transportation system that will extend the range of crew excursions and enable more scientific research, resource prospecting, and exploration activities to be conducted. Because Artemis missions will be targeting the lunar South Pole area, the new LTV must be able to withstand and operate in cold temperatures and unique lighting conditions. The Artemis LTV is expected to be able to be operated remotely when astronauts are not on the surface, enabling access to diverse locations that will facilitate science discoveries, resource prospecting, and exploration. It will also be available for commercial uses when not carrying out NASA research and operations.

xEVA AND HUMAN SURFACE MOBILITY PROGRAM

Procuring services from industry partners allows NASA to leverage commercial innovation and provide value to U.S. taxpayers while achieving its human spaceflight and exploration goals. The Lunar Terrain Vehicle Services (LTVS) contract will support continued science and human exploration of the Moon during the Artemis Campaign.

The Pressurized Rover (PR) is a pressurized surface transportation system being developed and built by the Japan Aerospace Exploration Agency (JAXA) in partnership with NASA that would be used on the Moon to expand the range of excursions even further, allowing crews to perform longer-duration research and exploration activities. This capability would allow NASA to conduct analogs of Mars surface activities to reduce risk and optimize operational concepts. When NASA sends a pressurized rover to the surface of the Moon, it will serve as astronauts' life support system and their means of transportation for up to a month at a time.

The capabilities provided by the EHP enable the crews of the new space age the ability to safely explore the lunar surface. The ability to explore the lunar surface will enable new scientific discoveries and promote new technologies, research, and systems needed for future Mars missions.

For additional information, please visit: http://www.nasa.gov/EHP

EXPLANATION OF MAJOR CHANGES IN FY 2026

EHP will begin early work on a space suit appropriate for use by astronauts on the Martian surface, leveraging existing contract mechanisms.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

In FY 2026, Axiom Space will continue the development of spacesuits for use in space and on the lunar surface. EHP will conduct the EVA CDR Informed Sync Review in the spring. KDP-D/E is planned for late summer.

EHP plans to complete LTV System Definition Review (SDR) and KDP-B in FY 2026.

PR JAXA System Definition Review (SDR) will be conducted in first quarter of FY 2026.

EHP will begin the process of developing Martian surface suits, including efforts through existing contract mechanisms.

Program Elements

EVA DEVELOPMENT

The goal of the EVA development project is to provide a safe, reliable, and effective EVA capability that allows astronauts to survive and work outside the confines of the base spacecraft, explore the lunar surface on Artemis missions, and prepare for human missions to Mars.

The xEMU is designed to provide astronauts with enhanced mobility to accomplish their exploration tasks on the lunar surface. It is also designed to be more comfortable when worn by astronauts with a wider range of physiological characteristics.

LUNAR TERRAIN VEHICLE

The LTV project will provide the unpressurized vehicle required for astronauts to explore the surface of the Moon. The project will also explore capabilities required to allow remote use of the vehicle to perform tasks on the Moon during periods where astronauts are absent from the lunar surface.

PRESSURIZED ROVER

The PR project is a partnership with JAXA to provide the means for astronauts to explore the surface of the Moon for long durations beyond any previous capability. Specifically, the habitable volume built into the surface PR will allow for long range missions away from a surface outpost.

Program Management & Commitments

ESDMD manages the xEVA and HSM Systems activities.

Program Element	Provider
xEVA	Provider: Axiom Lead Center: JSC Performing Center(s): JSC Cost Share Partner(s): TBD
LTV	Provider: TBD Lead Center: JSC Performing Center(s): JSC Cost Share Partner(s): TBD
Pressurized Rover	Provider: JAXA Lead Center: JSC Performing Center(s): TBD Cost Share Partner(s): TBD

Acquisition Strategy

Acquisition plans for all functions/elements of xEVA and HSM will be varied and depend upon specific activities.

NASA is using commercial contracts to advance spacewalking capabilities on the Moon by buying services that provide astronauts with next generation spacesuit and spacewalk systems to work outside spacecraft and explore the lunar surface on Artemis missions. NASA will use a mix of internal technology development and commercial contracts to mature suit designs appropriate for Mars.

MAJOR CONTRACTS/AWARDS

NASA selected Axiom Space for the task order for developing a spacesuit to enable lunar surface activities, which has a base value of $228.5 million. A future task order will be competed for recurring spacesuit services to support subsequent Artemis missions. Axiom Space will be required to test the suits in a spacelike environment before Artemis III.

NASA had awarded a task order to Collins Aerospace to deliver a spacewalking system for use outside the ISS. This award – the second under NASA's EVAS contract – was for design and development of a next-generation spacesuit and support systems. NASA and Collins Aerospace mutually agreed to descope the existing task orders on the Collins Exploration Extravehicular Activity Services contract.

HUMAN LANDING SYSTEM

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
HLS Initial Capability	584.0	--	**509.5**	596.5	437.1	553.9	962.1
Human Landing System	834.9	--	**1,237.1**	1,150.1	1,318.1	1,003.3	616.8
Total Budget	**1,418.9**	**--**	**1,746.6**	**1,746.6**	**1,755.2**	**1,557.2**	**1,578.8**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Human Landing System (HLS) is the mode of transportation that will take astronauts to the lunar surface as part of Artemis and prepare for human missions to Mars. The HLS program is currently working with U.S. industry to develop landers that will safely transfer Artemis astronauts from lunar orbit to the surface of the Moon and back to the waiting spacecraft. The FY 2026 President's Budget Request aims to further expand this work to progress toward a near-term entry, descent, and landing demonstration at Mars for a human-class Mars lander. Partnering with American industry fosters a space-related economic marketplace and maintains America's high-tech industrial base, while reducing costs to taxpayers. NASA shares its knowledge and expertise with industry and maintains oversight of safety, while companies develop, test, and iterate their lander designs.

For more information, please visit: http://www.nasa.gov/hls

EXPLANATION OF MAJOR CHANGES IN FY 2026

The HLS program will begin the process of procurement to conduct a near-term entry, descent, and landing demonstration at Mars for a human-class Mars lander.

As a part of ESDMD's initiation review process for new elements, the newly established Multi-Purpose Habitat (MPH) and Argonaut elements have transitioned from pre-formulation under SAO to the HLS program for implementation as part of the overall Artemis Architecture beginning in FY 2026. MPH will be developed by the Italian Space Agency (ASI) and Argonaut will be developed by ESA.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

For Artemis III, SpaceX will continue development of Starship with preparation for the Initial Capability CDR Future Integrated Flight Test, which will include the Propellant Transfer Flight Test and Long Duration Mission Post Test Review. SpaceX will continue leveraging the Initial Capability development leading to the CDR of the Sustaining Capability Starship in FY 2027. Blue Origin will continue development of Blue Moon Mark 2 system and conduct the Sustaining Capability CDR. Additionally, SpaceX and Blue Origin will continue development of large cargo landers. Blue Origin is planning a Human-class Cargo Delivery Lander (HDL) PDR in FY 2026.

The HLS Program intends to leverage existing HLS contracts to conduct a near-term entry, descent, and landing demonstration at Mars for a human-class Mars lander.

HUMAN LANDING SYSTEM

Program Elements

HLS PROGRAM MANAGEMENT

HLS Program Management is responsible for executing programmatic roles assigned by ESDMD. The HLS Program Office will oversee all HLS verification, validation, and certification to ensure requirements for flight readiness satisfy NASA's standards for crew safety and human rating.

HLS Program Management is responsible for the insight and oversight activities in collaboration with commercial partners associated with human landing system hardware development, integration, and flight demonstration, leading to services that can be procured by NASA. HLS performs risk reduction activities and identifies and prioritizes upgrades to the human landing systems so they can support sustainable future exploration missions. HLS includes a lander ground operations office at KSC, and both a crew compartment office and a lander flight operations office at JSC. HLS prioritizes and coordinates collaboration resources across multiple NASA centers and manages major integrated system test activities, as applicable.

HUMAN LANDING SYSTEMS - INITIAL CAPABILITY

NASA currently has a contract (NextSTEP-2 Appendix H Option A) with SpaceX to develop its Starship HLS to land astronauts on the Moon during the Artemis III mission. Starship will dock with Orion in lunar orbit, two crew members will transfer from Orion to Starship, and descend to the surface. There, the crew will collect samples, perform science experiments, and observe the lunar environment before returning in Starship to Orion in lunar orbit. Prior to the crewed Artemis III mission, SpaceX will perform an uncrewed landing demonstration mission on the lunar surface.

HUMAN LANDING SYSTEMS - SUSTAINING CAPABILITY

NASA has also awarded a contract (NextSTEP-2 Appendix H Option B) to SpaceX to further develop its Starship HLS for future missions to meet an extended set of requirements, such as landing more mass on the lunar surface. Concurrently, NASA has awarded a contract (NextSTEP-2 Appendix P) to Blue Origin and its partners to develop its Blue Moon lander to meet the same set of extended requirements for use during the future missions.

HUMAN DELIVERY LANDING SYSTEMS - CARGO CAPABILITY

NASA authorized the execution of optional contract line items under both Appendix H and P to develop human-class cargo delivery landers that leverage the human landing system designs.

Program Schedule

Date	Significant Event
Q3 2026	Uncrewed HLS demonstration to the lunar surface with SpaceX Starship
Jun 2027	Artemis III: Crewed HLS demonstration to the lunar surface with SpaceX Starship

HUMAN LANDING SYSTEM

Date	Significant Event
Dec 2028	Artemis IV: Crewed HLS demonstration to the lunar surface with SpaceX Starship that meets extended lander requirements

Program Management & Commitments

Program Element	Provider
HLS Program Management	Lead Center: MSFC Performing Center(s): ARC, GRC, LaRC, GSFC, SSC, JSC, KSC
HLS - Initial Capability	Provider: SpaceX (Artemis III) Lead Center: MSFC Performing Center(s): ARC, GRC, LaRC, GSFC, SSC, JSC, KSC
HLS - Sustaining Capability	Providers: SpaceX (Artemis IV) and Blue Origin (Artemis V) Lead Center: MSFC Performing Center(s): ARC, GRC, LaRC, GSFC, SSC, JSC, KSC
Cargo Landers	Provider: SpaceX and Blue Origin Lead Center: MSFC Performing Center(s): ARC, GRC, LaRC, GSFC, SSC, JSC, KSC
Multi-Purpose Habitat	Provider: ASI Lead Center: MSFC Performing Center(s): MSFC
Argonaut	Provider: ESA Lead Center: GRC Performing Center(s): GRC, MSFC

Acquisition Strategy

The HLS program utilizes the NextSTEP Broad Agency Announcement (BAA) contract vehicle. Through this approach, NASA can award firm-fixed-price, milestone-based proposals to enable rapid development of a crewed flight demonstration of the HLS. In addition, existing HLS contracts will be leveraged to include one or more Mars human-class Entry, Decent and Landing demonstration.

MAJOR CONTRACTS/AWARDS

NextSTEP-2 Appendix H BAA Option A: Selected SpaceX of Hawthorne, California for a firm-fixed price, milestone-based contract. The total award value is $2.89 billion. SpaceX is developing the Starship – a fully integrated lander that will use the SpaceX Super Heavy rocket.

NextSTEP-2 Appendix H BAA Option B: Selected SpaceX of Hawthorne, California. NASA has awarded SpaceX a $1.15 billion contract to develop an upgraded version of its Starship lunar lander and fly a second crewed mission.

HUMAN LANDING SYSTEM

NextSTEP-2 Appendix P BAA: Selected Blue Origin of Kent, Washington. The total award value of the firm-fixed price contract is $3.4 billion. Blue Origin is developing the Blue Moon lander to meet NASA's sustaining landing development requirement.

HLS INITIAL CAPABILITY

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**584.0**	**--**	**509.5**	**596.5**	**437.1**	**553.9**	**962.1**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

PROJECT PURPOSE

The Human Landing System (HLS) Initial Capability supports Artemis III, the first lunar landing mission. NASA awarded a contract for the full development of an initial lander capability to SpaceX (NextSTEP-2 Appendix H, Option A).

PROJECT PARAMETERS

The objective of the HLS Initial Capability is to facilitate the rapid development and demonstration of a U.S. landing system that will deliver the first astronaut crew to the surface of the Moon in more than 50 years. The Option A contract scope of work includes both an uncrewed and crewed lunar landing demonstration of the SpaceX Starship human landing system. For the Artemis III lunar return mission, the Space Launch System rocket will launch four astronauts aboard the Orion spacecraft for their multi-day journey to lunar orbit. Once in orbit, two crew members will transfer to the SpaceX Starship for the final leg of their journey to the surface of the Moon. The HLS Starship will first dock with the Orion spacecraft in lunar orbit to receive the crew, after which it will safely descend to the lunar surface with the two astronauts and stay for approximately a week. During this time, the crew will perform activities on the lunar surface, conduct science objectives, and collect materials from the surface. The HLS Starship will then ascend from the surface to lunar orbit, reuniting the astronauts with Orion, which will carry them back to Earth.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

Set for launch in 2026, the Starship Propellant Transfer Demonstration Mission will feature two Starship launches. Once in orbit, the two ships will rendezvous and dock, allowing the Tanker Ship to transfer propellant to the other Starship. Another key milestone is the HLS Uncrewed Lunar Demo. This test flight will launch the HLS to LEO, where it will dock with a Starship propellant depot and refuel. After undocking, it will execute a trans-lunar injection burn towards the Moon and enter near-rectilinear halo orbit (NRHO). From there, the vehicle will attempt to perform an uncrewed lunar landing, followed by ascent from the lunar surface. This demonstration is designed to validate the technologies needed for future crewed lunar landings.

HLS INITIAL CAPABILITY

Formulation	Development	Operations

SCHEDULE COMMITMENTS/KEY MILESTONES

Milestone	Confirmation Baseline Date	FY 2026 PB Request
CDR	Aug 2025	Aug 2025 → CY 2026 contract mod pending
ORR/FRR	Oct 2027	Oct 2027
LRD/IOC/IC	Feb 2028	Feb 2028

Development Cost and Schedule

The establishment of an HLS Initial Capability Agency Baseline Commitment of February 2028 for HLS Lunar Orbit Checkout Review (LOCR) in support of Artemis III represents a risk informed posture that encompass potential issues and not a target launch date. Joint Confidence Level (JCL) is used to track program performance.

Base Year	Base Year Develop-ment Cost Estimate ($M)	JCL (%)	Current Year	Current Year Develop-ment Cost Estimate ($M)	Cost Change (%)	Key Milestone	Base Year Milestone Data	Current Year Milestone Data	Milestone Change (mths)
2023	2,338.9	70	2023	2,338.9	0	LOCR	Feb 2028	Feb 2028	0

Note: The confidence level estimates reported reflect an evolving process as NASA improves its probabilistic estimation techniques and processes. Estimate reflects the practices and policies at the time it was developed. Estimates that include combined cost and schedule risks are denoted as JCL (joint confidence level); all other CLs (confidence levels) reflect cost confidence without necessarily factoring the potential impacts of schedule changes on cost.

Development Cost Details

Element	Base Year Development Cost Estimate ($M)	Current Year Development Cost Estimate ($M)	Change from Base Year Estimate ($M)
Launch Vehicle/ Services	2,338.9	2,338.9	0

HLS INITIAL CAPABILITY

Formulation	Development	Operations

Project Management & Commitments

Element	Description	Provider Details	Change from Baseline
HLS Starship	Initial Capability through services contract includes one uncrewed and one crewed human landing demonstration	Provider: SpaceX Lead Center: MSFC Performing Center(s): ARC, GRC, LaRC, GSFC, SSC, JSC, KSC Cost Share Partner(s):	

Project Risks

Risk Statement	Mitigation
In-space cryogenic propellant storage and transfer	Both SpaceX and Blue Origin use long duration storage and transfer of cryogenic propellants within their architectures to meet NASA requirements. Each provider is utilizing a combination of ground and flight tests along with NASA Tipping Point projects to gain understanding of the complexities and reduce the risks associated with cryogenic propellant storage and transfer.

Acquisition Strategy

NASA utilized the NextSTEP Broad Agency Announcement (BAA) contract vehicle with the Appendix H solicitation for the initial landing development. Option A, the firm-fixed-price, milestone-based procurement for flight and landing demonstrations of initial human landing systems was awarded to SpaceX.

MAJOR CONTRACTS/AWARDS

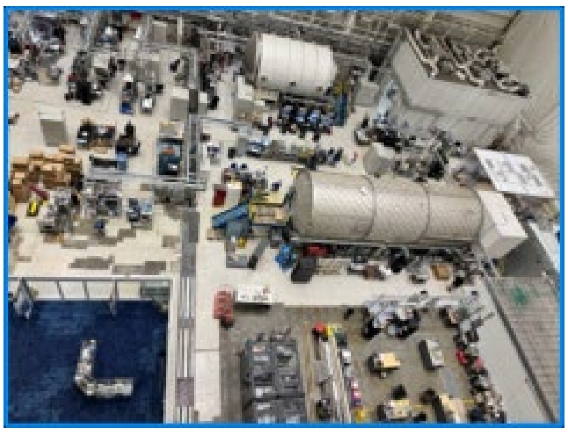
Element	Vendor	Location (of work performance)
Launch Vehicle/Services	SpaceX	California/Texas/Florida

ADVANCED EXPLORATION SYSTEMS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**140.6**	**--**	**123.0**	**163.1**	**163.2**	**163.2**	**163.2**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



The Exploration ECLS System Ground Test Facility. This life support system provides and controls atmospheric pressure, fire detection and suppression, oxygen levels, proper ventilation, waste management and water supply for the ISS.

The Advanced Exploration Systems (AES) budget line supports the dynamic and evolving technology portfolio of NASA's Mars Campaign Office (MCO), which is part of the Moon to Mars (M2M) program. MCO leads the implementation of technology development projects focused on the unique challenges of a crewed mission to Mars.

AES supports the Artemis program and future Mars missions by integrating technology plans from across the agency. By identifying and tracking the touch points between the Artemis campaign and NASA's Mars objectives, the portfolio delivers risk-reducing technologies and innovations ready for transition into operational systems through iterative ground testing, flight demonstrations, and human-in-the-loop evaluations.

AES uses a phased development approach, maturing technologies through testing environments that simulate mission conditions - including Earth-based testbeds, LEO platforms, and Artemis elements. This strategic progression accelerates readiness and reduces lifecycle costs, while validating operational concepts for future missions in a manner that maintains flexibility and mitigates risk.

AES efforts have focused on maturing systems for life support, health monitoring, habitat operations, power systems, and crew autonomy, emphasizing integration and real-world application through field simulations and on-orbit technology demonstrations.

AES will continue to emphasize technology integration, system maturation, and cross-domain coordination, especially in collaboration with the STMD and NASA mission planning teams. Ongoing work on crew autonomy tools, space weather forecasting, and closed-loop environmental systems will directly contribute to the current objectives on the Moon and Mars.

By focusing on reusable, scalable, and cost-effective systems, AES serves as the technological backbone of the MCO, empowering the agency to develop technologies critical to furthering human exploration from planet Earth to the surface of Mars.

EXPLANATION OF MAJOR CHANGES IN FY 2026

MCO rebalanced investments within its portfolio to prioritize high-impact areas (e.g., Environmental Control and Life Support System (ECLSS) assemblies), advancing technology development into the demonstration phase from formulation, and aligning efforts to more closely uphold M2M mission needs. Additionally, MCO continues to refocus workforce efforts with an emphasis on leveraging in-house talent to preserve critical agency capabilities for missions.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

In FY 2026, AES will continue advancing technologies critical to the M2M program through both ground and flight testing. Working to continue the support of ISS, all technology demonstrations are still scheduled to be completed in adherence of the ISS operational timeline. Key efforts within MCO include the completion of the long-term reliability testing of the Universal Waste Management System (UWMS) and the delivery of the Miniaturized Total Organic Analyzer -- the next-generation potable water monitor designed with reduced mass and increased reliability.

MCO will also conduct testing to demonstrate its capability to produce medical-grade IV fluids on demand with minimized mass and volume. The Ohalo III food production flight unit will be built and tested ahead of its planned delivery to the ISS August 2026.

AES will also advance space medicine capabilities by developing the Exploration Electronic Health Record for use aboard ISS and continuing work on technologies to support long-duration crew health.

Additional 2026 plans include completing the preliminary design of a new spacesuit carbon dioxide removal system using ionic liquids and continuing development of the Integrated ECLSS Ground Test System. This will test new ECLSS components and demonstrate autonomous control -- key for ensuring the reliability and sustainability of life support in deep space missions.

Program Elements

ENVIRONMENTAL CONTROL AND LIFE SUPPORT SYSTEM (ECLSS)

ECLSS activities demonstrate reliable, energy-efficient, and low-mass spacecraft systems to support human life in space, on the Moon, and on Mars, and improve performance and equivalent system mass over the current state of the art.

CREW HEALTH AND PERFORMANCE

These activities include development of countermeasures (e.g., exercise equipment to maintain crew fitness on long missions), food systems (e.g., crop production to provide nutritious food for the crew), diagnostic sensors for remote medical care, and models of human physiology to predict crew fatigue and injuries when performing EVA.

EARTH INDEPENDENT OPERATIONS (EIO)

EIO will deliver Mars technologies to provide capabilities to mitigate risks associated with reduced ground support. EIO is spearheading the development of novel hardware and software systems needed to allow crew to operate without real-time support from Earth. The EIO portfolio will pursue a hybrid approach, combining current large data analytics with traditional rule-based system modeling approaches to provide situational awareness and diagnostics support to crew for time- and safety-critical operations.

SURFACE SYSTEMS AND ENVIRONMENTS (SSE)

The Surface Systems and Environments (SSE) project will advance critical technologies to support long-duration human exploration on planetary surfaces -- starting with the Moon and extending to Mars. Key focus areas include power management and distribution, dust mitigation, and autonomous construction.

TRANSPORTATION AND VEHICLE SYSTEMS

Transportation and Vehicle Systems is set to begin in FY 2027 with a focus on Mars-specific transit needs. This project will cover the domains of propulsion and cryogenic fluid management (CFM), in-space manufacturing, and transit enabling. The overarching goal of the project is to ensure crew members partaking in deep-space journeys can self-regulate and manage crises on board.

Program Management & Commitments

ESDMD's Associate Administrator delegated management authority, responsibility, and accountability to the MCO via the M2M program at NASA HQ. The MCO establishes overall direction and scope, budget, and resource allocation for activities implemented by the NASA centers.

Program Element	Provider
ECLSS	Provider: NASA Centers Lead Center: HQ Performing Center(s): JSC, MSFC, ARC, GRC, LaRC, KSC, and JPL
Crew Health & Performance	Provider: NASA Centers Lead Center: HQ Performing Center(s): JSC, KSC, GRC, LaRC, GSFC, ARC, and MSFC
EIO	Provider: NASA Centers Lead Center: HQ Performing Center(s): JSC, MSFC, ARC, GRC, KSC, SSC and JPL
Vehicle Systems	TBD - FY 2027
Surface Systems and Environments	Provider: NASA Centers Lead Center: HQ Performing Center(s): JSC, KSC, SSC, and GRC

Acquisition Strategy

Each year, MCO evaluates how the AES portfolio aligns with human exploration priorities and technology gaps and either terminates or realigns activities that do not demonstrate adequate progress. The AES portfolio strives to maximize specialized skills within the civil service workforce, but it may also utilize contractor effort in areas where NASA can leverage external skills and knowledge in a cost-efficient manner.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
ECLSS: Advanced Oxygen Generation Assembly (AOGA)	Boeing	Houston, TX
ECLSS: Universal Waste Management System (UWMS)	Collins Aerospace	Windsor Locks, CT
ECLSS: Carbon Dioxide Removal by Ionic Liquids (CDRILS)	Honeywell	Phoenix, AZ
ECLSS: Trash Compaction Processing System (TCPS)	Sierra Space	Madison, WI

INDEPENDENT REVIEWS

The MCO provides briefing reports to, and seeks feedback on planning and development activities from, the NASA Advisory Council's Human Exploration and Operation Committee and Technology Committee on the AES portfolio.

STRATEGY AND ARCHITECTURE

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**62.6**	**--**	**179.9**	**108.9**	**108.9**	**108.9**	**108.9**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

In collaboration with other agency directorates — Space Operations, Science, Space Technology, and Aeronautics — as well as commercial, academic, and international partners, ESDMD leads crewed deep space exploration strategy for the agency. The directorate develops and implements the systems necessary to achieve its exploration goals through the Moon to Mars architecture. Within the directorate, the Strategy and Architecture Office, with resources from the Strategy and Architecture program line, leads definition, documentation, configuration control, and disposition of the architecture. In the near term, Strategy and Architecture is conducting trade studies to reduce risk and identify required technologies to be utilized as part of the Artemis Campaign and act as precursor systems for human Mars missions. Strategy and Architecture also maintains the science, technology, utilization, and integration required to support ESDMD in Artemis missions and future exploration planning.

The Strategy and Architecture team also oversees the directorate's early industry engagement and study efforts using the Next Space Technologies for Exploration Partnerships (NextSTEP) Broad Agency Announcement (BAA) process, a public-private partnership model seeking commercial development of deep space exploration capabilities to support human spaceflight missions. The multiple phases of NextSTEP are used to inform NASA's notional architecture including habitation, surface logistics, mobility capabilities, and more.

EXPLANATION OF MAJOR CHANGES IN FY 2026

The Strategy and Architecture Office will continue to contract with U.S. industry on surface logistics and other necessary future capabilities and add studies on transporting humans to and from Mars for future surface missions. This effort will focus on the in-space and Mars aspects, rather than Earth launch vehicle concepts. ESDMD will continue to assess how best to further mature technologies related to enhanced lunar surface mission and Mars transportation.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

Strategy and Architecture will conduct risk reduction activities to identify risks, capability gaps, and requirements to ensure mission success across NASA.

The yearly Architecture Concept Review will provide an updated Moon and Mars architecture to reflect the strategic direction of exploration and address needs with increasing definition and evolution as formulation and acquisition activities occur. The process will ensure continuity in the architecture evolution and incorporation of new technologies, opportunities and best practices as systems develop and progress.

Strategy and Architecture Office will continue to contract with U.S. industry on surface logistics and other necessary future capabilities and studies on transporting humans to and from Mars for future surface missions. This effort will focus on the in-space and Mars aspects, rather than Earth launch vehicle concepts.

Program Schedule

No formal commitment dates.

Program Management & Commitments

ESDMD manages the Strategy and Architecture activities.

Acquisition Strategy

A portion of the Strategy and Architecture Office (SAO) program utilizes the NextSTEP Broad Agency Announcement (BAA) contract vehicle. Through this approach, NASA can award fixed-price, milestone-based proposals to enable rapid development of critical capabilities for the Artemis missions and long-term exploration.

MAJOR CONTRACTS/AWARDS

NextSTEP-2 Appendix A BAA Habitation Systems. The focus of these studies is on developing deep space habitation concepts, engineering design and development, and risk reduction efforts leading to a habitation capability in cislunar space. The objective of this solicitation is to identify habitation concepts that can support extensive human spaceflight missions in the proving ground (around and beyond cislunar space) while encouraging application to commercial habitation capabilities in low-Earth orbit.

NextSTEP-2 Appendix R BAA Lunar Logistics and Mobility Studies. The objective of these studies is to seek proposals from industry for the conduct of studies specifically focused on the envisioned logistics and mobility capabilities as stated in NASA's 2024 Architecture Concept Review White Papers (Lunar Surface Cargo, Lunar Mobility Drivers and Needs) and 2023 Architecture Concept Review White Paper (Lunar Logistics Drivers and Needs).

In FY 2026, NASA will likely begin to use the new Next-STEP-3 Appendices to implement the new studies described above.

INDEPENDENT REVIEWS

To be determined.

FUTURE SYSTEMS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**31.5**	**--**	**73.0**	**142.1**	**1,146.7**	**1,876.8**	**1,323.7**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Future Systems program manages and integrates the systems that NASA will use throughout the Artemis Campaign to access and explore the surface of the Moon and Mars.

Future Systems formulates the systems necessary for Moon and Mars missions as identified through architectural analysis. These systems, including transportation, habitation, or other supporting infrastructure, will provide capabilities for Artemis missions and exercise analog capabilities to prepare for future Mars missions. Future Systems will utilize initial studies and pre-formulation activities to establish initial requirements. As these technologies and systems mature, they will be the building blocks for the capabilities required on and around the moon and Mars for human exploration missions. Future Systems is responsible for the pre-formulation phases of elements through integration of mission concepts, identification of key driving requirements, and analysis of alternatives to enable consistent project or program definition for ESDMD. Once they enter the formulation phase of the project development lifecycle, management of new systems will be transferred to the Moon to Mars Program Office. Savings realized as a result of the transition to commercial transportation systems in FY 2028 and beyond will be channeled to Future Systems to further surface exploration and other essential capabilities.

EXPLANATION OF MAJOR CHANGES IN FY 2026

International partnership systems integration for Multi-Purpose Habitat (MPH) and Argonaut Lunar Descent Element have been successfully transitioned from Future Systems to the Moon to Mars Program Office. Ramp up of surface logistics Design, Development, Test, and Evaluation (DDT&E) was delayed by 2 years, however, the transition to commercial lunar transportation systems is expected to provide savings in the outyears that could be used to accelerate development.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

Future Systems will continue conducting risk-reduction activities to further develop key elements of the Artemis plan for the lunar missions and future Mars missions, as well as continue to leverage commercial and international interest. As element definition is completed, Future Systems efforts will transition to the next priorities as defined by the Strategy and Architecture Office and approved by the Associate Administrator for ESDMD for development. Potential activities include enabling systems and capabilities necessary to achieve the Moon to Mars objectives and expand the capabilities in the Artemis program for exploration.

FUTURE SYSTEMS

Program Elements

PROGRAM INTEGRATION AND SUPPORT

The Program Integration and Support activities manage the program interfaces between ESDMD. This effort is critical to ensuring the performance meets technical and safety specifications and supports the programmatic assessments key to achieving integrated technical, cost, and schedule management. In addition, the integration effort is vital to managing interfaces with other ESDMD and SOMD activities, including strategic studies, feasibility studies, and small-scale research tasks that feed into future human exploration. Coordination and timely integration across ESDMD and SOMD are critical and aimed at mitigating the impacts of potential design overlaps, schedule disconnects and delays, and cost overruns.

FUTURE SYSTEMS

The Future Systems effort conducts activities that will lead directly to the development of capabilities based on the needs articulated in the Moon to Mars Architecture Definition Document, as well as other systems required for NASA to continue to advance human exploration. The effort leverages the ESDMD Strategy and Architecture Office to coordinate, integrate, and manage the pre-project development and formulation in conjunction with cross-directorate teams from the Moon to Mars Program Office and relevant programs and project support. The effort includes integration and support from other NASA mission directorates and NASA center personnel as to ensure the efforts are effective and the resulting element formulation achieves agency needs. Future Systems also holds the outyear budget wedge for future capabilities. Once those capabilities are identified and defined, the budget is moved to a program for implementation.

Program Schedule

By definition, all systems managed by Future Systems are in pre-formulation and, therefore, schedules have not been defined.

Program Management & Commitments

ESDMD manages the Future Systems activities.

Program Element	Provider
Future Systems	Provider: NASA Centers Lead Center: HQ Performing Center(s): MSFC, JSC, JPL, KSC, ARC, GRC, LaRC, GSFC Cost Share Partner(s): N/A

Acquisition Strategy

The Future Systems budget in the current year funds pre-formulation, planning and strategy efforts to prepare for system acquisition and implementation.

FUTURE SYSTEMS

MAJOR CONTRACTS/AWARDS

None.

INDEPENDENT REVIEWS

None.

MARS TECHNOLOGY

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**0.0**	**--**	**350.0**	**500.0**	**500.0**	**500.0**	**500.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Mars Technology program will accelerate the development of high-priority technologies for crewed missions to Mars. The budget ensures that America's human space exploration efforts remain unparalleled, innovative, and efficient. By uniting experts across industry, academia, and government, NASA will rapidly identify and close the most urgent capability gaps for humans reaching and working on Mars—from life support and propulsion to habitat systems and surface infrastructure.

This effort will build on NASA's investments in Artemis. While the environmental conditions and operational strategies will differ between the Moon and Mars, if done correctly, every mission to the Moon can help inform design and operational strategies for future Mars missions by providing key information and approaches necessary to support humans at greater duration and distance in deep space; demonstrating key operational capabilities and techniques; evaluating advanced exploration and surface exploration techniques; and reducing the risk of advanced technologies and system concepts.

ESDMD will coordinate the execution of these funds to enable synergies and leveraging of capabilities and expertise across mission directorates, particularly SMD and STMD. This program will take significant advantage of the skills and expertise of the NASA human spaceflight centers that will become available during the transition to commercial transportation systems. Within ESDMD, the Strategy and Architecture Office and the Mars Campaign Office within the Moon to Mars (M2M) program will coordinate closely on prioritization of the most urgent capability gaps and pre-formulation and formulation phases of elements to enable crewed missions to Mars.

EXPLANATION OF MAJOR CHANGES IN FY 2026

Mars Technology is a newly funded program in FY 2026.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

ESDMD will continue to define the content of this new program and will brief Congress as soon as appropriate.

SPACE OPERATIONS

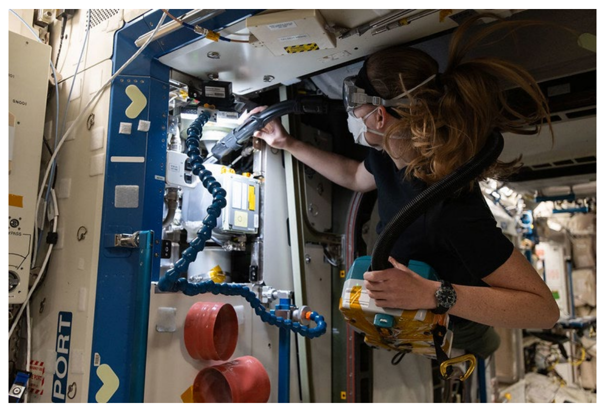
SPACE OPERATIONS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
International Space Station	1,240.6	--	**920.1**	920.1	920.1	920.1	920.1
Space Transportation	1,746.1	--	**1,293.8**	1,263.8	1,263.8	1,263.8	1,245.9
Space and Flight Support (SFS)	1,005.1	--	**645.8**	645.8	645.8	645.8	645.8
Commercial LEO Development	228.4	--	**272.3**	302.3	302.3	602.3	620.2
Total Budget	**4,220.2**	**4,220.0**	**3,131.9**	**3,131.9**	**3,131.9**	**3,431.9**	**3,431.9**

FY 2024 reflects the funding amount specified in Public Law 118-42, Consolidated Appropriations Act, 2024, as revised in NASA's FY 2024 final Operating Plan, September 2024. Amounts include a net transfer amount of $2.0 million; $4.5 million that was transferred from General Services Administration (GSA) and $2.5 million that was transferred to NASA's Information Technology Modernization Working Capital Fund.

FY 2025 reflects the funding amount specified in Public Law 119-4, Full-Year Continuing Appropriations and Extensions Act, 2025.



NASA astronaut and Expedition 72 Flight Engineer Nichole Ayers is shown here cleaning the ventilation system fans and inlets inside the ISS (April 2, 2025).

The Space Operations account is dedicated to sustained human presence in LEO, enabling future exploration and advanced operations in our solar system, and advancing scientific discoveries that benefit life on Earth.

Space Operations is comprised of four themes:

- ISS;
- Space Transportation;
- Space and Flight Support; and
- Commercial LEO Development.

Collectively, these themes are developing and operating American-led space infrastructure enabled by a commercial market, enhancing space access and services to both government and commercial entities, and researching and developing capabilities to safeguard astronaut explorers. These activities, which support existing and future space operations for both NASA and non-NASA missions, are catalysts for economic development and lay the groundwork for a commercial future in LEO, in which NASA is one of many customers for commercial services.

ISS continues to demonstrate American leadership in global space exploration, enabling a U.S.-led multinational partnership to advance shared goals in space. As a testbed for deep space exploration, ISS is helping us learn how to keep astronauts healthy during long-duration space travel and demonstrating technologies for human and robotic exploration beyond LEO, to the Moon, and to Mars.

Space Transportation's objective is to transport U.S. Orbital Segment astronauts and cargo to and from ISS safely. This theme includes the Commercial Crew Program (CCP) and Crew and Cargo Program, which includes the ISS U.S. Deorbit Vehicle (USDV).

- The CCP partners with the U.S. commercial sector to develop and operate safe, reliable, and affordable crew transportation systems capable of carrying humans to and from ISS and other LEO destinations.
- The Crew and Cargo Program manages transportation services provided by both international partners and domestic commercial providers. The Crew and Cargo Program also includes funding for the ISS USDV that was competitively awarded to a U.S. industry partner.

The SFS theme continues to provide mission critical space communication and navigation services, launch services, and astronaut training to support its customer missions. The theme is comprised of the Space Communications and Navigation (SCaN) Program, Communications Services Program, Launch Services Program, Human Space Flight Operations Program, and Human Research Program.

- The SCaN Program provides communication to missions in LEO, including the ISS, suborbital missions, and some lunar orbital missions, utilizing the Near Space Network. The Deep Space Network communicates with missions more distant from Earth and will initially provide primary communication links to early Artemis missions.
- The Communications Services Program focuses on demonstrating the feasibility of using commercially provided satellite communications services to support NASA and other space missions near Earth.
- The Launch Services Program procures launch services and provides expertise and active launch mission management for NASA and other government missions in various stages of development.
- The Human Space Flight Operations Program provides the training and readiness to ensure crew health and safety and mission success.
- The Human Research Program improves astronauts' ability to collect data, solve problems, respond to emergencies, and remain healthy during and after extended space travel.

NASA's Commercial LEO Development effort focuses on the development of a robust commercial space economy in LEO. This effort is stimulating development of commercially owned and operated LEO destinations from which NASA can purchase services to meet enduring LEO human spaceflight and research requirements. The program:

- Enables development of new commercially owned and operated LEO destinations which can meet NASA needs in LEO.
- Prepares for a sustained human presence in LEO and U.S. leadership in LEO after ISS.

For more information, visit: https://www.nasa.gov/directorates/space-operations-mission-directorate

EXPLANATION OF MAJOR CHANGES IN FY 2026

This budget prioritizes safely operating the ISS until its retirement in 2030, developing the USDV capability to safely deorbit the ISS, and streamlining and optimizing the Commercial LEO Development Phase 2 procurement approach to prioritize deployment of commercial platforms prior to 2030. It proposes termination of NASA’s Rocket Propulsion Test Program and other content reductions across the Space Operations portfolio. ISS is evaluating reducing U.S. crew and crew/cargo vehicle cadence. In FY 2025, Space Operations will begin planning for implementation.

INTERNATIONAL SPACE STATION PROGRAM

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**1,240.6**	**--**	**920.1**	**920.1**	**920.1**	**920.1**	**920.1**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

ISS is the largest and most complex space-based research facility ever constructed. The U.S. Orbital Segment (USOS) is the portion of the ISS operated by the U.S. and its Canadian, European, and Japanese partners. Russia exclusively operates the Russian segment. NASA's current crew size on the USOS averages four astronauts, with periodic increases in crew size during crew changeouts and private astronaut missions.

The ISS National Laboratory has been managing non-NASA utilization of ISS since it was designated by Congress in 2005. The 2010 Authorization Act subsequently required National Laboratory managed experiments be guaranteed not less than 50 percent of the U.S. research capacity. Since 2012, more than 800 payloads have flown under the ISS National Laboratory allocation. For the past three fiscal years, 80 percent of the ISS National Laboratory payloads launched represent investigations from the private sector, fostering economic growth to fuel a new innovation ecosystem in LEO.

ISS also supports development of technologies for potential use in exploration missions, such as Artemis, and longer-duration missions to Mars and beyond. ISS provides a means to demonstrate technology and system readiness for use on a human-occupied exploration vehicle by documenting performance in a spacecraft environment with humans-in-the-loop; piloting operational procedures and training requirements; and determining logistics requirements, safety, and interoperability concerns with respect to overall space systems infrastructure. ISS is host to multiple long-duration flight experiments and projects, which include investigations in water purification, recovery, and utilization; oxygen generation and filtration systems; carbon dioxide removal systems; and mitigation of known medical issues, all of which contribute to closing the technology and knowledge gap of future long-duration space exploration missions.

ISS must be safely maintained and continuously crewed on-orbit to prevent the risk of an unrecoverable failure, which would result in an uncontrolled reentry, posing a significant risk (one-in-10) to public safety on the ground. ISS cannot be safely deorbited without the equivalent capability of the U.S. Deorbit Vehicle (USDV).

EXPLANATION OF MAJOR CHANGES IN FY 2026

The budget significantly reduces research and other activities on board the ISS. ISS is replanning with a focus on maintaining minimal safe operations and very limited research essential to support Moon and Mars exploration until its retirement in 2030. ISS is evaluating how much to reduce the current U.S. crew and crew/cargo vehicle cadence.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

ISS is replanning FY 2026 activities with a focus on maintaining minimal safe operations and very limited research essential to support Moon and Mars exploration until 2030, when it will be replaced by commercial systems. NASA plans to work with international partners to maintain a continuous ISS crew member capability until then by coordinating and managing resources, logistics, systems, and operational procedures. ISS will continue to manage resource requirements and changes, including vehicle traffic, cargo logistics, stowage, and crew time. In addition to providing anomaly resolution and failure investigation (as needed), they will provide real-time support for activities, such as Extravehicular Activities (EVAs) and visiting vehicles.

CREW AND CARGO PROGRAM

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**1,635.5**	**--**	**1,212.7**	**1,182.7**	**1,182.7**	**1,182.7**	**1,164.8**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Maintaining ISS requires a fleet of spacecraft to sustain a constant supply line of both crew and cargo that is crucial to operations and research. Deliveries not only provide science experiments, supplies, and maintenance hardware, but also rotate crewmembers, return research and equipment for repair, and dispose of waste.

The Crew and Cargo Program manages transportation services provided by both international partners and domestic commercial providers. The Crew and Cargo Program purchases cargo transportation to ISS under Commercial Resupply Services (CRS) contracts with Northrop Grumman, Sierra Space (a subsidiary of Sierra Nevada Corp [SNC]), and Space Exploration Technologies Corporation (SpaceX) and crew transportation under Commercial Crew Transportation Capability (CCtCap) contracts with SpaceX and Boeing (managed by the Commercial Crew Program). The budget also supports other space transportation-related activities, such as integration work required to ensure that these visiting vehicles can safely dock or berth to ISS.

At the completion of ISS operations in 2030, the ISS must be safely deorbited via a controlled re-entry over an unpopulated region. Existing transportation vehicles do not have sufficient propulsive capabilities (e.g., thrust) or propellant quantities to meet the deorbit needs. NASA competitively awarded development of the U.S. Deorbit Vehicle (USDV) to SpaceX in June 2024.

EXPLANATION OF MAJOR CHANGES IN FY 2026

This budget prioritizes developing the USDV capability to safely deorbit the ISS and providing necessary crew and cargo services to ISS. ISS is evaluating reducing U.S. crew and crew/cargo vehicle cadence.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

Crew Cargo is replanning FY 2026 activities with a focus on maintaining a flight cadence to support minimal safe operations on ISS until a USDV capability is available and ISS can be safely deorbited.

COMMERCIAL CREW PROGRAM

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**110.6**	**--**	**81.0**	**81.0**	**81.0**	**81.0**	**81.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Commercial Crew Program (CCP) partners with the U.S. commercial sector to develop and operate safe, reliable, and affordable crew transportation to LEO. NASA awarded Commercial Crew Transportation Capability (CCtCap) contracts to Boeing and Space Exploration Technologies Corp. (SpaceX) in September 2014. Through its certification efforts, NASA will ensure the selected commercial transportation systems meet NASA's safety and performance requirements for transporting crew to ISS.

Crew transportation to ISS is currently provided using the SpaceX Crew Dragon, which was certified in 2020, and the Russian Soyuz vehicle. The Boeing Starliner spacecraft is working towards resolving anomalies encountered in Crew Flight Test (CFT) and completing certification by NASA for crew transportation to ISS.

Through CCP and the CCtCap contracts that they manage, NASA provides technical insight/oversight and financial support to industry partners as they develop and operate their crew transportation systems using milestone-based contracts and certifies them to carry astronauts to and from the ISS, which ended the nation's reliance on foreign crew transportation to ISS. Under this acquisition model, NASA defines requirements up-front and pays the partner only once contract milestones are successfully completed. This approach reduces financial risk to taxpayers and incentivizes the private sector to provide increased cost-control and decreased systems development cost. In addition, this approach helped stimulate growth of new space transportation industry capabilities available to all potential customers, strengthened America's space industrial base, and provided a catalyst for future business ventures that can capitalize on affordable, globally competitive U.S. space access. Although NASA currently permits human tended suborbital payloads for non-civil servants under auspices of NASA's Flight Opportunities Program, this does not apply to NASA civil servants. Since NASA is responsible for understanding the risks to its employees should they fly on a commercially available suborbital flight, the Suborbital Crew (SubC) effort, initiated in FY 2020, within CCP is performing safety assessments of commercial suborbital space transportation systems. Once those safety assessments are successfully completed, it will enable NASA civil servant scientists, researchers, and engineers to accompany their experiments and tests in the space microgravity environment. The funding for this activity within CCP is to support safety assessments designed to evaluate whether the systems are safe enough to fly NASA personnel, not to procure SubC flights.

EXPLANATION OF MAJOR CHANGES IN FY 2026

The budget will limit future vehicle changes and could impact NASA's ability to maintain two crew transportation providers. Additionally, the SubC project will be completed in FY 2025.

COMMERCIAL CREW PROGRAM

KEY ACHIEVEMENTS PLANNED FOR FY 2026

CCP is replanning FY 2026 activities with a focus on mission planning and preparations for future CCP missions, as well as remaining actively engaged with the providers as they continue space hardware manufacturing, critical testing, and qualification and verification events.

SPACE COMMUNICATIONS AND NAVIGATION

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**522.5**	**--**	**394.9**	**394.9**	**394.9**	**394.9**	**394.9**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Pursuant to P.L. 105-261, Division A, Title X, Section 1064(d), this budget incurs no cost for frequency allocations.

NASA's Space Communications and Navigation (SCaN) program provides the communications services required by all NASA human and robotic missions. These missions range from high-altitude balloons, to the ISS in LEO, to Voyager 1, the most distant humanmade object - currently more than 15 billion miles from Earth. SCaN retrieves science, spacecraft, and crew health data for these and other missions; uploads commands; and sends data to individual control centers. SCaN networks also provide measurements that allow missions to determine the precise location of a satellite and control its trajectory through space. Missions rely on these navigation measurements to gather valid scientific data and avoid other spacecraft or space debris. NASA would not be able to deliver key science data or advance exploration goals without SCaN's network capabilities.

SCaN provides planning and integration of current and future network capabilities to efficiently meet customer mission needs. It provides systems engineering, architecture planning, communications data standards, technology development, radio frequency spectrum management, and navigation policy support.

In addition to providing communication services to NASA missions, SCaN supports external customers, including international partners and commercial entities (e.g., launch service providers), on a reimbursable basis.

SCaN manages two networks, the Near Space Network (NSN) and the Deep Space Network (DSN), to support various sets of customer requirements for spacecraft science data collection, orbit determination, and real-time coverage. Both networks provide services to customer missions with a proficiency greater than 95 percent.

The NSN and DSN provide near real-time, low latency communication services to NASA users and missions, including human spaceflight operations. The NSN uses a combination of commercially-owned and government-owned ground assets and relay spacecraft to provide telemetry, tracking, and command of near-Earth spacecraft such as the Hubble Space Telescope, ISS, and vehicles from international partners and commercial entities. The government-owned NSN Space Relay component is comprised of NASA's Tracking and Data Relay Satellite (TDRS) system, which is a constellation of government-owned, contractor operated communications satellites in Geosynchronous Equatorial Orbit (GEO) (more than 22,000 miles above the Earth's surface) matched with a set of space-to-ground link terminals located at NASA's White Sands Complex (WSC) in New Mexico, Guam, and Blossom Point, MD. The NSN also provides launch communication services via the Launch Communications Segment (LCS) that provides pre-launch, launch, ascent, and landing communication services to Artemis through three modern ground stations. LCS stations are located at KSC; the Ponce de Leon Station 40 miles north in New Smyrna Beach, Florida; and the Bermuda Tracking Station.

The DSN is primarily focused on supporting deep space missions by utilizing its global network of large antenna ground assets. The DSN currently consists of three facilities around the world, each spaced approximately 120 degrees of longitude apart from each other: the Goldstone Deep Space Communications Complex (GDSCC) in California; the Madrid Deep Space Communications Complex (MDSCC) in Spain; and the Canberra Deep Space Communication Complex (CDSCC) in Australia. The strategic placement of the three sites allows for continuous line-of-sight between spacecraft and DSN antennas as the Earth rotates, permitting near-constant communication with spacecraft. Each site is equipped with multiple 34-meter antennas and one 70-meter antenna. The 70-meter antennas are some of the largest radio antennas in the world and are capable of tracking and communicating with a spacecraft traveling tens of billions of miles from Earth, including both Voyager spacecraft. This international network supports interplanetary spacecraft missions and radio and radar astronomy observations for the exploration of the solar system and the broader universe. Both networks support Commercial Crew providers and Artemis missions.

Both networks require maintenance, replenishment, modernization, and capacity expansion to ensure continued operation and to meet new mission needs. This includes information technology (IT) security upgrades critical to combat the ever-growing cybersecurity threats toward U.S. assets. Human and robotic exploration of the Moon requires communications to support video, telemedicine, and advanced instruments that locate and identify exploitable resources on the Moon (e.g., subsurface ice).

The DSN Aperture Enhancement Project (DAEP) is modernizing and upgrading the DSN by building 34-meter Beam Waveguide (BWG) antennas to increase overall network capacity, capability, and scheduling flexibility. These antennas can be arrayed to function as a single, 70-meter antenna for receive capability. The 34-meter BWG antennas offer several advantages, including being less complicated, more flexible, and more cost-effective to maintain than the 70-meter antennas. When missions do not require antenna arraying, the 34-meter antennas can support multiple spacecraft individually, offering greater flexibility than a single 70-meter antenna. The original project scope includes six, 34-meter BWG antennas across all three DSN complexes, bringing the total number to 14. Four are already completed (DSS-35, -36, -53, and -56). DAEP uses Construction of Facilities (CoF) funds appropriated in NASA’s Construction and Environmental Compliance and Restoration account. As part of future DAEP requirements, SCaN plans to install 80-kilowatt transmitters on the 34-meter BWG antennas to match the transmit capabilities of a 70-meter antenna. The DSN is also upgrading a pedestal for a 34-meter BWG antenna, DSS-54, in Madrid which will be completed in FY 2029. The DAEP activities are planned for completion in FY 2030.

SCaN collaborates with the Moon to Mars Program in the mission planning of the Artemis exploration and science missions to ensure that communications and navigation capabilities meet mission needs. These expanded services for missions to the Moon, include a lunar relay capability for missions that are not in line of sight with the Earth, as well as a Mars relay. These efforts are funded by the Exploration Systems Development Mission Directorate.

In alignment with interoperability and standardization goals, SCaN has implemented Delay Tolerant Networking (DTN) to both the NSN and DSN. DTN provides an internet-like approach to spacecraft communications. SCaN will now implement DTN via lunar relay providers.

SCaN's goal is to migrate the NSN away from government owned assets by leveraging the diverse space communications capabilities provided by private industry. One of the key parts of this migration is the commercial relay service demonstrations managed by the Communications Services Program (CSP). The goal is to begin migration to these commercial services after the CSP demonstrations are complete in FY 2026. The wideband technology project has been focused on reducing risk to these future missions by investing in user terminal technology that will enable interoperability between future missions and satellite services from a variety of commercial providers.

SPACE COMMUNICATIONS AND NAVIGATION

SCaN participates in several U.S. and international organizations that coordinate compatibility and interoperability in space communications and navigation through the definition of policies and standards. SCaN is responsible for ensuring access to the portions of the electromagnetic spectrum that NASA missions require and ensuring interference-free operations.

For more information, go to http://www.nasa.gov/scan

EXPLANATION OF MAJOR CHANGES IN FY 2026

The Budget will require the cessation of various projects, including reduction or elimination of technology development efforts. Additionally, the lunar relay effort will be funded through the ESDMD budget beginning in FY 2026.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

SCaN is replanning FY 2026 activities with a focus on maintaining the Networks to provide communications, tracking, and navigation services for current and planned missions.

COMMUNICATIONS SERVICES PROGRAM

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**74.4**	**--**	**59.4**	**59.4**	**59.4**	**59.4**	**59.4**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Communications Services Program (CSP) focuses on demonstrating the feasibility of commercially provided satellite communications (SATCOM) services to NASA missions. CSP is pursuing demonstrations that will allow future NASA missions to use flight qualified commercial communications services. Ultimately, near-Earth users will begin transitioning from using NASA owned networks to commercially provided services.

The CSP effort is a component of the larger NASA strategy to migrate near-Earth missions from communications and navigation services provisioned by government-owned networks to commercial networks. This transition to commercial services, and particularly commercial SATCOM, is driven by the state of current NASA network assets, National Space Policy, and long-standing federal procurement policies that direct the government to make use of, rather than duplicate, commercially provided services. NASA will not be replenishing the TDRS as aging spacecraft assets are decommissioned in the 2030's. NASA will continue to support existing users but future space-relay users will exclusively rely on communications links provided by commercial providers. This approach is consistent with federal policies intended to increase the cost-effectiveness of government operations and leverage investments that have already been made by the private sector.

The Space Communications and Navigation (SCaN) Program has overarching agency responsibility to ensure operational NASA missions receive required communications and navigation support. CSP retains responsibility to execute demonstrations of commercial SATCOM services and provide assessments and recommendations for service acquisition to the agency. SCaN will ensure that the transition to commercial services is managed in concert with the gradual phase out of the existing NASA-owned network resources.

NASA has a diverse set of users and communications needs against which commercial capabilities will be evaluated, such as launch vehicle support, visiting vehicles to ISS, human space flight, and science missions in Earth orbit ranging from flagship observatories to SmallSats and CubeSats. CSP intends to leverage SATCOM capabilities developed for terrestrial users to bring flexibility and functionality of commercial service to the space domain. CSP is working with the commercial market to identify requirements and explore opportunities that are mutually beneficial to NASA and industry. NASA is working with multiple commercial entities to demonstrate capabilities that best fulfill NASA's requirements, while also being compatible with a larger market where NASA can be one of many customers. On April 20, 2022, NASA selected six SATCOM providers to begin developing and demonstrating, near-Earth space communication services that may support future agency missions: Inmarsat Government Inc., Kuiper Government Solutions (KGS) LLC, SES Government Solutions, Space Exploration Technologies Corp. (SpaceX), Telesat U.S. Services LLC, and Viasat Incorporated. These agreements were designed to bolster American industry and reduce the cost of communication services to NASA, while promoting a diverse commercial market and maximizing interoperability between government and commercial service providers.

COMMUNICATIONS SERVICES PROGRAM

The CSP budget will support these multiple agreements between NASA and commercial SATCOM companies to develop and demonstrate capabilities that can meet NASA's needs and begin the initial planning for acquisition of commercial SATCOM services. The goal is to begin migration to these commercial services after the demonstrations are complete in FY 2026.

EXPLANATION OF MAJOR CHANGES IN FY 2026

None.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

CSP plans to continue monitoring and managing partner progress throughout the demonstration period, which is scheduled to be completed in FY 2026. This will include executing biannual mission engagement forums, and completing an updated assessment of commercial readiness. CSP will continue to identify capabilities and gaps as applicable during vendor milestone reviews. Major planned accomplishments in FY 2026 include KGS completion of a Dress Rehearsal with 3rd party satellite; SES Government Solutions Global Test and Final Report; a Secondary Launch Partner Mission Readiness Review, and an End of Project Review with Inmarsat Government, Inc.; a Customer Initialization Demonstration Demo with SpaceX; Telesat U.S. Services Pre-Ship Review (PSR) for Flight Tech Demo; and a Final Review and Transition to Operational Services with Viasat Incorporated.

By leveraging demonstration knowledge, CSP will prepare for subsequent acquisition of services and TDRS transition. CSP will continue coordinating and collaborating on the infusion of commercial services with the NSN.

HUMAN SPACE FLIGHT OPERATIONS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**106.5**	**--**	**80.0**	**80.0**	**80.0**	**80.0**	**80.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Human Space Flight Operations (HSFO) Program supports the astronaut corps, space flight readiness training, and health of crew members before, during, and after each spaceflight mission to the ISS and will support future Artemis missions. All crews on board ISS have undergone rigorous preparation, which is critical to mission success. Within the HSFO Program, the Space Flight Crew Operations (SFCO) Project provides astronaut selection and space flight readiness training, while the Crew Health and Safety (CHS) Project manages all aspects of NASA astronaut crew health.

To pave the way to the Moon and on to Mars, NASA is working with industry to develop the transportation, habitation, operations, and exploration systems that will enable crewed exploration of destinations beyond Earth's orbit. NASA must also prepare the human system for living and working for extended periods in the hostile environment of space. As astronauts explore further from Earth, many different issues may arise that require investigation. Questions that should be considered are:

- What health risks will astronauts face and how will they be resolved? What health risks will astronauts face as they adapt to micro- and partial-gravity and reacclimate when they return, and how will they be resolved?
- What type of training will crews need to prepare for months of travel in the harsh space environment?
- How will the crew deal with medical emergencies or technical anomalies when Earth is no longer within reach?
- How will NASA keep crews operating at peak performance during their mission to ensure mission success?

CHS, in collaboration with NASA's Office of Chief Health and Medical Officer and the Human Research Program (HRP), answers these and other questions to ensure crew health, safety, and mission success. SFCO and CHS are responsible for astronaut space flight readiness training and health, while HRP funds research of human health and performance countermeasures, the human response to space, and technologies that enable safe, reliable, and productive human space exploration.

Scientifically Calibrated In-Flight Imagery (SCIFLI) collects real-time visual, infrared, and spectral data on vehicles while they are in-flight to improve effectiveness and safety of commercial and NASA missions.

EXPLANATION OF MAJOR CHANGES IN FY 2026

The Budget will require the cessation of various efforts, including funding for SCIFLI.

HUMAN SPACE FLIGHT OPERATIONS

KEY ACHIEVEMENTS PLANNED FOR FY 2026

HSFO is replanning FY 2026 activities with a focus on supporting the astronaut corps, space flight readiness training, and the health of crew members. SFCO will continue to support the crew and their families during launch, landing, and recovery for ISS, CCP and Artemis missions.

HUMAN RESEARCH PROGRAM

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**151.2**	**--**	**40.3**	**40.3**	**40.3**	**40.3**	**40.3**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Human Research Program (HRP) is responsible for understanding and mitigating the highest risks to astronaut health and performance to ensure that crews remain healthy and productive during long-duration missions beyond LEO. HRP is focused on achieving research goals and meeting deliverable milestones that inform human health risks and produce mitigation strategies for Mars missions. Sending astronauts into space involves a multitude of complicated systems, but perhaps the most complex is the human system: human health, crew interactions, and human factors, which includes how crews interact with their environment, spacecraft, habitat, and systems during missions. While NASA has more than 50 years of crew experience in LEO, researchers are continuing to unravel the mysteries of how the human body responds to the harsh environment of space.

Space poses significant health risks for crew members, including the possibility of long-term health effects manifesting later in life from space radiation and microgravity exposure, health and performance decrements developing during the mission, and decrements in capabilities immediately upon return to Earth. Current research on ISS in LEO and in ground-based analog laboratories is expanding NASA's capabilities to enhance crew performance and protect the health and safety of astronauts.

HRP also collaborates with NASA’s Office of the Chief Health and Medical Officer (OCHMO), as well as the Crew Health and Safety (CHS) and Spaceflight Crew Operations (SFCO) projects to ensure crew health, safety, and mission success. SFCO and CHS are responsible for astronaut training, readiness, and health, while HRP funds research development on human health and performance countermeasures and technologies that enable safe, reliable, and productive human space exploration. The knowledge gained through HRP’s work and through partnerships will enable NASA’s plans for long-duration human space missions beyond LEO. In addition, as is the case with many space-based medical investigations, this research may also lead to significant advancements in treating patients on Earth.

As NASA prepares to conduct crewed Artemis missions to the Moon and to lunar orbiting stations, HRP is using research to develop the scientific and technological capabilities to facilitate these exploration missions. In support of the risk reduction strategy for human space exploration contained in NASA’s Human Research Roadmap, HRP is coordinating with the National Academies, the National Council on Radiation Protection and Measurements (NCRP), and other domestic and international partners to deliver products and strategies to protect crew health and performance during and after exploration spaceflight missions. HRP is specifically focused on achieving research goals to support Artemis missions that will then inform human health risks and mitigation strategies for Mars.

EXPLANATION OF MAJOR CHANGES IN FY 2026

The Budget will require the cessation of many individual research efforts, while preserving the highest-priority work in support of the Artemis program.

HUMAN RESEARCH PROGRAM

KEY ACHIEVEMENTS PLANNED FOR FY 2026

HRP is replanning FY 2026 activities with a focus on supporting research activities essential for the Moon and Mars exploration.

LAUNCH SERVICES

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**99.3**	**--**	**71.2**	**71.2**	**71.2**	**71.2**	**71.2**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA's science and discovery missions, civil communications, geographic survey, and civil weather missions provide key services for our nation and the world. The Launch Services Program (LSP) ensures access to space for the nation's civil sector satellite and robotic planetary missions.

National Space Transportation Policy identifies the NASA Administrator as the launch agent for the nation's civil sector. LSP enables the Administrator to execute this role by acquiring and managing domestic commercial launch services for assigned missions, certifying new commercial launch vehicles for readiness to fly high-value spacecraft, performing mission design and launch integration activities, and directing launch mission assurance efforts to ensure the greatest probability of launch mission success. While no space mission is routine, LSP has unique launch system expertise involving payloads containing nuclear power sources for launching one-of-a-kind science exploration missions to other planets, the Sun, or other locations in space. NASA relies on LSP to provide robust, reliable, and cost-effective launch services via commercial launch providers. NASA achieves assured access to space through a competitive mixed-fleet approach utilizing the breadth of U.S. industry capabilities. In addition, LSP provides launch-related expertise to other NASA programs, such as Crew and Cargo Program (for Commercial Resupply Services), Commercial Crew Program (CCP), and programs supporting the Artemis missions. LSP also provides launch advisory support to NASA payload missions using launch services through other government agencies, the launch industry, or international partners.

In addition to acquiring the commercial launch service, LSP arranges pre-launch spacecraft processing facility support and communications and telemetry during ascent for its customers. LSP offers insight into the commercial space launch industry, which has been utilized by CCP. LSP also tracks lessons learned to identify and mitigate risks for future managed launches and certifies readiness of new commercial launch vehicles for NASA and other civil sector, uncrewed spacecraft. The program also conducts engineering analyses and other technical tasks to maximize launch success for every assigned payload.

Further, as part of NASA's launch site risk mitigation efforts, NASA is studying safety issues associated with a new generation of launch vehicles that use liquid oxygen and methane propellants. The Liquid Oxygen and Methane Assessment (LMA) Project is responsible for assembling a data collection, which is beneficial for risk-based considerations related to launch pad explosive siting, launch vehicle fly out, and spacecraft survivability. The LMA project will coordinate between NASA mission directorates and with U.S. government agencies to run concurrent testing, share data, and gain access to data from previously executed tests to further understand hazards and risks associated with liquid oxygen and methane propellants.

EXPLANATION OF MAJOR CHANGES IN FY 2026

The Budget will require the cessation of various efforts, while continuing to provide for the safe launch of NASA missions.

LAUNCH SERVICES

KEY ACHIEVEMENTS PLANNED FOR FY 2026

LSP is replanning FY 2026 activities with a focus on mission planning and preparations for future missions.

The LMA project will close out activities and provide the final data products and reports to the tri-agency safety community comprised of NASA, the Federal Aviation Administration, and United States Space Force. This tri-agency will develop standardized policies, methods, and recommendations for safely conducting operations with the new generation of launch vehicles that use liquid oxygen and methane propellants.

ROCKET PROPULSION TEST

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**48.2**	**--**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The FY 2026 budget proposes termination of NASA's Rocket Propulsion Test (RPT) Program.

NASA’s Rocket Propulsion Test (RPT) program maintained and managed a wide range of facilities capable of ground testing rocket engines and components under controlled conditions. This test infrastructure included facilities located across the United States, and the program provided a single-entry point for any user of NASA rocket test stands.

EXPLANATION OF MAJOR CHANGES IN FY 2026

No funding is requested for the RPT program. NASA proposes to use unobligated balances previously appropriated to support termination of program activities. NASA infrastructure previously supported through RPT program funding could be made available to external users through Enhanced Use Leasing or other relevant mechanisms.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

In FY 2026, NASA will complete the shutdown and closeout of the RPT program using unobligated balances previously appropriated to support termination of program activities.

COMMERCIAL LEO DEVELOPMENT

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**228.4**	**--**	**272.3**	**302.3**	**302.3**	**602.3**	**620.2**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA seeks to maintain access to a LEO human-rated platform to continue U.S. human presence – with both government astronauts and private citizens – to support its future exploration missions and the utilization of space by U.S. citizens, companies, academia, and international partners, as well as to expand the American foothold in space. NASA established the Commercial LEO Development Program as a focused effort to ensure there will be a U.S. space station in LEO that meets NASA's enduring requirements at a lower cost. In meeting NASA's requirements, this program will also help develop a robust commercial space economy in LEO.

The Commercial LEO Development Program supports the development of commercially owned and operated LEO destinations from which services can be purchased that meet NASA's requirements and those of other customers.

NASA has pursued several avenues to enable the LEO economy. These include offering use of an ISS berthing port to Axiom Space to deploy a new commercial element on the ISS, Commercial Destinations for ISS (CDISS); supporting development and use of Commercial Destinations Free Flyers (CDFF); offering use of the ISS for Private Astronaut Missions; and fostering development of crucial technologies that enable a robust LEO economy through the Collaborations for Commercial Space Capabilities (CCSC) initiative.

NASA awarded Space Act Agreements (SAAs) to three companies (Blue Origin, Nanoracks, and Northrop Grumman) in December 2021 to develop CLDs that are launched directly to orbit (i.e., free-flyers). In FY 2023, Northrop Grumman agreed to withdraw from its own funded SAA so the company could join Nanoracks in providing cargo logistics services and engineering services. Nanoracks was acquired by Voyager in 2023 and in 2024, a new joint venture called Starlab Space LLC was established between Voyager and Airbus as the prime partner. Starlab Space LLC expanded partnerships to include Mitsubishi (Japan), MDA (Canada), and Palantir (United States).

Starlab Space LLC's commercial LEO destination is called Starlab. Starlab consists of a large 8-meter diameter metallic habitat with a docking node, power and propulsion element, and external robotic arm. The Starlab architecture will consist of a single launch on a SpaceX Starship.

Blue Origin and Sierra Space are partnered to develop Orbital Reef, a commercially owned and operated space station to be built in LEO, which will start operating in the second half of this decade. Orbital Reef teammates include Boeing, Redwire Space, Genesis Engineering, and Arizona State University. Orbital Reef will feature spacious modules with large Earth-facing windows and extensive pressurized volume for the crew and multiple external payload sites.

Axiom Space originally planned to launch and attach its first module, Habitat 1, to the space station, followed by three additional modules. In 2024, Axiom approached NASA with a revised assembly sequence to bring the Payload, Power, and Thermal Module (PPTM) as a first and only element to ISS. The modification accelerates Axiom's ability to operate as a viable free-flying space station, reduces reliance on ISS during Axiom assembly, and ensures ISS remains prepared for the United States Deorbit Vehicle (USDV).

In June 2023, NASA awarded seven Collaborations for Commercial Space Capabilities-2 (CCSC-2) unfunded SAAs. CCSC-2 continues the pursuit of goals set in the U.S. National Space Policy that will benefit human spaceflight and the U.S. commercial LEO economy by meeting future business and government needs. These agreements are designed to advance commercial space-related efforts through NASA contributions of technical expertise, assessments, lessons learned, technologies, and data. Structured sharing of NASA expertise demands minimal government resources but fosters development of technologies crucial to development of a robust LEO economy. The seven selected companies are:

- Blue Origin, Kent, WA;
- Northrop Grumman Systems Corporation, Dulles, VA;
- Sierra Space Corporation, Broomfield, CO;
- Space Exploration Technologies Corporation, Hawthorne, CA;
- Special Aerospace Services, Boulder, CO;
- ThinkOrbital Inc., Lafayette, CO; and
- Vast Space LLC, Long Beach, CA.

EXPLANATION OF MAJOR CHANGES IN FY 2026

The Budget will require a rescoping of the CLD Phase 2 certification and services acquisition plan with the goal of streamlining and optimizing the commercial LEO destination approach to prioritize deployment of commercial platforms prior to 2030.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

Axiom will continue work on the revised configuration plan, with milestones still being negotiated.

Blue Origin plans to complete Phase 1 development in FY 2026 with six remaining milestones: the PDR, Rendezvous, Proximity Operations and Docking (RPOD) Demonstration, Trace Contaminant Control Technology Demonstration, Integrated Propulsion and Environmental Control & Life Systems (ECLS) Design, Flight Software and Command and Data Handling (C&DH) end-to-end Command and Control Prototype, and a Tailored Safety Review.

Starlab plans to complete Phase 1 development in FY 2026 with three remaining milestones: Cygnus Upgrades Critical Design Review (CDR), High Fidelity Mockup and Human-in-the-Loop (HITL) Test, and the Starlab Station CDR.

The Budget will require a rescoping of the CLD Phase 2 certification and services acquisition plan with the goal of streamlining and optimizing the CLD approach to prioritize deployment of commercial platforms prior to 2030.

SPACE TECHNOLOGY

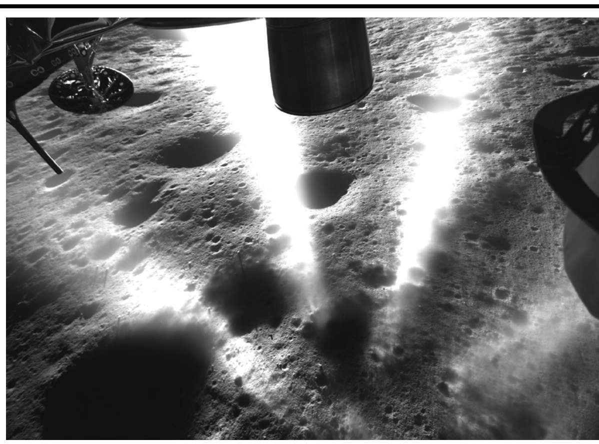
SPACE TECHNOLOGY

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
SBIR and STTR	217.8	--	**169.0**	169.0	169.0	169.0	169.0
Space Transportation (GO)	70.0	--	**46.6**	53.7	53.7	53.7	53.7
Space to Surface Access (LAND)	2.2	--	**26.9**	26.9	26.9	26.9	26.9
Surface Infrastructure & Exploration (LIVE)	16.2	--	**55.7**	62.7	62.7	62.7	62.7
In-Space Infrastructure & Discovery (EXPAND)	206.9	--	**46.7**	46.7	46.7	46.7	46.7
Foundational Capabilities (ENABLE)	0.0	--	**49.4**	49.4	49.4	49.4	49.4
Catalysts & Innovative Mechanisms	76.9	--	**174.6**	160.5	160.5	160.5	160.5
Early Stage Innovation and Partnerships	95.9	--	**0.0**	0.0	0.0	0.0	0.0
Technology Maturation	174.7	--	**0.0**	0.0	0.0	0.0	0.0
Technology Demonstration	239.5	--	**0.0**	0.0	0.0	0.0	0.0
Total Budget	**1,100.0**	**1,100.0**	**568.9**	**568.9**	**568.9**	**568.9**	**568.9**

FY 2024 reflects the funding amount specified in Public Law 118-42, Consolidated Appropriations Act, 2024, as revised in NASA's FY 2024 final Operating Plan, September 2024. Amounts include a net transfer amount of $2.0 million; $4.5 million that was transferred from General Services Administration (GSA) and $2.5 million that was transferred to NASA's Information Technology Modernization Working Capital Fund.

FY 2025 reflects the funding amount specified in Public Law 119-4, Full-Year Continuing Appropriations and Extensions Act, 2025.



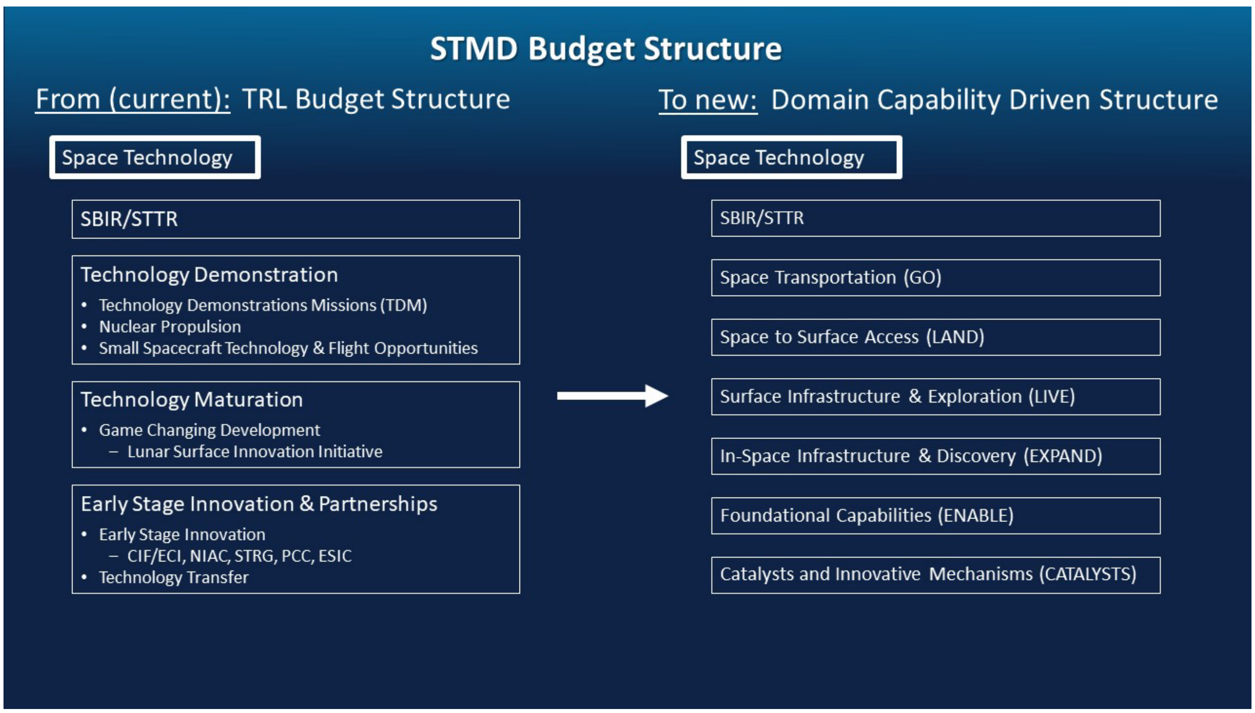
STMD's Stereo Cameras for Lunar-Plume Surface Studies (SCALPSS) 1.1 instrument captured around 3,000 images during Blue Ghost's descent and lunar landing on March 2, 2025. This image, taken approximately 12 meters (39 feet) above the surface, shows the lunar lander's engine plumes interacting with the Moon's regolith, providing key data as trips to the Moon increase in the coming years under the agency's Artemis campaign.

NASA's STMD is shaping the missions of the future while delivering the cutting-edge technology that defines American leadership in space exploration. STMD advances U.S. space technology leadership and global competitiveness by rapidly developing, demonstrating, and delivering transformative capabilities. STMD fosters breakthrough ideas, embraces risk, and fuels a vibrant, aerospace economy that empowers both established leaders and emerging innovators. Through strategic partnerships across industry, government, and academia, STMD accelerates high-risk, high-reward technologies that enable future missions, lower costs, and create real world solutions—driving progress in space and improving life for all.

SPACE TECHNOLOGY

EXPLANATION OF MAJOR CHANGES IN FY 2026

As NASA embarks on a new era of space exploration with Artemis, STMD advances critical technologies and testing for innovative new capabilities for the Moon, Mars, and beyond. STMD has aligned its organization and budget structure to enhance technology development and management agility. The FY 2026 budget aligns with transitioning from legacy Technology Readiness Level (TRL)-based programs to functional domains (programs) that are capability focused. This new structure enables STMD to mature space technologies across the full readiness spectrum from concept to mission, bolstering its ability to meet both mission and agency needs while strengthening the nation's technology base and innovative economy. Due to this reorganization, the FY 2024 Operating Plan columns included in the tables throughout this Congressional Justification may not reflect the same scope of activities included in the FY 2026-2030 columns.



The restructured programs are as follows:

- The Space Transportation (GO) program advances technologies that will enable rapid, safe, and efficient space transportation.
- The Space-to-Surface Access (LAND) program advances technologies that enable expanded and precision access to diverse surface destinations from in-space transits and orbital operations.
- The Surface Infrastructure and Exploration (LIVE) program develops and demonstrates essential surface infrastructure capabilities to enable sustainable robotic, scientific, and human exploration missions in lunar and Mars environments.
- The In-Space Infrastructure and Discovery (EXPAND) program advances technologies for resilient in-space infrastructure and agile missions to improve capabilities for orbital missions and enable persistent in-space activities across the solar system.

- The Foundational Capabilities (ENABLE) program advances multiple technologies in Avionics and Sensors, Autonomous Systems and Robotics, Advanced Materials, Structures and Manufacturing, and Advanced Power and Thermal.
- The Catalysts and Innovative Mechanisms (Catalysts) program is a merger of the previous Early Stage Innovation and Partnerships and Flight Opportunities portfolios, includes Space Technology Operations, and manages other agency-wide efforts.

Each program has projects that focus on addressing technology shortfalls relevant to its functional capability area scope. This structure streamlines technology development, transition, and infusion, supporting missions while enhancing the space economy and U.S. competitiveness. The overall STMD reduction from FY 2025 levels will have workforce impacts.

Within Space Transportation, this request provides no funding for Nuclear Thermal or Nuclear Electric Propulsion projects because these technologies have not been selected for deep space missions and require significant funding and lengthy development timelines. It also reflects the FY 2024 decision to cancel the 2020 Cryogenic Fluid Management Demonstration Tipping Point contract.

In the Surface Infrastructure and Exploration program, this request reflects the transfer of Fission Surface Power to the ESDMD. This request does not fund the Lunar Infrastructure Foundational Technologies effort. STMD will prioritize ground-based high-fidelity systems testing with an emphasis on critical lunar and Mars infrastructure such as power systems. This budget also reflects STMD's new role in overseeing NASA's Independent Research and Development (IRAD) program within Catalysts.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

SBIR and STTR intend to select approximately 360 new awards, grants, and contracts to small businesses, as well as continue to incubate and mature NASA commercial partnerships through post Phase II activities via sequential Phase II awards. The program will pilot ways to reduce barriers to entry and streamline the experience throughout the program phases, including strategies to encourage transition to NASA, government, and/or commercial use beyond SBIR/STTR awards.

Within the Space Transportation program, qualification and acceptance testing continues in the Solar Electric Propulsion project. The tests ensure that the hardware, software, and overall system meet the required performance and safety standards for spaceflight.

The Space to Surface Access program will analyze plume surface interaction (PSI) data from the Blue Origin Mark 1 lunar demonstration flight and continue to develop sensors for precision landing and PSI measurement for delivery to a Commercial Lunar Payload Services flight later in the decade. A 10-meter hypersonic inflatable decelerator will undergo testing in support of the United Launch Alliance Vulcan Engine Reuse Scale Tipping Point. Hypersonic flight data will be gathered through commercial testbed partnerships and the Scientifically Calibrated In-Flight Imagery (SCIFLI) airborne observation campaigns.

Within the Surface Infrastructure and Exploration program, the Cooperative Autonomous Distributed Robotic Exploration payload will transfer state-of-the-art autonomous software developed for enabling coordinated autonomous operations of multirobots on the surface of the Moon and/or Mars. This will enable industry to deploy a network of mobile robots to explore autonomously, collect distributed measurements, and carry micro-payload instrumentation. Three Tipping Point activities will make progress toward demonstrations related to power and production/construction on the lunar surface, with two of them using lunar regolith to accomplish these goals.

The In-Space Infrastructure and Discovery program's Small Spacecraft Propulsion and Inspection Capability (SSPICY) demonstration work will continue and it will be prepared for launch in early FY 2027. SSPICY will enable commercial inspection of defunct, or inoperable, satellites in LEO. NASA and the Defense Advanced Research Projects Agency will complete the initial phases of the Lunar Assay via Small Satellite Orbiter (LASSO) partnership in 2026. LASSO will advance U.S. commercial capabilities in cislunar space while gathering data to inform future In-Situ Resource Utilization (ISRU) testing and infrastructure. Starling 1.5, which is a space traffic management and coordination test between autonomous spacecraft operated by different organizations, will conclude its extended mission phase in 2026.

The Foundational Capabilities program will finish tests required for flight certification and launch of the Lockheed Martin Joining Demonstration In Space Tipping Point, an in-space joining experiment on the International Space Station. This technology is a demonstration of in-space assembly, important for building large structures in space where it is impractical to launch fully assembled from Earth. The High Performance Spaceflight Computing team will complete evaluation of chip prototype shock and radiation testing culminating in a final Product Acceptance Review at which point the technology will be ready for infusion into other NASA and commercial space flight computing systems. This technology allows spacecraft to process large amounts of data in real-time, enabling more complex scientific analysis and autonomy algorithms on-board, facilitating faster decision-making, and enabling missions to explore further.

Within Catalysts and Innovative Mechanisms Partnerships, NASA will continue to make new awards and support existing awards to nurture the pipeline of space technology talent and create space for transformative ideas inspired by the broad community response to the STMD technology shortfalls survey. These investments enable new capabilities or fields of aerospace technology study, transform future NASA missions, and cultivate powerful U.S. workforce for civil space. Prizes, Challenges and Crowdsourcing will continue supporting public challenges and crowdsourcing projects to meet NASA mission needs. The Technology Transfer team will continue to increase licensing and commercialization successes while engaging local and regional partners to improve life here on Earth and in space. Flight Opportunities will leverage commercial capabilities and best practices alongside rapid acquisition approaches that improve the ability to work effectively with the entrepreneurial space industry, partner with commercial flight providers on development of new space test capabilities and continue to provide researchers access to emerging commercial space test offerings. All Partnerships, Early Stage Innovations, and Commercialization activities will continue to collaborate with other STMD programs to fund, transition, and advance technologies of strategic value to NASA.

Acquisition Strategy

STMD projects and activities are competitively selected through various acquisition mechanisms. STMD utilizes the Announcements of Collaboration Opportunity (ACO) and Tipping Point solicitations and make awards to academia, industry, and NASA centers, while fostering collaborating with other government agencies as needed.

SBIR AND STTR

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	217.8	--	169.0	169.0	169.0	169.0	169.0

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA SBIR Ignite award winner, Outpost Technologies Corporation, is shown here after their successful drop test in support of their "Cargo Ferry" designed for delivering cargo back to Earth from the ISS and future commercial space stations in LEO.

NASA's Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) program leverages the nation's innovative small business community to fund research and development in support of NASA's mission in space technology, human exploration, science, and aeronautics. These programs support NASA's Artemis program objectives by identifying and accelerating relevant technologies throughout all phases (i.e., Phase I, II, and Post Phase II). Post Phase II awards may involve matching funding from investors and encourages advancement of innovations and commercialization of technologies developed through Phase I and Phase II. SBIR Ignite is a pilot in its third year for Phase I and II awards, seeking to fund ideas that are relevant in the commercial market with a proposal process more closely aligned with a venture financing process. These programs provide the small business sector with fast-track opportunities to develop and commercialize technology for NASA to spur economic growth.

EXPLANATION OF MAJOR CHANGES IN FY 2026

The SBIR/STTR program is a percentage of the overall agency extramural research and development, therefore the total awards across the program are reduced proportional to the agency budget.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

SBIR and STTR intend to select approximately 360 new awards, grants, and contracts to small businesses, as well as continue to incubate and mature NASA commercial partnerships through post Phase II activities through sequential Phase II awards.

The program will pilot ways to reduce barriers to entry and streamline the experience throughout the program phases, including strategies to encourage transition to NASA, government, and/or commercial use beyond SBIR/STTR awards.

SBIR AND STTR

Program Elements

SBIR

SBIR was established by statute in 1982 and was most recently reauthorized in 2022 to increase research and development opportunities for small businesses. The program stimulates U.S. technological innovation, employs small businesses to meet federal research and development needs, increases the ability for small businesses to commercialize innovations they derive from federal research and development, and encourages and facilitates participation by socially disadvantaged small businesses consistent with 15 USC 638. The SBIR budget is based on a level of at least 3.2 percent of NASA's extramural research and development budget. The maximum value for an SBIR Phase I contract is $150,000 for a period of performance of six months and the maximum value of an SBIR Phase II is $850,000 over a 24-month period of performance. NASA issues annual SBIR solicitations, setting forth a substantial number of topic areas open to qualified small businesses. NASA also supports several Post Phase II vehicles:

- Phase II-E is a contract opportunity on Phase II awards that provides incentives for cost sharing with non-SBIR investors to extend the research and development efforts of the current Phase II contract.
- Civilian Commercialization Readiness Pilot Program (CCRPP) is a Post-Phase II contract opportunity that provides incentives for cost sharing with non-SBIR investors up to $2,500,000 to extend the research and development efforts of previous Phase II contracts with strong customer pull for technology maturation and commercialization.
- Phase II Sequential contracts help accelerate the TRL of technologies to a point that other investors can infuse the technology into other NASA programs.

STTR

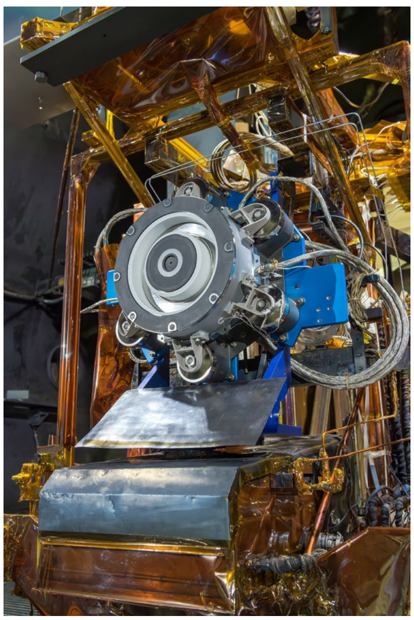
STTR was established by statute in 1992 and reauthorized in 2022 to award contracts to small businesses for cooperative research and development with a non-profit research institution, such as a university. STTR facilitates the transfer of technology developed by a research institution through the entrepreneurship of a small business, resulting in technology to meet NASA's core competency needs in support of its mission programs. Modeled after SBIR, STTR is funded based on 0.45 percent of the NASA extramural research and development budget. NASA issues annual STTR solicitations, setting forth a substantial number of topic areas open to qualified small businesses. The maximum value for an STTR Phase I contract is $150,000 for a period of performance of 13 months and the maximum total value of an STTR Phase II is $850,000 over a 24-month period of performance. Phase II E, CCRPP, Phase II sequential contracts can also be available to STTR participants.

SPACE TRANSPORTATION (GO)

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Solar Electric Propulsion	8.5	--	**7.7**	6.6	5.7	1.7	0.0
DRACO	0.0	--	**0.0**	0.0	0.0	0.0	0.0
Space Transportation Capabilities	61.5	--	**38.9**	47.1	48.0	52.0	53.7
Total Budget	**70.0**	**--**	**46.6**	**53.7**	**53.7**	**53.7**	**53.7**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



A 12Kw Hall Thruster is shown here mounted on its test stand at GRC.

The Space Transportation program (GO) manages all STMD transportation, propulsion, and cryogenic fluid management activities.

The primary goal of the Space Transportation program is to enable future science missions and human exploration of the Moon, Mars, and outer planets, utilizing technology that does not currently exist.

EXPLANATION OF MAJOR CHANGES IN FY 2026

This budget reflects changes in the STMD organization and budget structure from content aligned by TRL to content aligned by technology application. Programmatic activities such as Solar Electric Propulsion (SEP), Cryogenic Fluid Management (CFM), and Advanced Propulsion such as the Rotating Detonation Rocket Engine (renamed to Integrated Rotating Detonation Engine System (InRoDES)) transitioned to the Space Transportation program from the previous Technology Demonstration and Technology Maturation programs.

This budget provides no funding for Nuclear Thermal Propulsion and Nuclear Electric Propulsion projects. These efforts are costly investments, would take many years to develop, and have not been identified as the propulsion mode for deep space missions. The nuclear propulsion projects are terminated to achieve cost savings and because there are other nearer-term propulsion alternatives for Mars transit. The request also reflects the decision by our partner to cancel the Demonstration Rocket for Agile Cislunar Operations (DRACO) project. This request also cancels the 2020 Lockheed Martin CFM Tipping Point contract.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

Cryogenic Fluid In-situ Liquefaction for Landers will complete an integrated ground demonstration of oxygen liquefaction relevant to Mars ISRU systems. The demonstration will leverage the 90K cryocooler system already delivered to NASA and the demonstration results will provide a TRL 6 value for Mars oxygen liquefaction systems.

SPACE TRANSPORTATION (GO)

The United Launch Alliance (ULA) 2020 CFM Tipping Point demonstration flight will occur by November 2025, with the Long Endurance Advanced Prototype (LEAP) demonstration hardware co-manifested on a Vulcan / Centaur stage. The ULA LEAP system will demonstrate liquid hydrogen transfer and short duration storage, enhancing NASA's understanding of cryogenic fluid transfer operations and generating design model validation data for use in future Mars system designs.

The CFM Long Duration Hydrogen Storage test series will be complete with both liquid nitrogen and liquid hydrogen testing by October 2025. This series will demonstrate the two-stage active cooling operation on a liquid hydrogen tank through a series of thermal-vacuum tests. The two-stage cooling implementation offers reduced supply power and mass requirements, relative to a single-stage cooling approach, for future hydrogen vehicle and surface system architectures.

Program Elements

CRYOGENIC FLUID MANAGEMENT (CFM)

STMD is developing technologies that enable long duration spaceflight and extended human presence on the Moon and Mars by optimizing preservation and transfer of cryogenic fluids. Improved cryogenic fluid management helps enable in-space transportation systems, such as human landing systems for lunar and, eventually, Mars surface operations, including ISRU. Missions that involve durations ranging from months to multiple years are far beyond the current state-of-the-art capabilities for in-space cryogenic fluid management.

As part of the 2020 Tipping Point solicitation process, NASA selected four companies for milestone-based firm-fixed price contracts to demonstrate cryogenic fluid technologies in the areas of passive thermal control, tank pressure control, active cooling, and tank-to-tank propellant transfer. In the FY 2026 budget, the last of the CFM Tipping Point demonstrations, LEAP, will proceed to the flight demonstration phase.

STMD is also implementing industry and in-house activities to advance cryocooler technology, a technology critical to long duration storage of cryogens, centered on cryogenic fluids mass gauging, and ground test capabilities to study propellant transfer operations.

ADVANCED PROPULSION

Advanced Propulsion maturation efforts continue to develop the electric propulsion, emerging propulsion technologies, and advanced manufacturing of engines/components that hold the potential to transform future exploration, science, and commercial missions. Examples of Advanced Propulsion development activities include: high performance electric propulsion for the Artemis Architecture, SEP; alternative thrusters and fuels which will better survive the cold of deep space; efficient low power electric propulsion systems for small spacecraft that will enable reliance on domestic sources for critical components; and more efficient liquid propulsion systems such as rotating detonation engines.

SOLAR ELECTRIC PROPULSION (SEP)

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**8.5**	**--**	**7.7**	**6.6**	**5.7**	**1.7**	**0.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

PROJECT PURPOSE

As part of the Space Transportation Advanced Propulsion capability area, the development of Solar Electric Propulsion (SEP) technology is pushing the boundaries of space travel with thrusters nearly three times more powerful than current systems. The STMD is developing, testing, and qualifying for space, the first 12-kilowatt (kW) SEP Hall Thruster. This demonstration will provide NASA with experience in high power electric propulsion, while demonstrating operational approaches and mission life. SEP will enable more efficient orbit transfer and station keeping of spacecraft and accommodate the increasing power demands for government and commercial satellites.

EXPLANATION OF MAJOR CHANGES IN FY 2026

Quality System Acceptance Reviews 1 and 2 (QSARs) are currently scheduled for February 2026 and June 2027, respectively, but neither of these changes will cause an increase to the life-cycle cost. These reviews are to ensure that the hardware, software, and overall system meet the required performance and safety standards for spaceflight. The QSAR-1 delay is due to recently completed test facility recertification issues and QSAR-2 delay is due to cathode welding complications.

PROJECT PARAMETERS

The goal of the SEP project is to qualify a 12-kW solar electric propulsion thruster to use as the primary propulsion for a spaceflight demonstration during an operational mission. Objectives include:

- Qualify high-power SEP thruster technology for operational use through continuous long-term operation of the system in a relevant environment, sufficient to characterize and predict the performance and lifetime of the system; and
- Qualify a 12-kW electric propulsion thruster for extended operations in deep space.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

QSAR-1 will occur in February 2026. Qualification Model 1 (QM-1) acceptance testing will begin in the first quarter of FY 2026, with long duration wear testing beginning shortly thereafter and extending into FY 2027.

SOLAR ELECTRIC PROPULSION (SEP)

Formulation	Development	Operations

Schedule Commitments/Key Milestones

Milestone	Confirmation Baseline Date	FY 2026 PB Request
Formulation Authorization	Mar 2015 (as part of Asteroid Redirect Robotic Mission [ARRM])	Mar 2015 (as part of ARRM)
KDP-A	Mar 2015 (as part of ARRM)	Mar 2015 (as part of ARRM)
PDR	Aug 2017	Aug 2017
KDP-C	Oct 2019	Oct 2019
Delta KDP-C	-	May 2021
CDR	Mar 2022	Mar 2022
Re-baseline	Mar 2022	Mar 2022
KDP-D	Apr 2022	May 2023
QSAR-1	Jun 2024	Feb 2026
QSAR-2	Jun 2025	Jun 2027
Advanced Electric Propulsion System Life Qualification Test Report	Oct 2028	Jan 2029

Development Cost and Schedule

Base Year	Base Year Develop-ment Cost Estimate ($M)	JCL (%)	Current Year	Current Year Develop-ment Cost Estimate ($M)	Cost Change (%)	Key Milestone	Base Year Milestone Data	Current Year Milestone Data	Milestone Change (months)
2022	203.2	70	2025	223.2	9.8	Electric Propulsion Thruster Life Qual Test Report	Oct 2028	Jan 2029	3

Note: The confidence level estimates reported reflect an evolving process as NASA improves its probabilistic estimation techniques and processes. Estimate reflects the practices and policies at the time it was developed. Estimates that include combined cost and schedule risks are denoted as joint confidence level (JCL); all other confidence levels (CLs) reflect cost confidence without necessarily factoring the potential impacts of schedule changes on cost.

SOLAR ELECTRIC PROPULSION (SEP)

Formulation	Development	Operations

Development Cost Details

Element	Base Year Development Cost Estimate ($M)	Current Year Development Cost Estimate ($M)	Change from Base Year Estimate ($M)
TOTAL:	**203.2**	**223.2**	**+20.0**
Science/Technology	159.7	179.2	+19.5
Other Direct Project Costs	43.5	44.0	+0.5

Project Management & Commitments

Element	Description	Provider Details
Project Management	Manages Aerojet Rocketdyne contract, thruster development life testing and qualification testing	Lead Center: GRC
Thruster Development	Thruster development and life qualification testing support	Lead Center: JPL
Thruster Design	Thruster design and qualification	Provider: Aerojet Rocketdyne

Acquisition Strategy

All major acquisitions are in place.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
Advanced Electric Propulsion System Contract	Aerojet Rocketdyne	Redmond, WA

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	SRB	Feb 2026	QSAR-1, assess/approve environmental test results for QM-1	TBD
Performance	SRB	Jun 2027	QSAR-2, assess/accept preliminary life test data for QM-2	TBD

SPACE TO SURFACE ACCESS (LAND)

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	2.2	--	26.9	26.9	26.9	26.9	26.9

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Psionic Space Navigation Doppler Lidar (PSNDL) system installed in a testing pod on a NASA F/A-18 research aircraft ahead of February 2025 flight tests at NASA's Armstrong Flight Research Center in Edwards, California is shown here.

In the Space to Surface Access (LAND) Program, STMD is working to develop capable Entry, Descent, and Landing (EDL) systems, materials, and computer modeling capabilities necessary to land increased mass more accurately on Mars and other planetary bodies and improve capabilities to return spacecraft from LEO and deep space. More specifically, NASA is focusing on precision landing and hazard avoidance; advanced modeling, simulation, and flight instrumentation efforts; and EDL architectures for future exploration vehicles and planetary entry missions.

EXPLANATION OF MAJOR CHANGES IN FY 2026

This budget request reflects changes in STMD organization and budget structure from content aligned by TRL to content aligned by technology application. Programmatic activities such as Stereo CAmeras for Lunar Plume-Surface Studies (SCALPSS), Entry Systems Modeling (ESM), Scientifically Calibrated In-FLight Imagery (SCIFLI), and the Safe and Precise Landing-Integrated Capabilities Evolution (SPLICE) payload are all cross-walked from the previous Technology Maturation program.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

The Dragonfly Entry Aerosciences Measurements (DrEAM) hardware acceptance review will occur in December 2025. This is part of a larger review for all flight hardware on the SMD New Frontiers Dragonfly mission to Titan, Saturn's largest moon.

Multiple vertical takeoff and landing test flights of guidance and navigation sensors and algorithms will occur throughout 2026, accelerating maturation for infusion into near-term lunar landing systems.

The Entry Systems Modeling project will complete a detailed computational model of material strain in domestically-sourced Phenolic Impregnated Carbon Ablator (PICA-D) thermal protection system. This new state-of-the-art model will support spacecraft design and reduce the risk of integration challenges when using PICA-D on spacecraft such as Dragonfly.

SPACE TO SURFACE ACCESS (LAND)

Program Elements

ENTRY MODELING & INSTRUMENTATION (EM&I)

It is impossible to fully test planetary entry systems in relevant environments on Earth. Therefore, computer models of the heating environment, vehicle aerodynamics, and subsystem performance are critical to design and certify these systems for flight. Inaccurate models can result in inadequate safety margins and an incomplete understanding of risks. EM&I develops physics-based models, anchors them with ground test and flight data, and distributes them to the commercial industry designers of robotic and crewed vehicles to increase design robustness, shorten schedules, and reduce unexpected testing costs during development. EM&I consists of several activities. The Entry Systems Modeling effort sustains the core discipline skillsets within NASA that ensure a strong pipeline of future experts through academic grants, engaged mentoring, and the university-led Advanced Computational Center for Entry System research institute. Recognizing that entry models are key to exploring throughout the Solar System, SMD is a key partner in EM&I, as evidenced by the DrEAM instrument. The SCIFLI team, which currently has two agreements to observe commercial reentry vehicles through ACOs, extends the limits of wind-tunnel testing and computational aerothermal analysis by observing vehicles under real flight conditions; the resulting data supports both commercial and NASA crewed and uncrewed missions.

DECELERATION SYSTEMS (DS)

New and enabling approaches are required for sustained development and testing efforts on Mars. NASA's Mars Exploration Program plan for robotic Mars missions over the next two decades emphasizes lower-cost, more frequent missions, and new technologies in EDL. Advancing more capable, economical deceleration technologies for all planetary entries, including Earth return, supports an expanding commercial space economy and the accomplishment of several Moon to Mars objectives. Key public-private partnerships support inflatable decelerator technology scale-up and establishing more resilient supply chains; future investments will focus on improved capabilities that enable precise, timely deliveries of a wide range of asset sizes and masses.

LANDING SYSTEMS & ENVIRONMENTS (LS&E)

As landers and probes come to rest on planetary surfaces, they can undergo extreme impact, induce local environments, and contaminate the surrounding area. The goal of aggregating assets in one area on both the Lunar and Martian surfaces will drive the need to understand the effects of landings and launches on the surrounding area. Creating validated models of these effects will require a suite of sensor types that can acquire data from both ground tests and flight missions. This portfolio will advance technologies that improve the likelihood of successful landings while reducing the cost of landing systems. One current activity in this project is SCALPSS, a set of tiny cameras placed around the base of a commercial lunar lander. It monitors crater formation from the precise moment a lander’s hot engine plume begins to interact with the Moon’s surface. SCALPSS will also be on two future Commercial Lunar Payload Services (CLPS) flights, and the data gathered will inform future lunar lander vehicle and surface system designs.

SPACE TO SURFACE ACCESS (LAND)

GUIDANCE & NAVIGATION SYSTEMS (G&NS)

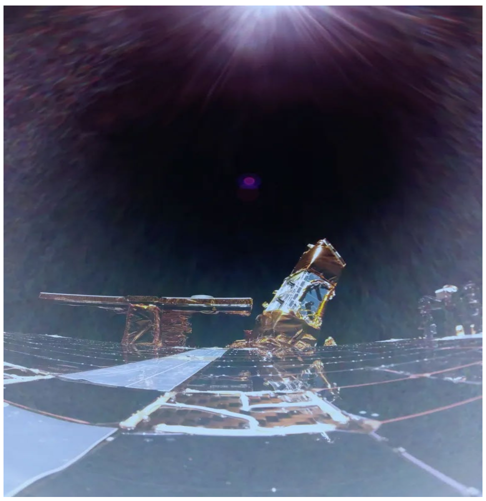
The use of precision landing and hazard avoidance enables ready access to sites of high scientific or exploration interest, supports asset aggregation for sustained operations, and ensures crew and vehicle safety. Although planetary landing precision has improved substantially over the last 20 years, future lunar and Mars missions and architectures will require at least another order of magnitude improvement. Advancements in sensors and computational capabilities are critical, but the software and algorithms that connect the measurements together robustly are an additional challenge. Advancing these integrated systems requires a continuum of test techniques, from hardware-in-the-loop simulations to laboratory testbeds to suborbital platforms that can mimic planetary approaches. Public-private partnerships are common and continue to have high potential in this portfolio due to synergies with terrestrial applications and the cross-cutting nature of the sensors and techniques to support a wide range of destinations and vehicle implementations. An example of a current activity in G&NS is the SPLICE technology, which advances multiple component technologies including avionics, sensors, and algorithms. These technologies provide safe and precise landing for the Moon, Mars, Icy Worlds, and other destinations using specialized navigation, guidance, and processing techniques. It enables landing in hard to reach and unknown areas that are of high scientific interest.

SURFACE INFRASTRUCTURE & EXPLORATION (LIVE)

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**16.2**	**--**	**55.7**	**62.7**	**62.7**	**62.7**	**62.7**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



The Electrodynamic Dust Shield (EDS) technology headed to the Moon as part of NASA's Artemis campaign is shown here.

The Surface Infrastructure and Exploration program (LIVE) develops the technologies required to establish the foundational surface infrastructure capabilities needed to explore and operate on the surface of the Moon and Mars. LIVE balances state-of-the-art technology development and robust partnerships and collaborations to leverage a national talent pool and provide this essential steppingstone to a sustainable presence on the surface of the Moon and Mars.

EXPLANATION OF MAJOR CHANGES IN FY 2026

This budget request reflects changes in STMD organization and budget structure from content aligned by TRL to content aligned by technology application. Programmatic activities such as ISRU, LunaGrid-Lite, the Cooperative Autonomous Distributed Robotic Exploration (CADRE) payload and Lunar Surface Innovation Initiative (LSII), are cross walked from the previous Technology Maturation program.

This budget request reflects the transfer of Fission Surface Power to the ESDMD. This request does not fund the Lunar Infrastructure Foundational Technologies effort. STMD will prioritize ground-based high-fidelity systems testing with an emphasis on critical lunar and Mars infrastructure such as power systems.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

Astrobotic's LunaGrid-Lite Tipping Point will complete all testing on a high-voltage cable, converter, and cable reel system to demonstrate power distribution for initial demonstration on the lunar surface with extensibility to Mars.

Blue Origin's ISRU Power Tipping Point will complete a ground demonstration of the integrated, autonomous operation of eight essential technologies by ingesting regolith simulants and producing silicon solar cells, aluminum wires, oxygen, iron, and slag (a byproduct of iron and steel production) in lunar environmental conditions.

The Harmonia Radioisotope Power System for Artemis Tipping Point team will fully fabricate and assemble the electrically heated Stirling generator and lander integration system.

SURFACE INFRASTRUCTURE & EXPLORATION (LIVE)

Program Elements

SURFACE POWER

Surface Power technologies are a critical enabler for the sustained human presence on the Moon and Mars. They include power generation (e.g., solar arrays, primary fuel cells, power beaming), power management and distribution (e.g., advanced energy management system), simulation models for power grid architectures, cabling, connectors, power electronics, proximity charging, and energy storage (e.g., regenerative fuel cells, batteries) in extreme environments and all appropriate for the Mars environment. Advancements in power generation and energy storage will provide the capability for continuous power throughout day and night operations on the lunar surface. In addition, Surface Power is developing and demonstrating a primary fuel cell system to support operations with long discharge times, including applications on rovers, powering habitats, powering ISRU systems, and for general energy storage.

Some examples include VSAT, a vertical array deployment on masts of up to 10 meters in length in order to capture continuous sunlight for power at the lunar South Pole, and the ISRU Power Tipping Point which is a commercial end-to-end system that produces solar power from simulated lunar regolith using molten regolith electrolysis.

Some future work includes solid oxide fuel cells and system development, advanced modular power systems, a 2kW primary fuel cell stack regenerative fuel cell integration, planetary surface long distance power transmission, and a surface element power exchange vehicle interface.

ENVIRONMENTS & DUST MITIGATION

Environments & Dust Mitigation includes development of cross-cutting technologies, materials, processes, test environments, and modeling that will enable robotic and human operations across the full range of surface conditions and environments.

In particular, Lunar and Martian dust introduces significant risks to virtually any surface system, including malfunctions and damage to core power systems such as solar arrays. LIVE works with industry stakeholders to develop active, passive, and/or operational measures that can be incorporated during the design and development process well before robotic or human surface operations are underway.

Some examples applicable to the Moon and Mars are dust-tolerant connectors, coating methodologies, material solutions, dust removal tools, scalable radiators, dust activation and adhesion, Moon and Mars regolith simulant characterization, and logistics (i.e., supply chain).

Additionally, Moon and Mars environment modeling, simulation, analyses, and testing ensure that stakeholder hardware developers can design to the appropriate operational environments early in the process.

SURFACE SUSTAINABILITY & LOGISTICS

Surface Sustainability and Logistics incorporates design, development, and testing principles throughout the development lifecycle to address interoperability, reliability, and maintainability of interdependent technologies common across most surface systems for Moon and Mars (i.e., power, communications, autonomy, robotics).

SURFACE INFRASTRUCTURE & EXPLORATION (LIVE)

To establish logistical permanence, be more Earth-independent, and generate a sustaining demand signal for a viable commercial ecosystem, Surface Sustainability and Logistics technologies will excavate, extract, process, and manipulate the local in-situ resources. Example technologies are consumables production, resource mining, and on-demand construction of structures (e.g., roads, landing pads, berms, storage facilities, etc.).

Achieving sustainability in extreme environments requires a strategy and design for reliable power grids on the Moon and Mars. This includes planetary surface electrical power grounding, safe and reliable transmission of energy across planetary surfaces, and maturation of core technologies for a Mars solar array 'farm'.

Humans need the ability to robotically explore, scout, and navigate treacherous terrain. Thus, the reliability, maintainability, and interoperability of the autonomous, robotic, power, and communications technologies are fundamental to the foundational lunar and Mars infrastructure.

LUNAR SURFACE INNOVATION CONSORTIUM (LSIC)

LSIC is also supported by the LIVE Domain. It is a nationwide consortium facilitated by Johns Hopkins Applied Physics Laboratory, comprised of industry, academia, non-profits, NASA, and other government agencies with a vested interest in establishing the technology infrastructure required for a sustained presence on the Moon and extensibility to Mars.

Since its inception in 2020, the LSIC, has engaged over 1,400 organizations across 50 states, the District of Columbia, Guam, Puerto Rico, and 73 countries to advance the technologies needed for surface exploration and stimulate economic development. Participation has increased by 400 percent over that time, proving its efficacy as an essential incubator for technology acceleration. Of the cross-sector entities who attend the meeting, over 50 percent are from industry, approximately 20 percent from academia, and approximately 10 percent from government, with the remaining from other entities such as non-profit organizations.

IN-SPACE INFRASTRUCTURE & DISCOVERY (EXPAND)

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	206.9	--	46.7	46.7	46.7	46.7	46.7

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

An engineer pictured at NASA's ARC inspects four spacecraft after completion of a solar array deployment test in preparation for the Starling demonstration.

In-Space Infrastructure & Discovery (EXPAND) leverages NASA expertise and industry partners to advance technology for resilient in-space infrastructure and agile missions. EXPAND invests in new capabilities to help ensure American leadership in space, support space-based infrastructure for human exploration of the Moon and Mars, create a sustainable operating environment, and accelerate the pace of scientific discovery. EXPAND seeks to improve capabilities enabling orbital missions and persistent in-space activities across the solar system.

EXPAND facilitates rapid, end-to-end technology development across the TRL spectrum through a balanced, cross-cutting portfolio of investments that utilize and advance U.S. commercial capabilities. The program elements host the necessary subject matter expertise to quickly mature technologies from government, academia, and commercial space, advancing adaptable and scalable in-space infrastructure capabilities that support human exploration of the Moon and Mars and respond to the rapidly changing needs of the space ecosystem.

The investments outlined below are some key examples of EXPAND's technology development, testing, and demonstration activities designed to address the space exploration needs of NASA and the nation.

EXPLANATION OF MAJOR CHANGES IN FY 2026

This budget submit reflects changes in STMD organization and budget structure from content aligned by TRL to content aligned by technology application. The realignment includes consolidating activities such as the entire Small Spacecraft Technology portfolio and the Deep Space Optical Communications (DSOC) demonstration from the previous Technology Demonstration program into the current EXPAND program.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

In FY 2025, the SpaceX Starlink satellite constellation and the Department of Commerce began using the Starling spacecraft to test advanced space traffic management techniques between autonomous spacecraft operated by different organizations. This Starling mission extension is making use of four CubeSats in LEO that were testing technologies for autonomous distributed operations and multipoint data collection, including ad hoc in-space networking, optical navigation for formation flight, and autonomous maneuvering and coordinated sensor-driven operations. During the mission extension, NASA also plans to work with the Bureau of Ocean Energy Management to use Starling's cross-link radios to localize and track from space low-power beacons attached to animals to record their movement and migration patterns, an approach that may be extensible to tracking assets on the lunar surface. The Starling extended mission phase will conclude in 2026.

In September 2024, NASA awarded an SBIR Phase III contract to Starfish Space of Seattle, Washington for the SSPICY demonstration. Targeting launch in late 2026, Starfish's Otter spacecraft will inspect up to four defunct satellites of U.S. origin in low-Earth orbit. SSPICY is the first commercial space debris inspection mission funded by NASA, designed to gather data on the nature of defunct satellites and advance solutions for their reuse or disposal. SSPICY will also mature U.S. commercial capabilities for rendezvous and proximity operations using electric propulsion.

In April 2025, NASA and the Defense Advanced Research Projects Agency (DARPA) released the Lunar Assay via Small Satellite Orbiter (LASSO) solicitation. LASSO aims to mature U.S. commercial capabilities and technologies in cislunar space. In 2026, NASA will support DARPA with subject matter expertise for the initial phases of this partnership. Following the spacecraft build, NASA will evaluate further contribution to the LASSO demonstration. Technologies advanced through LASSO will advance deep space navigation and situational awareness and help enable smaller cost-effective spacecraft to take high-fidelity measurements from very low altitude above the Moon. Data gathered through this activity could also inform future ISRU testing and infrastructure which is an enabling capability for long-term human presence at the Moon and Mars.

Program Elements

SMALL SPACECRAFT & DISTRIBUTED SYSTEMS

Small Spacecraft and Distributed Systems expands NASA's ability to execute unique missions through rapid development and demonstration of technologies for small spacecraft applicable to exploration, science, and the commercial space sector.

The program element engages in collaborations with U.S. industry to leverage the fast pace of innovation in the commercial space sector and apply those innovations to challenging mission needs. Through these partnerships, Small Spacecraft and Distributed Systems advances small spacecraft technologies to achieve NASA missions in faster and more affordable ways.

This includes expanding the capability of small spacecraft to execute missions at new destinations and in challenging new environments, including cislunar, deep space, and very low-Earth orbit (VLEO) applications. The program element also aims to advance mission architectures for which small spacecraft are uniquely suited, including capabilities for autonomous distributed systems, as well as enable augmentation of existing orbital assets and future exploration missions at the Moon and Mars with supporting small spacecraft for communications, navigation, awareness, and other space-based infrastructure applications.

Small Spacecraft & Distributed Systems targets a 24-month development cycle for all small missions. As such, EXPAND makes use of a missions-of-opportunity-based approach so that it can identify and initiate investments faster than the typical budget cycle. This improves the ability to work with the entrepreneurial space industry and increases the agility and effectiveness of the portfolio.

IN-SPACE INFRASTRUCTURE & DISCOVERY (EXPAND)

Current and ongoing activities include the Cislunar Autonomous Positioning System Technology Operations and Navigation Experiment (CAPSTONE), Starling, Advanced Composite Solar Sail System (ACS3), SSPICY, LASSO, and other technology demonstrations that support the other program elements in EXPAND as well as key stakeholders across NASA and other government agencies.

COMMUNICATION, POSITION, NAVIGATION & TIMING (CPNT)

CPNT activities develop and demonstrate technologies for advanced in-space communications, navigation, and timing infrastructure that reduces reliance on constrained Earth-based systems and enables scalable mission architectures at the Moon, Mars, and beyond. CPNT seeks to mature in-space technologies that can transition to NASA's Space Communications and Navigation (SCaN) program as well as U.S. commercial industry for operational implementation.

Current and ongoing activities in this project include the DSOC experiment, NASA's first demonstration of optical communications beyond the Earth-Moon system. The CPNT team also collaborates with other activities in the program to rapidly mature cross-cutting technologies, like the TerraByte InfraRed Delivery (TBIRD) laser communications payload tested aboard Small Spacecraft Technology's Pathfinder Technology Demonstrator-3 (PTD-3) spacecraft.

In coordination with NASA's SCaN program, CPNT initiated some rapid advancement of technologies for exploration infrastructure. These include developing and testing to adapt commercial terrestrial telecommunications technology for the Moon and Mars and other studies for deep space CPNT. The studies include one for a very high data rate deep space optical "trunkline" to Mars, and one to analyze existing clock technologies and establish technology performance metrics for NASA's coordinated lunar time technology strategy.

IN-SPACE SERVICING, ASSEMBLY, AND MANUFACTURING (ISAM)

ISAM activities innovate and demonstrate next-generation space architectures for the assembly and servicing – including refueling, repairing, and upgrading – of in-space assets. ISAM works in partnership with academia, industry, and other government agencies to mature critical in-space robotics, rendezvous and docking, refueling, assembly, and advanced manufacturing technologies, as well as to establish approaches and best practices for ISAM operations.

Current and ongoing activities in ISAM include providing subject matter expertise support to commercial and partner agency activities including U.S. commercial refueling demonstrations and DARPA's Robotic Servicing of Geosynchronous Satellites (RSGS) program. In October 2024, U.S. Naval Research Laboratory’s Naval Center for Space Technology (NCST) and DARPA successfully completed the development of the RSGS spaceflight-qualified robotics suite. The mission will demonstrate satellite servicing operations in geosynchronous Earth orbit using a robotic vehicle. NASA subject matter expertise will focus on RSGS technology development, integration, testing, and demonstration.

The ISAM team supports Small Spacecraft and Distributed Systems on the SSPICY demonstration that will mature small spacecraft electric propulsion capabilities for rendezvous and proximity operations.

In addition to its technology development activities, the ISAM program element also manages the Consortium for Space Mobility and ISAM Capabilities (COSMIC).

FOUNDATIONAL CAPABILITIES (ENABLE)

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**0.0**	**--**	**49.4**	**49.4**	**49.4**	**49.4**	**49.4**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Pictured here is the assembled prototype cycloidal magnetic gear developed by The Motors for Dusty and Extremely Cold Environments (MDECE) team at GRC. It will demonstrate functionality and mechanical limits of flight hardware to withstand vacuum environments and temperatures from negative 416 to positive 195 degrees Fahrenheit. The prototype gear is designed to actuate robotic arms and the wheels of large rovers on the lunar surface.

The Foundational Capabilities program (ENABLE) aims to advance cross-cutting capabilities and technologies to enable human and scientific exploration of cis-lunar space and beyond. By collaborating across NASA and industry, ENABLE fosters the development and integration of these cutting-edge capabilities into critical systems and missions. Key capability advancements include in-space manufacturing and thermoplastics for exploration; innovative processors and software necessary for missions across the agency and civil space; autonomous technology to infuse into various missions; and power generation and storage and advanced thermal management in multiple extreme environments and applications.

EXPLANATION OF MAJOR CHANGES IN FY 2026

This budget request reflects changes in STMD organization and budget structure from content aligned by TRL to content aligned by technology application. Programmatic activities such as High Performance Spaceflight Computing (HPSC), Joining Demonstration In Space (JOINS) Tipping Point, and the Space Habitat Structures with Additive Manufacturing (3DSpaceHab) Tipping Point are from the previous Technology Maturation and Technology Demonstration programs.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

HPSC will complete an evaluation of chip prototype shock and radiation testing culminating in a final product acceptance review in preparation for commercial market release. Additional investments will mature technologies needed on high-performance computing systems for lunar and Mars application, ensuring commercial viability and infusion into NASA and commercial flight computing systems.

Investments in power generation and management, including non-plutonium-based radioisotope power systems and advanced battery technologies, will advance industry manufacturing capabilities and extend the longevity of systems operating in challenging and extremely cold lunar and Mars environments.

Finally, a focus on technologies for autonomous systems and robotics will improve capabilities in uncrewed logistics manipulation as well as robotic support of human missions.

Program Elements

ADVANCED MATERIALS, STRUCTURES, AND MANUFACTURING

Advanced Materials, Structures and Manufacturing is the investment in development and material characterization of thermoplastics and composite structures for exploration and in-space manufacturing, as well as in structures and materials for ultra-stable NextGen observatories. The goal of this project is to advance both ultralightweight materials and in-space manufacturing to enable NASA and commercial industry to develop innovative exploration vehicles and extend the potential of in-space remote observational science. Examples of activities in this portfolio are the 3DSpaceHab and JOINS Tipping Points.

ADVANCED POWER AND THERMAL

STMD develops modular high-specific-energy storage solutions with common interfaces, flexible and lightweight solar cells for multiple user applications within the Advanced Power and Thermal portfolio. This portfolio will build on the current Harmonia Radioisotope Power Source to evaluate and mature more cost-effective radioisotope sources, including Americium, to manufacture advance power and thermal management technologies for continuous operation in extremely cold environments, which would be valuable for long-distance human or science missions. Improvements in battery storage performance and reliability allows for lower launch costs (i.e., lighter weight) as well as enhanced conventional batteries with benefits easily translated to terrestrial applications.

AUTONOMOUS SYSTEMS AND ROBOTICS

Advanced technologies for autonomous systems and robotics yields benefits across multiple fronts. Autonomy enables novel human-robotic interactions and unprecedented robotic support of crewed missions. Uncrewed logistics manipulation reduces burden on crew time and enables expanded science and exploration during uncrewed periods. Robotic actuation, sensors, subsystem components, and system architectures advances sustained operation in environmental extremes to increase the duration and breadth of operations possible on the Moon and at other science destinations of interest.

AVIONICS AND SENSORS

The focus of Avionics and Sensors is to continue to develop complex, high-performance spaceflight computing for extreme environments, and advancing state-of-the-art sensors to perform resource reconnaissance imaging, mapping, and space weather prediction. These technologies have multiple applications across NASA, industry, and other government agencies. One of the activities, HPSC, is the next-generation flight computing system capable of potentially 100x the computational capacity of current flight processors for the same amount of power. HPSC can enable future NASA and other commercial applications the ability to perform advanced autonomous missions. Another example, the

FOUNDATIONAL CAPABILITIES (ENABLE)

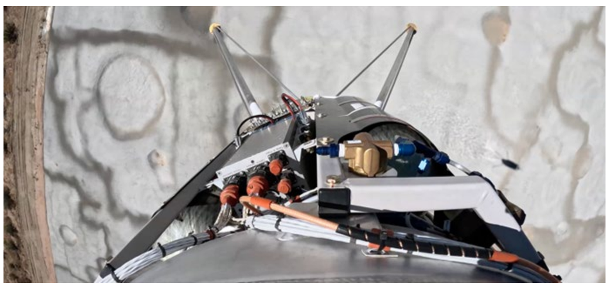
Highly Efficient watt-class Direct Diode LiDAR transmitter Tipping Point, is a sensor to detect methane which is beneficial to both mapping Earth's atmosphere as well as other planetary bodies.

CATALYSTS & INNOVATIVE MECHANISMS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**76.9**	**--**	**174.6**	**160.5**	**160.5**	**160.5**	**160.5**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



Astrobotic's rocket-powered Xodiac flying over a simulated lunar surface in May 2024 is shown here. Built by Astrobotic in preparation for flight tests conducted as part of the NASA TechLeap Prize's Nighttime Precision Landing Challenge, the nearly 100-meter-by-100-meter 3D test field mimics the topography and optical properties of the Moon's surface. Credits: Astrobotic

The Catalysts and Innovative Mechanisms (Catalysts) program is a portfolio of activities and services that leverages a wide range of procurement and partnership mechanisms to enable NASA and the STMD to address capability shortfalls, create a pipeline of talent and space for unique technology ideas, and manage agency-wide technology and innovation activities. Through Catalysts, NASA enables partnerships with and between a wide variety of innovators including industry, academia, the NASA workforce, and individual participants using a comprehensive suite of awards, activities, and mechanisms available to NASA.

A major part of the Catalyst program is Partnerships, Early Stage Innovations, and Commercialization, which supports concept studies, applied research, early technology development, open innovation, and flight testing that germinates revolutionary ideas, expands innovation, transforms future capabilities, and rapidly demonstrates promising technologies to support American global competitiveness and leadership in space. Early-stage efforts support NASA's research and development (R&D) objectives and inspire the American and global public to support NASA's mission. These programs leverage the creativity and technical capabilities of innovators across the nation to give the agency new ideas and alternative approaches to solving NASA's difficult and far-reaching space technology challenges, while also building a pipeline for talent development.

Catalysts also supports several STMD recurring solicitation processes to increase efficiency and strategic alignment with NASA's Tipping Point and ACO solicitations. Through the Tipping Point Announcement for Partnership proposals, NASA uses a cost-sharing model to quickly mature commercial technologies, increase the likelihood of infusion into a commercial space application, and bring the technology to market for both government and commercial applications. Through ACOs, NASA helps reduce the development cost of commercial space technologies and accelerate the infusion of emerging commercial capabilities into future missions using Unfunded Space Act Agreements, which allow NASA Centers to partner with selected companies to provide expertise, facilities, hardware, and software.

Awards made through Catalysts align with STMD strategy (either directly prioritized by program or shortfall-inspired), except for those which support agency-wide initiatives.

The IRAD project is also a part of the Catalysts portfolio. IRAD fuels NASA's culture of innovation and exploration, enabling game changing ideas to become engineering and science breakthroughs and technologies that shape the future of aeronautics, space technology, exploration, and scientific discovery for NASA and the nation. IRAD advances the foundation of critical technologies for the Moon to Mars architecture; the study of Earth, our Solar System, and the universe; and the vehicles and airspace systems needed for safe and efficient travel in to the 2050's and beyond.

EXPLANATION OF MAJOR CHANGES IN FY 2026

This budget submit reflects changes in STMD organization and budget structure from content aligned by TRL to content aligned by technology application. As such the budget structure is realigned from the previous Early Stage Innovation and Partnerships (ESIP) program. Catalysts also includes two activities, Space Technology Operations and Flight Opportunities, that came from other prior STMD programs.

IRAD is a new project in this budget submit. It is an agency-level initiative, hosted by STMD, similar to SBIR/STTR.

In addition, this submit reallocates some former ESIP funding to other STMD programs. Activities and awards funded and managed in Catalysts can be enhanced by additional investments from the other STMD programs to make more awards.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

Partnerships, Early Stage Innovations, and Commercialization will make new awards and support existing awards in NASA Innovative Advanced Concepts (NIAC), Center Innovation Fund (CIF), Early Career Initiative (ECI) and Space Technology Research Grants (STRG) to nurture the pipeline of space technology talent and create space for transformative ideas inspired by STMD shortfalls. These investments will target and enable potential new capabilities or fields of aerospace technology study, transform future NASA missions, and cultivate a powerful U.S. workforce for civil space.

Prizes, Challenges, and Crowdsourcing (PCC) will conduct Phase II (Demonstration and Testing) of the LunaRecycle Challenge while formulating and preparing to launch an additional Centennial Challenge focused on technology innovation for Mars. PCC will also conduct its next NASA workforce Crowdsourcing Contenders solicitation. PCC will continue to make the NASA Spark platform available to all NASA employees while supporting public challenges and crowdsourcing projects to meet NASA mission needs.

Flight Opportunities will leverage commercial capabilities and best practices alongside rapid acquisition approaches that improve the ability to work effectively with the entrepreneurial space industry, partner with commercial flight providers on development of new space test capabilities and continue to provide researchers access to emerging commercial space test offerings.

The Technology Transfer program will continue to license and commercialize NASA technologies while engaging local and regional partners to improve life here on Earth and in space.

In FY 2026, IRAD intends to fund approximately 150 innovative and high-risk, high reward activities across all NASA Centers. At the end of 2026, IRAD will conduct an annual review of the FY 2026 activities and hold a symposium to spur knowledge and technology transition to missions, other government agencies, and to industry. Additionally, a call for proposals for the FY 2027 IRAD activities will be prepared for release.

Partnerships, Early Stage Innovations, and Commercialization supports recurring solicitation processes and services to increase efficiency across STMD by centralizing solicitation business processes to reduce redundant processes in other STMD programs, including the release of any Tipping Points and ACO solicitations.

Program Elements

NIAC

NIAC offers NASA the opportunity to collaborate with any U.S. entity in search of the most visionary and transformative technology concepts. The NIAC team releases annual solicitations seeking exciting, unexplored, but technically credible new concepts that could one day create breakthroughs in space and aeronautics. These efforts keep the agency and our nation on the cutting edge of aerospace research, enabling long-term capabilities and transformative innovations that make aeronautics and space exploration more effective, affordable, and sustainable.

NIAC Phase I and continuation Phase II solicitations are open to NASA centers, other government agencies, universities, industry, and individual entrepreneurs. While to date NIAC Phase III studies have succeeded in transitioning promising studies beyond NIAC investment, there will be no Phase III solicitation in 2026. NASA will continue to facilitate next steps towards realization of visionary NIAC concepts by leveraging other approaches.

CIF

CIF provides the opportunity to stimulate aerospace creativity and NASA workforce innovation through competitively selected activities at each NASA center. CIF selections will explore alternative technology approaches or enhanced capabilities that advance NASA missions and address national aerospace needs. Partnerships with academia, private industry, individual innovators, as well as among NASA centers and government agencies, are highly encouraged.

ECI

ECI provides the opportunity for NASA early career civil servants to propose and work on two-year technology activities with industry and academic partners, engage in hands-on technology development opportunities, and learn different approaches to project management. Several ECI projects target technology demonstrations or flight opportunities that support lunar surface operations, which provides NASA civil servant innovators the opportunity to have their technologies demonstrated on the lunar surface. Designed to invigorate NASA's technology base and champion innovative management processes, ECI successfully partners NASA early career leaders with external world-class innovators to deliver transformative national space capabilities.

STRG

STRG conducts a series of annual and biennial competitive solicitations targeting strategic technology shortfalls and stimulating innovative space technology research that engage the entire spectrum of academic researchers, from graduate students to early career and senior faculty members. STRG emphasizes technology that can make space activities more effective, affordable, and sustainable. In the process, close collaborations between U.S. universities and NASA centers are established and nurtured.

Also, via the students who support these awards, these efforts cultivate the pipeline of the next generation of technologists and innovators who will go on to support aerospace and other institutions with roles in industry, academia, and government.

The NASA Space Technology Graduate Research Opportunities (NSTGRO) solicitation seeks to sponsor graduate researchers who show significant potential to contribute to NASA's goal of creating innovative new space technologies for the nation's exploration, science, and economic future. The unique focus of the Early Career Faculty (ECF) is to support outstanding faculty researchers early in their careers as they conduct space technology research. Early Stage Innovations (ESI) efforts are university-led but allow for teaming within academia as well as some external entities including industry. Lunar Surface Technology Research (LuSTR), are university-led efforts addressing high priority lunar surface challenges that encourages larger teaming. Space Technology Research Institutes (STRI) are STRG's largest multi-year awards, which support university-led institutes that require multidisciplinary, multi-institutional participants researching high-priority early-stage space technologies. The STRG program funds a baseline level of NSTRGO, ECF and ESI awards.

PCC

PCC supports open innovation via three primary approaches: 1) The Center of Excellence for Collaborative Innovation (CoECI) operates the NASA Tournament Lab and manages a flexible contract that makes a wide variety of commercial open innovation platforms and services available to NASA employees and other government agencies to conduct challenge and crowdsourcing projects to support their work, 2) NASA Spark, an internal crowdsourcing and challenge platform designed to improve the ability of NASA employees to connect with others within the agency to solve technical and non-technical problems, and 3) Centennial Challenges develops and administers dynamic technology development challenges in partnership with private and public organizations that offer incentive prizes to generate transformational innovation and solutions to advance NASA's mission.

FLIGHT OPPORTUNITIES

Flight Opportunities rapidly demonstrates promising technologies for space exploration, discovery, and the expansion of space commerce through suborbital and hosted orbital testing with industry flight providers. The team matures capabilities needed for future missions while strategically investing in the growth of the U.S. commercial spaceflight industry. In addition to solicitations and competitions, Flight Opportunities uses a flights-of-opportunity-based approach to rapidly move technology from benchtop to flight test. This approach leverages commercial capabilities and best practices alongside rapid acquisition approaches that improve the ability to work effectively with the entrepreneurial space industry. In addition to purchasing commercial space flight testing services, Flight Opportunities also invests directly in U.S. commercial space flight capabilities. Activities across the portfolio involve partnerships with commercial flight providers on development of new space test capabilities and aims to provide researchers access to emerging commercial space test offerings.

TECHNOLOGY TRANSFER

Technology Transfer provides agency-level management and oversight of NASA-developed and NASA-owned intellectual property and manages the transfer of the technologies to external entities. Activities include active collection and assessment of all NASA inventions, strategic management and marketing of intellectual property, negotiation and management of licenses, software releases, and development of technology transfer-focused partnerships. The team tracks and reports metrics related to these activities (e.g., numbers of new inventions, patents, licenses, cooperative research and development agreements, or software use agreements). Technology Transfer also accelerates commercialization of NASA technologies through strategic partnerships and entrepreneurial projects to increase licensing and commercialization success.

IRAD

IRAD is an investment in competitively selected R&D activities conducted by NASA center personnel, independent of existing programs and missions. It includes basic and applied research, technology development, systems studies, and concept formulations in areas aligned with future NASA and national aerospace challenges. IRAD enables centers to pursue strategic, long-term research and technology development that combines unique center strengths with NASA's overall goals to drive future success. It is a grassroots approach to the development of high impact innovations and technology solutions that directly enable future NASA missions. At the same time, IRAD strengthens the skills of NASA's technical workforce for upcoming mission challenges.

SCIENCE

Astrophysics

Heliophysics

Biological and Physical Sciences

SCIENCE

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Earth Science	2,138.9	--	**1,035.9**	1,055.9	1,081.9	1,106.9	1,077.9
Planetary Science	2,764.3	--	**1,891.3**	1,861.3	1,867.3	1,822.3	1,851.3
Astrophysics	1,529.7	--	**523.0**	543.0	501.0	521.0	521.0
Heliophysics	805.0	--	**432.5**	422.5	432.5	432.5	432.5
Biological and Physical Sciences	87.5	--	**25.0**	25.0	25.0	25.0	25.0
Total Budget	**7,325.4**	**7,334.2**	**3,907.6**	**3,907.6**	**3,907.6**	**3,907.6**	**3,907.6**

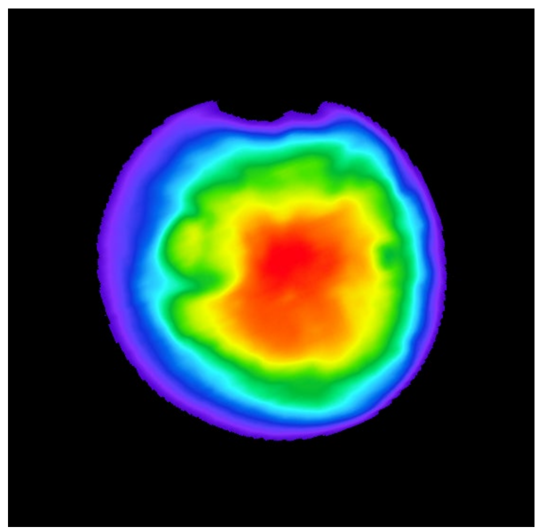
FY 2024 reflects the funding amount specified in Public Law 118-42, Consolidated Appropriations Act, 2024, as revised in NASA's FY 2024 final Operating Plan, September 2024. Amounts include a net transfer amount of $2.0 million; $4.5 million that was transferred from General Services Administration (GSA) and $2.5 million that was transferred to NASA's Information Technology Modernization Working Capital Fund.

FY 2025 reflects the funding amount specified in Public Law 119-4, Full-Year Continuing Appropriations and Extensions Act, 2025.

NASA’s SMD conducts scientific exploration enabled by space-based observatories, which observe the Earth, perform fundamental research, visit other bodies in the solar system, and gaze out into the galaxy and beyond. NASA's scientific exploration will inform human exploration of the Moon, Mars, and the solar system, providing valuable scientific data for such human missions. NASA also strives to drive discovery by studying biological and physical phenomena in space. SMD utilizes technological advances and partnership opportunities, including public-private partnerships that leverage commercial investments, to further NASA's science objectives.

NASA’s science programs also help protect and improve life on Earth through research that enables innovative and practical applications for decision-makers, including disaster response, natural resource management, and planetary defense.

In determining the content of the Science portfolio, NASA considers the recommendations of the National Academies' decadal surveys, national priorities and policies, budgets, existing technological capabilities, partnership opportunities, and other programmatic factors.



This picture of Mars is a colorized composite of several images captured by Europa Clipper’s thermal imager during a flyby of Mars in March 2025. Warm colors represent relatively warm temperatures; red regions are about 32 degrees Fahrenheit (0 degrees Celsius), and purple regions are about minus 190 degrees Fahrenheit (minus 125 degrees Celsius).

EXPLANATION OF MAJOR CHANGES IN FY 2026

While NASA's science missions have greatly expanded humanity's understanding of the Earth, solar system, and universe, the current expenditure of over $7 billion per year on over 100 missions is unsustainable. The budget provides $3.9 billion for SMD, supporting a leaner, more focused Science program that reflects the Administration's commitment to fiscal responsibility.

Within Earth Science, NASA will focus on completing missions which ensure continuity of critical data sets, including NASA-ISRO Synthetic Aperture Radar (NISAR), Grace Continuity, and Libera, and will select future medium- to small-sized missions within Earth Explorers and Earth Venture to address new measurements recommended by the Decadal. NASA will not continue formulation of Earth System Observatory missions, including the Atmosphere Observing System (AOS) Storm and AOS-Sky, and the Surface Biology and Geology Thermal Infrared Radiometer (TIR) and Visible & Shortwave Infrared Spectrometer (VSWIR) missions; however, science objectives from those missions may be addressed through future competed missions. NASA will work with the U.S. Geological Survey to restructure the Landsat Next mission and pursue more affordable alternatives. Within a reduced budget for Earth Science Research, Earth Science Technology, Responsive Science Initiatives, and Applied Sciences, NASA will prioritize integrated science and applications relevant to users and decisionmakers, including agriculture and wildfires.

Within Planetary Science, increased funding is requested for a new Mars initiative to provide lower-cost, competitively selected missions and instruments that address both human exploration and science objectives. These payloads will take advantage of the new Commercial Mars Payload Services established within ESDMD. The Lunar Discovery and Exploration Program will continue to develop scientific instruments for Artemis II and III missions and payloads for commercial delivery to the Moon via the Commercial Lunar Payload Services project, which has been transferred to ESDMD. NASA will terminate the Mars Sample Return mission and will further reduce the portfolio by halting progress on several other missions. Activities within Planetary Science Research, Venus and Mars Technology, and Radioisotope Power Systems are reduced, and will focus on high priority science investigations and technologies relevant to planned missions.

Within Astrophysics, the budget supports continued operations of the Hubble Space Telescope and the James Webb Space Telescope, and development of the Roman Space Telescope. NASA will not select an Astrophysics Probes mission and will not proceed with formulation of the UltraViolet EXplorer (UVEX) mission. NASA contributions to several partner missions will be cancelled. Activities within Astrophysics Research, Supporting Research & Technology, and Science Activation are reduced, and will focus on high priority science investigations and technologies relevant to planned missions. NASA will initiate closeout of the Chandra mission.

Within Heliophysics, the budget supports continued investments in Space Weather research, technology, and missions, including a reformulation of the Heliophysics Environmental and Radiation Measurement Experiment Suite (HERMES) instrument to conduct space weather research on the journey to Mars, and NASA contributions to a partner space weather mission, Joint Effort for Data assimilation Integration (JEDI). NASA will not continue with formulation of the HelioSwarm mission and will cancel planned contributions to the partner mission Extreme Ultraviolet High-Throughput Spectroscopic Telescope. Activities within Heliophysics Research, Heliophysics Technology, Research Range, and Sounding Rockets are reduced and will focus on high priority science investigations and technologies relevant to planned missions.

Within Biological and Physical Sciences, NASA has prioritized funding for investigations planned for Artemis II and III, and initial funding for research on Commercial LEO destinations. NASA expects to significantly reduce the amount of Biological and Physical Sciences (BPS) research conducted aboard the ISS in FY 2026 given the reduced cadence of resupply missions and crew time availability as NASA moves towards a transition in 2030 to lower-cost commercial space stations. NASA will terminate BPS support for center ground-based testing facilities and will cancel planned BPS contributions to international collaborations.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

In FY 2026, NASA's Mars-moon Exploration with GAmma rays and NEutrons (MEGANE) instrument will launch on the JAXA Martian Moons eXploration (MMX) mission to investigate the Martian moons Phobos and Deimos. The Lunar Discovery & Exploration Program anticipates the launch and delivery of multiple new lunar science payloads to the surface of the Moon through the Commercial Lunar Payload Services project. NASA will release the New Frontiers 5 Announcement of Opportunity.

NASA will continue development of the Gravity Recovery and Climate Experiment-Continuity (GRACE-C), Multi-slit Solar Explorer (MUSE), Dragonfly and Near-Earth Object (NEO) Surveyor missions. Biological and Physical Sciences will fly the first organ-chip experiment into deep space aboard Artemis II, scheduled for launch in FY 2026.

The Europa Clipper mission will continue its journey towards Jupiter's moon, Europa. NASA will continue to operate the Hubble Space Telescope and the James Webb Space Telescope, along with missions launched in FY 2025, including NISAR and Interstellar Mapping and Acceleration Probe (IMAP).

Themes

NASA’s Science budget, managed by SMD, includes five major science areas.

EARTH SCIENCE

NASA’s unique capabilities as a space and science agency ultimately enable decision makers to address the most pressing challenges posed by our rapidly changing planet such as changing agricultural conditions, and severe weather challenges, including droughts, tropical storms, and wildfires. NASA develops innovations in instrument, flight, data, and mission technology to improve capability, resolution, and frequency of our remote sensing and in-situ Earth observations. NASA missions use the vantage point of space to observe our planet and continuously improve our scientific understanding of Earth’s interconnected systems, from Earth’s core to its atmosphere. Missions include continuity measurements made for decades, and advances in observations to advance understanding of the Earth system. NASA selects and funds innovative research enabling the nation’s scientific community to build an ever-improving understanding of global-scale changes, connecting causes to effects.

This budget supports translating Earth science into actionable data and information via investments in the Applied Sciences and Responsive Science Initiatives (RSI) programs, which will support applications development and user engagement related to disaster response, wildfires, energy, and agriculture. RSI also ensures that NASA is acquiring commercial data and creating Earth observation data products, tools, and models that directly address user needs.

The budget restructures the Landsat Next mission and supports a more affordable architecture for continuing the Landsat data record. The budget supports continued formulation of the GRACE-Continuity mission, continued operations of high-impact missions such as NISAR, SWOT, PACE, and ICESat-2, continues the Earth System Explorers program, and continues collecting the decades-long data records of Earth's radiant energy system through the Total and Spectral Solar Irradiance Sensor–2 (TSIS-2) and Libera missions.

PLANETARY SCIENCE

To answer questions about the solar system and the origins of life, NASA sends robotic space probes to the Moon, other planets and their moons, asteroids and comets, and the icy bodies beyond Neptune. NASA’s robotic explorers gather data to help scientists understand how the planets formed, what triggered different evolutionary paths among planets, what processes have occurred and are active, and how Earth, among the planets, became habitable.

NASA is currently operating spacecraft at Mars, Jupiter, and the Moon, and has spacecraft traveling to Jupiter's moon, Europa; the asteroid Psyche; and the Jupiter Trojan asteroids. NASA is preparing to deliver new instruments to the lunar surface; will develop the Dragonfly mission to explore Saturn's moon, Titan; and will develop Near Earth Objects Surveyor mission to survey the solar system for potentially hazardous asteroids. The budget funds the Lunar Discovery and Exploration Program that supports Artemis science, commercial collaborations, and innovative approaches to achieving human and science exploration goals. The budget supports future competitive mission selections within Mars Exploration Discovery, and New Frontiers, and a research program to support the scientists who use NASA mission data to make discoveries about our solar system.

ASTROPHYSICS

NASA stands on the threshold of new endeavors that will transform not only our understanding of the universe and the processes and physical paradigms that govern it, but also humanity’s place in it. Progress in understanding pathways to habitable worlds, opening new windows on the dynamic universe, and unveiling the drivers of galaxy growth require the essential vantage point of space. Building on the revolutionary advances in our observations of exoplanets, NASA now seeks to identify and characterize Earth-like exoplanets orbiting Sun-like stars, with the ultimate goal of obtaining imaging and spectroscopy of potentially habitable worlds.

NASA aims to exploit the new observational tools of gravitational waves and particles, along with temporal monitoring of the sky across the electromagnetic spectrum and wide-area surveys to probe the most energetic processes in the universe and address the nature of dark matter, dark energy, and cosmological inflation. By linking observations and modeling of the stars, galaxies, and the gas and energetic processes that couple their formation, evolution, and destinies, NASA can revolutionize our understanding of the origins and evolution of galaxies, from the nature of the tenuous cosmic webs of gas that feed them, to the nature of how this gas condenses and drives the formation of stars.

The budget supports operation of the Hubble Space Telescope and the James Webb Space Telescope, development of the Roman Space Telescope, and operations of the recently launched SHPEREx mission, as well as other smaller missions to ensure broad wavelength coverage from the X-ray through the mid-infrared.

SCIENCE

HELIOPHYSICS

The Sun, a typical small star midway through its life, governs our solar system. The Sun wields its influence through its gravity, radiation, solar wind, and magnetic fields, all of which interact with the Earth and its space environment. These processes are crucial for our understanding of the universe, and they relate directly to our ability to live in space as they produce space weather, which can affect technological infrastructure and human activities in space. Using a fleet of sensors on various spacecraft in Earth orbit and throughout the heliosphere, NASA seeks to understand the fundamental processes of how and why the Sun varies in many ways, how Earth and our solar system respond to the Sun, how the Sun and the solar system interact with the interstellar medium, and how human activities are affected by these processes. The science of heliophysics, including space weather, enables the predictions necessary to safeguard life and society on Earth and the outward journeys of human and robotic explorers.

The budget supports development of the MUSE mission and contributions to the ESA Vigil space weather mission. The budget includes the highest funding ever proposed for the Space Weather program, which is focused on applied research and applications to enable the nation to better protect our technology and astronauts from space weather. The budget includes funding for Heliophysics research and analysis and funding for orbital debris investments to enable characterization of the populations of small debris and dust in space to protect space-based critical infrastructure and humans working in space.

BIOLOGICAL AND PHYSICAL SCIENCES

NASA conducts fundamental biological and physical sciences research that contributes to transformational discoveries, improves life on Earth and in space, and enables sustained deep-space human exploration. NASA achieves this by pioneering research to understand how spaceflight affects living and physical systems in space and to prepare for future human exploration missions far from Earth. The experiments NASA conducts on the ISS and other platforms examine how astronauts, plants, animals, and physical systems respond to the extreme conditions of space, including microgravity, ionizing radiation, and altered atmosphere.

The budget reduces funding for BPS to support higher priorities within the agency. Given reduced crew time and research capacity of the International Space Station program as the program transitions to less-expensive commercial facilities, BPS will reduce its ISS flight experiments to one to two per year and proceed with the Commercially Enabled Rapid Space Science (CERISS) project, focused on research capabilities for use on Commercial LEO Destination (CLD) space labs, at a slower pace. BPS will support organ-chip research on Artemis-II and -III, CLDs and other commercial opportunities such as suborbital flights, and Flammability of Materials on the Moon (FM2), and a physical sciences experiment on the SpaceX uncrewed demo.

EARTH SCIENCE

Earth Science

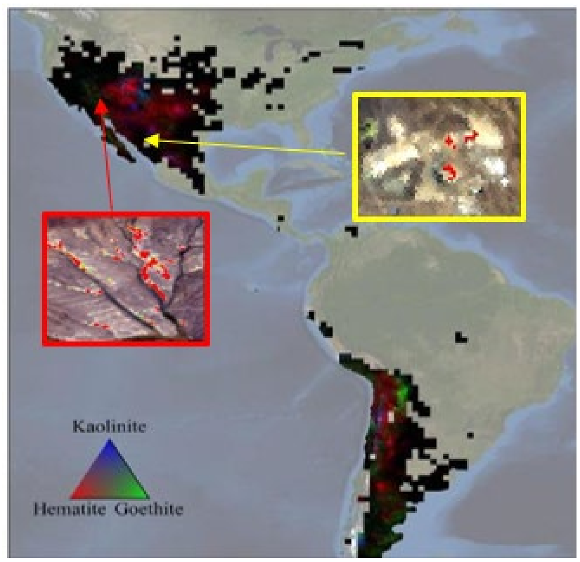
EARTH SCIENCE RESEARCH

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Earth Science Research and Analysis	380.6	--	**189.4**	169.8	169.0	169.8	170.7
Computing and Management	178.0	--	**129.0**	129.0	129.0	129.0	129.0
Total Budget	**558.6**	**--**	**318.4**	**298.8**	**298.0**	**298.9**	**299.7**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Earth Science Research program addresses complex Earth science questions in pursuit of a comprehensive understanding of the complex Earth system (Atmosphere, Biosphere, Cryosphere, Geosphere, and Hydrosphere). By linking the most advanced satellite observations of Earth with research on these systems and interdisciplinary connections between them, the Earth science program advances knowledge about the Earth system and develops technologies that benefit multiple stakeholders, including natural resource managers, disaster responders, academia, and U.S. industry.



NASA's EMIT instrument on ISS is producing the first-ever continental scale mineral maps of the Earth, supporting the identification and assessment of strategic minerals (lithium-bearing minerals (red box), rare earths (yellow box).

EXPLANATION OF MAJOR CHANGES IN FY 2026

The budget reduces funding for lower-priority research and modeling efforts, Directorate Support, and upgrades to Space Geodesy. It makes the most of remaining funds by streamlining the research portfolio. Specifically, Earth System Science Research (previously named Earth Science Research & Analysis) consolidates activities from Interdisciplinary Science and Early Career Research. NASA will restructure the approach to competitive research solicitations from the former six focus areas made up of numerous calls (i.e., Water and Energy Cycle, Weather and Atmospheric Dynamics, Earth Surface and Interior, Climate Variability and Change, Atmospheric Composition, and Carbon Cycle and Ecosystems) and a periodic call for Interdisciplinary Science. The new synergistic approach structures calls around the five major Earth systems observed by NASA missions: Atmosphere, Biosphere, Cryosphere, Geosphere, and Hydrosphere, with interdisciplinary connections emphasized throughout every solicitation. This realignment and consolidation will simplify the Earth Science research opportunities released to the NASA science community and enable streamlined management of research selections aligned with resource availability.

New selections in FY 2026 will be limited. Several specific research calls that overlap with discipline science areas will not continue solicitations and selections in FY 2026, including Carbon Monitoring System and Land Cover and Land Use Change.

EARTH SCIENCE RESEARCH

The budget cancels NASA support for the Global Learning and Observations to Benefit the Environment project given higher priorities within the agency.

NASA streamlined the Integrated Earth System Modeling (IESM) project, reorganizing various Earth system modeling activities currently spread over at least four different NASA centers into a single IESM virtual institute; core capabilities at the Goddard Institute for Space Studies (GISS) will be incorporated into the effort as needed, while GISS as an independently managed effort will not continue.

NASA transferred the High-End Computing Capabilities project to the Planetary Science Research program.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

In FY 2026, Earth Science Research expects to deliver preliminary results from the water-related activities initiated in FY 2025. The expected data include zero–14 day forecasts of soil moisture, evapotranspiration, and streamflow at 1 kilometer resolution over North and Central America; vertical land motion for U.S. coastlines, inundation mapping of flood frequency, vulnerability estimates from freshwater loss and salt-water (ocean) intrusion; coastal water quality products; and ocean carbon change.

NASA will complete the research restructuring to become more streamlined and efficient in FY 2026 to encourage interdisciplinary activities and simplify the Earth Science research opportunities and requests for proposals that are released to the NASA science community.

Similarly, the newly established Integrated Earth System Modeling (IESM) project will reorganize various Earth system modeling activities currently spread over at least four different NASA centers into a single IESM virtual institute coordinated by GSFC. The new virtual institute will better align the various and sometime divergent efforts into a more efficient and focused team that will work together to provide an integrated world-class Earth System modeling system that works across the relevant spatial and temporal scales and allows participation by a broader group of scientists and institutions. NASA will transition the core modeling capabilities of the Goddard Institute for Space Studies (e.g., GISS Model-E and GISS Impact) to the virtual institute while activities begun in FY 2025 to discontinue the physical presence of GISS in New York City are completed.

Program Elements

INTEGRATED EARTH SYSTEM MODELING

Earth system data models translate our theoretical understanding of the Earth system into specific retrospective simulations of the past, and predictions of the near and distant future states of the Earth system. The IESM project includes the Global Modeling and Assimilation Office, the Modeling, Analysis, and Prediction (MAP) program, the Model-E century-scale effort, and the Scientific Computing project. The Global Modeling and Assimilation Office creates global Earth system component models using data from Earth Science satellites and aircraft. Investigators and the U.S. private sector can use these products worldwide to further their research and analyze Earth system change and business impacts. The MAP program supports advancement of comprehensive models of the Earth system, development of model/observation syntheses (analyses and reanalysis) of Earth system variables, generation of predictions of the future state of the Earth system on weather up to multi-decadal time scales, and affiliated research. The Model-E effort provides a framework to simulate many different configurations of

Earth System Models including interactive atmospheric chemistry; aerosols; carbon and other tracers; and the standard atmosphere, ocean, sea ice, and land surface components.

The Scientific Computing project funds NASA's Earth Science Discover supercomputing system, high-end storage, network, software engineering, and user interface projects, including modeling and data analysis, research on applying Artificial Intelligence/Machine Learning for science, and commercial cloud computing. The project team specifically designed the Scientific Computing architecture for the needs of Earth system science global modeling activities that assimilate data collected by Earth Science missions. The system is separate from the High-End Computing Capability program at ARC, so it can be close to the satellite data archives at GSFC while also providing cloud computing environments specifically engineered for Earth Science collaborations. The proximity to the data and the focus on satellite data assimilation makes the Discover cluster unique in its ability to analyze large volumes of satellite data quickly. The system currently has approximately 234,000 central processing unit cores and 415,000 graphical processing unit cores.

AIRBORNE SCIENCE

The Airborne Science program provides access to airborne platforms that obtain key measurements of the Earth system for research and to advance and understand earth satellite data. Airborne platforms test new measurement approaches, serve as technology test beds, conduct research campaigns such as the suborbital portion of Earth Venture, and provide calibration/validation information for satellites. Airborne platforms are also an important part of training the next generation of scientists. The current fleet of modified aircraft (https://airbornescience.nasa.gov/aircraft) include the large science laboratory B777 under modification, two high-altitude ER-2s, three high-altitude WB-57s, the P-3 Orion, and business class Gulfstream aircraft (GIII aircraft near end of operational life and a GV aircraft to replace them). Airborne Science also provides access to commercially available aircraft, all heavily modified to support Earth Science instruments and research requirements. The program also provides the skilled personnel and infrastructure required to plan and execute Earth Science missions.

NASA realigned several components of the former Interdisciplinary Science project to Airborne Science for management efficiency. This includes calibration and validation activities that ensure the utility of space-based measurements and other focused fieldwork (e.g., airborne campaigns) and specific facility instruments critical to these campaigns.

EARTH SYSTEM SCIENCE RESEARCH

Earth System Science Research (formerly Earth Science Research and Analysis) is the core of the research program and funds the analysis and interpretation of data from NASA's satellites and aircraft. This project funds the scientific activity needed to establish the foundational knowledge which undergirds the satellites' data and their use in computational models.

NASA consolidated former Interdisciplinary Science research activities with Earth Science Research to reduce costs and improve management efficiency and offer annual interdisciplinary opportunities throughout all disciplines.

The Early Career Research project, formerly managed as a separate activity, is now part of the Earth System Science Research to support graduate and early career research in the areas of Earth system research, applied science, data systems, and technology. Early Career Research funds several

EARTH SCIENCE RESEARCH

opportunities including Future Investigators in NASA Earth and Space Science and, Technology, and the Early Career Investigator Program in Earth Science.

SPACE GEODESY

Geodesy is the science of measuring Earth's shape, gravity, orientation, and rotation and how these properties change over time. The Space Geodesy Project (SGP) encompasses the development, operation, and maintenance of a global network of space geodetic technique instruments, a data transport and collection system, data analysis, and the public dissemination of data products required to maintain a stable terrestrial reference system. SGP provides the data and analysis essential for fully realizing the measurement potential of the current and next generation of Earth-observing spacecraft. In FY 2026 NASA will prioritize the replacement of failed infrastructure. Upgrading aging but still operable equipment will be completed on a delayed schedule compared to previous plans.

EARTH SCIENCE DIRECTED RESEARCH AND TECHNOLOGY

The Earth Science Directed Research and Technology project funds the civil service staff who work on emerging Earth Science flight projects, instruments, and research. In FY 2026 funds will also support workforce reshaping efforts.

DIRECTORATE SUPPORT

The Directorate Support project funds SMD's institutional and crosscutting activities including National Academies studies, the proposal peer review processes, printing and graphics, information technology, the NASA Postdoctoral Fellowship Program, working group support, independent mission assessments, NASA center bid and proposal, center and HQ performance awards, center and HQ lump sum payments, HQ civil servant labor, procurement support for the award and administration of all grants, and other administrative tasks.

Program Schedule

Date	Significant Event
Q1 FY 2026	ROSES-2025 selection within six to nine months of receipt of proposals
Q2 FY 2026	ROSES-2026 solicitation release
Q1 FY 2027	ROSES-2026 selection within six to nine months of receipt of proposals
Q2 FY 2027	ROSES-2027 solicitation release
Q1 FY 2028	ROSES-2027 selection within six to nine months of receipt of proposals
Q2 FY 2028	ROSES-2028 solicitation release
Q1 FY 2029	ROSES-2028 selection within six to nine months of receipt of proposals
Q2 FY 2029	ROSES-2029 solicitation release
Q1 FY 2030	ROSES-2029 selection within six to nine months of receipt of proposals
Q2 FY 2030	ROSES-2030 solicitation release

EARTH SCIENCE RESEARCH

Program Management & Commitments

Program Element	Provider
Airborne Science	Provider: Various Lead Center: HQ Performing Center(s): AFRC, ARC, Wallops Flight Facility, JSC, LaRC Cost Share Partner(s): N/A
Earth System Science Research	Provider: Various Lead Center: HQ Performing Center(s): All NASA centers Cost Share Partner(s): Subcommittee on Ocean Science and Technology (SOST) agencies
Directorate Support	Provider: Various Lead Center: HQ Performing Center(s): All NASA centers Cost Share Partner(s): N/A
Space Geodesy	Provider: Various Lead Center: GSFC Performing Center(s): GSFC, JPL Cost Share Partners: N/A
Integrated Earth System Modeling	Provider: Various Lead Center: GSFC Performing Center(s): HQ, GSFC, GISS, JPL Cost Share Partners: N/A

Acquisition Strategy

NASA implements the Earth Science Research program via competitively selected research awards. NASA releases research solicitations each year in the ROSES NASA Research Announcements. All proposals in response to NASA ROSES are peer reviewed and selected based on defined criteria. The program competitively awards funds to investigators from academia, the private sector, NASA centers, and Federally Funded Research and Development Centers.

EARTH SYSTEMATIC MISSIONS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
NASA-ISRO SAR	72.1	--	**24.5**	20.9	16.0	3.5	0.0
Sentinel-6	51.3	--	**8.1**	8.7	5.7	7.1	4.9
GRACE-Continuity	132.6	--	**42.3**	48.8	54.7	44.1	14.1
Other Missions and Data Analysis	538.6	--	**258.7**	252.4	261.8	293.9	301.5
Total Budget	**794.6**	**--**	**333.5**	**330.8**	**338.2**	**348.6**	**320.5**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA and SpaceX technicians connect NASA's PACE spacecraft to the payload adapter on Friday, January 26, 2024, at the Astrotech Space Operations Facility near KSC in Florida.

The Earth Systematic Missions (ESM) program includes a broad range of multi-disciplinary science investigations, operating and in development, aimed at understanding Earth 's complex chemical and physical systems. Missions in this program include investigations of Earth's water, land and land mass, atmosphere and precipitation and biology.

EXPLANATION OF MAJOR CHANGES IN FY 2026

NASA increased the lifecycle cost for the NASA- Indian Space Research Organization (ISRO) Synthetic Aperture Radar (NISAR) mission by $40.9 million to $1,158.9 million to address thermal issues with the Radar Antenna Reflector (RAR) discovered in the final phase of system integration and testing. The updated budget ensures delivery of the reworked RAR to ISRO on time for launch readiness in June 2025. Please refer to the NISAR section for more details.

The budget restructures the unaffordable Landsat Next mission, which required simultaneous development and launch of three satellites with significantly enhanced capabilities compared to the current Landsat satellites. NASA will study alternative mission architectures that could provide desired continuity of the Landsat imagery at a lower cost.

To achieve cost savings, NASA will not proceed with formulation and development of Atmosphere Observing System (AOS) -Storm, AOS-Sky, Surface Biology and Geology (SBG)-VSWIR, SBG-TIR, and the NASA contributions to the Sentinel-6C, CRISTAL, Luce, and PMM partner missions. Additionally, NASA will implement mission closeout of DSCOVR, SAGE III, Terra, Aqua, and Aura.

NASA-ISRO SYNTHETIC APERTURE RADAR (NISAR)

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**72.1**	**--**	**24.5**	**20.9**	**16.0**	**3.5**	**0.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Shown here is an artist rendering of the NISAR satellite.

PROJECT PURPOSE

The NASA-ISRO Synthetic Aperture Radar (NISAR) mission will provide an unprecedented, detailed view of the Earth using advanced radar imaging and a dual frequency (L-band and S-band) Synthetic Aperture Radar (SAR). NISAR will be NASA's first dual frequency radar imaging satellite and will observe processes including ecosystem disturbances, ice sheet collapse, and natural hazards (e.g., earthquakes, tsunamis, volcanoes, and landslides). The mission will reveal information about the evolution and state of Earth's crust, broadening scientific understanding of our planet's changing processes and supporting natural resource and hazard management.

Both the 2007 and 2017 Earth Science Decadal Surveys endorsed the NISAR science objectives. NISAR is a collaborative mission with ISRO and marks the first time the two agencies have cooperated on hardware development for an Earth-observing mission.

EXPLANATION OF MAJOR CHANGES IN FY 2026

NASA increased the lifecycle cost for NASA-ISRO Synthetic Aperture Radar (NISAR) by $40.9 million to $1,158.9 million to address thermal issues with the Radar Antenna Reflector (RAR) discovered in the final phase of System Integration & Test (SIT). The updated budget ensures delivery of the reworked RAR to ISRO on time for launch readiness in June 2025.

PROJECT PARAMETERS

NISAR consists of a dual frequency (L-band and S-band) SAR. NASA will provide the L-band SAR (L-SAR), the engineering payload, the payload integration, and payload operations. ISRO will provide S-band SAR (S-SAR), the spacecraft bus, the launch vehicle, observatory integration and testing, and spacecraft operations. NISAR has a prime mission of three years.

NASA-ISRO SYNTHETIC APERTURE RADAR (NISAR)

Formulation	Development	Operations

NISAR will implement enhanced data acquisition and data downlink capability as well as a global soil moisture product for agricultural, forest, and modeling efforts, as recommended by the interagency Satellite Needs Working Group (SNWG). The SNWG identified multiple other agencies that would benefit from NISAR systematically collecting data over North America in Quad-pol 40-megahertz mode, thus requiring additional data acquisition and downlink capability. NASA will track the cost of these additional capabilities outside of the Agency Baseline Commitment for cost, as approval of the scope enhancements took place after mission confirmation.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

NISAR will continue prime operations.

SCHEDULE COMMITMENTS/KEY MILESTONES

NISAR completed KDP-C in August 2016 and was re-baselined in August 2022.

Milestone	Rebaseline Date	FY 2026 PB Request
KDP-C	Aug 2016	Aug 2016
CDR	Oct 2018	Oct 2018
KDP-D	Mar 2021	Mar 2021
Payload Delivery to ISRO	Mar 2023	Oct 2024
Launch Readiness Date (LRD)	Oct 2024	Jun 2025

Development Cost and Schedule

Base Year	Base Year Develop-ment Cost Estimate ($M)	JCL (%)	Current Year	Current Year Develop-ment Cost Estimate ($M)	Cost Change (%)	Key Milestone	Base Year Milestone Data	Current Year Milestone Data	Milestone Change (months)
2022	921.1	70	2024	972.0	6%	LRD	Oct 2024	June 2025	+8

Note: The confidence level estimates reported reflect an evolving process as NASA improves its probabilistic estimation techniques and processes. Estimate reflects the practices and policies at the time it was developed. Estimates that include combined cost and schedule risks are denoted as joint confidence level (JCL) ; all other confidence levels (CLs) reflect cost confidence without necessarily factoring the potential impacts of schedule changes on cost. NASA originally baselined NISAR in 2016 and conducted a re-plan in 2022 which become the new reporting baseline in the FY 2024 appropriation. The original baseline is provided in the Supporting Data section.

NASA-ISRO SYNTHETIC APERTURE RADAR (NISAR)

Formulation	Development	Operations

Development Cost Details

Element	Base Year Development Cost Estimate ($M)	Current Year Development Cost Estimate ($M)	Change from Base Year Estimate ($M)
TOTAL:	**921.1**	**972.0**	**+50.9**
Aircraft/Spacecraft	143.6	153.3	+9.7
Payloads	369.6	407.2	+37.6
Systems Integration and Testing	104.8	140.8	+36.0
Launch Vehicle	0.2	0.2	+0
Ground Systems	97.1	142.2	+45.1
Science/Technology	35.4	43.0	+7.6
Other Direct Project Costs	170.4	85.5	-84.9

NASA-ISRO SYNTHETIC APERTURE RADAR (NISAR)

Formulation	Development	Operations

Project Management & Commitments

The ESM program at JPL has program management responsibility for NISAR. NASA assigned project management responsibility to JPL. NISAR is a partnership between NASA and ISRO.

Element	Description	Provider Details	Change from Baseline
L-SAR	Radar imaging payload	Provider: NASA Lead Center: JPL Performing Center(s): JPL Cost Share Partner(s): N/A	N/A
S-SAR	Radar imaging payload	Provider: ISRO Lead Center: N/A Performing Center(s): N/A Cost Share Partner(s): ISRO	N/A
Spacecraft	Provides platform for the payload	Provider: ISRO Lead Center: N/A Performing Center(s): N/A Cost Share Partner(s): ISRO	N/A
Launch Vehicle	Geosynchronous Satellite Launch Vehicle; delivers observatory to orbit	Provider: ISRO Lead Center: N/A Performing Center(s): N/A Cost Share Partner(s): ISRO	N/A

Project Risks

Risk Statement	Mitigation
If: The Reflector Deployment operations are not successful, Then: The observatory will not function as planned.	Mitigation is complete and the project has reduced the risk to acceptable.

Acquisition Strategy

The design and build of L-SAR radar is an in-house build at JPL with competed subcontracts.

NASA-ISRO SYNTHETIC APERTURE RADAR (NISAR)

Formulation	Development	Operations

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
Solid State Recorder	Airbus	Germany
Reflector Antenna	Astro Aerospace	California

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	SRB	Nov 2024	Operational Readiness Review	Passed

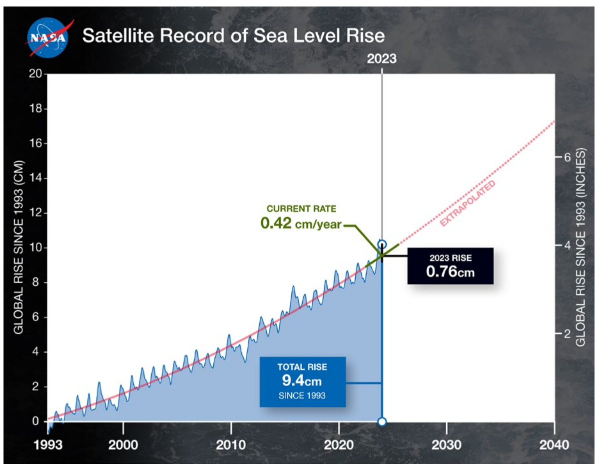
SENTINEL-6

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	51.3	--	8.1	8.7	5.7	7.1	4.9

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



As shown here, the rate of global sea level rise has more than doubled since satellite records began. Sentinel-6 Michael Freilich continues to provide the most accurate record of this rise.

PROJECT PURPOSE

The Sentinel-6 satellites will ensure continuity of sea level observations into a fourth decade. The data will also support improved forecasts of flooding and ocean currents as well as wind and wave conditions, which affect marine productivity and the weather on land. This data will allow improvements in both short-term forecasting for weather predictions in the two- to four-week range (e.g., hurricane intensity predictions), and long-term forecasting for seasonal conditions (e.g., El Niño, La Niña). Like their predecessors, these satellites will provide ongoing measurements of global sea level.

The Sentinel-6 mission provides continuity of ocean topography measurements beyond the Topography Experiment/Poseidon (launched in 1992), Jason-1 (launched in 2001), Ocean Surface Topography Mission/Jason-2 (launched in 2008), and Jason-3 (launched in 2016) missions. It consists of two satellites, Sentinel-6 Michael Freilich (S6-MF) that launched in 2020 and Sentinel-6B (S6-B), that will launch in 2025 to extend ocean topography measurements for ocean circulation and climate studies throughout the decade.

Sentinel-6 characterizes atmospheric temperature and humidity profiles and makes them available for incorporation into National Weather Service models to support weather forecasting capabilities. Sentinel-6 is a collaborative mission with NOAA, ESA, and the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT).

EXPLANATION OF MAJOR CHANGES IN FY 2026

Sentinel-6 development costs have decreased by $31.7M due to excellent cost performance and lower than planned launch vehicle costs.

SENTINEL-6

Formulation	Development	Operations

PROJECT PARAMETERS

The satellites will carry several instruments to support science goals. The Poseidon-4 Altimeter will bounce signals off the ocean surface. Sea surface height will be determined based on the time it takes each pulse to travel from the satellite to the ocean and back again. An Advanced Microwave Radiometer (AMR) will retrieve the amount of water vapor between the satellite and ocean, which affects the travel speed of radar pulses. Radio Occultation Antennas will measure the delay of radio signals between Jason-CS and global navigation satellites (GPS) as they slice through different layers of the atmosphere. The project team will use other onboard instruments will be used to determine the satellite's position, including a Precise Orbit Determination suite comprising Global Navigation Satellite System (GNSS) receivers, a Laser Retroreflector Array (LRA) and a Doppler Orbitography Radio-positioning Integrated by Satellite (DORIS) system. Instruments will also perform data downlinks (S-band and X-band antennas), and supply power (Solar Array).

NASA will provide the launch vehicle and launch services as well as the AMR-Climate Quality (AMR-C), the GNSS-Radio Occultation (GNSS-RO) receiver, and the LRA for each spacecraft. NASA will also provide support for instrument integration and testing on the satellites, mission operations support for NASA-developed instruments, an operational AMR-C science data processor for EUMETSAT, near real-time and offline data processing for GNSS-RO data, and mission data product archiving and distribution. The S6-MF and S-6B observatories each have a five-and-a-half-year prime mission.

ESA is responsible for providing the Sentinel-6 Michael Freilich and Sentinel-6B spacecraft buses; the European science instrument payload; command and control of the spacecraft through the launch and early orbit phase; and in-orbit verification, commissioning, and routine operations support.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

In FY 2026, Sentinel 6-MF will continue to operate and produce high-accuracy science data products, contributing to hundreds of scientific publications per year.

Sentinel 6-B currently is targeted to launch in FY 2026 on a SpaceX Falcon 9 rocket from Vandenberg Space Force Base in California and conduct commissioning and calibration activities of all flight and ground systems, including a cross-calibration of the Sentinel 6-B data products with the existing Sentinel 6-MF data products to ensure continuity of the high-accuracy and consistent science data products.

SCHEDULE COMMITMENTS/KEY MILESTONES

The project targets Sentinel 6-B to launch in early FY 2026, in advance of the confirmation commitment of November 2026.

Milestone	Confirmation Baseline Date	FY 2026 PB Request
KDP-C	Apr 2017	Apr 2017

SENTINEL-6

Formulation	Development	Operations

Milestone	Confirmation Baseline Date	FY 2026 PB Request
CDR	Oct 2017	Oct 2017
S6-MF U.S. Payload delivery to ESA	Mar 2020	Mar 2020
S-6B U.S. Payload delivery to ESA	Oct 2020	Oct 2020
Launch (S6-MF)	Nov 2021	Nov 2020
Start Phase E (S6-MF)	Feb 2022	Feb 2021
End Prime Mission (S6-MF)	Aug 2027	Aug 2026
Launch (S-6B)	Nov 2026	Nov 2026
Start Phase E (S-6B)	Feb 2027	Feb 2027
End Prime Mission (S-6B)	Aug 2032	Aug 2032

Development Cost and Schedule

Base Year	Base Year Develop-ment Cost Estimate ($M)	JCL (%)	Curren t Year	Current Year Develop-ment Cost Estimate ($M)	Cost Change (%)	Key Milestone	Base Year Milestone Data	Current Year Milestone Data	Milestone Change (months)
2017	465.9	>70	2024	335.8	-27.9	LRD of S6-MF	Nov 2021	Nov 2020	-12
N/A	N/A	N/A	N/A	N/A	N/A	LRD of S-6B	Nov 2026	Nov 2026	0

Note: The confidence level estimates reported reflect an evolving process as NASA improves its probabilistic estimation techniques and processes. Estimate reflects the practices and policies at the time it was developed. Estimates that include combined cost and schedule risks are denoted as joint confidence level (JCL); all other confidence levels (CLs) reflect cost confidence without necessarily factoring the potential impacts of schedule changes on cost.

Development Cost Details

Element	Base Year Development Cost Estimate ($M)	Current Year Development Cost Estimate ($M)	Change from Base Year Estimate ($M)
TOTAL:	**465.9**	**335.8**	**-130.1**
Aircraft/Spacecraft	0	0	0

SENTINEL-6

Formulation	Development	Operations

Element	Base Year Development Cost Estimate ($M)	Current Year Development Cost Estimate ($M)	Change from Base Year Estimate ($M)
Payloads	65.8	77.4	+11.6
Systems Integration Testing	8.8	6.2	-2.6
Launch Vehicle	280.7	169.1	-111.6
Ground Systems	9.7	13.2	+3.5
Science/Technology	4.4	39.0	+34.6
Other Direct Project Costs	96.5	30.9	-65.6

Project Management & Commitments

The ESM program at JPL has program management responsibility for Sentinel-6. NASA also assigned project management responsibility to JPL. Sentinel-6 is a partnership with NOAA, ESA, and EUMETSAT.

Element	Description	Provider Details	Change from Baseline
AMR-C	Provides high spatial resolution wet tropospheric path delay corrections for the ESA-supplied Ku/C-Band Altimeter	Provider: NASA Lead Center: JPL Performing Center(s): JPL Cost Share Partner(s): N/A	N/A
GNSS-RO	Supports secondary mission objectives for weather modeling and forecasting	Provider: NASA Lead Center: JPL Performing Center(s): JPL Cost Share Partner(s): N/A	N/A
LRA	Provides orbit determination	Provider: NASA Lead Center: JPL Performing Center(s): JPL Cost Share Partner(s): N/A	N/A
Ku/C-Band Altimeter	Measures Jason-heritage ocean surface topography at nadir	Provider: ESA Lead Center: N/A Performing Center(s): N/A Cost Share Partner(s): ESA	N/A

SENTINEL-6

Formulation	Development	Operations

Element	Description	Provider Details	Change from Baseline
DORIS	Provides orbit determination	Provider: ESA Lead Center: N/A Performing Center(s): N/A Cost Share Partner(s): ESA	N/A
Spacecraft Bus	Provides instrument platform	Provider: ESA Lead Center: N/A Performing Center(s): N/A Cost Share Partner(s): ESA	N/A
Launch Vehicle	Delivers spacecraft to orbit	Provider: NASA Lead Center: JPL Performing Center(s): KSC Cost Share Partner(s): N/A	N/A

Project Risks

None.

Acquisition Strategy

Sentinel-6 leverages Jason heritage by using JPL legacy instrument designs (e.g., AMR-C, GNSS-RO, and LRA) and an in-house build with a combination of sole source and competitive procurements. NASA selected SpaceX to provide a Falcon 9 launch vehicle through a competitive Launch Service Task Order evaluation under the NASA Launch Services II contract.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
GNSS-RO Electronics	MOOG	Golden, CO
AMR-C Antenna	Northrop Grumman Innovation Systems	San Diego, CA
LRA	ITE	Laurel, MD
Launch Services (S6-MFand S-6B)	SpaceX	Los Angeles, CA

SENTINEL-6

Formulation	Development	Operations

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	SRB	Aug 2025	Sentinel-6B ORR	TBD

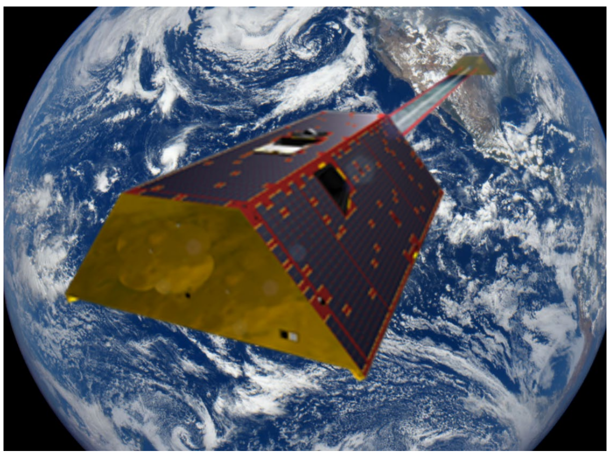
GRACE-CONTINUITY

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**132.6**	**--**	**42.3**	**48.8**	**54.7**	**44.1**	**14.1**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



Artist rendering of the two GRACE-C spacecraft orbiting Earth in formation.

PROJECT PURPOSE

The GRACE-Continuity (GRACE-C) mission will provide month-to-month changes of Earth's gravity field to track water movement and surface mass changes across the planet, monitoring variations in ice sheets, glaciers, underground water storage, soil moisture, and sea levels. These data provide a unique integrated global view of how Earth’s water cycle and energy balance are evolving—measurements that have far-reaching benefits to society, such as providing insights into where global groundwater resources may be shrinking or growing, where dry soils are contributing to drought and fire risk, and where saturated soils increase likelihood of flooding.

GRACE-C will provide continuity of the 20+ year record of monthly measurements of Earth’s mass change established by the GRACE and GRACE-Follow On (GRACE-FO) missions. GRACE-C will contribute observations on water resources and mass changes to the integrated observatory.

NASA leads work on GRACE-C in partnership with DLR, building on a relationship established in the 1990s for GRACE and GRACE-FO. The GRACE-C mission concept evolved from the GRACE-FO design and targets a launch in a near-polar orbit in FY 2029 to maintain continuity with the mass change record from GRACE-FO.

EXPLANATION OF MAJOR CHANGES IN FY 2026

This budget provides an updated lifecycle cost based on improved planning and estimates consistent with the budget approved at confirmation (May 2024), which supports launch readiness in July 2029.

PROJECT PARAMETERS

The GRACE-C mission architecture consists of a pair of satellites in co-planar, low altitude polar orbits. The mission will achieve its science and applications objectives by making accurate measurements of the

Formulation	Development	Operations

inter-satellite range change between the centers of mass of the two satellites, as well as by precisely measuring the non-gravitational forces acting on the satellites and tracking their orientation and position in inertial space. Each satellite carries geodetic quality Global Navigation Satellite System receivers, attitude determination sensors, a laser ranging interferometer (LRI) for satellite range change measurements, high accuracy accelerometers, and laser retroreflectors for orbit determination.

Unlike other Earth-observing satellites, the two GRACE-C satellites are the "instruments," acting directly as the observational system. The two satellites maintain positions approximately 300 kilometers apart and continuously measure the distance between each other to within a few microns. As one satellite approaches a landmass, gravity pulls it towards the landmass and the distance between the two satellites grows. As the second satellite approaches that same landmass, gravity also pulls it toward the landmass, and the distance between the two satellites becomes closer again. This ever-fluctuating change in distance between the two is the primary measurement used to derive Earth's gravity field.

NASA is responsible for the GRACE-C project and is providing the Project Manager and Project Scientist, project management, system engineering and mission design, safety and mission assurance, delivery of the integrated LRI, the LRI electronics subsystems, the accelerometers, two spacecraft, instrument integration and on orbit operations, science and applications data processing, and delivery of calibrated/validated science and applications data products to a NASA archive for public distribution and long-term preservation.

DLR is responsible for providing the optics subsystems for the LRI, mission operations and telemetry, tracking and command, the ground data system, laser retroreflectors for ground-to-satellite ranging, and the launch vehicle and launch services.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

The GRACE-C project will conduct a System Integration Review (SIR) in October 2025 and proceed to a KDP-D in December 2025. Following these reviews, GRACE-C will begin system assembly, integration, and test activities.

SCHEDULE COMMITMENTS/KEY MILESTONES

Milestone	Confirmation Baseline Date	FY 2026 PB Request
KDP-C	May 2024	May 2024
CDR	May 2025	May 2025
SIR	October 2025	October 2025
KDP-D	December 2025	December 2025
Pre-Ship Review	July 2028	July 2028
Operational Readiness Review	October 2028	October 2028
KDP-E	October 2028	October 2028
Launch Readiness Date (LRD)	December 2028	December 2028

GRACE-CONTINUITY

Formulation	Development	Operations

Development Cost and Schedule

Base Year	Base Year Develop-ment Cost Estimate ($M)	JCL (%)	Current Year	Current Year Develop-ment Cost Estimate ($M)	Cost Change (%)	Key Milestone	Base Year Milestone Data	Current Year Milestone Data	Milestone Change (mths)
2024	441.7	70	2025	441.7	0	LRD	July 2029	July 2029	0

Note: The confidence level estimates reported reflect an evolving process as NASA improves its probabilistic estimation techniques and processes. Estimate reflects the practices and policies at the time it was developed. Estimates that include combined cost and schedule risks are denoted as joint-confidence level (*JCL*)*; all other* confidence levels (*CLs*) *reflect cost confidence without necessarily factoring the potential impacts of schedule changes on cost.*

Development Cost Details

This is the first report of development costs for this project.

Element	Base Year Development Cost Estimate ($M)	Current Year Development Cost Estimate ($M)	Change from Base Year Estimate ($M)
TOTAL:	**441.7**	**441.7**	**0**
Aircraft/Spacecraft	124.7	145.4	+20.7
Payloads	91.9	89.9	-2.0
Systems I&T	6.9	6.9	0
Launch Vehicle	1.3	1.3	0
Ground Systems	21.4	26.9	+5.5
Science/Technology	16.4	16.0	-0.4
Other Direct Project Costs	179.1	155.3	-23.8

GRACE-CONTINUITY

Formulation	Development	Operations

Project Management & Commitments

Element	Description	Provider Details	Change from Baseline
Spacecraft	Provides platform for the instruments	Provider: Airbus Defence & Space (Germany) Lead Center: JPL Performing Center(s): JPL Cost Share Partner(s): N/A	N/A
Accelerometers	Measures all nongravitational accelerations of the satellite(s)	Provider: French Office National d'Etudes et Recherches Aérospatiales (ONERA) Lead Center: JPL Performing Center(s): JPL Cost Share Partner(s): N/A	N/A
Laser Ranging Interferometer	Heterodyne interferometric laser will measure the distance between the two spacecraft as a function of time	Provider: JPL and DLR Lead Center: JPL Performing Center(s): JPL Cost Share Partner(s): JPL and DLR	N/A
Launch Vehicle	Delivers spacecraft to orbit	Provider: DLR Lead Center: N/A Performing Center(s): N/A Cost Share Partner(s): DLR	N/A
Project Management	Overall management; system engineering and mission design; safety and mission assurance	Provider: JPL Lead Center: JPL Performing Center(s): JPL Cost Share Partner(s): N/A	N/A
Science and Applications Data Processing	Delivery of calibrated/validated science and applications data products	Provider: JPL Lead Center: JPL Performing Center(s): JPL Cost Share Partner(s): DLR	N/A

GRACE-CONTINUITY

Formulation	Development	Operations

Project Risks

Risk Statement	Mitigation
If: DLR delays the Optical Bench Electronics (OBE) assembly delivery is delayed, Then: This will cause a delay in the LRI instrument delivery, which is on the project's critical path.	DLR (the contributing organization) holds a month of margin on OBE delivery internally.
If: the analysis of the GRACE-C spacecraft is not compliant with orbital debris requirements, Then: The project may need to incorporate material changes or breakable joints in the primary and secondary structure.	Send updated GRACE-C materials list to JSC for detailed analysis with less conservatism. JSC has a more accurate modeling and simulation capability.
If: Cost of Euro increases relative to Dollar, Then: The firm fixed priced contracts with Airbus and ACC provider will cost more than planned for in the project's allocated reserves for said contracts	Monitor the exchange rate and manage reserves.

Acquisition Strategy

NASA is leveraging the acquisition strategy from GRACE-FO. JPL is developing the LRI in partnership with DLR. JPL contracted with Airbus to provide the spacecraft, and ONERA to provide the accelerometers. DLR will provide the launch vehicle.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
Spacecraft	Airbus	Germany
Accelerometer	ONERA	France

GRACE-CONTINUITY

Formulation	Development	Operations

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	SRB	March 2024	PDR	Successful
Performance	SRB	May 2025	CDR	TBD
Performance	SRB	October 2025	SIR	TBD
Performance	SRB	October 2028	ORR	TBD

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Surface Biology and Geology - TIR	16.3	--	**0.0**	0.0	0.0	0.0	0.0
Atmosphere Observing System-Sky	4.9	--	**0.0**	0.0	0.0	0.0	0.0
Precipitation Measuring Mission (PMM)	15.7	--	**0.0**	0.0	0.0	0.0	0.0
Landsat Next	56.2	--	**0.0**	0.0	0.0	0.0	0.0
Sustained Climate Observations Future Missions	15.0	--	**0.0**	0.0	0.0	0.0	0.0
Earth Systematic Missions (ESM) Research	39.0	--	**10.6**	10.6	10.6	10.6	10.6
Surface Water and Ocean Topography Mission (SWOT)	13.7	--	**15.1**	0.8	0.0	0.0	0.0
Landsat 9	3.0	--	**3.1**	3.1	0.0	0.0	0.0
Sage III	4.2	--	**0.0**	0.0	0.0	0.0	0.0
Radiation Budget Instrument (RBI)	0.3	--	**3.8**	0.0	0.0	0.0	0.0
Sustainable Land Imaging	0.0	--	**70.0**	89.0	110.1	129.7	130.2
Earth from ISS	1.5	--	**0.0**	0.0	0.0	0.0	0.0
Total Solar Irradiance Sensor-2 (TSIS-2)	13.1	--	**10.0**	15.5	7.5	7.4	6.0
Earth Radiation Data Continuity	19.0	--	**10.0**	10.0	10.0	10.0	10.0
Ozone Mapping and Profiler Suite (OMPS)	0.7	--	**1.5**	1.5	1.6	1.6	1.7
Total Solar Irradiance Sensor-1 (TSIS-1)	4.1	--	**3.9**	0.0	0.0	0.0	0.0
CLARREO Pathfinder	19.0	--	**2.0**	0.0	0.0	0.0	0.0
Earth System Observatory Future Missions	15.4	--	**0.0**	0.0	0.0	0.0	0.0
Earth Science Program Management	60.0	--	**30.0**	30.0	30.0	30.0	30.0
Land Cover Science Project Office	1.4	--	**0.0**	0.0	0.0	0.0	0.0
Soil Moisture Active and Passive (SMAP)	6.5	--	**11.4**	0.0	0.0	0.0	0.0
Deep Space Climate Observatory	1.6	--	**0.0**	0.0	0.0	0.0	0.0
Global Precipitation Measurement (GPM)	19.8	--	**19.7**	0.0	0.0	0.0	0.0
Suomi National Polar-Orbiting Partnership (Suomi NPP)	4.4	--	**1.7**	1.7	1.7	1.7	1.7
Terra	11.4	--	**0.0**	0.0	0.0	0.0	0.0
Aqua	11.0	--	**0.0**	0.0	0.0	0.0	0.0
Aura	8.3	--	**0.0**	0.0	0.0	0.0	0.0
ICESat-2	20.5	--	**22.1**	0.0	0.0	0.0	0.0
GRACE Follow-On	4.6	--	**9.1**	0.0	0.0	0.0	0.0
Ocean Measurements Research	16.4	--	**5.4**	0.0	0.0	0.0	0.0
Earth Science Senior Review	0.0	--	**0.0**	58.8	67.6	80.3	88.7
Copernicus Polar Ice and Snow Topography	39.7	--	**0.0**	0.0	0.0	0.0	0.0
Plankton, Aerosols, Clouds, Ocean Ecosystem (PACE)	49.0	--	**26.6**	8.5	0.0	0.0	0.0
Surface Biology and Geology	42.6	--	**0.0**	0.0	0.0	0.0	0.0
Luce	0.0	--	**0.0**	0.0	0.0	0.0	0.0
Integrated Earth System Observatory Measurements	0.0	--	**2.8**	22.7	22.7	22.7	22.7
Total Budget	**538.6**	**--**	**258.7**	**252.4**	**261.8**	**293.9**	**301.5**

OTHER MISSIONS AND DATA ANALYSIS

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Earth Systematic Missions (ESM) Other Missions and Data Analysis includes operating missions and their science teams and competed research projects. Mission science teams define the scientific and applications requirements for their missions and generate algorithms used to process the data into useful data products. The research projects execute competitively selected investigations related to specific mission measurements.

Also included are Sustainable Land Imaging activities, as well as smaller instruments and missions in formulation and development, such as the Ozone Mapping and Profiler Suite Limb Sounder, and Total and Solar Irradiance Sensor-2.

Mission Planning and Other Projects

LANDSAT NEXT

The budget restructures the unaffordable Landsat Next mission, which required simultaneous development and launch of three satellites with significantly enhanced capabilities compared to the current Landsat satellites. NASA will study alternative mission architectures that could provide desired continuity of the Landsat imagery at a lower cost. Studies will include options that better leverage commercial capabilities and/or take advantage of current technology development efforts, leverage the design of the LandIS instrument development intended for Landsat Next, and other architecture options.

Landsat Next is the successor mission to Landsat 8 and Landsat 9. The U.S. Geological Survey (USGS) and NASA have collected Landsat imagery since 1972, resulting in the longest continuously acquired collection of space-based terrestrial observations. Landsat-derived information allows federal agencies, land managers, farmers, ranchers, and policymakers to make informed decisions about the environment and natural resources, including agriculture, water, and forests.

All funding to support studies and development of a new mission to provide continuity of Landsat imagery is carried in the Sustainable Land Imaging budget.

EARTH SYSTEMATIC MISSIONS (ESM) RESEARCH

ESM Research funds science teams that are composed of competitively selected investigators who analyze data from ESM projects to address key science questions. Most selected activities focus on science data analyses; however, some activities continue algorithm improvement and validation.

In this budget request, NASA has consolidated the Earth Observation Systems (EOS) Research project (for the Terra, Aqua, Aura, and Ice, Cloud, and Land Elevation Satellite [ICESat-2] science teams) and the Precipitation Science project (for the TRMM and GPM science teams) into the ESM Research project.

SUSTAINABLE LAND IMAGING (SLI)

The SLI project supports the development of space systems that will provide U.S. users with high-quality global land-imaging measurements that will continue the existing Landsat record and will address issues of continuity risk. Under the SLI framework, NASA maintains responsibility for developing, launching, and initial checkout of space systems. USGS is responsible for collecting and documenting user needs, developing the associated ground systems, and funds operations of the on-orbit spacecraft. USGS will also collect, calibrate, archive, process, and distribute data to users. Funding in this project supports studies of alternatives to the current Landsat Next mission architecture and development of a new mission to provide continuity of Landsat imagery.

TOTAL SOLAR IRRADIANCE SENSOR-2 (TSIS-2)

TSIS-2 will maintain and extend the 42-year measurement record of total solar irradiance and spectral solar irradiance beyond 2025. Researchers use solar irradiance data to understand how solar energy affects the Earth system over an 11-year cycle and longer time scales. NASA is in the process of updating the TSIS-2 launch readiness date to reflect more accurate project projections driven by challenges encountered by the spacecraft vendor. The previous launch readiness date was February 2025. The new launch readiness date will be no earlier than FY 2027 and the mission will operate for no less than three years.

EARTH RADIATION DATA CONTINUITY (ERDC)

Earth Radiation Data are the cornerstone of Earth science, providing the fundamental understanding of energy stored and circulating in the Earth System. ERDC uses data from the multiple radiation budget instruments in orbit (e.g., the Clouds and the Earth's Radiant Energy System [CERES], Terra, Aqua, Suomi National Polar-Orbiting Partnership [Suomi NPP], NOAA-20, and geostationary instruments) and ancillary measurements to produce integrated data products over the entire suite of radiation budget instruments. In total, scientists have used 32 instruments on 26 spacecraft thus far to produce an accurate, temporally consistent description of the radiation budget at the top of the atmosphere, within the atmosphere, and at the surface. ERDC is the only project worldwide whose prime objective is to produce global Earth radiation budget data from dedicated Earth radiation budget satellite instruments.

OZONE MAPPING AND PROFILER SUITE LIMB SOUNDER (OMPS-L)

OMPS is a three-part instrument that tracks the changes in the ozone layer and measures the concentration of ozone in the Earth's atmosphere: a nadir mapper that maps global ozone with about 50 km ground-resolution; a nadir profiler that measures the vertical distribution of ozone in the stratosphere; and OMPS-L, a limb profiler that measures ozone in the lower stratosphere and troposphere. NASA provided OMPS-L for integration on the OMPS instrument that currently operates on the Suomi NPP spacecraft. These measurements fulfill the U.S. treaty obligation to monitor global ozone concentrations for the Montreal Protocol. Therefore, to ensure data continuity, NASA provided a copy of this suite for NOAA's Joint Polar Satellite System-2 (JPSS-2) mission, now called NOAA-21, which launched in November 2022. The project budget also supports OMPS-L profilers for JPSS-3 and JPSS-4.

CLIMATE ABSOLUTE RADIANCE AND REFRACTIVITY OBSERVATORY (CLARREO) PATHFINDER (CPF)

CPF will measure sunlight reflected by the Earth and Moon with up to ten times better accuracy than current sensors. This improved accuracy will make it possible to detect and trend subtle changes in Earth's energy retention decades sooner than otherwise possible. The project designed CPF to serve as a calibration standard against which other NASA missions and commercial data providers could calibrate to improve accuracy. The project designed the CPF payload to be hosted on ISS.

To minimize cost in FY 2026, NASA will maintain the CPF instrument in storage while pursuing the possibility of commercial partnership for access to space and operations.

EARTH SCIENCE PROGRAM MANAGEMENT

The Earth Science Program Management budget supports critical flight project management functions executed by the ESM program offices at NASA GSFC and JPL. This budget supports:

- The GSFC conjunction assessment risk analysis function, which determines maneuvers required to avoid potential collisions between spacecraft and to avoid debris.
- The technical and management support for the international Committee on Earth Observation Satellites, which coordinates civil space-borne observations of Earth.
- Senior Review Board teams, who conduct independent reviews of the various flight projects in Earth Science.
- Earth Science division communications and public engagement activities.
- Earth Science division civil servant labor and ESM program offices at GSFC and JPL.

OCEAN MEASUREMENTS RESEARCH

Ocean Measurements Research combines all activities from the Ocean Surface Topography Science Team (OSTST), Ocean Salinity Science Team (OSST), and Ocean Vector Wind Science Team (OVWST) projects.

OSTST uses data from the Ocean Surface Topography Mission, Jason, Sentinel-6 Michael Freilich (S6-MF), and others to measure global sea surface height and study oceanography, weather, and extreme events. The OSTST is the official science team for the Jason and Sentinel-6 missions.

OSST supports the development and construction of surface salinity products from Aquarius, SMAP, and ESA’s Soil Moisture and Ocean Salinity (SMOS) mission. The team studies upper-ocean processes that impact variability of sea surface salinity and its role in processes, including the Earth’s water cycle and extreme weather events.

OWST uses data from the Quick Scatterometer satellite, RapidScat instrument, and other international missions, which measure ocean surface winds by sensing ripples caused by winds at the ocean’s surface. Scientists use this data to acquire global observations of surface wind velocity each day.

INTEGRATED EARTH SYSTEM OBSERVATORY (iESO) MEASUREMENTS

The iESO Measurements project funds cross-platform science teams and integrated products that require inputs from multiple missions, with the aim of enhancing outcomes for both foundational science and addressing societal challenges. iESO Measurements support science and applications that span multiple missions across the full suite of ESO missions (including all PACE, SWOT, NISAR, plus others over time). iESO works to define integrated or cross-platform science and applications.

OTHER MISSIONS AND DATA ANALYSIS

EARTH SCIENCE SENIOR REVIEW

Every three years, the Earth Science division conducts a Senior Review to evaluate missions that have completed, or will soon complete, their prime mission operation phase. The 2023 Senior Review concluded in September 2023. Budget for mission extensions after 2026 will depend upon recommendations made during the next Senior Review in 2026.

Operating Missions

PLANKTON, AEROSOL, CLOUD, OCEAN ECOSYSTEM (PACE)

The PACE mission extends and improves our understanding of how the ocean and atmosphere interact and reveals how aerosols may fuel phytoplankton growth at the ocean surface. PACE's unprecedented spectral coverage is providing the first-ever global measurements designed to identify phytoplankton community composition. This will significantly improve our ability to understand Earth's changing marine ecosystems, manage natural resources (e.g., fisheries), and identify harmful algal blooms.

PACE's primary sensor, the Ocean Color Instrument (OCI), is a highly advanced optical spectrometer that measures properties of light over portions of the electromagnetic spectrum extending key ocean color data records. The interaction of sunlight with substances or particles in seawater such as chlorophyll (a green pigment found in most phytoplankton species) determine the color of the ocean. By monitoring global phytoplankton communities and abundance with unprecedented detail, through measurement of ocean color, OCI helps improve our understanding of the complex systems that drive ocean ecology.

PACE includes two contributed polarimeters to measure how the oscillation of sunlight within a geometric plane - known as its polarization - changes by passing through clouds, aerosols, and the ocean. Measuring polarization states of ultraviolet-to-shortwave light at various angles provides detailed information on the atmosphere and ocean (e.g., particle size and composition). PACE successfully launched on February 8, 2024.

SURFACE WATER AND OCEAN TOPOGRAPHY MISSION (SWOT)

Launched on December 16, 2022, SWOT makes high-resolution measurements of ocean circulation, kinetic energy, and dissipation to improve ocean circulation models and predictions of weather. SWOT also measures the water levels in millions of lakes and water bodies and the discharge of all major rivers to obtain a surface water inventory on the continents and allow for deeper understanding of the natural water cycle and improved water management.

SWOT complements the Jason oceanography missions, as well as Sentinel-6, GPM, SMAP, and Gravity Recovery and Climate Experiment Follow-On (GRACE-FO). SWOT is an international collaborative mission with CNES, CSA, and United Kingdom Space Agency (UKSA).

SWOT will remain in prime mission operations until September 2026.

LANDSAT 9

The Landsat data series, initiated in 1972, is the longest continuous record of changes in Earth's surface as seen from space and the only U.S. satellite system designed and operated to make repeated observations of the global land surface at moderate resolution. Landsat data is available at no cost to users, providing a unique resource for people who work in fields such as agriculture, geology, forestry, regional planning, education, and mapping.

Landsat 9, launched in September 2021, extends the record of multi-spectral, moderate resolution Landsat quality data, and meets operational and scientific requirements for observing land use and land change. Landsat 9 is a collaboration between NASA and the USGS and is a cornerstone of the SLI effort. Landsat 9 is currently in prime mission operations through December 2026.

TOTAL SOLAR IRRADIANCE SENSOR-1 (TSIS-1)

Launched in December 2017, TSIS-1 is providing absolute measurements of total solar irradiance and spectral solar irradiance which is important for accurate scientific models of energy balance and solar variability, allowing scientists to better understand solar variability at both short and long-time scales.

The 2023 Senior Review approved extended mission operations for TSIS-1 through FY 2026.

SOIL MOISTURE ACTIVE AND PASSIVE (SMAP)

SMAP, launched in January 2015, maps soil moisture with unprecedented accuracy, resolution, and coverage to improve monitoring and forecasting of water resources and weather. Although SMAP's active radar instrument failed in July 2015, its radiometer continues to provide global mapping of soil moisture with accuracy, resolution, and coverage that exceeds the capability of other on-orbit systems.

The 2023 Senior Review approved extended mission operations for SMAP through FY 2026.

GLOBAL PRECIPITATION MEASUREMENT (GPM)

GPM, launched in February 2014, provides a three-dimensional view of tropical storm structural and microphysical properties, and provides estimates of storm rainfall accumulations for major storm events. The GPM Microwave Imager measures energy from different types of precipitation within clouds to estimate heavy to light rain and to detect falling snow. The Dual-frequency Precipitation Radar provides three-dimensional information about precipitation particles, including their size distributions and associated rainfall rates. GPM is a joint mission with JAXA.

The 2023 Senior Review approved extended mission operations for GPM through FY 2026.

ICE, CLOUD, AND LAND ELEVATION SATELLITE (ICESAT-2)

ICESat-2, launched in September 2018, measures global elevation to determine sea ice thickness and ice sheet mass change. It also provides topography and vegetation data around the globe, supporting estimates of biomass and carbon in aboveground vegetation, measurements of ocean topography, inland water body elevation, and cloud properties. ICESat-2 has one instrument, the Advanced Topographic Laser Altimeter System, which measures the round-trip time of laser light from the observatory to Earth and back as the basis for the mission’s elevation measurements.

The 2023 Senior Review approved extended mission operations for ICESat-2 through FY 2026.

OTHER MISSIONS AND DATA ANALYSIS

GRAVITY RECOVERY AND CLIMATE EXPERIMENT FOLLOW-ON (GRACE-FO)

GRACE-FO, launched in May 2018, provides mass change observations and high-resolution global models of Earth's gravity field, allowing scientists to gain new insights into the dynamic processes of Earth's water cycle. GRACE-FO also maps large earthquakes and tectonic processes. GRACE-FO data was vital to minimizing the gap in mass change measurements following the decommissioning of the original GRACE mission in 2017. GRACE-FO is a partnership with the German Research Center for Geosciences and was in prime mission operations through May 2023.

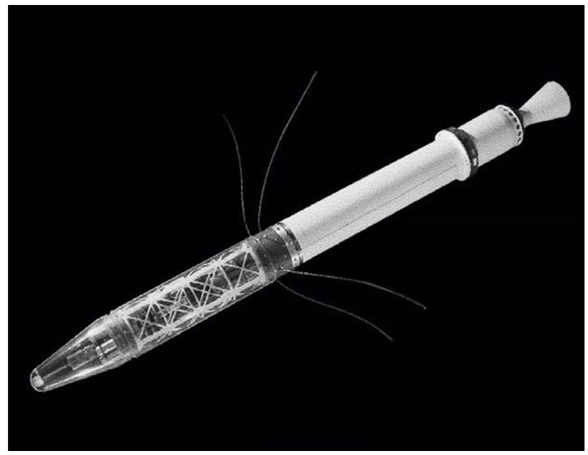
The 2023 Senior Review approved extended mission operations for GRACE-FO through FY 2026.

EARTH SYSTEM EXPLORERS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**15.4**	**--**	**5.0**	**61.8**	**84.9**	**43.4**	**39.4**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



NASA's Earth System Explorers will continue the tradition of the first U.S. satellite Explorer 1 (illustrated above), which was launched in 1958.

NASA's Earth System Explorers (ESE) program provides competitive opportunities for medium-sized instruments and missions that address specific science and application needs identified in the 2017 National Academies Decadal Survey.

These Principal Investigator-led projects will employ innovative, streamlined, and efficient management approaches to constrain design, development, and operations costs. Distinct from Earth Venture instruments and missions, Earth System Explorers will focus on one or more of the seven identified targeted observables important to our understanding of Earth system science:

- atmospheric winds;
- greenhouse gases;
- ice elevation;
- ocean surface winds and currents;
- ozone and trace gases;
- snow depth and snow water equivalent; and
- terrestrial ecosystem structure.

The cost cap is set at $310 million (in FY 2024 dollars) excluding the cost of standard launch vehicle services.

EXPLANATION OF MAJOR CHANGES IN FY 2026

To achieve cost savings, NASA reduced the Explorer program funding, allowing only one mission selection in FY 2026. Explorer program management functions will transition to other ESD organizations to achieve efficiencies.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

NASA plans to make a single final mission selection and will delay initiation of this new mission to no earlier than the first quarter of FY 2027.

EARTH SYSTEM EXPLORERS

Program Elements

EARTH SYSTEM EXPLORERS FUTURE MISSIONS

Earth System Explorers Future Mission funding supports the selection of new missions through AO solicitations. This funding supports proposals selected during Step 1 of the proposal process while conducting Phase A formulation studies and will support missions selected for full mission implementation.

Program Schedule

Date	Significant Event
FY 2026	Select ESE-1 proposal with delayed implementation
FY 2029	Release ESE-2 AO

Program Management & Commitments

Program Element	Provider
ESE Program Management	Provider: TBD Lead Center: TBD Performing Center(s): TBD Cost Share Partner(s): TBD

Acquisition Strategy

NASA will select all Earth System Explorers through full and open competition using a two-step proposal process.

MAJOR CONTRACTS/AWARDS

None.

INDEPENDENT REVIEWS

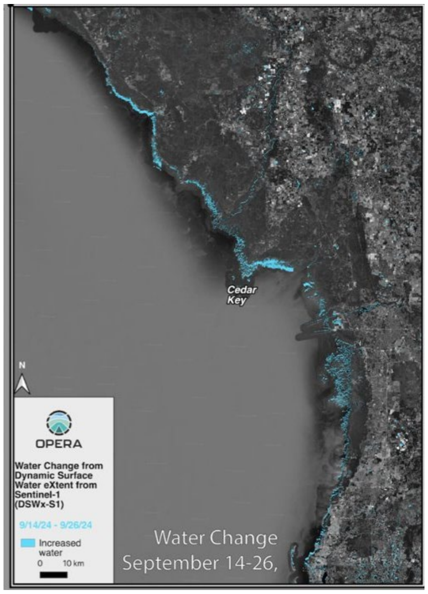
None.

RESPONSIVE SCIENCE INITIATIVES

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	51.4	--	92.9	89.9	89.2	89.9	89.2

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



The product was created by Observational Products for End-Users from Remote Sensing (OPERA) and used by FEMA to map flooded areas in the aftermath of Hurricane Helene in September 2024. It leverages data from multiple Earth observing satellites to map surface water extent - highlighting the communities that were experiencing extreme flooding (image credit: JPL).

Responsive Science Initiatives (RSI) includes projects that connect user needs with NASA remote sensing observations and Earth system science. RSI provides focused support for user-centered research activities while attending to the complex managerial requirements and stakeholder arrangements of projects that involve other agencies or commercial satellite data. In addition, RSI supports technology development and modeling efforts that address user needs.

RSI is currently comprised of six major projects: Agriculture, Commercial Satellite Data Acquisition, Crosscutting Activities, Interagency Satellite Observation Needs (ISON), Wildland Fires, and AI and Advanced Modeling Applications.

Through these projects, RSI ensures that NASA is acquiring commercial data and creating Earth observation data products, tools, and models that directly address user needs.

EXPLANATION OF MAJOR CHANGES IN FY 2026

To achieve cost savings, NASA made reductions to most program activities.

This budget cancels the Responsive Science Initiatives - Research project.

Responsive Science Initiatives - Modeling is renamed and refocused to emphasize AI and Advanced Modeling Applications, identified as some of the highest impact needs by users outside the scientific community. Other efforts within this project will have major reductions.

The budget terminates or significantly reduces lower-priority activities within Crosscutting Activities, including support for the Earth Information System and Global Partnerships.

The budget reduces funding for the Wildland Fires and Interagency Satellite Observation Needs projects. NASA will work with partner agencies to determine how to prioritize work within those projects.

The CSDA project will focus data purchases strategically to reduce costs. It will add calibration-validation support for the private sector to expand commercial value chain and use commercial data more broadly in concert with the NASA portfolio.

The Agriculture project will have a minor reduction and will continue most planned work.

RESPONSIVE SCIENCE INITIATIVES

KEY ACHIEVEMENTS PLANNED FOR FY 2026

Within the Agriculture project in FY 2026, NASA will lead and coordinate a global, long-term effort to provide standardized agriculture products, Essential Agriculture Variables, for use by the agriculture community for supporting advanced tools for risk management, policy development, advanced farm management planning tools, and early warning of agriculture impacts due to weather extremes. NASA Acres will provide rural workforce training/education in the use of Earth observations for agriculture with existing capabilities at agriculture extension programs, commodity associations, 4-H, and Future Farmers of America.

The CSDA project will continue to identify, evaluate, and acquire data from commercial sources to support NASA's Earth science research and applications activities. NASA will continue working on interagency coordination of data purchases and evaluations to support the reduction of duplicate data buys and associated data assessment activities. It will add calibration-validation support so that all users can use commercial data more broadly in concert with the NASA portfolio.

In FY 2026, the ISON program anticipates it will operate and implement a subset of the solutions identified in the SNWG 2016-2022 assessment cycles with several solution outputs becoming operational. Following the conclusion of SNWG-2024, the fifth assessment, the respective implementation teams will begin formulating a small subset of those solutions, involving stakeholders and end user partners across various federal agencies.

In FY 2026, the Wildland Fires project will continue to work with agencies, states, and communities to provide useful NASA data, models, and tools that focus on communicating, guiding, and transitioning science, tools, and models to operational agencies and communities. The project works throughout pre-fire, active fire, and recovery timeframes.

NASA’s application team, in partnership with FEMA Region IV, is using AI to harmonize optical and synthetic aperture radar assets to rapidly detect and measure post-disaster debris and provide recommendations for optimal removal routes. The teams will test the model’s rapid and automated detection of disaster debris across different landscapes and hazard types to ensure optimal performance ahead of final later in FY 2026.

Program Elements

CROSSCUTTING ACTIVITIES

The Crosscutting Activities project brings recent developments from NASA's efforts in research and remote sensing to federal and state agencies, the private sector, the public, and other partners. The aim is to put relevant information in the hands of decisionmakers and the public in a way that they can use it.

Activities are crosscutting in two ways: they build on outcomes from across the NASA Earth Science R&A element and the Applied Sciences project; and/or they combine results and data from across the federal government to offer a complete view of an aspect of Earth science.

The primary goal of the Crosscutting Activities project is to develop and support products and tools that meet user-determined needs. This project also accelerates the uptake of Earth science and improves accessibility to data and tools through development of user interface tools and experiences.

RESPONSIVE SCIENCE INITIATIVES

INTERAGENCY SATELLITE OBSERVATION NEEDS

The ISON project supports NASA's participation in the U.S. Group on Earth Observation's Satellite Needs Working Group, which identifies high priority, sustained, and unmet needs for satellite Earth observation. The SNWG conducts a biennial survey of federal civil agencies to formally document and communicate satellite Earth-observing needs to NASA. Through the ISON project, NASA, in partnership with USGS and NOAA, assesses each submitted satellite need, and proposes potential solutions that help satisfy the agencies' observational needs. The ISON project's analysis of other agencies' observational needs and recommendations of potential solutions inform agency planning and budgeting. The ISON project also oversees the implementation of the solutions.

AGRICULTURE

The Agriculture project promotes the use of Earth observations for understanding the functioning and resilience of food systems. The area supports multi-organizational consortia to enhance domestic productivity, international food security, and improved agricultural practices, especially for economic progress and humanitarian pursuits. The Agriculture project comprises two consortia: NASA Harvest, focusing on global food security issues; and NASA ACRES, focusing on domestic agricultural needs. ACRES is NASA's first consortium that focuses on domestic agriculture and bridges the gap from space-to-farm and workforce-to-impact together with U.S. farmers, ranchers, and other agrifood system decision makers who address the most pressing challenges to sustainable, productive, and resilient agriculture, both today and into the next generation. NASA's Harvest and ACRES agriculture consortia focus on applying satellite Earth observation information to the most pressing agricultural and food security challenges facing U.S. farmers and the global agriculture community. These consortia bring public and private sectors together to enable flexible partnerships that enable rapid delivery of Earth observation solutions to agriculture decision makers.

WILDLAND FIRES

The Wildland Fires project supports the improved prediction, management, and mitigation of overall impacts of wildfires within the United States and around the world. Activities include developing and transitioning research, technology, and applications to operational fire management agencies and organizations in the United States and across the globe. This project focuses on four functional themes: improved forecasting and mitigating pre-fire risk; improved detection and monitoring of active fires; improved prediction of post-fire hazards, including landslides; and air quality impacts.

AI & ADVANCED MODELING APPLICATIONS

The RSI Modeling project sponsors AI and other advanced modeling efforts to address decision-making. The project includes directed and competed efforts to develop new models and apply existing models to support decision-making. This project aims to further the use of AI (including large Earth foundation models and large language models) to dramatically decrease the amount of time and expertise needed for application development or scaling.

RESPONSIVE SCIENCE INITIATIVES

COMMERCIAL SATELLITE DATA ACQUISITION

The CSDA project identifies, evaluates, and acquires data from commercial sources to support NASA's Earth science research and applications activities. This provides a cost-effective means to augment and/or complement the suite of Earth observations made available by NASA, other U.S. government agencies, and international partners. The CSDA project also supports efforts that use commercial data in research and applications, and efforts to improve calibration and validation of commercial data sources.

Program Schedule

Date	Significant Event
Q1 FY 2026	ROSES-2025 selections within six to nine months of receipt of proposals
Q2 FY 2026	ROSES-2026 solicitation release
Q1 FY 2027	ROSES-2026 selections within six to nine months of receipt of proposals
Q2 FY 2027	ROSES-2027 solicitation release
Q1 FY 2028	ROSES-2027 selections within six to nine months of receipt of proposals
Q2 FY 2028	ROSES-2028 solicitation release
Q1 FY 2029	ROSES-2028 selections within six to nine months of receipt of proposals
Q2 FY 2029	ROSES-2029 solicitation release
Q1 FY 2030	ROSES-2030 solicitation release
Q2 FY 2030	ROSES-2030 selections within six to nine months of receipt of proposals

Program Management & Commitments

Program Element	Provider
Crosscutting Activities	Provider: Various Lead Center: HQ Performing Center(s): ARC, GSFC, JPL, LaRC, MSFC Cost Share Partner(s): None
ISON	Provider: Various Lead Center: HQ Performing Center(s): ARC, GSFC, JPL, LaRC, MSFC Cost Share Partner(s): None

RESPONSIVE SCIENCE INITIATIVES

Program Element	Provider
Agriculture	Provider: HQ Lead Center: HQ Performing Center(s): ARC, GSFC, MSFC Cost Share Partner(s): Agmatix, BMGF, Corteva, CSU Carbon Solutions Center, ESA, General Mills, Google, Kansas State University, Maui United Way, National Grape Research Association, National Sorghum Producers, University of Maryland, Unilever, University of Strasbourg, USAID, USDA, USGS
Wildland Fires	Provider: Various Lead Center: HQ (competitive selections), ARC (implementation) Performing Center(s): ARC, GSFC, JPL, LaRC, MSFC Cost Share Partner(s): None
AI and Advanced Modeling Applications	Provider: HQ Lead Center: HQ Performing Center(s): ARC, GSFC, MSFC Cost Share Partner(s): IBM, ESA
CSDA	Provider: Various Lead Center: GSFC Performing Center(s): GSFC, JPL, MSFC Cost Share Partner(s): NOAA

Acquisition Strategy

NASA bases the Earth Science Responsive Science Initiative acquisitions on full and open competition to the greatest extent possible. NASA directs approximately one quarter of the portfolio. Grants are peer reviewed and selected based on NASA research announcements and other related announcements. NASA may acquire certain research, instruments, or services without competition if there is a clear scientific, technological, or programmatic benefit to NASA.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
CSDA	IDIQ vendors per awarded task orders	Various (vendor location)
Agriculture	University of Maryland	College Park, Maryland
Satellite Needs Working Group	University of Maryland	College Park, Maryland
Satellite Needs Working Group	University of Alabama, Huntsville	Huntsville, Alabama

RESPONSIVE SCIENCE INITIATIVES

INDEPENDENT REVIEWS

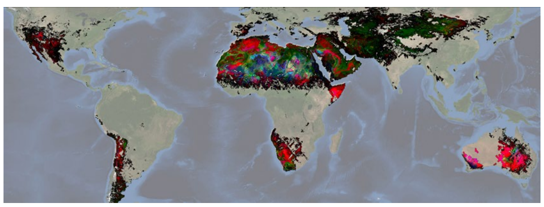
Review Type	Performer	Date of Review	Purpose	Outcome
Relevance	Applied Sciences Advisory Committee	Spring 2025	Discuss Earth Science to Action Strategy	TBD

EARTH SYSTEM SCIENCE PATHFINDER

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Venture Class Missions	165.6	--	**97.5**	76.1	73.0	127.5	130.5
Other Missions and Data Analysis	51.9	--	**5.5**	5.5	5.5	5.5	5.5
Total Budget	**217.5**	**--**	**103.0**	**81.6**	**78.5**	**133.0**	**136.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



Shown here is the first global map of minerals measured by EMIT. These minerals interact with the environment when blown into the atmosphere, and these new measurements help researchers understand their impact. The more than one billion measurements with 10s of mineral types measured by EMIT also support discovery and assessment of mineral resources, including critical minerals, as well as assessment of mineral hazards.

The Earth System Science Pathfinder (ESSP) program provides regular opportunities for competitively selected low-cost and targeted Earth science investigations that accommodate new and emerging scientific priorities and measurement capabilities. Principal investigators lead these focused projects that contribute to studies of the atmosphere, oceans, land surface, polar ice regions, or solid Earth.

ESSP projects include space missions, remote sensing instruments for space-based missions of opportunity, and extended duration airborne-science missions. This portfolio of missions and investigations provides opportunity for investment in innovative Earth science that enhances NASA's capability for better understanding the current state of the Earth system.

EXPLANATION OF MAJOR CHANGES IN FY 2026

To achieve cost savings, the INCUS and PolSIR Venture class missions will not continue; NASA will close them out in FY 2026. CYGNSS, a Venture class mission measuring surface winds and soil moisture and nearing end of life, will also close out in FY 2026.

The GLIMR instrument (originally an Earth Venture-Instrument selection, and nearly completed) will be delivered and maintained in storage as NASA seeks commercial satellite public/private partnerships for access to space and operations. The previous plan would require NASA investment in integration to spacecraft and access to space that cannot be supported at this budget level. See the Venture Class Missions description for more details.

To achieve cost savings, NASA will not release the Earth Venture Announcement of Opportunity planned for FY 2026 and will release the next opportunity in FY 2028.

OCO-2 and OCO-3, two climate missions beyond their prime mission, will close out and end in FY 2026.

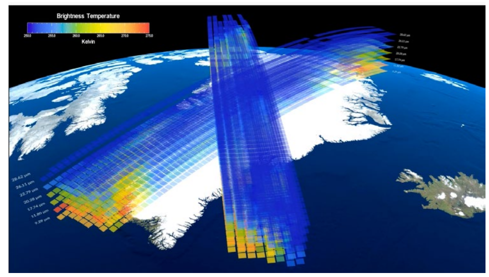
VENTURE CLASS MISSIONS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	165.6	--	97.5	76.1	73.0	127.5	130.5

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA's Earth Venture Class Missions provide frequent flight opportunities for high-quality, low-cost Earth science investigations that can be developed and flown in five years or less. NASA selects the investigations through open competitions to ensure broad community involvement and encourages innovative approaches. Successful investigations enhance our capability to understand the current state of the Earth system and enable continual improvement in the prediction of future changes. Solicitations include both space-borne and airborne/suborbital opportunities.



Visualization emphasizing two passes of one of the two Polar Radiant Energy in the Far InfraRed Experiment (PREFIRE) spacecraft over Greenland. Change in emission at the intersection of the passes derives the information about the rates of atmospheric emission.

NASA established Venture Class Missions in response to recommendations in the 2007 National Academies Decadal Survey and the 2017 National Academies Decadal Survey endorsed Venture Class Missions.

All Earth Venture-class missions and instruments are cost- and schedule-constrained and openly competed. Earth Venture missions complement the other mission elements within Earth Science, enabling more frequent launch opportunities and demonstration of innovative ideas and higher-risk technologies.

Earth Venture Class Missions include the following components:

- Space missions of opportunity that can be hosted on space-borne platforms, be small space-based missions, or will fly on-orbit demonstrations. Earth Venture opportunities planned for the future are described by cost class and can be scaled before the opportunity is released covering a range up to $300 million. Costs are inclusive of Principal Investigators (PI) managed mission cost, access to space, and accommodations.
- Earth Venture Suborbital (EVS) investigations support suborbital-science investigations. NASA selects multiple investigations within each EVS solicitation call, individually cost-capped at no more than $30 million.

EXPLANATION OF MAJOR CHANGES IN FY 2026

To achieve cost savings, the Investigation of Convective Updrafts (INCUS, in development) and Polarized Submillimeter Ice-cloud Radiometer (PolSIR, in formulation) Venture class missions in development will not continue; NASA will close them out in FY 2026.

Cyclone Global Navigation Satellite System (CYGNSS), a Venture class mission measuring surface winds and soil moisture and nearing end of life, will also close out in FY2026.

VENTURE CLASS MISSIONS

To achieve cost savings, NASA will not release the Earth Venture Announcement of Opportunity planned for FY 2026 and will release the next opportunity in FY 2028.

Program Element

VENTURE CLASS FUTURE MISSIONS

Earth Venture Class Future Mission funding supports the selection of new missions through EVX AO solicitations and the selection of new suborbital missions through EVS AO solicitations.

TROPOSPHERIC EMISSIONS: MONITORING OF POLLUTION (TEMPO) (EVI-1, SELECTED IN 2012)

The TEMPO instrument measures atmospheric pollution covering most of North America. A commercial communications satellite, Intelsat-40e, hosts the instrument and launched in April 2023. On an hourly basis, TEMPO measures atmospheric pollution spanning from Mexico to Canada, and from the Atlantic Ocean to the Pacific Ocean. TEMPO provides measurements that include the key elements of air pollution chemistry (e.g., ozone, nitrogen dioxide) in the lowest part of the atmosphere. Measurements from geostationary orbit capture the inherent high variability in the daily cycle of emissions and chemistry. Measuring across both time and space creates a revolutionary dataset that provides understanding and improves prediction of air quality and climate forcing. TEMPO will continue prime operations through June 2025. This budget request includes funding for extended operations through the next Senior Review in FY 2026.

ECOSYSTEM SPACEBORNE THERMAL RADIOMETER EXPERIMENT ON SPACE STATION (ECOSTRESS) (EVI-2, SELECTED IN 2014)

ECOSTRESS launched in June 2018 to help scientists observe changes in global vegetation from ISS. The sensors give scientists new ways to see how changes in environment or land use affect agriculture, forests, and ecosystems. ECOSTRESS uses a high-resolution thermal infrared radiometer to measure plant evapotranspiration, the loss of water from growing leaves, and evaporation from the soil. These data observe the critical link between the water cycle and effectiveness of plant growth, both naturally and agriculturally. ECOSTRESS began extended operations in August of 2019 and proposed to the 2020 Senior Review for extension through September 2023. NASA conducted an out-of-cycle Senior Review in December 2022 and approved ECOSTRESS to continue operations through September 2026 to align with the 2026 Senior Review. ISS extended site accommodations for ECOSTRESS through its end-of-life.

GLOBAL ECOSYSTEM DYNAMICS INVESTIGATION (GEDI) LIDAR (EVI-2, SELECTED IN 2014)

GEDI is a geodetic-class laser ranging system that provides three-dimensional measurements of the Earth's forests from ISS. GEDI measures the height of the Earth's temperate and tropical forests and their vertical structure. This data will help scientists determine, for the first time, how much carbon forests store as biomass, and the net impact of deforestation and subsequent regrowth on atmospheric carbon dioxide. GEDI is the first mission optimized for vegetation measurements from space and provides the first global and transparently available data set that various U.S. agencies can use at relevant scales for both policy and land management.

Launched in December 2018, GEDI completed its prime mission in April 2021. NASA conducted an out-of-cycle Senior Review in December 2022 and approved GEDI to continue operations through September 2026 to align with the 2026 Senior Review. NASA temporarily stowed GEDI on an ISS storage site between March 2023 and April 2024 while another mission operated at its location. NASA reinstalled GEDI at its original location and ISS has approved site accommodations for GEDI through the end of life of the ISS.

EARTH VENTURE MANAGEMENT

Earth Venture Management supports the development of AO solicitations and the technical, management, and cost evaluations of proposals received in response to the solicitations. The budget supports critical flight project management functions executed by the Earth System Science Pathfinder (ESSP) program office and Senior Review Board teams who conduct independent reviews of the ESSP flight projects. Additionally, this project supports the airborne assets that the EVS investigations rely on for their airborne campaigns, as well as large aircraft procurements.

As part of flight program office consolidation for a smaller portfolio of missions, the Earth System Science Pathfinder Office will support a broader suite of Earth science mission selection and evaluation activities in FY 2026.

MAIA (EVI-3, SELECTED IN 2016)

The MAIA investigation will use a spaceborne multi-angle imager to remotely determine aerosol characteristics and assess linkages between different airborne particulate matter (PM) types and human health (cardiovascular and respiratory disease, and premature death). This project will measure concentrations of fine and coarse particles, sulfate, nitrate, organic and elemental carbon, and mineral dust particles in major urban areas around the globe at one-kilometer spatial resolution. The MAIA science team plans to use established epidemiological methodologies to associate human exposure to particulate matter with adverse health outcomes.

MAIA's primary spaceborne instrument is a specialized digital camera mounted on a two-axis gimbal on a LEO spacecraft, which will collect multi-angle spectropolarimetric imagery over a globally distributed set of major metropolitan areas. It will use this data in conjunction with surface-based pollution monitors and atmospheric models to map PM concentrations and types and conduct epidemiological studies over a three-year prime mission.

ASI has offered to partner on this mission, contributing a PLATiNO satellite to host the MAIA instrument, launch vehicle for access to space, and ground services to support MAIA during operations. NASA plans to provide MAIA instrument operations, ground network operations, and data transportation. The MAIA instrument completed testing and went into storage in October 2022 while development continued on the ASI satellite and launch vehicle.

VENTURE CLASS MISSIONS

TIME-RESOLVED OBSERVATIONS OF PRECIPITATION STRUCTURE AND STORM INTENSITY WITH A CONSTELLATION OF SMALLSATS (TROPICS) (EVI-3, SELECTED IN 2016)

TROPICS is making measurements over the tropical latitudes to observe the thermodynamics and precipitation structures of tropical cyclones and hurricanes. TROPICS observations include the temperature within the atmosphere, spatially and vertically resolved, as well as humidity, cloud ice, precipitation horizontal structure, and instantaneous surface rain rates. These measurements and the increased temporal resolution provided by the constellation are contributing to a better understanding of life cycles and the environmental factors that affect the intensification of hurricanes. The TROPICS mission consists of three CubeSats, each with a cross-track scanning multiband passive microwave radiometer in an IU payload (IU, a CubeSat unit, is equivalent to a four-inch cubic box).

Improved knowledge of storm processes will result in better weather modeling, which allows meteorologists to improve forecasts of storm tracks and intensity, ultimately enabling better warnings to the general population and more effective disaster management. TROPICS launched in May of 2023, and is approved to operate through its end of life expected in FY 2025 - FY 2026.

EARTH VENTURE SUBORBITAL-4 (EVS-4; SELECTED IN 2024)

In April 2024, NASA selected six new airborne missions that include studies of fire-induced clouds, Arctic coastal change, air quality, landslide hazards, shrinking glaciers, and emissions from agricultural lands. These EVS-4 investigations include:

- Arctic Coastlines - the Frontlines Of Rapidly Transforming Ecosystems (FORTE) will combine optical and radar measurements from planes, helicopters, boats, and drones to measure water flows and chemistry and observe how ecosystems respond to changing conditions.
- FarmFlux will measure the amount of greenhouse gases, nitrogen, and other pollutants emitted from agricultural lands across the Midwestern United States.
- Hemispheric Airborne Measurements of Air Quality (HAMAQ) will investigate areas of poor air quality over Mexico City and a to-be-determined U.S. city. HAMAQ will also test how satellite information can help improve ground-based forecasting and mitigation strategies.
- INjected Smoke and PYRocumulonimbus Experiment (INSPYRE) studies pyrocumulonimbus clouds, which form when wildfires burn hot enough to make their own weather. Flying over the western United States and Canada, researchers will examine the fire characteristics that produce pyrocumulonimbus clouds, while exploring the mechanisms that lead these clouds to inject smoke into the stratosphere.
- Landslide Change Characterization Experiment (LACCE) will combine airborne measurements with land-based sensors to track the way slopes and landslides are changing as water moves differently across the landscape.
- Snow4Flow will quantify the retreat of glaciers and ice sheets in ways that can lead to better projections of land-ice change. In Alaska, southeastern Greenland, the Canadian Arctic, and Svalbard, the team will use microwave and high-frequency radar sounders to measure snow accumulation, ice melting, and changes in ice thickness and motion.

VENTURE CLASS MISSIONS

EARTH SURFACE MINERAL DUST SOURCE INVESTIGATION (EMIT) (EVI-4; SELECTED IN 2018)

EMIT uses a sensor mounted to the exterior of ISS to map the mineral composition of regions that produce dust aerosols around the world. Scientists do not currently have a global inventory of the mineral sources of dust, and as a result, the global impacts of dust on atmospheric heating and cooling, weather, and other aspects of Earth's environment are not well established.

EMIT's hyperspectral instrument measures the different wavelengths of light emitted by minerals on the surface of deserts and other dust sources to determine their composition. By measuring in detail which minerals make up the dust, EMIT helps answer the critical question of whether mineral-based dust has a cooling or warming effect on the atmosphere. EMIT's modeling component uses the data collected to advance the understanding of the role of atmospheric dust in Earth's climate and better predict future states. NASA launched EMIT to the ISS in July of 2022 and the project completed its prime mission in November 2023. The team proposed an out-of-cycle Senior Review in December 2023 for mission extension through September 2026 to align with the 2026 Senior Review.

POLAR RADIANT ENERGY IN THE FAR INFRARED EXPERIMENT (PREFIRE) (EVI-4; SELECTED IN 2018)

PREFIRE consists of miniaturized thermal spectrometers on a pair of small CubeSat satellites to measure far-infrared emissions and how they change throughout the day and over seasons. These CubeSats orbit Earth's poles to probe a little-studied portion of the radiant energy emitted by Earth for clues about Arctic warming, sea-ice loss, and icesheet melting. These observations allow scientists to assess how changes in thermal infrared emissions at the top of Earth's atmosphere are related to changes in cloud cover and surface conditions below, such as the amount of sea ice and meltwater on the surface of ice. PREFIRE launched in mid-2024, completed its Prime Operations in 2025, and was approved for extended operations until the next Senior Review in FY 2026.

GLIMR (EVI-5; SELECTED IN 2019)

GLIMR was planned to provide unique observations of ocean biology, chemistry, and ecology in the Gulf of America, portions of the southeastern United States coastline, and where major rivers enter the Atlantic Ocean. It will closely monitor the health of the oceans and assess risks for coastal communities and fisheries. GLIMR would operate from a geosynchronous orbit, where it will monitor a wide area centered on the Gulf of America for up to 15 hours a day. GLIMR was a competitively selected, cost-capped, PI-led EVI. The access to space solution for GLIMR is the responsibility of NASA and is currently under study, but cost effective rideshare opportunities to geosynchronous orbit have not been available. To achieve cost savings, NASA will complete the development of the GLIMR instrument in FY 2026 and store the instrument while seeking commercial satellite public/private partnerships for access to space and operations.

LIBERA (EVC-1; SELECTED IN 2020)

Libera was NASA’s first mission selected under an EV Continuity opportunity to provide critical Earth system measurements. The project is planned to provide continuity for the Clouds and the Earth’s Radiant Energy System Earth Radiation Budget (ERB) observations. Its primary goal is to extend the ERB record seamlessly, which is essential for understanding Earth's energy balance. The project will deliver the Libera instrument in 2026 to NOAA for hosting on the Joint Polar Satellite System (JPSS)-4 satellite, targeted for launch in 2027.

Program Schedule

Following the National Academies' recommendation, NASA is "discontinuing the distinction between EV Mission and EV Instrument proposals." In the schedule below NASA has marked the Earth Venture solicitation as simply "EVX" and will decide the size/type of the solicitation when it releases the AO. This will allow better tailoring to the needs of the division and available resources.

Date	Significant Event
FY 2026	Libera instrument delivery
FY 2028	EVX-1 solicitation released
FY 2028	Libera/JPSS-4 launch readiness

Program Management & Commitments

The ESSP program at LaRC manages the Venture Class projects. The “Provider” in the following table lists the PI institution for each project.

Program Element	Provider
EVS-4: FORTE	Provider: City University of New York Lead Center: LaRC Performing Center(s): ARC, GSFC Cost Share Partner(s): University of Maryland Baltimore County
EVS-4: FarmFlux	Provider: NASA Lead Center: LaRC Performing Center(s): ARC, GSFC Cost Share Partner(s): N/A
EVS-4: HAMAQ	Provider: NASA Lead Center: LaRC Performing Center(s): LaRC Cost Share Partner(s): N/A
EVS-4: INSPYRE	Provider: Naval Research Laboratory - Monterey Lead Center: LaRC Performing Center(s): ARC Cost Share Partner(s): N/A

VENTURE CLASS MISSIONS

Program Element	Provider
EVS-4: LACCE	Provider: NASA Lead Center: LaRC Performing Center(s): JPL Cost Share Partner(s): N/A
EVS-4: Snow4Flow	Provider: University of Arizona Lead Center: LaRC Performing Center(s): GSFC Cost Share Partner(s): N/A
EVI-1: TEMPO	Provider: Smithsonian Astrophysical Observatory Lead Center: LaRC Performing Center(s): LaRC, GSFC Cost Share Partner(s): N/A
EVI-2: ECOSTRESS	Provider: JPL Lead Center: JPL Performing Center(s): JPL Cost Share Partner(s): United States Department of Agriculture
EVI-2: GEDI	Provider: University of Maryland Lead Center: GSFC Performing Center(s): GSFC Cost Share Partner(s): N/A
EVI-3: TROPICS	Provider: MIT Lincoln Laboratory Lead Center: LaRC Performing Center(s): GSFC Cost Share Partner(s): N/A
EVI-3: MAIA	Provider: JPL Lead Center: LaRC Performing Center(s): JPL Cost Share Partner(s): ASI
EVI-4: EMIT	Provider: JPL Lead Center: JPL Performing Center(s): GSFC, JPL Cost Share Partner(s): N/A
EVI-4: PREFIRE	Provider: JPL Lead Center: JPL Performing Center(s): JPL Cost Share Partner(s): N/A

VENTURE CLASS MISSIONS

Program Element	Provider
EVI-5: GLIMR	Provider: University of New Hampshire Lead Center: LaRC Performing Center(s): LaRC, GSFC Cost Share Partner(s): N/A
EVC-1: LIBERA	Provider: University of Colorado Laboratory for Atmospheric and Space Physics Lead Center: LaRC Performing Center(s): LaRC Cost Share Partner(s): N/A

Acquisition Strategy

NASA will decide the size/type of the solicitation when it releases the AO. NASA will select all Venture Class missions through full and open competition.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
TEMPO	PI Institution: Smithsonian Astrophysical Observatory Instrument Provider: Ball Aerospace & Technologies Corp. Host Services Provider: Maxar Technologies	PI: Cambridge, MA Instrument: Boulder, CO Host Services: Westminster, CO
GLIMR	PI Institution: University of New Hampshire Instrument Provider: Raytheon Operations/Host Services Provider: TBD	PI: Durham, NH Instrument: El Segundo, CA Host Services: TBD
Libera	PI Institution: University of Colorado Laboratory for Atmospheric and Space Physics Instrument provider: LASP Host Services Provider: NOAA (NOAA-22)	PI: Boulder, CO Instrument: Boulder, CO Host Services: Gilbert, AZ

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	SRB	Q1 FY 2024	GLIMR Instrument SRR	Successful
Performance	SRB	Q2 FY 2024	PREFIRE ORR	Successful
Performance	SRB	Q3 FY 2025	GLIMR SIR	TBD
Performance	SRB	Q4 FY 2025	Libera PER	TBD

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
ESSP Missions Research	20.3	--	**5.5**	5.5	5.5	5.5	5.5
Orbiting Carbon Observatory-3	7.2	--	**0.0**	0.0	0.0	0.0	0.0
OCO-2	8.8	--	**0.0**	0.0	0.0	0.0	0.0
CloudSat	9.4	--	**0.0**	0.0	0.0	0.0	0.0
Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations (CALIPSO)	6.2	--	**0.0**	0.0	0.0	0.0	0.0
Total Budget	**51.9**	**--**	**5.5**	**5.5**	**5.5**	**5.5**	**5.5**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Earth System Science Pathfinder (ESSP) Other Missions and Data Analysis projects include operating missions and mission-specific research. These innovative missions have enhanced understanding of the current state of the Earth system and enable continual improvement in the prediction of future changes.

Mission Planning and Other Projects

ESSP MISSIONS RESEARCH

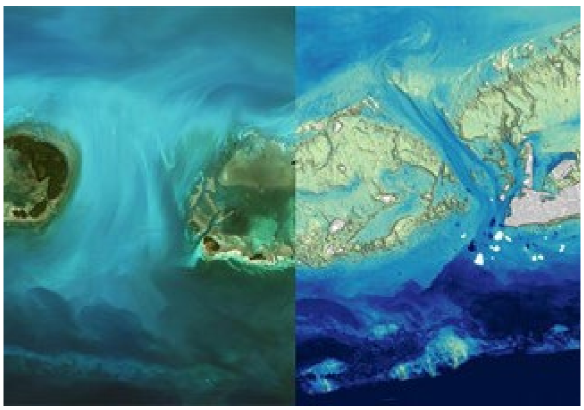
ESSP Missions Research provides funds for the science teams supporting ESSP operating missions, and Principal Investigator-led Earth Venture-Instruments, operating onboard ISS. The science teams are comprised of competitively selected individual investigators who analyze data from the missions to address relevant science questions.

EARTH SCIENCE DATA SYSTEMS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**311.5**	**--**	**114.6**	**114.6**	**114.6**	**114.6**	**114.6**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



Visible-light satellite observation data allows for greater scientific discovery. This image comparison shows a natural-color Landsat image (left) and a high-resolution bathymetric map (right) of the Florida Keys. Coastal waters are only 52 percent mapped and satellite data with new algorithm development allows for improved mapping of coastal waters nationwide.

The Earth Science Data Systems (ESDS) program oversees the lifecycle of Earth Science data with the principal goal of maximizing the scientific return from NASA's missions and experiments for research and applied scientists, industry, decision-makers, and the nation.

ESDS acquires, processes, preserves, and distributes observational Earth Science data from spacecraft, aircraft, and in-situ sensors to support Earth Science research focus areas. The ESDS program primarily achieves its mission through the Earth Observing System Data and Information System (EOSDIS), managed by the Earth Science Data and Information System (ESDIS) Project, which has operated since 1994.

EOSDIS has continuously evolved to take advantage of improved technology to meet the increasing demands of data providers and users.

The Data System Evolution (DSE) component of ESDS works to continuously improve the program by innovating new capabilities, adopting new technologies, supporting competitive research, and collaborating with users. These efforts prioritize investments to meet user needs and identify emerging technologies that improve access to NASA's Earth Science data.

NASA's Earth Science data is available to the public at https://earthdata.nasa.gov.

EXPLANATION OF MAJOR CHANGES IN FY 2026

To modernize, streamline, and reduce the cost of data management, NASA will replace the existing Distributed Active Archive Centers (DAACs) with a small number of thematic science-enabling teams, driving the use of Earth observation data across the value chain for commercial, decision-making, and scientific communities. The project will halt all data accession outside current missions and continuity products. The DSE component will focus on supporting AI integration and broadening commercial and scientific impact through visualization, data analysis, and processing investments.

The Making Earth System Data Records for Use in Research Environments (MEaSUREs) project will complete current projects by the end of CY 2026 and cancel future selections.

EARTH SCIENCE DATA SYSTEMS

Citizen Science for Earth Systems Program activities will complete the currently selected projects and cancel future selections.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

ESDS plans to complete the majority of its Earth Science data archive migration to the cloud by the end of FY 2026, with full completion anticipated by mid-FY 2027. This transition will enable more efficient management of the increasing volumes of data from current and future NASA missions and campaigns, while also providing centralized access to the archive and supporting software and tools. ESDS will enhance data storage and processing capabilities, improving accessibility for all end users. The migration reduces operational costs and complexities associated with maintaining historical on-premises infrastructure. This initiative supports NASA's commitment to open science by making Earth Science data more discoverable, usable, and reproducible.

ESDS will reduce and realign its existing DAACs into thematic science enabling teams. This complements the ongoing Web Unification effort and the shift to cloud-based infrastructure. Thematic science enabling teams will utilize shared cloud-based tools and datasets to better meet the evolving needs of a growing and diverse user community.

ESDS will continue to develop and refine geospatial artificial intelligence (AI) capabilities to improve data interaction and analysis. These efforts focus on scalability and adoption to support commercial innovation, scientific research, and operational decision-making.

ESDS will also maintain its collaboration with the Office of the Chief Science Data Officer to deliver accessible scientific data and cloud-based computing resources, fostering interdisciplinary science and continued public-private partnerships.

Program Elements

EARTH SCIENCE DATA AND INFORMATION SYSTEM (ESDIS)

The ESDIS project has historically managed geographically distributed science processing, archival, distribution and visualization systems including Earthdata Cloud, DAACs, Science Investigator-led Processing Systems, and other core services. Together, these systems support the processing of satellite and campaign data and seamless interdisciplinary access to Earth Science data, including data products, services, and handling tools for a broad range of user communities that include government agencies, the commercial sector, scientists and researchers, and the public. The DAAC framework originally was developed as physical data archive centers with user support, but as data has been migrated to the cloud, the user support function can be done by fewer support teams.

- The ESDIS project will realign the DAACs into thematic science enabling teams. In parallel with Web Unification efforts, the project will securely archive all data previously held on-premises and all tools and software independently developed and made available in the cloud, along with the critical data used by the private and public sectors to innovate, inform decisions, and advance scientific understanding and research. ESDIS oversees the generation and distribution of high-quality science products from Terra, Aqua, Aura, S-NPP, and JPSS missions and will reprocess products to ensure quality assurance and science value as missions come to the end of their planned operations.

EARTH SCIENCE DATA SYSTEMS

- The ESDIS project archives, documents, and distributes data while providing user support for NASA's past and current Earth-observing satellite missions, airborne campaigns, and field measurement programs. ESDIS continues to deliver reliable, robust services to a broad user base to support both traditional scientific disciplines and an increasing number of users whose needs span multiple domains, including commercial and government decision-makers.

The ESDIS project supports several core services that create a common entry point to discover, access, and visualize Earth Science data from the archive. The program developed core systems to reduce duplication and improve user access to data, including:

- Earthdata Cloud is a platform hosted in a commercial cloud environment that houses the managed archive of Earth Science data and a multitude of cloud-hosted applications.
- Earthdata Search and the underlying Common Metadata Repository are high-performing and high-quality services which allow users to search and discover datasets of interest in ESDIS' vast catalog of Earth data.
- Worldview provides visual representations of NASA Earth Science data at full resolution in a free, open, and interoperable manner. It enables interactive exploration of data to support a wide range of applications, including scientific research, applied sciences, natural hazard monitoring, and outreach. The Land, Atmosphere Near real-time Capability for Earth observation provides global satellite data within three hours of overpass and displays the data within Worldview. The general public, first responders, and operational weather agencies all use this data and imagery for monitoring a wide variety of natural and human-created phenomena such as fire, smoke and ash plumes, floods, hurricanes, dust storms, oil spills, snow and ice cover, and agriculture.
- FIRMS provides information on active fire/hotspots and email alerts in near real-time to identify the location, extent, and intensity of wildfire activity. FIRMS provides this data to the public and local and international governments for their use.
- Cumulus is a software package for performing Earth Science data ingesting, archiving, and distribution capabilities in the cloud.

DATA SYSTEM EVOLUTION (DSE)

The DSE project strategically enhances ESDS program capabilities through innovation, partnerships, technology development, and user engagement. These efforts aim to broaden the use of NASA Earth Science observations and improve the discoverability and accessibility of NASA data.

DSE supports interagency initiatives, establishes Space Act Agreements with non-governmental organizations, and promotes data system interoperability through the development and adoption of standards via the Interagency Implementation and Advanced Concepts Team (IMPACT). IMPACT collaborates with other federal agencies to expand the use of NASA Earth observations and independently assesses, evaluates, and advances data system capabilities by maturing emerging technologies into reliable, scalable services for operational deployment.

DSE also supports the Citizen Science for Earth Systems Program (CSESP). CSESP is completing support for previously awarded competitively selected projects. These projects involve data collection and analysis by citizen scientists across a range of Earth Science topics, including the development of low-cost sensors for environmental monitoring. The project will not conduct new solicitations for CSESP.

EARTH SCIENCE DATA SYSTEMS

Program Schedule

Funding for the ESDIS project continuously delivers software to improve functionality and improve efficiency.

Date	Significant Event
Q4 FY 2026	Current CSESP awards completed and closed out.
Q2 FY 2027	Complete transition of ESD data archives to the cloud

Program Management & Commitments

The ESM program at GSFC provides program management for the ESDIS project. NASA HQ manages the DSE component of ESDS. Reductions to the ESDIS project will require reducing and realigning the DAACs into five thematic science teams, driving the use of Earth observation data across the value chain for commercial, decision-making, and scientific communities.

Program Element	Provider
EOSDIS core system	Provider: Various Lead Center: GSFC Performing Center(s): GSFC Cost Share Partner(s): N/A
Alaska Synthetic Aperture Radar Facility Distributed Active Archive Center (DAAC) (Fairbanks, AK)	Provider: University of Alaska Lead Center: N/A Performing Center(s): N/A Cost Share Partner(s): N/A
Atmospheric Science Data Center (Hampton, VA)	Provider: LaRC Lead Center: LaRC Performing Center(s): LaRC Cost Share Partner(s): N/A
Goddard Earth Science Data and Information System Center (Greenbelt, MD)	Provider: GSFC Lead Center: GSFC Performing Center(s): GSFC Cost Share Partner(s): N/A
Land Processes Data Center (Sioux Falls, SD)	Provider: U.S. Geological Survey (USGS) Lead Center: N/A Performing Center(s): N/A Cost Share Partner(s): N/A

EARTH SCIENCE DATA SYSTEMS

Program Element	Provider
National Snow and Ice Data Center (NSIDS) (Boulder, CO)	Provider: University of Colorado Lead Center: N/A Performing Center(s): N/A Cost Share Partner(s): N/A
Oak Ridge National Laboratory DAAC (Oak Ridge, TN)	Provider: Oak Ridge National Laboratory Lead Center: N/A Performing Center(s): N/A Cost Share Partner(s): N/A
Physical Oceanography DAAC (Pasadena, CA)	Provider: JPL Lead Center: JPL Performing Center(s): JPL Cost Share Partner(s): N/A
Crustal Dynamics Data Information System (Greenbelt, MD)	Provider: GSFC Lead Center: GSFC Performing Center(s): GSFC Cost Share Partner(s): N/A
Global Hydrology Research Center (Huntsville, AL)	Provider: University of Alabama Lead Center: MSFC Performing Center(s): MSFC Cost Share Partner(s): N/A
Interagency Implementation and Advance Concepts Team (Huntsville, AL)	Provider: MSFC Lead Center: MSFC Performing Center(s): MSFC Cost Share Partner(s): N/A

Acquisition Strategy

NASA competitively selects ESDIS support contracts through full and open competition.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
EOSDIS Evolution & Development	Raytheon	Riverdale, MD
NSIDC	University of Colorado	Boulder, CO
Alaska SAR Facility	University of Alaska	Fairbanks, AK

EARTH SCIENCE DATA SYSTEMS

INDEPENDENT REVIEWS

The American Customer Satisfaction Index (ACSI) measures customer satisfaction with the NASA EOSDIS services at a national level. NASA EOSDIS scored a 79 on the ACSI survey in 2022, and a 78 in 2024, remaining among the highest Federal Government scores. The survey also highlights key areas NASA can leverage across its services to continuously enhance customer support.

Review Type	Performer	Date of Review	Purpose	Outcome
Quality	ACSI	2024	Survey current EOSDIS users to assess satisfaction with current services	Score of 78 of ACSI
Quality	ACSI	2026	Annual survey of EOSDIS users to assess satisfaction with services	TBD

EARTH SCIENCE TECHNOLOGY

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**105.4**	**--**	**50.7**	**60.7**	**60.7**	**60.7**	**60.7**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Earth Science Technology Program (ESTP) enables previously infeasible science investigations, improves existing measurement capabilities, and reduces the cost, risk, and/or development times for Earth science instruments and information systems, including transition to the U.S. commercial satellite sector.

The Snow Water-equivalent Wide Swath Interferometer and Scatterometer (SNOWWI) instrument, developed under an IIP-21 award to the University of Massachusetts, Amherst, embarked on two sets of demonstration flights over Grand Mesa, CO, in January and March 2024, onboard a Cessna 208. SNOWWI is a new two-frequency, dual-polarized (VV & HV) Ku-band InSAR and scatterometer airborne instrument intended to measure and map snow properties – depth, density, height, and snow water equivalent (SWE) – over an extended region. These measurements are particularly important for water resources management and agriculture. (Image credit: P. Siqueira)

EXPLANATION OF MAJOR CHANGES IN FY 2026

Due to budget constraints, NASA reduced all activities in this program including activities previously planned in Decadal Incubation that will move to the Instrument Incubator project. NASA will not continue Advanced Information System Technology and ESTO Innovation Fund activities in FY 2026. NASA created a new project for development of the Quantum Gravity Gradiometer.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

ESTP technology development will continue to reflect the updated NASA Earth science needs, while incorporating requirements from the Earth Science Decadal Survey through the NASA Wildland FireSense and Quantum Gravity Gradiometer efforts.

NASA also expects to launch additional ESTP validation missions as hosted payloads or free-flying CubeSats. These include: the Active Cooling for Multispectral Earth Sensors 16-unit CubeSat, the Geodetic Reference Instrument Transponder for Small Satellites - Flight Demonstration 16-unit CubeSat, and the Gas Filter Correlation Radiometer for Limb Occultation Temperature Sensor instrument as a hosted payload under the DoD Space Technology Program.

EARTH SCIENCE TECHNOLOGY

Program Elements

ADVANCED TECHNOLOGY INITIATIVES (ATI)

ATI supports the InVEST opportunity which selects new technologies to validate in space prior to use in a science mission. This is necessary because the space environment imposes stringent conditions on components and systems, some of which cannot be adequately tested on the ground or in airborne systems. Validation of Earth science technologies in space will further reduce the risk of new technologies in future Earth Science missions.

INSTRUMENT INCUBATOR

The IIP element develops instruments, instrument concepts, and measurement techniques at the system level, including laboratory breadboards and operational prototypes that often lead to ground or airborne demonstrations. These instrument prototypes provide multiple measurements to support the broad needs of Earth science, such as atmospheric composition, ocean color, and solar spectrum (from ultraviolet to infrared). Instrument Incubator supports the development of instrument design and prototyping through demonstration for innovative measurement techniques that have the highest potential to meet the measurement capability requirements of the NASA Earth science community across the optical and the microwave spectrum. The IIP also supports key instrument maturation activities, which seek to advance the readiness of previously developed instruments that have high potential to meet the objectives of the IIP and substantially improve beyond the current state-of-the-art in Earth science measurements.

ADVANCED MODELING TECHNOLOGY

AMT brings renewed focus to modeling techniques by leveraging emerging computer and information science research as well as new technologies and frameworks that will be essential in the development of digital twins. Earth System Digital Twins (ESDTs) are interactive digital replicas of Earth's systems, represent an emerging capability for understanding, forecasting, and conjecturing complex natural interconnections, especially impacts to humanity. The ESDT effort will develop capabilities toward the development of future digital twins of the Earth or of subcomponents of the Earth, as well as toward the development of an overarching framework that will continuously evolve and connect the various components developed by Research and Analysis, Applied Sciences, Data Systems, and computational capabilities from other Earth Science programs. In additional to supporting ESDTs, the program will also address the need for increased computational performance for existing physics-based models of the atmosphere, oceans, and solid earth through new artificial intelligence and machine learning techniques.

QUANTUM GRAVITY GRADIOMETER

NASA initiated this focused effort to develop a QGG pathfinder instrument, a groundbreaking new area of science that has the potential to make a big leap in the accuracy of Earth's gravitational measurements. It will collect much more precise measurements of Earth's gravitational field than existing methods, such as the Satellite-to-Satellite Tracking utilized by NASA's GRACE-FO mission, and could do so from a single satellite. The QGG project aims to deliver an instrument for on-orbit testing in 2030, using an architecture that could be scalable to a science-grade instrument. Measurements from a QGG would both continue the data record of the GRACE satellites, as well as significantly advance the study of earthquakes, glacial, isostatic adjustment, and glacier-scale processes.

Program Schedule

Date	Significant Event
Q1 FY 2026	ROSES-2025 selection no earlier than six months of receipt of proposals
Q2 FY 2026	ROSES-2026 solicitation
Q1 FY 2027	ROSES-2026 selection no earlier than six months of receipt of proposals
Q2 FY 2027	ROSES-2027 solicitation
Q1 FY 2028	ROSES-2027 selection no earlier than six months of receipt of proposals
Q2 FY 2028	ROSES-2028 solicitation
Q1 FY 2029	ROSES-2028 selection no earlier than six months of receipt of proposals
Q2 FY 2029	ROSES-2029 solicitation
Q1 FY 2030	ROSES-29 selection no earlier than six months of receipt of proposals
Q2 FY 2030	ROSES-2030 solicitation for selected ESTP projects

Program Management & Commitments

Program Element	Provider
ATI	Provider: Various Lead Center: HQ Performing Center(s): GSFC, JPL, LaRC, ARC Cost Share Partner(s): N/A
Instrument Incubator	Provider: Various Lead Center: HQ Performing Center(s): GSFC, JPL, LaRC, MSFC, AFRC Cost Share Partner(s): N/A
AMT	Provider: Various Lead Center: HQ Performing Center(s): GSFC, JPL, LaRC, MSFC, ARC, JSC Cost Share Partner(s): N/A
QGG	Provider: Various Lead Center: HQ Performing Center(s): GSFC, JPL Cost Share Partner(s): N/A

Acquisition Strategy

NASA primarily procures tasks through full and open competition, such as through the ROSES announcements. The solicitation of technology investments is competitive, and NASA selects proposals from NASA centers, industry, academia, other government agencies, Federally Funded Research and Development Centers, and nonprofit organizations.

MAJOR CONTRACTS/AWARDS

None.

INDEPENDENT REVIEWS

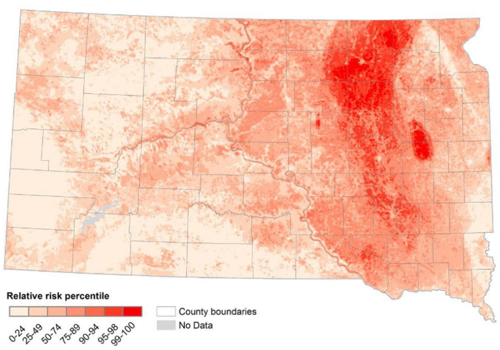
Review Type	Performer	Date of Review	Purpose	Outcome
Technical	Quantum Pathfinder Independent Review Panel	May 2025	Provide independent technical review of the QGG design and approach	TBD

APPLIED SCIENCES

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**84.6**	**--**	**17.7**	**17.7**	**17.7**	**17.7**	**17.7**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



NASA-funded ArboMAP produces weekly, county-level forecasts of the risk of contracting West Nile Virus by combining satellite, ground, and health data. The tool is being used in South Dakota, Louisiana, Michigan, Nebraska, and Oklahoma to issue warnings and direct spraying. Credit: Hess, A., Davis, J. K., & Wimberly, M. C. (2018). Identifying environmental risk factors and mapping the distribution of West Nile virus in an endemic region of North America. GeoHealth, 2, 395–409. https://doi.org/10.1029/2018GH000161

The Applied Sciences program leverages NASA Earth Science satellite measurements and new scientific knowledge to enable innovative and practical uses by public and private sector organizations. It supports near-term uses of Earth science knowledge, discovers and demonstrates new applications, and facilitates adoption of applications.

Applied Sciences projects improve decision-making activities to help the United States better manage resources, improve quality of life, and strengthen the economy. NASA develops Earth science applications in collaboration with end-users in public, academic, and private organizations.

The program supports activities in thematic Earth science applications areas and in disaster response. The program encourages potential users to envision and anticipate possible applications from upcoming satellite missions and to provide input to mission development teams to increase the societal benefits of NASA missions.

For more information, go to: https://appliedsciences.nasa.gov/

EXPLANATION OF MAJOR CHANGES IN FY 2026

To achieve cost savings, NASA has reduced all activities in this program.

NASA renamed the Applications project to "Applications Innovation" and cancelled the Climate Resilience activity. NASA made reductions to the remaining activities (Ecological Conservation, Energy and Infrastructure, Health and Air Quality, and Water Resources).

NASA reduced the Disasters project, and the focus will shift to empowering state and local agencies in their disaster response efforts.

NASA cancelled the Capacity Building project. ARSET will move to Responsive Science Initiatives to support training in use of Earth observation data outside the scientific community. NASA will cancel other components (SERVIR, DEVELOP, Indigenous Peoples Initiative, and Equity and Environmental Justice).

APPLIED SCIENCES

NASA cancelled the Mission and Applied Research project. Support for Applied Science programmatics and mission applications leads will move to the Applications Innovation project. NASA cancelled the remaining mission engagement activities and efforts for Engagement and Socioeconomic Consortia.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

The POWER effort (funded within the Applications Innovation project) will improve and expand services to better meet the needs of building and infrastructure standards setting organizations, state energy offices, and other building modeling stakeholders. POWER will further enhance its support to hydrological applications, such as hydropower and flood monitoring, and will develop interactive search tools leveraging AI/ML to reach a wider range of interested stakeholders, ranging from small businesses to local and regional commissions and federal government partners.

A team led by co-development experts at MSFC, and supported by co-development experts at LaRC and ARC, will establish a new effort to focus on resilience and preparedness.

Current grantees will continue to use Earth observations to support decision-makers. As an example, an activity within Water Resources will reach operational status by completing a custom satellite-based data dashboard for New Mexico's water management authority. By providing access to a massive 30+ year dataset of satellite-based water information through a custom-designed dashboard, this system enables more precise decision-making for water rights, agricultural planning, and drought response while saving the state hundreds of thousands of dollars annually. The project demonstrates the approaches NASA has pioneered for working with state and local governments to provide information so that resilience decisions can be managed locally.

The Disaster Response Coordination System will continue to provide data products that support emergency managers and will pivot towards greater support of State and local agencies.

Program Elements

DISASTER SUPPORT

The Disaster Support project enables the development of innovative and time-relevant applications using NASA satellite mission data in concert with novel approaches to understanding community exposure and vulnerability to a range of hazards and extreme events. The project sponsors the use and integration of Earth observations in the decisions and actions of disaster-management and disaster-financing organizations, including the pursuit of feasibility studies and needs assessments, in-depth engagements, and workshops. The project also sponsors a Disaster Response Coordination System at LaRC that coordinates across all NASA centers to enhance the value and usability of NASA Earth Science products in support of domestic and international disaster response across a wide range of disaster types, including floods, fires, earthquakes, volcanoes, and landslides. Furthermore, this project pursues strategic partnerships with disaster groups that can carry forward NASA-developed information and tools to support the disaster management communities they serve. The project will begin to place a greater focus on empowering State and local governments to reduce their disaster risks, take anticipatory action, and build resilience to complex and cascading disasters.

APPLIED SCIENCES

APPLICATIONS INNOVATION

The Applications Innovation project sponsors the integration of Earth observations in the decisions and actions of federal, state, local, tribal, and territorial agencies, and the private sector (including for-profit and non-profit organizations). There are formal program elements in Ecological Conservation, Energy and Infrastructure, Health and Air Quality, and Water Resources.

The Applications program elements support feasibility studies, tool development, workshops, and needs assessments. The innovations that are catalyzed within this project later spin out into activities that partner organizations can sustain, allowing NASA to move on to the next set of innovations.

- Ecological Conservation: promotes the use of Earth observations and models to analyze and forecast changes to develop effective resource management strategies. Primary user communities are natural resource managers (both land and marine) and those involved in conservation and sustainable ecosystem management at state and local levels.
- Energy and Infrastructure: provides solar, meteorological, and other types of Earth information to aid with decision-making related to energy production and management, power systems planning, building energy efficiency and sustainability, and resilient infrastructure. A major component of the Energy and Infrastructure program element is the POWER initiative. POWER curates a free web-services platform providing user-driven and highly accessible NASA satellite analysis and modeling data enabling decisions from the private to the public sectors including small businesses, energy system engineers, civil engineers, and architects, and building energy efficiency modelers.
- Health and Air Quality: promotes the use of Earth observation data and models in decision-making. Additionally, the element addresses issues related to environmental health, infectious/vector-borne diseases, toxic and pathogenic exposures, and other health-related hazards and their effects for risk characterization and mitigation.
- Water Resources: promotes the use of Earth observations in inland and coastal water resources management related to water availability, quality, and use. The program element addresses drought resilience and water scarcity, water quality and pollution, stormwater, floodwater, wastewater management and forecasting, water use for hydropower and irrigation, and other impacts on regional and local water resources.

Program Schedule

Date	Significant Event
Q1 FY 2026	ROSES-2025 selections within six to nine months of receipt of proposals
Q2 FY 2026	ROSES-2026 solicitation release
Q1 FY 2027	ROSES-2026 selections within six to nine months of receipt of proposals
Q2 FY 2027	ROSES-2027 solicitation release
Q1 FY 2028	ROSES-2027 selections within six to nine months of receipt of proposals
Q2 FY 2028	ROSES-2028 solicitation release
Q1 FY 2029	ROSES-2028 selections within six to nine months of receipt of proposals

APPLIED SCIENCES

Date	Significant Event
Q2 FY 2029	ROSES-2029 solicitation release
Q1 FY 2030	ROSES-2029 selections within six to nine months of receipt of proposals
Q2 FY 2030	ROSES-2030 solicitation release

Program Management and Commitments

Program Element	Provider
Applications Innovation	Provider: Various Lead Center: HQ Performing Center(s): ARC, GSFC, JPL, LaRC, MSFC Cost Share Partner(s): U.S. Forest Service, National Park Service (NPS), U.S. Department of Agriculture (USDA), NOAA, USGS, U.S. Fish and Wildlife Service, Environmental Protection Agency (EPA), Bureau of Land Management, Centers for Disease Control and Prevention
Disaster Support	Provider: Various Lead Center: HQ (competitive selections), LaRC (Disaster Response Coordination System) Performing Center(s): ARC, GSFC, JPL, LaRC, MSFC Cost Share Partner(s): FEMA, USGS, NOAA, DoE, Pacific Disaster Center, Willis Towers Watson, American Red Cross, Joint Research Centre

Acquisition Strategy

NASA bases the Earth Science Applied Science acquisitions on full and open competition. Grants are peer reviewed and selected based on NASA research announcements and other related announcements.

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Relevance	Applied Sciences Advisory Committee	June 2025	Review strategic planning efforts	TBD

PLANETARY SCIENCE

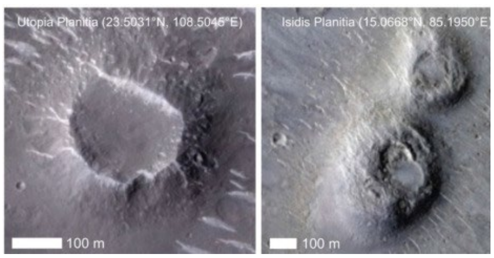
Planetary Science

PLANETARY SCIENCE RESEARCH

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Planetary Science Research and Analysis	219.1	--	**158.2**	182.1	201.3	204.4	199.8
Other Missions and Data Analysis	165.6	--	**183.6**	194.9	269.2	297.7	192.7
Total Budget	**384.7**	**--**	**341.8**	**377.0**	**470.5**	**502.1**	**392.5**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



Researchers employed deep learning models to globally map pitted cones on Mars. The work provides an important link between past surface water and sediment deposits on Mars. (Mills et al., 2024 Icarus., https://doi.org/10.1016/j.icarus.2024.116145)

The Planetary Science Research program is at the heart of NASA's planetary science objectives. It informs and inspires future missions and maximizes the return of existing ones. The Planetary Science Research program supports the scientists who use NASA mission data to make discoveries about our solar system. Scientists study NASA mission data to understand the planets and small bodies that inhabit our solar system, to answer questions about its formation - how it reached its current diverse state, how life evolved on Earth and possibly elsewhere in the solar system, and what characteristics of the solar system led to the origins of life. The program also supports development of analytical and theoretical tools, as well as laboratory data, to complement analyses of flight mission data. The research program achieves this by supporting research grants solicited annually and subjected to a competitive peer review process before selection and award. The Planetary Science Research program focuses on five key research goals:

- Advance the understanding of how the chemical and physical processes in our solar system operate, interact, and evolve;
- Explore and observe the objects in the solar system to understand how they formed and evolve;
- Explore and find locations where life could have existed or could exist today;
- Improve our understanding of the origin and evolution of life on Earth to guide our search for life elsewhere; and
- Identify and characterize objects in the solar system that pose threats to Earth or offer resources for human exploration.
- Two cross-organizational activities are embedded within the Planetary Science Research Program that serve SMD and agency needs. The goals of these activities are:
- Foster cutting-edge data science practices, open science, and the continuous evolution of scientific data and computing systems across the SMD.
- Manage the agency's High-End Computing Capability portfolio to serve the supercomputing needs of all NASA mission directorates and NASA-supported investigators.

PLANETARY SCIENCE RESEARCH

EXPLANATION OF MAJOR CHANGES IN FY 2026

NASA reduced peer reviewed science in Planetary Science Research and Analysis by 20 percent to achieve cost savings.

The High-End Computing Capability (HECC) portfolio is transferred to Planetary Science Research from the Earth Science Research program. HECC will achieve cost savings by eliminating several existing systems to reduce utility and labor costs. These older systems will be replaced by a new HEC system that more efficiently delivers compute at a lower cost.

The Scientific Artificial Intelligence, Data & Analytics (SAIDA) portfolio was renamed from the Open-Source Science Initiative. SAIDA achieves cost savings by consolidating multiple cloud environments and using AI to support the stewardship, management, and governance of NASA's scientific data for all SMD divisions.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

This budget reduces activities in planetary science research and interdisciplinary science efforts. The Origins, Worlds, and Life: A Decadal Strategy for Planetary Science and Astrobiology 2023-2032, recommended that NASA "catalyze research focused on emerging systems-level thinking about dynamic habitability and the coevolution of planets and life, with a focus on problems and not disciplines" - that is, using and expanding successful programmatic mechanisms that foster interdisciplinary and cross-divisional collaboration. This budget will encourage interdisciplinary science, expand collaboration opportunities, and facilitate new ideas while continuously working to reduce barriers to proposing.

Planetary Data System (PDS) is working to complete the conversion of up to 90 percent of its total data volume to a more complete data standard (PDS4) in FY 2026.

The SAIDA and HECC portfolios will be integrated into a streamlined data and computing program for NASA science and engineering, eliminating redundancy and reducing the total operating budget. SAIDA will deploy the first version of a consolidated SMD cloud infrastructure (collapsing three redundant cloud platforms into a single, efficient platform) to realize cost savings and streamlined management of data. SAIDA will release a lunar AI foundation model to support lunar exploration and science and begin developing a Mars foundation model to support NASA's scientific and exploration activities.

HECC will deploy a new supercomputer that will be NASA's fastest system, replacing several older, less efficient systems that will be decommissioned to reduce utility and labor costs. HECC will continue to provide computing capabilities and associated network connectivity, data storage, data analysis, visualization, and application software support for NASA’s aeronautics, human exploration, and science missions.

Program Elements

PLANETARY SCIENCE RESEARCH AND ANALYSIS (R&A)

Planetary Science R&A enhances the scientific return from on-going and completed space flight missions and provides the foundation for the formulation of new scientific questions and strategies for answering those questions. R&A develops new theories and instrumentation concepts that enable the next generation

PLANETARY SCIENCE RESEARCH

of space flight missions. R&A funds research tasks in areas such as astrobiology and cosmochemistry; the origins and evolution of planetary systems; the observation and characterization of extra-solar planets (i.e., exoplanets); and the atmospheres, geology, and chemistry of the solar system's bodies other than the Earth or the Sun.

Program Schedule

The Planetary Science Research Program solicits proposals as part of the SMD's annual Research Opportunities in Space and Earth Sciences (ROSES) research calls. The program issues solicitations every year. A Senior Review process assesses all missions in the extended operations phase every three years. NASA reviews and evaluates the planetary data archives for mission data every five years.

Date	Significant Event
Q1 FY 2025	ROSES 2024 NRA selection within six to nine months of receipt of proposals
Feb 2025	Senior Review Operating Missions
June 2025	ROSES-2025 NRA solicitation release
Q2 FY 2026	ROSES-2025 NRA selection within six to nine months of receipt of proposals
Feb 2026	ROSES-2026 NRA solicitation release
Q4 FY 2026	Finalize recompete of Data Archives Discipline Nodes
Q1 FY 2027	ROSES-2026 NRA selection within six to nine months of receipt of proposals
Q3 FY 2027	Senior Review Data Archives Support Nodes
Feb 2027	ROSES-2027 NRA solicitation release
Q1 FY 2028	ROSES 2027 NRA selection within six to nine months of receipt of proposals
Mar-Apr 2028	Senior Review Operating Missions

Program Management & Commitments

Program Element	Provider
R&A	Provider: NASA Lead Center: HQ Performing Center(s): ARC, GRC, GSFC, JPL, JSC, LaRC, MSFC Cost Share Partner(s): N/A

Acquisition Strategy

The R&A budget will fund competitively selected activities from the ROSES omnibus research announcement.

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Advanced Multi-Mission Operation System	38.0	--	**36.3**	37.0	37.7	37.2	38.3
Planetary Data System	27.4	--	**30.2**	38.9	41.5	41.5	36.6
Astromaterial Curation	13.6	--	**13.7**	15.7	15.6	15.6	14.4
Robotics Alliance	5.0	--	**5.0**	5.0	5.0	5.0	5.0
Scientific AI, Data & Analytics (SAIDA)	28.7	--	**19.4**	19.4	19.4	19.4	19.4
Planetary Technology	4.9	--	**3.1**	3.1	74.1	103.1	3.1
High End Computing Capability	48.1	--	**23.8**	23.8	23.8	23.8	23.8
Planetary Science Directed R&T	0.0	--	**52.0**	52.0	52.0	52.0	52.0
Total Budget	**165.6**	**--**	**183.6**	**194.9**	**269.2**	**297.7**	**192.7**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Other Missions and Data Analysis includes activities and infrastructure that support NASA Planetary Science Research and missions, such as the Advanced Multi-Mission Operation System, Planetary Data System, and Astromaterial Curation. It also includes two cross-organizational projects that serve SMD and agency needs: High End Computing and Scientific Artificial Intelligence, Data & Analytics.

Mission Planning and Other Projects

ADVANCED MULTI-MISSION OPERATION SYSTEM (AMMOS)

AMMOS is a system of reusable software tools and services comprising a mission ground operations and ground data system used across multiple NASA missions. AMMOS provides multi-mission operations, navigation, design, and training tools and services for Planetary Science flight missions, as well as other SMD missions, and invests in improved communications and navigation technologies. The AMMOS project will continue to provide and develop multi-mission software tools for spacecraft navigation, command, control, assessment, mission planning, and data archiving. Utilizing the AMMOS common tools and services lowers individual mission costs and risks by providing a mature base for mission operations systems at significantly reduced development times. AMMOS also provides support to our international space agency partners on an as-needed basis. This support typically pertains to navigation assistance and scheduling of NASA's Deep Space Network (DSN) assets.

AMMOS currently provides multi-mission operations tools and services to 88 missions, and includes support to Planetary Science, Heliophysics, Earth Science, and Astrophysics missions within NASA and critical operations services to 14 international missions. AMMOS continues to provide critical NASA support to international missions from CSA, DLR, ESA, ISRO, JAXA, the Korea Aerospace Research Institute (KARI), and United Arab Emirates Space Agency. NASA support for these missions often results in data sharing agreements with international partners, greatly increasing the amount of data available to US researchers and the public. Operating missions enabled by AMMOS include the Mars 2020 Perseverance rover, Parker Solar Probe, Chandra X-ray Observatory, Lucy, Lunar Trailblazer, the Cislunar Autonomous Positioning System Technology Operations and Navigation Experiment, and the

Korean Pathfinder Lunar Orbiter, among many others. Missions currently in development enabled by AMMOS include Europa Clipper.

PLANETARY DATA SYSTEM (PDS)

PDS is an online data archive that furthers NASA's Planetary Science goals by efficiently collecting, archiving, and making accessible digital data produced by, or relevant to, NASA's planetary missions, research programs, and data analysis. This curated archive includes raw and fully calibrated orbital and surface observations from NASA missions and instruments exploring the solar system planets, asteroids, and small bodies. The PDS archives now span more than 50 years of NASA-funded research, and they are expanding to include ground-based observations of Near-Earth objects (NEOs). The PDS archives are publicly available through the PDS website. NASA continues to incorporate new PDS enhancements, and is implementing a PDS website unification, making data easier to find and access. The PDS is also implementing a cloud computing strategy that increases access to super-computing time and continues to create training modules for finding and using PDS data.

ASTROMATERIAL CURATION

The Astromaterials Acquisition and Curation Office curates extraterrestrial material under NASA control. Curation is an integral part of sample return missions. Activities conducted by the Curation office include: (1) research into advanced curation techniques to support future missions; (2) sample return mission planning; (3) archiving of witness, engineering, and reference materials related to sample return missions; (4) recovery and transport of returned materials; (5) initial characterization of newly received samples; (6) preparation and allocation of samples for research; and (7) providing clean and secure storage of samples for the benefit of current and future generations.

Materials currently curated include: Antarctic meteorites; cosmic dust; samples collected from the Moon; samples of the solar wind; samples from comet 81P/Wild; dust collected in interstellar space; particles from asteroids Itokawa, Ryugu, and Bennu; cosmic dust collected in Earth's stratosphere; micrometeorites collected at the South Pole, microparticle-impacted flight hardware; witness materials (i.e., small foils and plates placed in spacecraft assembly cleanrooms to collect particles); and coupons (i.e., representative pieces of materials used in construction of spacecraft). Curated materials come from past, present, and future sample-return missions: Apollo, Luna, Long Duration Exposure Facility, Genesis, Stardust, Hayabusa, Hayabusa2, OSIRIS-REx, and the Mars 2020 Rover). Planning and research efforts are currently underway to develop the technologies and procedures for proper curation of samples from current and future missions to the Moon, such as Artemis; to Mars; and to Mars' moon, Phobos, such as Martian Moons eXploration (MMX). NASA plans to receive 15% of the MMX samples through cooperation with JAXA. New laboratory space is currently under construction to be the long-term home of witness materials and coupons, for NASA's portion of the MMX samples, and for cold sample processing of Apollo samples.

The project maintains ten existing collections of astromaterials in pristine condition for scientific research within ten cleanroom suites at JSC and White Sands Complex. JSC curation also maintains numerous high efficiency particulate air (HEPA)-filtered air handling systems, an ultrapure water system, high-purity gaseous and liquid nitrogen systems, and a precision cleaning facility to support these sample storage laboratories. The suite of advanced imaging instruments continues to non-destructively characterize the current astromaterials collections, allowing more efficient use of the samples and more robust scientific results.

OTHER MISSIONS AND DATA ANALYSIS

ROBOTICS ALLIANCE

The Robotics Alliance Project (RAP) increases interest in engineering, technology, science, and mathematics disciplines among youth in the United States to create an inspired, experienced, and technical workforce for the aerospace community. Annual activities and events expose students to challenging applications of engineering and science, including national robotic competitions in which high school students work with engineering and technical professionals from government, industry, and universities to gain hands-on experience and mentoring.

SCIENTIFIC ARTIFICIAL INTELLIGENCE, DATA & ANALYTICS (SAIDA)

Scientific Artificial Intelligence, Data & Analytics (SAIDA, formerly known as Open Source Science) is transforming SMD's computing and data infrastructure to enhance efficiency and scientific impact. The Core Data and Computing Services (CDCS) element is implementing a unified cloud infrastructure that simplifies access to computing and data resources for all SMD divisions through the consolidation of several existing cloud platforms. CDCS is also improving data stewardship, management, and governance strategies to strengthen the discoverability, availability, and usability of NASA's scientific information, maximizing the long-term impact of research investments. For example, NASA's Science Discovery Engine (SDE) unifies search capabilities, providing an efficient tool for users to discover and leverage NASA's vast archives of scientific information. The Data Science Innovation (DSI) element provides leadership and technical expertise across SMD to evaluate and prototype cutting-edge data science technologies, including Artificial Intelligence (AI), to increase the efficiency of the scientific lifecycle and accelerate scientific discoveries. This includes leading the development of tools to integrate AI throughout the scientific lifecycle and AI foundation models that leverage large volumes of NASA science data for multiple downstream applications. DSI collaborates with the Chief AI Officer to ensure alignment in data science investments across the agency. This work is guided by the goals described in the "Strategy for Data Management and Computing for Groundbreaking Science 2019-2024 (https://science.nasa.gov/wp-content/uploads/2023/05/SDMWGStrategy_Final-1.pdf)." Starting in FY 2025, SAIDA and the NASA High-End Computing Capability (HECC) portfolio share common leadership within the Office of the Chief Science Data Officer. Opportunities to streamline SAIDA and HECC are currently being evaluated, with plans to merge the two activities into an integrated program in FY 2026.

HIGH-END COMPUTING CAPABILITY (HECC)

HECC is an agency-wide portfolio that provides high-end computing, storage, and associated services to enable large-scale modeling, simulation, and analysis in support of NASA's aeronautics, human exploration, and science missions. HECC resources are used by scientists and engineers across all NASA Mission Directorates and by NASA-supported investigators. In addition to supercomputing systems, HECC provides a range of services including application optimization to enhance productivity and code performance, end-to-end networking to meet the data distribution and access requirements of geographically dispersed users, and visualization and data analytics tools.

PLANETARY TECHNOLOGY

Planetary Technology funds promising mission-specific technology investments, such as NASA's Global Reference Atmospheric Model (GRAM) and Entry Systems Modeling as well as non-mission specific, non-nuclear investments in planetary technology which will enable future Planetary Science missions. The Planetary Exploration Science Technology Office (PESTO) manages these activities and coordinates planetary-relevant technology investments across the agency and maximizes technology infusion into specific missions.

PLANETARY SCIENCE DIRECTED RESEARCH AND TECHNOLOGY

The Planetary Science Directed Research and Technology project funds the civil service staff who work on emerging Planetary Science flight projects, instruments, and research. This project funds workforce reshaping efforts in FY 2026.

PLANETARY DEFENSE

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
NEO Surveyor	255.7	--	**266.3**	305.5	37.1	33.1	33.0
Other Missions and Data Analysis	41.0	--	**38.0**	40.8	44.0	51.0	41.0
Total Budget	**296.7**	**--**	**304.2**	**346.3**	**81.0**	**84.1**	**74.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

For three decades, NASA has engaged in studying near-Earth objects (NEOs), asteroids, and comets that orbit the Sun and come within 30 million miles of our planet's orbit. While NEOs have the potential to help planetary scientists better understand the birth and formation of our solar system and perhaps the origins of life, some travel in orbits that bring them close enough to Earth's vicinity to make them potential impact hazards.

Representatives from NASA, FEMA, and the planetary defense community participate in the fifth Planetary Defense Interagency Tabletop Exercise on April 2-3, 2024, to discuss the nation's ability to respond effectively to the threat of a potentially hazardous asteroid or comet. Credits: NASA/JHU-APL/Ed Whitman

To address this, NASA established its Planetary Defense Coordination Office (PDCO) in 2016 to manage agency efforts to find, track, characterize, and – if necessary – mitigate against NEO impacts.

Planetary Defense encompasses all the capabilities needed to detect and warn of potential asteroid or comet impacts with Earth and then to either prevent or mitigate their possible effects. The effort involves:

- Finding and tracking NEOs that pose a hazard of impacting Earth (greater than 10 meters in size are considered hazardous).
- Characterizing each potentially hazardous NEO found, predicting its precise trajectory, and also determining its size, shape, mass, composition, rotational dynamics, and other parameters to assess the likelihood and severity of devastation if it has a potential Earth impact.
- Warning of the impact timing, potential effects, and advise of possible means to mitigate the impact.
- Planning and testing of measures to deflect or disrupt (break up) an object on an impact course with Earth, or to mitigate the effects of an impact.

The project made significant progress in NEO detection in recent years. The NEO Surveyor mission, designed to improve detection capabilities to find greater than 90 percent of NEOs 140 meters (m) or larger within about a decade of being launched in 2028, will roughly triple NASA's current capability. In 2022, the DART mission successfully impacted an asteroid almost seven million miles from Earth,

PLANETARY DEFENSE

altering its orbit and demonstrating NASA's ability to respond to a potential asteroid threat for the first time via a kinetic impactor spacecraft.

The PDCO manages the Planetary Defense Program and administers the Near-Earth Object Observations (NEOO) project, which funds, and coordinates efforts across multiple agencies and space institutions to find, track, and characterize any asteroid or comet that could become an impact hazard to Earth. Scientists supported by NASA conduct these NEOO efforts at observatories on the ground and in space, as well as with partnerships for data from assets of the National Science Foundation and space situational awareness facilities of the United States Space Force.

In addition to finding, tracking, and characterizing NEOs, NASA also researches techniques for deflecting or disrupting, if possible, NEOs that are determined to be on an impact course with Earth to provide options for government response to any detected impact threat. If deflection or disruption of the NEO is not possible due to insufficient time available before impact, the PDCO is responsible for providing expert input to other government agencies for emergency response operations.

EXPLANATION OF MAJOR CHANGES IN FY 2026

The NEOO project is reduced as the program pursues cost efficiencies. The budget for the NEO Surveyor mission is reduced due to excellent cost performance and early retirement of risks with no impact to the planned launch readiness date.

NEAR EARTH OBJECTS SURVEYOR

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**255.7**	**--**	**266.3**	**305.5**	**37.1**	**33.1**	**33.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The NEO Surveyor spacecraft, depicted above, will detect, track, and characterize asteroids and comets moving across the sky against the stationary stars in the background.

PROJECT PURPOSE

The Near-Earth Object Surveyor (NEO Surveyor) addresses NASA's objective to find, track, and characterize the asteroids and comets that could potentially impact Earth and cause significant damage. NEO Surveyor consists of ground and space-based segments that constitute a system searching the sky for significant potential impact hazards.

The NEO Surveyor will make significant progress toward the objective given to NASA in Public Law 109-155 Sec. 321, the George E. Brown, Jr. Near-Earth Object Survey Act, which requires detecting, tracking, cataloging at least 90 percent of NEOs equal to or larger than 140 meters in size, and characterizing a representative subset.

The National Academies study (2019) concluded that a space-based mid-infrared survey is the most effective, timely option for meeting the congressional NEO survey completeness and size determination requirements. The most recent Planetary Science and Astrobiology Decadal Survey 2023-2032 (2022) recommended that NASA should fully support the development, timely launch, and subsequent operation of NEO Surveyor to achieve the highest priority planetary defense goals.

NEO Surveyor will find potentially hazardous objects because of its optimized sensitivity in the infrared part of the spectrum and observation cadence. The mission's primary goals are to: (1) identify impact hazards to the Earth posed by NEOs by performing a comprehensive survey of the NEO population; (2) obtain detailed physical characterization data for individual objects that are likely to pose an impact hazard; and (3) advance the understanding of potential impact energies of potentially hazardous NEOs through characterizing physical properties, including object size, to inform potential mitigation strategies.

EXPLANATION OF MAJOR CHANGES IN FY 2026

The budget for the NEO Surveyor mission is reduced due to excellent cost performance and early retirement of risks with no impact to the planned launch readiness date.

NEAR EARTH OBJECTS SURVEYOR

Formulation	Development	Operations

PROJECT PARAMETERS

NEO Surveyor consists of a single scientific instrument: a 50-centimeter (nearly 20 inch) diameter telescope that operates in two heat-sensing infrared wavelengths. It will be capable of detecting both bright asteroids and dark asteroids - the most difficult type to find.

The NEO Surveyor Observatory will travel in a large-amplitude halo orbit around the Sun-Earth Lagrange point 1 (L1). The L1 orbit has the advantages of a flexible launch date and a stable, cold thermal environment that supports passive cooling, and enables high data rates needed to downlink full-frame images for asteroid detection and recovery using ground processing and analysis.

After launch, NEO Surveyor will carry out a five-year baseline survey to find at least two-thirds of the undetected NEOs larger than 140 meters (460 feet). These are the potentially hazardous objects large enough to cause major regional damage in the event of an Earth impact. By using two heat-sensitive infrared imaging channels, NEO Surveyor can make accurate measurements of both NEO position and sizes to gain valuable information about their composition, shapes, rotational states, and orbits.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

The project will conduct the System Integration Review (SIR) to ensure all subsystems are on schedule to be integrated into the complete spacecraft observatory and mission ground systems.

SCHEDULE COMMITMENTS/KEY MILESTONES

Milestone	Confirmation Baseline Date	FY 2026 PB Request
KDP-C	Nov 2022	Nov 2022
CDR	Feb 2025	Feb 2025
KDP-D	Aug 2026	Aug 2026
LRD	Jun 2028	Jun 2028
EOM	Sep 2033	Sep 2033

NEAR EARTH OBJECTS SURVEYOR

Formulation	Development	Operations

Development Cost and Schedule

Base Year	Base Year Develop-ment Cost Estimate ($M)	JCL (%)	Current Year	Current Year Develop-ment Cost Estimate ($M)	Cost Change (%)	Key Milestone	Base Year Milestone Data	Current Year Milestone Data	Milestone Change (mths)
2023	1,228.6	86	2025	1192.2	-3.0	LRD	Jun 2028	Jun 2028	0

Note: The confidence level estimates reported reflect an evolving process as NASA improves its probabilistic estimation techniques and processes. Estimate reflects the practices and policies at the time it was developed. Estimates that include combined cost and schedule risks are denoted as JCL (joint confidence level); all other CLs (confidence levels) reflect cost confidence without necessarily factoring the potential impacts of schedule changes on cost.

Development Cost Details

Element	Base Year Development Cost Estimate ($M)	Current Year Development Cost Estimate ($M)	Change from Base Year Estimate ($M)
TOTAL:	**1,228.6**	**1192.2**	**-36.4**
Aircraft/Spacecraft	338.0	309.0	-29.0
Payloads	221.7	311.3	+89.6
Systems I&T	4.1	5.0	+0.9
Launch Vehicle	134.0	102.7	-31.3
Ground Systems	25.2	33.1	+7.9
Science/Technology	71.7	64.4	-7.3
Other Direct Project Costs	433.9	366.7	-67.2

NEAR EARTH OBJECTS SURVEYOR

Formulation	Development	Operations

Project Management & Commitments

Element	Description	Provider Details	Change from Baseline
NEO Surveyor Director and Investigation Team	NEO Surveyor science and operations leadership	Provider: University of California, Los Angeles (UCLA) Lead Center: MSFC Performing Center(s): N/A Cost Share Partner(s): N/A	Surveyor Director changed institutions
Flight System Management	Project management, systems engineering, safety and mission assurance, and system integration	Provider: JPL Lead Center: JPL Performing Center(s): JPL Cost Share Partner(s): N/A	N/A
NEO Surveyor Spacecraft	Spacecraft bus with all flight subsystem capabilities	Provider: BAE Systems, Lead Center: JPL Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
Telescope	50-centimeter aperture telescope (waveguide and reflectors)	Provider: JPL Lead Center: JPL Performing Center(s): JPL Cost Share Partner(s): N/A	N/A
Camera Assembly Enclosure	Houses the Sensor Chip Assemblies (SCA), Sensor Chip Electronics (SCE), and focal plane modules	Provider: Space Dynamics Laboratory Lead Center: JPL Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
Sensor Chip Assemblies (SCA) and Sensor Chip Electronics (SCE)	Digital image sensors and electronics	Provider: Teledyne Scientific & Imaging Lead Center: MSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
Mission Operations	NEO Surveyor Spacecraft operations at existing facility with DSN connectivity and existing cybersecurity authorization capability	Provider: Laboratory for Atmospheric and Space Physics (LASP), UC Boulder Lead Center: JPL Performing Center(s): N/A Cost Share Partner(s): N/A	N/A

NEAR EARTH OBJECTS SURVEYOR

Formulation	Development	Operations

Element	Description	Provider Details	Change from Baseline
NEO's Survey Data System (SDS)	Process, analyze, archive, and distribute NEO Surveyor instrument data.	Provider: Caltech IPAC Lead Center: MSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
Launch Vehicle	Launch vehicle and all launch services to deliver mission to orbit	Provider: TBD Lead Center: KSC Performing Center(s): KSC Cost Share Partner(s): N/A	N/A

Project Risks

Risk Statement	Mitigation
If: Planned tests and model validation campaign is insufficient to produce a fully validated flight model due to the complexity of the individual tests and the difficulty of stitching test results together to emulate an end-to-end test, Then: The project will need additional cost and time to augment the model or replan the test sequence.	The project completed early risk reduction prototype activities and is developing a detailed test plan campaign, followed by a review of the test campaign focusing on test implementation, model validation, and detailed modeling of the test configuration. After these activities, the project will conduct a test readiness review prior to the testing and evaluate success criteria after each test result during testing.

Acquisition Strategy

JPL has initiated subcontracts for the major flight and ground support components. NASA contracted directly with UCLA for the survey director, investigation team and associated efforts. NASA contracted directly with Caltech/IPAC for SDS.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
Survey director and investigation team	University of California, Los Angeles	Los Angeles, CA
Instrument CEA, CEU, instrument I&T, and Focal Plane Modules	Space Dynamics Laboratory (SDL)	Logan, UT

NEAR EARTH OBJECTS SURVEYOR

Formulation	Development	Operations

Element	Vendor	Location (of work performance)
Instrument components, spacecraft bus, and observatory I&T	BAE Systems	Boulder, CO
Mission Operations	Laboratory for Atmospheric and Space Physics (LASP)	Boulder, CO

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	SRB	Feb 2025	CDR	Successful
Performance	SRB	Jul 2026	SIR	TBD

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Near Earth Object Observations	41.0	--	**38.0**	40.8	44.0	51.0	41.0
Total Budget	**41.0**	**--**	**38.0**	**40.8**	**44.0**	**51.0**	**41.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Mission Planning and Other Projects

NEAR-EARTH OBJECT OBSERVATIONS (NEOO)

The NEOO project funds work that uses ground and space-based assets to search for Near-Earth Objects (NEOs) that have potential to collide with Earth and characterize them to assess if any could do significant damage at the surface of our planet. NEOs range in size from a few meters to approximately 34 kilometers. There are over 36,000 known NEOs, and over 11,000 of them are larger than 140 meters in size. NASA estimates that there are still over 13,000 NEOs left to find in this size range.

The NEOO project supports a network of activities including search and characterization observatories and the data processing and analysis required to understand the orbits and nature of the near-Earth population of small bodies. In accordance with the findings and recommendations of the Planetary Science and Astrobiology Decadal Survey (2022), as well as NASA's action plan in response to the White House's updated National Preparedness Strategy and Action Plan for Planetary Defense (2023), NASA continues to:

- Increase collection of NEO detection and characterization data by the Catalina Sky Survey, the Panoramic Survey Telescope and Rapid Reporting System (Pan-STARRS), and the United States Space Force’s (USSF) Space Surveillance Telescope located in Exmouth, Australia.
- Support the operation of the four small telescope wide field survey sites called the Asteroid Terrestrial-impact Last Alert System (ATLAS), designed to detect smaller asteroids as they approach the Earth and warn of any imminent impact, two of which operate at southern hemisphere sites.
- Support data processing and analysis activities critical for planetary defense: The Minor Planet Center (MPC), which is the internationally recognized repository for small body position measurements operated as a sub-node of NASA's Planetary Data System Small Bodies Node, and the Center for Near-Earth Object Studies (CNEOS), which utilizes MPC data to calculate precise orbits for NEOs and identify any NEO impact threats to Earth.
- Support the continued and enhanced operation of planetary radar capabilities at NASA’s Goldstone Deep Space Network facility and support the processing and archiving of radar data from the decommissioned 305-meter telescope at the NSF’s Arecibo Observatory.
- Utilize NASA's Infrared Telescope Facility for targeted measurement of physical characteristics of NEOs.

OTHER MISSIONS AND DATA ANALYSIS

- Support NEO research teams at multiple universities and space science institutes using their access to research telescopes to observe and characterize the nature of asteroids and comets which can closely approach Earth.
- Investigate both ground and space-based concepts for increasing capacity to detect, track, and characterize NEOs of all sizes.

Since NASA's NEO search efforts started in 1998, NEOO research has found over 96 percent of the estimated population of these objects that are one kilometer and larger, and about 45 percent of all those larger than 140 meters in size. NEOs discovered and characterized by the project may be viable targets for future robotic and human exploration, and possible eventual candidates for asteroid resource utilization operations.

The Infrared Telescope Facility (IRTF) is NASA's infrared-optimized three-meter telescope at an altitude of 13,600 feet on the dormant volcano Mauna Kea on the Big Island of Hawai'i. The NEOO project fully funds IRTF operations, which is a primary NASA planetary defense asset for NEO physical characterization. IRTF continues its mission of strategic support of NASA flight missions and science goals in both planetary science and astrophysics while being on-call for rapid response observations of NEO targets of opportunity and potential threats.

LUNAR DISCOVERY AND EXPLORATION

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Other Missions and Data Analysis	363.4	--	**137.3**	169.0	195.8	219.2	219.6
Total Budget	**363.4**	**--**	**137.3**	**169.0**	**195.8**	**219.2**	**219.6**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Intuitive Machines' IM-2 Micro-Nova Hopper, shown here, is a miniature Nova-C lander designed to search for water ice in permanently shaded regions of the moon. Credit: Intuitive Machines

NASA's exploration strategy will provide an innovative and sustainable approach to scientific and human exploration, with commercial and international collaborators to enable human expansion across the solar system and bring new knowledge and opportunities back to Earth. The agency will achieve these accomplishments with emerging commercial capabilities and innovative approaches to achieving human and science exploration goals, including the return of humans to the Moon.

The Lunar Discovery and Exploration Program (LDEP) in SMD is a key component of the agency's exploration strategy and leads all lunar science strategy, instrumentation development, and training for the human and robotic return to the Moon. LDEP continues operations of the Lunar Reconnaissance Orbiter (LRO) and develops lunar science instruments and other payloads for robotic and crewed missions, long-term exploration, and utilization needs. LDEP also develops Artemis Deployed Instrument payloads to be delivered by astronauts on Artemis missions in addition to establishing the integrated lunar science strategy for the agency. LDEP will provide innovative investigations to enhance lunar exploration and science by developing technical capabilities and increased commercialization for an expanded range of lunar services For example, LDEP will focus on instrumentation to advance knowledge and technologies required to characterize the form, abundance, and distribution of local resources, such as lunar water ice. Working with the science and human exploration communities, our international partners, and U.S. industry, LDEP is defining the goals and objectives for a robust and sustainable lunar science program.

In collaboration with private industry and the scientific community, the program is developing lunar surface payloads (and supporting orbital payloads). These payloads address the nation’s lunar exploration, science, and technology demonstration goals as defined in NASA's Moon To Mars (M2M) objectives. The recent National Academies of Sciences Decadal Survey (Origins, Worlds, and Life: A Decadal Strategy for Planetary Science and Astrobiology 2023-2032) emphasized the need to continue supporting commercial innovation and collaboration initiatives to accomplish lunar (and beyond) exploration and science initiatives. The Artemis Deployed Instruments activities will enable greater Artemis science in service of these community goals.

LUNAR DISCOVERY AND EXPLORATION

EXPLANATION OF MAJOR CHANGES IN FY 2026

NASA has transferred the management and budget for Commercial Lunar Payload Services (CLPS) to the ESDMD in this budget. This transfer consolidates NASA's lunar transportation services within ESDMD without altering CLPS' operational model. This budget reduces funding for Development and Advancement of Lunar Instruments projects and assumes that the Lunar Trailblazer spacecraft, which launched as part of the Intuitive Machines-2 lunar lander in February 2025, cannot be revived. Given budget constraints, the Lunar Future project is not funded until future years.

NASA established a new project within this program: The Payloads and Research Investigations on the Surface of the Moon: Stand Alone Landing Site Agnostic (PRISM SALSA) project. PRISM-SALSA fills a gap in the instrument solicitation line that enables stand-alone instruments whose science may be completed at any lunar surface destination to be co-manifested on CLPS deliveries or international missions/collaborations. NASA expects to select up to four instruments for delivery to the lunar surface by a CLPS provider(s) in the 2028-2029 timeframe.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

In FY 2026, LDEP will complete a delivery for integration payloads for four CLPS deliveries. Intuitive Machines' third commercial delivery will include LDEP's first PRISM payload. The first PRISM-1 payload, Lunar Vertex, is set to land in the first quarter of FY 2026, alongside the STMD Cooperative Autonomous Distributed Robotic Exploration (CADRE) rovers and two international payloads, a radiation sensor from South Korea and a retroreflector from the European Space Agency (ESA). NASA will complete a delivery for integration of the joint NASA-Department of Energy payload, LuSEE-Night, to Firefly Aerospace for delivery to the lunar far side in order to conduct cosmological observations as well as an orbiting communications relay satellite and associated calibration source for LuSEE-Night. A small retroreflector for the CLPS Astrobotic Griffin lander will also be completed.

LDEP plans to award two PRISM-4 instrument suites for delivery to the lunar surface in the FY 2030 timeframe.

LRO has been in operation since 2009 and will commence its 6th extended mission period. LRO will continue to conduct priority science investigations and acquire valuable data sets that provide support for Artemis including commercial lunar deliveries under the CLPS project and for human exploration.

Program Schedule

Date	Significant Event
Q1 FY2025	PRISM SALSA Solicitation Release
Q2 FY2025	Scheduled delivery of 10 NASA payloads to Mare Crisium by Firefly Aerospace through CLPS*
Q2 FY2025	Scheduled delivery of PRIME-1 drill and mass spectrometer to southern lunar pole region by IM*
Q2 FY2025	Artemis Handheld Instrument RFI/Solicitation release

LUNAR DISCOVERY AND EXPLORATION

Date	Significant Event
Q2 FY2025	Scheduled delivery of 10 NASA payloads to Mare Crisium by Firefly Aerospace through CLPS*
Q3 FY2025	Scheduled delivery of a plume surface interaction instrument by Blue Origin through CLPS*
Q3 FY2025	Artemis III Participating Scientist Program Solicitation Release
Q3 FY2025	Delivery of LRA to Blue Origin for integration on CS-3/Mk1-SN1
Q4 FY2025	PRISM 4 Solicitation Release
Q4 FY2025	Delivery of PRISM-1 payload (Lunar Vertex) to Intuitive Machines for integration on IM-3
Q4 FY2025	Delivery of LuSEE-Night payloads to Firefly for integration on BGM-2
Q2 FY2026	PRISM 5 Solicitation Release
Second half of CY2026	Delivery of PRISM-1 payloads (LITMS, FSS) to Draper for integration

**NASA does not manage the launch vehicle portion of the CLPS effort and does not ultimately control final launch schedules of the selected providers that will deliver NASA and other provider-provided payloads. NASA will work with the CLPS vendors to ensure timely and successful launch and delivery of all science and technology payloads.*

Program Management & Commitments

The Planetary Mission Program Office located at MSFC is responsible for managing the LRO and Lunar Trailblazer missions, as well as Lunar Surface Instrument and Technology Payloads (LSITP), Payloads and Research Investigations on the Surface of the Moon (PRISM) payloads, and Artemis Deployed Instruments.

Program Element	Provider
LRO	Provider: GSFC Lead Center: MSFC, GSFC Performing Center(s): GSFC, JPL Cost Share Partner(s): N/A
Lunar Instruments	Provider: Various Lead Center: HQ Performing Center(s): N/A Cost Share Partner(s): N/A
Artemis III Deployed Instruments	Provider: University of Maryland, Baltimore County (LEMS); Space Lab Technologies, LLC (LEAF); University of Tokyo (LDA) Lead Center: MSFC Performing Center(s): Goddard Space Flight Center (LEMS), Ames Research Center (LEAF) Cost Share Partner(s): Biological & Physical Sciences Division (LEAF); JAXA (LDA)

LUNAR DISCOVERY AND EXPLORATION

Program Element	Provider
DALI	Provider: Various Lead Center: HQ Performing Center(s): ARC, GRC, GSFC Cost Share Partner(s): N/A
PRISM-1	Provider: JPL, Applied Physics Laboratory (APL), Southwest Research Institute (SwRI) Lead Center: MSFC Performing Center(s): JPL (Farside Seismic Suite) Cost Share Partner(s): N/A
Lunar Trailblazer	Provider: California Institute of Technology Lead Center: HQ, MSFC Performing Center(s): JPL Cost Share Partner(s): N/A
Lunar Management	Provider: HQ, MSFC Lead Center: HQ, MSFC Performing Center(s): MSFC Cost Share Partner(s): N/A
PRISM-2	Provider: ARC, University of Central Florida (UCF) Lead Center: MSFC Performing Center(s): ARC Cost Share Partner(s): N/A
PRISM-3	Provider: Southwest Research Institute (SwRI) Lead Center: MSFC Performing Center(s): N/A Cost Share Partner(s): N/A
Lunar International Mission Contributions - ShadowCam	Provider: Various Lead Center: HQ Performing Center(s): JSC, GSFC, JPL Cost Share Partner(s): Korea AeroSpace Administration (KASA)

LUNAR DISCOVERY AND EXPLORATION

Acquisition Strategy

NASA uses its established solicitation mechanisms, such as the Research Opportunities in Space and Earth Science (ROSES), NASA Research Announcements (NRA) and the Stand-Alone Missions of Opportunity Notice (SALMON) Announcement of Opportunity processes, to select and develop exploration, scientific, and technology development payloads for delivery to the Moon. This is how NASA established the PRISM, Artemis Deployed Instrument, and Lunar Terrain Vehicle Instrument payloads, which are solicited through the ROSES call. In some cases, NASA may direct a NASA center to develop a lunar capability or surface payload when it is in the government's best interest, such as when that capability supports multiple NASA applications or when a commercial entity or international stakeholder identifies a near-term opportunity for a lunar surface mission on a timeframe that does not support competitive selection. To the maximum extent possible, NASA will leverage competitive solicitations for science instrument procurement and commercial services.

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

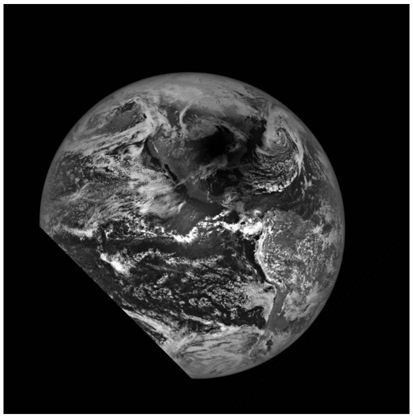
Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Volatiles Investigation Polar Exploration Rover	89.3	--	**0.0**	0.0	0.0	0.0	0.0
Commercial Lunar Payload Services	136.6	--	**0.0**	0.0	0.0	0.0	0.0
Lunar Trailblazer	7.2	--	**0.0**	0.0	0.0	0.0	0.0
Lunar Instruments	16.5	--	**17.5**	61.8	86.3	85.1	120.0
Payloads and Research Investigations on the Surface of the Moon-1	8.5	--	**4.3**	0.3	0.0	0.0	0.0
Payloads and Research Investigations on the Surface of the Moon-2	14.5	--	**2.1**	4.6	2.8	0.0	0.0
Payloads and Research Investigations on the Surface of the Moon-3	8.8	--	**12.3**	4.7	1.4	0.0	0.0
Artemis Instruments	0.7	--	**1.6**	1.0	1.0	1.0	1.0
Artemis III Deployed Instruments	9.1	--	**12.9**	1.7	0.0	0.0	0.0
Lunar Intl Mission Collaborations	2.5	--	**2.8**	1.9	0.0	0.0	0.0
Development and Advancement of Lunar Instrumentation (DALI)	15.0	--	**10.0**	10.0	10.3	10.3	10.3
Lunar Science	16.8	--	**19.6**	28.1	30.0	28.5	28.0
Lunar Management	5.6	--	**21.2**	21.6	32.4	33.2	10.0
Lunar Future	10.0	--	**0.0**	1.3	9.5	39.2	28.3
Lunar Reconnaissance Orbiter (LRO)	22.1	--	**22.2**	22.0	22.0	22.0	22.0
Payloads and Research Investigations on the Surface of the Moon-Stand-alone Landing Site-Agnostic	0.0	--	**11.0**	10.0	0.0	0.0	0.0
Total Budget	**363.4**	**--**	**137.3**	**169.0**	**195.8**	**219.2**	**219.6**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

OTHER MISSIONS AND DATA ANALYSIS

Mission Planning and Other Projects

Other Missions and Data Analysis includes mission planning, small missions in development, instrument and technology development, operating missions, international collaborations, management activities, and funding for future instrument and mission selections.



This image shows the Moon's shadow on Earth's surface during a 20-second period starting at 2:59 p.m. EDT (18:59:19 UTC) on April 8, 2024, by NASA's Lunar Reconnaissance Orbiter. Credit: NASA/Goddard/Arizona State University

LUNAR TRAILBLAZER

NASA selected a SmallSat called Lunar Trailblazer from the Small Innovative Missions for Planetary Exploration (SIMPLEx) call in 2019. Lunar Trailblazer launched in February, 2025 and was intended to spend one year orbiting the Moon to generate a high-resolution map of the distribution of water. However, following the successful deployment of Lunar Trailblazer from the SpaceX Falcon 9 rocket, mission operators initially established communications with the small satellite as expected but subsequently lost communication the next morning. Currently, there is still no contact with the spacecraft. The FY 2026 budget request assumes contact will not be regained and that NASA will declare an official end of mission. NASA has established an independent Anomaly Review Board to understand the issues that led to the post-launch anomaly and to identify lessons learned from this mission that could be crucial for enabling the success of future projects.

LUNAR INSTRUMENTS

NASA is developing instruments and technology payloads to manifest on CLPS deliveries and international lunar lander missions. These instruments come from U.S. academia, industry, and from NASA centers. NASA has manifested NASA Provided Lunar Payloads (NPLP), Lunar Surface Instrument and Technology Payloads (LSITP), and Payloads and Research Investigations on the Surface of the Moon (PRISM) payloads on CLPS deliveries with launch and deliveries starting in December 2023 and continuing through FY 2026.

The Lunar Surface Electromagnetics Experiment (LuSEE) Night instrument builds on the smaller LuSEE instrument originally selected as an LSITP payload. The pathfinder measurements enabled by LuSEE Night will be extremely valuable for understanding the radio-quiet lunar far side environment and the Dark Ages phase of the universe. LuSEE Night is a partnership between NASA and U.S. DoE. LuSEE Night is manifested on a CLPS delivery scheduled to launch in late 2025/early 2026.

LAFORGE is a U.S. lunar instrument development that will be on a CSA rover and serve as an imaging infrared radiometer to better create temperature maps in cold, permanently shadowed regions of the Moon. The Applied Physics Laboratory is leading the development.

OTHER MISSIONS AND DATA ANALYSIS

PAYLOADS AND RESEARCH INVESTIGATIONS ON THE SURFACE OF THE MOON (PRISM) - 1

The PRISM instrument selections will take the next leap forward in addressing National Academies' decadal priorities and continue to help NASA develop science-driven payloads for manifesting on future CLPS deliveries. NASA made three PRISM-1 selections in June of 2021 and will deliver the first of these payloads to high science-value locations on the lunar surface as early as the second quarter of FY 2026: the Reiner Gamma albedo swirl on the lunar nearside, and the second/third payloads to Schrödinger Basin on the lunar far side in Q4 CY 2026. This innovative approach for soliciting science investigations and technology demonstration payloads for future deliveries by CLPS providers will enable decadal-caliber science at the Moon and support the Artemis campaign. The three PRISM-1 selections were: Lunar Vertex (LVx) which is a combination of stationary lander payloads and a rover that will make detailed measurements of the magnetic field, plasma environment, and regolith properties; Farside Seismic Suite (FSS) which will return NASA's first lunar seismic data from the far side of the Moon; and Lunar Interior Temperature and Materials Suite (LITMS), a suite of two instruments which aims to investigate the heat flow and subsurface electrical conductivity structure of the lunar interior in Schrödinger Basin. LVx is on the CLPS manifest awarded to Intuitive Machines with lunar surface delivery of these payloads no earlier than the second quarter of FY 2026. FSS and LITMS are both manifested on a CLPS delivery awarded to Draper Laboratory. Draper will deliver these PRISM science investigations to the far side of the Moon no earlier than FY 2027.Payloads and Research Investigations on the Surface of the Moon (PRISM) - 2

CLPS will deliver the PRISM-2 selections to the lunar South Pole and the Gruithuisen Domes. The solicitation focused on volcanism in the mid-latitudes and environmental monitoring at the south polar region, the latter of which will support Artemis crewed missions. NASA selected the PRISM-2 science instrument suites in July 2022. The Gruithuisen Domes delivery is to a region of silicic late-stage volcanism and will help us understand the volcanic history of the Moon. The Lunar Vulkan Imaging and Spectroscopy Explorer (Lunar-VISE) investigation consists of a suite of five instruments, two mounted on a stationary lander and three on a mobile rover provided as a service by the CLPS vendor. The Lunar Explorer Instrument for space biology Applications (LEIA) science suite is a small CubeSat-based device. LEIA will provide biological research on the Moon by delivering yeast to the lunar surface and studying its response to radiation and lunar gravity.

PAYLOADS AND RESEARCH INVESTIGATIONS ON THE SURFACE OF THE MOON (PRISM) - 3

NASA selected the PRISM-3 payload in July 2023. The Dating an Irregular Mare Patch with a Lunar Explorer (DIMPLE) instrument suite, will investigate the Ina Irregular Mare Patch, discovered in 1971 by Apollo 15 orbital images. Learning more about this mound will address outstanding questions about the evolution of the Moon, which can provide clues to the history of the entire solar system. The scientific payload will establish the age and composition of hilly terrain created by volcanic activity on the near side of the Moon. This PRISM call was the first that allowed proposers to choose and justify a particular landing site for conducting high-priority lunar science investigations.

OTHER MISSIONS AND DATA ANALYSIS

PAYLOADS AND RESEARCH INVESTIGATIONS ON THE SURFACE OF THE MOON: STAND ALONE LANDING SITE AGNOSTIC (PRISM-SALSA)

PRISM-SALSA solicits individual instruments that are destination agnostic across the lunar surface. These stand-alone instruments whose science may be completed at any lunar surface destination will fly on CLPS deliveries in conjunction with other science investigations or be co-manifested on other NASA mission directorates' or international partners' spacecrafts. NASA expects to select up to four instruments for delivery to the lunar surface by a CLPS provider in the FY 2027-2028 timeframe.

ARTEMIS INSTRUMENTS

Artemis Instruments will specifically support science on the upcoming Artemis missions, beginning with Artemis III, currently scheduled for launch in FY 2026. These instruments will consist of surface-deployed instruments coupled to a central power/communications station (analogous to Apollo lunar surface experiment) or designed as a stand-alone instrument suite independent of lander/vehicle support. Some of these planned instruments are extra-vehicular activity astronaut-handheld instruments to enhance geological fieldwork/operations.

ARTEMIS III DEPLOYED INSTRUMENTS

NASA released the Artemis III Deployed Instruments solicitation in May of 2023 and made selections in March 2024. These instrument selections were based on the ability to be scientifically relevant at any of the current 13 lunar surface destinations identified for Artemis III and the ability to be ready for the Artemis III launch timeframe of Mid-2027.

LUNAR INTERNATIONAL MISSION COLLABORATION

In developing collaborations with our international partners, NASA funds U.S. participating science investigators and provides international collaborators with lunar landing site characterization data, as well as navigation and data relay services, in exchange for U.S. participation. Participation includes establishing U.S. scientists on the international instrument team, access to data returned from the mission, and assurance that participating scientists will publicly archive returned data in a manner consistent with NASA policies. NASA is also providing science instruments to fly on international missions. NASA is planning to contribute a Neutron Spectrometer (NSS) to the JAXA Lunar Polar Exploration Mission (LUPEX) rover, which is a partnership between JAXA and ISRO. NASA is also supporting extended operations for the NASA ShadowCam instrument on the Korean Lunar Pathfinder (KPLO).

DEVELOPMENT AND ADVANCEMENT OF LUNAR INSTRUMENTATION (DALI)

DALI focuses on advancing the development of spacecraft-based instruments that show promise for use in future lunar missions, including expected commercial ventures. DALI activities develop and demonstrate lunar science instruments to the point where principal investigators may propose their use in response to future announcements of flight opportunity without additional extensive technology development. DALI focuses on instruments with technology readiness levels (TRLs) four through six and may solicit for new technologies related to specific science gaps such as astronaut handheld instrument technologies.

OTHER MISSIONS AND DATA ANALYSIS

LUNAR SCIENCE

NASA is maximizing the lunar science achieved in this era of lunar exploration through science planning support for Artemis architecture formulation, including support for tool development and astronaut geology training. This project also supports Artemis-specific curation activities to prepare for the return of new lunar samples, such as those containing volatiles or requiring cold curation. It supports surface operations development, including analog activities to help NASA develop a real-time science support room structure and science team integration. In addition, targeted research and analysis funding will prepare the lunar community to take maximum advantage of data and samples from Artemis and CLPS.

LUNAR MANAGEMENT

The Planetary Missions Program Office (PMPO) at MSFC manages Planetary Science flight projects that are not part of the Mars Exploration Program, including elements of the LDEP portfolio, such as the LSITP and PRISM payloads selected for lunar delivery by CLPS landers as well as Artemis Instruments awards. PMPO provides programmatic, technical, and business management of these LDEP activities. Lunar Management also includes support for review boards and external technical support as needed and future mission studies.

LUNAR FUTURE

Lunar Future supports future activities, studies, instruments, and missions to help NASA achieve human and science exploration goals. In 2022, the Planetary Science and Astrobiology Decadal Survey identified potential new strategic missions to accomplish on the Moon. This budget provides no funding for the Lunar Future project in 2026 given higher priorities in the Science portfolio. As funding becomes available in future years, NASA will perform studies to address these potential strategic missions as defined in the Decadal alongside other strategic goals for science near and on the Moon.

Operating Missions

LUNAR RECONNAISSANCE ORBITER (LRO)

The LRO mission continues to conduct priority science investigations and acquire valuable data sets that provide support for commercial lunar deliveries under the CLPS project and for human exploration. LRO has contributed to a new understanding of the Moon and its evolution, which provides a foundation for understanding all other objects in our solar system, as well as solar systems beyond our own. LRO's investigations include a focus on lunar volatiles like ice and water and can help scientists answer questions about the nature of these volatiles. LRO has also been characterizing the thermal history of the Moon by identifying unusual volcanic features that may be geologically young, as well as tectonic features that reflect the continued gravitational pull from the Earth. Scientists use the instrument suite on LRO to characterize the rate at which volatiles move across the surface, the development of the regolith on different terrains, and the location and composition of unusual rock types on the surface.

LRO's ongoing characterization of the lunar surface ultimately enables and reduces risk associated with commercial and human exploration initiatives. LRO will characterize areas that may contain volatiles at or near the surface as well as landing sites for upcoming U.S. commercial lunar lander missions. LRO is also providing data products to support current and future Artemis missions.

DISCOVERY

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Other Missions and Data Analysis	188.3	--	113.9	119.8	305.0	391.6	431.0
Total Budget	**188.3**	**--**	**113.9**	**119.8**	**305.0**	**391.6**	**431.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Shown here is U.S. and Japanese team members gather around and discuss the gamma-ray spectrometer portion of the MEGANE instrument during its development at Johns Hopkins APL. Credit: NASA/JAXA/Johns Hopkins APL/Ed Whitman

NASA's Discovery program supports competitively selected, investigator-led Planetary Science missions to explore the planets, their moons, and small bodies such as comets and asteroids. With a lower mission cost cap than most of NASA's other planetary missions, Discovery provides scientists the opportunity to propose innovative ways to unlock the mysteries of the solar system. The Discovery 2019 Announcement of Opportunity (AO) had a cost-cap of $500 million in FY 2019, excluding launch vehicle and mission operation costs. The Discovery Program also supports research based on completed Discovery missions.

EXPLANATION OF MAJOR CHANGES IN FY 2026

In order to achieve cost savings, the DAVINCI, VERITAS, and EnVision missions are eliminated. No funding is provided for the Venus Technology project and funding is reduced for peer-reviewed science in Discovery Research.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

Psyche will begin the second phase of testing of the Deep Space Optical Communication technology demonstration on board the spacecraft. NASA/Psyche will collaborate with ESA in testing the DSOC's optical communications interoperability on the ground by using the ESA DSOC terminal in Greece.

JAXA will launch the MEGANE instrument and P-Sampler technology demonstration on the MMX spacecraft, currently scheduled for launch in October 2026.

DISCOVERY

Program Schedule

Date	Significant Event
FY 2025	MEGANE and P-Sampler underwent integration testing, including electrical, EMI/EMC, thermal vacuum, and vibration Lucy fly-by encounter of mid-sized asteroid (Donaldjohanson) in the main asteroid belt
FY 2026	Psyche Mars gravity assist in May 2026
FY 2027	JAXA MMX spacecraft will ship to the launch site with MEGANE and P-Sampler, for launch in October 2026 Lucy fly-by encounter with Jupiter trojan asteroids Eurybates, Queta, Polymele NET date for release of Discovery Announcement of Opportunity
FY 2028	Lucy fly-by encounter with Jupiter trojan asteroid Leucus Psyche arrives at asteroid in August 2029
FY 2029	Lucy fly-by encounter with Jupiter trojan asteroid Orus

Program Management & Commitments

The Discovery Program is a multiple-project program, with responsibility for implementation assigned to the Planetary Missions Program Office, located at MSFC.

Acquisition Strategy

NASA competitively selects new Discovery missions, releasing AOs when available funding allows.

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Deep Atmospheric Venus Investigation of Noble gases, Chemistry & Imaging	30.3	--	**0.0**	0.0	0.0	0.0	0.0
Venus Emissivity, Radio Science, InSAR, Topography, and Spectroscopy	5.0	--	**0.0**	0.0	0.0	0.0	0.0
EnVision	30.3	--	**0.0**	0.0	0.0	0.0	0.0
Psyche	57.7	--	**30.8**	37.6	38.6	38.1	41.1
Venus Technology	5.7	--	**0.0**	0.0	0.0	0.0	0.0
InSight	0.0	--	**0.0**	0.0	0.0	0.0	0.0
Lucy	25.6	--	**28.1**	32.6	34.9	25.0	23.1
Strofio	1.5	--	**1.8**	2.3	2.4	0.4	0.0
International Mission Contributions (IMC)	5.0	--	**10.7**	10.1	11.7	8.0	9.0
Planetary Management	21.4	--	**31.5**	27.9	28.7	27.3	27.9
Discovery Future	0.6	--	**0.3**	0.4	179.4	282.5	319.5
Discovery Research	2.8	--	**5.6**	6.2	7.7	8.7	8.7
Mars-moon Exploration with GAmma rays and NEutrons (MEGANE)	2.3	--	**5.2**	2.6	1.7	1.6	1.7
Total Budget	**188.3**	**--**	**113.9**	**119.8**	**305.0**	**391.6**	**431.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Discovery Other Missions and Data Analysis funds research and analysis; management activities; operations of active missions; small projects and international collaborations; and future mission selections.

INTERNATIONAL MISSION CONTRIBUTIONS (IMC)

NASA works closely with other space agencies to find opportunities to participate in each other’s missions. These opportunities complement NASA-led planetary missions and expand the opportunities for the U.S. planetary science community to address scientific priorities identified in the Decadal Survey. Under the International Mission Contributions, NASA funds instruments and scientific investigators and provides navigation and data relay services in exchange for participation in mission science. International missions currently supported include: the JAXA's extended mission, Hayabusa 2 Sharp (H2#), and Martian Moons eXploration (MMX) missions; the ESA/JAXA BepiColombo mission; the Korea Pathfinder Lunar Orbiter (KPLO), renamed Danuri; and the ESA Comet Interceptor mission.

The Pneumatic Sampler (P-Sampler) is also an element in IMC and is a technology demonstration instrument in development by Honeybee Robotics as a second NASA contribution to JAXA's MMX mission. The P-Sampler will complement the JAXA-developed primary surface sampler system by demonstrating the collection of surface and near-surface material on the Martian moon (Phobos) using compressed gas jets. The MMX mission will fly on a JAXA H3 rocket in 2026.

JAXA lost contact with the Akatsuki (Venus Climate Orbiter) in April 2024, with Akatsuki participating scientists' investigations reaching completion.

OTHER MISSIONS AND DATA ANALYSIS

PLANETARY MANAGEMENT

The Planetary Management project funds the NASA Planetary Science Division's institutional needs as well as programmatic assessments in support of the Planetary Science Division's strategic initiatives. This project also funds the Planetary Missions Program Office (PMPO) at MSFC, who manage nearly all Planetary Science flight projects outside the Mars Exploration Program, including, Discovery, New Frontiers, Outer Planets and Ocean Worlds, and Planetary Defense Coordination Office flight missions. The PMPO includes support for the day-to-day efforts of the mission managers and business office, as well as independent review boards and external technical support for the missions. This project also funds the Science Office for Mission Assessments at LaRC to support the proposal evaluation process for all competed missions, and the formation and operation of independent review panels to evaluate mission proposals.

DISCOVERY FUTURE

Discovery Future funds mission concept development during step one of the AO down-select process and provides funding for future Discovery mission selections. The next Discovery AO is no earlier than 2027.

DISCOVERY RESEARCH

Discovery Research funds analysis of archived data from Discovery missions and supports participating scientists on Discovery missions and international partnering missions. Discovery Research gives the broad research community an opportunity to access samples and data and allows research to continue for many years after mission completion. NASA solicits planetary research proposals from the U.S. planetary science community and evaluates them for selection through competitive peer review. Discovery Research also funds the analysis of samples returned to the Earth by the Stardust and Genesis missions, as well as the development of new analysis techniques for samples returned by future missions.

The Discovery Data Analysis Program element (DDAP) has provided support for continued analysis of spacecraft data from missions such as the Near-Earth Asteroid Rendezvous (NEAR)-Shoemaker; Stardust; Stardust-New Exploration of Tempel (NExT); Genesis; Deep Impact; Mercury Surface, Space Environment, Geochemistry and Ranging (MESSENGER); Dawn; and Kepler missions. The supported projects conduct new scientific inquiries and regularly obtain new scientific results. The Rosetta Data Analysis Program element (RDAP) has provided additional support targeted for analysis of data from Rosetta, an ESA-led mission with NASA participation, to explore and land on Comet 67P/Churyumov-Gerasimenko.

Discovery Research provided support for participating scientists on the Volatiles Investigating Polar Exploration Rover (VIPER) project. Due to the termination of the project, support for the VIPER participating scientists will cease at the end of FY 2025.

MEGANE

The Mars-moon Exploration with Gamma rays and Neutrons (MEGANE, also Japanese for "eyeglasses") instrument is a gamma-ray and neutron spectrometer currently in development by the Johns Hopkins University Applied Physics Laboratory, as a contribution to the JAXA MMX mission. Planned for launch in 2026, MMX will operate near the Martian moons Phobos and Deimos for approximately four years and return a sample from Phobos to Earth in 2031. MEGANE will measure the bulk composition of the near-surface materials on Phobos to constrain theories for the origin of the moons. It will also map the near-surface materials on Phobos to enable the study of surface processes and support MMX sample site selection.

Operating Missions

LUCY

NASA's Lucy mission launched in October 2021 to explore a diverse population of small bodies known as the Jupiter Trojan asteroids. The Trojans are remnants of our early solar system, now trapped on stable orbits associated with Jupiter. The two "swarms" lead and follow Jupiter in its orbit around the Sun and are almost as numerous as the objects in the Main Asteroid Belt. Over its 12-year primary mission, Lucy will explore a record-breaking number of asteroids, flying by two main-belt asteroids and seven Trojan asteroids on a tour that sets another first by being the first mission to traverse from the inner to outer solar system and back as it moves from the leading to trailing swarm.

Solar system formation models suggest that the Trojans are remnants of the same primordial material that formed the outer planets, serving as time capsules from the birth of our solar system. These bodies hold vital clues to deciphering the history of our solar system and may even tell us about the kinds of organic materials supplied to the early Earth. Lucy's objectives are to determine the properties and history of the Trojan asteroids by mapping their surface geology, measuring their color and composition, and determining their mass and density, as well as searching for satellites and/or rings that might exist.

PSYCHE

The Psyche mission launched in October 2023 will explore one of the most intriguing targets in the main asteroid belt: a giant metal asteroid known as 16 Psyche. This asteroid measures approximately 140 miles in diameter and, unlike most other asteroids that are rocky or icy bodies, is likely comprised mostly of metallic iron and nickel, similar to Earth's core. The mission will help scientists understand how planets and other bodies separated into their layers, including cores, mantles, and crusts, early in their histories. Psyche will arrive at 16 Psyche in 2029, where the spacecraft will spend more than two years in four different orbits. Each orbit will be at different distances from the asteroid, allowing the team to study its shape and magnetic field, topography and spectral characteristics, gravitational field, and elemental compositions. Each orbit will provide knowledge needed to guide future orbits, enabling operators to update the models, plans, and sequences.

STROFIO

STart from a ROtating FIeld mass spectrOmeter (STROFIO) is a unique mass spectrometer that is part of the suite of instruments flown onboard the joint ESA and JAXA BepiColombo spacecraft, launched on October 20, 2018, and planned to enter Mercury orbit and begin observations in 2026. STROFIO will study and characterize the chemical composition and dynamics of Mercury's thin atmosphere (exosphere). Eight NASA-funded scientists serve as interdisciplinary scientists, guest investigators, or instrument co-investigators on the BepiColombo Science Team. These investigators collaborate with the BepiColombo team on a variety of projects that will improve understanding of both Mercury and Venus, as well their surrounding space environments.

NEW FRONTIERS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Dragonfly	360.0	--	**494.1**	416.9	337.4	31.1	44.2
Other Missions and Data Analysis	78.2	--	**5.8**	14.8	24.9	125.8	251.8
Total Budget	**438.2**	**--**	**499.9**	**431.7**	**362.3**	**156.9**	**296.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The New Frontiers program is focused on planetary science investigations using innovative and efficient management approaches. The program's prime objective is to answer unique science questions in the exploration of the solar system. Initiated in 2003, the New Frontiers Program solicits medium-class planetary science missions led by principal investigators with high scientific priority and value. The program emphasizes competed and peer-reviewed missions accomplished under the leadership of the scientific research community and aligned with the scientific goals of the Planetary Science Decadal Survey.

Jupiter, as seen during NASA Juno's 66th perijove on Oct. 23, 2024. Credit: NASA / JPL / SwRI / MSSS / Gerald Eichstädt / Thomas Thomopoulos

Since its inception, the program has successfully launched three missions, one to study Pluto (New Horizons), a second to study Jupiter (Juno), and a third to return samples from the Bennu asteroid (Origins, Spectral Interpretation, Resource Identification, Security, Regolith Explorer [OSIRIS-REx]). A fourth mission to study the surface of Saturn's moon, Titan, is currently in development (Dragonfly).

The program also supports continued research and data analysis from its missions. NASA issues annual calls for proposals and awards research grants based primarily upon their scientific merit. These grants not only broaden participation in the missions, but also deepen our understanding of the science objectives of each mission, produce new discoveries, and train the next generation of scientists.

EXPLANATION OF MAJOR CHANGES IN FY 2026

In order to maintain progress on the Dragonfly mission within a reduced Planetary Science budget, reductions are made to other elements of this program. NASA reduced peer-reviewed science in New Fronters Research. Operating missions that have completed their prime missions (New Horizons and Juno) and the follow-on mission to OSIRIX-REx, OSIRIS-Apophis Explorer, are eliminated. Funding is increased for the Dragonfly mission consistent with the budget approved at mission confirmation.

PROGRAM SCHEDULE

Date	Significant Event
Q3 2025	Release of draft New Frontiers 5 AO
Q2 2025	New Frontiers Data Analysis Program solicitation

NEW FRONTIERS

Date	Significant Event
Q2 2026	New Frontiers Data Analysis Program solicitation
NET 2026	Release of New Frontiers 5 AO solicitation
NET FY 2028	Select fifth New Frontiers mission
Q4 2028	Dragonfly Launch Readiness Date

PROGRAM MANAGEMENT & PLANNED CADENCE

The New Frontiers Program is a multi-project program, with responsibility for implementation assigned to the Planetary Missions Program Office, located at MSFC.

The New Frontiers Program has a launch cadence goal of five years. The current average launch cadence has lengthened to 7.5 years.

ACQUISITION STRATEGY

NASA competitively selects New Frontiers missions, releasing AOs when available funding allows.

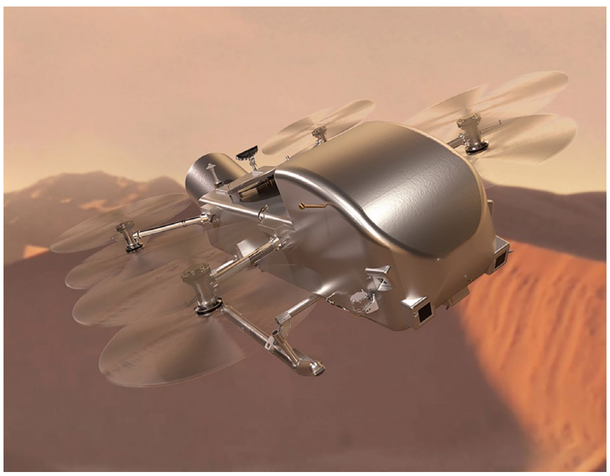
DRAGONFLY

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	360.0	--	494.1	416.9	337.4	31.1	44.2

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



Shown here is an Artist's impression of Dragonfly soaring over the dunes of Saturn's moon Titan. Credit: NASA/Johns Hopkins APL/Steve Gribben

PROJECT PURPOSE

Dragonfly is a mission to study Titan, the largest moon of Saturn, using a rotorcraft carrying an advanced set of instruments to characterize the surface, atmosphere, and interior from different locations. Titan is a unique world that potentially harbors an interior ocean. Its surface, layered with organic snow on an icy crust possibly shaped by wind and fluvial processes, may be analogous to early Earth, where carbon and nitrogen interacted with water and energy to form life. Through measurements made at diverse locations across Titan, Dragonfly will characterize the habitability of Titan's environment, investigate how far pre-biotic chemistry has progressed, and search for chemical signatures indicative of water-based and/or hydrocarbon-based life.

EXPLANATION OF MAJOR CHANGES IN FY 2026

NASA confirmed the Dragonfly mission to enter the development phase in April 2024. The Dragonfly budget is increased consistent with the budget approved at mission confirmation, supporting a launch date of July 2028.

PROJECT PARAMETERS

Dragonfly will target a launch in July 2028. After a 6.5-year cruise, which includes one Earth gravity assist, Dragonfly will perform an entry, descent, and landing onto Titan's surface. Upon landing, Dragonfly will fly to dozens of locations looking for prebiotic chemical processes on Titan, analogous to processes on early Earth. Dragonfly, which has eight rotors and flies like a large drone, marks the first time NASA will fly a multirotor vehicle designed to collect science data on another planetary body. It will take advantage of Titan's dense atmosphere (four times denser than Earth's) and low-gravity (one-seventh that on Earth) to become the first vehicle ever to fly its entire science payload to multiple sites for

DRAGONFLY

Formulation	Development	Operations

repeatable and targeted access to surface materials. It is a scientifically diverse mission that includes an assortment of instruments: the Dragonfly Camera Suite (DragonCam), which is a set of microscopic and panoramic cameras to image Titan's terrain and scout for scientifically interesting landing sites; the Dragonfly Gamma-Ray and Neutron Spectrometer (DraGNS), which consists of a deuterium-tritium Pulsed Neutron Generator and a set of a gamma-ray and neutron spectrometers to identify the surface composition under the lander; the Dragonfly Mass Spectrometer (DraMS), which is an advanced mass spectrometer to identify chemical components in surface and atmospheric samples, especially those relevant to biological processes; and the Dragonfly Geophysics and Meteorology Package (DraGMet), which is a suite of meteorological sensors including a seismometer.

Titan is an analog to the very early Earth and can provide clues to how life may have begun on our planet. During its nearly three-year baseline mission, Dragonfly will explore diverse environments from organic dunes to the floor of an impact crater where liquid water and complex organic materials, key to life, once existed together, possibly for tens of thousands of years. Its instruments will study how far prebiotic chemistry has progressed. They also will investigate the moon’s atmospheric and surface properties and its potential subsurface ocean and liquid reservoirs. Instruments will search for chemical signatures suggestive of past or extant life. A multi-mission radioisotope thermoelectric generator will power the Dragonfly rotorcraft.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

Dragonfly will continue to fabricate and build both test and flight hardware as the project moves to the start of Integration and Test (I&T) in FY 2027.

SCHEDULE COMMITMENTS/KEY MILESTONES

Dragonfly's project schedule is based on a July 2028 launch readiness date.

Milestone	Confirmation Baseline Date	FY 2026 PB Request
KDP-C	April 2024	April 2024
CDR	December 2024	April 2025
KDP-D	Spring 2027	Spring 2027
KDP-E	Spring 2028	Spring 2028
Launch	July 2028	July 2028

DEVELOPMENT COST AND SCHEDULE

This is the first report of development costs for this mission.

DRAGONFLY

Formulation	Development	Operations

Base Year	Base Year Develop-ment Cost Estimate ($M)	JCL (%)	Current Year	Current Year Develop-ment Cost Estimate ($M)	Cost Change (%)	Key Milestone	Base Year Milestone Data	Current Year Milestone Data	Milestone Change (mths)
2025	1963.5	>70 %	2025	1963.5	0%	LRD	July 2028	July 2028	0

Note: The confidence level estimates reported reflect an evolving process as NASA improves its probabilistic estimation techniques and processes. Estimate reflects the practices and policies at the time it was developed. Estimates that include combined cost and schedule risks are denoted as JCL (joint confidence level); all other CLs (confidence levels) reflect cost confidence without necessarily factoring the potential impacts of schedule changes on cost.

DEVELOPMENT COST DETAILS

Element	Base Year Development Cost Estimate ($M)	Current Year Development Cost Estimate ($M)	Change from Base Year Estimate ($M)
TOTAL:	1963.5	1963.5	0
Aircraft/Spacecraft	530.9	731.8	+200.9
Payloads	156.4	233.6	+77.2
Systems I&T		47.0	+47.0
Launch Vehicle	350.6	350.6	0
Ground Systems	19.3	50.7	+31.4
Science/Technology		15.0	+15.0
Other Direct Project Costs	906.3	534.8	-371.5

PROJECT MANAGEMENT & COMMITMENTS

The Principal Investigator is from the Johns Hopkins University APL. APL has project management responsibility for Dragonfly.

DRAGONFLY

Formulation	Development	Operations

Element	Description	Provider Details	Change from Baseline
DraMS	Provides detailed analysis of organic chemistry	Provider: GSFC Lead Center: GSFC Performing Center(s): GSFC Cost Share Partner(s): N/A	Removed the atmospheric mode.
DraGNS	Determines bulk near-surface composition and layering	Provider: APL Lead Center: MSFC Performing Center(s): N/A Cost Share Partner(s): N/A	Replaced the Pulse Neutron Generator (PNG) with a passive radiation source.
DraGMet	Measures atmospheric conditions, seismicity, and surface/subsurface properties	Provider: APL Lead Center: MSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
DragonCam	Documents landforms and processes; provides context for samples; and performs aerial imaging to scout landing sites	Provider: Malin Space Science Systems Lead Center: MSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
Drill for Acquisition of Complex Organics Sampling System	Provides pneumatic transfer system and sample acquisition drill	Provider: Honeybee Robotics Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
Multi-Mission Radioisotope Thermoelectric Generator	Provides power to the Dragonfly lander	Provider: DoE Lead Center: GRC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A

DRAGONFLY

Formulation	Development	Operations

Element	Description	Provider Details	Change from Baseline
Cruise Stage	Propulsion stage to get Dragonfly to Titan	Provider: Lockheed Martin Lead Center: MSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
Entry, Descent, and Landing (EDL) Assembly	Includes aeroshell, parachutes, and support equipment	Provider: Lockheed Martin Lead Center: MSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
Dragonfly Lander	Flight system to carry and support the science instruments	Provider: APL Lead Center: MSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A

PROJECT RISKS

Risk Statement	Mitigation
If: The project underestimates the aerodynamics loads during preparation for powered flight in the model, Then: the lander might not achieve a successful release and transition to powered flight.	The team plans to incorporate additional testing and analyses to increase fidelity to the existing models. Improved models will provide confidence in the estimates and ability to transition to powered flight.
If: There is a fatigue related failure of a single string component on the Dragonfly lander due to flight related mechanical environments, Then: The team could lose the lander before achieving baseline science.	The team will be looking into performing endurance vibration testing on key single string components. The team is also considering the addition of response accelerometers in the Lander.

DRAGONFLY

Formulation	Development	Operations

Risk Statement	Mitigation
If: Flight System mass exceeds the defined Maximum Possible Value, Then: The mission requirements will not be met.	The team both tracks mass liens and threats and then also reconciles the Dragonfly system mass on a monthly basis. There is a direct relation between the lander mass and the duration of Titan surface flight durations.

ACQUISITION STRATEGY

NASA competitively selected the mission through the New Frontiers 4 Announcement of Opportunity (AO); the final down selection occurred in June 2019. The major elements of the mission and spacecraft are as proposed in the AO.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
Principal Investigator; Science Co-Is; Mission Management; Lander Development; DraGMet; DraGNS; System I&T; Science Operations; and Mission Operations	APL	Laurel, MD
Cruise Stage; EDL Assembly; and I&T Support	Lockheed Martin	Denver, CO

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	Standing Review Board (SRB)	Feb 2023	PDR	Passed
Performance	SRB	April 2025	CDR	Passed
Performance	SRB	Apr 2027	SIR	TBD
Performance	SRB	Apr 2028	ORR	TBD

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
OSIRIS-Apophis Explorer	14.5	--	**0.0**	0.0	0.0	0.0	0.0
New Frontiers Future Missions	0.0	--	**0.5**	8.4	17.3	117.0	243.0
New Frontiers Research	8.8	--	**5.3**	6.4	7.6	8.8	8.8
Origins Spectral Interpretation Resource	16.8	--	**0.0**	0.0	0.0	0.0	0.0
New Horizons	9.7	--	**0.0**	0.0	0.0	0.0	0.0
Juno	28.4	--	**0.0**	0.0	0.0	0.0	0.0
Total Budget	**78.2**	**--**	**5.8**	**14.8**	**24.9**	**125.8**	**251.8**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

New Frontiers Other Missions and Data Analysis includes support for analysis of data from New Frontiers missions and preparation for future missions.

Mission Planning and Other Projects

NEW FRONTIERS FUTURE MISSIONS

New Frontiers Future Missions provides the funding required for future New Frontiers mission selections. NASA will release the next Announcement of Opportunity no earlier than 2026.

NEW FRONTIERS RESEARCH

New Frontiers Research funds analysis of archived data from New Frontiers missions, as well as participating scientists and selected members of the research community who augment and enhance the science teams of New Frontiers missions. New Frontiers Research provides the research community access to data and samples, enabling research to continue for many years after mission completion. Participating scientists bring new ideas to mission teams and frequently provide a pathway for early career investigators to gain experience with planetary missions. This program supports efforts to maximize science return from each of the missions. NASA solicits planetary research proposals from the U.S. planetary science community and evaluates them for selection through competitive peer review.

MARS EXPLORATION

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Other Missions and Data Analysis	255.0	--	**271.1**	294.8	297.0	303.3	268.7
Total Budget	**255.0**	**--**	**271.1**	**294.8**	**297.0**	**303.3**	**268.7**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Mars Reconnaissance Orbiter (MRO) used its High-Resolution Imaging Science Experiment (HiRISE) camera to capture this impact crater, about 71 feet (21.5m) in Cerberus Fossae, a seismically active region of the Red Planet, on March 4, 2021 is shown here. Scientists matched the crater's appearance on the surface with a quake detected by the InSight lander, which was about 1,000 miles (1,640 kilometers) away. This impact crater was identified, along with 123 craters that formed in the time InSight was operating, in a matter of days, with help from a machine learning algorithm developed at the JPL (a task that would have taken humans years of searching).

The Mars Exploration Program is a science-driven, technology-enabled program to characterize and understand Mars, including its current environment, climate and geological history, and biological potential, and to prepare for human exploration. Over the past two decades, Mars Exploration has made numerous scientific and technical breakthroughs via a series of missions. As the most Earth-like planet in the solar system, Mars has a landmass approximately equivalent to the Earth's, as well as ancient remnants of many of the same geological features (e.g., riverbeds, river deltas, and volcanoes). Mars also has many of the same "systems" that characterize Earth (e.g., atmosphere, water, ice, and geology), that interact to produce the modern Martian environment. Mars also has fundamental differences from Earth, including the lack of a global magnetic field and chaotic changes in the orientation of its spin axis over tens of millions of years, which have affected its environment.

In the past two decades, Mars Exploration successfully enabled meeting high-priority objectives associated with Mars Exploration's evolving science themes: Follow the Water, Explore Habitability, Seek Signs of Life, Prepare for Human Exploration. Today, our scientific missions are paving the way for a future in which humans and robots will explore Mars and the solar system together.

Mars Exploration's programmatic planning for the 2024–2044 period evolved from four science themes into three co-equal, guiding science themes: exploring the potential for Martian life, supporting the human exploration of Mars, and revealing Mars as a dynamic planetary system. These science themes address time-sensitive questions and build the capacity to study Mars the way we study Earth.

MARS EXPLORATION

EXPLANATION OF MAJOR CHANGES IN FY 2026

Funding is increased within Mars Future Missions to establish a regular cadence of science-driven, lower-cost mission and hosted instrument opportunities which will conduct robotic science investigations to prepare for the arrival of humans on the Martian surface. The Mars technology investments made in FY 2025 will be leveraged along with future year technology investments to enable the lower-cost missions and hosted instruments funded in the Mars Future Missions line. NASA reduced peer-reviewed science in Mars Research and Analysis and has eliminated funding for several missions operating well past the end of prime mission including Mars Odyssey and Mars Express, Mars Atmosphere and Volatile EvolutioNn (MAVEN). The budget does not support NASA contributions to the European Space Agency's (ESA) Rosalind Franklin ExoMars Rover mission (ROSA).

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Rosalind Franklin Support and Augmentation (ROSA)	36.0	--	**0.0**	0.0	0.0	0.0	0.0
Mars Rover 2020	87.5	--	**67.9**	82.5	83.0	83.0	65.9
Trace Gas Orbiter - ExoMars	1.7	--	**2.0**	2.0	2.0	2.1	2.2
Mars Program Management	8.4	--	**13.3**	13.4	13.5	14.0	13.4
Mars Future Missions	5.1	--	**110.0**	110.0	110.0	110.0	110.0
Mars Mission Operations	5.4	--	**5.6**	6.4	6.1	5.7	6.3
Mars Research and Analysis	10.2	--	**9.6**	10.6	12.0	14.0	11.0
Mars Technology	2.4	--	**0.0**	6.0	6.5	6.5	1.0
2011 Mars Science Lab	40.0	--	**38.0**	40.0	40.0	44.0	35.0
Mars Reconnaissance Orbiter 2005 (MRO)	25.1	--	**24.8**	24.0	24.0	24.0	24.0
Mars Odyssey 2001	10.6	--	**0.0**	0.0	0.0	0.0	0.0
Mars Express	0.3	--	**0.0**	0.0	0.0	0.0	0.0
Mars Atmosphere & Volatile EvolutioN	22.5	--	**0.0**	0.0	0.0	0.0	0.0
Total Budget	**255.0**	**--**	**271.1**	**294.8**	**297.0**	**303.3**	**268.7**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Other Missions and Data Analysis includes mission planning and management, small missions in development, research and technology activities, funding for future Mars missions, and Mars operating missions. The operating projects include Mars Science Laboratory (MSL), Mars Reconnaissance Orbiter (MRO), Trace Gas Orbiter - ExoMars, and Mars Rover 2020.

Mission Planning and Other Projects

MARS PROGRAM MANAGEMENT

Mars Program Management provides for the broad-based implementation and programmatic management of the Mars Exploration Program. Mars Program Management also supports independent review panels, planetary protection studies, advanced mission and program architecture studies, program science, and coordination and integration of telecommunications between the Earth and Mars (including the Mars Relay Network).

MARS FUTURE MISSIONS

Mars Future Missions supports lower-cost, competitively selected missions and instruments that address both human exploration and science objectives.

To maintain and advance U.S. leadership in Mars science exploration, a position that NASA has held for over 50 years, investment is required to strategically enable a flexible and scalable program to conduct priority science investigations on Mars in preparation for the arrival of humans. The new investment will establish a regular cadence of science-driven, lower-cost mission and hosted instrument opportunities that allow for rapid response to discoveries. New initiatives will leverage industry and science partnerships with initial efforts focused on addressing Martian surface transport mechanisms. Addressing surface transport mechanisms will further our understanding of atmospheric evolution and current processes, and it will inform and validate transport models to account for contamination from Earth systems. This will directly support informing planetary protection policy for crewed missions to Mars.

Partnerships with industry and science stakeholders will be achieved through competitive solicitations and announcements of opportunity. Industry capabilities will be assessed for integration and will leverage commercial services to the maximum extent possible. The first hosted instruments and payloads ($25-$35M each) will likely be delivered via the new Commercial Mars Payload Services targeting readiness for a 2028 launch.

A low-cost mission solicitation will be released in October 2026, targeting a 2030 launch, with a $200M lifecycle cost, excluding launch.

MARS MISSION OPERATIONS

Mars Mission Operations provides management and leadership for the development and operation of Mars multi-mission systems for operations. Mars Mission Operations supports and provides common operational systems and capabilities at a lower cost and risk than having each Mars project produce systems individually.

MARS RESEARCH AND ANALYSIS (R&A)

Mars R&A provides funding for research and analysis of Mars mission data to understand how geologic, climatic, and other processes have worked to shape Mars and its environment over time, as well as how they interact today. The project has invested in Mars data analysis capabilities to analyze archived data collected from Mars missions, as well as critical products that provide data and analyses for the safe arrival, aero-maneuver, entry, descent, and landing on Mars.

Data analysis through Mars R&A allows research to continue for many years after data collection and mission completion. These research projects increase our scientific understanding of Mars' past and present environments and share the results through scientific publications. Using data collected by spacecraft, researchers can make scientific discoveries and test hypotheses about the Martian environment.

MARS TECHNOLOGY

Mars Technology focuses on technological investments that lay the groundwork for successful future Mars missions such as miniaturized telecommunication devices that enable lower cost science missions, automated manufacturing of low-cost thermal protection system materials, and advanced legged-robotic-mobility elements for exploration of challenging Martian terrain.

In FY 2025, NASA will initiate studies and technology development in support of "Exploring Mars Together: Mars Exploration Program Future Plan, 2024-2044." Specific areas of near-term interest include new techniques for Mars entry, descent, and landing; surface and aerial mobility; avionics, autonomy, and power; drilling and sample handling, and telecommunications. Investments in these areas are considered the initial steps of a "roadmap" for infrastructure investments to enable future missions. As part of these efforts, NASA will engage with academia and United States industry to leverage their unique and growing capabilities in these technologies.

Operating Missions

MARS ROVER 2020

NASA's Mars 2020 Perseverance rover advanced one of the top scientific priorities detailed in the Planetary Science and Astrobiology Decadal Survey 2023-2032, initiating the first leg of a round trip to Mars to return samples to Earth for further study. Perseverance is characterizing the planet's geology and past climate, searching for signs of ancient microbial life on Mars, and collecting and storing carefully selected rock and sediment samples. During the Mars Rover 2020 prime mission, it tested new technologies to benefit future robotic missions and pave the way for human exploration of Mars. Subsequent missions could retrieve the sealed samples collected by Perseverance from the surface of Mars and return them to Earth for in-depth analysis. Once returned to Earth, the Perseverance sample suite may provide answers to long-standing critical questions about Mars, given the significant increase in precision and accuracy of the laboratory analyses on Earth, relative to in situ measurements on Mars. Earth arrival of the first samples carrying potential evidence of non-terrestrial life would create an entirely new and potentially rich scientific discipline and engage many hundreds of scientists for decades.

The Perseverance rover is carrying a competitively selected science and technology payload of seven instruments. Five of the instruments provide the clearest possible measurements for seeking possible signs of ancient life (potential “biosignatures”) on Mars over its 4.6-billion-year history. The remaining two instruments assess environmental hazards and resources for future human exploration. Perseverance also ferried a helicopter named Ingenuity, the first aircraft to achieve powered, controlled flight on another planet. The Mars Rover 2020 mission incorporates new capabilities developed through investments by NASA's STMD and ESDMD and payload contributions from international partners.

TRACE GAS ORBITER - EXOMARS

The first mission in the ESA ExoMars program is the 2016 ExoMars Trace Gas Orbiter (TGO), which launched in March 2016 and began its science and relay operations phase in March 2018 with the observations of a global dust storm. For this mission, NASA contributed two Electra ultra-high frequency telecommunication radios, identical to those used successfully on NASA’s MRO and MAVEN. The Electra radio acts as a communications relay and navigation aid for surface assets and supports navigation, command, and data-return needs for Martian landers and rovers. Furthermore, two instruments, the Colour and Stereo Surface Imaging Systems (CaSSIS) and the Nadir and Occultation for MArs Discovery (NOMAD) included significant contributions from U.S. co-investigators.

2011 MARS SCIENCE LABORATORY (MSL)

The Curiosity rover is collecting Martian soil and rock samples and analyzing them for organic compounds and environmental conditions favorable for microbial life, using its cameras, spectrometers, and the Sample Analysis at Mars (SAM) instrument suite. To look for signs of water that may lie below the rover, a radiation detector pointed downward measures hydrogen up to three feet below the surface.

OTHER MISSIONS AND DATA ANALYSIS

The team expects the Curiosity radioisotope thermal generator to produce enough power into the 2030s to enable the continued exploration and assessment of Martian regions with potential as past habitats for life.

The Curiosity rover is also providing regular measurements of the Martian atmosphere and weather one of few stations recording temperature, atmospheric pressure, humidity, and wind on the Martian surface. A radiation detector also regularly monitors high-energy radiation at the Martian surface.

MARS RECONNAISSANCE ORBITER 2005 (MRO)

MRO, currently in its sixth extended operations phase, carries the highest resolution camera orbiting another planet, the High-Resolution Imaging Science Experiment (HiRISE). This capability yields a very detailed view of the geology and structure of Mars and is critical in identifying obstacles that could jeopardize the safety of future landers and rovers. A second camera, the Context Camera, acquires medium-resolution images that provide a broader geological context for the more detailed observations from higher-resolution instruments. MRO also carries a radar sounder to find deep subsurface water ice, which is an important consideration in selecting scientifically worthy landing sites for future exploration.

MRO carries a high-resolution imaging spectrometer, the Compact Reconnaissance Imaging Spectrometer for Mars, which ceased operations in FY 2022 as its cryocoolers could no longer maintain the low temperatures required by its detectors. A wide-angle camera, the Mars Color Imager, continues to provide daily global weather maps, and the Mars Climate Sounder maps the vertical distribution of temperature, dust, and water vapor ice around the globe. MRO will extend HiRISE operations and reveal new images of mineral deposits and the three-dimensional structure and extent and nature of polar ice and subsurface ice in fresh craters; characterize the episodic nature of great dust storms; and expand coverage and quantification of active surface change on Mars today.

As it explores Mars, MRO also serves as a major element of an “interplanetary internet,” as a communications orbiter that relays commands to and data from the MSL Curiosity and Mars 2020 Perseverance rovers to Earth.

MARS SAMPLE RETURN

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**310.0**	**--**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA plans to terminate the Mars Sample Return Program given that current architecture options remain unaffordable. The project will halt formulation activities and begin termination of all procurements. It is anticipated that future missions to Mars will return samples for study on Earth.

OUTER PLANETS AND OCEAN WORLDS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Other Missions and Data Analysis	352.5	--	**83.9**	101.8	136.5	165.1	169.4
Total Budget	**352.5**	**--**	**83.9**	**101.8**	**136.5**	**165.1**	**169.4**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

This artist's concept depicts NASA's Europa Clipper spacecraft with solar arrays fully deployed in orbit around Jupiter. Europa Clipper's solar arrays are the biggest NASA has ever developed for a planetary mission.

The Outer Planets and Ocean Worlds Program enables the exploration of worlds currently possessing vast expanses of liquid water in our solar system. These liquid reservoirs provide insight into some of the most fundamental questions about life and the evolution of the solar system.

NASA missions have revealed a surprising number of ocean worlds in our solar system, while at the same time providing enticing, but limited details about these oceans. Underneath its icy crust, Jupiter's moon (Europa) contains a global liquid water ocean holding twice as much water as all of Earth's oceans. Scientists detected a similar, though smaller, global ocean on Enceladus, a small moon orbiting Saturn. Other moons (e.g., Ganymede, Titan, and perhaps Callisto) and possibly even Pluto possess oceans deep beneath their surfaces. Titan also possesses huge lakes of liquid methane on its surface, the only place beyond Earth known to have lakes exposed to an atmosphere.

Research and spacecraft measurements have increased our confidence that these ocean worlds possess at least some of the conditions needed for life: long-lived oceans, providing liquid water and a stable habitat; hydrothermal activity and other chemical sources, providing energy; and the basic elements along with organics, providing necessary materials. Thus, ocean worlds, like Europa, are the most likely places to search for currently habitable environments in the solar system and any life forms that could exist in them.

The Outer Planets and Ocean Worlds Program enables science investigations spanning the diversity of worlds hosting large liquid bodies in the outer solar system. These missions enable investigation of more focused scientific questions than smaller and less complex missions in the New Frontiers and Discovery programs can pursue.

EXPLANATION OF MAJOR CHANGES IN FY 2026

To achieve cost savings, slight reductions are made to peer-reviewed science in Outer Planets Research. Additional funds are added to support Europa Clipper operations.

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Europa Clipper	339.9	--	**71.4**	89.2	122.2	148.6	152.3
JUICE - Jupiter Icy Moons Explorer	0.6	--	**2.5**	2.6	2.4	2.9	3.6
Outer Planets Research	12.0	--	**10.0**	10.0	11.9	13.6	13.6
Total Budget	**352.5**	**--**	**83.9**	**101.8**	**136.5**	**165.1**	**169.4**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Other Missions and Data Analysis includes NASA's contribution to the ESA JUpiter ICy Moons Explorer (JUICE) mission, Europa Clipper, and Outer Planets Research.

Mission Planning and Other Projects

JUPITER ICY MOONS EXPLORER (JUICE)

NASA is collaborating on this ESA-led mission to Ganymede and the Jupiter system. Together, the Europa Clipper and JUICE missions provide an opportunity for comparative investigation of three of the ocean worlds in the Jupiter system: Europa, Ganymede, and Callisto. Researchers believe all three worlds possess liquid water oceans at varying depths beneath their surfaces. The NASA contribution consists of three separate pieces of hardware: one full instrument, the Ultraviolet Spectrograph; two sensors for the Swedish National Space Agency Particle Environment Package suite of instruments; and the transmitter and receiver hardware for the Radar for Icy Moons Exploration instrument.

OUTER PLANETS RESEARCH

Outer Planets Research increases the scientific return of current and past outer planets missions and paves the way for future missions (e.g., characterizing the interior and surface of Europa; and identifying changes on the surface of Enceladus, which may be caused by its water-rich plumes venting from its sub-surface oceans).

Operating Missions

EUROPA CLIPPER

This mission will leverage the competitively selected payload of investigations to characterize the ice shell and any subsurface water, including their heterogeneity, ocean properties, and the nature of the surface-ice ocean exchange. It will also seek to understand the habitability of Europa’s ocean through composition and chemistry of the surface and exosphere; understand the formation of surface features, including sites of recent or current activity; and identify and characterize high science interest locations. This will be the first NASA mission explicitly designed to explore an ocean world.

OTHER MISSIONS AND DATA ANALYSIS

Europa Clipper's science payload consists of 10 instruments, grouped as follows:

- Cameras and spectrometers will create high-resolution images and composition maps of the moon's surface and thin atmosphere;
- An ice-penetrating radar, a magnetometer, plasma sensors, and a gravity investigation will reveal the moon's ocean and deep interior;
- The spacecraft's thermal camera will pinpoint warmer ice and might reveal recent eruptions of water or bodies of liquid water buried near the surface; and
- A dust analyzer and a mass spectrometer will study the chemistry of particles and gases ejected from the surface and subsurface of the moon.

Europa Clipper launched on a SpaceX Falcon Heavy launch vehicle on October 14, 2024, using the gravity of Mars and Earth (i.e., Mars-Earth Gravity Assist) to gain speed and steer it towards Jupiter. The Europa Clipper mission will spend four years in orbit around Jupiter, conducting its scientific observations by completing 49 close fly-bys of Europa.

RADIOISOTOPE POWER

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	175.5	--	139.0	21.0	19.1	0.0	0.0

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Radioisotope Power Systems (RPS) program works in partnership with the DoE to ensure continuing plutonium-238 production and operations infrastructure. The program also supports nuclear launch approval activities and the implementation of RPS on NASA and international partner missions.

EXPLANATION OF MAJOR CHANGES IN FY 2026

In order to achieve cost savings, reductions are made to all elements of this program. Reductions to RPS will terminate mission integration activities, including Next Gen Radioisotope Thermoelectric Generator (RTG) industry sustainment, RTG power prediction model validation and updates, and long-term thermoelectric testing. This budget provides the funding to complete the MultiMission Radioisotope Thermoelectric Generator (MMRTG), the power source for Dragonfly, and provides funds to DoE Operations & Analysis for the required plutonium.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

NASA plans to complete the General Purpose Heat Source RTG Flight Unit 5 refurbishment. NASA will complete construction of the MMRTG for the Dragonfly mission at Aerojet Rocketdyne and will deliver it to Idaho National Lab.

Program Elements

RADIOISOTOPE POWER SYSTEMS (RPS)

The budget for this project is reduced to achieve cost savings. NASA will terminate mission integration activities, including Next Gen RTG industry sustainment, RTG power prediction model validation and updates, and long-term thermoelectric testing.

DOE OPERATIONS AND ANALYSIS

This budget provides no funding for the DoE Operations and Analysis project after 2026 given budget constraints and the reduced pipeline of new planetary science missions.

RADIOISOTOPE POWER

Program Management & Commitments

Program Element	Provider
RPS	Provider: GRC Lead Center: GRC Performing Center(s): GRC, JPL, Applied Physics Laboratory (APL), GSFC, KSC, DoE Cost Share Partner(s): N/A
DoE Operations and Analysis	Provider: DoE Lead Center: GRC Performing Center(s): GRC Cost Share Partner(s): N/A

Acquisition Strategy

DoE provides radioisotope power systems and production operations on a reimbursable basis. Maturity of the technologies determines the timeline for the acquisition of technologies and new systems. NASA or DoE laboratory-competed acquisitions help mature technology before system development begins. NASA-led DoE laboratory acquisitions procure unfueled designs and flight-qualified hardware when initiating a system development.

The program acquires content via existing agency contracts with JPL and APL. The program will use in-house or competitive procurements, as needed

ASTROPHYSICS

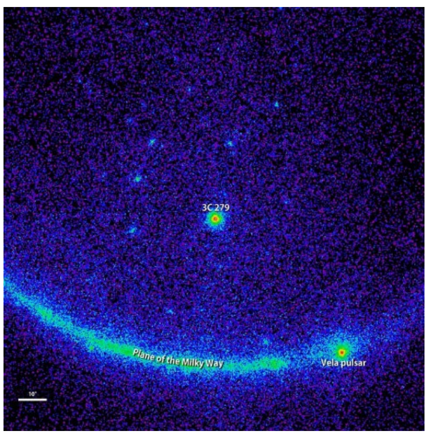
Astrophysics

ASTROPHYSICS RESEARCH

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Astrophysics Research and Analysis	116.7	--	**48.7**	48.7	48.7	48.7	48.7
Balloon Project	49.3	--	**0.0**	0.0	0.0	0.0	0.0
Science Activation	52.0	--	**2.0**	10.0	10.0	10.0	10.0
Other Missions and Data Analysis	79.9	--	**32.0**	30.0	30.0	30.0	30.0
Total Budget	**297.8**	**--**	**82.7**	**88.7**	**88.7**	**88.7**	**88.7**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



Blazar 3C 279's historic gamma-ray flare in 2015 can be seen in this image from the Large Area Telescope on NASA's Fermi satellite. During the flare, the blazar outshone the Vela pulsar, usually the brightest object in the gamma-ray sky. Gamma rays are useful because they can tell us a lot about how particles accelerate and how they interact with their environment. With their enormous power, they almost certainly affected how the universe changed over time.

The Astrophysics Research program explores a vast range of astronomical phenomena, from the formation of the first stars, black holes, and distant galaxies to the nature of exoplanets within or Milky Way. Sounding rocket missions serve as platforms to test cutting-edge instruments designed to observe, wavelengths of light in accessible from the ground.

The program supports basic research grants that allow scientists to test theories and maximize the scientific return from NASA missions. Researchers analyze mission data to investigate exoplanets, stellar explosions that create compact objects like white dwarfs, neutron stars, and black holes; or the signatures of the early universe preserved in the cosmic microwave background radiation. Competitively selected investigations may include data analysis, theoretical modelling, computational work, laboratory astrophysics, and capital equipment purchases. In addition, the program invests in innovative technologies for future missions, including advanced detectors and electronics, optics, gratings, and coatings.

EXPLANATION OF MAJOR CHANGES IN FY 2026

Given higher priorities within the agency, the budget reduces funding for the Astrophysics Research project and the Astrophysics and Data Curation and Archival Research project. The Science Activation project will implement a strategic pause in FY 2026 as it plans for a more streamlined set of activities. Funding is eliminated for the Balloons, Astrophysics Data Analysis Program (ADAP) and Astrophysics Senior Review projects.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

NASA will continue a competed Astrophysics Research program with a focus on advancing detectors, instrument, optics, and key enabling technologies for use in future mission payloads. Theoretical work, often conducted by networks of scientists across multiple institutions, will provide the foundation for developing science requirements for upcoming missions. Data analysis will multiply the science yield from NASA's astrophysics missions.

The Science Activation project will implement a strategic pause in FY 2026 in order to plan for implementation of a streamlined set of new activities designed to deepen the public's active engagement in the advancement of knowledge.

Program Elements

RESEARCH AND ANALYSIS

Funding will support various types of research previously funded within other Astrophysics programs and projects, albeit at a reduced level. This project supports basic research through NASA's annual Research Opportunities in Space and Earth Science (ROSES) solicitations. NASA invites investigations relevant to Astrophysics across the full spectrum of photon energies, gravitational waves, and cosmic particles. Proposals are evaluated through a rigorous merit-based review process by interdisciplinary panels of scientists and technologies.

The project also solicits technology development for detectors and instruments that may be used on future spaceflight missions, as well as science and technology investigations utilizing sounding rockets, and other suborbital platforms. A single combined program element will be offered for all mission-specific guest observer/investigator opportunities, including both US-led missions and international missions in which the US is a partner. This element will consider proposals for any operating mission that does not have its own Guest Observer/Guest Investigator GO/GI program.

The Astrophysics Theory element solicits basic theory investigations that support the interpretation of data from NASA's space astrophysics missions and helps define the scientific basis for future missions. Topics include star and planet formation, supernova explosions and gamma-ray bursts, galaxy evolution, dark matter, dark energy, and the cosmic microwave background.

The Exoplanet Research element invites proposals for studies that significantly advance our understanding of exoplanets and their formation.

Through Future Investigators in NASA Earth and Space Science and Technology (FINESST) initiative, NASA funds graduate student-designed and conducted research aligned with the agency's science, technology, and exploration goals. Eligible proposals must come from accredited U.S. universities and other qualified institutions.

SCIENCE ACTIVATION

The Science Activation project delivers SMD's unique science content and expertise into the learning environment for learners of all ages. Current cooperative agreements for the network of 48 competitively selected teams and supporting infrastructure projects focus on connecting NASA science experts, content, and authentic experiences with community leaders and the public. These agreements will reach the end of their period of performance in December 2025. Afterwards, the Science Activation project will implement a strategic pause in FY 2026 in order to plan for implementation of a streamlined set of new activities designed to deepen the public's active engagement in the advancement of scientific knowledge.

ASTROPHYSICS RESEARCH

PROGRAM SCHEDULE

The Astrophysics Research program issues solicitations every year. A Senior Review process assesses all missions in the extended operations phase every three years and all data archives every three or four years.

Date	Significant Event
Jun 2025	ROSES-2025 NRA solicitation release
Q2 FY 2026	ROSES-2025 selection within six to nine months of receipt of proposals
Feb 2026	ROSES-2026 NRA solicitation release
Q1 FY 2027	ROSES-2026 selection within six to nine months of receipt of proposals
Feb 2027	ROSES-2027 NRA solicitation release
Mar 2027	Senior Review of Astrophysics Data Archives
Q1 FY 2028	ROSES-2027 selection within six to nine months of receipt of proposals
Feb 2028	ROSES-2028 NRA solicitation release
Feb 2028	Senior Review of Operating Missions

Program Management & Commitments

Program Element	Provider
Research and Analysis Project	Provider: All NASA centers Lead Center: HQ Performing Center(s): All Cost Share Partner(s): None
Science Activation	Provider: All NASA centers Lead Center: HQ Performing Center(s): All Cost Share Partner(s): N/A

Acquisition Strategy

NASA issues solicitations for competed research awards each February through ROSES. Panels of subject matter expert scientists conduct peer reviews on all proposals. A Senior Review panel reviews all missions in the extended operations phase every three years, and all data archives every three or four years.

Astrophysics Research

Independent Reviews

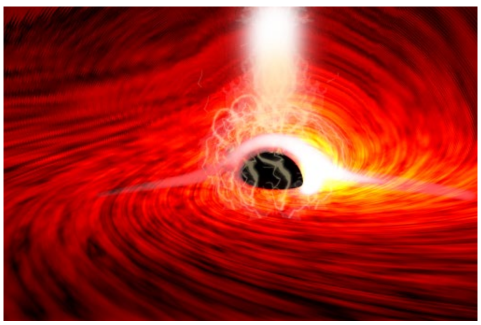
Review Type	Performer	Date of Review	Purpose	Outcome
Quality	Astrophysics Archives Programmatic Review	2027	Review of Astrophysics data archives	TBD
Quality	Senior Review of Operating Missions	2028	Review of Astrophysics operating missions	TBD

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Contract Administration, Audit & QA Services	14.6	--	**12.0**	10.0	10.0	10.0	10.0
Astrophysics Data Program	28.6	--	**0.0**	0.0	0.0	0.0	0.0
Astrophysics Data Curation and Archival	31.0	--	**20.0**	20.0	20.0	20.0	20.0
Astrophysics Directed R&T	5.7	--	**0.0**	0.0	0.0	0.0	0.0
Total Budget	**79.9**	**--**	**32.0**	**30.0**	**30.0**	**30.0**	**30.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



Shown here is an illustration of a bright flare of X-ray emission and its echoes produced as gas falls into a supermassive black hole and reflects off of the gas falling into the black hole. Researchers have reported the first recording of these X-ray echoes consistent with X-rays reflected from behind the black hole. Image Credit: Dan Wilkins

Astrophysics Research Other Missions and Data Analysis includes the data curation and archival project, and support for contract audits and contract quality assurance for SMD and Astrophysics directed research and technology.

Mission Planning and Other Projects

CONTRACT ADMINISTRATION, AUDIT, AND QUALITY ASSURANCE SERVICES

This project provides critical safety and mission product inspections, as well as contract audit services from the Defense Contract Management Agency and Defense Contract Audit Agency, respectively. It also provides for contract assurance audits, assessments, and surveillance by the NASA Contract Assurance Services Program.

ASTROPHYSICS DATA CURATION AND ARCHIVAL RESEARCH (ADCAR)

Astrophysics Data Centers constitute an ensemble of archives receiving processed data from individual missions and making them accessible to the scientific community. After the completion of a mission, the relevant, active, and multi-mission archive takes over all data archiving activities. ADCAR covers the activities of the Astrophysics Data Centers and the NASA Astronomical Virtual Observatories (NAVO). ADCAR will reduce scope in FY 2026.

COSMIC ORIGINS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Hubble Space Telescope (HST)	93.3	--	**85.0**	80.0	80.0	75.0	75.0
James Webb Space Telescope	187.0	--	**140.0**	140.0	140.0	130.0	130.0
Other Missions and Data Analysis	58.6	--	**9.0**	9.0	9.0	9.0	9.0
Total Budget	**339.0**	**--**	**234.0**	**229.0**	**229.0**	**214.0**	**214.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Shown here is Webb's infrared observations of Sagittarius A*, our galaxy's central supermassive black hole. The surrounding accretion disk exhibits unexpectedly dynamic activity, from subtle flickers to bright flares, possibly caused by magnetic field interactions. These findings enhance our understanding of how black holes influence their galactic environments.

"How did we get here?" This simple but fundamental question drives the broad science objectives of NASA's Cosmic Origins program. The search for answers raises underlying questions and topic areas, such as: How and when did the first stars and galaxies form? When did the universe first create the elements critical for life? How did galaxies evolve from the very first systems to the types we observe "in the here and now," such as the Milky Way in which we live? How do stars and planetary systems form and change over time?

Observatories collect data at different wavelengths to fully address these questions. Currently operating facilities in the Cosmic Origins program are the James Webb Space Telescope and the Hubble Space Telescope.

EXPLANATION OF MAJOR CHANGES IN FY 2026

This budget supports continued operations of the Hubble Space Telescope and the James Webb Space Telescope at slightly reduced budget levels which assume operational efficiencies in FY 2026 and out. Astrophysics Program Management is reduced and activities within Cosmic Origins Supporting Research and Technology (SR&T) are cancelled.

HUBBLE SPACE TELESCOPE OPERATIONS

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	93.3	--	85.0	80.0	80.0	75.0	75.0

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Researchers used Hubble to investigate the Sombrero Galaxy, measuring the metals (what astronomers call elements heavier than helium) in stars in the galaxy's expansive halo. This type of measurement can help astronomers better understand a galaxy's history, potentially revealing whether it merged with other galaxies in the past. In the case of the Sombrero Galaxy, extremely metal-rich stars in the halo point to a possible merger with a massive galaxy several billion years ago. An ancient galactic clash, hinted at by Hubble's sensitive measurements, could explain the Sombrero Galaxy's distinctive appearance. Image credit: ESA/Hubble & NASA, K. Noll

One of NASA's most successful and long-lasting science missions, the Hubble Space Telescope (Hubble) has beamed over 1 million images back to Earth, helping resolve many of the great mysteries of astronomy. The telescope helped scientists determine the age of the universe, the identity of quasars, and the existence of dark energy. Hubble launched in 1990 and is currently in an extended operations phase. The fifth servicing mission in 2009, the last visit by a Space Shuttle crew, added new batteries, gyroscopes, and instruments to extend Hubble's life even further into the future. April 24, 2025, marked the start of Hubble's 35rd year in orbit. The Hubble Space Telescope Operations budget covers mission operations, software maintenance, guest-observer science grants, and fellowships.

EXPLANATION OF MAJOR CHANGES IN FY 2026

The budget supports continued operations of Hubble and assumes the project will achieve operational efficiencies in FY 2026 and out, with no impact to funding for guest-observer science grants. NASA will begin work soon to assess options for more efficient operations for the Hubble Space Telescope, which is the second most expensive telescope to operate in the Astrophysics portfolio.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

NASA will support mission operations, systems engineering, software maintenance, ground systems support, guest-observer science grants, and the NASA Hubble Fellowship Program. NASA will release the Cycle 34 call for proposals in early 2026, with announcements expected in mid-2026.

JAMES WEBB SPACE TELESCOPE

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
James Webb Space Telescope	157.0	--	**120.0**	120.0	120.0	110.0	110.0
Webb Science	30.0	--	**20.0**	20.0	20.0	20.0	20.0
Total Budget	**187.0**	**--**	**140.0**	**140.0**	**140.0**	**130.0**	**130.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The James Webb Space Telescope (Webb) is a large, space-based astronomical observatory. Webb observes the highly red-shifted early universe and studies objects like protostars and protoplanetary disks, which strongly emit infrared light where dust obscures shorter wavelengths. With more light-collecting area than Hubble and near- to mid-infrared optimized instruments, Webb observes objects farther away and further back in time.

The James Webb Space Telescope (Webb) has imaged a binary pair of actively forming stars, creating this shimmering hourglass of gas and dust. Here, Webb's ability to see near-infrared light reveals incredible detail and structure in the protostar Lynds 483 (L483). Image credit: NASA, ESA, CSA, STScI

The four main science goals are to:

- Search for the first galaxies or luminous objects formed after the Big Bang;
- Determine how galaxies evolved from their formation until now;
- Observe the formation of stars from the first stages to the formation of planetary systems; and
- Measure the physical and chemical properties of planetary systems and investigate the potential for life in those systems.

While the Hubble Space Telescope has dramatically advanced our understanding of the distant universe, it is primarily optimized for visible and ultraviolet wavelengths and only limited infrared capability. This presents a challenge when studying the early universe. Due to the expansion of the universe, light from the earliest galaxies and stars is red-shifted, stretched into longer wavelengths, moving it out of Hubble's range and into the infrared part of the spectrum. The Webb, with its highly sensitive infrared instruments, is uniquely equipped to peer deeper into the cosmos and further back in time than any previous observatory. Webb enables exploration of the "cosmic dawn", the poorly understood epoch when the first luminous objects formed after the Big Bang, transforming the universe from darkness into light. This makes Webb a powerful complement to Hubble, expanding our ability to observe the earliest stages of cosmic history.

JAMES WEBB SPACE TELESCOPE

Formulation	Development	Operations

EXPLANATION OF MAJOR CHANGES IN FY 2026

The budget supports continued operations of Webb and assumes the project will achieve operational efficiencies in FY 2026 and out. NASA will continue to support general observer science grants within a reduced Webb Science budget.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

NASA will provide support for mission operations, systems engineering, software maintenance, and ground systems support, and will issue a reduced number of general observer science grants.

Mission Elements

JAMES WEBB SPACE TELESCOPE

Webb is an infrared-optimized observatory that conducts imaging and spectrographic observations in the 0.6 to 28 micrometer wavelength range. Webb is roughly 100 times more capable than Hubble because its mirror is seven times larger. It spends about twice as much time observing targets since the Earth is not in the way. Webb's detectors cover larger regions of the sky and are always on. Its multi-object spectroscopic capabilities greatly expand the number of spectra per field.

The 6.5-meter primary mirror consists of 18 actively controlled segments. A multilayer sunshield the size of a tennis court passively cools the mirror, telescope optics, and instruments to about 40 Kelvin. Webb launched in 2021 from Kourou, French Guiana on an Ariane 5 rocket contributed by the ESA. Webb is currently operating in deep space about 1 million miles from Earth.

Webb's instruments include the Near-Infrared Camera (NIRCam), Near-Infrared Spectrograph (NIRSpec), Mid-Infrared Instrument (MIRI), and the Fine Guidance Sensor/Near-Infrared Imager and Slitless Spectrograph.

The operating telescope project supports the telescope operations and science team.

WEBB SCIENCE

The Webb Science project funds research enabled by Webb observations and data. Observation time on Webb is allocated in a competitive process each year in cycles of awards. The Space Telescope Science Institute (STScI) announces annual calls for proposals for Webb. The proposals are peer reviewed and those that NASA selects are executed by the project team during the next calendar year.

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Stratospheric Observ for Infrared Astron	16.2	--	**0.0**	0.0	0.0	0.0	0.0
Astrophysics Program Management	10.8	--	**9.0**	9.0	9.0	9.0	9.0
Cosmic Origins SR&T	31.6	--	**0.0**	0.0	0.0	0.0	0.0
Cosmic Origins Future Missions	0.1	--	**0.0**	0.0	0.0	0.0	0.0
Total Budget	**58.6**	**--**	**9.0**	**9.0**	**9.0**	**9.0**	**9.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Mission Planning and Other Projects

ASTROPHYSICS PROGRAM MANAGEMENT

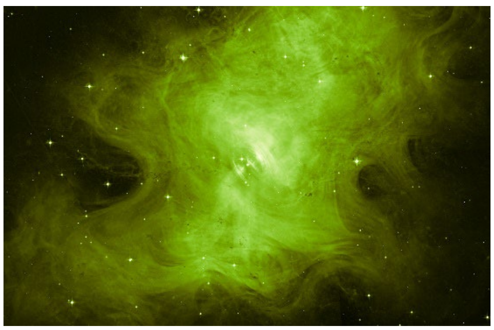
Astrophysics Program Management ensures streamlined agency oversight for all of NASA's strategic astrophysics missions by consistently applying management best practices to maximize mission success. The Astrophysics Strategic Mission Program Office (ASMPO) delivers programmatic, technical, business, and scientific leadership across all mission phases, from definition and design to launch and operations, supporting the science derived from these missions. At a reduced funding level, this project continues to fund for Astrophysics Division HQ civil servants while implementing efficiencies and cost-saving measures in Astrophysics Program Management and operations.

PHYSICS OF THE COSMOS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Other Missions and Data Analysis	196.3	--	**1.5**	1.5	1.5	1.5	1.5
Total Budget	**196.3**	**--**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



Shown here is the eerie glow of a dead star, which exploded long ago as a supernova, in this NASA Hubble image of the Crab Nebula. The ghoulish-looking object has a pulse. Buried at its center is the star's tell-tale heart, which beats with rhythmic precision.

The Physics of the Cosmos (PhysCOS) program supports investigations at the intersection of physics and astronomy. Scientists explore some of the most fundamental questions regarding the physical forces and laws of the universe: How do matter, energy, space, and time behave under extreme gravity? What is the nature of dark energy and dark matter? How did the universe grow from the Big Bang to its present size? The PhysCOS program incorporates cosmology, high-energy astrophysics, and fundamental physics projects that address central questions about the nature of complex astrophysical phenomena, such as black holes, neutron stars, dark matter and dark energy, cosmic microwave background, and gravitational waves.

The operating missions within the PhysCOS program continue to provide answers to these fundamental questions and more.

PhysCOS develops the technologies necessary for the next generation of space missions to address the science questions of this program.

EXPLANATION OF MAJOR CHANGES IN FY 2026

Given higher priorities within the agency, the request eliminates U.S contributions to the Laster Interferometer Space Antenna (LISA) and Ultraviolet Transient Astronomy Satellite (ULTRASAT) missions and cancels PhysCOS SR&T, Euclid, Chandra, Fermi, and the PCOS/COR Technology Management Office projects.

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Physics of the Cosmos SR&T	77.5	--	**0.0**	0.0	0.0	0.0	0.0
PCOS/COR Technology Office Management	12.6	--	**0.0**	0.0	0.0	0.0	0.0
Physics of the Cosmos Future Missions	0.1	--	**0.0**	0.0	0.0	0.0	0.0
Laser Interferometer Space Antenna	0.0	--	**0.0**	0.0	0.0	0.0	0.0
Ultraviolet Transient Astronomy Satellite	1.3	--	**0.0**	0.0	0.0	0.0	0.0
Euclid	16.8	--	**0.0**	0.0	0.0	0.0	0.0
Fermi Gamma-ray Space Telescope	14.5	--	**0.0**	0.0	0.0	0.0	0.0
Chandra X-Ray Observatory	69.6	--	**0.0**	0.0	0.0	0.0	0.0
XMM	4.0	--	**1.5**	1.5	1.5	1.5	1.5
Total Budget	**196.3**	**--**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Operating Missions

X-ray Multi-Mirror Mission (XMM)

XMM is an ESA-led mission with substantial NASA contributions. The telescope launched in December 1999. XMM studies everything from conditions of planetary formation to the distribution of dark matter in galaxy clusters, the evolution of chemical elements in galaxy clusters, and the distribution of dark matter in galaxy clusters and elliptical galaxies. The GSFC operations facility provides a clearing house for project-generated technical information and analysis software as well as budget support for U.S. astronomers who apply for XMM-Newton observation time. The project participated in the 2025 Senior Review, and NASA approved extended mission operations. FY 2026 funding will support operations.

EXOPLANET EXPLORATION

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Nancy Grace Roman Space Telescope	407.3	--	**156.6**	170.6	91.4	78.5	73.0
Other Missions and Data Analysis	54.4	--	**3.3**	9.2	47.2	81.5	63.9
Total Budget	**461.8**	**--**	**159.9**	**179.8**	**138.6**	**160.0**	**137.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Shown here is the nearest single star to the Sun hosts an exoplanet at least 3.2 times as massive as Earth — a so-called super-Earth. This image shows an artist's impression of the exoplanet viewed from space. Credit: ESO/M. Kornmesser

Humankind is gaining insight into timeless questions: Are we alone? Is Earth unique, or are planets like ours common? One of the most exciting fields of research within the NASA Astrophysics portfolio is the search for planets, particularly Earth-like planets, around other stars.

Since the discovery of the first exoplanets in the 1990s, astronomers have confirmed over 5,500 planets orbiting most types of stars in our galaxy. At first, most of the planets discovered were so-called "Hot Jupiters"— gas giants similar in size to the planet Jupiter but orbiting much closer to their parent stars. However, analysis of NASA's Kepler Space Telescope data, in conjunction with data from ground-based telescopes, has revealed that smaller planets, with sizes between those of Earth and Neptune, are much more common than Jupiter-like planets. Rocky planets in the habitable zone of their parent stars also appear to be common.

NASA's Exoplanet Exploration Program is advancing along a path of discovery leading to a point where scientists can directly study the atmospheres and surface features of habitable, rocky planets like Earth around other stars in the solar neighborhood. Following the recommendation of the recent National Academy of Sciences "Decadal Survey on Astronomy and Astrophysics 2020" report, NASA aims to develop systems that will allow scientists to take the pivotal step from identifying an exoplanet as Earth-sized to determining whether it is genuinely Earth-like and possibly even detecting if it bears the spectral fingerprints of life via a program of technology development.

EXPLANATION OF MAJOR CHANGES IN FY 2026

The budget supports continued development of the Nancy Grace Roman Space Telescope and the Habitable Worlds Observatory Technology Maturation Project at reduced budget levels. The budget cancels the Exoplanet Exploration Supporting Research and Technology, Keck Operations, and Exoplanet Exploration Technology Office Management projects.

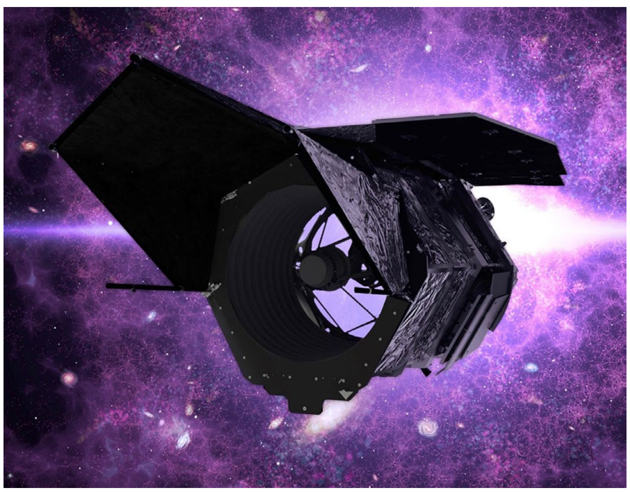
NANCY GRACE ROMAN SPACE TELESCOPE

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**407.3**	**--**	**156.6**	**170.6**	**91.4**	**78.5**	**73.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



The Nancy Grace Roman Space Telescope, depicted here, is a NASA observatory designed to tackle essential questions in the areas of dark energy, exoplanets, and infrared astrophysics.

PROJECT PURPOSE

The Nancy Grace Roman Space Telescope (Roman) will investigate long-standing astronomical mysteries, such as the force behind the universe's accelerating expansion and search for distant planets beyond our solar system. Roman will unravel the secrets of dark energy and dark matter, search for and image exoplanets, and explore many topics in infrared astrophysics. This newest NASA observatory addresses the top priority large mission of the 2010 Decadal Survey in Astronomy and Astrophysics.

Roman carries two instruments. The Wide Field Instrument will accomplish the mission's primary science observations over large areas of the sky. The Coronagraph Instrument (CGI) technology demonstration matures components and systems for imaging and spectroscopy of individual nearby exoplanets. The Roman mission's operations are intended to overlap with those of the James Webb Space Telescope to provide synergistic science capabilities. Roman ushers in a new era of big data for astrophysics, producing an archive averaging over 10 terabytes of data per day of operations during its first five years of operations.

EXPLANATION OF MAJOR CHANGES IN FY 2026

FY 2026 development funding for Roman is $156.6 million, significantly lower than previous projections. NASA is actively evaluating cost-saving strategies and identifying schedule optimization opportunities to enable the mission to proceed with this reduced funding level. These efforts will proceed in parallel with ongoing integration and testing activities throughout FY 2026 to help protect the mission's scientific goals and maintain progress toward a successful launch.

NANCY GRACE ROMAN SPACE TELESCOPE

Formulation	Development	Operations

PROJECT PARAMETERS

Roman is a NASA observatory designed to investigate essential questions in the areas of dark energy, exoplanets, and infrared astrophysics. To address these questions, the telescope has a large, 7.9-foot (2.4-meter) diameter primary mirror, since a larger surface area gathers more light and produces sharper images. Roman's mirror is the same size as the Hubble Space Telescope's primary mirror, and it is less than one-fourth the weight at only 410 pounds (186 kilograms), thanks to major improvements in technology. To make Roman's sensitive measurements possible, the telescope observes from a vantage point orbiting about 930,000 miles (1.5 million kilometers) away from Earth in the direction away from the Sun. Near this location, called the second Sun-Earth Lagrange point (L2), the observatory is thermally stable, views more of the sky for longer periods of time, and can prevent stray light from the Sun, Moon, and Earth more easily.

The telescope provides a field of view that is 200 times greater than the Hubble Space Telescope's infrared instrument, allowing it to capture more of the sky with less observing time. The Roman Wide Field Instrument is a 300-megapixel infrared camera and spectrometer built to provide revolutionary surveys of unprecedented size, sharpness, and depth to address key topics in cosmology, exoplanets, and infrared astrophysics. The camera features eight filters for different wavelengths of infrared light suited to studying varied astronomical objects, plus two spectroscopic elements to measure distances and study other physical characteristics of galaxies and supernovae across the universe.

In addition to the Wide Field Instrument, Roman will advance exoplanet observations by carrying the first active coronagraph into space. The CGI, built as a technology demonstration, combines multiple technologies and operation modes to block light from the host star and allow high-contrast imaging of faint exoplanets orbiting it. This capability is critical for next-generation telescopes capable of analyzing the atmospheres of Earth-like planets around other stars.

Roman is planned for a primary mission lifetime of five years, with enough propellant for at least five years of extended mission.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

The Roman Space Telescope project is currently planning to complete several major mission milestones in Fiscal Year (FY) 2026. These include completion of the testing phase, the Pre-Ship Review, the Flight Operations Review, and the Operational Readiness Review. Successfully completing these key reviews will position the mission for a potential launch as early as October 2026, while preserving substantial schedule margin to meet the baseline launch readiness date in May 2027.

SCHEDULE COMMITMENTS/KEY MILESTONES

Milestone	Confirmation Baseline Date	FY 2026 President's Budget Request
KDP-C	Feb 2020	Feb 2020
CDR	Jul 2021	Sep 2021

NANCY GRACE ROMAN SPACE TELESCOPE

Formulation	Development	Operations

Milestone	Confirmation Baseline Date	FY 2026 President's Budget Request
SIR	Jul 2023	Sep 2024
Flight Readiness Review	Jun 2026	Jan 2027
Launch	Oct 2026	May 2027
Begin Phase E	Jan 2027	Aug 2027
End Prime Mission	Jan 2032	Aug 2032

Development Cost and Schedule

Base Year	Base Year Develop-ment Cost Estimate ($M)	JCL (%)	Current Year	Current Year Develop-ment Cost Estimate ($M)	Cost Change (%)	Key Milestone	Base Year Milestone Data	Current Year Milestone Data	Milestone Change (months)
2021	2,898	>70	2024	3,004	+4	LRD	Oct 2026	May 2027	+7

Note: The confidence level estimates reported reflect an evolving process as NASA improves its probabilistic estimation techniques and processes. Estimate reflects the practices and policies at the time it was developed. Estimates that include combined cost and schedule risks are denoted as Joint Confidence Level (JCL); all other confidence levels (CLs) reflect cost confidence without necessarily factoring the potential impacts of schedule changes on cost.

Development Cost Details

Element	Base Year Development Cost Estimate ($M)	Current Year Development Cost Estimate ($M)	Change from Base Year Estimate ($M)
TOTAL:	**2,898.1**	**3,004.1**	**+106.0**
Aircraft/Spacecraft	278.1	415.9	+137.8
Payloads	661.6	908.4	+ 246.8
Systems I&T	183.2	330.8	+147.6
Launch Vehicle	238.6	221.6	-17.0
Ground Systems	217.6	300.4	+82.8
Science/Technology	79.4	439.2	+359.8

NANCY GRACE ROMAN SPACE TELESCOPE

Formulation	Development	Operations

Element	Base Year Development Cost Estimate ($M)	Current Year Development Cost Estimate ($M)	Change from Base Year Estimate ($M)
Other Direct Project Costs	1,239.6	387.8	-851.8

Project Management & Commitments

NASA HQ is responsible for the overall management of Roman and CGI. GSFC has project management responsibility for Roman. JPL has project management responsibility for CGI.

Element	Description	Provider Details	Change from Baseline
Project Management and Systems Engineering	Management of all technical and programmatic aspects of mission development and system engineering of each element and the integrated system	Provider: NASA Lead Center: GSFC Performing Center(s): GSFC Cost Share Partner(s): N/A	N/A
Mission Science Management	Management of all project science activities from formulation through development and operations	Provider: NASA Lead Center: GSFC Performing Center(s): GSFC and partners Cost Share Partner(s): N/A	N/A
Wide Field Instrument	Overall instrument management; in-house development of the Focal Plane System, Grism, Prism, and all subsystems other than the Ball Aerospace-managed Wide Field Instrument Opto-Mechanical Assembly (WOMA)	Provider: NASA, Ball Aerospace Lead Center: GSFC Performing Center(s): GSFC Cost Share Partner(s): N/A	N/A
Instrument Carrier	Structural Support for the Optical Telescope Assembly, WFI, and CGI	Provider: NASA, Northrop Grumman Lead Center: GSFC Performing Center(s): GSFC Cost Share Partner(s): N/A	N/A
Spacecraft	Main bus for Roman; providing power, electrical, thermal, and propulsion systems	Provider: NASA Lead Center: GSFC Performing Center(s): GSFC Cost Share Partner(s): N/A	N/A

NANCY GRACE ROMAN SPACE TELESCOPE

Formulation	Development	Operations

Element	Description	Provider Details	Change from Baseline
CGI	Management of all technical and programmatic aspects of instrument development and system engineering of the technology demonstration for space-based exoplanet characterization	Provider: NASA Lead Center: JPL Performing Center(s): JPL Cost Share Partner(s): N/A	N/A
Star Tracker, Flight Battery	Optical device that measures the positions of stars using photocells or a camera; rechargeable power source	Provider: ESA Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): ESA	N/A
Electron-Multiplying Charge-Coupled Device Detectors	Devices for digital imaging under low-light conditions	Provider: ESA Lead Center: JPL Performing Center(s): N/A Cost Share Partner(s): ESA	N/A
Super-polished optics and Off Axis Parabolas	Optical elements to collimate and direct light within the CGI	Provider: French Space Agency (CNES)/LAM Lead Center: JPL Performing Center(s): N/A Cost Share Partner(s): CNES	N/A
Precision Alignment Mechanisms	Mechanisms to direct light within the CGI with one to two arcsecond pointing accuracy	Provider: Max Planck Institute for Astronomy (MPIA) Lead Center: JPL Performing Center(s): N/A Cost Share Partner(s): MPIA	N/A
Polarization Optics	Optical elements to select the polarization state of light within the CGI	Provider: JAXA Lead Center: JPL Performing Center(s): N/A Cost Share Partner(s): JAXA	N/A
Use of Ground Station	Daily use of a ground station in Japan and data transport to the Science Operations Center	Provider: JAXA Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): JAXA	N/A
Launch Vehicle	Launch services for Roman on required trajectory for L2 operational orbit	Provider: SpaceX Lead Center: KSC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A

NANCY GRACE ROMAN SPACE TELESCOPE

Formulation	Development	Operations

Element	Description	Provider Details	Change from Baseline
Mission Operations	Management of on-orbit operations	Provider: NASA Lead Center: GSFC Performing Center(s): GSFC Cost Share Partner(s): N/A	N/A
Ground Control System and Science Operations and Control Center	Science Operations Center responsible for processing, analysis, and archiving of data from the observatory	Provider: Space Telescope Science Institute Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
Coronagraph Ground Control System and Science Operations and Control Center	Science Center responsible for processing and analysis of coronagraph data for infrared astronomy	Provider: Infrared Processing and Analysis Center Lead Center: JPL Performing Center(s): N/A Cost Share Partner(s): N/A	N/A

Project Risks

Risk Statement	Mitigation
The budget does not allow for the recommended level of cost reserves in FY 2026.	Prior year cost reserves will be utilized as available. In FY 2026, the remaining currently-planned major tests will be completion of the thermal vacuum test for the Spacecraft Integrated Payload Assembly (SCIPA), and vibration and EMI testing after integration of the SCIPA and Solar Array Sun Shield (SASS) into the full observatory. If there are significant anomalies in any of these tests, and prior year reserves are not available, the mission schedule will slip.

Acquisition Strategy

The project has awarded all major contracts.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
Optical Telescope Assembly	L3Harris	Rochester, NY

NANCY GRACE ROMAN SPACE TELESCOPE

Formulation	Development	Operations

Element	Vendor	Location (of work performance)
WOMA	BAE Systems (formerly Ball Aerospace)	Boulder, CO
Sensor Chip Assemblies	Teledyne	Camarillo, CA
	Hawaii Aerospace	Honolulu, HI
Science Operations Center Support	AURA/Space Telescope Science Institute	Baltimore, MD
Science Center Support	IPAC/Caltech	Pasadena, CA
Launch Vehicle	SpaceX	Hawthorne, CA

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	SRB	Sep 2024	SIR: Determine Roman readiness to proceed to system integration and test phase.	Successful
Performance	SRB	Jan 2027	FRR: Evaluate the readiness of the project to operate and perform the mission.	TBD

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Exoplanet Exploration SR&T	20.8	--	**0.0**	0.0	0.0	0.0	0.0
Exoplanet Exploration Technology Office Management	8.6	--	**0.0**	0.0	0.0	0.0	0.0
Exoplanet Exploration Future Missions	0.0	--	**0.0**	0.0	0.0	0.0	0.0
Keck Operations	7.4	--	**0.0**	0.0	0.0	0.0	0.0
Habitable Worlds Observatory Technology Maturation	17.5	--	**3.3**	9.2	18.8	60.8	37.8
Exoplanet Exploration Science	0.0	--	**0.0**	0.0	28.4	20.7	26.2
Total Budget	**54.4**	**--**	**3.3**	**9.2**	**47.2**	**81.5**	**63.9**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Mission Planning and Other Projects

Exoplanet Exploration Other Missions and Data Analysis includes funding for Habitable Worlds Observatory Technology Maturation.

Exoplanet Exploration Science

This project funds competed science under the Exoplanet Exploration Program. Following the scheduled launch in 2027, the project will fund competed research and other related activities from Nancy Grace Roman Space Telescope observations and data.

Habitable Worlds Observatory Technology Maturation

This budget provides critical funding to advance technologies for the potential future Habitable Worlds Observatory. The Habitable Worlds Observatory (HWO) concept consists of a large aperture, optical and ultraviolet observatory designed to survey sun-like, nearby stars for habitable planets and search for chemical footprints or biosignatures that may provide the first evidence for the presence of life outside our Solar System. The Habitable Worlds Observatory Technology Maturation project directly supports the technology maturation consistent with the Astro2020 Decadal Survey recommendation that NASA should provide a new approach for developing large space strategic missions which requires significant early investments in the co-maturation of mission concepts and technologies. The funding supports technology maturation efforts, precursor science, development of scientific analyses that will support mission hardware parameters, exploration of mission architectures, and long-lead mission planning. The current concept for the HWO assumes significant collaboration and partnership with industry, academia, and other governments.

To directly image and characterize potentially habitable planets around other stars, the HWO technology must be capable of high precision cancellation of the star's light because host stars are 10 billion times brighter than their potentially habitable planets. Coronagraph technology will need further advancements to increase the level of precision. HWO's coronagraph performance is directly coupled with the observatory's ultrastability. While Webb demonstrated nanometer observatory-level stability, HWO requires picometer observatory-level stability per control step – one thousand times higher stability achievement. Such advancements in coronagraphy and stability will achieve the level required for searching for signs of life on planets around other stars.

ASTROPHYSICS EXPLORER

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Other Missions and Data Analysis	234.8	--	**44.9**	44.0	43.2	56.8	79.8
Total Budget	**234.8**	**--**	**44.9**	**44.0**	**43.2**	**56.8**	**79.8**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA's SPHEREx mission is observing the entire sky in 102 infrared colors, or wavelengths of light not visible to the human eye. This image shows a section of sky in one wavelength (3.29 microns), revealing a cloud of dust made of a molecule similar to soot or smoke. Credit: NASA/JPL-Caltech

The Astrophysics Explorer program provides frequent flight opportunities for world-class astrophysics investigations using innovative and streamlined management approaches for spacecraft development and operations. The program is highly responsive to new knowledge, new technology, and updated scientific priorities by launching smaller missions formulated and executed in a relatively short development cycle. NASA selects new missions based on an open competition of concepts solicited from the scientific community. The program emphasizes the accomplishments of missions under the control of the scientific research community within constrained mission life-cycle costs.

EXPLANATION OF MAJOR CHANGES IN FY 2026

This budget cancels funding for the Contributions to Ariel Spectroscopy of Exoplanets (CASE), Compton Spectrometer and Imager (COSI), Astrophysics Probes Future Missions, Astrophysics Explorer Science, and the UltraViolet Explorer projects. This budget reduces the Explorer Program Management project, and Pioneers, which will not make new selections in FY 2026. This budget initiates closeout of the XRISM mission in FY 2026. NICER and Swift operating missions will not operate after FY 2026, and funding for TESS, IXPE and NuStar is reduced.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

SPHEREx will conduct on-orbit science operations as part of the 2-year baseline SPHEREx science mission.

Program Schedule

Date	Significant Event
NET Apr 2027	SMEX AO
2027	Selection of new Pioneers investigation(s)
2029	Selection of new Pioneers investigation(s)

ASTROPHYSICS EXPLORER

Program Management & Planned Cadence

The Astrophysics and Heliophysics Explorer programs are both coordinated sets of uncoupled missions, where each mission is independent and has unique science. The programs share a common program office at NASA GSFC and a common management structure. The Explorer Program Manager resides at GSFC, reporting functionally to the Center Director and programmatically through the Astrophysics and Heliophysics Division Directors to the Associate Administrator for SMD.

Acquisition Strategy

NASA selects all Explorer missions through competitive AOs.

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Spectro-Photometer for the History of the Universe, Epoch Of Reonization, and Ices Explorer	79.4	--	**11.5**	7.6	1.8	1.2	1.2
Compton Spectrometer and Imager	21.8	--	**0.0**	0.0	0.0	0.0	0.0
UltraViolet EXplorer	18.6	--	**0.0**	0.0	0.0	0.0	0.0
Astrophysics Explorer Science	0.4	--	**0.0**	0.0	0.0	0.0	0.0
Astrophysics Probes Future Missions	2.5	--	**0.0**	0.0	0.0	0.0	0.0
Pioneers	33.0	--	**0.0**	10.0	10.0	10.0	10.0
Contribution to ARIEL Spectroscopy of Exoplanets	8.8	--	**0.0**	0.0	0.0	0.0	0.0
Astrophysics Explorer Future Missions	0.0	--	**0.0**	0.0	9.0	23.2	46.2
Astrophysics Explorer Program Management	10.8	--	**5.0**	5.0	5.0	5.0	5.0
Neutron Star Interior Composition Explorer	4.5	--	**4.5**	0.0	0.0	0.0	0.0
Neil Gehrels Swift Observatory	6.0	--	**4.5**	4.0	0.0	0.0	0.0
Nuclear Spectroscopic Telescope Array	9.4	--	**4.8**	4.8	4.8	4.8	4.8
Transiting Exoplanet Survey Satellite	9.9	--	**7.3**	7.3	7.3	7.3	7.3
Galactic/Extragalactic ULDB Spectroscopic Terahertz Observatory	0.8	--	**0.0**	0.0	0.0	0.0	0.0
Imaging X-Ray Polarimetry Explorer	8.5	--	**5.4**	5.4	5.4	5.4	5.4
X-Ray Imaging and Spectroscopy Mission	20.4	--	**2.0**	0.0	0.0	0.0	0.0
Total Budget	**234.8**	**--**	**44.9**	**44.0**	**43.2**	**56.8**	**79.8**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Neutron star Interior Composition Explorer (NICER) X-ray telescope is reflected on NASA astronaut and Expedition 72 flight engineer Nick Hague's spacesuit helmet visor in this high-flying "space-selfie" taken during a spacewalk on January 16, 2025.

Mission Planning and Other Projects

Astrophysics Explorer Other Missions and Data Analysis includes funding for Pioneers, operating missions (Imaging X-ray Polarimetry Explorer [IXPE], Transiting Exoplanet Survey Satellite [TESS]), Neutron Star Interior Composition Explorer [NICER], Nuclear Spectroscopic Telescope Array [NuSTAR], Neil Gehrels Swift Observatory, X-Ray Imaging and Spectroscopy Mission [XRISM]), and funding for future mission selections and program management functions.

OTHER MISSIONS AND DATA ANALYSIS

ASTROPHYSICS PIONEERS

This budget reduces funding for the Astrophysics Pioneers program. This budget will support the project at reduced scope and capacity. Astrophysics Pioneers investigations will provide high-impact science with low cost via the use of new and inexpensive SmallSat and CubeSat technologies, new Ultra-Long Duration stratospheric balloon payloads, and ISS payloads. The Astrophysics Pioneers program element solicits proposals annually for astrophysics suborbital and modest orbital science investigations that are greater in cost and scope than what is possible within the Astrophysics Research and Analysis (APRA) program element. This class of small missions fills a critical gap in NASA's portfolio, enabling innovative and focused science that can't be achieved under traditional research grants, but does not require the resources of larger flight opportunities. Investigations are led by a Principal Investigator (PI). NASA encourages participation from early-career researchers and institutions receiving their first NASA spaceflight mission. The Pioneers program has proven to be a successful entry point for new teams into NASA's flight mission portfolio.

This budget supports annual solicitations in 2027 and out. Early career researchers, underrepresented communities, and institutions receiving their first NASA space-flight mission continue to be highly successful within the Pioneers program. Currently active Pioneers investigations:

- Payload for Ultrahigh Energy Observation (PUEO) is a long duration balloon instrument for particle astrophysics at the highest energies. The NASA schedule for LRD is no earlier than December 2025;
- Pandora is a SmallSat for multiwavelength characterization of exoplanets and their host stars. The NASA schedule for LRD is no earlier than September 2025;
- Aspera is a SmallSat to measure the intergalactic medium inflow/outflow from galaxies. The NASA schedule for LRD is no earlier than October 2025;
- StarBurst is a SmallSat all-sky monitor for high-energy gamma rays from events such as the merger of neutron stars -- events that can be synchronized with the detection of simultaneous gravity waves at facilities such as the ground-based Laser Interferometer Gravitational-wave Observatory (LIGO). The NASA schedule for LRD is no earlier than January 2027;
- Trans-Iron Galactic Recorder for the International Space Station (TIGERISS) is designed for deployment from the ISS to measure ultra-heavy galactic cosmic rays. The NASA schedule for LRD is no earlier than February 2027;
- Landolt is focused on enhancing the accuracy of photometric measurements of stellar fluxes. The mission will place an artificial "star" in orbit, enabling scientists to precisely calibrate telescopes and measure the brightness of stars with greater accuracy. Launch is planned for mid-2027.
- Planetary Origins and Evolution Multispectral Monochrometer (PEOMM) is a far-infrared balloon born spectrograph to obtain accurate masses of protoplanetary disks around nearby stars, LRD December 2028;

ASTROPHYSICS EXPLORER FUTURE MISSIONS

Astrophysics Explorer Future Missions funding supports future Astrophysics Explorer missions and MO through concept studies and selections. NASA plans to release the next AO no earlier than spring 2027.

OTHER MISSIONS AND DATA ANALYSIS

ASTROPHYSICS EXPLORER PROGRAM MANAGEMENT

This budget will support the Astrophysics Explorer Program Management at reduced scope and capacity. Astrophysics Explorer Program Management provides programmatic, technical, and business management of ongoing missions in formulation and development. This function provides the independent assessment of astrophysics projects for life cycle reviews and Key Decision Points (KDPs) per NASA Program and Project Management policy. It also provides independent software verification and validation for astrophysics projects in later development. It provides programmatic, technical, and business management assessments and analysis to support projects to ensure they have proper requirements, guidance, and resources. The project also includes support for the Science Office for Mission Assessments (SOMA) at Langley Research Center. SOMA is responsible for the technical and scientific evaluation of Explorer mission proposals.

Operating Missions

NEUTRON STAR INTERIOR COMPOSITION EXPLORER (NICER)

The NICER instrument launched on June 3, 2017, to an external logistics carrier on ISS for an 18-month prime mission. Its main goal is spectroscopic X-ray observations of neutron stars with high-time resolution, to measure their masses and radii precisely and thus to test models of how matter behaves at extreme densities. NICER's operational flexibility enables it to play the role of X-ray sensor for coordinated campaigns spanning the electromagnetic spectrum with telescopes around the world and in space (including the James Webb Space Telescope [Webb]) targeting a variety of cosmic phenomena.

In May 2023, NICER suffered damage to several sensitive sunshade thermal shields creating a light leak. While NICER continues to return quality science, these reduced capabilities degrade its daytime observations. The NICER team and ISS developed a strategy to repair the light leak during an EVA planned for January 2025. Because of the significant investment in the repair and the time required to design, build, and test the hardware and processes for the repair, NASA excluded NICER from the 2025 Senior Review. NICER will begin mission closeout in FY 2026.

NEIL GEHRELS SWIFT OBSERVATORY

The Neil Gehrels Swift Observatory (Swift) remains NASA's premier mission for prompt and accurate localization of gamma-ray bursts and rapid response x-ray and ultraviolet follow-up observations of transient sources requested by the astronomical community. The observatory measures the position, brightness, and physical properties of gamma-ray bursts, and is revolutionary in allowing scientists to solve the mystery of their origin in the formation of stellar-mass black holes. The observatory continues to target gamma-ray burst science, while also using its capabilities to increase our understanding of the entire transient universe, ranging in distance from the solar system to high-redshift quasars, and in time from the present to the epoch of reionization. Swift's Burst Alert Telescope detects gamma ray bursts and accurately determines their positions on the sky. Swift then relays a 3-arcminute (3/60th of a degree) position estimate to the ground within 20 seconds of the initial detection. The spacecraft "swiftly" (in less than 90 seconds) and autonomously repoints itself to bring the burst location within the field of view of the sensitive narrow-field X-ray and UV/optical telescopes to observe the afterglow. This unique ability to make rapid-response observations to fast-breaking events makes Swift especially beneficial for

TDAMM. Swift is a MIDEX class mission that launched in 2004, completed its prime mission in 2006. The project will operate through FY 2027.

NUCLEAR SPECTROSCOPIC TELESCOPE ARRAY (NUSTAR)

Launched in June 2012, NuSTAR completed its prime mission in July 2014 and is now in extended mission operations. NuSTAR enables scientists to locate supermassive black holes in other galaxies, study extreme accretion onto neutron stars, locate and examine the remnants of collapsed stars in our galaxy and the nearby universe, and observe any new supernovae in the local group of galaxies. NuSTAR's key science products are sensitive X-ray maps of the celestial sky at a higher energy band than any other focusing X-ray satellite. NuSTAR offers opportunities for a broad range of science investigations, ranging from probing cosmic ray origins and studying the extreme physics around collapsed stars, to mapping microflares on the surface of the Sun. NuSTAR performs key follow-up observations of sources found by other satellites. The NuSTAR mission implemented a GO program in 2015. NuSTAR is now conducting the observations selected under Cycle 8 of the GO program. The project coordinates some NuSTAR observations with other missions, including Swift, The International Gamma-Ray Astrophysics Laboratory, XMM-Newton, and NICER. Such coordinated observations take advantage of NuSTAR's unique access to high-energy x-rays with synergistic lower-energy X-ray capabilities of other missions. NASA approved extended mission operations through FY 2025. The project participated in the 2025 Senior Review, and NASA approved extended mission operations.

TRANSITING EXOPLANET SURVEY SATELLITE (TESS)

The TESS mission launched on April 18, 2018, and completed its prime mission on July 4, 2020. TESS is performing an all-sky survey to search for planets transiting nearby stars. TESS monitors the sky with four wide-field visible-light cameras to detect periodic drops in brightness caused by planets passing in front of their stars. TESS is designed to survey over 85 percent of the sky (an area of sky 400 times larger than covered by Kepler) to search for planets around nearby stars (within approximately 200 parsecs). TESS stars are typically 30 to 100 times brighter than those surveyed by the Kepler satellite. Planets detected around these stars are far easier to characterize with follow-up observations, resulting in refined measurements of planet masses, sizes, densities, and atmospheric properties. By finding planets smaller than Neptune that transit stars bright enough to enable follow-up, TESS provides prime targets to learn about the composition and atmospheric properties of planets beyond the Solar System.

TESS also obtains full-frame images of the entire field-of-view (24 by 96 degrees), originally at a cadence of 10 minutes and now at a cadence of 200 seconds. For a subset of preselected targets, TESS collects data at a higher time-resolution of one image every 120 seconds or 20 seconds. These data collection modes enable a broader range of science investigations. NASA approved extended mission operations through FY 2025. The project participated in the 2025 Senior Review, and NASA approved extended mission operations.

THE IMAGING X-RAY POLARIMETRY EXPLORER (IXPE)

NASA launched IXPE in December 2021 and it completed its prime mission in 2023. Due to the hundred-fold improvement in the sensitivity of X-ray polarimeters during the past two decades, IXPE will enable astrophysicists to open an important new field of investigation into some of the most extremely unusual objects found in the universe. IXPE is examining polarized X-ray emissions from both galactic and extragalactic X-ray sources, such as active galactic nuclei, blazars, pulsars, pulsar wind nebulae, magnetars, accreting X-ray binaries, supernova remnants, and the Galactic Center. These observations have allowed the investigation of general relativistic and quantum effects in the extreme environment associated with these sources and will significantly improve our understanding of fundamental physics. NASA approved extended mission operations through FY 2025. The project participated in the 2025 Senior Review, and NASA approved extended mission operations.

SPECTRO-PHOTOMETER FOR THE HISTORY OF THE UNIVERSE, EPOCH OF REIONIZATION, AND ICES EXPLORER (SPHEREX)

NASA launched the SPHEREx mission on March 11,2025. SPHEREx will serve as a powerful tool for understanding how our universe evolved and how common the ingredients for life are in our galaxy's planetary systems. SPHEREx will be NASA's first all-sky spectral astronomy survey mission and will investigate the quantum physics of the Big Bang theory of the origin of the universe. The mission will chart the origin and history of galaxy formation, from light produced by the first galaxies that ended the cosmic dark ages, to the present day. Astronomers will use the mission to gather data on hundreds of millions of galaxies and stars. SPHEREx will also survey water and organic molecules in interstellar ices.

HELIOPHYSICS

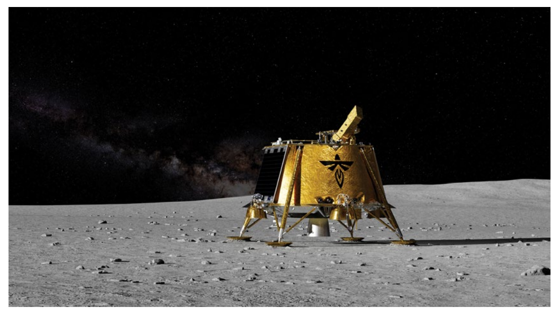
Heliophysics

HELIOPHYSICS RESEARCH

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Heliophysics Research and Analysis	55.8	--	**40.2**	40.2	40.2	40.2	40.2
Sounding Rockets	73.1	--	**30.0**	30.0	30.0	30.0	30.0
Research Range	26.9	--	**10.0**	10.0	10.0	10.0	10.0
Other Missions and Data Analysis	91.6	--	**53.9**	55.8	54.8	49.8	49.8
Total Budget	**247.4**	**--**	**134.0**	**136.0**	**135.0**	**130.0**	**130.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



The Heliophysics payload Lunar Environment Heliospheric X-ray Imager (LEXI) landed on the Moon in 2025 onboard Firefly Aerospace's Blue Ghost Mission 1. LEXI will capture the first global images of the magnetic field that shields Earth from solar radiation. Credit: Firefly Aerospace.

The Sun, a typical medium star midway through its life, governs the solar system. The Sun wields its influence through its gravity, radiation, solar wind, and magnetic fields, all of which spread out through the heliosphere, interacting with other planets, the Earth, and its space environments to produce space weather, which can affect human technological infrastructure and activities. Heliophysics seeks to understand the Sun, heliosphere, and planetary space environments as a single connected system to answer these fundamental questions:

- How and why does the Sun vary?
- How do Earth, other planets, and the heliosphere respond to the Sun's changes?
- How do the Sun and the solar system interact with the interstellar medium?
- How do these processes affect human activities?

The Heliophysics Research program supports a wide variety of activities in support of these questions including:

- Investigations of the Sun, including processes taking place throughout the solar interior and atmosphere and the evolution and cyclic activity of the Sun.
- Investigations of the origin and behavior of the solar wind, energetic particles, and magnetic fields in the heliosphere and their interaction with Earth and other planets, as well as with the interstellar medium.
- Investigations of the physics of magnetospheres, including fundamental interactions of plasmas and particles with fields and waves, and coupling to the solar wind and ionospheres.
- Investigations of the physics of the terrestrial mesosphere, thermosphere, and ionosphere, including the coupling of these phenomena to the lower atmosphere and magnetosphere.

HELIOPHYSICS RESEARCH

EXPLANATION OF MAJOR CHANGES IN FY 2026

To achieve cost savings, reductions are made to all elements of this program. This budget consolidates and reduces peer-reviewed science in the Guest Investigator project into a program element within Heliophysics R&A. This budget cancels the Wind mission; the Solar and Heliospheric Observatory (SOHO) mission is moved to the Space Weather program. Additionally, the budget reduces funding for Research Range and Sounding Rockets, assuming fewer payloads in the future. NASA will seek to initiate cost sharing of range maintenance with other partners.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

NASA will continue research within solar studies, magnetospheric studies, solar wind studies, and investigations of the uppermost regions of the Earth's atmosphere. NASA will select a limited number of new awards solicited in ROSES 2025 and ROSES 2026, focusing on studies that advance fundamental understanding of the space environments of Earth, Moon, and Mars needed for enhanced technology operation and human exploration in these environments.

The portfolio of research program elements for ROSES 2026 will be reviewed and revised based on community input and recommendations provided in the new decadal survey for solar and space physics from the National Academy of Sciences and Engineering released in December 2024.

NASA will continue participatory projects as well as collaborative efforts related to studies of solar maximum events and conditions.

NASA will continue to develop and refine the Artificial Intelligence (AI) and Machine Learning (ML) capabilities available to the Heliophysics community for data processing of mission science information, including through the Research and Development of Initiatives of Advanced New Technologies (RADIANT) program.

NASA is finalizing the sounding rockets mission manifest for FY 2026 to be consistent with the planned reduction in mission funding.

NASA will launch four CubeSats and one hosted payload in FY 2026.

Wind is currently in extended operations and will begin mission closeout in FY 2026.

Program Elements

RESEARCH RANGE

The Research Range project provides operations support, maintenance, and engineering for the Wallops Flight Facility (WFF) launch range in support of suborbital, orbital, and aircraft missions conducted on behalf of NASA and DoD. The project also supports NASA technology missions, autonomous aerial vehicle flights, and commercial launch and flight projects.

The range instrumentation includes meteorological, telemetry, radar, command, launch and range control centers, and optical systems. Research Range mobile assets provide range services at other ranges and remote locations around the world.

HELIOPHYSICS RESEARCH

SOUNDING ROCKETS

NASA's Sounding Rockets project provides suborbital launch vehicles, payload development, and field operations support to NASA suborbital missions within SMD. The approximately 20 suborbital missions flown annually by the project provide researchers with opportunities to build, test, and fly new instrument and sensor design concepts while conducting world class scientific research. The project conducts operations from fixed launch sites such as WFF's Test Range in Virginia, Poker Flat Research Range in Alaska, White Sands Missile Range in New Mexico, and foreign sites such as Andøya Space Sub-Orbital in Norway and Esrange in Sweden.

With the capability to fly higher than many LEO satellites and the ability to launch on demand, sounding rockets often offer the only means to study specific scientific phenomena of interest to many researchers. Sounding rockets can place instruments directly into regions where and when the science is occurring to enable direct, in-situ measurements. The mobile nature of the project enables researchers to conduct missions from strategic vantage points worldwide. To study solar and astrophysics phenomena, telescopes and spectrometers fly on sounding rockets to collect unique science data and test prototype instruments for future satellite missions.

HELIOPHYSICS RESEARCH AND ANALYSIS

The Heliophysics Research and Analysis (R&A) project supports basic research, solicited through NASA's annual ROSES announcements. It supports investigations in all research areas of Heliophysics, including the study of solar interiors, solar wind dynamics, magnetic reconnection in solar and terrestrial magnetic fields, particle acceleration in space plasmas, energy deposition and distribution in the ionosphere, and gravity waves in the terrestrial atmosphere. The investigations emphasize the understanding of fundamental processes and interconnections across the traditional science disciplines, on a broad range of spatial and temporal scales. This budget consolidates and reduces peer-reviewed science in the Guest Investigator program element within Heliophysics R&A.

Heliophysics Foundational Research supports data analysis along with supporting research, theory, modeling, and simulation, the combination of which is essential for interpreting mission research data collected between the outer edge of the Earth's atmosphere and the interaction of the Sun and solar wind with the local galactic environment (currently explored by Voyager). The DRIVE science center element supports large principal-investigator proposed team efforts, which require a critical mass of interdisciplinary expertise, to make significant progress in understanding complex physical processes with broad importance.

Program Schedule

NASA implements the Heliophysics Research program via a competitive selection process. NASA releases research solicitations each year through the ROSES NASA Research Announcements (NRA).

Date	Significant Event
Q2 FY 2026	ROSES-2025 selection within six to nine months of receipt of proposals
Q2 FY 2026	ROSES-2026 solicitation
Q1 FY 2027	ROSES-2026 selection within six to nine months of receipt of proposals

HELIOPHYSICS RESEARCH

Date	Significant Event
Q2 FY 2027	ROSES-2027 solicitation
Q1 FY 2028	ROSES-2027 selection within six to nine months of receipt of proposals
Q2 FY 2028	ROSES-2028 solicitation
Q1 FY 2029	ROSES-2028 selection within six to nine months of receipt of proposals
Q2 FY 2029	ROSES-2029 solicitation
Q1 FY 2030	ROSES-2029 selection within six to nine months of receipt of proposals
Q2 FY 2030	ROSES-2030 solicitation

Program Management & Commitments

Program Element	Provider
Research and Analysis	Provider: HQ Lead Center: HQ Performing Centers: GSFC, MSFC, JPL, LaRC, JSC, ARC Cost Share Partners: None
Sounding Rockets	Provider: GSFC Lead Center: HQ Performing Center: GSFC/WFF Cost Share Partners: None
Research Range	Provider: GSFC Lead Center: HQ Performing Center: GSFC/WFF Cost Share Partners: None

Acquisition Strategy

NASA issues solicitations for competed research awards each February in the ROSES NRAs. To the widest extent possible, NASA fully and openly competes all new acquisitions. Proposals are peer-reviewed and selected from the annual ROSES announcement. Universities, government research laboratories, and industry partners throughout the United States all participate in research projects.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
Sounding Rocket Operations	Peraton	Wallops Island, VA

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Science Planning and Research Support	7.1	--	**3.4**	3.4	3.4	3.4	3.4
CubeSat	8.7	--	**10.0**	10.0	10.0	10.0	10.0
Solar Data Center	3.5	--	**3.0**	3.0	3.0	3.0	3.0
Data & Modeling Services	5.5	--	**4.0**	4.0	4.0	4.0	4.0
Space Physics Data Archive	3.8	--	**3.0**	3.0	3.0	3.0	3.0
Guest Investigator Program	26.2	--	**0.0**	0.0	0.0	0.0	0.0
Community Coordinated Modeling Center	5.6	--	**4.5**	4.5	4.5	4.5	4.5
Space Science Mission Ops Services	15.2	--	**9.0**	11.0	10.0	10.0	10.0
Voyager	7.8	--	**5.0**	5.0	5.0	0.0	0.0
Wind	2.2	--	**0.0**	0.0	0.0	0.0	0.0
Geotail	0.1	--	**0.0**	0.0	0.0	0.0	0.0
Directed Research & Technology	5.8	--	**11.9**	11.9	11.9	11.9	11.9
Total Budget	**91.6**	**--**	**53.9**	**55.8**	**54.8**	**49.8**	**49.8**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA accumulates, archives, and distributes data collected by the Heliophysics System Observatory, a fleet of operating spacecraft. Combining the measurements from all these observing platforms enables interdisciplinary science across the vast spatial scales of our solar system. This collective asset enables the data, expertise, and research results to contribute directly to fundamental research on solar and space plasma physics and to space weather prediction. NASA teams support day-to-day mission operations for NASA spacecraft and data analysis to advance the state of space science and space weather modeling. NASA conducts science community-based projects to share heliophysics research models and evaluate models containing space weather information that is of value to industry and government agencies. Heliophysics data centers archive and distribute the science data from operating missions in the Living With a Star (LWS), Solar Terrestrial Probes (STP) Research, and Explorer programs.

Mission Planning and Other Projects

SCIENCE PLANNING AND RESEARCH SUPPORT

This project supports NASA scientists' participation in proposal peer review panels, Decadal Surveys, and National Academies' studies.

CUBESAT

CubeSats are small spacecraft, built to a standardized form-factor of size and mass, which can launch as secondary or ride-share payloads. With lower development costs per investigation and rapid development cycles, CubeSats can provide frequent science and technology flight opportunities. CubeSats have significant potential to leverage exploratory and systematic science observations at minimal additional cost.

The Heliophysics CubeSat project continues to work on the cross-discipline investigations already underway. In response to the capabilities demonstrated by CubeSat investigations in the initial pathfinder stage, the CubeSat activities expanded to take advantage of new science achievable via investigations in the $2 million to $10 million range. The larger investigations will enable the development of remote sensing investigations with more sophisticated CubeSats, as well as small constellations of in-situ CubeSat investigations. Beginning in FY 2025, NASA will select CubeSat activities at the rate of at least one per year to establish a regular cadence of flight opportunities for the proposer community.

SOLAR DATA CENTER

The Solar Data Center (SDAC) provides mission and instrument expertise to enable high-quality analysis of solar physics mission data. It provides leadership for community-based, distributed development efforts to facilitate identification of and access to solar physics data, including ground-based coordinated observations via the Virtual Solar Observatory, a research tool that allows scientists to search for solar and heliospheric physics data. SDAC also provides a repository for software used to analyze these data.

DATA AND MODELING SERVICES

The Data and Modeling Services project supports missions in extended operations and missions planned for decommissioning, by preparing their data holdings for long-term archival curation. This project also provides for the creation of higher-level data products, which are of significant use to the science community and not funded during the prime mission. Higher-level data products are data that combine results of multiple missions and/or instruments.

SPACE PHYSICS DATA ARCHIVE

The Space Physics Data Archive (SPDA) ensures long-term data preservation and online access to non-solar heliophysics science data. It operates key infrastructure components for the Heliophysics Data Environment, including inventory and web service interfaces to systems and data. It also provides unique enabling science data services.

The Heliophysics data archives are growing at an exponential rate. All science disciplines have seen a surge of data holdings over the last decade. As such, conventional storage and retrieval has become impractical. This era of Big Data requires the effective curation and preservation of critical data products. NASA will move beyond a traditional repository and toward a functional, collaborative data library. Over the next several years, NASA will transform the Heliophysics archives, consisting of SPDA and SDAC, into a digital resource library.

GUEST INVESTIGATOR PROGRAM

NASA has consolidated this project into Heliophysics Research and Analysis as a program element.

OTHER MISSIONS AND DATA ANALYSIS

COMMUNITY COORDINATED MODELING CENTER

The Community Coordinated Modeling Center (CCMC) is a multi-agency partnership that enables and performs the research and development for next generation heliophysics and space weather models. The project provides the United States and international research community access to simulations that enable "runs on demand," using models to study space weather events in near-real time. This allows the comparison of observational data and model parameters during or shortly after solar activity, thereby improving accuracy of the models.

SPACE SCIENCE MISSION OPERATIONS SERVICES

Space Science Mission Operations (SSMO) Services manages the on-orbit operations of GSFC Space Science missions. SSMO currently manages the following Heliophysics missions: Advanced Composition Explorer (ACE), Aeronomy of Ice in Mesophere (AIM), Interstellar Boundary Explorer (IBEX), Ionospheric Connection Explorer (ICON), IRIS, Magnetospheric Multiscale Mission (MMS), Parker Solar Probe, Solar Dynamics Observatory (SDO), Solar and Heliospheric Observatory (SOHO), Solar Terrestrial Relations Observatory (STEREO), Time History of Events and Macroscale Interactions during Substorms (THEMIS), Thermosphere Ionosphere Mesosphere Energetics and Dynamics (TIMED), and Wind. SSMO Services also sustains an operational multi-mission infrastructure for current and future missions.

DIRECTED RESEARCH AND TECHNOLOGY

The Heliophysics Directed Research and Technology project funds the civil service staff who work on emerging Heliophysics flight projects, instruments, and research. In FY 2026 funds will also support workforce reshaping efforts.

Operating Missions

VOYAGER

The Voyager Interstellar Mission is exploring the interaction of the heliosphere and the local interstellar medium. Voyager 1, launched in 1977, is making the first in-situ observations of the region outside the heliosphere from about 167 astronomical units (AU), or 167 times Earth's distance from the Sun, and is traveling at a speed of 3.6 AU per year, or 38,000 miles per hour. Voyager 2 is about 140 AU from the Sun and traveling at a speed of about 34,000 miles per hour, or 3.2 AU per year. Voyager 2 crossed the heliopause, the theoretical boundary where the Sun's solar wind is stopped by the interstellar medium, on November 5, 2018. Its twin, Voyager 1, crossed the heliopause on August 25, 2012, and continues to sail outward through the local interstellar medium. NASA approved Voyager for continued operations through 2026; the mission will submit a proposal to the 2026 Senior Review cycle.

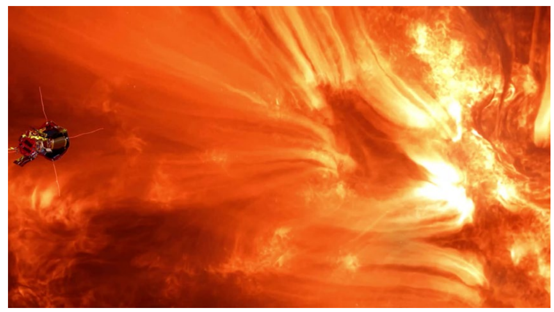
LIVING WITH A STAR

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Other Missions and Data Analysis	107.4	--	**70.5**	67.5	77.0	72.8	72.8
Total Budget	**107.4**	**--**	**70.5**	**67.5**	**77.0**	**72.8**	**72.8**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Living With a Star (LWS) program targets specific aspects of the Sun-Earth system that affect life and society. LWS provides a predictive understanding of the Sun-Earth system, linkages among the interconnected systems, and space weather conditions at Earth and the interplanetary medium. Measurements and research from LWS missions may contribute to advances in operational space weather forecasting that help prevent damage to spacecraft, communications and navigation systems, and power grids. LWS products improve our understanding of ionizing radiation, which has human health implications on ISS and high-altitude aircraft flight, as well as operations of future space exploration with and without human presence.



Shown here is an artist's impression of Parker Solar Probe near the Sun. Launched in 2018, the mission has now reached a 90-day orbit that sends the spacecraft into close encounters with our star four times per year to investigate sources of the solar wind. The mission is named after Eugene Parker, who predicted the existence of a solar wind in 1958. Credit: Johns Hopkins APL/Steve Gribben

EXPLANATION OF MAJOR CHANGES IN FY 2026

In light of fiscal constraints, NASA is reducing funding for missions in extended operations (Parker Solar Probe, Solar Orbiter, and Solar Dynamics Observatory).

Consistent with previous plans, no funding is provided for the Geospace Dynamics Constellation (GDC) project, which will conduct an orderly shutdown. NASA will explore other ways of meeting the science goals relevant to the space weather operational and user communities.

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Geospace Dynamics Constellation	20.0	--	**0.0**	0.0	0.0	0.0	0.0
LWS Science	29.7	--	**19.8**	19.8	29.8	29.8	29.8
LWS Program Management	23.0	--	**23.0**	20.0	20.0	20.0	20.0
Solar Orbiter Collaboration	9.5	--	**4.7**	4.7	4.2	0.0	0.0
Solar Dynamics Observatory (SDO)	14.0	--	**8.0**	8.0	8.0	8.0	8.0
Parker Solar Probe (PSP)	11.3	--	**15.0**	15.0	15.0	15.0	15.0
Total Budget	**107.4**	**--**	**70.5**	**67.5**	**77.0**	**72.8**	**72.8**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Living With a Star (LWS) Other Missions and Data Analysis budget includes operating LWS missions, scientific research and, program management.

Mission Planning and Other Projects

LIVING WITH A STAR (LWS) SCIENCE

The overarching goal of the LWS Science project is to develop the scientific understanding needed to address those aspects of heliophysics that affect life and society on Earth and in space. To accomplish this goal, NASA solicits targeted research proposals leading to a physics-based understanding of the integral system linking the Sun to the Earth, both directly and via the heliosphere, magnetosphere, and ionosphere. Types of investigations in support of this goal may include data analysis, theory and modeling, and the development of numerical tools and methods (e.g., software). LWS Science addresses large-scale problems that cross discipline and technique boundaries. LWS Science also includes funding to train the next generation of heliophysics experts by conducting a graduate-level heliophysics summer school, developing publicly available graduate course content, and supporting a limited number of postdoctoral research positions at universities and government laboratories.

LIVING WITH A STAR (LWS) PROGRAM MANAGEMENT

The FY 2026 budget proposes consolidation of LWS Program Management and Solar Terrestrial Probes (STP) Program Management to create a more efficient program management structure aligned with changes to the fleet of Heliophysics flight missions in development.

The LWS Program Management budget supports critical flight project management functions executed by the LWS Program Office at NASA GSFC and provides the resources required to manage the planning, formulation, and implementation of all LWS missions. The LWS Program Management project includes the SMD Rideshare Office. This office implements an SMD-wide rideshare strategy for Evolved Expendable Secondary Payload Adapter-class (ESPA-class) payload opportunities. The office is responsible for coordinating rideshare opportunities and collaborating across SMD, other NASA science directorates, other government agencies, and the greater rideshare community to foster a culture of cross-collaboration and maximize science return through shared launch opportunities and resources.

NASA will provide a limited contribution to the University of Calgary's refurbishment and expansion of a CSA ground-based network, through the Canadian Fund for Innovation. This network is central to a long-term collaboration between space-based missions and ground-based observatories to study Earth's space environment.

Operating Missions

SOLAR ORBITER COLLABORATION (SOC)

The NASA and ESA SOC mission, launched in February 2020, provides measurements that give NASA better insight on the evolution of sunspots, active regions, coronal holes, and other solar features and phenomena. The instruments explore the near-Sun environment to improve our understanding of the origins of the solar wind streams and the heliospheric magnetic field; the sources, acceleration mechanisms, and transport processes of solar energetic particles; and the evolution of CMEs in the inner heliosphere. To achieve these objectives, SOC makes in-situ measurements of the solar wind plasma, fields, waves, energetic particles, and imaging/spectroscopic observations. SOC adjusts its orbit to the direction of the Sun’s rotation to allow the spacecraft to observe one specific area for much longer than any other currently operating solar observation platforms.

ESA provided the spacecraft, manages operations and most of the instruments. NASA provided the launch vehicle and two science investigations/instruments: The Solar Orbiter Heliospheric Imager and the Heavy Ion Sensor. The prime mission phase will continue until May 2027, when the spacecraft will have completed thirteen orbits around the Sun.

PARKER SOLAR PROBE

Parker Solar Probe (PSP), launched in 2018, is unlocking the mysteries of the Sun's atmosphere. Parker Solar Probe has flown through the solar corona 20 out of an expected 24 times, gradually lowering its orbit closer to the Sun using Venus' gravity during seven flybys over its seven-year mission with the prime mission ending in 2025. After the sixth Venus flyby, the spacecraft flew through the Sun's atmosphere as close as 4.6 million miles to our star’s surface—well within the orbit of Mercury.

PSP employs a combination of in-situ measurements and imaging to revolutionize our understanding of the corona and expand our knowledge of the origin and evolution of the solar wind. PSP will also make critical contributions to our ability to forecast changes in Earth's space environment.

PSP will complete its prime mission in 2025 and will be included in the 2026 Senior Review. The FY 2026 budget assumes operational efficiencies will be implemented in the extended mission phase.

SOLAR DYNAMICS OBSERVATORY (SDO)

Launched on February 11, 2010, SDO seeks to understand the Sun’s influence on Earth and near-Earth space by simultaneously studying the solar atmosphere on small scales of space and time and in many wavelengths. The observatory enables scientists to determine how the Sun’s magnetic field is generated and structured and how stored magnetic energy is converted and released in the form of solar wind,

OTHER MISSIONS AND DATA ANALYSIS

energetic particles, and variations in the solar irradiance. SDO collects data to help explain the creation of solar activity, which drives space weather. Measurements of the interior of the Sun, the Sun's magnetic field, the hot plasma of the solar corona, and the irradiance that creates Earth's ionosphere are the primary data products. SDO is currently in extended operations. Following the 2023 Senior Review, NASA approved SDO for continued operations until the 2026 Senior Review. The FY 2026 budget assumes operational efficiencies will be implemented beginning in FY 2026.

SOLAR TERRESTRIAL PROBES

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Interstellar Mapping and Acceleration Probe (IMAP)	137.4	--	**39.5**	23.9	15.3	15.0	15.0
Other Missions and Data Analysis	54.3	--	**2.9**	2.2	2.7	2.5	2.5
Total Budget	**191.7**	**--**	**42.4**	**26.1**	**18.0**	**17.5**	**17.5**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Solar Terrestrial Probes (STP) program focuses on understanding the fundamental physical processes of the space environment from the Sun to the Earth, to other planets, and beyond to the interstellar medium. STP provides insight into the basic processes of plasmas inherent in all astrophysical systems. STP missions focus on processes such as the variability of the Sun, responses of the planets to those variations, and the interaction of the Sun and the solar system. NASA defines specific goals for STP missions and selects investigations for each mission competitively. These missions allow the science community an opportunity to address important research focus areas and make significant progress in understanding fundamental physics.

Artist's depiction of the Carruthers Geocorona Observatory satellite in space is shown here.

EXPLANATION OF MAJOR CHANGES IN FY 2026

This budget cancels operating missions well past their prime mission, including Magnetospheric Multiscale (MMS), Hinode, and Thermosphere Ionosphere Mesosphere Energetics and Dynamics (TIMED). This budget moves the Solar Terrestrial Relations Observatory (STEREO) mission into the Space Weather program given the mission's contribution to space weather prediction efforts at partner agencies. NASA will consolidate the Solar Terrestrial Program management with program management for the Living With a Star program.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

Both IMAP and Carruthers will launch in FY 2026.

SOLAR TERRESTRIAL PROBES

Program Schedule

Date	Significant Event
Q3 FY 2025	IMAP Pre-Ship Review
Q4 FY 2025	IMAP ORR
Q4 FY 2025	Carruthers ORR
Q4 FY 2025	Carruthers KDP-E
Q4 FY 2025	IMAP KDP-E
Q1 FY 2026	IMAP launch readiness
Q1 FY 2026	Carruthers launch readiness

Program Management and Commitments

GSFC is responsible for the management of the STP program.

Acquisition Strategy

In the acquisition of STP scientific instruments, spacecraft, and science investigations, NASA will use full and open competitions to the greatest extent possible. NASA may acquire certain instruments, missions, or mission systems without competition (e.g., through international partnerships or in-house builds) if there is a clear scientific, technological, or programmatic benefit to NASA.

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	SRB	Aug 2025	Carruthers ORR Program Independent Review: Assess performance of program	TBD
Performance	SRB	Jul 2025	IMAP ORR Program Independent Review: Assess performance of program	TBD

INTERSTELLAR MAPPING AND ACCELERATION PROBE (IMAP)

Formulation	Development	Operations

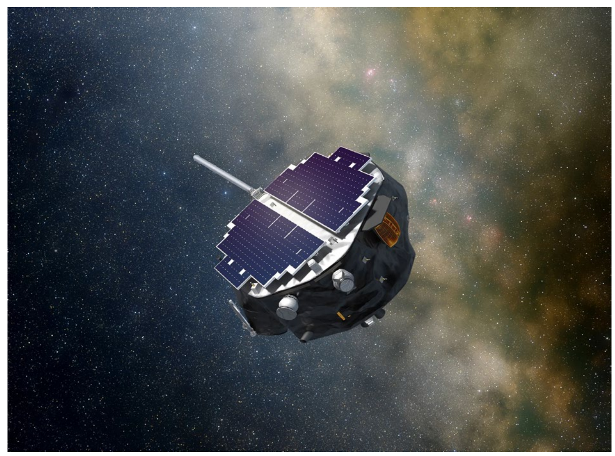
FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**137.4**	**--**	**39.5**	**23.9**	**15.3**	**15.0**	**15.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

PROJECT PURPOSE

The Interstellar Mapping and Acceleration Probe (IMAP) mission will help researchers better understand the boundary of the heliosphere. This region is where the constant flow of particles from our Sun, called the solar wind, collides with material from the rest of the galaxy. This collision limits the amount of harmful cosmic radiation entering the heliosphere. IMAP will collect and analyze particles that make it through to the heliosphere.



Shown here is an artist's depiction of NASA's IMAP spacecraft. The IMAP mission will study the heliosphere, the Sun's magnetic bubble that shields our solar system, to better understand the protective boundary.Credits: Princeton/Patrick McPike.

Another objective of the mission is to learn more about the generation of cosmic rays in the heliosphere. Cosmic rays created both locally and from the galaxy and beyond affect human explorers in space and can harm technological systems, and likely play a role in the presence of life itself in the universe.

IMAP is the fifth mission in NASA's Solar Terrestrial Probes (STP) program portfolio. NASA selected IMAP following an extensive and competitive peer review of proposals submitted in 2017. The mission will carry 10 science instruments provided by international and domestic research organizations and universities.

EXPLANATION OF MAJOR CHANGES IN FY 2026

None.

PROJECT PARAMETERS

IMAP will study the interaction of the solar wind with the winds from other stars by directly sampling neutral atoms returning from the interstellar boundary and will elucidate how particles are accelerated to high energies in space environments. The IMAP spacecraft will launch on a SpaceX Falcon 9 in FY 2026 and will conduct operations at the Earth-Sun Lagrange Point 1, upstream of Earth at one percent of the

INTERSTELLAR MAPPING AND ACCELERATION PROBE (IMAP)

Formulation	Development	Operations

distance to the Sun. IMAP will carry ten instruments, which can be grouped into three categories: energetic neutral atom detectors (i.e., IMAP-Lo, IMAP-Hi, and IMAP-Ultra), charged particle detectors (i.e, Solar Wind and Pickup Ions [SWAPI], SWE, CoDICE, and HIT), and other coordinated measurements (i.e, MAG, IDEX, GLOWS). IMAP will also supply critical real-time space weather data through its IMAP Active Link for Real-Time (I-ALiRT).

Two secondary rideshare payloads will accompany the IMAP mission, taking advantage of the excess performance capability of the launch vehicle. Heliophysics is currently planning to fly an STP mission of opportunity (i.e., Carruthers Geocorona Observatory), along with the NOAA Space Weather Follow-On (SWFO-L1).

KEY ACHIEVEMENTS PLANNED FOR FY 2026

IMAP will launch in FY 2026.

SCHEDULE COMMITMENTS/KEY MILESTONES

Milestone	Confirmation Baseline Date	FY 2026 PB Request
KDP-C	Jul 2021	Jul 2021
CDR	Jun 2022	Jan 2023
SIR	Jun 2023	Sep 2023
KDP-D	Jun 2023	Nov 2023
ORR	Dec 2024	Jul 2025
KDP-E	Jan 2025	Aug 2025
Launch (or equivalent)	Dec 2025	Dec 2025

INTERSTELLAR MAPPING AND ACCELERATION PROBE (IMAP)

Formulation	Development	Operations

Development Cost and Schedule

Base Year	Base Year Develop-ment Cost Estimate ($M)	JCL (%)	Current Year	Current Year Develop-ment Cost Estimate ($M)	Cost Change (%)	Key Milestone	Base Year Milestone Data	Current Year Milestone Data	Milestone Change (mths)
2021	589.5	70	2025	589.5	0	LRD	Dec 2025	Dec 2025	0

Note: The confidence level estimates reported reflect an evolving process as NASA improves its probabilistic estimation techniques and processes. Estimate reflects the practices and policies at the time it was developed. Estimates that include combined cost and schedule risks are denoted as JCL (joint confidence level); all other CLs (confidence levels) reflect cost confidence without necessarily factoring the potential impacts of schedule changes on cost.

Development Cost Details

Element	Base Year Development Cost Estimate ($M)	Current Year Development Cost Estimate ($M)	Change from Base Year Estimate ($M)
TOTAL:	**589.5**	**589.5**	**0**
Spacecraft	67.4	98.5	+31.1
Payloads	124.9	202.7	+77.8
Systems I&T	26.6	35.1	+8.5
Launch Vehicle	78.4	80.9	+2.5
Ground Systems	33.7	42.9	+9.2
Science/Technology	21.6	17.4	-4.2
Other Direct Project Costs	236.9	112.0	-124.9

INTERSTELLAR MAPPING AND ACCELERATION PROBE (IMAP)

Formulation	Development	Operations

Project Management & Commitments

The mission Principal Investigator is from Princeton University. The Johns Hopkins University/Applied Physics Laboratory (JHU/APL) is responsible for project management and engineering.

Element	Description	Provider Details	Change from Baseline
Spacecraft	Provides a controlled spinning platform at the L1 Lagrange point for an extensive payload of scientific instruments.	Provider: JHU/APL Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
IMAP-Lo Instrument	Tracks the interstellar flow to precisely determine the species-dependent flow speed, temperature, and direction of the Local Interstellar Medium (LISM) that surrounds, interacts with, and determines the outer boundaries of the global heliosphere.	Provider: University of New Hampshire Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
CoDICE Instrument	Determines the LISM composition and flow properties, to discover the origin of the enigmatic suprathermal tails and advance understanding of the acceleration of particles in the heliosphere.	Provider: Southwest Research Institute Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
IDEX Instrument	A high-resolution dust analyzer that provides the elemental composition, speed, and mass distributions of Interstellar Dust (ISD) particles.	Provider: University of Colorado Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
SWAPI Instrument	Delivers the high time and energy resolution required to identify local acceleration processes, fundamental to understanding the solar wind context, sources, and acceleration of particles, pickup ions, and the physical processes regulating the global heliosphere.	Provider: Princeton University Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A

INTERSTELLAR MAPPING AND ACCELERATION PROBE (IMAP)

Formulation	Development	Operations

Element	Description	Provider Details	Change from Baseline
IMAP Ultra Instrument	Images the emission of Energetic Neutral Atoms (ENAs) produced in the heliosheath and beyond.	Provider: JHU/APL Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
HIT Instrument	Delivers full-sky coverage of ion anisotropy measurements, observing the ramps of local shocks, anchoring the high-energy SEP ion spectra, and resolving particle transport in the heliosphere.	Provider: GSFC Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
SWE Instrument	Measures in-situ solar wind electrons at L1 to provide context for the ENA measurements and perform the in-situ solar wind observations necessary to understand the local structures that can affect acceleration and transport.	Provider: Los Alamos National Laboratory Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
IMAP-Hi Instrument	Enables unprecedented, detailed studies of structure and evolution of source plasmas in the heliosphere-LISM interaction region.	Provider: Los Alamos National Laboratory Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
GLOWS Instrument	Measures the heliospheric resonant backscatter glow of hydrogen and helium.	Provider: Polish Academy of Science, Space Research Center Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): Poland Ministry of Science	N/A

INTERSTELLAR MAPPING AND ACCELERATION PROBE (IMAP)

Formulation	Development	Operations

Element	Description	Provider Details	Change from Baseline
Magnetometer Instrument	Allows new insight into waves and turbulence in the solar wind to frequencies near the electron gyrofrequency and maintains an accurate baseline for space weather applications.	Provider: Imperial College of London Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): UK Space Agency	Yes
Launch Vehicle	The Falcon 9 rocket will deliver the IMAP observatory and up to four rideshare secondary payloads to a proper orbital trajectory.	Provider: SpaceX Lead Center: KSC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A

Project Risks

Risk Statement	Mitigation
If: The integrated payload stack, rideshare complexities and combined operations cause issues during launch site processing, Then: The project may experience schedule delays and or violation of safety or contamination requirements.	1) LSP to establish a Tiger team to work through integrated rideshare payload combined operations scheduling; 2) Launch Vehicle provider to mature schematics for review and demonstration of combined operations; 3) Technical authorities to evaluate launch site requests from rideshare payloads.

Acquisition Strategy

NASA competitively selected the mission through the Solar Terrestrial Program-5 AO and completed final down-selection in 2018. NASA selected the launch vehicle through full and open competition via NASA's Launch Services Program at KSC.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
Mission Development, IMAP-Ultra Instrument	JHU/APL	Laurel, MD
SWAPI Instrument and Science	Princeton University	Princeton, NJ

INTERSTELLAR MAPPING AND ACCELERATION PROBE (IMAP)

Formulation	Development	Operations

Element	Vendor	Location (of work performance)
IMAP-Hi and SWE Instruments	Los Alamos National Laboratory	Los Alamos, NM
CoDICE Instrument, Instrument Common Electronics, Payload Systems Engineering	Southwest Research Institute	San Antonio, TX
IMAP-Lo Instrument	University of New Hampshire	Manchester, NH
IDEX Instrument and Science Operations Center	Laboratory for Atmospheric and Space Physics - Colorado University	Boulder, CO
Launch Vehicle	SpaceX	Hawthorne, CA

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	Standing Review Board	July 2025	ORR ensures that all system and support (i.e., flight and ground) hardware, software, personnel, procedures, supporting capabilities, and user documentation accurately reflect the deployed state of the system and are operationally ready.	TBD

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Carruthers Geocorona Observatory	12.4	--	**2.9**	2.2	2.7	2.5	2.5
Solar Terrestrial Probe Future Missions	6.0	--	**0.0**	0.0	0.0	0.0	0.0
STP Program Management	8.5	--	**0.0**	0.0	0.0	0.0	0.0
Magnetospheric Multiscale (MMS)	21.5	--	**0.0**	0.0	0.0	0.0	0.0
Hinode (Solar B)	3.3	--	**0.0**	0.0	0.0	0.0	0.0
TIMED	2.6	--	**0.0**	0.0	0.0	0.0	0.0
Total Budget	**54.3**	**--**	**2.9**	**2.2**	**2.7**	**2.5**	**2.5**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Solar Terrestrial Probes (STP) Other Missions and Data Analysis budget includes program management and smaller missions in development.

Mission Planning and Other Projects

CARRUTHERS GEOCORONA OBSERVATORY

In December 2020, NASA selected the Carruthers Geocorona Observatory, formerly known as Global Lyman-alpha Imager of the Dynamic Exosphere (GLIDE), as an STP Mission of Opportunity. Carruthers will study variability in Earth's exosphere by tracking far ultraviolet light emitted from hydrogen. It will also gather observations at a high rate, with a view of the entire exosphere, ensuring a global and comprehensive set of data, which is currently lacking. Carruthers will help scientists better understand the ways in which Earth's exosphere changes in response to influences of the Sun. This study will provide us with better ways to forecast and, ultimately, mitigate the ways in which space weather can interfere with radio communications in space. Carruthers will be a rideshare payload on the IMAP mission, launching in FY 2026.

HELIOPHYSICS EXPLORER PROGRAM

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Multi-Slit Solar Explorer	74.7	--	**66.9**	78.0	15.6	11.7	0.6
Other Missions and Data Analysis	131.5	--	**58.4**	50.8	105.8	108.0	128.6
Total Budget	**206.2**	**--**	**125.2**	**128.8**	**121.4**	**119.7**	**129.2**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA's PUNCH mission is a constellation of four small satellites in LEO that will make global, 3D observations of the Sun's outer atmosphere to learn how the mass and energy there become the solar wind.

The The Heliophysics Explorer Program provides frequent flight opportunities for world-class scientific investigations on focused and timely science topics. These investigations complement the science of strategic missions of the LWS and STP programs. The program is highly responsive to new knowledge, new technology, and updated scientific priorities by launching smaller missions formulated and executed in a relatively short development cycle. The program features missions competitively selected from the scientific research community with constrained mission life cycle costs.

The Explorer Program provides two classes (Medium-Class Explorers [MIDEX] and Small Explorers [SMEX]) of flight opportunities to accomplish the goals of the program. MIDEX missions are the most capable Explorers scientific investigations, with a cost cap of $300 million (not including launch services). SMEX missions focus on targeted scientific objectives and are limited to a $150 million cost cap (not including launch services). Explorers Missions of Opportunity (MO) are smaller investigations, which may fly as a hosted payload, sub-orbital flight, SmallSat or CubeSat mission, or ISS-attached payloads.

EXPLANATION OF MAJOR CHANGES IN FY 2026

To achieve cost savings, the Extreme Ultraviolet High-Throughput Spectroscopic Telescope (EUVST) and HelioSwarm missions will not proceed with formulation in FY 2026. Missions well past their prime mission, including Global-scale Observations of the Limb and Disk (GOLD), Interface Region Imaging Spectrograph (IRIS), Time History of Events and Macroscale Interactions during Substorms (THEMIS), and Advanced Composition Explorer (ACE) will implement mission closeout. In addition, NASA will cancel the MIDEX Announcement of Opportunity planned for FY 2026.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

MUSE will complete the mission System Integration Review (SIR).

EZIE will continue and complete prime science operations in FY 2026.

PUNCH will continue prime science operations in FY 2026.

TRACERS and ESCAPADE will start prime science operations in FY 2026.

HELIOPHYSICS EXPLORER PROGRAM

Program Schedule

Date	Significant Event
Q3 FY 2025	SMEX2022 Step 2 down-selection
Q3 FY 2025	MUSE CDR
Q3 FY 2025	TRACERS Operational Readiness Review
Q3 FY 2025	TRACERS launch readiness
Q4 FY 2025	ESCAPADE Pre-Ship Review
Q4 FY 2025	ESCAPADE Operational Readiness Review
Q4 FY 2025	ESCAPADE KDP-E
Q4 FY 2025	ESCAPADE launch readiness
Q4 FY 2025	SunRISE launch readiness
Q2 FY 2026	MUSE SIR
Q3 FY2027	MUSE Pre-Ship Review
Q3 FY2027	MUSE Operational Readiness Review
Q3 FY 2027	MUSE KDP-E
Q4 FY 2027	MUSE launch readiness

Program Management and Commitments

The Heliophysics and Astrophysics Explorer programs share a common program office at GSFC and a common management structure. The Explorer Program Manager resides at GSFC, reporting functionally to the Center director and programmatically through the Heliophysics and Astrophysics division directors.

Acquisition Strategy

NASA competitively selects new Explorer missions, releasing solicitations when available funding allows, with the expectation of a two-to-three-year cadence. NASA acquires launch vehicles through the Launch Services Program at KSC except when an international partner provides them under an approved agreement or when the Explorer mission is not a primary payload on the launch vehicle.

MULTI-SLIT SOLAR EXPLORER

Formulation	Development	Operations

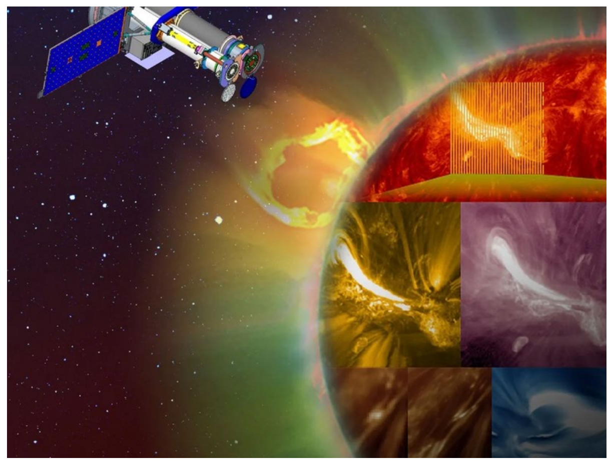
FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	74.7	--	66.9	78.0	15.6	11.7	0.6

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

PROJECT PURPOSE

NASA selected the Multi-slit Solar Explorer (MUSE) mission under the 2019 MIDEX Announcement of Opportunity in February 2022. MUSE will help scientists understand the forces driving the heating of the Sun's corona and the eruptions in that outermost region that are at the foundation of space weather. The mission will offer deeper insight into the physics of the solar atmosphere by using a powerful instrument known as a multi-slit spectrometer to observe the Sun's extreme ultraviolet radiation and obtain the highest resolution images ever captured of the solar transition region and the corona.



Artistic Concept of NASA's MUSE mission. MUSE will study solar flares, coronal mass ejections, and the Sun's outer atmosphere, the corona.

EXPLANATION OF MAJOR CHANGES IN FY 2026

NASA confirmed MUSE to enter the development phase in November 2024 with a total Agency Baseline Commitment lifecycle cost of $389.3million and an anticipated launch date of November 2027.

PROJECT PARAMETERS

The primary goal of the MUSE mission is to investigate the causes of coronal heating and instability, such as flares and coronal mass ejections, and gain insight into the basic plasma properties of the corona. This mission consists of one spacecraft with two Spectrograph and Context Imager instruments.

The Multi-slit Spectrograph collects line profiles in bright coronal lines, covering a large temperature range (0.7-12 MK) at a 0.4" angular and 1 second slit dwelling time temporal resolution. The Context Imager collects 0.33" resolution images over a larger field-of-view, showing transition region and coronal morphology and motions.

Using these instruments, MUSE will obtain high-resolution images of the evolution of solar flare ribbons in a field of view focused on a large, active region on the Sun. The mission will use breakthrough imaging

MULTI-SLIT SOLAR EXPLORER

Formulation	Development	Operations

spectroscopy techniques to observe radial motion and heating at ten times the current resolution, and 100 times faster, a key capability when trying to study the phenomena driving heating and eruption processes, which occur on time scales shorter than previous spectrographs could observe.

MUSE will launch in November 2027, and will have a prime mission duration of two years in a low-Earth Sun-synchronous orbit.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

MUSE will complete the System Integration Review (SIR) and KDP D. The MUSE team will fully integrate the spacecraft with the Multi-slit Spectrograph and Context Imager and will start environmental testing of the observatory.

SCHEDULE COMMITMENTS/KEY MILESTONES

Milestone	Confirmation Baseline Date	FY 2026 PB Request
KDP C	August 2024	August 2024
CDR	April 2025	April 2025
System Integration Review	April 2026	April 2026
KDP D	May 2026	May 2026
Pre-Ship Review	August 2027	August 2027
Operational Readiness Review	September 2027	September 2027
KDP E	October 2027	October 2027
Launch Readiness Date	November 2027	November 2027

MULTI-SLIT SOLAR EXPLORER

Formulation	Development	Operations

Development Cost and Schedule

This is the first report of development cost for this mission.

Base Year	Base Year Develop-ment Cost Estimate ($M)	JCL (%)	Current Year	Current Year Develop-ment Cost Estimate ($M)	Cost Change (%)	Key Milestone	Base Year Milestone Data	Current Year Milestone Data	Milestone Change (mths)
2025	296.9	70	2025	296.9	0	LRD	Nov 2027	Nov 2027	0

Note: The confidence level estimates reported reflect an evolving process as NASA improves its probabilistic estimation techniques and processes. Estimate reflects the practices and policies at the time it was developed. Estimates that include combined cost and schedule risks are denoted as JCL (joint confidence level); all other CLs (confidence levels) reflect cost confidence without necessarily factoring the potential impacts of schedule changes on cost.

Development Cost Details

Element	Base Year Development Cost Estimate ($M)	Current Year Development Cost Estimate ($M)	Change from Base Year Estimate ($M)
TOTAL:	**296.9**	**296.9**	**0**
Aircraft/Spacecraft	32.4	37.1	+4.7
Payloads	42.7	41.7	-1.0
Systems I&T	7.6	8.6	+1.0
Launch Vehicle	110.6	110.6	0
Ground Systems	3.7	9.8	+6.1
Science/Technology	8.5	8.7	+0.2
Other Direct Project Costs	91.4	80.4	-11.0

MULTI-SLIT SOLAR EXPLORER

Formulation	Development	Operations

Project Management & Commitments

The Principal Investigator for this mission is located at Lockheed Martin Advanced Technology Center. In addition, NASA awarded the contract for the spacecraft and instruments to Lockheed Martin Advanced Technology Center.

Element	Description	Provider Details	Change from Baseline
Instrument	Multi-slit Spectrograph	Provider: Lockheed Martin Advanced Technology Center Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
Instrument	Context Imager	Provider: Lockheed Martin Advanced Technology Center Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
Spacecraft	Provides platform for the payload	Provider: Lockheed Martin Commercial Civil Space Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
Ground Systems	Mission Operations Center	Provider: UC Berkeley Space Sciences Laboratory (SSL) Lead Center: GSFC Performing Center(s): N/A Cost Share Partner(s): N/A	N/A
Launch Vehicle	Deliver the spacecraft to operational orbit	Provider: TBD Lead Center: GSFC Performing Center(s): KSC Cost Share Partner(s): N/A	N/A

MULTI-SLIT SOLAR EXPLORER

Formulation	Development	Operations

Project Risks

Risk Statement	Mitigation
If: New optics multi-layer coating providers encounter unexpected issues during development of flight coatings, Then: Providers may not be able to provide coated flight optics on schedule.	Test coatings on sample optics will be performed by the selected optics coating vendor prior to the receipt of flight optics to identify any issues. A Coating Readiness Review will be conducted to evaluate readiness to proceed and direct any additional development to mitigate any identified issues.

Acquisition Strategy

NASA competitively selected the mission through the Heliophysics Explorers 2019 Medium-class Explorer (MIDEX) Announcement of Opportunity (AO) in 2022.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
Principal Investigator, Project Management, Payload (Spectrograph and Context Imager), Systems Integration & Test, Data Processing, Science Operations and Analysis, Science Operations Center	Lockheed Martin Advanced Technology Center	Palo Alto, CA

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	SRB	Apr 2025	CDR ensures the integrity of the project design and its ability to meet mission requirements with appropriate margins and acceptable risk within the project defined constraints.	Successful

MULTI-SLIT SOLAR EXPLORER

Formulation	Development	Operations

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	SRB	Feb 2026	SIR ensures the readiness of the project and associated supporting infrastructure to begin system AI&T and evaluate if remaining project development can be completed within existing project resources.	TBD
Performance	SRB	May 2027	ORR ensures that all system and support (i.e., flight and ground) hardware, software, personnel, procedures, supporting capabilities, and user documentation accurately reflect the deployed state of the system and are operationally ready.	TBD

OTHER MISSIONS AND DATA ANALYSIS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
HelioSwarm	16.2	--	**0.0**	0.0	0.0	0.0	0.0
Electrojet Zeeman Imaging Explorer	13.5	--	**6.3**	3.1	3.1	0.0	0.0
Escape and Plasma Acceleration and Dynamics Explorers (EscaPADE)	11.4	--	**2.8**	3.4	2.0	0.0	0.0
Extreme Ultraviolet High-Throughput Spectroscopic Telescope (EUVST)	9.7	--	**0.0**	0.0	0.0	0.0	0.0
Ionospheric Connection Explorer	4.3	--	**0.0**	0.0	0.0	0.0	0.0
Global-scale Observations of the Limb and Disk (GOLD)	3.7	--	**0.0**	0.0	0.0	0.0	0.0
Heliophysics Explorer Future Missions	6.0	--	**3.2**	14.6	75.9	94.7	114.7
Heliophysics Explorer Program Management	18.3	--	**14.4**	9.0	13.9	11.5	14.0
Interface Region Imaging Spectogr (IRIS)	6.3	--	**4.5**	2.0	0.0	0.0	0.0
Interstellar Boundary Explorer (IBEX)	2.4	--	**0.0**	0.0	0.0	0.0	0.0
Aeronomy of Ice in Mesophere (AIM)	1.5	--	**0.0**	0.0	0.0	0.0	0.0
Time History of Events and Macroscale Interactions during Substorms (THEMIS)	5.7	--	**0.0**	0.0	0.0	0.0	0.0
ACE	2.0	--	**0.0**	0.0	0.0	0.0	0.0
Polarimeter to Unify the Corona and Heliosphere (PUNCH)	7.7	--	**8.4**	4.2	4.2	0.0	0.0
Tandem Reconnection and Cusp Electrodynamics Reconnaissance Satellites	21.5	--	**11.3**	4.0	4.0	0.0	0.0
Atmospheric Wave Experiment	1.2	--	**2.5**	0.0	0.0	0.0	0.0
Sun Radio Interferometer Space Experiment (SunRISE)	0.0	--	**5.1**	10.5	2.6	1.8	0.0
Total Budget	**131.5**	**--**	**58.4**	**50.8**	**105.8**	**108.0**	**128.6**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The Heliophysics Explorer Other Missions and Data Analysis budget includes operating Explorer missions, program management, missions in formulation and development with LCCs less than $250 million, and funding for future mission selections.

Mission Planning and Other Projects

ESCAPE AND PLASMA ACCELERATION AND DYNAMICS EXPLORERS (ESCAPADE)

NASA selected ESCAPADE under the Small Innovative Missions for Planetary Exploration (SIMPLEx) Mission of Opportunity in 2019. ESCAPADE will study the active processes in the magnetosphere of Mars and how the solar wind controls them. Using two identical SmallSats, ESCAPADE will be the first mission to characterize the flow of the solar wind and of Mars-produced plasma through the Mars space environment with the ability to distinguish variations in space (e.g., a spacecraft passes through a structure) and in time (e.g., a structure changes size). The mission will focus on the plasma boundaries that define the regions of Mars' magnetosphere, Mars' atmospheric escape, and global changes in the magnetospheric structure under different solar wind conditions. With its thin atmosphere and weak crustal magnetic field in the southern hemisphere, Mars allows the study of fundamental physical processes and their differences across different planetary environments (such as compared to Earth and Venus). Further, characterizing the global system and its variability is a necessary component of understanding the space weather environment ahead of any crewed mission to Mars.

The ESCAPADE project delivered two complete spacecraft observatories to the launch site payload processing facility ready for launch. Due to delays in the development schedule of the Blue Origin New Glenn launch vehicle, NASA is in the process of establishing an updated schedule and cost profile to enable this mission to ride on the second launch of New Glenn. The ESCAPADE launch readiness date is expected in Q4 FY 2025.

HELIOPHYSICS EXPLORER FUTURE MISSIONS

Explorer Future Missions funding will support future missions that have yet to be selected. NASA released the SMEX AO in 2022 which resulted in four mission concepts selections, which were conducted in 2024. NASA expects to announce final selections no earlier than Q3 FY 2025. To achieve cost savings, the MIDEX AO planned for FY 2026 will be canceled.

HELIOPHYSICS EXPLORER PROGRAM MANAGEMENT

Explorer Program Management encompasses the program office resources required to manage Explorer projects. The program office is responsible for providing support and guidance to projects in resolving technical and programmatic issues and risks; for monitoring and reporting technical and programmatic progress of the projects; and for achieving Explorer cost, schedule, and technical goals and requirements. The project also includes support for the Science Office for Mission Assessments (SOMA) at LaRC. SOMA is responsible for the technical and scientific evaluation of Explorer mission proposals.

TANDEM RECONNECTION AND CUSP ELECTRODYNAMICS RECONNAISSANCE SATELLITES (TRACERS)

NASA selected TRACERS in 2019 as a SMEX mission. The TRACERS mission will observe particles and fields at the Earth's northern magnetic cusp region (i.e., the region encircling Earth's pole) where our planet's magnetic field lines curve down toward Earth. Here, the field lines guide particles from the boundary between Earth's magnetic field and interplanetary space down into the atmosphere. In the northern magnetic cusp area, with its easy access to our boundary with interplanetary space, TRACERS will study how magnetic fields around Earth interact with those from the Sun. In a process known as magnetic reconnection, the field lines explosively reconfigure, sending particles out at speeds that can approach the speed of light. Earth's magnetic field will guide some of these particles into the region where TRACERS can observe them.

Magnetic reconnection drives energetic events all over the universe, including coronal mass ejections and solar flares on the Sun. It also allows particles from the solar wind to push into near-Earth space, affecting its space weather. TRACERS will be the first space mission to explore this process in the cusp with two spacecraft, providing observations of how processes change over both space and time. TRACERS' twin satellites will fly in tandem — one behind the other — through the polar cusps, funnel-shaped regions where Earth's magnetic field opens over the north and south poles. This will allow scientists to observe how quickly reconnection changes and evolves by comparing data collected by each satellite.

SUN RADIO INTERFEROMETER SPACE EXPERIMENT (SUNRISE)

NASA provisionally selected the SunRISE mission in February 2019 for an extended Phase A and then authorized the mission to proceed with its Formulation Phase in March 2020. SunRISE will use six solar-powered CubeSats, each about the size of a toaster oven, to simultaneously observe radio images of low-frequency emission from solar activity and share them via NASA's Deep Space Network. The constellation of CubeSats will fly within six miles of each other above Earth's atmosphere, which otherwise blocks the radio signals SunRISE will observe. Together, the six CubeSats will create 3D maps to pinpoint where giant particle bursts originate on the Sun and how they evolve as they expand outward into space. This will help determine what initiates and accelerates these giant jets of radiation. The six individual spacecraft will also work together to map the pattern of magnetic field lines reaching from the Sun out into interplanetary space. This information will help improve understanding of how our solar system works and, ultimately, can help protect astronauts traveling to the Moon and Mars by providing better information on how the Sun's radiation affects the space environment through which they must travel. The SunRISE launch readiness date is in Q4 FY 2025.

Operating Missions

POLARIMETER TO UNIFY THE CORONA AND HELIOSPHERE (PUNCH)

NASA selected PUNCH under the 2016 SMEX AO in 2017. The PUNCH mission will focus directly on the Sun's corona and how the corona generates the solar wind. Comprised of four suitcase-size satellites, PUNCH will image and track the solar wind as it leaves the Sun. The spacecraft will also track coronal mass ejections (i.e., large eruptions of solar material that can drive large space weather events near Earth) to better understand their evolution and develop new techniques for predicting such eruptions. These observations will enhance research by other NASA missions, such as Parker Solar Probe and the ESA/NASA Solar Orbiter. PUNCH will be able to image, in real time, the structures in the solar atmosphere that these missions encounter by blocking out the bright light of the Sun and examining the much fainter atmosphere. Together, these missions will investigate how the star we live with drives radiation in space.

PUNCH launched as a rideshare with the NASA Astrophysics mission SPHEREx in March 2025.

ELECTROJET ZEEMAN IMAGING EXPLORER (EZIE)

In December 2020, NASA selected the EZIE mission (proposed as an Explorer Mission of Opportunity) to study electric currents in Earth's atmosphere linking aurora to the Earth's magnetosphere—one piece of Earth's complicated space weather system, which responds to solar activity and other factors. The Auroral Electrojet index is a common measure of geomagnetic activity levels, even though scientists do not yet understand all the details of the structure of these currents. EZIE is a trio of SmallSats that launched together in March 2025.

OTHER MISSIONS AND DATA ANALYSIS

ATMOSPHERIC WAVE EXPERIMENT (AWE)

AWE is observing infrared emissions from the atmospheric layer near 85 kilometers (50 miles) altitude to study how atmospheric gravity waves generated in the lower atmosphere transport energy into the transition region between the upper atmosphere and space. Gravity (or buoyancy) waves are generated near the surface by a variety of processes including wind flow over topography, severe storms, and atmospheric turbulence. AWE is attached to the External Logistics Carrier on ISS, where it will provide the first comprehensive observations of wave energy propagating from the lower atmosphere into the upper atmosphere, which will broaden understanding of the relationship between terrestrial weather and space weather. The results from AWE will help develop improved models used to predict environmental conditions in this highly dynamic region of the upper atmosphere that are known to affect satellite-based navigation and communication systems in LEO. The mission will complete prime operations in Q2 FY 2026 and will initiate mission closeout immediately afterwards.

INTERSTELLAR BOUNDARY EXPLORER (IBEX)

IBEX, launched in 2008, is the first mission designed to image the edge of the solar system. As the solar wind from the Sun flows out beyond Neptune, it collides with the material between the stars, forming several boundaries. These interactions create energetic neutral atoms (i.e., particles with no charge that move very quickly). This region emits no light that conventional telescopes can see, therefore IBEX measures particles that happen to be traveling inward from the boundary instead. IBEX contains two detectors designed to collect and measure energetic neutral atoms, providing data about the mass, direction of origin, and energy of these particles. From these data, researchers create maps of the boundary every six months.

The mission's focused science objective is to discover the nature of the interactions between the solar wind and the interstellar medium at the edge of the solar system. This region is important because it shields a large percentage of harmful galactic cosmic rays from Earth and the inner solar system. IBEX is currently in extended operations. NASA approved IBEX for continued operations through 2026, and the mission will submit a proposal to the 2026 Senior Review cycle.

SPACE WEATHER

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**40.5**	**--**	**54.9**	**59.1**	**76.1**	**87.5**	**78.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Shown here is an aurora image captured by the ISS on August 6, 2017.

Solar flares, coronal mass ejections (CMEs), solar particle events, and the solar wind form the recipe for space weather that affects life on Earth and astronauts in space. Space weather can pose a significant threat to society through its impacts on the electric power grid, radio and satellite communications, navigation systems, drag on satellites orbiting Earth, and humans working in space. Space weather is also an important factor for everyday decision making by end users in the United States and across the globe in sectors like commercial spaceflight, national security, and agriculture.

In May 2024, a major solar storm impacted Earth which led power grid operators to take action to mitigate outages, disrupted commercial space-based internet, caused over 5,000 satellites to experience increased drag and adjust their orbits, rerouted commercial aviation flights to avoid radio communication outages, canceled a national security high-altitude flight due to radiation risk, and disrupted U.S. farming through GPS errors. Ten days after the solar storm at Earth, the largest solar storm ever observed at Mars occurred. Both events underscore the critical economic, national security, and exploration needs for space weather.

The NASA Space Weather Program plays a vital role in the national space weather enterprise by supporting space weather applied research and applications, enhancing understanding of the space environment including orbital debris, advancing modeling capability to enable more accurate forecasting, and providing unique and useful observations and data streams for research and applications. This program is a critical partner to operational forecasting agencies, including NOAA's Space Weather Prediction Center, by focusing the scientific community on addressing the needs of forecasters and end-users and supporting the transition of those results to those partners agencies. NASA’s contributions to observing and understanding space weather will enable the nation to better protect technology, national infrastructure, and astronauts from space weather.

The NASA Space Weather Program involves a diverse mixture of activities including competed applied research and applications projects, directed and competed modeling infrastructure and space flight components, and interagency and international cooperation. This approach allows the program to address gaps in national space weather capabilities wherever they are found and serves to enable the efficient maturation of technologies and subsequent transfer of critical new capabilities to partner agencies (e.g., NOAA and DoD).

SPACE WEATHER

EXPLANATION OF MAJOR CHANGES IN FY 2026

The budget provides the highest-ever proposed amount for NASA's Space Weather program. This request supports the development of the Joint Extreme ultraviolet coronal Diagnostic Investigation (JEDI) instrument for ESA's Vigil space weather mission, following JEDI's selection in May 2024. The Program will also support, in collaboration with agency partners, capacity building efforts for the research and end-user communities in space weather.

The Heliophysics Environmental and Radiation Measurement Experiment Suite (HERMES) project will be reformulated for a future commercial mission to Mars. HERMES will characterize the causes of space-weather variability on Mars. The space weather instrument suite will gather data and enhance our ability to forecast events originating from the Sun that could affect astronauts on future missions to Mars.

Two operating missions are transferred into the Space Weather program: the Solar and Heliospheric Observatory (SOHO) mission is transferred from the Heliophysics Research program and the Solar Terrestrial Relations Observatory (STEREO) mission is transferred from the Solar Terrestrial Probes program.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

The Space Weather Program will continue to make progress in efforts to improve space weather forecasting and transition research outcomes to users. The Space Weather R2O2R program element will issue solicitations for one or more Ideas Labs and an Open Call to support the transition of scientific knowledge into the hands of space weather forecasters and other end users. The program will conduct third-year site visits at the Space Weather Centers of Excellence to evaluate and provide advice on progress, user engagement, management, transition to operations, and outreach. The Space Weather Program will continue collaboration with the Living With a Star Program to ensure that applied science projects are appropriately advancing towards application for user needs in space weather. The Space Weather Program Office will mature its support of the R2O2R program element and transition efforts, expand training opportunities for the science and user communities in collaboration with other government agencies, and support other space weather initiatives. The Space Weather Program will expand and strengthen its partnership with the DoD to ensure successful transition of scientific understanding for national security needs, and the Program will continue to build deeper relationships with the commercial sector to enhance the nation’s preparedness for space weather.

The Orbital Debris/Space Situational Awareness program element effort will see the launch of the LARADO instrument on the DoD's Space Test Program (STP) mission STP-Sat7 in FY 2026.

JEDI will hold its PDR and KDP-C in FY 2026. Two more Space Weather CubeSats will launch in FY 2026, and the Space Weather Program will potentially solicit for new CubeSat opportunities to meet user needs in space weather. The Space Weather Instrument Pipeline program element will launch the first Pipeline instrument in FY 2026 and will further advance opportunities to fly the remaining two instruments and explore models for commercial data buys.

The Moon to Mars Space Weather Analysis Office and CCMC teams will partner with NOAA's Space Weather Prediction Center and NASA Space Radiation Analysis Group to support the Artemis II mission in FY 2026 and complete final preparations for the Artemis III mission that will be the first human landing on the Moon since 1972.

SPACE WEATHER

The Space Weather Program will begin implementing recommendations in the Decadal Survey and continue interagency coordination on the National Space Weather Strategy and Action Plan and Decadal Survey. Follow-on space weather tabletop exercises will be held on focused sectors and topics.

Program Elements

SPACE WEATHER SCIENCE AND APPLICATIONS

The Space Weather Science Application project supports directed and competed activities across NASA and with the research community that benefit the larger space weather research, forecasting, and end-user communities. This portfolio establishes the ecosystem required to support the effective transition of heliophysics science results, tools, technology, and techniques to applications that enhance the user communities' ability to address impacts caused by the dynamic space environment.

Elements within the Space Weather Science and Application portfolio are described below:

- Space Weather Program Office provides program implementation support.
- CCMC provides research and development for space weather models for the community and operational transition activities for NOAA and DoD.
- Moon to Mars Space Weather Analysis Office provides space weather assessment support to NASA robotic and human exploration missions.
- Space Weather Science Operations Centers is an open-source, cloud-based multi-mission Science Operations Centers for the community targeting space weather missions.
- The Radiation Assessment Detector (RAD) instrument on the Curiosity rover provides space environment data at Mars.
- Wang-Sheeley-Arge (WSA) model team provides operational and research model support
- Small Business Innovation Research (SBIR) Program team provides program support for space weather activities for small businesses in space weather.
- Orbital Debris/Space Situational Awareness program element supports competed activities address scientific aspects of orbital debris and space situational awareness.

SPACE WEATHER RESEARCH AND ANALYSIS

The Space Weather Research and Applications project supports competed activities that address user needs in space weather. To accomplish this, the project engages with users and agencies to understand their space weather needs and with user communities to understand how they are impacted. This portfolio is NASA's primary touchpoint for interagency space weather efforts and is consistent with the recommendations of the National Academy 2013 Decadal Survey for Solar and Space Physics, the 2019 National Space Weather Strategy and Action Plan, and the Promoting Research and Observations of Space Weather to Improve the Forecasting of Tomorrow Act (PROSWIFT) Act of 2020. These competed research opportunities serve to empower the research community to tackle critical existing and emerging challenges in space weather.

Activities supported within the Space Weather Research and Analysis portfolio are described below:

- Space Weather R2O2R (including Ideas Lab and Open Call solicitations) supports activities that accelerate targeted, user-driven applied research and applications toward operational implementation.

- Space Weather Centers of Excellence supports multi-institution collaborations that address grand challenges goals in space weather research and applications toward operational implementation.
- Space Exploration program element supports space weather applications driven by and instrument development for robotic and human exploration needs for the Moon, Mars, and beyond.
- Space Weather Instrument Pipeline supports opportunities to host space weather instruments on commercial and other government agency spacecraft.
- HERMES Instrument Science and Interdisciplinary Science teams supports the scientific activities related to HERMES.
- Space Weather CubeSats supports development and flight opportunities for CubeSat missions for space weather.
- Space weather technology development coordinated with the Heliophysics Technology Program.

HELIOPHYSICS ENVIRONMENTAL AND RADIATION MEASUREMENT EXPERIMENT SUITE (HERMES)

HERMES will be a space weather payload available to fly on a to-be-determined commercial Mars mission. HERMES was previously developed to be placed on the Gateway orbital outpost, which is being proposed for termination. HERMES has entered a "safe and store" period of extended storage, with a plan to ramp back up to align the project's future launch-to-Mars timeframe.

HERMES will enable the investigation of fundamental science questions like the acceleration mechanisms of solar energetic particles, variability of solar wind structures and Galactic Cosmic Rays, and magnetotail dynamics. HERMES will support operational forecasting and nowcasting, or prediction of current events, of solar energetic particles that pose a risk to astronauts.

In FY 2026, following definition of a commercial Mars launch and orbiting vehicle, the HERMES project will conduct interface, compatibility and environmental testing. The HERMES project will also design and build the required interface plate to support data acquisition from a Mars orbiting vehicle.

JOINT EXTREME ULTRAVIOLET CORONAL DIAGNOSTIC INVESTIGATION (JEDI)

In May 2024, NASA selected the Joint Extreme Ultraviolet (EUV) coronal Diagnostic Investigation (JEDI) as an instrument of opportunity to fly on ESA's Vigil mission, an operational space weather spacecraft going to Sun-Earth Lagrange Point 5 (L5) and which is planned to launch in 2031. From L5, Vigil will monitor active regions on the Sun before they rotate to face Earth and will provide unique observations of CMEs as they move through space towards Earth. JEDI will provide EUV images of the Sun and its corona that will complement Vigil's operational space weather forecasting data. JEDI will also help researchers better understand the origin of solar storms as they form on the Sun's surface. JEDI is managed out of the LWS Program Office at GSFC.

SOLAR AND HELIOSPHERIC OBSERVATORY (SOHO)

SOHO, launched in 1995, is a joint mission of ESA and NASA, and it has been a dependable solar watchdog, providing the only Earth-Sun line coronagraph images of solar storms and accurate measurements of solar radiation storm hazards. CMEs drive most of the space weather effects affecting Earth. SOHO continues to provide essential early alert space weather observations used as inputs for and to validate models that further our understanding of the Sun's effect on the Earth. During its extended mission phase, NASA declared SOHO a national space weather asset. SOHO is currently in extended operations. Following the launch and commissioning of NOAA's Space Weather Follow On L-1 spacecraft, which will provide operational coronagraph imagery, NASA will end the SOHO mission. The transition to operational coronagraph capabilities by NOAA represents a successful research-to-operations handoff between NASA and NOAA.

SOLAR TERRESTRIAL RELATIONS OBSERVATORY (STEREO)

STEREO enables studies of the origin of the Sun’s CMEs and their consequences for Earth, other planets, and interplanetary space. The mission launched with two spacecraft, one Ahead of Earth (i.e., STEREO-A) and the other Behind Earth (i.e., STEREO-B) in its orbit. STEREO’s instrumentation targets the fundamental process of energetic particle acceleration in the low solar corona and in interplanetary space. The mission can image the structure and evolution of solar storms as they leave the Sun and move through space toward Earth. The mission also provides the foundation for understanding space weather events and developing predictive models. The models, in turn, help to identify and mitigate the risks associated with space weather events. In addition, STEREO improves space weather situational awareness not only for Earth and in LEO, but also throughout the solar system.

STEREO launched in October 2006 and entered its extended mission phase in January 2009. NASA has been unable to communicate with STEREO-B since 2016. STEREO-A continues to operate nominally and is still providing significant data for science and space weather prediction.

SPACE WEATHER FUTURE MISSIONS

The Space Weather Future Missions portfolio will support future space weather investigations and future NASA participation in international space weather missions which could provide valuable science data to advance understanding of the dynamics of space weather and improve space weather predictions and user-driven needs.

SPACE WEATHER

Program Schedule

Date	Significant Event
Q3 FY 2025	SWx Centers of Excellence annual meeting
Q4 FY 2025	SunCET CubeSat mission launches NET Sep 2025
Q1 FY 2026	CubIXSS CubeSat mission launches NET Oct 2025
Q1 FY 2026	Launch of LARADO science instrument NET Oct 2025
Q2 FY 2026	ROSES-26 Space Weather R2O2R solicitation released
Q3 FY 2026	SWx Centers of Excellence annual meeting / site visits
Q4 FY 2026	M2M and CCMC teams support Artemis III mission
Q2 FY 2027	HERMES payload integration and testing completed
Q2 FY 2027	ROSES-27 Space Weather R2O2R solicitation released
Q3 FY 2027	SWx Centers of Excellence annual meeting / site visits

Program Management & Commitments

Program Element	Provider
Space Weather Science and Applications	Provider: Various Lead Center: HQ Performing Center(s): ARC, GSFC, HQ, JPL, LaRC, MSFC Cost Share Partner(s): None
Space Weather Research and Analysis	Provider: Various Lead Center: HQ Performing Center(s): ARC, GSFC, HQ, JPL, LaRC, MSFC Cost Share Partner(s): None
HERMES	Provider: GSFC Lead Center: GSFC Performing Center(s): GSFC Cost Share Partner(s): None
JEDI	Provider: Southwest Research Institute Lead Center: GSFC Performing Center(s): GSFC Cost Share Partner(s): None

Acquisition Strategy

NASA primarily procures space weather research tasks through full and open competition, such as the ROSES announcements. The solicitation of space weather research is competitive and selected from NASA centers, industry, and academia, as well as other government agencies, Federally Funded Research and Development Centers, and nonprofit organizations.

NASA competitively selected the JEDI instrument project as a mission of opportunity to be contributed ESA's Vigil mission.

INDEPENDENT REVIEWS

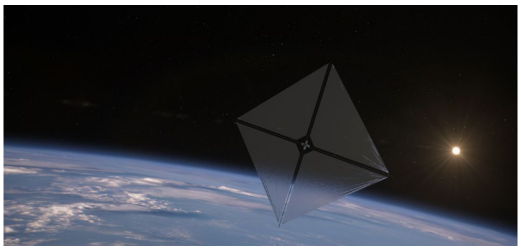
Review Type	Performer	Date of Review	Purpose	Outcome
Performance	SRB	2025	JEDI instrument Preliminary Design Review	Successful
Performance	SRB	2026	HERMES Integration Readiness Review 2	TBD
Performance	SRB	2026	HERMES Pre Environmental Review	TBD
Performance	SRB	2026	HERMES Pre Ship Review	TBD
Performance	SRB	2026	JEDI instrument CDR	TBD
Performance	SRB	2028	JEDI Instrument Delivery Review	TBD

HELIOPHYSICS TECHNOLOGY

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**11.8**	**--**	**5.4**	**5.0**	**5.0**	**5.0**	**5.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



An artist's concept of NASA's Advanced Composite Solar Sail System spacecraft in orbit as the Sun crests Earth's horizon is shown here.

Advancements in Heliophysics depend on the ability to produce novel and transformative technologies, capabilities, and mission concepts. The Heliophysics Technology program makes strategic investments in the development and demonstration of instruments and technologies for infusion into future missions. Investments in new technologies will enable previously infeasible science investigations; improve existing measurement capabilities; reduce the cost, risk, and/or development times for Heliophysics science instruments and advanced space missions of the future; and yield applications that benefit the broader economy in areas of strategic importance such as space weather.

The Heliophysics Technology program supports investigations that are competitively selected through the NASA ROSES solicitation via the Heliophysics Technology and Instrument Development for Science (HTIDeS) program element. The program nurtures technology maturation and infusion and supports mission concept development as well as strategic analyses. The program also includes the technology demonstration mission: the Magnetometers for Innovation and Capability (MAGIC).

EXPLANATION OF MAJOR CHANGES IN FY 2026

The budget makes significant reductions to Heliophysics Technology given higher priorities within the agency. Reductions include elimination of Technology Analysis and Mission Design (TAMD) program element and the HEliophysics Strategic Technology Office (HESTO). NASA will no longer solicit proposals for the Heliophysics Flight Opportunities Studies (HFOS) competition.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

The Lightsheet Anomaly Resolution and Debris Observation (LARADO) instrument is integrated and undergoing testing with the Space Test Program Satellite 7 (STPSat-7) scheduled for launch in FY 2026. LARADO is a groundbreaking space-based instrument designed to detect and characterize lethal non-trackable orbital debris, using satellite and laser technology. These debris objects, ranging in size from a few centimeters to larger than a millimeter, are too small to track from the ground but pose a significant threat to operational satellites.

The project is developing a miniaturized magnetometer derived from the MAGIC for maturation through flight. The payload is scheduled to fly on a rocket from Andoya in FY 2026.

HELIOPHYSICS TECHNOLOGY

Program Elements

ADVANCED TECHNOLOGY DEVELOPMENT (ATD)

The ATD Project invests in the development of critical and innovative new instruments and technologies, and novel and transformative capabilities to achieve significant progress toward addressing the scientific and technical challenges in Heliophysics in the coming years. This includes the Heliophysics Technology and Instrument Development for Science (HTIDeS). This project also supports promising early Technology Readiness Level (TRL) technologies to proactively nurture and advance these capabilities.

MAGNEOMETERS FOR INNOVATION AND CAPABILITY (MAGIC)

MAGIC is a five-year project to develop the fluxgate magnetometer technology and to design, build, test, and fly a next-generation space flight fluxgate. Fluxgate magnetometers are a widely used instrument that provides measurements of the Direct Current (DC) and low-frequency Alternating Current (AC) magnetic field. MAGIC will deliver world-class magnetic measurements without relying on the legacy ring-cores used by other providers and can be scaled and tuned for other applications.

Program Schedule

Date	Significant Event
Q4 FY 2025	2nd Annual Heliophysics Technology Symposium
Q1 FY 2026	ROSES-2025 HTIDeS selections
Q2 FY 2026	ROSES-2026 HTIDeS solicitation released
Q1 FY 2027	ROSES-2026 HTIDeS selection
Q2 FY 2027	ROSES-2027 HTIDeS solicitation released
Q1 FY 2028	ROSES-2027 HTIDeS selection
Q2 FY 2028	ROSES-2028 HTIDeS solicitation released
Q1 FY 2029	ROSES-2028 HTIDeS selection
Q2 FY 2029	ROSES-2029 HTIDeS solicitation released
Q1 FY 2030	ROSES-2029 HTIDeS selection
Q2 FY 2030	ROSES-2030 HTIDeS solicitation released

HELIOPHYSICS TECHNOLOGY

Program Management & Commitments

Program Element	Provider
Advanced Technology Development (ATD)	Provider: Various Lead Center: HQ Performing Center(s): TBD Cost Share Partner(s): None
MAGIC	Provider: University of Iowa Lead Center: GSFC Performing Center(s): GSFC Cost Share Partner(s): None

Acquisition Strategy

NASA primarily procures tasks through full and open competition, such as the ROSES announcements. The solicitation of technology investments is competitive and selected from NASA centers, industry, and academia as well as other government agencies, Federally Funded Research and Development Centers, and nonprofit organizations. NASA may directly fund critical technologies identified through a gap analysis.

MAJOR CONTRACTS/AWARDS

None.

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Relevance	National Academies of Science, Committee for Solar and Space Physics (CSSP)	2025	Independent assessment of targeted technology development priorities for Heliophysics Technology	TBD

BIOLOGICAL AND PHYSICAL SCIENCES

Biological and Physical Sciences

BIOLOGICAL AND PHYSICAL SCIENCES

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**87.5**	**--**	**25.0**	**25.0**	**25.0**	**25.0**	**25.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Researcher Rob Ferl conducting a plant experiment aboard Blue Origin New Shepherd 26. Ferl is the first NASA-funded researcher to conduct his own investigation in space.

NASA's Biological and Physical Sciences (BPS) division conducts research in space to obtain critical insights into how biological and physical systems function. The unique, extreme conditions found in space, such as altered gravity and deep-space radiation, enable scientists to probe biological and physical systems in ways not possible on Earth. The resulting knowledge can lead to scientific discoveries and technological advancements that support NASA's deep-space missions and benefit life on Earth.

In response to the Decadal Survey on Biological and Physical Sciences Research in Space 2023-2032, BPS has identified five major areas of study which align with the Key Science Questions identified in the Decadal Survey, and which will guide selection of future science. The five goals are:

- Precision Health, leveraging space to unlock the secrets of aging and disease;
- Space Crops, understanding the fundamental science needed for sustainable space-based crop production for future long duration exploration of the Moon and beyond, and to benefit agriculture in austere environments on Earth;
- Quantum Leaps, probing the very nature of the universe using precise space-based quantum sensors to test the Einstein equivalence principle, dark sector physics, and the nature of fundamental physical constants;
- Foundations, revealing the novel behaviors of fluids, fire, and materials in space; and
- Space Labs, accelerating the pace and productivity of research.

BPS conducts investigations via competitively awarded research grants to scientists at universities, research institutions across the country, and NASA centers. BPS develops critical equipment and processes to support new experiments and shares research results with academia, commercial industry, and other government agencies through open science databases, conferences, and working groups.

The division facilitates and oversees collaborations between a wide range of agencies, including the National Institutes of Health (NIH), National Center for Advancing Translational Sciences, NIH's National Institute of Allergy and Infectious Diseases, NIH's National Cancer Institute Division of Cancer Treatment and Diagnosis, Biomedical Advanced Research and Development Authority, U.S. Department of Agriculture, U.S. DoD, National Research Office, and the Food and Drug Administration.

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EXPLANATION OF MAJOR CHANGES IN FY 2026

The budget reduces funding for BPS to support higher priorities within the agency. Given reduced crew time and research capacity of the International Space Station as the program transitions to less-expensive commercial facilities, BPS will reduce its ISS flight experiments to one to two per year. BPS will proceed with the Commercially Enabled Rapid Space Science (CERISS) project, focused on research capabilities for use on Commercial LEO Destination (CLD) space labs, at a slower pace. BPS will support organ-chip research on Artemis-II and -III, CLDs and other commercial opportunities such as suborbital flights, and Flammability of Materials on the Moon (FM2), and a physical sciences experiment on the SpaceX uncrewed demo.

New solicitations and BPS support for ground facilities (e.g., hypergravity facilities, drop towers, microgravity simulator facility) will be significantly reduced or terminated.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

Quantum Leaps: 1) The Cold Atom Lab will benefit from a new science module that will increase atom numbers, which should set a record for coldest atoms in space. Colder atoms improve experiments, including the sensitivity of atom interferometry; 2) In collaboration with DLR, NASA will continue its quest to understand dark energy in the German Einstein Elevator; and 3) NASA will operate one ground terminal for the ACES investigation and become an integral part of testing General Relativity.

Precision Health: BPS plans to fly the first organ-chip experiment into deep space aboard Artemis II, scheduled for launch in FY 2026. This pioneering research could unlock new insights into aging and disease, contributing to health advances for crew in space and patients on Earth. It is a NASA-led experiment in collaboration with other government agencies, including the Biomedical Advanced Research and Development Authority, National Center for Advancing Translational Research, Food and Drug Administration, and other commercial companies, including Space Tango.

Foundations: 1) Launch the FM2 experiment. Results from this mission could deliver insights on the effects of lunar gravity, elevated oxygen, and lower pressures on the flammability of critical spaceflight materials; 2) Complete the ZBOT Non-Condensable project operations studying the effects of non-condensable gases on tank pressure. Results will feed into Computational Fluid Dynamics modeling efforts and will be shared with U.S. industry; 3) In collaboration with ESA, continue materials sciences research using the Material Science Lab; and 4) In collaboration with JAXA, continue materials sciences research using the Electrostatic Levitator Facility on the ISS.

Space Labs: CERISS plans to award contract(s) to the commercial space industry to supplement the CLD lab capabilities, by modifying existing commercially available lab equipment to conduct on-orbit analysis. This equipment is necessary for research in LEO that aligns with Decadal Survey recommendations. BPS will seek the utilization of launches on suborbital and orbital platforms from commercial entities.

Space Crops: In partnership with ESSIO, continue to advance Lunar Effects on Agricultural Flora (LEAF), a science payload studying plant growth and photosynthesis on the lunar surface. Scheduled to launch on Artemis III.

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Program Elements

BPS PROGRAM MANAGEMENT

The FY 2026 budget will fund a streamlined team to enable division and project management. This project will no longer fund other BPS institutional and crosscutting activities.

SPACE BIOLOGY

The main objective of the Space Biology Project is to build a better understanding of how space flight affects living systems in spacecraft (e.g., ISS) or in ground-based experiments that mimic aspects of space flight, and to prepare for future human exploration missions far from Earth. The experiments researchers conduct on these platforms examine how plants, microbes, and animals adjust or adapt to living in space. Researchers study the processes of metabolism, growth, stress response, physiology, and development. Space Biology studies how organisms repair cellular damage and protect themselves from infection and disease in conditions of microgravity, while exposed to space radiation—and across the spectrum of biological organization, from molecules to cells, from tissues to organs, and from systems to whole organisms, to communities of microorganisms. These studies often reveal new insights into biological functions that would be difficult or impossible to obtain only through Earth-based experiments.

In addition to providing useful information on how living organisms adapt to space flight, the discoveries NASA researchers make in space have significant implications for life on Earth. Space Biology's research into the virulence of pathogens in space, loss of bone density, and the changes in the growth of plants can impact the development of drugs that promote wound healing or tissue regeneration. This research will also inform treatments designed to counter osteoporosis on Earth, and high-tech fertilizers that increase crop yield.

The research community will maintain access to BPS's comprehensive space-related omics databases where users can upload, download, share, store, and analyze space flight and space flight-relevant data from experiments using model organisms. Omics refers to a collection of biological classes of study, such as genomics, transcriptomics, and others that focuses on the collective characterization and quantification of pools of biological molecules that translate into the structure, function, and dynamics of an organism or organisms. BPS's databases include: GeneLab, NASA Biological Institutional Scientific Collection, and Ames Life Sciences Data Archive.

In response to 2023-2032 Decadal Survey priorities, the Space Biology project will focus on two thematic goals: Space Crops and Precision Health.

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Physical sciences research contributes in two key ways:

1) Basic research explores physical phenomena without the influence of gravity, helping scientists better understand fundamental laws of the universe. This type of research reveals the core mechanisms that govern how physics works. The Quantum Leaps goal focuses on this area, using microgravity to suspend ultra-cold atoms for long periods with minimal interference—something that isn’t possible on Earth.

2) Applied research supports a deeper understanding of key technologies needed for space exploration—such as power generation and storage, propulsion, life support, and environmental monitoring and control.

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This research drives the development of breakthrough capabilities for future missions. The Foundation's goal includes applied work in Combustion Science, Fluid Physics, and Materials Science. In these fields, microgravity serves both as a valuable research tool and a unique engineering challenge since systems must function reliably in space conditions. Scientific progress in these areas can lead to major improvements in spacecraft design and performance. Data storage from these studies occurs in NASA's Physical Sciences Informatics system and is made publicly available.

In response to 2023-2032 Decadal Survey priorities, the Physical Sciences project will focus on two thematic goals: Quantum Leaps and Foundations.

COMMERCIALLY ENABLED RAPID SPACE SCIENCE (CERISS)

The goal of CERISS is to develop transformative research capabilities with commercial space industry partners to dramatically increase the pace of research within the five goals of the BPS portfolio. It is highly focused on the transition of science capabilities from the ISS to the CLD space labs to ensure BPS has modern lab equipment to conduct cutting edge science as well as reduce the time needed to analyze experiment results. Long-term goals for equipment include developing automated hardware for experiments both in LEO on CLDs as well as beyond, including the lunar surface. The benefits will include a dramatically faster pace of research for a wide range of research sponsored by BPS, the NASA Human Research Program, other government agencies, and industry.

In response to 2023-2032 Decadal Survey priorities, the CERISS project will focus on five thematic goals: Space Crops, Precision Health, Space Labs, Quantum Leaps and Foundations.

Program Schedule

The BPS program solicits proposals as part of the SMD's annual Research Opportunities in Space and Earth Science (ROSES) research calls.

Date	Significant Event
Q1 FY 2025	TechLeap solicitation release
Q3 FY 2025	TechLeap selection
Q4 FY 2025	ROSES-2024 NASA Research Announcements (NRA) selection within six to nine months of receipt of proposals

Program Management & Commitments

Program Element	Provider
Space Biology (Precision Health)	Provider: Various Lead Center: ARC Cost Share Partner(s): BARDA

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Program Element	Provider
Space Biology (Space Crops)	Provider: Various Lead Center: KSC Cost Share Partner(s): ESSIO
Physical Sciences (Foundations)	Provider: Various Lead Center: GRC Cost Share Partner(s): N/A
Physical Sciences (Quantum Leaps)	Provider: Various Lead Center: JPL Cost Share Partner(s): N/A
CERISS	Provider: Various Lead Center: HQ Cost Share Partner(s): N/A

Acquisition Strategy

BPS competitively selects its research via NRAs. Once selected, the principal investigator is paired with a NASA field center and a commercial partner to facilitate the implementation of the project.

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	IRB	Feb 2025	FM2 KDP-D	Proceed to Phase D
Performance	IRB	Apr 2025	Artemis-II Informed Consent Board	Waiting on response
Performance	IRB	Apr 2025	Artemis-II Phase II Safety Review	Proceed to Phase III
Performance	IRB	May 2025	LEAF PDR and Phase I Safety Review	TBD
Performance	IRB	Jul 2025	Artemis-II CDR	TBD
Performance	IRB	Aug 2025	LEAF CDR and Phase II Safety Review	TBD
Performance	IRB	Dec 2025	CAL SM-3X: FHA	TBD
Performance	IRB	Mar 2026	FM2 FHA on HLS SpaceX Uncrewed Demo	TBD

AERONAUTICS

AERONAUTICS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Airspace Operations and Safety Program	148.1	--	**88.1**	96.4	112.4	115.0	117.0
Advanced Air Vehicles Program	259.6	--	**133.4**	163.3	161.2	154.9	162.8
Integrated Aviation Systems Program	256.6	--	**167.2**	161.3	115.4	110.0	70.0
Transformative Aeronautics Concepts Program	154.9	--	**125.1**	82.8	109.8	113.9	134.0
Aerosciences Evaluation and Test Capabilities	115.8	--	**74.9**	84.9	89.9	94.9	104.9
Total Budget	**935.0**	**935.0**	**588.7**	**588.7**	**588.7**	**588.7**	**588.7**

FY 2024 reflects the funding amount specified in Public Law 118-42, Consolidated Appropriations Act, 2024, as revised in NASA's FY 2024 final Operating Plan, September 2024. Amounts include a net transfer amount of $2.0 million; $4.5 million that was transferred from General Services Administration (GSA) and $2.5 million that was transferred to NASA's Information Technology Modernization Working Capital Fund.

FY 2025 reflects the funding amount specified in Public Law 119-4, Full-Year Continuing Appropriations and Extensions Act, 2025.

NASA's X-59 lights up the night sky with its Mach-diamond-infused flames during maximum afterburner testing at Lockheed Martin Skunk Works in Palmdale, California. The early 2025 test demonstrated the engine's ability to generate the thrust required for supersonic flight in support of NASA's Quesst mission.

NASA Aeronautics leads the nation's aviation community in research to maintain and advance American leadership in global aviation markets. The Aeronautics Research Mission Directorate (ARMD) is working to improve commercial aircraft, safely increase the capacity of the national airspace system, and provide new innovation to aviation. The Aviation sector is critical to the U.S. economy providing a positive manufacturing trade balance of $113.9 billion in 2023 and 2.2 million aerospace/defense jobs in 2023 (https://www.aia-aerospace.org/industry-impact/).

NASA's technology development and research support the nation's leadership in the commercial aviation industry. Specifically, NASA is leading industry to accelerate the development of aircraft technologies that will reduce aircraft operating costs. NASA will demonstrate that supersonic aircraft (X-59) can fly without generating loud sonic booms.

NASA is working with the Federal Aviation Administration (FAA), industry, and academia to transform air traffic management systems to safely accommodate the growing demand for new air vehicles entering the airspace, enabling them to perform a variety of missions no matter what airspace that mission may require.

NASA conducts foundational research on crosscutting ideas and technologies. This research enables a broad range of aeronautics and aerospace applications and explores opportunities for technology convergence from disparate technology areas. Flight and ground capabilities for experimentation and feasibility demonstrations are additional elements that support the entire ARMD portfolio.

AERONAUTICS

In FY 2026, NASA will develop a detailed new strategy to maintain U.S. leadership in aviation, including developing new tools for the FAA to safely increase the capacity of the airspace, and providing innovative technologies and concepts that will revolutionize aviation. The strategy outlined below will guide portfolio content and help develop a new leaner and more cost-efficient Aeronautics research organization.

NASA will innovate in Aeronautics where only NASA can. First, ARMD will focus its efforts in key areas that will drive U.S. technological competitiveness in aviation to outpace rapidly advancing international capabilities. Second, NASA will further focus its deep partnership with FAA on transformative concepts, automation and other technologies that ensure the U.S. has the safest, most capable airspace system in the world. Third, NASA's partnership with DoD, a long-term highly productive relationship, will enable aviation to fly higher and faster than ever before.

ARMD is working to enable transformation of future air travel in at least four major areas:

Revolutionize Aerospace Engineering Methods – Accelerating the ability to perform rapid, high fidelity computational design and analysis of complex aerospace systems will lead to enormous innovation advantages through accelerating design cycles, reducing expensive and time-consuming ground and flight testing, and enabling true system optimization. While China and other countries focus on building new ground test facilities, NASA will utilize its existing fleet of ground and flight test capabilities, high-end computing, and world class computational expertise in a partnership with industry and universities to generate the unique experimental databases that reveal complex physics and drive the next generations of computational methods.

Pioneer High Speed Flight – There are enormous obstacles to achieving practical, scalable, commercial supersonic and hypersonic flight. NASA is uniquely positioned and capable of solving these technical challenges. For example, NASA's X-59 is taking a major step in enabling overland supersonic flight – we will be the first in the world to demonstrate the ability to fly at cruise supersonic speeds without unacceptable sonic boom noise. NASA will continue to tackle supersonic challenges while also leading the nation in advancement in key hypersonic technology areas, such as combined cycle propulsion and durable high temperature material systems for civil systems, with relevance for national security applications.

Automate Airspace and Safety Management Capabilities – NASA's proven track record in high confidence aviation operation automation systems coupled with FAA's infrastructure modernization creates the conditions for growing and diversifying U.S. aviation operations. Today, NASA is demonstrating a range of advanced capabilities for FAA, airline and third-party service deployment that implement efficient trajectory-based operations for airlines, while enabling entry of new air transportation capabilities, such as small drone delivery services and air taxi services.

Transform Aviation Propulsion – Propulsion has traditionally been at the heart of major leaps in aircraft system capabilities and performance. New energy technologies being developed across industrial sectors enable aviation to envision new ultra-high efficiency propulsion cycles and revolutionize future air vehicles. Therefore, as ARMD completes current research activities such as the advanced thin wing design, the Hi-Rate Composite Aircraft Manufacturing project, and the hybrid thermally efficient core development for next generation airliners, we will focus long-term research on truly revolutionary propulsion capabilities that will drive future generations of airliner performance, further enhancing U.S. technological competitiveness and travel affordability.

EXPLANATION OF MAJOR CHANGES IN FY 2026

NASA will focus on addressing the highest priority challenges to the nation's global competitiveness in aviation, delivering advances through partnerships with the FAA and DoD and saving costs by reducing lower priority activities.

Within the Airspace Operations and Safety Program, NASA, in partnership with the FAA, will focus on developing technologies for reduced airline delays and operating costs, third party airspace management technologies for advanced air mobility, portable airspace management system for wildfire management, and requirements for prognostic safety management data. To achieve cost savings, NASA will reduce the number of technologies validated through flight with more validated through simulation only, reduce and consolidate oceanic and disruption management flow management technology development, eliminate Model Based System Engineering (MSBSE) architecture development for advanced air mobility, eliminate integration of wildfire airspace management with sensor data, and eliminate development of vehicle safety technologies.

Within the Advanced Air Vehicles Program, NASA will fund aircraft and propulsion research that will provide the nation with a competitive advantage in the aviation industry and support the hypersonics work with the DoD. To achieve cost savings, NASA will refocus on the priority challenge of providing the burgeoning U.S. Advanced Air Mobility market with validated computational tools to understand and address noise and performance of these new vehicles. It will do so by descoping its vertical lift portfolio by reducing research on electric vehicles including ride handling, ride quality, crashworthiness, support for extra-planetary vehicles, DoD partnerships, and university collaborations and centers of excellence. It will also delay or rescope small-core engine research.

Within the Integrated Aviation Systems Program, NASA will fund advanced thin-wing technology development, the low boom flight demonstrator, and key flight capabilities. To achieve cost savings, NASA plans to complete its work on and funding for the Electrified Powertrain Flight Demonstration project by the end of 2025.

Within the Transformative Aeronautics Concepts Program (TACP), NASA will focus funding on university innovation, advanced computational tools, and capabilities needed to maintain a strong pipeline of new ground-breaking technologies to keep America competitive. To achieve cost savings, TACP will rapidly phase out research related to emissions and climate issues. In addition, TACP will eliminate the Convergent Aeronautics Solutions (CAS) project, and pause selection of new University Leadership Initiative awards while stopping the University Student Research Challenge and Gateway to Blue Skies competition in the University Innovation (UI) Project.

Within the Aerosciences Evaluation and Test Capabilities Portfolio, NASA will focus resources on supporting seven priority large wind tunnels and seek efficiencies across the remaining portfolio as we adjust to new demand levels. With lower planned wind tunnel utilization in FY 2026, NASA has reduced funding for wind tunnel maintenance and operations. The initial estimates show that up to five of the twelve tunnels in the portfolio will be put into "stand-by" mode where the tunnel would be provided minimal maintenance and supporting workforce.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

The budget request supports five programs within the agency’s aeronautics portfolio:

The Airspace Operations and Safety Program (AOSP) advances mobility through modernizing and transforming the national air traffic management system, in partnership with the FAA and the aviation community. The program develops and explores advanced technologies for more efficient gate-to-gate flight trajectories, leads research on increasingly autonomous aviation, and provides tools for the integration and analysis of data to support in-time system-wide safety assurance. The program has focused efforts to advance the safe integration of new advanced air mobility vehicles into the airspace. The program is also addressing the need for improved responses to wildfires by leveraging its UAS traffic management capabilities. The Program will reduce and consolidate airspace management and safety technology development efforts, as well as reduce and consolidate the Advanced Air Mobility and Advanced Capabilities in Emergency Response Operations projects. AOSP will focus on integrated automation and establish the updated reduced scope Technical Challenges. In FY 2026, AOSP, in collaboration with FAA and industry, will:

- Validate prognostic safety data analytics algorithms on an integrated and fused set of different types of airline data to identify potential safety issues and share the results with airline partners;
- Evaluate digital gate-to-gate flight rerouting capability to reduced airline delays and operating costs; and
- Assess technologies for strategic deconfliction by advanced air mobility operators to integrate non-traditional vehicles into the airspace.

The Advanced Air Vehicles Program (AAVP) develops the tools, technologies, and concepts to enable safe new aircraft that are faster, quieter, and more fuel efficient. The program pioneers fundamental aeronautics research and matures the most promising concepts for transition to the community. AAVP works closely with the DoD to advance dual-use technologies for both civilian and military applications. Key focus areas include: enabling major leaps in the safety and performance of subsonic fixed and rotary wing aircraft; overcoming noise and other technology challenges to high-speed flight, including demonstration of quiet supersonic flight with the X-59 aircraft; and understanding and resolving critical challenges of hypersonic flight. In FY 2026, AAVP will:

- Evaluate and select high-rate composite aircraft manufacturing technologies for at least one major aircraft structure demonstration;
- Research dual-mode ramjet control and operability in flight and in post-flight ground test to advance hypersonic engine technologies; and
- Acquire early probing data from the X-59 aircraft flight tests to understand the acoustic characteristics of the aircraft and provide confidence in the tools that will be used during future acoustic validation.

The Integrated Aviation Systems Program (IASP) explores, assesses, and demonstrates the benefits of the most promising technologies at an integrated system level, including in flight. The program has two major efforts: the Low Boom Flight Demonstrator and advanced thin wing development. Also, the program funds flight support capabilities and other aeronautics research related to flight tests. In FY 2026, IASP will:

- Complete X-59 aircraft envelope expansion flights and begin flights needed to validate that acoustic characteristics match design targets for quiet supersonic flight;
- Demonstrate F-15 calibrated chase capability at high altitude in support of the Quesst mission; and
- Complete project planning associated with a major ground-based testbed of a full-scale, high aspect ratio wing to demonstrate the benefits of thin-wing technologies.

The TACP demonstrates initial feasibility of concepts supporting the discovery and development of new transformative solutions. TACP creates advanced and improved computational tools, technologies, and experimental capabilities for use by other aeronautics programs, industry partners, and government collaborators. The program encourages revolutionary concepts, creates the environment for researchers to become immersed in new ideas, and drives rapid turnover of new concept development. In FY 2026, TACP will:

- Advance state-of-the-art computational and experimental tools and technologies that are vital to aviation applications; and
- Fund up to three new University Leadership Initiative awards and will evaluate the results of five ongoing awards.

Aerosciences Evaluation and Test Capabilities Portfolio (AETC) manages NASA's portfolio of 12 large wind tunnels used for ground testing of advanced technologies and configurations across all speed regimes: subsonic, transonic, supersonic, and hypersonic. These test facilities also serve the needs of other NASA mission directorates, as well as non-NASA users. In FY 2026, AETC will:

- Open the new LaRC Flight Dynamics Research Facility, replacing the 84-year-old Vertical Spin Tunnel.
- Develop an Aerosciences Data Platform Portal to store wind tunnel test data. The portal data will be understandable, secure, trustworthy, and accessible to customers. In parallel, AETC will maintain viable data systems, instrumentation, and front-end hardware that are adaptable to customer needs.

AIRSPACE OPERATIONS AND SAFETY PROGRAM

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**148.1**	**--**	**88.1**	**96.4**	**112.4**	**115.0**	**117.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Using a NASA-developed uncrewed aircraft traffic management system, multiple delivery drones operate safely in a shared airspace even though their pilots are not in visual range.

The U.S. air transportation system is one of the most efficient and safest systems in the world. NASA has substantially contributed to the Federal Aviation Administration (FAA)-led NextGen modernization effort that enabled efficient passage through the increasingly crowded skies. NASA will now focus on additional opportunities to enhance safety, reduce air transport operations costs, reduce flight delays, and support the introduction of new aviation users into the national airspace.

With the FAA, industry, and academic partners, the Airspace Operations and Safety Program (AOSP) conceives, develops, and demonstrates technologies to safely improve air traffic management systems for use in the National Airspace System (NAS). The program develops advanced technologies for a service-oriented and federated NAS architecture to enable seamless integration of small, advanced air mobility (AAM) vehicles with present-day aircraft to assure continued U.S. global leadership and industrial competitiveness. AOSP also works with other ARMD programs to define safe NAS operational requirements for the next generation of vehicles, mature new transformative concepts, and demonstrate integrated systems.

EXPLANATION OF MAJOR CHANGES IN FY 2026

In FY 2026, NASA's Airspace Operations and Safety Program budget provides $88.1 million. AOSP will focus on a key partnership with the FAA for the highest impact deliverables that will improve the nation's air traffic management system and safely accommodate the growing demand of new air vehicles. To achieve cost savings, AOSP will reduce air traffic management and safety activities, such as development of vehicle safety technologies and reduce number of technology validations through flight with more validated through simulation.

In support of FAA and industry objectives, AOSP will focus on third-party technologies to reduce airline delays and operating costs. In collaboration with FAA and industry, AOSP will research System Level Uncertainty and Contingency Management in the Terminal Area using Machine Learning and Artificial Intelligence (MLAI) for automated trajectory negotiation and mitigation of safety events. AOSP will deliver data to inform FAA processes and procedures for safe and efficient integration of AAM vehicles and develop federated airspace management technologies for the industry operators of AAM for integration and coordination with the NAS. AOSP will collaborate with FAA on prognostic safety to establish the requirements for data, integration, and MLAI based data mining technologies for FAA and

AIRSPACE OPERATIONS AND SAFETY PROGRAM

industry's future Aviation Safety Information Analysis and Sharing (ASIAS 3.0.) In addition, AOSP will collaborate with FAA and interagency wildfire first responders to develop the Portable Airspace Management System for wildfire aerial response.

To achieve cost savings, AOSP will reduce and delay flight testing of AAM technologies, development of vehicle technologies, vertiport and dispatcher technologies, and development of the functional architecture. AOSP will reduce future communication, navigation, surveillance, and security research and development. In addition, AOSP will reduce and delay vehicle safety functions and capabilities technology development. Furthermore, AOSP will shift from NASA operated and management test sites to leveraging external government and industry test site capabilities.

AOSP will save management costs by reducing the number of projects from four to two. The Air Traffic Management eXploration and System Wide Safety projects will be combined into a single project, called Air Traffic Management and Safety (ATMS). The Air Mobility Pathfinders and Advanced Capabilities for Emergency Response Operations projects will be combined into a single project called Advanced Air Mobility Pathfinders (AAMP) project.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

- NASA will evaluate a digital gate-to-gate flight rerouting capability aimed at improving aircraft trajectories. In coordination with FAA, NASA research will contribute to reduced airline delays and operating costs in the National Airspace System. (ATMS)
- NASA will evaluate airspace technologies for strategic deconfliction by AAM operators in collaboration with FAA and industry. This research activity will contribute to integration of a diverse range of non-traditional vehicles into the National Airspace by enabling federated third-party services to commercial operators. (AAMP)
- NASA will complete the transfer of aerial monitoring techniques for wildland fires using Unmanned Aircraft System (UAS) to FAA, industry, and wildland fire management federal and state agencies. This research will enable development of a portable airspace management system for enhanced coordination of wildland fire aerial response. (AAMP)
- NASA will complete flight testing of a representative Urban Air Mobility (UAM) vehicle demonstrating integration into UAM airspace infrastructure and services network as part of a Live, Virtual, Constructive (LVC) environment. This initial integration and evaluation will include strategic conflict management within a provider of services network with a piloted aircraft flying operationally representative UAM flight profiles. (AAMP)
- NASA will complete the Sky for All roadmap which is a stakeholder informed roadmap that describes research and development needed to progress from today's aviation ecosystem, through the FAA's Info-Centric National airspace system concept, to NASA's Sky for All concept. (ATMS)
- NASA will collaborate with FAA to develop the requirements for a future Aviation Safety Information Analysis and Sharing (ASIAS 3.0) to demonstrate how different types of data can be used to clarify whether a statistical anomaly is a potential safety issue or not. Discovered safety issues will be shared with airline partners. (ATMS)
- NASA will collaborate with FAA and industry for System Level Uncertainty and Contingency Management in the Terminal Area using MLAI for automated trajectory negotiation and mitigation of safety events. Jointly with industry and FAA, NASA will flight validate automated digital taxi for prevention of runway incursion and wrong surface approaches. (ATMS)

AIRSPACE OPERATIONS AND SAFETY PROGRAM

Program Elements

AIR TRAFFIC MANAGEMENT AND SAFETY (ATMS)

The ATMS project will transform and modernize the national air traffic management system, in partnership with the FAA and the aviation community. The project develops and explores advanced technologies for more efficient gate-to-gate flight trajectories, leads research on increasingly autonomous aviation, and provides tools for the integration and analysis of data to support in-time system-wide safety assurance. The project also develops and demonstrates innovative tools for proactive mitigation of risks, increased access to relevant data, improved in-time detection, and decision support for mitigation. ATMS addresses the need for safety-related advances in methods used for the verification and validation of machine learning-enabled components and advanced, increasingly autonomous systems. This approach will increase the use of advanced MLAI capabilities for air traffic management and contingency management. ATMS is developing airspace requirements and capabilities for integrating highly automated and increasingly autonomous vehicles into the airspace. The project is exploring advanced trajectory management services and advanced flight deck capabilities to enable safe, efficient operations. ATMS works collaboratively with the FAA and industry partners to validate and transfer key concepts and technologies which will transform the NAS.

ADVANCED AIR MOBILITY PATHFINDERS (AAMP)

The AAMP project focuses on one of the most important challenges in the AAM industry – researching how to safely integrate emerging crewed and autonomous vehicles into cities and the national airspace system to ensure continued U.S. leadership and industrial competitiveness. The project will help accelerate the industry’s development of this innovative system of aircraft and technologies to move people and cargo safely and efficiently, as well as conduct a variety of first responder operations. Through a series of technical capabilities evaluations with government and industry partners, researchers will collect data to create and test functions and capabilities for safe, and scalable UAM operations. AAMP is focused on addressing FAA's mid-term and long-term Concept of Operations for UAM requirements. The project validates NASA-developed tools and technologies in multiple use cases of passenger and cargo delivery as well as improve aerial response for wildland fire fighting and coordination with FAA for airspace access. The project works with other government agencies and regional fire response organizations to develop and demonstrate capabilities for the coordination of aerial assets and real-time data exchange to increase the duration and density of aerial firefighting operations. The project will demonstrate a common interoperable platform for situational awareness of all aerial assets and data. AAMP's longer term objectives include the development of advanced aircraft technologies and airspace management capabilities to enable diverse simultaneous crewed and uncrewed operations for delivery of passengers and cargo as well as persistent (up to 24 hours per day) wildfire observation and suppression operations.

Program Schedule

Date	Significant Event
Nov 2025	ATMS - Conduct oceanic flow management data exchange flight validation with FAA and industry for reduced airline delays and operating costs.

AIRSPACE OPERATIONS AND SAFETY PROGRAM

Date	Significant Event
Dec 2025	AAMP - Complete flight testing of a representative UAM vehicle demonstrating integration into UAM airspace infrastructure and services network as part of a LVC environment. This initial integration and evaluation will include strategic conflict management within a provider of services network with a piloted aircraft flying representative UAM flight profiles and operational procedures.
Feb 2026	AAMP - Technology transfer and deliver results of Portable Airspace Management System communication relay flight validation to FAA and industry.
Mar 2026	AAMP - Complete Provider for Services for UAM (PSU) technology development for strategic deconfliction.
Mar 2026	ATMS - Technology transfer departure rerouting around weather flight validation to FAA and industry
May 2026	ATMS - Conduct digital taxi flight validation with FAA and industry for increased situational awareness for prevention of runway incursion and wrong surface approach.
Aug 2026	AAMP - Complete development of Portable Airspace Management System for information sharing and mission planning.
Sep 2026	AAMP - Initiate strategic deconfliction integrated evaluation
Sep 2026	ATMX - Deliver additional data source requirements to FAA and industry to identify potential safety issues.

Program Management & Commitments

Program Element	Provider
Air Traffic Management and Safety (ATMS)	Provider(s): ARC, LaRC, AFRC, GRC Lead Center: ARC Performing Center(s): ARC, LaRC, AFRC, GRC Cost Share Partner(s): FAA, DOT, Air Force Research Laboratory (AFRL), DLR, JAXA, American Airlines, Delta Air Lines, JetBlue, Southwest Airlines, United Airlines, Envoy Air, Dallas Fort Worth International Airport, Dallas Love Field International Airport, Houston George Bush International Airport, Boeing, GE Aviation, Swiss International Airlines, Flight Safety Foundation, Radio Technical Commission for Aeronautics (RTCA), Joby, Reliable Robotics, Wisk, Jeppesen, AeroStar International LLC, ANRA Technologies, AURA Network Systems, SkyGrid
Advanced Air Mobility Pathfinders (AAMP)	Provider(s): ARC, LaRC, AFRC, GRC Lead Center: ARC Performing Center(s): ARC, LaRC, AFRC, GRC Cost Share Partner(s): FAA, AFRL/AFWERX, Port Authority of New York and New Jersey, University of North Texas, Metron Aviation, Inc, Joby, Wisk, ANRA, United States Forest Service, Department of Interior, JAXA, National Research Council Canada, California Department of Forestry and Fire Protection, Avision, Inc., ForeFlight

AIRSPACE OPERATIONS AND SAFETY PROGRAM

Acquisition Strategy

AOSP research and technology spans from foundational research to integrated system capabilities. This broad spectrum necessitates the use of a wide array of acquisition tools relevant to the appropriate work awarded externally through full and open competition. For all procurement actions, NASA strongly encourages teaming among large companies, small businesses, and universities.

MAJOR CONTRACTS/AWARDS

AOSP awards multiple smaller contracts, which are generally less than $5 million and widely distributed across academia and industry.

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	Expert Review	Oct 2025	The 12-month review is a formal independent peer review. Experts from other government agencies report on their assessment of technical and programmatic risk and/or program weaknesses.	Determined that the projects made satisfactory progress in meeting technical challenges and all annual performance indicators.

ADVANCED AIR VEHICLES PROGRAM

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**259.6**	**--**	**133.4**	**163.3**	**161.2**	**154.9**	**162.8**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Hypersonic test of a fueled scramjet engine model at the 8-Foot-High Temperature Tunnel at LaRC is shown here.

The Advanced Air Vehicles Program (AAVP) studies, evaluates, and develops technologies and capabilities for new aircraft systems and explores far-future concepts that hold promise for revolutionary air-travel improvements. AAVP technologies enable safe new aircraft (including subsonic, vertical take-off, and high-speed vehicles) that are faster, quieter, and more fuel efficient. All large modern U.S. aircraft incorporate NASA research and technology. AAVP's research will prime the technology pipeline, enabling continued U.S. leadership, competitiveness, and high-quality jobs in the future.

AAVP develops a broad range of technologies that will ensure U.S. leadership in aviation benefiting the nation's economy and quality of life. Specifically, with respect to subsonic transport aircraft, AAVP accelerates development of key subsonic transport technologies to ensure they will be ready by the late 2020s to transition into U.S. industry's next generation single-aisle transport aircraft, while exploring high-risk, high-payoff concepts for future generations of vehicles. Across the program, NASA will continue to engage partners from industry, academia, and other government agencies to maintain a broad perspective on technology solutions to aviation's challenges, to pursue mutually beneficial collaborations, and to leverage opportunities for effective technology transition.

EXPLANATION OF MAJOR CHANGES IN FY 2026

In FY 2026, NASA's Advanced Air Vehicles Program budget provides $133.4 million. AAVP will focus its research on truly revolutionary propulsion capabilities that will drive future generations of airliner performance, further enhancing U.S. technological competitiveness and travel affordability and support critical hypersonics research in coordination with the DoD. AAVP research will strive to seek a balance between near-term and long-term research to ensure the nation's future dominance of global aviation markets. AAVP will refocus on the priority challenge of providing the burgeoning U.S. Advanced Air Mobility market with revolutionary engineering methods and validated computational tools to understand and address noise and performance and improve new vehicle designs. It will do so by descoping its vertical lift portfolio by reducing research on electric vehicles including ride handling, ride quality, crashworthiness, support for extra-planetary vehicles, DoD partnerships, and university collaborations and centers of excellence. It will also delay by a year and rescope small core engine research, eliminate contrails research, and reduce research in aircraft emissions, electric propulsion, and structural performance. AAVP will also reduce elements of the Commercial Supersonic Technology project related to landing/take-off noise and emissions, high altitude cruise emissions, and airframe performance.

ADVANCED AIR VEHICLES PROGRAM

AAVP will reduce the number of projects from six to three to save management costs. AAVP will transfer the highest priority elements from the Hybrid Thermally Efficient Core (HyTEC) and the Revolutionary Vertical Lift Technology (RVLT) projects into the Subsonic Vehicle Technologies and Tools (SVTT) project, and then close out the HyTEC and RVLT projects. AAVP will combine the Commercial Supersonic Technology (CST) and Hypersonic Technology (HT) projects into a single High-Speed Flight (HSF) project. It will continue to maintain the Hi-Rate Composite Manufacturing (HICAM) project as a stand-alone entity.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

- NASA will test a revolutionary unducted propulsor through a partnership with industry and FAA to collect experimental data that are expected to show a significant improvement in engine performance (SVTT)
- NASA will complete the Advanced Aircraft Concepts for Environmental Sustainability (AACES) 2050 Phase 1 contracts that will provide insight into revolutionary propulsion and airframe technology for aircraft that will enter into service around the middle of this century (SVTT)
- NASA and industry partners will demonstrate high-rate composites manufacturing technologies by fabricating wing cover panel and spar components using competing approaches: next-generation thermosets and resin-infused composites. Technologies demonstrated will include laser-assisted automated fiber placement, in situ inspection, automated stiffener forming, pick-and-place part movement, and rapid cure resin systems. The wing components will be used to demonstrate advanced assembly techniques later in the project. (HiCAM)
- NASA will collect data on the X-59 to understand the acoustic characteristics of the aircraft and provide confidence in the tools that will be used during future community test planning. Acoustic characterization will determine whether the aircraft’s low boom features perform as expected and whether future testing plans need to be adjusted. (HSF)
- In partnership with other government agencies, NASA will research dual-mode ramjet control and operability in flight and in post-flight ground test. The flight test will utilize sounding rocket technology to achieve hypersonic conditions for the experimental payload. This experiment combines state-of-the-art modeling and simulation codes, ground test facilities, and flight test capabilities to advance hypersonic engine technologies. (HSF)

Program Elements

SUBSONIC VEHICLE TECHNOLOGIES AND TOOLS (SVTT)

In FY 2026, NASA will expand the previous Advanced Air Transport Technology project scope to integrate priority activities from the RVLT and HyTEC projects to facilitate agile project management with reduced costs and overhead. The combined project name will be Subsonic Vehicle Technologies and Tools.

The SVTT project includes technology and tool development for multiple vehicle types and speed regimes. It incorporates both next generation vertical take-off and landing (VTOL) and fixed wing subsonic aircraft. SVTT fixed wing subsonic aircraft research enables revolutionary advancements in future aircraft performance to keep the nation ahead of global competitors. The research explores solutions to advance knowledge, technologies, and concepts, enabling major steps to lower operating costs of the next generation single-aisle aircraft through efficient air frames, reduced fuel consumption and noise, and propulsion airframe integration. SVTT research benefits U.S. industrial competitiveness in the subsonic transport aircraft market and will open new markets for the U.S. regional jets and smaller size aircraft. SVTT research includes new efficient airframe designs, the emerging area of electrified aircraft propulsion, and the complementary gas turbine engine research needed to develop new engines that will ultimately power the new vehicles. SVTT will focus on the development of modeling and simulation tools to explore the noise and performance of multi-rotor urban air mobility (UAM) vehicles. The unique ability of vertical lift vehicles to operate in confined areas has significant applications in the civil market as evidenced by the emerging UAM industry within the broader Advanced Air Mobility (AAM) industry. Additionally, advanced vertical lift technologies and capabilities support public good missions, such as disaster relief, emergency services, and medical transport. Although this project focuses on the long-term technology timeframe, it also contributes to both near-term and mid-term development by demonstrating interim technology advancements.

HI-RATE COMPOSITE AIRCRAFT MANUFACTURING (HICAM)

The HiCAM project will demonstrate manufacturing approaches and associated technologies for large, composite primary airframe structures that enable high-rate production (up to 80 aircraft per month) with reduced cost and no weight penalty versus 2020 technology for composite structures. The project focuses on airframe structural components for single-aisle transport aircraft expected to enter service in the early to mid-2030s. HiCAM will develop model-based engineering tools to rapidly mature, optimize, and transition high-rate composite manufacturing and assembly methods. NASA will team with partners to share expertise, facilities, and resources to accelerate technology maturation efforts. HiCAM technologies will enable advanced vehicle concepts that require composite structures and will introduce manufacturing considerations into future vehicle designs. HiCAM's advanced manufacturing techniques will be applicable to a variety of composite aircraft structures, with potential applications in aircraft engines, urban air mobility vehicles, space launch vehicles, and in-space construction. Funding for the HiCAM project will be maintained at the FY 2024 level.

HIGH SPEED FLIGHT (HSF)

In FY 2026, NASA will create a new HSF project that covers the scope of the Commercial Supersonic Technology and Hypersonic Technology projects into a single project.

The HSF project develops technologies that enable high speed commercial flight from Mach 1 to Mach 5 and above. The HSF project's supersonic vehicle research includes tools, technologies, and knowledge that will help eliminate today's technical barriers to practical commercial supersonic flight, most notably sonic boom. The project will support the X-59 quiet supersonic vehicle testing by gathering acoustic data and validating tools that predict in-flight sonic booms. The HSF project focuses on fundamental and applied research that explores key challenges in hypersonic flight and maintains unique, specialized facilities and experts. HSF research focuses on hypersonic propulsion systems, reusable vehicle technologies, high-temperature materials, and systems analysis. The project applies its expertise to evaluate the potential for future commercial hypersonic vehicles, including reusable access to space and commercial point-to-point missions. In addition, this project coordinates closely with the DoD, so NASA can leverage DoD investment in ground and flight activities to develop and validate advanced physics-based computational models. At the same time, DoD benefits from NASA expertise, analyses, testing capabilities, and computational models. The HSF project supports U.S. industry's emerging interest in commercial hypersonic vehicles.

Program Schedule

Date	Significant Event
Jan 2026	SVTT – Complete NASA Electric Aircraft Testbed relocation and make facility available to outside customers.
Jun 2026	SVTT - Complete Advanced Aircraft Concepts for Environmental Sustainability (AACES) 2050 Phase 1 contracts that will give NASA insight into propulsion and airframe technology for mid-century entry into service aircraft.
Jul 2026	HSF - Partner with Air Force Research Laboratory (AFRL) to conduct a sounding rocket experiment to demonstrate active control of a dual-mode ramjet (DMRJ) engine.
Sep 2026	HiCAM - Develop wing and fuselage capstone designs to a maturity level that supports developing components, selecting materials, determining tooling requirements, and identifying any specialized equipment needed for manufacturing.

Program Management & Commitments

Program Element	Provider
Subsonic Vehicle Technologies and Tools (SVTT)	Provider(s): ARC, AFRC, GRC, LaRC Lead Center: GRC Performing Center(s): ARC, AFRC, GRC, LaRC Cost Share Partner(s): Boeing, Pratt & Whitney, General Electric Aerospace, Raytheon Technologies Corporation, FAA, United States Navy, Department of Energy, ARPA-e, magniX, Wright Electric, Honeywell
High Speed Flight (HSF)	Provider(s): AFRC, GRC, LaRC Lead Center: LaRC Performing Center(s): AFRC, GRC, and LaRC Cost Share Partners: DoD, John Hopkins University/Applied Physics Laboratory, Boeing
Hi-Rate Composite Aircraft Manufacturing (HiCAM)	Provider(s): GRC, LaRC Lead Center: LaRC Performing Center(s): GRC, LaRC Cost Share Partners: FAA, Advanced Thermoplastic Composites, Aurora Flight Sciences, Boeing, Collins Aerospace, Collier Aerospace, Convergent Manufacturing Technologies - US, Electroimpact, Fives Machining Systems, General Electric Aviation, Gulfstream Aerospace, Hexcel, Lockheed Martin, Mississippi State University, Northrop Grumman, Syensqo, Spirit AeroSystems, Toray Advanced Composites, University of South Carolina, Vericut, Wichita State University

Acquisition Strategy

AAVP research and technology spans from foundational research to integrated system capabilities. This broad spectrum necessitates the use of a variety of acquisition tools relevant to the appropriate work awarded externally through full and open competition. For all procurement actions, NASA strongly encourages collaboration among large companies, small businesses, and universities.

MAJOR CONTRACTS/AWARDS

AAVP awards multiple smaller contracts, which are generally less than $5 million, with a few exceptions, and are widely distributed across academia and industry. AAVP anticipates awarding larger contracts to support the HiCAM projects' large technology development and demonstrations.

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	Expert Review	Oct 2024	The 12-month review is a formal independent peer review. Experts from other NASA programs and government agencies report on their assessment of technical and programmatic risk and/or program weaknesses.	The Panel provided favorable reviews to the projects. The Panel also gave constructive comments and recommendations.

INTEGRATED AVIATION SYSTEMS PROGRAM

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Low Boom Flight Demonstrator	42.6	--	**67.2**	41.3	5.4	0.0	0.0
Electrified Powertrain Flight Demonstration	84.9	--	**0.0**	0.0	0.0	0.0	0.0
Other Projects	129.0	--	**100.0**	120.0	110.0	110.0	70.0
Total Budget	**256.6**	**--**	**167.2**	**161.3**	**115.4**	**110.0**	**70.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA's quiet supersonic X-59 research aircraft has cleared electromagnetic testing, confirming its systems will work together safely, without interference across a range of scenarios.

The Integrated Aviation Systems Program (IASP) conducts research and demonstrations of advanced technologies in a flight environment to prove, mature and transition them into future air vehicles and systems. The program focuses on technologies supporting faster and more efficient air travel, benefiting the Nation and flying public.

IASP has two major demonstration projects: the Subsonic Flight Demonstrator (SFD) and the Low Boom Flight Demonstrator (LBFD). The program funds flight support capabilities and other aeronautics research related to flight tests including support for the LBFD project.

The SFD project will pursue a ground-based, full-scale wing demonstration of integrated thin-wing technologies that are key for increased efficiency (and thus lower operating costs) of next-generation commercial airliners. The LBFD project will build, assemble, and conduct flight validation tests for the X-59 supersonic aircraft. The results of the LBFD flight tests could lead to the end of current bans on commercial supersonic flight over land, greatly reducing flight times.

EXPLANATION OF MAJOR CHANGES IN FY 2026

In FY 2026, NASA's IASP budget provides $167.2 million. IASP will focus funding on an advanced thin-wing demonstration project, the LBFD, and key flight capabilities. To achieve cost savings, NASA plans to discontinue funding of the Electrified Powertrain Flight Demonstration project.

The SFD project will pause development of the flight demonstrator aircraft in cooperation with Boeing in order to pursue a ground-based, full-scale wing demonstration of integrated thin-wing technologies that are key for increased efficiency of next-generation commercial airliners. The project will complete planning of this modified development path including associated milestones to measure progress toward the ground-based demonstration.

NASA plans to complete its work on and funding for the Electrified Powertrain Flight Demonstration (EPFD) project by the end of 2025.

INTEGRATED AVIATION SYSTEMS PROGRAM

KEY ACHIEVEMENTS PLANNED FOR FY 2026

- NASA's FDC project will complete precise, near-field probing and airborne imaging of the X-59 shockwave structure using the F-15-based test capability which will enable the acoustic validation of X-59 required prior to community response testing. (FDC)
- NASA's FDC project will complete key community response planning milestones in support of the Quesst mission to include required Mobile Operations Facility modifications needed for deployment and community response testing site selections. (FDC)
- NASA's SFD project will complete planning of a modified development path with Boeing that enables pursuing a ground-based, full-scale wing demonstration of integrated thin-wing technologies that are key for increased efficiency of next-generation commercial airliners. (SFD)

Program Elements

The LBFD project within IASP is reported in a separate section since it is a major project of greater than $250 million and has completed KDP-C.

FLIGHT DEMONSTRATIONS AND CAPABILITIES (FDC)

The FDC project conducts complex integrated small scale flight research to validate the benefits of new technologies. By modifying aircraft from FDC's support fleet, the project enables aggressive, success-oriented flight campaign schedules. While many technologies are at mid-levels of technology readiness, the FDC project supports all phases of technology maturation. FDC's support aircraft fleet enables safety chase and in-flight experimental measurements for a variety of NASA missions. FDC collaborates with academia, industry, and government organizations to leverage flight opportunities. The FDC project engages with NASA researchers and university students to bring innovative concepts to flight.

The FDC project operates, sustains, and enhances other national flight research capabilities that enable complex high-risk flight research for both NASA and the aviation industry. These capabilities are located at AFRC and include the Aeronautics Test Data Portal, Flight Loads Laboratory, the Dryden Aeronautical Test Range, and a suite of flight simulators. The project leverages collaborative opportunities for flight testing from across the aeronautical industry.

SUBSONIC FLIGHT DEMONSTRATOR (SFD)

The NASA SFD project is working with Boeing and its industry partners under a Funded Space Act Agreement to develop, integrate, and test thin-wing technologies at full scale on the path to a flight demonstrator, which will allow an aircraft to be more fuel efficient than a traditional airliner due to a shape that would create less drag, resulting in its burning less fuel. When combined with additional technologies, this configuration will reduce fuel consumption up to 30 percent relative to today's most efficient single-aisle aircraft. Technologies and designs demonstrated by the project will help inform industry decisions about the next generation of single-aisle seat class aircraft that could enter into service in the 2030s.

INTEGRATED AVIATION SYSTEMS PROGRAM

Program Schedule

Date	Significant Event
Q1 FY 2026	SFD - complete planning of additional research to conduct ground-based testing of a full-scale wing that integrates thin-wing technologies
Q2 FY 2026	FDC - F-15 calibrated chase readiness complete in support of the Quesst mission
Q4 FY 2026	FDC - Mobile Operations Facility (MOF) 5 ready for operations in support of Quesst mission

Program Management & Commitments

Program Element	Provider
Flight Demonstrations and Capabilities (FDC)	Provider(s): ARC, AFRC, GRC, LaRC Lead Center: AFRC Performing Center(s): ARC, AFRC, GRC, LaRC Cost Share Partner(s): DoD, Air Force Research Laboratory (AFRL), Lockheed Martin
Subsonic Flight Demonstrator (SFD)	Provider(s): ARC, AFRC, GRC, LaRC Lead Center: HQ Performing Center(s): ARC, AFRC, GRC, LaRC Cost Share Partner(s): Boeing

Acquisition Strategy

IASP research and technology development focuses on integrated aircraft system capabilities. The program uses a variety of acquisition tools relevant to the appropriate work awarded externally through full and open competition.

MAJOR CONTRACTS/AWARDS

IASP awards multiple smaller contracts, which are generally less than $7 million and widely distributed across academia and industry for efforts supporting small-scale flight demonstrations. IASP awards substantially larger awards for the design and build of large-scale flight demonstrations (e.g., LBFD, SFD).

INTEGRATED AVIATION SYSTEMS PROGRAM

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	Expert Review	Oct 2024	The 12-month review is a formal independent peer review. Experts from other government agencies report on their assessment of technical and programmatic risk and/or program weaknesses.	Given FY 2024 performance and alignment with NASA ARMD Strategic Goals, the Review Panels recommended continuation of IASP projects (FDC, SFD, LBFD, EPFD).

LOW BOOM FLIGHT DEMONSTRATOR

Formulation	Development	Operations

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	42.6	--	67.2	41.3	5.4	0.0	0.0

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA's X-59 quiet supersonic research aircraft completed maximum afterburner testing, demonstrating the engine's ability to generate the thrust required for supersonic flight. Credit: Lockheed Martin

PROJECT PURPOSE

The Low Boom Flight Demonstrator project (LBFD) is part of NASA's effort to help enable new aircraft noise standards that are required to open the market to commercial supersonic flight over land. The federal government banned all civilian supersonic flights over land more than fifty years ago due to sonic boom noise. If new standards are established, the U.S. aviation industry can position itself to lead the commercial supersonic market, and passengers will benefit from significantly shorter travel times. Over the past decade, fundamental research and experimentation have demonstrated the possibility of supersonic flight with greatly reduced sonic boom noise - one of several key areas needed to transform commercial supersonic flight. The LBFD project will demonstrate a reduced sonic boom by utilizing a purpose-built experimental aircraft designated the X-59.

The LBFD project supports a multi-phase effort aimed at demonstrating the X-59's ability to fly supersonic without generating loud sonic booms. The LBFD project leads Phase 1 of the Quesst mission, involving the design, fabrication, ground tests, and checkout flights of the X-59. After ensuring the aircraft is safe and performing as expected, the LBFD project will support the rest of the mission team during Phase 2 to prove the aircraft is producing a quiet sound to people on the ground and is safe for operations in the National Airspace System. At the conclusion of Phase 2, the X-59 aircraft will transfer to IASP's Flight Demonstrations and Capabilities (FDC) project.

EXPLANATION OF MAJOR CHANGES IN FY 2026

Due to contractor performance issues and technical discoveries, the LBFD project exceeded its rebaselined program developmental schedule milestone of an October 2024 first flight. As such, a February 4, 2025 Reassessment Review incorporated a replan of the remaining development work to determine an updated milestone commitment with corresponding budget. NASA informed Congress by letter dated February 10, 2025 that LBFD experienced a schedule delay. NASA performed a risk-informed assessment of remaining work to inform a reassessed schedule. On May 1, 2025, NASA transmitted the final LBFD Project Cost and Schedule Analysis Report pursuant to Section 103(d) of the NASA Authorization Act of 2005 (P.L. 109-155).

LOW BOOM FLIGHT DEMONSTRATOR

Formulation	Development	Operations

The detailed discussion of LBFD included in this budget request constitutes NASA's response to the requirements of Section 103(e) of P.L. 109-155. This reassessed schedule reflects a revised life cycle cost estimate of $902.4 million and development cost of $768.9 million. The reassessment includes a revised development schedule with first flight in September 2025.

In FY 2026, the LBFD project will complete aircraft envelope expansion (Phase 1) and begin acoustic validation flights (Phase 2).

PROJECT PARAMETERS

The LBFD project is responsible for overseeing the construction, integrated ground tests and flight validation of the X-59 aircraft through Phase 2 of the Quesst mission. The X-59 aircraft was built by prime contractor Lockheed Martin Skunk Works in Palmdale, California. Its unique design and technologies produce a soft "thump" heard on the ground, which is similar to a car door slamming across the street.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

The LBFD project team will complete envelope expansion. The project will enter into Phase 2 of the Quesst mission, which is when the X-59 will fly within the supersonic test range over NASA's AFRC and Edwards Air Force Base in California to prove the quiet supersonic technology works as designed, that the aircraft performance is robust in real atmospheric conditions, and that it is safe for operations in the National Airspace System.

SCHEDULE COMMITMENTS/KEY MILESTONES

Milestone	Baseline Date	FY 2026 PB Request
Flight Readiness Review	Mar 2024	Mar 2024
First Flight Complete	Oct 2024	Sep 2025
System Acceptance Review (Phase 1) Flight Testing Complete	Q4 FY 2025	Q4 FY 2026
Acoustic Validation (Phase 2) Complete	Oct 2026	Q3 FY 2027
LBFD project Close-Out Complete	Dec 2026	Q1 FY 2028

Development Cost and Schedule

The LBFD project life cycle includes aircraft concept refinement studies, aircraft preliminary design, aircraft final design and build, and acoustic validation flight testing. These activities span from FY 2014 to FY 2027 (Phase 1 and Phase 2 of the Quesst mission). Given continued challenges with contractor performance and, to a lesser extent, persistent COVID-19 impacts from 2020 through 2022, a rebaseline of the remaining work was recommended and agreed to by NASA leadership in early 2023. Since then, plans were made to conduct a thorough assessment of cost and schedule risks associated with

LOW BOOM FLIGHT DEMONSTRATOR

Formulation	Development	Operations

remaining work in anticipation of a Rebaseline Review, which was completed on December 12, 2023. Due to contractor performance issues and technical discoveries since the Rebaseline Review, the LBFD project exceeded its rebaselined program developmental schedule milestone of an October 2024 First Flight. As such, a February 4, 2025 Reassessment Review was held, which incorporated a replan of the remaining development work to determine an updated milestone commitment with corresponding budget. The table below reflects the results of the Reassessment Review for remaining milestones.

Base Year	Base Year Develop-ment Cost Estimate ($M)	JCL (%)	Current Year	Current Year Develop-ment Cost Estimate ($M)	Cost Change (%)	Key Mile-stone	Base Year Milestone Data	Current Year Mile-stone Data	Mile-stone Change (months)
2024	709.2	-	2025	768.9	+59.7	First Flight	Oct 2024	Sept 2025	11

Note: Estimate reflects the practices and policies at the time of development. An updated JCL was not conducted for the December 2023 Rebaseline and February 2024 Reassessment due to the level-of-effort nature of remaining work.

Development Cost Details

Element	Base Year Development Cost Estimate ($M)	Current Year Development Cost Estimate ($M)	Change from Base Year Estimate ($M)
TOTAL:	**709.2**	**768.9**	**+59.7**
Flight Sciences	39.7	46.8	+7.1
Flight Systems	37.5	42.5	+5
Aircraft	476.7	498.1	+21.4
Aircraft Operations	70.8	77.7	+6.9
Other Direct Project Costs	84.5	103.8	+19.3

LOW BOOM FLIGHT DEMONSTRATOR

Formulation	Development	Operations

Project Management & Commitments

Element	Description	Provider Details
Flight Sciences	Vehicle sonic boom, aerodynamics, propulsion, structures, and mission performance NASA in-house flight simulation tools, and analysis of vehicle handling qualities and control laws	Provider: ARC, AFRC, GRC, LaRC Lead Center: LaRC Performing Center(s): ARC, AFRC, GRC, LaRC Cost Share Partner(s): N/A
Flight Systems	Design, development, and test of Power Distribution System, Flight Test Instrumentation System, and eXternal Vision System	Provider: AFRC, LaRC Lead Center: AFRC Performing Center(s): AFRC, LaRC Cost Share Partner(s): N/A
Aircraft	Design, build, and initial test of a single-piloted X-plane	Provider: Lockheed Martin Lead Center: AFRC Performing Center(s): N/A Cost Share Partner(s): N/A
Aircraft Operations	Demonstrate airworthiness of aircraft, flight operations, and develop key aircraft subsystems - including life support and crew escape systems Provide Government Furnished Equipment to construct the research aircraft, support and maintain F414 engine, and perform insight/oversight of Ops-related tasks that the vehicle Contractor performs	Provider: AFRC, LaRC Lead Center: AFRC Performing Center(s): AFRC, LaRC Cost Share Partner(s)/subcontractors: GE, Northrop, Honeywell, and Lockheed Martin

Project Risks

Risk Statement	Mitigation
Sonic Boom Level is Not Acceptable for Community Overflight Research Given that achieving a fully shaped sonic boom ground signature in the 70-75 perceived decibel level range requires a complex and integrated design solution that is sensitive to outer mold line changes, there is a possibility that the mission requirements related to ground signature loudness may not be achievable - resulting in an aircraft that may not be fully acceptable for community response studies.	NASA will ensure that all configuration assessments use the latest and most mature aircraft configuration and periodically assess any updates to the aircraft configuration, such as the outer mold line or performance characteristics.

LOW BOOM FLIGHT DEMONSTRATOR

Formulation	Development	Operations

Risk Statement	Mitigation
Reduced Aircraft Performance Could Impact Mission Effectiveness Given the aircraft and propulsion system selection and integration complexity, there is a possibility of reduced aircraft performance resulting in loss of mission effectiveness and leading to longer duration time to meet flight parameter(s), increased costs, and limitations of flight test points to standard-day conditions.	NASA will ensure that the contractor has sufficient margin for aircraft weight growth with propulsion configuration; assess contractor aircraft performance and thrust predictions (both computationally and experimentally) over the aircraft flight envelope; and perform a trade study on engine performance during demanding conditions.

Acquisition Strategy

The acquisition strategy for LBFD is to award to industry a contract for the detailed design/build/test of the experimental X-59 aircraft. NASA will provide in-house support that will include in-flight and ground systems, instrumentation and operations, simulation, wind tunnel testing, and safety and mission assurance. NASA supplies aircraft components and systems as Government Furnished Equipment whenever feasible and considered to add value to the development of the X-59 aircraft.

MAJOR CONTRACTS/AWARDS

Element	Vendor	Location (of work performance)
X-59Aircraft - Design, Build, and Initial Testing	Lockheed Martin	Palmdale, CA
F414-GE-100 Engine	General Electric Aviation	Lynn, MA

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	Flight Readiness Review Board	Mar 2024	Flight Readiness Review	Successful

TRANSFORMATIVE AERONAUTICS CONCEPTS PROGRAM

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	154.9	--	125.1	82.8	109.8	113.9	134.0

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Artist's concept of an emergency response flyer from a team at Texas A&M University and Oklahoma State University, one of 14 university teams that received NASA-supported GoAERO awards in 2025 as part of NASA's University Innovation project.

The Transformative Aeronautics Concepts Program (TACP) cultivates multi-disciplinary, revolutionary concepts to enable aviation transformation. TACP fosters innovative solutions to aviation challenges by capitalizing on advancements in the aeronautics and non-aeronautics sectors to create new opportunities in aviation. One major goal of the program is to reduce or eliminate technical barriers and infuse ground-breaking concepts into the aviation community.

TACP creates advanced and improved computational tools, technologies, and experimental capabilities for use by other aeronautics programs, industry partners, and government collaborators. These advancements will accelerate our ability to perform rapid, high fidelity computational design and analysis of complex aerospace designs, leading to revolutionized aerospace engineering methods.

TACP's activities offer flexibility for innovators to explore technology feasibility and provide the knowledge for radical transformation. The program creates an environment for researchers to incubate and test new ideas, and leverage the knowledge gained from their discoveries. Therefore, the program's investments are in brand-new areas that can provide paradigm-shifting analysis and experimental capabilities.

EXPLANATION OF MAJOR CHANGES IN FY 2026

In FY 2026, NASA's TACP budget is $125.1 million.

TACP will focus funding on university innovation, advanced computational tools, and capabilities needed to maintain a strong pipeline of new ground-breaking technologies to keep America competitive. To achieve cost savings, TACP will rapidly phase out research related to emissions and climate issues. The University Innovation (UI) project will pause selection of new University Leadership Initiative awards and will stop the University Student Research Challenge and Gateway to Blue Skies competition.

TACP will focus on developing advanced computational tools and methods, and sub-system technologies for aero-propulsion and material system concepts as proof-of-concepts in FY 2026, readying for potential ground and flight validation experiments in FY 2027. TACP will reduce activities related to battery development and alternate power applications.

TACP will save management costs by transferring a few elements from the Convergent Aeronautics Solutions (CAS) project to the Transformational Tools and Technologies (TTT) project, and close out the CAS project. These changes will enable TACP to focus on acceleration of our ability to perform rapid, high fidelity computational design, and analysis of complex aerospace designs leading to revolutionizing aerospace engineering methods.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

- Through TTT, NASA will complete development of a computational capability that reduces error in predicting maximum lift coefficient to enable assessment of aircraft high-lift systems, with the goal of much reduced flight certification requirements.
- NASA will continue support for ongoing University Leadership Initiative (ULI) and will close out the following expiring ULI awards, consistent with timelines proposed at the time of award:
  - Pennsylvania State University: Leading Advanced Turbine Research for Hybrid Electric Propulsion Systems;
  - Georgia Tech: Improving propulsion efficiency for Civil Supersonic Transport;
  - University of Illinois, Urbana-Champaign: Robust and Resilient Autonomy for Advanced Aerial Mobility;
  - Boston University: Improving multi-rotor performance and noise that are critical to enable Urban Air Mobility (UAM) operations in an urban setting; and
  - University of Notre Dame: Defining a system where multiple small drones can operate safely together within a shared airspace by leveraging a network that continuously monitors and assesses drone safety records.

Program Elements

TRANSFORMATIONAL TOOLS AND TECHNOLOGIES (TTT)

The TTT project advances state-of-the-art computational and experimental tools and technologies that are vital to aviation applications. These new computer-based tools, models, and associated scientific knowledge provide novel capabilities to analyze, understand, and predict performance for a variety of aviation concepts. Applying these tools will enable and accelerate NASA's research and enable the aviation community to introduce advanced concepts and designs. An example is the development and validation of new computational tools to predict complex turbulent airflow around vehicles and within propulsion systems, ultimately leading to an improved ability to predict future vehicle performance in flight. The project also explores technologies critical to advancing ARMD strategic outcomes, such as understanding new types of strong and lightweight materials, innovative aircraft control techniques, and experimental methods. Such technologies will support and enable concept development and benefit assessment across multiple ARMD programs and disciplines.

The TTT project will add an element to support rapid feasibility assessments of early-stage innovations as previously conducted in the CAS project.

UNIVERSITY INNOVATION (UI)

The UI project contains a portfolio of disruptive technologies and other new concepts to meet the future needs of aviation and support education of the next generation of engineers. The project's University Leadership Initiative invests in university-led teams that assess solving the most critical technical challenges to achieve Aeronautics strategic outcomes and propose independent, innovative research projects to find those solutions. Universities develop their own success criteria, progress indicators, and technical approaches. Universities pursue multi-disciplinary approaches and incorporate opportunities with other universities, industry, and U.S. entities.

Program Schedule

Date	Significant Event
Fall 2025	UI – ULI Round 8 Award Kick-Off
Fall 2025	UI – Completion of ULI Round 3 Stanford University and University of Delaware; ULI Round 4 Purdue University, UC San Diego, and University of Texas, Austin
Dec 2025	TTT – Achieve full-envelope flight (including transition from vertical to horizontal flight) of sub-scale Research Aircraft for eVTOL Enabling techNologies (RAVEN), applying aerodynamic modeling and Electric Vertical Take Off and Landing (eVTOL) learning configuration controls
Mar 2026	UI – Release ULI Round 9 Solicitation
Sep 2026	UI – Completion of ULI Round 4 Pennsylvania State University; ULI Round 5 Georgia Tech and University of Illinois, Urbana-Champaign; ULI Round 6 Boston University and University of Notre Dame
Sep 2026	TTT - Complete RCA computational modeling tools technical challenge and performing CRM-HL high Reynolds wind tunnel tests to improve aerodynamics of aircraft

Program Management & Commitments

Program Element	Provider
Transformational Tools and Technologies (TTT)	Provider(s): ARC, GRC, LaRC, AFRC Lead Center: GRC Performing Center(s): ARC, GRC, LaRC, AFRC Cost Share Partner(s): Boeing; Blue Origin, LLC; Rolls Royce Corporation; DoE Golden Field Office; DoE; Naval Air Systems Command; Dimensional Energy and Oerlikon Metco (US) Incorporated; and U.S. small businesses
UI	Provider(s): ARC, GRC, LaRC, AFRC Lead Center: HQ Performing Center(s): ARC, GRC, LaRC, AFRC Cost Share Partner(s): N/A

Acquisition Strategy

TACP research and technology development focuses on foundational research capabilities. The program uses a variety of acquisition tools relevant to the appropriate work awarded externally through full and open competition. For all procurement actions, NASA strongly encourages teaming among large companies, small businesses, and universities.

TRANSFORMATIVE AERONAUTICS CONCEPTS PROGRAM

MAJOR CONTRACTS/AWARDS

TACP awards multiple smaller contracts, which are less than $5 million and are widely distributed across academia and industry.

INDEPENDENT REVIEWS

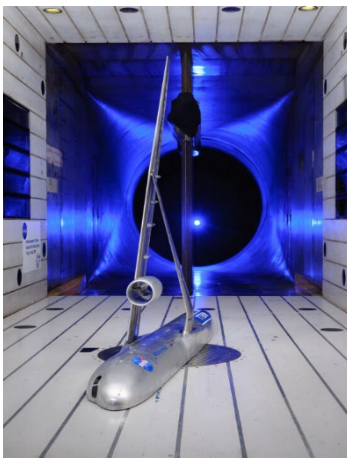
Review Type	Performer	Date of Review	Purpose	Outcome
Performance	Expert Review	Oct 2024	The 12-month review is a formal independent peer review. Experts from other government agencies report on their assessment of technical and programmatic risk and/or project weaknesses.	Received expert feedback on project improvement. Determined that the projects made satisfactory progress in meeting objectives.

AEROSCIENCES EVALUATION AND TEST CAPABILITIES

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	115.8	--	74.9	84.9	89.9	94.9	104.9

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



Shown above is a NASA/Boeing Subsonic Flight Demonstrator Model at ARC's Unitary Plan Wind Tunnel.

The Aerosciences Evaluation and Test Capabilities (AETC) portfolio office executes strategic efforts to preserve and enhance research and test capabilities for NASA's world-class portfolio of National Wind Tunnel facilities. These facilities are paving the way towards the future offering versatile and comprehensive ground testing in the areas of technology innovation, while providing new capabilities, calibration, and characterization through our diverse and highly skilled workforce.

AETC assets include capabilities in the subsonic, transonic, supersonic, hypersonic speed regimes, and propulsion test facilities at LaRC in Virginia, GRC in Ohio, and ARC in California. Our state-of-the art testing support is a crucial component in the advancement of innovative technologies that will take NASA into the future, expand the human presence into space, further the understanding of our solar system, and provide benefits to humanity and national and international collaboration.

Through broad alliances, AETC optimizes the use of these capabilities across the government. NASA participates in the National Partnership for Aeronautical Testing and collaborative working groups that include NASA, the DoD, and other partners. Members of these working groups: (1) gain awareness of capabilities across the government, academia, and industry; (2) share best practices; (3) provide technical support; and (4) refer test programs to facilities best suited to meet test requirements. Within NASA, AETC directly supports the testing needs of five mission directorates: ARMD, ESDMD, SOMD, SMD, and STMD.

EXPLANATION OF MAJOR CHANGES IN FY 2026

In FY 2026, NASA's AETC portfolio totals $74.9 million. AETC will continue to support 12 major wind tunnels. Since wind tunnel utilization is expected to be lower in FY 2026 than in past years, NASA has reduced funding for wind tunnel maintenance and operations. The initial estimates show that in the near-term, up to five of 12 tunnels will be put into "stand-by" mode, where the tunnel is provided a minimum level of maintenance and new operational models are explored, expanding use of a more deployable workforce. AETC will also accelerate an operational data portal that makes unique experimental databases more accessible to assist in revealing complex physics and drive the next generations of computational methods.

KEY ACHIEVEMENTS PLANNED FOR FY 2026

- AETC will open the new LaRC Flight Dynamics Research Facility, replacing the 84-year-old Vertical Spin Tunnel.

AEROSCIENCES EVALUATION AND TEST CAPABILITIES

- AETC will explore and execute a new operational model capturing a more re-deployable workforce that best aligns to reduced demand of test capabilities. This model will reflect having select facilities at reduced operational levels.
- AETC will employ new ways to assess the condition and health of testing capabilities at ARC, GRC, and LaRC and new tools to assess and draw insights for more strategically planned investments.
- AETC will deploy a new propulsion simulation calibration and testing capability for aircraft and spacecraft models at the ARC Unitary Plan Wind Tunnel. This new capability will enable acquisition of next generation aerodynamic test data from aircraft and spacecraft models that integrate with propulsion simulators (e.g., air ejection nozzle or air-powered turbine propulsion simulators).
- AETC will continue development of Aerosciences Data Platform(s)/Portal(s) for all AETC tunnels to store test facility data. The portal data will be accessible, understandable, secure, and trustworthy for partners. In parallel, AETC will maintain viable data systems, instrumentation, and front-end hardware that are adaptable to customer needs.

Program Element

AEROSCIENCES EVALUATION AND TEST CAPABILITIES (AETC)

Aerosciences ground-test capabilities (e.g., facilities, systems, workforce, and tools) that support future aircraft, space vehicles, and operations require efficient and effective investment, operations, and management. Efforts in this area preserve and enhance ground test capabilities necessary to achieve the agency's multi-mission requirements. Among these assets are subsonic, transonic, supersonic, and hypersonic wind tunnels and propulsion test facilities at ARC in Mountain View, CA; GRC in Cleveland, OH; and LaRC in Hampton, VA. These test facilities and capabilities also serve the needs of non-NASA users and are listed below:

- ARC Unitary Plan 11- by 11-foot Transonic and 9- by 7-foot Supersonic Wind Tunnels;
- GRC 9- by 15-foot Low Speed and 8- by 6-foot Supersonic Wind Tunnels;
- GRC 10- by 10-foot Supersonic Wind Tunnel;
- GRC Icing Research Tunnel;
- GRC Propulsion Systems Laboratory;
- LaRC 14- by 22-foot Subsonic Wind Tunnel;
- LaRC National Transonic Facility;
- LaRC Transonic Dynamics Tunnel;
- LaRC Aerothermodynamics Laboratory;
- LaRC 8-foot High Temperature Tunnel;
- LaRC 20-foot Vertical Spin Tunnel (replaced by LaRC Flight Dynamics Research Facility in FY 2026); and
- LaRC Unitary Plan Wind Tunnel.

NASA's integrated approach to test capability planning, use, and management will consider the complementary computational tools, software, and related systems to effectively acquire and process research data. NASA offers research customers high-quality data that accurately reflects the simulated test environment and the interactions of test articles in those test environments. Furthermore, NASA expertise helps ensure safe and successful use of the assets and the high quality of research outcomes. The AETC portfolio is cross-cutting and supports ARMD, other government agencies, and industry.

Program Schedule

Date	Significant Event
Oct 2025	AETC – Operations of new LaRC Flight Dynamics Research Facility
Sep 2026	AETC – Aerosciences Data Platform/Portal operational (ARC only)
Sep 2026	AETC - Artificial Intelligence Tool for Predictive Maintenance

Program Management & Commitments

Program Element	Provider
AETC	Provider: ARC, LaRC, GRC Lead Center: HQ Performing Center(s): ARC, LaRC, GRC Cost Share Partner(s): Multiple

Acquisition Strategy

AETC uses of a variety of acquisition tools relevant to the appropriate work awarded externally through full and open competition.

MAJOR CONTRACTS/AWARDS

AETC awards multiple smaller contracts, which are generally less than $5 million and are typically with industry, that provide systems applicable to the sustainment and operations for large-scale wind tunnel assets.

INDEPENDENT REVIEWS

Review Type	Performer	Date of Review	Purpose	Outcome
Performance	Expert Review	Dec 2024	This 12-month review is a formal independent peer review. Experts from other NASA missions report on their assessment of technical and programmatic risk and/or program weaknesses.	This was a very favorable review. The expert reviewers encouraged the team to continue improving its processes including those that support operational efficiency gains and improved investment and divestment decision making.

STEM ENGAGEMENT

STEM ENGAGEMENT

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**143.0**	**143.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

FY 2024 reflects the funding amount specified in Public Law 118-42, Consolidated Appropriations Act, 2024, as revised in NASA's FY 2024 final Operating Plan, September 2024. Amounts include a net transfer amount of $2.0 million; $4.5 million that was transferred from General Services Administration (GSA) and $2.5 million that was transferred to NASA's Information Technology Modernization Working Capital Fund.

FY 2025 reflects the funding amount specified in Public Law 119-4, Full-Year Continuing Appropriations and Extensions Act, 2025.

The FY 2026 budget proposes no funding for NASA's Office of STEM Engagement (OSTEM) including its four projects: National Space Grant College and Fellowship Project (Space Grant); Established Program to Stimulate Competitive Research (EPSCoR); Minority University Research and Education Project (MUREP); and Next Generation STEM project (Next Gen STEM).

EXPLANATION OF MAJOR CHANGES IN FY 2026

NASA's primary role is space exploration and, similar to prior generations that were inspired by the Apollo lunar landings, NASA will inspire the next generation of explorers through exciting, ambitious space missions. No funding is requested for Space Grant, EPSCoR, MUREP, and Next Gen STEM. NASA proposes to use unobligated balances previously appropriated under this heading to support the closeout of OSTEM activities, including but not limited to, administration, oversight, monitoring, and funding of grants previously awarded by OSTEM.

SAFETY, SECURITY, AND MISSION SERVICES

SAFETY, SECURITY, AND MISSION SERVICES

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Mission Services & Capabilities	2,042.6	--	**1,498.0**	1,671.8	1,671.8	1,671.8	1,671.8
Engineering, Safety, & Operations	1,088.3	--	**620.3**	446.5	446.5	446.5	446.5
Total Budget	**3,131.0**	**3,092.3**	**2,118.3**	**2,118.3**	**2,118.3**	**2,118.3**	**2,118.3**

FY 2024 reflects the funding amount specified in Public Law 118-42, Consolidated Appropriations Act, 2024, as revised in NASA's FY 2024 final Operating Plan, September 2024. Amounts include a net transfer amount of $2.0 million; $4.5 million that was transferred from General Services Administration (GSA) and $2.5 million that was transferred to NASA's Information Technology Modernization Working Capital Fund.

FY 2025 reflects the funding amount specified in Public Law 119-4, Full-Year Continuing Appropriations and Extensions Act, 2025.

The Safety, Security, and Mission Services (SSMS) account enables NASA's mission success by providing foundational support capabilities responsive to evolving mission needs. SSMS also funds independent oversight over NASA's missions and programs to ensure the health, safety, and security of the NASA workforce, property, and the public. SSMS programs provide the services and capabilities that ensure NASA has the technical skills, physical assets, financial resources, and workforce to be successful. The SSMS FY 2026 budget is comprised of two themes: Mission Services and Capabilities (MSaC) and Engineering, Safety, and Operations (ESO).

EXPLANATION OF MAJOR CHANGES IN FY 2026

In In alignment with the Administration's priorities, the FY 2026 Safety, Security, and Mission Services budget reflects a streamlined approach to services that focus on statutory requirements in the most cost-effective way possible. The SSMS budget has therefore been adjusted and priorities shifted to fulfill these revised requirements. Major FY 2026 changes include:

- Restructuring of organizations to eliminate functions not statutorily mandated, excepting those functions the agency deems necessary; consolidation of management layers and duplicative functions; and evaluation/implementation of technological solutions that automate routine tasks.
- Elimination of the SSMS funded Office of Science, Technology, Engineering, and Math (OSTEM) and its activities.
- Consolidation of the Agency Technical Authorities:
    - Significantly reduce and restructure the NASA Engineering and Safety Center (NESC); and
    - Significantly reduce and restructure the Independent Verification and Validation (IV&V) program.
- Significant reduction in all Science and Engineering activities at each NASA center to fund higher priority services and activities.
- NASA will explore opportunities to consolidate facilities across the agency and significantly reduce the HQ footprint in Washington, D.C.

SAFETY, SECURITY, AND MISSION SERVICES

MISSION SERVICES AND CAPABILITIES

MSaC provides enterprise solutions under three programs: Information Technology, Mission Enabling Services, and Infrastructure and Technical Capabilities. Strategically, these programs meet workforce, infrastructure, information technology, and business operations requirements necessary to enable NASA's mission. MSaC ensures critical agency operations are effective; efficient; safe; and meet statutory, regulatory, and fiduciary responsibilities. These mission enabling services and capabilities provide efficient and effective administration across all NASA centers and HQ. More information is provided in the program element sections below.

ENGINEERING SAFETY AND OPERATIONS

ESO provides for the management and operations of NASA HQ, centers, and component facilities under two programs: Agency Technical Authority; and Center Engineering, Safety, and Operations. Both programs support scientific and engineering activities. In accordance with the Administration's priorities, beginning in FY 2026, NASA will streamline the Engineering Safety and Operations program and make adjustments commensurate with programmatic changes across the agency. More information is provided in the program elements section below.

MISSION SERVICES & CAPABILITIES

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Information Technology (IT)	636.7	--	**481.1**	544.5	544.5	544.5	544.5
Mission Enabling Services	757.3	--	**524.9**	523.7	523.7	523.7	523.7
Infrastructure & Technical Capabilities	648.7	--	**492.1**	603.7	603.7	603.7	603.7
Total Budget	**2,042.6**	**--**	**1,498.0**	**1,671.8**	**1,671.8**	**1,671.8**	**1,671.8**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Mission Services and Capabilities (MSaC) provides foundational business service and enterprise solutions to all of NASA. While mission requirements evolve with agency priorities and external conditions, MSaC is focused on the permanent and critical requirements that enable all NASA activity.

MSaC offers a range of foundational services. NASA's mission enabling services (MES) includes, but is not limited to, human capital, financial management, physical asset management, software and hardware services, communications, equal opportunity programs, legal services, small business program, procurement services, and safety/protective services. MSaC is comprised of three programs: Information Technology (IT), MES, and Infrastructure and Technical Capabilities (I&TC).

Progression of a partial solar eclipse over the Washington Monument, April 8, 2024. NASA's Office of Communications tells the NASA story, using its ongoing public outreach and engagement capabilities to organize events for the eclipse, which saw nearly 200,000 in-person attendees, and more than 40 million views of videos and broadcasts that were created.

Program Elements

INFORMATION TECHNOLOGY

The IT program sets IT policy and provides the information and technology services needed to fulfill NASA’s multifaceted missions and operations, including cybersecurity, IT asset planning and management, and technical support. NASA's IT program helps improve agency outcomes by accelerating results through tools that increase productivity and drive mission results; sharing NASA’s data and discoveries; and increasing the quality, resiliency, and cost-effectiveness of its information systems. Reliable; adaptable; and secure, cloud-based IT is increasingly important to NASA's mission portfolio and is a key enabler for advances in science, technology, aeronautics, and space exploration.

MISSION ENABLING SERVICES

The MES program provides an enterprise approach to setting policy and managing NASA's business operations and mission support activities. Missions rely on these institutional services to provide the business services and skilled staff required to accomplish their objectives. Enterprise management of

MISSION SERVICES & CAPABILITIES

these areas ensures that critical agency operations are effective; efficient; and meet statutory, regulatory, and fiduciary responsibilities. Business services include financial management, human capital management, procurement, small business, legislative affairs, equal opportunity management, legal, communications, international and interagency relations, and protective services.

INFRASTRUCTURE AND TECHNICAL CAPABILITIES

The I&TC program provides sustainment, operations, and maintenance for facilities and technical capabilities. The program also provides effective oversight and management of real property, environmental program activities, aircraft operations, and logistics functions. These capabilities enable NASA to meet its statutory and regulatory responsibilities and ensures that the right infrastructure is available to meet mission requirements. The Agency Master Plan informs the guidance to accomplish this mission through effective management of assets and capabilities, proactive coordination with NASA mission directorates, institutional planning, proactive deployment of sustainable practices, ongoing regulatory compliance, and reducing current and future infrastructure-related risks.

INFORMATION TECHNOLOGY (IT)

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	636.7	--	481.1	544.5	544.5	544.5	544.5

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA's Information Technology (IT) program provides cross-cutting corporate IT products and services to the agency's workforce, contractors, and partners that support achievement of all NASA's strategic objectives and missions. Corporate products and services include enterprise productivity tools and applications, business process transformation, data management platforms and analytics, devices, cloud and data center computing platforms, and communications networks, enhanced with cybersecurity to ensure the protection of NASA's people, missions, and assets. Some IT products and services are tailored to support specific mission and business requirements, including data management and analytics solutions, mission networks, cloud computing, collaboration, and artificial intelligence capabilities. Together, these corporate and tailored capabilities provide the foundational IT platform to deliver NASA's current missions, while enabling ongoing transformation to support the agency's future mission needs.

Network and Telecommunications Services (NaTS) completed installation of Starlink satellite data services on NASA's historic barge, Pegasus, enabling improved mobile data communications on board. Pegasus ferries space hardware from Michoud Assembly Facility to other NASA centers for testing and launch.

EXPLANATION OF MAJOR CHANGES IN FY 2026

IT will restructure as necessary to eliminate functions not statutorily mandated or mission critical, consolidate management layers and remove duplicative functions, and evaluate/implement technological solutions that automate routine tasks and focus on cost savings through optimization. Through the optimization of software licenses and platform rationalization for IT service management, NASA will reduce core services and infrastructure costs.

PLANNED ACHIEVEMENTS AND KEY INITIATIVES FOR FY 2026

- Update SAP Enterprise Resource Planning (ERP) Center Component (ECC) 6.0, the Core Financial System used to manage and execute NASA's budget, to provide NASA with a modernized platform while taking advantage of high-payoff process optimization and new system capabilities.
- Strengthen NASA's evidence-based, data-driven evaluation activities that are responsive to learning agenda questions or already included in NASA's Annual Evaluation Plan.
- Accelerate deployment of Generative AI (GenAI) capabilities that enable NASA organizations and employees to achieve efficiencies that enhance operational effectiveness. Deploy GenAI-enabled

INFORMATION TECHNOLOGY (IT)

content repositories, meeting summarization capabilities and software development tools that increase production and accelerate mission and business outcomes.

Business Transformation and IT Modernization

- Complete deployment of the NASA Contract Management System Replacement Project to include training, deployment, and stabilization at all NASA centers.
- Consolidate OCIO-managed cloud environments to streamline the cloud adoption process, reduce operational costs, and provide a unified customer experience. This consolidated platform will serve as a central hub for NASA's cloud resources, making it easier for missions across the agency to access cloud solutions and resources efficiently.
- Operationalize NASA Chat which will offer agency users access to advanced Azure OpenAI models, such as GPT-4, through a familiar, yet robust ChatGPT-like interface. Enabling users to upload and share approved Moderate data, NASA Chat enhances information retrieval and collaboration. This tool supports mission activities across the NASA enterprise (engineering, science, and mission support) by leveraging AI to provide deeper insights, automate routine tasks, and enhance problem-solving capabilities, ultimately contributing to the efficient achievement of NASA's objectives.
- Continue to modernize and consolidate NASA's 672 public-facing websites into the new flagship sites to provide one unified web experience centered on www.NASA.gov.

Cybersecurity

- Expand secure collaboration with external partners to advance our missions. The External Access Management service will enable partners and NASA mission users with secure, direct access to the shared NASA information and services leveraging their partner issued credentials and devices which will increase productivity and improve mission outcomes.
- Operate in a fully streamlined integrated workflow across Network Operations and Security Operations with tools and procedures integrated to leverage streamlined process and reduce cost of shared toolsets.
- Increase automation of Vulnerability Asset Management Program communications, tracking, and reporting to increase effectiveness and efficiency of cybersecurity vulnerability management.

Program Elements

ENTERPRISE IT

The Enterprise IT program is multifaceted and includes the following six project elements, each with unique functions and work focus:

- Applications and Platforms Services: anticipates and aligns customer requirements with solutions that best meet agency needs by delivering secure, sustainable applications quickly and cost effectively, establishing a platform-centric architecture that empowers mission support, enhanced software management to reduce software license costs, and continuous portfolio rationalization.

INFORMATION TECHNOLOGY (IT)

- Network and Telecommunications Services: provides fully managed network and communications services supporting institutions, programs, and projects located at the NASA centers. Network and Telecommunications is also responsible for maintaining, operating, and continually evolving services to improve delivery capabilities, strengthen NASA's cybersecurity posture, and reduce costs.
- Cloud and Computing Services: brokers commercial cloud computing services for the NASA community, providing oversight of NASA's compliance with the Federal Data Center Optimization Initiative. Cloud Computing Services extends to all NASA missions, mission support, and external collaborators.
- Workplace and Collaboration Services: provides high-quality, reliable, cost-effective service desk, end-user computing services, collaboration, content management systems, and identity, credential, and access services in support of all NASA federal and contractor employees, including support for laptops, desktops, mobile devices, printing, email, messaging, help desk services, software patching, distribution, and more.
- Information, Data, and Analytics Services: provides NASA with framework, guidelines, and services to ensure secure and efficient access, use, analysis, and preservation of the agency's information resources. The program ensures NASA's compliance with federal statutes relating to data access and integrity.
- IT Transformation/Modernization: allows implementation of innovative aspects of our IT strategy through technology infusion, strategic investment decisions, and identification of information technologies to support NASA's needs most effectively in a rapidly changing world.

SAFEGUARDING DATA AND IT ASSETS

NASA OCIO is responsible for agency cybersecurity policy and the implementation and management of enterprise cybersecurity and privacy services. The IT program budget is aligned to the National Institute of Standards and Technology (NIST) Cybersecurity Framework to evaluate cybersecurity gaps and investments against the NIST cybersecurity functions: Identify, Detect, Protect, Respond, and Recover. This alignment allows the agency to make strategic investments to develop, modernize, and enhance agency cybersecurity capabilities to address the greatest areas of risk to the agency, its missions, and supporting functions.

MISSION ENABLING SERVICES

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**757.3**	**--**	**524.9**	**523.7**	**523.7**	**523.7**	**523.7**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Shown here are the Artemis Accords Flags for each of the 55 signatories as of December 1, 2024.

Mission Enabling Services (MES) ensure NASA mission success with foundational support services using enterprise service delivery, while promoting engagement to enhance problem solving and agile responses to evolving requirements. Using an enterprise approach, the MES program eliminates duplicative capabilities, provides opportunities for employees to collaborate across geographic boundaries, and remains agile to shifting demands and surge requirements, while ensuring the health, safety, and security of NASA people, property, and the public. Missions rely on MES' institutional capabilities to accomplish their objectives. Enterprise management ensures that critical agency operations are strategic, mission-focused, agile, and streamlined.

MES provides NASA with a bedrock of business functionality in human capital and financial management; procurement and protective services; small business and equal opportunity programs; legislative affairs; communications; and international and interagency operations. It also supports the agency's outreach and engagement with the public, industry, and federal and international partners, to ensure the world partners and shares in NASA's incredible work of exploration, innovation, inspiration, and discovery.

EXPLANATION OF MAJOR CHANGES IN FY 2026

In alignment with the Administration's priorities, NASA will continue to streamline the MES program and make workforce and service adjustments commensurate with programmatic changes across the agency.

PLANNED ACHIEVEMENTS AND KEY INITIATIVES FOR FY 2026

Business Transformation and IT Modernization

- Complete deployment of the NASA Contract Management System Replacement Project to include training, deployment, and stabilization at all NASA centers.

Workforce Reshaping

- Strategically consolidate duplicative functions, streamline management layers, and reduce non-critical components and positions resulting in a leaner, technically focused and more agile organization.

MISSION ENABLING SERVICES

Procurement Streamlining

- NASA will streamline procurement processes to improve the agility of NASA's programs.

Program Elements

OFFICE OF THE CHIEF FINANCIAL OFFICER

The Office of the Chief Financial Officer (OCFO) manages the agency's budget and financial operations, directs the preparation and submission of annual financial and budgetary reports, and coordinates agency financial management activities with other federal agencies. Specifically, OCFO provides leadership for the performance reporting, budget analysis, justification, control, and reporting of all agency fiscal resources; provides co-leadership for the strategic planning of all agency fiscal resources; directly supports the development of the agency's overarching strategic plan and associated annual performance reports; leads the agency's planning, programming, budgeting, and execution process; oversees all financial management activities relating to the programs and operations of the agency; and monitors and reports the financial execution of the agency budget.

OFFICE OF CHIEF HUMAN CAPITAL OFFICER

The Office of the Chief Human Capital Officer (OCHCO) provides the full spectrum of human capital services to NASA's employees and supervisors. OCHCO focuses on innovative solutions to ensure NASA's most valuable resource, its people, can meet the needs of NASA's mission today and into the future. From creating a learning culture to implementing technology that supports work/life balance, OCHCO supports and strengthens the human foundation of NASA. OCHCO focuses on helping agency leaders understand workforce investments, anticipate workforce needs, and easily acquire talent for the task. Recent priorities have included: implementing a new service delivery model where self-service puts HR information at employees' fingertips; and enhancing our Strategic Workforce planning capability to ensure NASA has the talent needed to accomplish tomorrow's missions. Future areas of focus include performance management and ensuring NASA has a modern employee recognition program that recognizes the amazing accomplishments of our team.

OFFICE OF LEGISLATIVE AND INTERGOVERNMENTAL AFFAIRS

The Office of Legislative and Intergovernmental Affairs (OLIA) provides executive leadership, direction, and coordination of all communications and relationships, both legislative and non-legislative, between NASA and Congress as well as state and local governments.

OFFICE OF PROCUREMENT

The Office of Procurement (OP) explores and executes innovative, effective, and efficient acquisition business solutions to optimize capabilities and operations that enable NASA's mission. NASA spends approximately 85 percent of its budget on acquiring goods and services through approximately 800 procurement and small business professionals across the agency. In FY 2024, total agency procurement spending was $21.1 billion via approximately 32,829 procurement actions (e.g., awards, modifications), while managing nearly 24,000 instruments (e.g., contracts, grants, purchase orders, task

MISSION ENABLING SERVICES

orders, and delivery orders). OP transformed workforce, optimized capabilities, and continuous training opportunities keep it poised to deliver effective and efficient procurement services that ensure mission agility, resilience, and success.

OFFICE OF SMALL BUSINESS PROGRAMS

The Office of Small Business Programs (OSBP) promotes and integrates small businesses into NASA's industry base of competitive contractors that pioneer the future of space exploration, scientific discovery, and aeronautics research. OSBP provides integration, policy, initiatives, and oversight needed to ensure compliance with law and regulation to increase the agency's small business industry base while offering the best technical solutions and value to support the agency's mission. OSBP conducts, sponsors, and participates in small business outreach activities, which assist small businesses.

OFFICE OF PROTECTIVE SERVICES

The Office of Protective Services (OPS) provides security services at all NASA facilities to ensure the protection of life, information, and property across the agency. OPS provides secure access to intelligence and information essential to mission success, fire services, and emergency management at all NASA facilities and is the focal point for policy formulation, oversight, coordination, and management of agency physical security, intelligence, counterintelligence, counterterrorism, emergency management, continuity of operations, fire services, national security, communications security (COMSEC), classified information security, personnel security, identity and credential management, electronic physical access management, insider threat, Operations Security (OPSEC), and protective services training programs. OPS provides services to ensure the safety and security of people, property, and information at 20 locations across the country.

OFFICE OF EQUAL OPPORTUNITY

The Office of Equal Opportunity (OEO) leads NASA's civil rights programs to include Equal Employment Opportunity (EEO) and Equal Opportunity (EO) to ensure the workplace and assisted and conducted programs are free of unlawful discrimination. OEO provides leadership to ensure a talented workforce through the analysis of data to identify barriers to equal employment access, whether during recruitment, to retain the best and brightest, and other employment activities or through programs that support religious or medical accommodation and a workplace free of unlawful harassment. OEO also touches external grantees and schools who receive financial assistance to promote NASA's mission. OEO ensures that these entities follow anti-discrimination laws through compliance and complaint processing efforts.

OFFICE OF COMMUNICATIONS

The Office of Communications (OCOMM) delivers NASA's inspiring work to billions of people around the world, pairing transparency and release of information, with compelling storytelling through a variety of methods. OCOMM supports NASA's founding function from the 1958 Space Act to "provide for the widest practicable and appropriate dissemination of information" with intentionality and efficiency. It facilitates engagement with the news media and connects directly to the public via digital platforms such as a streaming service, websites, and social media. As NASA makes history, OCOMM captures and

MISSION ENABLING SERVICES

preserves that history and agency historical archives and provides additional services managing technical libraries and Freedom of Information Act (FOIA) inquiries. OCOMM's work is critical to ensure that the public goes together with NASA to explore the unknown in air and space, innovate for the benefit of humanity, and inspire the world through discovery.

OFFICE OF INTERNATIONAL AND INTERAGENCY RELATIONS

The Office of International and Interagency Relations (OIIR) provides executive leadership and coordination for all of NASA's international and interagency activities and policy interactions between NASA and other offices and agencies within the U.S. Executive Branch. OIIR manages the agency's Export Control Program, ensuring compliance with federally mandated requirements and all applicable NASA and U.S. export and import laws, policies, and regulations to maximize the benefits of the agency's international efforts. OIIR leads international engagement for NASA, overseeing approximately 850 international agreements in 134 countries in FY 2024. OIIR provides management oversight and staff support for NASA's chartered federal advisory committees.

OFFICE OF THE GENERAL COUNSEL

The Office of the General Counsel (OGC) provides legal services agency-wide, including establishing and disseminating legal policy and interpreting new statutes and cases to enable cutting-edge agency activities, thus ensuring NASA remains in compliance with all statutory and regulatory requirements. Additionally, OGC is responsible for developing the ethics and patent program requirements, establishing metrics, and developing quality standards. OGC serves in an advisory capacity to the Administrator, Enterprise Associate Administrators, and Center Directors across nearly 20 core legal disciplines, provides litigation expertise to the agency, and acts as the agency representative before the United States Patent and Trademark Office and other administrative forums. NASA attorneys also function as leaders and trusted advisors on matters of policy and legal risk, upholding NASA values and enabling the NASA mission.

INFRASTRUCTURE & TECHNICAL CAPABILITIES

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**648.7**	**--**	**492.1**	**603.7**	**603.7**	**603.7**	**603.7**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

The NASA Infrastructure and Technical Capabilities (I&TC) program addresses agency-wide operating requirements for NASA's approximately 5,000 physical assets not fully funded by a single NASA mission directorate. Many of NASA's physical assets date back to the Apollo era, with approximately 83 percent of facilities beyond their design life. The agency's aging infrastructure has resulted in increased deferred maintenance (DM) costs, currently at approximately $4.1 billion. The program operates and maintains facilities, utilities, structures, and technical capabilities supporting all of NASA's missions. It also provides oversight and management of real property assets, environmental compliance activities, and logistics functions. Critical to supporting NASA's missions, the underlying infrastructure and skilled workforce keeps the centers and facilities operating effectively and efficiently. Funding is allocated between failure prevention, in the form of reliability centered maintenance activities comprised of predictive, condition based, and routine preventative maintenance programs; and other forward-looking investments in capabilities to support NASA's future missions and reinforce strategic goals of strengthening infrastructure readiness and resilience and driving affordability. The agency's mission-driven Agency Master Plan (AMP) catalogs NASA's facilities and infrastructure and aligns them to meet current and future mission needs. The AMP also determines areas of investment and divestment and ensures comprehensive environmental compliance and stewardship, while maintaining effective logistics support.

EXPLANATION OF MAJOR CHANGES IN FY 2026

In accordance with the Administration's priorities, NASA will continue to streamline the I&TC program and make workforce and service adjustments commensurate with programmatic changes across the agency.

The following are major adjustments to the I&TC program in FY 2026:

- NASA will provide preventative maintenance to approximately 10 percent of its infrastructure (Mission Critical) and the remaining facilities will receive life safety and run-to-fail maintenance.
- NASA will provide necessary facilities engineering, grounds maintenance, and custodial to core campus and mission critical areas.
- NASA will sustain mission critical logistics services in supply operations, property management, freight and delivery services, transportation planning, and property disposal; providing only minimum operational capability to ensure safety, regulatory compliance, and baseline mission readiness.
- NASA will provide environmental compliance surveillance activities, sustaining required regulatory and permit inspections, monitoring, sampling, and reporting to ensure safety and regulatory compliance.
- NASA will provide required regulatory inspections, monitoring, sampling, and reporting to ensure safety and regulatory compliance.

INFRASTRUCTURE & TECHNICAL CAPABILITIES

PLANNED ACHIEVEMENTS AND KEY INITIATIVES FOR FY 2026

Environmental Compliance, Planning, and Stewardship

- Handle, store, and dispose of approximately 2 million lbs. of hazardous waste across all centers.
- Work with the EPA to prevent abrupt loss of critical materials under the Toxic Substances Control Act, t to mitigate delays to spacecraft development, costly requalification efforts, and disruptions to national priority missions (e.g., Artemis and Mars Sample Return).

Facility Management

- In FY 2026, the agency plans to institutionalize tiered maintenance measurement tools to measure center Maintenance and Operations (M&O) expenditures against Tiers 1-4 and complete preventative maintenance to approximately 10 percent of its infrastructure (Mission Critical) with the remaining facilities receiving life safety and run-to-fail maintenance.
- Provide Facility Engineering, Custodial and Grounds services to support NASA missions focusing on key areas at each center.
- NASA will also continue to utilize Reliability Centered Maintenance principles (e.g., CBM) on already instrumented facilities.
- NASA will also explore opportunities to consolidate facilities across the agency.
- Provide Tier 1 space environment testing and simulation services for NASA programs and other DoD/Industry Partners, and advance space commercialization initiatives at strategically important ground-based testing and simulation capabilities at various field centers.

Program Elements

ENVIRONMENTAL MANAGEMENT

The Environmental Management program enables compliance with applicable federal, state, and local environmental laws and regulations, in day-to-day operations and mission support. Specifically, Environmental Management covers NASA's programs for environmental permitting and compliance, environmental reporting, hazardous materials and waste management, pollution prevention, energy and water management systems and reporting, renewable energy, natural resources, historic properties, and National Environmental Policy Act (NEPA) program support.

FACILITIES SERVICES

The Facilities Services program encompasses the institutional facilities support activities throughout the agency. The I&TC program budget supports utility services, operations and maintenance services, infrastructure and facility repair projects, facilities management, real estate, and facilities engineering to include civil construction designers, engineers, and project managers. I&TC funds the civil servants and procurements that operate, maintain, and manage NASA’s institutional infrastructure. NASA recently deployed a cost model that forecasts the funding requirements to sustain its inventory of facilities at the current condition. NASA manages a portfolio of assets with over $4 billion in deferred maintenance. The I&TC budget pursues a strategy to reinforce infrastructure readiness and drive affordability by stemming

INFRASTRUCTURE & TECHNICAL CAPABILITIES

growth of backlogged maintenance and systematically improving the reliability of NASA's critical institutional infrastructure (from transformers and substations to buildings, horizontal infrastructure, and test capabilities) while effectively managing risk and reliability for the remainder of the portfolio.

LOGISTICS MANAGEMENT

The Logistics Management program encompasses the development, implementation, and management of agency-wide logistics policies, processes, services, system innovation, and facilitates the implementation of government and industry best practices for NASA's centers and facilities. Logistics Management provides functional management, oversight, and coordination over the agency's personal property equipment, supply and material, warehouse and receiving operations, property disposal, and artifact property disposition. The program also provides oversight for contractor-held property management, mail and freight management, transportation management, life cycle logistics and supply chain management, policy compliance and logistics contracts. Logistics Management ensures the readiness of material and equipment for NASA’s scientific, aeronautics, and space exploration mission requirements at ten NASA centers and three component facilities. The program includes receiving and inspecting supplies/materials as well as issuing and moving those materials so that products critical to NASA's mission arrive at the desired locations in an efficient manner.

TECHNICAL CAPABILITIES MANAGEMENT

The Space Environments Testing Management Office provides centralized and strategic management of a portfolio of specific ground-based capabilities in support of agency and other national interests including federal agencies and industry partners. The capabilities include:

- The high-enthalpy test capability at ARC's Arc Jet Complex for simulating atmospheric entry effects on Thermal Protection Systems Flight simulators for human-in-the-loop research and development of various operational platforms. at the ARC Vertical Motion Simulator and the LaRC Flight Simulation Facility.
- Space environments testing capabilities and facilities whose primary use is related to spacecraft and instrument development and qualification, space technology development, human-rated space environments, and launch environments. Includes capabilities at GRC-ATF, GRC-LF, JSC, and MSFC.
- External radiation testing at non--NASA facilities in conjunction with the agency IEEE parts certification program to meet requirements for space flight programs and projects.

ENGINEERING, SAFETY, & OPERATIONS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Agency Technical Authority	196.1	--	**69.6**	69.6	69.6	69.6	69.6
Center Engineering, Safety, & Operations	892.2	--	**550.7**	376.9	376.9	376.9	376.9
Total Budget	**1,088.3**	**--**	**620.3**	**446.5**	**446.5**	**446.5**	**446.5**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Engineering, Safety, and Operations (ESO) supports NASA's high standard of safety and mission assurance, while maintaining center flexibilities that promote innovation and mission success. ESO is divided between two distinct programs: Agency Technical Authority (ATA) and Center Engineering, Safety, and Operations (CESO).

ATA protects the overall health and safety of NASA's workforce and programs by providing technical oversight for safety, health, quality, and engineering. The independence of ATA offices is a vital part of NASA's safeguards to ensure safety, quality, and engineering concerns are always vetted, analyzed, and mitigated.

CESO provides funding for the operations and management at NASA centers and component facilities, corporate leadership at NASA HQ, the execution of delegated technical authority. CESO encompasses ongoing activities and unique projects in support of center operations and infrastructure, while enabling safe and effective mission support as well as agency-level operations at NASA HQ to ensure the development and implementation of agency-wide policies, standards, and processes are effective and efficient.

Programs

AGENCY TECHNICAL AUTHORITY (ATA)

ATA work is managed by the Offices of the Chief Health and Medical Officer (OCHMO), Safety and Mission Assurance (OSMA), and the Chief Engineer (OCE). These activities provide the foundation for NASA’s system of checks and balances, by providing for the technical authority over health, safety, and engineering, independent of the missions and leadership for the agency’s occupational safety and health program. Through independent analysis and subject matter expertise, ATA designs procedural requirements and provides recommendations to NASA's Administrator, mission directorates, center directors, and program managers, who are ultimately responsible for the safety and mission success of all NASA activities.

ATA provides training and maintains a competent technical workforce with expertise in system engineering, system safety, reliability, quality, and space medicine. Subject matter experts analyze risks and risk acceptability through an established process of independent reviews and assessments. The information and advice from these experts provide critical data required to develop authoritative decisions related to the application of requirements on programs and projects.

ENGINEERING, SAFETY, & OPERATIONS

CENTER ENGINEERING, SAFETY, AND OPERATIONS (CESO)

NASA's CESO is a multifaceted program that ensures agency leadership is implemented at the center-level, while centers have the flexibility and support to ensure mission success and uphold NASA's high standard of safety and engineering excellence.

CESO ensures NASA's unique, technical, and innovative capabilities are mission-ready by supporting center-level institutional and technical capabilities through maintenance of facilities, laboratories, and other mission-critical assets. The technical skill and specialized assets or services that support analyses, design, research, testing, laboratories, and fabrication enable the efficient and effective implementation of mission work at the centers, now and in the future. CESO funds are used by centers to ensure the technical skills and capabilities are available and mission-ready based on mission requirements and timelines.

In FY 2026, NASA will consolidate the technical authorities for safety, engineering and mission assurance and transition these responsibilities from a center-centric to a mission-centric model.

CESO funds NASA HQ operations and center management across the agency. Support for institutional administration and operational safety are vital to allow centers the flexibility to address and manage conditions unique and specialized to their center. CESO also ensures that agency policies and guidance are operationalized across centers with consistency and efficiency.

EXPLANATION OF MAJOR CHANGES IN FY 2026

In alignment with the Administration's priorities, in FY 2026, NASA will:

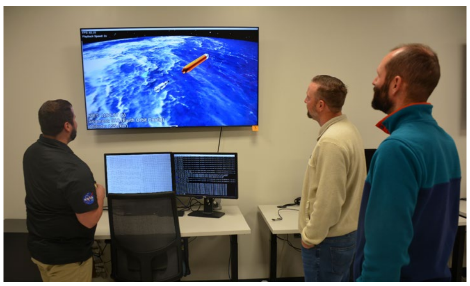
- Consolidate the Agency Technical Authorities.
- Streamline the CESO program and make workforce and service adjustments commensurate with programmatic changes across the agency.

AGENCY TECHNICAL AUTHORITY

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	196.1	--	69.6	69.6	69.6	69.6	69.6

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."



IV&V's Jon McBride Software Testing and Research (JSTAR) team demonstrates the digital twin user interface for Artemis (ARRISTOTLE), which has matured to the point of being able to execute and script an entire run without any intervention. It now includes new visualization capability with real-time and data-processed playback ability, which allows for data plotting, performing aborts, and reversing time.

The Agency Technical Authority (ATA) program protects the health and safety of NASA's workforce by evaluating programs, projects, and operations to ensure safe and successful completion. ATA capabilities provide expert technical excellence, mission assurance, and technical authority agency wide.

ATA is managed by the Offices of the Chief Health and Medical Officer (OCHMO), Safety and Mission Assurance (OSMA), and the Chief Engineer (OCE). These programs provide the foundation for NASA's system of checks and balances. Through independent analysis and subject matter expertise, ATA designs procedural requirements and provides recommendations to NASA's Administrator, mission directorates, center directors, and program managers, who are ultimately responsible for the safety and mission success of all NASA activities.

ATA provides training and maintains a competent technical workforce with expertise in system engineering, system safety, reliability, quality, and space medicine. Subject matter experts analyze risks and risk acceptability through an established process of independent reviews and assessments. The information and advice from these program experts provide critical data required to develop authoritative decisions related to the application of requirements.

Independent Verification and Validation (IV&V)

The IV&V program is funded through a combination of ATA (OSMA) and mission directorate resources. The following table shows the funds provided by the Safety, Security, and Mission Services; Science; Exploration; and Space Operations accounts.

AGENCY TECHNICAL AUTHORITY

	Estimated IV&V Funding ($M)	
Mission Account	**FY 2024**	**FY 2026***
Safety, Security, and Mission Services	$39.2	$9.9
Science	$0.0	$1.2
Exploration	$3.3	$2.0
Space Operations	$0.8	$0.7
Total	**$43.3**	**$13.8**

**Note: The IV&V program will work with Mission Directorates to adjust FY 2026 allocations as the FY 2026 Operating plan is developed.*

EXPLANATION OF MAJOR CHANGES IN FY 2026

- In FY 2026, NASA plans to significantly reduce and restructure both the NASA Engineering and Safety Center (NESC) and Independent Verification and Validation (IV&V) program as part of the effort to consolidate the overall Agency Technical Authority (ATA) program. In FY 2026, NASA will allocate $9.9 million for IV&V to ensure the program can provide software assurance support to the future Moon to Mars programs. NASA will allocate $10 million for NESC to continue to perform value-added independent testing, analysis, and assessments of NASA's high-risk projects to ensure safety and mission success for the Moon to Mars programs. The NESC plays a key role in ensuring safety and mission success for programs supporting the Moon to Mars objectives. These independent assessments have historically resolved complex technical challenges and helped prevent costly failures. They will support senior agency leadership and major program offices to inform sound engineering decisions and strengthen technical leadership.

PLANNED ACHIEVEMENTS AND KEY INITIATIVES FOR FY 2026

Continue to develop policy, design procedural requirements, and provide recommendations to NASA's Administrator, mission directorates, center directors, and program managers, ensuring safety and mission success of all NASA activities.

- Consolidate the Agency Technical Authorities
- Provide training and maintain a competent technical workforce with expertise in system engineering, system safety, reliability, quality, and space medicine.
- Continue to analyze risks and risk acceptability through an established process of independent reviews and assessments.
- Provide Engineering Technical Authority support to NASA's programs, ensuring independent technical insight and assessment of programs at key programmatic milestones.

AGENCY TECHNICAL AUTHORITY

Program Elements

OFFICE OF THE CHIEF HEALTH AND MEDICAL OFFICER (OCHMO)

OCHMO promulgates agency health and medical policies and standards to support the medical technical capabilities of NASA. As a functional area, OCHMO provides independent oversight and advances expert health and medical capabilities from development through de-commissioning. It assures the physical and mental health and well-being of the NASA workforce.

OCHMO also ensures that bioethics principles and NASA's policies and practices related to the use of human and animal subjects in research are in accordance with all relevant federal regulations and guidelines. The program oversees NASA's processes for reviewing the use of human and animal subjects in research.

OCHMO administers the Human Medical Technical Authority (HMTA), which engages in all crewed programs. The HMTA provides guidance, insight, and oversight, while translating health and medical standards into tailored technical requirements for all human-rated programs across the agency. HMTA ensures that integrated spaceflight systems reflect the most current knowledge on health and medical impacts related to flight, life support, and environmental systems.

OFFICE OF SAFETY AND MISSION ASSURANCE (OSMA)

OSMA provides policy direction, functional oversight, and assessment for all agency safety, reliability, maintainability, quality engineering and assurance, software assurance, risk management, orbital debris mitigation, nuclear flight safety, aviation safety, and planetary protection activities and serves as a principal advisory resource for the Administrator and other senior officials on matters pertaining to safety and mission success. The program develops technical excellence in these areas and assesses and communicates crosscutting and significant risks to appropriate decision makers. OSMA serves as the designated agency-level "official voice" for institutional safety and related standards aimed at protecting the public, NASA workforce, and high-value assets from potential harm, and maintains assessment and investigation capabilities to provide leadership with critical information related to mishap events and the state of the agency's safety programs.

The Chief of Safety and Mission Assurance is designated as the Safety and Mission Assurance Technical Authority (SMA TA) for NASA. The SMA TA establishes and is responsible for the SMA processes, specifications, rules, and best practices necessary to fulfill safety and programmatic mission assurance performance requirements. SMA TAs are assigned when new programs or projects begin, and their duties include providing input to program or project planning; overseeing proposed technical or process changes or decisions that could increase risks to safety, quality, or reliability; and guiding and advising the management of this risk. Unlike the leaders of other technical authorities, the Chief of SMA is fully empowered to suspend any operation or project activity that presents an unacceptable risk.

The NASA IV&V program provides an independent, systems engineering-based assessment of software for the agency's most complex and mission-critical systems. Operating within the Office of Safety and Mission Assurance (OSMA), the program is focused on improving the reliability, safety, and security of software to increase the likelihood of mission success. IV&V applies advanced analysis techniques, simulations, and testing to evaluate how mission software will behave under real-world conditions, uncovering defects and integration issues that may not be identified through standard development or assurance processes.

OFFICE OF THE CHIEF ENGINEER (OCE)

OCE ensures that NASA's development efforts and mission operations are planned and conducted with sound engineering practices, proper controls, and management of technical risks. The program provides independent engineering oversight and guidance to ensure that decisions have the benefit of different points of view and are not made in isolation.

OCE creates the foundation for excellence of program/project management and engineering workforce, system-engineering methodology, and engineering standards throughout the agency. OCE establishes and maintains engineering technical standards; and through its Mission Resilience and Protection Program, supports spaceflight missions by integrating the consideration of potential threats (including cybersecurity) into systems engineering processes and improving the resilience and protection of systems from the effects of threat actors.

NESC enables rapid, cross-agency responses to mission critical engineering and safety issues at NASA and improves the state of practice in critical engineering disciplines. Established in FY 2003 in response to the recommendations of the Space Shuttle Columbia Accident Investigation Board, the NESC performs independent testing, analysis, and assessments of NASA’s high-risk projects to ensure safety and mission success. As an agency wide resource with a reporting path that is independent of the mission directorates and directly funded from OCE, the NESC helps the agency ensure mission safety and obtain objective technical results.

CENTER ENGINEERING, SAFETY, & OPERATIONS

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	**892.2**	**--**	**550.7**	**376.9**	**376.9**	**376.9**	**376.9**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA's Center Engineering, Safety, and Operations (CESO) program provides strategic management and crucial policy direction at the agency- and center-level in addition to center-level technical authority and capabilities that ensure mission success.

CESO maintains test capabilities, laboratories, and other mission-critical assets so they are available and mission-ready based on mission requirements and timelines. The technical skill and specialized assets or services that support analyses, design, research, testing, laboratories, and fabrication enable the efficient and effective implementation of mission work at the centers.

CESO programs contribute to NASA's overall approach to risk management by providing center-level, independent technical authority. By funding center-level oversight and reporting activities that uphold the strategy and guidance from Agency Technical Authorities (ATAs), checks on safety, engineering, and mission assurance remain independent from the mission directorates.

CESO funds HQ and agency-level operations, as well as center management across the agency. This institutional support for center operations and infrastructure allows the centers to focus on managing conditions unique to their center. CESO also ensures that agency-wide developed and implemented policies, guidance, standards, and processes are operationalized across the centers with consistency and efficiency.

EXPLANATION OF MAJOR CHANGES IN FY 2026

- Restructuring of all organizations to eliminate functions not statutorily mandated or deemed mission critical, consolidation of management layers and duplicative functions, and evaluation/implementation of technological solutions that automate routine tasks.
- NASA will explore opportunities to consolidate facilities across the agency.

PLANNED ACHIEVEMENTS AND KEY INITIATIVES FOR FY 2026

- Based on mission requirements, maintain test capabilities, laboratories, and other mission-critical assets so they are available and mission ready.
- Ensure technical skills and specialized assets and services are available to support analyses, design, research, testing, laboratories, and fabrication to enable the efficient and effective implementation of mission work at the centers.
- Focus on the launch support for Artemis 2, International Space Station Commercial Crew 12 Launch, and 2 Commercial Resupply Services (CRS) missions.

CENTER ENGINEERING, SAFETY, & OPERATIONS

- Restructure all organizations to eliminate functions not statutory mandated or deemed mission critical, consolidate management layers and duplicative functions and evaluate/implement technological solutions that automate routine tasks.

CONSTRUCTION AND ENVIRONMENTAL COMPLIANCE AND RESTORATION

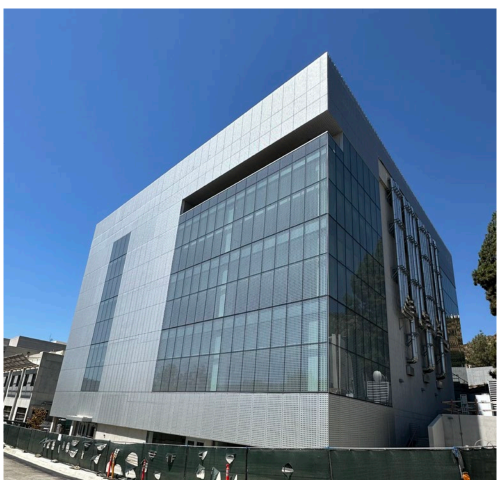
CONSTRUCTION AND ENVIRONMENTAL COMPLIANCE AND RESTORATION

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Construction of Facilities	274.8	--	**110.0**	105.0	105.0	105.0	105.0
Environmental Compliance and Restoration	51.5	--	**30.1**	35.1	35.1	35.1	35.1
Total Budget	**326.3**	**300.0**	**140.1**	**140.1**	**140.1**	**140.1**	**140.1**

FY 2024 reflects the funding amount specified in Public Law 118-42, Consolidated Appropriations Act, 2024, as revised in NASA's FY 2024 final Operating Plan, September 2024. Amounts include a net transfer amount of $2.0 million; $4.5 million that was transferred from General Services Administration (GSA) and $2.5 million that was transferred to NASA's Information Technology Modernization Working Capital Fund.

FY 2025 reflects the funding amount specified in Public Law 119-4, Full-Year Continuing Appropriations and Extensions Act, 2025.



NASA's Flight Electronics Integration Facility at Jet Propulsion Laboratory consolidates electronic component processing of flight hardware for NASA missions led by JPL.

Within the Construction and Environmental Compliance and Restoration (CECR) account, NASA manages two themes related to the agency's asset portfolio: capital repairs and improvements to NASA's infrastructure, and environmental compliance and restoration activities. Activities related to the design, construction, and demolition of infrastructure, including utility systems and facilities, are funded through the Construction of Facilities (CoF) Theme. Environmental compliance, cleanup, and restoration activities are funded through Environmental Compliance and Restoration (ECR) Theme.

CECR funding in the CoF theme enables NASA to address the challenges of aging infrastructure needs. More than 83 percent of NASA's infrastructure is beyond its design life, posing significant risk of failure, inefficiency, and potential impacts to health and wellness. To address these growing challenges, CECR is focused on modernizing and rightsizing NASA's infrastructure into fewer, more efficient, and more sustainable facilities, and on repairing and upgrading infrastructure before it has failed.

CECR funding in the ECR theme enables NASA to address its commitment to environmental stewardship by conducting critical cleanup efforts, maintaining compliance with regulatory requirements, addressing emerging regulations, and managing environmental issues. NASA's estimated current environmental liability, excluding asbestos removal that is not funded by the ECR appropriation, is approaching $2.3 billion and is expected to grow as plans to address 173 areas of potential concerns for emerging per- and polyfluoroalkyl substances (PFAS) contaminants are developed.

CECR funding ensures that NASA's assets are ready, available, and appropriately sized to conduct NASA's current and future missions, while remaining compliant with agency and governmental environmental regulations. CECR program priorities are aligned with the Agency Master Plan's (AMP), which focuses on reducing sustainment costs, minimizing the agency's physical footprint, and lowering its environmental impact.

Themes

CONSTRUCTION OF FACILITIES (COF)

CoF funds capital repairs and improvements to NASA's infrastructure to provide NASA programs and projects with the research, development, and testing facilities required to accomplish their missions. CoF repairs the facilities that have suffered degradations, recent failures, or deterioration from inadequate maintenance over time. Due to mission priorities, projects to address immediate needs may displace renewal or new construction projects planned to replace obsolete facilities. These necessary tradeoffs preclude the construction of new, more advanced and energy efficient facilities and infrastructure that would reduce costs and increase sustainability in the long run.

The CoF Theme is comprised of two programs: Institutional CoF and Programmatic CoF. Both institutional and programmatic construction projects reduce facility-related risk to mission success, reduce sustainment costs, increase sustainability, and improve technical infrastructure capabilities in support of NASA missions. CoF projects and activities are divided across five project definitions: **discrete** projects costing over $10 million; **minor** revitalization and construction less than $10 million; **facility planning and design; demolition;** and **energy savings investments**. Institutional CoF does not fund routine maintenance and repairs projects, or projects with cost estimates of less than $1 million.

Institutional CoF addresses infrastructure and facilities that span all mission areas and enable the effectiveness of NASA centers. Horizontal infrastructure and center-wide systems, such as roads and utilities, support all mission activities and are therefore considered "institutional." Institutional CoF also funds activities that support the overall agency goals of reducing operating costs, maintenance obligations, and utility usage through demolition and energy savings projects.

Programmatic CoF is funded by mission directorates for construction of specialized capabilities that directly support specific NASA missions, with appropriate funding transferred into CoF during the formulation of each budget year. Facilities and infrastructure supporting the execution of specific mission directorate requirements or having a unique capability required specifically for the execution of mission directorate programs and/or projects are funded through Programmatic CoF. Construction, repairs, and revitalization funded by Programmatic CoF do not have center-wide or agency-wide applications.

ENVIRONMENTAL COMPLIANCE AND RESTORATION (ECR)

ECR supports agency-wide environmental compliance and risk management initiatives. ECR mitigates environmental risks and restores impacted property to beneficial use. ECR supports remediation at current or former sites where NASA operations have contributed to environmental degradation or where the agency is legally obligated due to past releases of pollutants, including emerging contaminants (e.g., PFAS).

CONSTRUCTION AND ENVIRONMENTAL COMPLIANCE AND RESTORATION

At every center, ECR is investigating contaminated sites; remediating contaminated soil, water, and other media; and monitoring for continued compliance with legal standards, agency objectives and obligations. ECR ensures NASA's compliance with environmental requirements, including the Resource Conservation and Recovery Act (RCRA); Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); Toxic Substance Control Act (TSCA); state regulatory requirements; consent orders; and legal obligations.

CONSTRUCTION OF FACILITIES

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Institutional CoF	208.6	--	**100.0**	105.0	105.0	105.0	105.0
Exploration CoF	28.7	--	**0.0**	0.0	0.0	0.0	0.0
Space Operations CoF	29.2	--	**10.0**	0.0	0.0	0.0	0.0
Science CoF	8.3	--	**0.0**	0.0	0.0	0.0	0.0
Total Budget	**274.8**	**--**	**110.0**	**105.0**	**105.0**	**105.0**	**105.0**

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

NASA's Construction of Facilities (CoF) budget funds the agency's highest priority construction projects and continues to replace obsolete and deteriorating facilities that directly support NASA's missions. The capital repairs and improvements to NASA’s infrastructure provide NASA programs and projects with the research, development, and testing facilities required to accomplish their missions.

Shown here, the GSFC Wallops Island Causeway bridge is being replaced after severe deterioration threatened derating. As the only road to Wallops Flight Facility, it provides access for personnel and mission hardware for NASA and commercial partners.

EXPLANATION OF MAJOR CHANGES IN FY 2026

Funding has been prioritized to perform critical major repairs on existing infrastructure with emphasis on projects that support deep space exploration programs. No new construction or renewal projects are proposed for FY 2026.

COF PRIORITIES

Both the Institutional and Programmatic CoF prioritize CoF projects based upon mission requirements and long-term affordability, in alignment to the Agency Master Plan (AMP). As part of the AMP, NASA has developed and maintains an Agency Capital Investment Program Plan (ACIPP), which serves as a prioritized roadmap for agency-wide investments, ensuring that mission requirements are met efficiently and sustainably. The ACIPP is used by agency leadership to inform Planning, Programming, Budgeting, and Execution (PPBE) prioritization decisions.

PLANNED ACHIEVEMENTS AND KEY INITIATIVES FOR FY 2026

The following list are the FY 2026 Institutional and Programmatic CoF projects.

The FY 2026 Institutional CoF Program includes funding for two Discrete projects: demolition of unneeded infrastructure and facility planning & design activities.

CONSTRUCTION OF FACILITIES

Institutional Discrete Projects

- Replace LC-39 Area Power Ductbank at KSC, $52.0M:
  - Construction of 13,500 ft. (2.54 miles) of electrical ductbank infrastructure (ductbanks and 50 manholes) between the C-5 substation and Switching Station 900 and the replacement of Medium Voltage (MV) electrical feeders in this section.
  - Replaces aged and deteriorated medium voltage electrical feeders to numerous facilities in the LC-39 area and provides increased capacity to accommodate electrical demand growth in the LC-39 area. Enhances power reliability by ensuring newly installed feeders are better protected from failure of the existing/old ductbank system.
- Substation Switchgear Replacement (B221) at JSC, $14.0M;
  - Replaces and repairs existing switchgear hardware and associated equipment, wiring and systems in the substation; includes the removal of old equipment, supports and systems.
  - Addresses critical reliability and safety issues with existing antiquated high voltage electrical system responsible for providing site-wide power for all missions at JSC. New breakers and relays result in lower energy arc flash and more reliable electrical power.

Demolition

- The FY 2026 budget funds demolition activities of multiple facilities to reduce the agency's facility footprint, reduce operational costs, and increase environmental sustainability. This footprint reduction will be achieved over several years as the projects are completed.

Facility Planning and Design (FP&D)

- FP&D activities are essential for ensuring optimal outcomes across all CoF projects and positioning the agency for the lowest life cycle cost of facilities. Specific key activities may include comprehensive planning and design of all projects, with an emphasis on consolidating workspaces to reduce the agency's footprint, decrease lifecycle costs of facilities and increase utility efficiency. Also included is the assessment and analysis of engineering, design, construction management, facility operations, maintenance, condition-based maintenance, facility utilization and support for engineering in facilities management systems, including oversight and capital leveraging research.

Space Operations Discrete Project

- Continue the Deep Space Network Aperture Enhancement Program (DAEP) Beam Waveguide (BWG) antenna projects as follows: complete construction of Deep Space Station-23 (DSS-23) at Goldstone, continue excavation for DSS-33 at Canberra and begin antenna pedestal construction, and continue the relocation and pedestal replacement of DSS-54 at Madrid.

ENVIRONMENTAL COMPLIANCE AND RESTORATION

FY 2026 Budget

Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	51.5	--	30.1	35.1	35.1	35.1	35.1

For background information on FY 2024 and FY 2025 funding amounts, please see footnotes in the front tables of this chapter or in the section titled "FY 2026 President's Budget Request Summary."

Granulated Activated Carbon (GAC) treatment units at the WFF for the removal of PFAS contamination from the Town of Chincoteague water supply.

NASA's Environmental Compliance and Restoration (ECR) Program cleans up hazardous materials and waste products released to the environment at current and former NASA installations or associated facilities that may pose a risk to human health or the environment. It is the agency's ethical and legal responsibility to address hazardous pollutants and environmental impacts. NASA currently has a greater than $2.1 billion unfunded environmental liability, that is growing as new contaminated sites are identified, new clean-up standards are established, and as contaminants at un-remediated sites spread impacting more soil and groundwater.

ECR Priorities

ECR activities are prioritized based on a combination of legal and statutory requirements, assessed risk, and mission requirements. ECR's overarching goal is to ensure public health, conserve land and groundwater resources, and reduce NASA's environmental burden. ECR activities are conducted in each of the following high priority areas:

- Compliance: Ensure the public and the NASA workforce are not exposed to harmful chemicals from current or previous mission activities by monitoring, measuring, assessing, mitigating, treating, and identifying significant environmental risks; and executing regulatorily required compliance actions and reporting environmental compliance challenges and risks.
- Restoration: Conduct cleanup activities, including contaminant surveys, groundwater and soil investigations, groundwater treatment, soil removal, demolition and associated regulatorily required activities to eliminate harmful substances or materials and reduce environmental impacts.
- Stewardship: Ensure the responsible use and protection of the NASA infrastructure, assets, cultural and natural environment, and resources through the active execution of conservation and affordability efforts practices that conform with legal requirements and directives.

EXPLANATION OF MAJOR CHANGES IN FY 2026

In FY 2026, NASA will focus on managing or eliminating direct exposure of NASA personnel or the public to contaminated groundwater, soil, and soil gases. NASA will sustain, to the extent possible, the treatment systems and remedial activities that carry stipulated environmental enforcement penalties, should work stop or otherwise not meet regulatory requirements. NASA will reduce the focus on the investigation of polyfluoroalkyl substances (PFAS) contamination, but will complete current projects.

ENVIRONMENTAL COMPLIANCE AND RESTORATION

In FY 2026, groundwater and soil restoration efforts at the Santa Susana Field Laboratory (SSFL) facility will be paused to prioritize work at other NASA centers providing critical drinking water treatment systems that prevent risks to human health and the environment. At SSFL NASA will sustain site safety and access control efforts. NASA will also deprioritize restoration work at other NASA centers where there is not a risk of direct exposure to contamination.

PLANNED ACHIEVEMENTS AND KEY INITIATIVES FOR FY 2026

ECR will continue cleanup activities, with priority given to protecting health and conforming to environmental regulations and statutory requirements. In addition to the specific achievements below, the ECR program will continue, as feasible, agency-wide compliance initiatives, site-wide restoration activities, operation and maintenance of groundwater treatment systems, and soil contamination investigations. The program will also continue to provide regulatory risk analysis and communication support.

- Complete Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) five-year reviews at centers (AFRC, ARC, and LaRC).
- Continue to provide contaminant-free drinking water for the City of Pasadena, Town of Chincoteague, and White Sands Testing Facility (WSTF).
- Continue vapor intrusion monitoring at relevant centers (ARC, GSFC, KSC, MAF, and MSFC) for the protection of on-site personnel.
- Maintain operating groundwater treatment systems at relevant centers (AFRC, ARC, KSC, SSC, MAF, and MSFC).
- Continue to monitor groundwater to comply with regulatory requirements at centers, Component Facilities, and work areas.
- Demobilize restoration activities at SSFL while sustaining site safety and access control efforts.
- Collaborate closely with regulatory agencies to optimize the cleanup objectives at SSFL and make progress on remediation efforts.

INSPECTOR GENERAL

INSPECTOR GENERAL

FY 2026 Budget

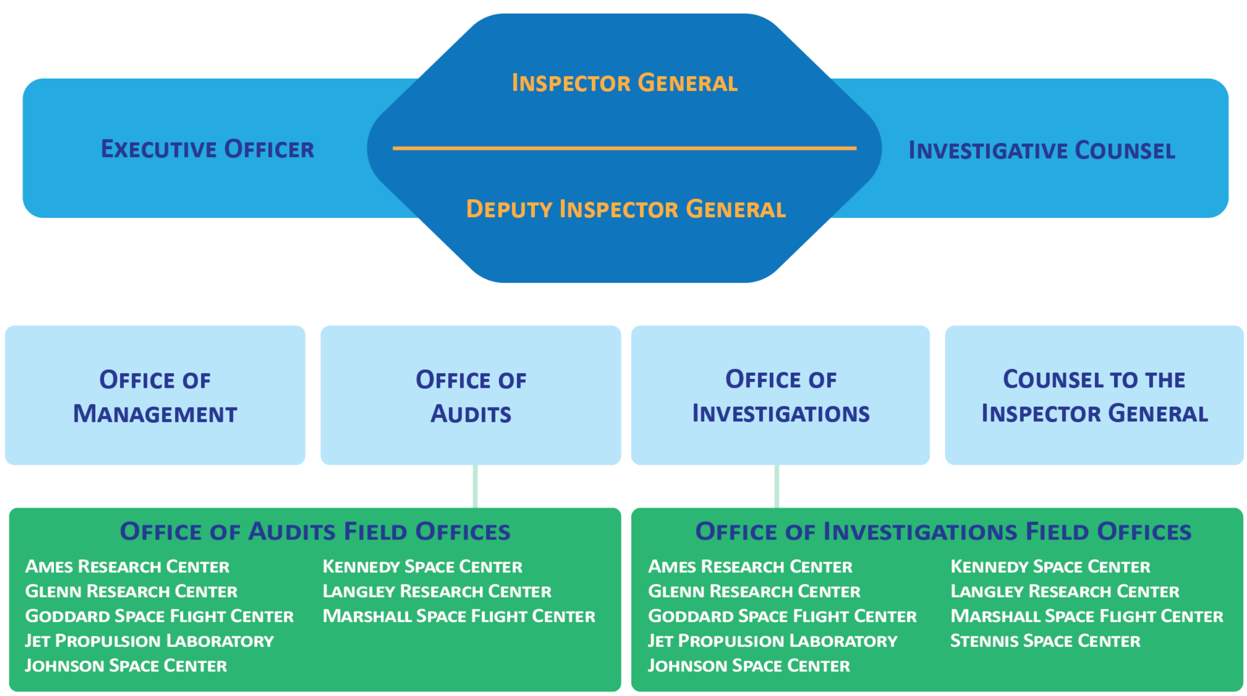
Budget Authority (in $ millions)	Op Plan FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Total Budget	48.1	47.6	40.7	40.7	40.7	40.7	40.7

FY 2024 reflects the funding amount specified in Public Law 118-42, Consolidated Appropriations Act, 2024, as revised in NASA's FY 2024 final Operating Plan, September 2024. Amounts include a net transfer amount of $2.0 million; $4.5 million that was transferred from General Services Administration (GSA) and $2.5 million that was transferred to NASA's Information Technology Modernization Working Capital Fund.

FY 2025 reflects the funding amount specified in Public Law 119-4, Full-Year Continuing Appropriations and Extensions Act, 2025.

The Office of Inspector General (OIG) conducts audits, investigations, and reviews of NASA programs and personnel to prevent and detect fraud, waste, abuse, and mismanagement. Through its oversight role, the OIG assists NASA leaders and Congress in promoting economy, efficiency, and effectiveness. To accomplish this work, OIG employs auditors, investigators, data analysts, attorneys, and support staff at NASA Headquarters in Washington, DC, and nine locations throughout the United States. OIG's operational offices consist of the Office of Audits (OA), Office of Investigations (OI), Counsel to the Inspector General, and Office of Management (OM).

Figure 1- OIG Organizational Chart



OA conducts independent and objective audits of NASA programs, projects, operations, contractor activities, and the annual audits of the Agency's financial statement and information security programs. OA targets high-risk areas and top management challenges to assist NASA's efforts to achieve its space exploration, scientific discovery, space technology, and aeronautics goals. OIG audits provide fact-based analysis with actionable recommendations that help NASA improve its operations.

OI conducts investigations into allegations of fraud, waste, abuse, cybercrime, and misconduct related to NASA programs, operations, and resources. OI refers its findings to the Department of Justice (DOJ) for criminal prosecution and civil litigation or to NASA leadership for administrative action, while also issuing recommendations to reduce systemic risks and strengthen agency integrity. OI leverages secure cloud-based and on-premises infrastructure to support investigations and proactively identify emerging threats. Special Agents work alongside data scientists, engineers, forensic accountants, and analysts to uncover patterns, automate detection, and deliver timely, actionable insights. This integrated, technology-drive approach enhances OI's ability to protect taxpayer's money and promote accountability across NASA's mission activities.

The Counsel to the Inspector General (Office of Counsel) provides legal advice and assistance to OIG managers, auditors, and investigators. The Office of Counsel serves as counsel for administrative litigation and assists the DOJ when the OIG is part of the prosecution team or when the OIG is a witness or defendant in legal proceedings. In addition, the Office of Counsel educates agency employees about prohibitions on retaliation for protected disclosures and about rights and remedies for protected whistleblower disclosures.

OM and staff provide financial, procurement, human resources, administrative, information technology (IT) services, and support to OIG staff. OM advises the OIG senior management on budget issues and human resources staffing matters, directs OIG internal management and support operations, and oversees development and adherence to management policies and procedures. Additionally, OM ensures state-of-the-art IT system capabilities for OIG staff.

BUDGET REQUEST OVERVIEW

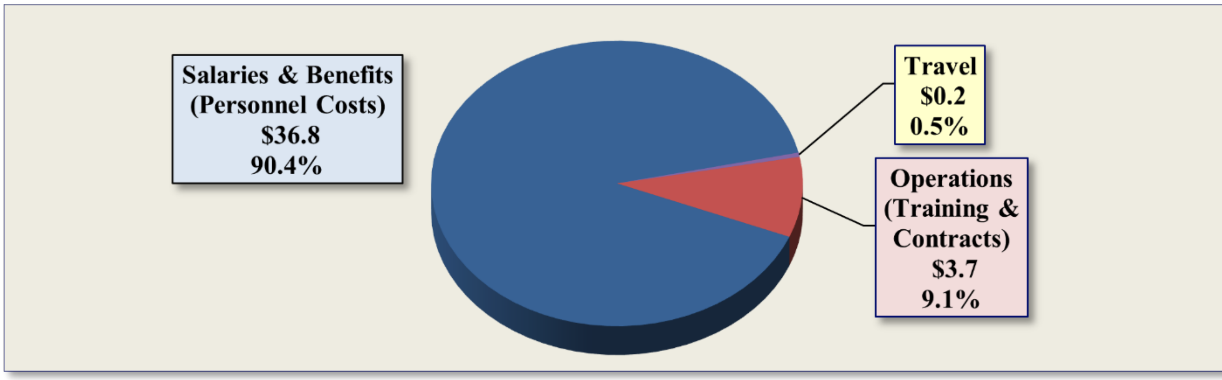
For FY 2026, the NASA OIG requests $40.7 million in direct appropriations to support its mission to improve NASA's programs and operations through independent and objective oversight. The FY 2026 budget request seeks the funding necessary for the OIG to continue to deliver impactful audits and investigations. OIG oversight ensures that NASA receives full value for its expenditures, reinforcing both congressional and public confidence in investments in NASA programs. Further, OIG work consistently yields a positive return on investment (ROI).

The OIG is supporting the Administration's efforts to make government work efficiently. The OIG will be more targeted in its oversight, but the quality of the work provided by OIG employees will remain strong. Starting in FY 2023 and continued into FY 2024 and FY 2025, the OIG implemented planned attrition, reductions in mission support trainings, limited travel, and the reduction or elimination of certain OIG contracts.

BUDGET SUMMARY

For FY 2026, the NASA OIG requests $40.7 million in direct appropriations, with $36.8 million for personnel and related costs, $0.2 million for travel costs, and $3.7 million for operational costs such as training and IT procurement.

Figure 2 - FY 2026 Estimated Obligations (in millions)



The following is detailed breakdown of the FY 2026 President's Budget Request.

- $36.8 million (90.4 percent) for personnel and related costs, including salaries, benefits, and government contributions for Social Security, Medicare, health and life insurance, retirement/separation costs, and the Thrift Savings Plan.
  - Salaries include no increase in base pay for cost-of-living adjustments but does include within grade increases and the required additional 25 percent law enforcement availability pay for OIG's approximately 47 criminal investigators. For FY 2026, the amount requested for non-SES/SL/ST salary spending is $24.2 million for 151 FTE.
  - The estimate of awards and recognition spending as a percent of non-SES salary spending for FY 2026 is 2.5 percent.
- $0.2 million (0.5 percent) for employee travel, per diem, and related expenses.
- $3.7 million (9.1 percent) for operational procurements, including training and staff development, vehicles and equipment for criminal investigators, and IT equipment and software unique to the OIG.
  - To minimize training costs, the OIG will continue to use online courses where practical and use free courses offered through the Council of the Inspectors General on Integrity and Efficiency (CIGIE) and NASA. The OIG also uses qualified in-house staff to deliver training, including accredited trainers who deliver firearms and other mandated training to OIG investigators. The OIG will use vendor-offered courses only for critical training not available through these means.
  - In accordance with the reporting requirements of Section 6(g)(1) of the Inspector General Act of 1978, as amended (IG Act), the Senior Official, performing the functions and duties for the Inspector General, certifies that $0.1 million for staff trainings will satisfy all known training requirements for FY 2026. This includes amounts designated for the statutorily required training provided by the Federal Law Enforcement Training Center and the Inspector General Criminal Investigator Academy.
  - Additionally, as required by Section U.S.C. 406(g)6 of the IG Act, the Senior Official, performing the functions and duties for the Inspector General, certifies the OIG has requested the resources necessary to support CIGIE. The OIG has requested $0.2 million, or 0.4 percent of the OIG's FY 2026 designated funding level based on the President's Budget of $40.7 million.

Figure 3 - FY 2026 President's Budget with Outyears

(in millions)	FY 2024	Enacted FY 2025	Request FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Budget Resources (in millions)	$48.1		$40.7	$40.7	$40.7	$40.7	$40.7
Breakdown by Built-ins							
Salaries & Benefits	39.4		36.8	36.2	36.1	35.9	35.6
Travel	0.8		0.2	0.3	0.3	0.3	0.3
Operations	7.9		3.7	4.2	4.3	4.5	4.8
Current Services Budget	**$48.1**	**$47.6**	**$40.7**	**$40.7**	**$40.7**	**$40.7**	**$40.7**
FTE Supportable	**177**	**171**	**154**	**153**	**151**	**148**	**145**

EXPLANATION OF MAJOR CHANGES IN FY 2026

The budget request provides two-year availability for 6 percent of all funds under this account.

PROPOSED CHANGE IN FUNDING AUTHORITY

In Public Law 118-042, *Consolidated Appropriations Act, 2024*, and continued into Public Law 119-4, *Full-Year Continuing Appropriations and Extensions Act, 2025*, $500,000 of OIG's funding was appropriated with two-year availability, and the rest of the appropriations were annual funding. This budget provides two-year availability for the $2.5 million, or about 6 percent, of the budget request of $40.7 million of direct OIG funding. Increasing the availability to 6 percent of the OIG appropriation will improve resource planning and promote additional efficiencies, especially under continuing resolutions. This change will also provide more certainty in funding and allow for additional time to evaluate the cost effectiveness of contracts needed near the end of the fiscal year or that must be in place before the next fiscal year begins. Moreover, it will allow the OIG to align its business processes and other year-end financial processes within NASA's centralized systems and budgetary framework to execute the oversight mission more efficiently. With the exception of the OIG, all NASA funding has at least two-year availability.

Appropriations Language for FY 2026

The information provided below provides the proposed appropriations language for the FY 2026.

For necessary expenses of the Office of Inspector General in carrying out the Inspector General Act of 1978, $40,700,000, of which $2,500,000 to remain available until September 30, 2027.

ACHIEVEMENTS IN FY 2024 AND FY 2025

To support the budget request, OIG has included the following select accomplishments and ongoing work performed by OA and OI.

Over the past two years, the OIG issued 40 audit products containing 111 recommendations for improvement and identifying $4.9 million in questioned costs for NASA, with an additional $12.6 million in funds put to better use. OIG Audit products included reports examining NASA's management of its:

- Transition of the Space Launch System to a commercial services contract

- Efforts to demonstrate robotic servicing of on-orbit satellites
- Artemis supply chain
- FY 2023 and FY 2024 financial statements
- FY 2023 Payment Integrity Information Act compliance
- Geospatial Data Act
- NASA's privacy program
- Mars Sample Return Program
- High-end computing capabilities
- Readiness for the Artemis II crewed mission to lunar orbit
- Commercial Lunar Payload Services initiative
- Rocket Propulsion Test program
- Nancy Grace Roman Space Telescope Project
- FY 2024 Federal Information Security Modernization Act
- Space Launch System Block 1B Development
- Risks to Sustaining ISS Operations through 2030
- Mobile Launcher 2 Project
- NASA's Zero Trust Architecture

In FY 2024, OI Special Agents continued to experience increased caseloads that included a wide variety of criminal and administrative matters involving procurement fraud, theft, counterfeit parts, ethics violations, computer intrusions, and cyber incidents, leading to more than $14.1 million in criminal, civil, and administrative penalties and settlements, with approximately $4.1 million of these funds returned directly to NASA. OI's efforts in FY 2024 resulted in 20 indictments, 10 convictions, nine sentencings, nine civil settlements, 40 administrative actions, and one debarment.

Examples of OI's work over the past year include cases that directly impacted the Artemis campaign, to include the Space Launch System and Orion Spacecraft, NASA awards (contracts and grants), and matters of foreign influence and ethical concern. For example:

Mission/Infrastructure Critical (Counterfeit parts, false certifications, substandard work)

- A former NASA KSC contractor was sentenced to 21 months imprisonment and was ordered to pay $689,280 in restitution after pleading guilty to wire fraud. The former contractor altered critical testing and conformance documentation for parts and materials sold to NASA for use in the Space Launch System/Orion spacecraft from the Artemis campaign. Some of the parts were installed in critical ground support equipment directly supporting the campaign and its space vehicles.
- A GRC contractor employee was charged by the Cuyahoga County Ohio Prosecutor's Office with felony theft and falsification of records after a NASA OIG investigation revealed he removed approximately 1,000 pounds of insulated copper wire from NASA property to sell for scrap. As the result of a guilty plea, the employee was accepted into a pre-trial diversion program whereby he was ordered to serve 12 months of probation and pay restitution and court costs.
- Two NASA contractors agreed to civil settlements of $30,000 and $40,000, respectively, to resolve claims they laid conduit to an incorrect depth at Wallops Flight Facility (WFF). The issue has since been resolved at no additional cost to the government.

Foreign Influence in NASA funded projects

- A major university agreed to repay $214,000 to NASA after an internal investigation revealed that a principal investigator on numerous NASA grants failed to disclose his concurrent participation in a foreign talent program.
- A university in New York failed to verify whether a professor receiving NASA funding had any foreign affiliations that would have precluded them from receiving NASA contracts. As a result of the oversight, the university falsely certified to NASA that the professor was eligible for funding and agreed to a civil settlement of $313,574 of which $97,318 was awarded to NASA.

Cyber and affiliated crimes

- A NASA contractor employee was sentenced to 15 years probation, a $5,100 special assessment and was required to register as a sex offender. After pleading guilty to one count of 18 U.S. Code § 2252, Investigation found the employee was hosting child pornography on a computer at his residence. He was indicted in July 2019 and pleaded guilty in January 2024.
- A complex investigation in support of local law enforcement helped to identify the subject, victims, and witnesses of numerous sexual assault allegations, support formal criminal charges, and affect the arrest of the employee in question.

Procurement related matters

- A large Government contractor agreed to a settlement of $377 million to resolve allegations that it violated the False Claims Act. While not part of the investigation, NASA OIG examined the settlement and created a financial model demonstrating NASA's potential recovery on a year-by-year basis. Ultimately, NASA OIG's efforts returned $1.6 million back to the Agency. The contracts involved in this case included engineering and consulting services across multiple NASA Directorates.
- Based on a Qui Tam filed with the United States District Court for the Western District of Texas and a joint investigation by NASA OIG and the Defense Criminal Investigative Service (DCIS), a contractor agreed to a civil settlement of $1.35 million to resolve claims that it violated export control laws and misrepresented its eligibility to receive contracts under the program.
- As the result of a NASA OIG-led investigation with eleven federal agencies, a contractor agreed to a civil settlement of $465,000 after voluntarily disclosing that it incorrectly transferred labor hours between government projects over a nine-year period. The contract was funded through a SMD project.
- As the result of a joint investigation by NASA OIG and the DCIS, a NASA contractor agreed to a civil settlement of $645,000 to resolve claims that it failed to meet subcontract and other key personnel disclosure requirements, as well as claims related to U.S. DoD contracts. The settlement was equally dispersed between NASA and the Defense Department. The failed disclosure requirements impacted the STMD.

Ethical and other fraud matters

- The former executive director of a NASA-funded research institute was sentenced to 56 months of imprisonment (suspended) and 24 months of probation, and ordered to pay $94,000 in restitution, for embezzlement and misappropriation of public funds. In separate proceedings, the institute was ordered to pay $1.6 million to successor charitable corporations prior to its dissolution. This matter had a direct impact on operations at the AFRC.

- A former NASA OIG employee and her husband were charged with conspiracy to make false statements to a mortgage lender in order to secure a loan for a debt elimination scheme. The government issued a forfeiture notice for the residential property in question.
- As the result of a joint investigation by NASA OIG and the DCIS, a contractor employee providing contract administration services to NASA was terminated by his employer after it was discovered that he was concurrently working numerous full-time contract positions with other federal agencies. The employee in question was also serving as an active-duty service member during the period under investigation.
- A former contract employee working at NASA's JPL was sentenced to two years of probation and ordered to pay $167,000 in restitution and a $10,000 fine for committing wire fraud in order to fraudulently secure an Economic Injury Disaster Loan from the U.S. Small Business Administration. The proceeds of the loan were used to repay personal real estate debt and fund illegal marijuana cultivation.
- A senior NASA employee received a five-day suspension for misusing her position to secure an internship for her child at NASA Headquarters.
- A NASA JSC employee was terminated for committing unemployment insurance and pandemic relief fraud whereby she misrepresented her employment status in order to receive unemployment benefits and made false representations to secure pandemic relief funds which she used for an unapproved purpose.

WORK IN PROGRESS AND KEY ACHIEVEMENTS PLANNED FOR FY 2025 - FY 2026

The OIG will examine NASA's Moon to Mars program, including the Artemis campaign. Planned oversight includes a deep look into the agency's center operations and engineering support services for the Artemis campaign as well as its management of government-furnished property for the Human Landing System contracts and spacesuit contracts for both Artemis and the International Space Station. The OIG will continue to examine NASA's human exploration activities in low-Earth orbit, including reviews of the Commercial Crew Program and NASA's efforts to facilitate commercialization of low-Earth orbit. Additionally, the OIG will examine NASA's management of communications requirements for deep-space human exploration missions.

Further, the OIG will continue to monitor NASA's ambitious science and aeronautics research programs including management of the Dragonfly mission, current Standing Review Board practices, the implementation and management of its planetary defense strategy, and the resilience of its infrastructure and operations. Upcoming reviews include management of the Aerosciences Evaluation and Test Capabilities portfolio, NASA's role in the National Academies' decadal survey process, management of the Gravity Recovery and Climate Experiment – Continuity (GRACE-C) mission, and management of developed assets after mission cancellations.

The OIG is also reviewing the Agency's mission support services, including IT and cybersecurity, workforce, and infrastructure and facilities. The OIG is examining the impact of the Mission Support Future Architecture Program on NASA operations, while also reviewing the infrastructure and facilities needed to meet its current and future missions. The OIG also plans to review the agency's access management practices; management of the export control program; and the status of the environmental remediation cleanup at the Santa Susana Field Laboratory.

Ongoing investigative work includes proactive initiatives designed to identify acquisition and procurement fraud schemes in NASA's major programs and projects. Additionally, representatives from OI and OA are working collaboratively to identify, access, and create cutting-edge tools, platforms, and resources for advanced data analytics and artificial intelligence (AI) capabilities. This will accelerate the identification of potential indicators of fraud and allow for more precise analysis of historical trends, thereby improving decision-making processes. These efforts will lead to more accurate forecasting, enhanced fraud detection, and optimized resource allocation, ultimately driving a higher return on investment in our audits and investigations.

In FY 2025, the OIG will continue to focus its work on NASA's top management and performance challenges identified in our November 2024 report. Specifically, OIG plans to undertake work in the following areas:

- improving management of major programs and projects;
- partnering with commercial industry; and
- enabling mission critical capabilities and support services.

The OIG will also continue mandated oversight in a variety of financial management and quality control areas, including:

- Payment Integrity Information Act compliance;
- oversight of NASA grants;
- oversight of the Financial Statement Audit;
- risk assessment of purchase and travel card programs; and
- Federal Information Security Modernization Act.

As NASA continues to work toward returning humans to the Moon, with the eventual goal of landing humans on Mars, additional OIG funding will enable enhanced oversight of major NASA projects.

From an investigative perspective, the FY 2026 request will continue support for investigations of cybercrime, fraud, waste, abuse, and misconduct related to NASA programs, projects, personnel, operations, and resources.

Given the important role of NASA's contracting practices in agency missions, most of OIG's proactive initiatives focus on acquisition activities that are susceptible to procurement fraud schemes. Examples of ongoing, proactive initiatives that will continue including the following:

- an initiative to identify reimbursable credits to NASA contracts from the pandemic Paycheck Protection Program;
- a project to identify duplicate contract labor charges from the same vendor to different government agencies;
- a Criminal and Cyber Threat Intelligence project to identify cyber incidents for the Civil Cyber-Fraud Initiative;
- a project to aggregate, analyze, and monitor cost data related to NASA's Artemis campaign;

- a project to monitor and aggregate data related to NASA's Artemis campaign to identify indications of fraud on the part of prime contractors and subcontractors; and
- multiple initiatives to identify, detect, and deter fraud involving grant and contract recipients who surreptitiously receive significant financial support from foreign governments and/or fail to identify potential foreign-based conflicts of interest in violation of NASA policies and/or federal law.

Supporting Data

FUNDS DISTRIBUTION

DISCRETIONARY BUDGET REQUEST BY MISSION BY NASA CENTER

Budget Authority ($ in millions)	FY 2026*
Exploration	41.8
Space Operations	3.6
Space Technology	41.8
Science	109.7
Aeronautics	106.4
STEM Engagement	-
Safety, Security, and Mission Services	112.9
Construction and Environmental Compliance and Restoration	-
ARC Total	**416.1**
Exploration	-
Space Operations	0.2
Space Technology	21.5
Science	8.1
Aeronautics	131.7
STEM Engagement	-
Safety, Security, and Mission Services	40.6
Construction and Environmental Compliance and Restoration	-
AFRC Total	**202.0**
Exploration	172.5
Space Operations	77.6
Space Technology	53.7
Science	13.9
Aeronautics	90.1
STEM Engagement	-
Safety, Security, and Mission Services	172.4
Construction and Environmental Compliance and Restoration	-
GRC Total	**580.2**
Exploration	7.1
Space Operations	139.0
Space Technology	30.0
Science	1,451.9
Aeronautics	-
STEM Engagement	-
Safety, Security, and Mission Services	199.1
Construction and Environmental Compliance and Restoration	-
GSFC Total	**1,827.2**

FUNDS DISTRIBUTION

Budget Authority ($ in millions)	FY 2026*
Exploration	21.7
Space Operations	132.9
Space Technology	14.0
Science	707.6
Aeronautics	-
STEM Engagement	-
Safety, Security, and Mission Services	4.0
Construction and Environmental Compliance and Restoration	10.0
JPL / NASA Office of Management and Oversight (NMO) Total	**890.3**
Exploration	2,710.8
Space Operations	2,110.1
Space Technology	18.4
Science	50.6
Aeronautics	-
STEM Engagement	-
Safety, Security, and Mission Services	207.0
Construction and Environmental Compliance and Restoration	-
JSC Total	**5,096.9**
Exploration	805.5
Space Operations	433.3
Space Technology	10.1
Science	100.0
Aeronautics	-
STEM Engagement	-
Safety, Security, and Mission Services	210.6
Construction and Environmental Compliance and Restoration	-
KSC Total	**1559.5**
Exploration	29.9
Space Operations	3.9
Space Technology	26.6
Science	114.6
Aeronautics	143.5
STEM Engagement	-
Safety, Security, and Mission Services	146.6
Construction and Environmental Compliance and Restoration	-
LaRC Total	**465.1**
Exploration	3,461.3
Space Operations	36.7
Space Technology	39.6
Science	136.8
Aeronautics	-
STEM Engagement	-
Safety, Security, and Mission Services	341.9
Construction and Environmental Compliance and Restoration	-
MSFC Total	**4,016.3**

FUNDS DISTRIBUTION

Budget Authority ($ in millions)	FY 2026*
Exploration	1,025.0
Space Operations	194.6
Space Technology	310.1
Science	1,214.3
Aeronautics	117.0
STEM Engagement	-
Safety, Security, and Mission Services	650.1
Construction and Environmental Compliance and Restoration	130.1
Office of Inspector General	40.7
NASA HQ and Inspector General (IG) Total	**3,682.0**
Exploration	37.2
Space Operations	-
Space Technology	3.2
Science	0.1
Aeronautics	-
STEM Engagement	-
Safety, Security, and Mission Services	33.2
Construction and Environmental Compliance and Restoration	-
SSC Total	**73.6**
Total	**18,809.1**

**Totals may not add due to rounding*

NOTE: Funds will not be fully distributed to the centers until after final acquisition decisions are made. Thus, FY 2026 allocations by center should not be considered final or directly comparable to prior year allocations

CIVIL SERVICE FULL-TIME EQUIVALENT DISTRIBUTION

NASA's workforce continues to be one of its greatest assets for enabling missions in space and on Earth. The workforce enables NASA to lead or participate in emerging technology opportunities, collaborate and strengthen the capabilities of commercial partners, and communicate the challenges and results of agency programs and activities. The civil service staffing levels funded in the FY 2026 Budget support the work of scientists, engineers, researchers, managers, technicians, and administrative professionals at NASA centers, HQ, and NASA-operated facilities.

NASA continually assesses and adjusts the mix of skills in its workforce to address changing mission priorities, effectively leveraging industry and academic partnerships, and on and near-site support contracts. A knowledgeable and well-trained civil service workforce is critical for conducting mission-essential work in research and technology. Centers will explore cross-mission retraining opportunities for employees whenever possible, offer targeted buyouts in selected surplus skill areas, and continue to identify, recruit, and retain a multi-generational workforce of employees who possess skills critical to the agency.

CIVIL SERVICE FULL-TIME EQUIVALENT (FTE) DISTRIBUTION BY CENTER – DIRECT FUNDED

	Actual	Estimate	Request
	FY 2024	**FY 2025**	**FY 2026**
HQ	1,614	1,841	1,366
ARC	1,258	1,225	755
AFRC	499	500	309
GRC	1,446	1,391	837
GSFC	2,963	2,884	1,549
JSC	3,013	3,292	2,594
KSC	2,010	2,016	1,506
LaRC	1,801	1,730	1,058
MSFC	2,261	2,240	1,714
SSC	257	274	166
NSSC	-	-	-
NASA Total*	**17,122**	**17,391**	**11,853**
OIG	178	171	154

**Totals may not add due to rounding*

NOTE: Funds will not be fully distributed to centers until after final acquisition decisions are made. Thus, center FY 2025 and FY 2026 allocations should not be considered final or directly comparable to prior year allocations.

CIVIL SERVICE FULL-TIME EQUIVALENT DISTRIBUTION

CIVIL SERVICE FULL-TIME EQUIVALENT (FTE) DISTRIBUTION BY CENTER – REIMBURSABLE FUNDED

	Actual FY 2024	Estimate FY 2025	Request FY 2026
HQ	18	2	2
ARC	38	22	17
AFRC	29	20	15
GRC	28	-	-
GSFC	212	219	60
JSC	37	-	-
KSC	22	-	-
LaRC	43	2	1
MSFC	49	-	-
SSC	21	17	13
NSSC	199	205	154
NASA Total*	**696**	**487**	**261**
OIG	-	-	-

**Totals may not add due to rounding*

NOTE: Funds will not be fully distributed to centers until after final acquisition decisions are made. Thus, center FY 2025 and FY 2026 allocations should not be considered final or directly comparable to prior year allocations.

CIVIL SERVICE FULL-TIME EQUIVALENT DISTRIBUTION

FY 2026 FTE DISTRIBUTION BY ACCOUNT BY CENTER

	Deep Space Exploration Systems	Space Operations	Space Technology	Science	Aeronautics	STEM Engagement	Safety, Security, and Mission Services	Reimbursable / Working Capital Fund**	Inspector General	NASA-Funded Total	Agency TOTAL
HQ	120	74	57	260	53	-	802	2	-	1,366	1,367
ARC	40	7	70	139	191	-	309	17	-	755	771
AFRC	-	-	23	26	142	-	118	15	-	309	324
GRC	202	60	83	20	182	-	291	-	-	837	837
GSFC	21	96	55	717	-	-	659	60	-	1,549	1,609
JSC	1,127	893	42	38	-	-	495	-	-	2,594	2,594
KSC	594	372	22	14	-	-	505	-	-	1,506	1,506
LaRC	97	12	73	119	315	-	442	1	-	1,058	1,059
MSFC	941	74	95	109	-	-	495	-	-	1,714	1,714
SSC	53	-	9	-	-	-	104	13	-	166	179
NSSC	-	-	-	-	-	-	-	154	-	-	154
NASA Total*	**3,194**	**1,588**	**528**	**1,441**	**882**	**-**	**4,220**	**261**	**-**	**11,853**	**12,113**
OIG	-	-	-	-	-	-	-	-	154	154	154

**Totals may not add due to rounding*

***Includes 155 FTE funded by Working Capital Fund; and 106 FTE anticipated FTE funded by reimbursable customers.*

NOTE: Funds will not be fully distributed to centers after final acquisition decisions are made. Thus, center FY 2026 allocations should not be considered final or directly comparable to prior year allocations.

WORKING CAPITAL FUND

NASA established the Working Capital Fund (WCF) to satisfy specific recurring needs for goods and services through use of a business-like buyer and seller approach under which NASA's WCF entities provide goods or services pursuant to contracts and agreements with their customers. The overarching aim of the WCF is to promote economy, efficiency, and accountability with fully reimbursed rates and by focusing on streamlining operations, measuring performance, and improving customer satisfaction.

NASA's WCF is comprised of five entities:

- NASA Shared Services Center (NSSC);
- Solutions for Enterprise-Wide Procurement (SEWP) Government-Wide Acquisition Contract;
- Enterprise IT Services Program [formerly Information Technology Infrastructure Integration Program (I3P)];
- National Center for Critical Information Processing and Storage (NCCIPS); and
- IT Modernization.

WORKING CAPITAL FUNDS BUDGET SUMMARY

Spending Authority from Offsetting Collections	Actual	Estimate	Request
($ in millions)	FY 2024	FY 2025	FY 2026
NSSC	87	82	85
SEWP*	41	52	55
I3P	148	112	114
NCCIPS	31	30	25
IT Modernization	4	38	86
Total New Spending Authority	**311**	**314**	**365**
Unobligated Brought Forward, Oct. 1	44	61	56
Recoveries of Prior Yr. Unpaid Obligations	25	6	21
Total Budgetary Resources	**380**	**381**	**442**
NSSC	89	96	78
SEWP*	32	23	26
I3P	164	135	213
NCCIPS	33	61	30
IT Modernization	1	10	50
Total Obligations	**319**	**325**	**347**
Unobligated Balance (end-of-year) *	**61**	**56**	**95**

* Disposition of SEWP in FY 2026 is pending GSA implementation of Executive Order 14240 Eliminating Waste and Saving Taxpayer Dollars by Consolidating Procurement.

NASA SHARED SERVICES CENTER (NSSC)

NSSC opened in March 2006 to provide centralized administrative processing services and customer contact center operations for support of human resources, procurement, financial management, agency IT, and agency business support services. NASA established NSSC, a function under the NASA HQ MSD, as a public/private partnership. NSSC has awarded its major business management and IT services contract to COLSA Corporation and InspiriTec. Typical expenditures are related to the civil service workforce, support contractor, other direct procurements, and agency training purchases.

NSSC is located on the grounds of SSC and operates in a manner that provides for transparency and accountability of costs and services. NASA has reduced its administrative costs through centralized processing at NSSC. The work performed by NSSC reduces duplicative efforts and increases cost efficiencies.

NSSC's revenue streams include funding from the NASA mission support enterprise offices, mission directorates, and various NASA mission support offices. During FY 2025, NSSC will continue to offer similar services as in FY 2024. During FY 2026, NSSC will continue to offer similar services as in FY 2025 making minor changes to existing services.

SOLUTIONS FOR ENTERPRISE-WIDE PROCUREMENT (SEWP)

SEWP refers to operations related to the Government-Wide Acquisition Contract (GWAC) that was established under the authority of section 5112 of the Information Technology Management Reform Act (40 U.S.C. 1412[e]), enacted in 1996, under which NASA is designated by the Office of Management and Budget (OMB) as a Federal Government Executive Agent for SEWP contracts.

SEWP was established as a WCF entity to allow all federal agencies use of a best value tool to purchase IT product solutions and services. Under this approach, the buying power of federal agencies is combined to acquire best value for IT products and services more efficiently. Typical acquisitions include a wide range of advanced technologies, such as: UNIX-Linux and Windows-based desktops and servers, peripherals, network equipment, storage devices, security tools, software, and other IT products and product-based solutions.

On March 20, 2025, President Donald J. Trump issued Executive Order 14240 Eliminating Waste and Saving Taxpayer Dollars by Consolidating Procurement (the Order). The Order directs a series of actions to consolidate domestic Federal procurement of common goods and services in the General Services Administration (GSA). As a result, NASA's executive agent designation for SEWP will be rescinded. NASA is working closely with GSA to plan transition of its GWAC to GSA.

ENTERPRISE IT SERVICES PROGRAM

WCF operations supporting Enterprise IT Services Program began in early FY 2012. WCF enables Enterprise IT Services Program to improve the efficiency and economy in which contract services and management are provided to support NASA's IT strategic initiatives and to increase visibility into NASA's IT budget and expenditures. Under the Enterprise IT Services Program, NASA has consolidated 19 separately managed contracts into four centrally managed ones described as follows:

- The Enterprise Applications Service Technologies (EAST2) contract supports Agency Applications Office (AAO) applications hosted by MSFC. The AAO operates and maintains a broad spectrum of

NASA's enterprise applications, with an emphasis on fully integrating business process expertise with application and technical knowledge. A small team of civil servants and support contractors sustain operations, implement new applications and capabilities, and provide business readiness support to the stakeholders and end-users.

- The Enterprise Applications Service Technologies Web Enterprise Service Technologies (EAST2-WSO) contract provides public website hosting, web content management and integration, and search services. GSFC and ARC host these services.
- The End User Services Contract (NASA End-User Services and Technology [NEST] / End User Services Office [EUSO]) provides program management, provisioning, and support of desktops, laptops, cell phones, personal digital assistants, office automation software, and video conferencing. NSSC hosts these services.
- The Networx Telecommunications Circuits contract provides telecommunication services, which includes tele-conferencing services, core circuit services, mission network services, and regional circuit services hosted at MSFC. The work under the Networx contract slowly started transitioning to the follow-on contract, Enterprise Infrastructure Solutions Contract (EIS) in July 2019 with some services transitioning to other Enterprise Contracts. The transition of work is still ongoing in FY 2025 and should be completely transitioned by the end of FY 2025.

Enterprise IT Services Program consolidated contracting approach benefits NASA by providing cost saving opportunities, such as the reduction in administrative burden involved with the business management of contracts and a significant reduction in procurement request transaction volume. Other Enterprise IT Services Program benefits include: streamlining the budgeting, funding, and costing of Enterprise IT Services Program services; achieving transparency through the provision of detailed customer monthly billings; and providing consolidated, consistent reporting of agency-wide consumption of Enterprise IT Services Program-related goods and services.

Enterprise IT Services Program is unique in that revenue streams and expenditures are limited to contract costs for its four service contracts. Revenue streams include funding from the NASA centers, NASA mission directorates, and various NASA mission support offices. As reflected in the FY 2025 and FY 2026 anticipated funding level, the Enterprise IT Services Program WCF will continue to offer similar services as in FY 2024 with one significant change. As of July 2024, the follow-on contract for EAST 2 and EAST 2 WSO, the NASA Consolidated Applications and Platform Services (NCAPS) contract, is being managed outside of the WCF.

NATIONAL CENTER FOR CRITICAL INFO. PROCESSING AND STORAGE (NCCIPS)

NCCIPS is a federal shared services data center designed for sensitive and secure processing and storage. NCCIPS is a 211,000-square-foot secure data center facility on a 64-acre campus within SSC. NCCIPS offers federal customers collocation services from a state-of-the-art data center facility. NCCIPS offers 24x7x365 availability at a Tier III level as defined by the Uptime Institute, with complete redundancy in the cooling system and in the electrical distribution system from the national power grid to the rack-level.

NCCIPS provides the following infrastructure/services:

- Five Layer Security – Buffer Zone/perimeter fencing, armed security at all gates, roving guards, and NCCIPS armed guards, and NCCIPS Access Control System;

- Three separate commercial power generation systems available to NCCIPS;
- Tier III redundant (N + 1) power from commercial power systems down to racks on the datacenter floors with N + 1 diesel generator backup;
- Tier III redundant (N + 1) cooling;
- Expert IT staff with a proven track record of uninterrupted service;
- 24x7 facility operations staff monitoring;
- Robust network infrastructure with multiple, discreet communication paths; and
- FE-25 clean agent fire suppression.

The NASA WCF provides NASA with a mechanism to collect amounts sufficient to finance continuing operations, acquire capital assets, and adjust for prior year results of operations, in addition to normal operating expense recovery at NCCIPS. NCCIPS WCF benefits NASA and its customers by:

- Enabling funds to be collected over time and (once earned) used for new equipment and technology.
- Allowing the NSSC to incorporate a level of equipment replacement, maintenance, and technology refresh costs into customer rates.
- Helping to normalize rates charged to NCCIPS customers from year-to-year, as the need for facility repairs, infrastructure upgrades, and routine equipment maintenance increases; thus, enabling NCCIPS customers to maintain their appropriation funding without incurring potentially large unplanned expenses.
- Facilitating NCCIPS business opportunities for new customers.
- Reducing the probability of hardware failure within the NCCIPS operational environment.

The NCCIPS revenue streams include funding from the NASA SSC and NSSC Centers, NASA HQ Office of the Chief Human Capital Officer, and external federal agencies, including Department of Homeland Security (DHS), U.S. Army Program Executive Offices - Missiles and Space (ARMY – APEO) and Aviation (ARMY – AAVN), U.S. Navy DoD Supercomputing Resource Center (DSRC), DoD High Performance Computing Modernization program – Engineer Research and Development Center, National Reconnaissance Office (NRO), Government Services Administration (GSA), Department of Transportation OCIO (DOT-OCIO), DOT Maritime Administration, Department of Housing and Urban Development (HUD), and Naval Air Systems Command (NAVAIR). During FY 2025 and FY 2026, NCCIPS will continue to offer similar services as in FY 2024 with no significant scope changes anticipated.

IT MODERNIZATION

In FY 2023, NASA's existing authority under 51 U.S.C. 30102 was amended to authorize the WCF for IT Modernization activities on a non-reimbursable basis and included transfer authority from the Safety, Security, and Mission Services account into the WCF to fund such activities. The Administrative Provisions in the FY 2026 Budget include transfer authority for up to $32,600,000 for purposes of IT modernization.

BUDGET BY OBJECT CLASS

FY 2026 Estimated Direct Discretionary Obligations
($ millions)

Code	Object Class	Exploration	Space Operations	Space Technology	Science	Aeronautics	STEM Engagement	Safety, Security, and Mission Services	Construction & Environmental Compliance & Restoration	Office of Inspector General	NASA Total
11.1	Full-time permanent	527	272	83	264	132	-	662	-	25	**1,965**
11.3	Other than full-time permanent	5	4	2	5	6	-	16	-	1	**39**
11.5	Other personnel compensation	14	7	2	4	4	-	21	-	1	**53**
11.8	Special Personal Services Payments	-	1	-	-	-	-	1	-	-	**2**
11.9	*Subtotal Personnel Compensation*	*546*	*284*	*87*	*273*	*142*	-	*700*	-	*27*	***2,059***
12.1	Civilian personnel benefits	199	102	31	185	51	-	249	-	12	**829**
13.0	Benefits to former personnel	-	-	-	-	-	-	-	-	-	-
	Total Personnel Compensation & Benefits	**745**	**386**	**118**	**458**	**193**	**-**	**949**	**-**	**39**	**2,888**
21.0	Travel & transport. of persons	11	12	-	-	-	-	9	-	-	**32**
22.0	Transportation of things	-	1,150	2	3	-	-	1	-	-	**1,156**
23.1	Rental payments to GSA	-	-	-	-	-	-	38	-	-	**38**
23.2	Rental payments to others	7	1	-	7	-	-	1	-	-	**16**
23.3	Communications, utilities & misc.	16	11	-	4	6	-	65	-	-	**102**
24.0	Printing & reproduction	-	-	-	1	-	-	1	-	-	**2**
25.1	Advisory & assistance services	570	136	20	95	16	-	335	-	-	**1,172**
25.2	Other services from non-Federal sources	40	111	12	52	15	-	148	-	1	**379**
25.3	Other purchases of goods & services from Government accounts	28	26	54	163	5	-	37	-	1	**314**
25.4	Operation & maintenance. of facilities	131	42	2	9	33	-	130	-	-	**347**
25.5	Research & development contracts	5,848	1,091	306	2,485	241	-	106	140	-	**10,217**
25.6	Medical care	-	-	-	-	-	-	3	-	-	**3**
25.7	Operation & maintenance of equipment	140	98	3	20	21	-	102	-	-	**384**
26.0	Supplies & materials	53	11	5	15	9	-	7	-	-	**100**
31.0	Equipment	351	16	10	93	21	-	130	-	-	**621**
32.0	Land & structures	357	2	-	1	4	-	12	-	-	**376**
41.0	Grants, subsidies, & contributions	16	39	37	502	25	-	43	-	-	**662**
42.0	Insurance claims and indemnities	-	-	-	-	-	-	1	-	-	**1**
	Other Object Classes	**7,568**	**2,746**	**451**	**3,450**	**396**	**-**	**1,169**	**140**	**2**	**15,921**
	NASA Total, Direct	**8,313**	**3,132**	**569**	**3,908**	**589**	**-**	**2,118**	**140**	**41**	**18,809**

**Totals may not add due to rounding.*

NOTE: The table only reflects the estimated FY 2026 direct discretionary obligations. Estimated FY 2026 obligations of anticipated reimbursable budget authority and prior year direct or supplemental unobligated balances are not shown.

STATUS OF UNOBLIGATED FUNDS

The table below displays actual and estimated unobligated balances of direct and reimbursable budget authority in each NASA account at the end of each fiscal year.

END OF YEAR UNOBLIGATED FUNDS SUMMARY BY APPROPRIATIONS ACCOUNT

($ in millions)	Unobligated Balances Sept. 30, 2024	Unobligated Balances Sept. 30, 2025	Unobligated Balances Sept. 30, 2026
Exploration	127	166	166
Space Operations	230	339	339
Space Technology	72	83	83
Science	862	903	903
Aeronautics	25	42	42
STEM Engagement	7	8	8
Safety, Security, and Mission Services	816	817	818
Construction & Environmental Compliance & Restoration	509	509	509
Working Capital Fund	61	67	88
Office of Inspector General	-	2	2
Total NASA	**2,709**	**2,936**	**2,958**

**Totals may not add due to rounding.*

REIMBURSABLE ESTIMATES

Reimbursable agreements are agreements where the NASA costs associated with the undertaking are borne by the non-NASA partner. NASA undertakes reimbursable agreements when it has equipment, facilities, and services that it can make available to others in a manner that does not interfere with NASA mission requirements. Reimbursable agreements are executed under various legal authorities including:

1. National Aeronautics and Space Act of 1958, as amended [P.L. 85–568] - Space Act Agreements (SAAs) and Enhanced Use Leasing (EUL) authority [incorporated through P.L. 108-7].
2. Commercial Space Launch Act [P.L. 98-575] – authority to outsource the use of its launching facilities and services to private companies.
3. National Historic Preservation Act (NHPA) [P.L. 89-665] – leasing authority for historic property.
4. Government Employees Training Act [P. L. 85-507] – authority to conduct employee training for other government organizations.
5. Economy Act [P.L. 31–15359] – authority for agencies to obtain supplies or services from another agency.

The agreements are transacted in two accounts (Safety, Security, and Mission Services [SSMS] and Construction and Environmental Compliance and Restoration [CECR]. Most of the work is managed by a specific NASA center and performed by the relevant mission directorate or office program at the center (i.e., Science, Aeronautics, Space Operations, Exploration, Space Technology, Mission Support, Office of STEM Engagement, and Office of Inspector General). Examples include the use of NASA-operated wind tunnel test facilities and rocket test stand facilities by other government agencies or private sector users. Some larger agreements and those that involve multiple centers or mission directorates are managed by NASA HQ.

The table below presents the budget authority for NASA's reimbursable work. As most reimbursable requests to NASA do not occur until the year of execution, the FY 2025 and FY 2026 estimates are based on anticipated reimbursable agreements reported by NASA HQ and centers.

REIMBURSABLE BUDGET AUTHORITY BY APPROPRIATIONS ACCOUNT

($ millions)	Actual	Estimate	Request
	FY 2024	**FY 2025**	**FY 2026**
Safety, Security, and Mission Services (including NHPA)	1,518	4,326	3,245
Construction and Environmental Compliance and Restoration (including EUL)	20	44	44
Total	**1,538**	**4,370**	**3,289**

ENHANCED USE LEASING

In 2003, Congress authorized NASA to enter into leasing arrangements at two centers. In 2007 and 2008, Congress expanded that authority such that NASA may enter into Enhanced Use Leasing (EUL) arrangements at all centers. EUL revenues help NASA maintain critical facilities and address deferred maintenance challenges as well as support centers' revitalization plans. Additionally, NASA's EUL authority enhances important relationships with industry, academia, and non-profit organizations.

NASA's EUL authority expired without an extension on December 31, 2021, pursuant to the "sunset" provision in 51 U.S.C. 20145(g). However, Title III of Division B of the FY 2023 Omnibus Appropriations Act extends the existing EUL authority through December 31, 2032.

After deducting the costs of administering the leases, NASA centers are permitted to retain 65 percent of net receipt revenue. The balances are made available to NASA for use agency wide. These funds are in addition to annual appropriations. The table below depicts the estimated FY 2026 EUL expenses and revenues. The amounts identified under Capital Asset Account Expenditures may be adjusted between projects listed based on actual contract award. There are no civil servants funded from EUL income.

SUMMARY OF PROJECTED FY 2026 EUL ACTIVITY

FY2026 EUL Expenses and Revenues ($ Whole Dollars)	ARC	GRC	LaRC	AFRC	GSFC	JPL(NMO)	MSFC	SSC	JSC	KSC	Agency	Total
Base Rent	10,302,000	1,466,038			1,863,725	88,000	1,600,505	9,480,339		6,622,662	3,143	31,426,413
Institutional Support Costs (AAI, ISP, Shared Center Support Costs)	1,114,000	203,779			259,058	22,000	105,689	1,295,257		827,380		3,827,163
Lease Management and Administration							61,913			50,000	112	112,025
Reimbursable Demand Services	2,925,322	387,973								206,000		3,519,295
Operations and Maintenance Included in Lease NOT AS a DEMAND SERVICE							1,990,461	15,000		289,278	295	2,295,034
Total Estimated Lease Collections (N + E Funds Lease Project Code) - Program Year 2026	**14,341,322**	**2,057,790**	**0**	**0**	**2,122,783**	**110,000**	**3,758,568**	**10,790,596**	**0**	**7,995,321**	**3,550**	**41,179,930**
Estimated Lease Costs												
Institutional Support Costs (AAI, ISP, Shared Center Support Costs)	-1,114,000				-259,058		-105,689	-1,379,712		-827,380	0	-3,685,839
Lease Management and Administration	-1,021,561					-22,000	-61,913			-50,000	0	-1,155,474
Operations and Maintenance Included in Lease NOT AS a DEMAND SERVICE							-1,990,461	-15,000		-289,278	-295	-2,295,034
Total Estimated Cost Associated with Leases (N Fund) - Program Year 2026	**-2,135,561**	**0**	**0**	**0**	**-259,058**	**-22,000**	**-2,158,063**	**-1,394,712**	**0**	**-1,166,658**	**-295**	**-7,136,347**
Estimated Net Proceeds from Lease Activity (E Fund) - Program Year 2026	**12,205,761**	**2,057,790**	**0**	**0**	**1,863,725**	**88,000**	**1,600,505**	**9,395,884**	**0**	**6,828,662**	**3,255**	**34,043,583**
Projected Balance, Capital Asset Account - Prior Program Years	**0**	**2,589,218**	**0**	**0**	**1,669,484**	**95,370**	**1,731,037**	**2,694,212**	**0**	**2,068,767**	**1,000**	**10,849,089**
Estimated Net Proceeds from Lease Activity Retained at Center - Program Year 2026	**7,933,745**	**1,337,564**	**0**	**0**	**1,211,422**	**57,200**	**1,040,328**	**6,107,325**	**0**	**4,438,631**	**2,116**	**22,128,329**
Total Lease Income - All Program Years	**7,933,745**	**3,926,781**	**0**	**0**	**2,880,906**	**152,570**	**2,771,365**	**8,801,537**	**0**	**6,507,398**	**3,116**	**32,977,417**
Planned Capital Projects for Net Proceeds for Fiscal Year 2026												
Planned Maintenance, Various Buildings	-6,032,285				-40,000		-237,737	-3,000,000		-5,000,000	-3,115	-14,313,137
Replace Roofs on Various Buildings												0
Misc. Renewable Solar Energy Expansion												
Replace Bldg. 1 main steam condensate piping												0
Upgrade Lighting Systems (Green Project)												0
Energy and Sustainability Upgrades, Various Buildings (Stennis)												0
Energy and Sustainability Upgrades, Various Buildings (Various Centers)					-2,661,000							-2,661,000
Estimated Capital Asset Account (OSI Project Codes) Expenditures	**-6,032,285**	**0**	**0**	**0**	**-2,701,000**	**0**	**-237,737**	**-3,000,000**	**0**	**-5,000,000**	**-3,115**	**-16,974,137**
Estimated Capital Asset Account (OSI Project Codes) Ending Balance	**1,901,459**	**3,926,781**	**0**	**0**	**179,906**	**152,570**	**2,533,628**	**5,801,537**	**0**	**1,507,398**	**1**	**16,003,280**
In Kind Activity	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**44,911**	**0**	**44,911**

DEFINITIONS

Base Rent

The income generated from tenants as payment for leasing land or buildings, ensuring continued access to the rented property.

Institutional Support Costs

Cost for institutional shared services, such as fire, security, first responder, communications, common grounds, road, and infrastructure maintenance, as well as routine administrative support and management oversight (e.g., environmental).

ENHANCED USE LEASING

Total Lease Income – All Program Years

The total revenue generated from EUL activities, encompassing all earnings before deductions, including costs associated with renting. This amount includes prior year revenue collected in FY 2026.

In-Kind Activity

Consideration accepted in lieu of rent payment (only applies to selected leases signed prior to January 1, 2009).

Reimbursable Demand Services

Services, such as janitorial, communications, and maintenance, that solely benefit the tenant and are provided for their convenience. There is no net income received by NASA, as these payments may only cover the costs of NASA and its vendors providing these services.

NATIONAL HISTORIC PRESERVATION ACT

The National Historic Preservation Act (NHPA) 54 U.S.C. §306121-306122 provides NASA with the following authority.

> §306121. Lease or exchange
>
> (a) Authority To Lease or Exchange.-Notwithstanding any other provision of law, any federal agency after consultation with the Council [the Advisory Council on Historic Preservation], shall, to the extent practicable, establish and implement alternatives for historic properties, including adaptive use, that are not needed for current or projected agency purposes, and may lease an historic property owned by the agency to any person or organization, or exchange any property owned by the agency with comparable historic property, if the agency head determines that the lease or exchange will adequately insure the preservation of the historic property.
>
> (b) Proceeds of Lease.-Notwithstanding any other provision of law, the proceeds of any lease under subsection (a) may, notwithstanding any other provision of law, be retained by the agency entering into such lease and used to defray the costs of administration, maintenance, repair, and related expenses incurred by the agency with respect to such property or other properties which are on the National Register which are owned by, or are under the jurisdiction or control of, such agency. Any surplus proceeds from such leases shall be deposited into the Treasury of the United States at the end of the second fiscal year following the fiscal year in which such proceeds were received.
>
> §306122. Contracts for management of historic property
>
> The head of any federal agency having responsibility for the management of any historic property may, after consultation with the Advisory Council on Historic Preservation, enter into contracts for the management of such property. The contract shall contain such terms and conditions as the head of such agency deems necessary or appropriate to protect the interests of the United States and insure adequate preservation of historic property.

In FY 2014, NASA established a program for leasing its historic properties based upon the NHPA authorities. Funds received from historic property leases are expended for the purposes of operating, maintaining, and managing the properties, or for authorized demolition or removal of buildings. Federal workforce costs associated with executing the leasing program are funded from annual appropriations, not leasing revenues.

The table below depicts the estimated amounts of anticipated NHPA expenses and revenues for FY 2026 for the use of several historic properties at ARC Moffett Field, CA and Building 925 and adjacent land at JSC Houston, TX, as well as two buildings at Glenn Research Center. NASA currently expects total rental income of approximately $37.0 million. Of the $37.0 million in total rental income, approximately $22.9 million represents net revenue from lease activities. $21.9 million of the net revenue amount will be used for historic building maintenance and repairs at ARC and JSC starting in FY 2026.

NATIONAL HISTORIC PRESERVATION ACT

FY2026 NHPA Expenses and Revenues ($ Whole Dollars)	Ames Research Center	Johnson Space Center	Glen Research Center	Total
Base Rent	8,960,520	4,025,000	1,010,000	13,995,520
Institutional Support Costs (AAI, ISP, Shared Center Support Costs)	11,539,480	615,423	140,390	12,295,292
Lease Management and Administration		-		-
Reimbursable Demand Services	9,559,430		837,041	10,396,471
Operations and Maintenance Included in Lease NOT AS a DEMAND SERVICE		402,500		402,500
Total Estimated Lease Collections (N + E Funds Lease Project Code) - Program Year 2026	**30,059,430**	**5,042,923**	**1,987,431**	**37,089,784**
Institutional Support Costs (AAI, ISP, Shared Center Support Costs)	(11,539,480)	(615,423)	(1,010,000)	(13,164,902)
Lease Management and Administration	(574,957)	-	(70,100)	(645,057)
Operations and Maintenance Included in Lease NOT AS a DEMAND SERVICE		(402,500)		(402,500)
Total Estimated Cost Associated with Leases (N Fund)	**(12,114,437)**	**(1,017,923)**	**(1,080,100)**	**(14,212,459)**
Total Lease Income (E Fund Lease Project Code)	**17,944,993**	**4,025,000**	**907,331**	**22,877,324**
Estimated Capital Asset Account Ending Balance (E Fund OSI Projects)	**17,944,993**	**4,025,000**	**907,331**	**22,877,324**
Estimated In Kind Activity	**-**			

DEFINITIONS

Base Rent

The income generated from tenants as payment for leasing land or buildings, ensuring continued access to the rented property.

Institutional Support Costs

Cost for institutional shared services such as fire, security, first responder, communications, common grounds, road, and infrastructure maintenance, as well as routine administrative support and management oversight (e.g., environmental).

Total Lease Income

The total revenue generated from EUL activities, encompassing all earnings before deductions, including costs associated with renting. This amount includes prior year revenue collected in FY 2026 Reimbursable

Reimbursable Demand Services

Services, such as janitorial, communications, and maintenance, that solely benefit the tenant and are provided for their convenience. There is no net income received by NASA, as these payments may only cover the costs of NASA and its vendors providing these services.

Total Lease Income

Total gross proceeds from NHPA activities including expenses due to renting NASA property.

BUDGET FOR SAFETY OVERSIGHT

The following table provides the safety oversight budget request. This includes the agency-wide surveillance functions as well as the project specific safety, reliability, maintainability, and quality assurance elements embedded within individual projects. NASA does not have a single safety oversight budget line item, but instead amounts are embedded in program, project, and mission support budgets.

BUDGET SUMMARY FOR SAFETY OVERSIGHT

	Actual	Request
Budget Authority ($ millions)	FY 2024	FY 2026
Saftety and Mission Assurance	50.4	37.9
Institutional Operational Safety	41.0	23.4
SMA Technical Authority	54.3	30.3
NASA Total	145.7	91.6

Agency-Wide Safety Oversight – Agency-level programs and activities that support the overarching NASA Safety and Mission Success program.

Safety and Mission Assurance – The Safety and Mission Assurance (S&MA) program administers and refines the pertinent policies, procedural requirements, and technical safety standards. The program participates in forums that provide advice to the administrator, mission directorates, program managers, and center directors who are ultimately accountable for the safety and mission success of all NASA programs, projects, and operations. The program's policy focuses on protecting the public, workforce, high-value property, and the terrestrial, orbital, and planetary environments from potential harm; assuring crew safety and mission success; and cultivating a robust Safety Culture that values and pursues technical and organizational excellence to understand and reduce risk. The budget for the Safety and Mission Assurance is part of the Agency Technical Authority (ATA) program under the Safety, Security, and Mission Services (SSMS) mission account.

Institutional Safety – NASA's Institutional Operational Safety program is driven by 29 CFR 1960, Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters, NASA Procedural Requirement (NPR) 8715.1A, NASA Occupational Safety and Health Programs, and NPR 7900.3, Aircraft Operations Management Manual. The program includes: risk management, safety training, safety awareness, construction safety, the voluntary protection program, safety metrics and trend analysis, contractor insight/oversight, support to safety boards and committees, support to the emergency preparedness and fire safety programs, aviation safety, explosives and propellants safety, nuclear safety, radiation safety, confined space entry, fall protection, lifting devices, pressure vessel safety, hazard reporting and abatement systems, cryogenic safety, electrical safety requirements (lock out/tag out), facility systems safety, institutional safety policy development, visitor and public safety, institutional safety engineering, and a mishap prevention program (including a reporting system and investigations). The Institutional Operational Safety program requires significant federal, state, and local coordination. The budget for Institutional Operational Safety is part of the Center Engineering, Safety, and Operations (CESO) program under the SSMS mission account.

BUDGET FOR SAFETY OVERSIGHT

S&MA Technical Authority – S&MA Technical Authority provides independent oversight of programs and projects in support of safety and mission success and is a key part of NASA's overall system of checks and balances. The S&MA Technical Authority program includes travel and labor only for all S&MA supervisors, branch chiefs, or above and designated deputies. In addition, where the principal job function of a non-supervisory S&MA person consists of rendering authoritative decisions on S&MA matters relating to the design or operation of a program or project, that person's salary is included. Often, these positions are the lead S&MA managers for large programs where the decision-making process is nearly a full-time demand. This category does not include salaries for individuals who only occasionally work on an authority task; however, the program budget does include travel funds in direct support of these tasks when needed. The budget for S&MA Technical Authority is part of the CESO program under the SSMS mission account.

BUDGET FOR PUBLIC RELATIONS

The NASA budget for Communications is funded within the Safety, Security, and Mission Services account under Mission Services & Capabilities, Mission Enabling Services. These program activities include strategic planning and coordination to ensure the consistency of information disseminated to the public through the news media, digital interfaces, and NASA websites. The content supports inherently governmental and external communications; public inquiries; the NASA+ website (see https://plus.nasa.gov/); the nasa.gov portal (see: http://www.nasa.gov); Freedom of Information Act requests; history, archival, libraries, and artifact management; public affairs/public relations; and other multimedia support.

Beginning in FY 2026, the Office of Communications will restructure the organization to an Agency or centralized structure vs Center-specific to eliminate functions not statutorily mandated, except functions the Agency deems necessary, consolidate management layers and duplicative functions, and evaluate/implement technological solutions that automate routine tasks**.**

NASA COMMUNICATIONS BUDGET SUMMARY, BY CENTER

Budget Authority (in $ millions)	Actual	Request
	FY24	FY26
ARC	3.4	0.0
AFRC	1.4	0.0
GRC	3.7	0.0
GSFC	5.9	0.0
HQ	39.9	33.8
JSC	4.2	0.0
KSC	7.8	0.0
LaRC	2.5	0.0
MSFC	5.9	0.0
SSC	1.4	0.0
NASA Total	**76.2**	**33.8**

**Totals may not add due to rounding*

CONSULTING SERVICES

NASA uses paid experts and consultants to provide advice and expertise beyond that which is available from its in-house civil service workforce. Management controls ensure that there is ample justification for consulting services before these services are obtained. Much of the agency's expert and consultant support is for the NASA Advisory Council and the Aerospace Safety Advisory Panel. NASA uses experts and consultants to provide expertise on the selection of experiments for future space missions. The use of these experts and consultants provides the agency with an independent view that promotes the selection of experiments likely to have the greatest scientific merit. Other individuals provide independent views of technical and functional problems to offer senior management a wide range of information to support decision-making. Historically, each mission directorate engages a few consultants to primarily support programmatic and Aerospace Safety Advisory Panel issues.

NASA CONSULTING SERVICES BUDGET SUMMARY

	Actual	Request
(Cost in $ millions)	**FY 2024**	**FY 2026**
Number of Paid Experts and Consultants	35	35
Salaries	$1.1	$1.1
Benefits Costs	$0.1	$0.1
Travel Costs	$0.1	$0.1
Total Costs	**$1.3**	**$1.3**

FY 2024 are actual obligations. FY 2026 are estimated Budget Authority

A broader definition of consulting services could include the total of the Advisory and Assistance Services object class as shown in the Supporting Data - Budget by Object Class section of this volume. Advisory and Assistance Services includes: (1) Quality Control, Testing, & Inspection Services; (2) Management and Professional Support Services; (3) Studies, Analysis, & Evaluations; (4) Engineering and Technical Services; and (5) IT Services.

	Actual	Request
(Cost in $ millions)	**FY 2024**	**FY 2026**
Quality Control, Testing & Inspection Services	$67.2	$51.2
Management and Professional Support Services	$985.8	$751.2
Studies, Analysis, & Evaluations	$59.4	$45.3
Engineering and Technical Services	$12.3	$9.4
IT Services	$413.3	$314.9
Total Costs, Advisory & Assistance Services	**$1,538.0**	**$1,172.0**

CONSULTING SERVICES

DEFINITIONS

Consultant - A person who can provide valuable and pertinent advice generally drawn from a high degree of broad administrative, professional, or technical knowledge or experience. When an agency requires public advisory participation, a consultant also may be a person who is affected by a particular program and can provide useful views from personal experience.

Expert - A person who is specially qualified by education and experience to perform difficult and challenging tasks in a particular field beyond the usual range of achievement of competent persons in that field. An expert is regarded by other persons in the field as an authority or practitioner of unusual competence and skill in a professional, scientific, technical, or other activity.

These definitions are located under 5 CFR 304.102. The appointments are made under 5 U.S.C. 3109, and the use of this authority is reported to Office of Personnel Management (OPM).

E-GOV INITIATIVES AND BENEFITS

E-GOVERNMENT FUNDING CONTRIBUTIONS AND SERVICE FEES BY INITIATIVE

NASA will provide funding contributions in FY 2026 for each of the following E-Government initiatives:

Initiative	2026 Contributions (Includes In- Kind) ($ In Dollars)	2026 Service Fees* ($ In Dollars)
E-Payroll	-	5,359,290
E-Rulemaking	-	13,798
E-Training	-	1,583,625
E-Travel	-	89,520
Enterprise HR Integration	-	357,500
Federal PKI Bridge	-	186,832
Grants.gov	157,000	-
Integrated Award Environment	-	530,417
Recruitment One-Stop	-	129,375
Technology Transformation Services	484,292	
Budget Formulation and Execution LoB	125,000	-
Federal Audit Clearinghouse LoB	44,597	
Financial Management LoB	124,236	-
Geospatial LoB	225,000	-
Human Resources Management LoB	68,478	-
Lead Agency Coordination Request System	6,671	-
Performance Management LoB	100,000	-
NASA Total	**1,335,274**	**8,250,357**

**Service fees are estimates as provided by the E-Government initiative Managing Partners*

After submission of the budget, NASA will post FY 2025 Exhibit 300 IT business cases on the IT Dashboard located at: https://www.itdashboard.gov

The E-Government initiatives serve citizens, businesses, and federal employees by delivering high-quality services more efficiently at a lower price. Instead of expensive "stove-piped" operations, agencies work together to develop common solutions that achieve mission requirements at a reduced cost, which makes resources available for higher priority needs. Benefits realized by NASA through these initiatives in FY 2026 are described below:

E-Payroll FY 2026 Benefits

The E-Payroll Initiative standardizes and consolidates government-wide federal civilian payroll services and processes by simplifying and standardizing HR/payroll policies and procedures and better integrating payroll, HR, and finance functions. Since 2004, the Department of Interior (DOI) has served as NASA's payroll provider. DOI's system (i.e., Federal Personnel and Payroll System [FPPS]) processes NASA's HR and Payroll transactions and supplies all key delivery aspects of its payroll operation functions. The E-Payroll Initiative benefits NASA by permitting the agency to focus on its mission-related activities rather than on administrative payroll functions. Payroll processing costs are reduced through economies of scale and avoid the cost of duplicative capital system modernization activities. The initiative also promotes standardization of business processes and practices and unified service delivery. NASA continues to work closely with DOI to pilot innovative solutions such as Robotic Process Automation to realize cost savings and more modern data connections to more reliably exchange our HR data.

E-Rulemaking (Managing Partner EPA) FY 2026 Benefits

NASA has benefited from the e-Rulemaking initiative by being able to better provide the public with one-stop access to the agency's information on rulemakings and non-rulemaking activities via the Regulations.gov website (see: https://www.regulations.gov/).

NASA uses the Federal Docket Management System (FDMS) to post its rulemakings so that the public can gain access to review and comment on these rulemakings. NASA relies on Regulations.gov to retrieve public comments on its rulemakings. NASA's use of the FDMS and Regulations.gov substantially improves the transparency of its rulemaking actions and increases public participation in the regulatory process. Direct budget cost savings and cost avoidance has resulted from the FDMS and Regulations.gov.

E-Training (Managing Partner OPM) FY 2026 Benefits

The e-Training initiative provides access to premier electronic training systems and tools that support the training and development of the federal workforce. The initiative supports agency missions through efficient one-stop access to e-Training products and services. The availability of an electronic training environment enhances the ability of the federal government and NASA to attract, retain, manage, and develop highly skilled professionals needed for a flexible and high-performing government workforce.

The e-Training initiative benefits NASA by reducing redundancies and achieving economies of scale in the purchase, development, and deployment of e-learning content and in the management of learning technology infrastructure. This initiative allows NASA to remain in a positive security posture by allowing access to applications based upon completed required trainings and real-time integrations with our identity and credential access management systems. The System for Administration, Training, and Educational Resources at NASA (SATERN) is a Web-based talent management tool that serves as NASA's training system of record for over 100,000 active civil servants and contractor accounts tracked within the system. This centralized approach allows NASA to reduce and leverage training costs by eliminating unique systems, standardizing training processes, and maintaining valid data across the agency. In 2018, NASA migrated SATERN to a software as a service (SaaS) cloud hosted solution.

Through SATERN, employees can view required training, launch online content, view training history, and self-register for approved courses and conferences. In addition, the system allows NASA officials to identify groups and individuals who have not met basic training requirements and ensure accountability for mission-critical and federally-mandated training and development. SATERN also offers employees access to career planning tools, individual development plans, and competency management assistance. Currently, SATERN offers learners access to almost 3,000 online courses and more than 10,000 online courses, books, and training videos via our partnership with SkillSoft and/or Percipio. We are also working with other entity partnerships to enhance the overall learning experience and provide more learning opportunities. SATERN is available at all times and can be accessed from work, home, or via approved mobile devices.

E-GOV INITIATIVES AND BENEFITS

E-Travel (Managing Partner GSA) FY 2026 Benefits

NASA completed migration of its travel services to Electronic Government Travel System 2 (ETS2) - Concur Government Edition (CGE) (formerly HP Enterprise Services [FedTraveler]). Completed in 2014, this migration has allowed NASA to provide more efficient and effective travel management services. ETS2 is a streamlined, adaptable, world-class travel management service that continually applies commercial best practices to realize travel efficiencies and deliver a transparent, accountable, and sustainable service that yields exceptional customer satisfaction.

Enterprise HR Integration (Managing Partner OPM) FY 2026 Benefits

The Enterprise HR Integration (EHRI) Program supports the strategic management of human capital by providing agency customers access to timely and accurate federal workforce data. In support of this objective, EHRI has the following goals: 1) streamline and automate the exchange of federal employee human resources (HR) information government wide; 2) provide comprehensive knowledge management and workforce analysis, forecasting, and reporting across the Executive Branch; 3) maximize cost savings captured through automation; and 4) enhance retirement processing throughout Executive Branch.

A key initiative of EHRI is the electronic Official Personnel Folder (eOPF), a Web-based application capable of storing, processing, and displaying the OPFs of all current, separated, and retired federal employees. Specific EHRI/eOPF benefits to NASA include: improved convenience in searching for information, better security and safety for electronic files, decreased costs, streamlined business processes, and the ability to have a central repository of OPF records for the agency. NASA completed its implementation to eOPF in March 2008, and transitioned personnel actions processing to the NASA Shared Service Center (NSSC). Specific NASA employee benefits include secure online access to OPFs, automatic notification when documents are added, exchange of retirement and HR data across agencies and systems, and the elimination of duplicate and repetitive personnel data in personnel folders.

Federal PKI Bridge - FY 2026 Benefits

The Federal Public Key Infrastructure (FPKI) is the primary, secure mechanism that allows for electronic business transactions across government and between government and industry. It is the backbone and trust anchor for Homeland Security Presidential Directive 12 (HSPD-12) and Personal Identity Verification (PIV) cards and is critical to enabling cyber security via identity management. The FPKI enables secure physical and logical access using strong credentials, such as the PIV card, and allows NASA documents to be digitally signed, sent, encrypted, and archived in digital media without fear that they will be compromised, spoofed, or altered. A number of core government-wide documents mandate NASA's use of the FPKI.

Grants.gov (Managing Partner HHS) FY 2026 Benefits

In addition to the federal requirement for all grant-issuing agencies to, at a minimum, post a synopsis of all new grant and cooperative agreement funding opportunities to Grants.gov (see: https://www.grants.gov/), the Grants.gov initiative benefits NASA and its grant programs by providing a single location with broader exposure to publish grant and cooperative agreement funding opportunities and application packages. Posting internally, NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES), as well as externally (e.g., Grants.gov), makes the process easier for applicants to apply for funding with multiple agencies. All 26 major federal grant-making agencies post 100 percent of their synopses for discretionary funding opportunity announcements on Grants.gov.

In addition, Grants.gov provides a single site for the grantee community to apply for grants using a standard set of forms, processes, and systems. This gives grantees greater access and ability to apply for federal funding. Through the continued use of Grants.gov, NASA can reduce operating costs associated with online grant posting and application evaluation. Additionally, the agency is able to improve operational effectiveness through the use of Grants.gov by increasing data accuracy and reducing processing cycle times.

Integrated Award Environment (Managing Partner GSA) FY 2026 Benefits

The Integrated Award Environment (IAE) initiative is designed to support a common, secure business environment which facilitates and supports the cost-effective acquisition of and payment for goods and services; resulting in effective management of federal acquisition and assistance awards, and consistent transparency into federal awards. The IAE services enable NASA to do business with industry, whether it is through contracts, grants, or loans, in a smart, streamlined, and shared services platform. Services range from entity management, pre-award, post award, and common services (e.g., data governance, security, hosting, help desk, single sign-on, and search). Use of the IAE common services allows agencies to focus on specific needs (e.g., strategy, operations, and management), while leveraging shared services for common functions. Furthermore, use of a government-wide business-focused service environment reduces funding and resources for technical services and support for acquisition systems originally housed by individual agencies.

Through adoption of the tools and services provided by IAE, NASA improves its ability to make informed and efficient purchasing decisions and allows it to replace manual processes. If NASA did not use IAE systems, the Agency would need to build and maintain separate systems to record vendor and contract information and to post procurement opportunities. Agency purchasing officials would not have access to databases of important information from other agencies on vendor performance and could not use systems to replace paper-based and labor-intensive work efforts.

Integrated Award and Environment – Loans & Grants FY 2026 Benefits

As part of the IAE, all agencies participating in the posting and/or awarding of Contracts and Loans & Grants are required by the Federal Funding Accountability and Transparency Act (FFATA) of 2006 and the Digital Accountability and Transparency Act of 2014 (DATA Act) reporting requirements to disclose award information on a publicly accessible website. On December 14, 2007, the Office of Management and Budget (OMB) launched USASpending.gov (see: http://www.USASpending.gov) to meet the FFATA statutory requirements. NASA analyzes the past and present total funding amounts of each proposing entity, as well as its total number of awards to assist in assessing each grant proposer's risk level and score during the 2 Code of Federal Regulations (CFR) 200 required pre-award risk assessment process. This information is submitted and housed in USASpending.gov by funding agency. Understanding the total dollar amounts managed and the number of awards provides insight on a proposer's experience with managing federal funds.

Recruitment One-Stop (Managing Partner OPM) FY 2026 Benefits

USAJOBS simplifies the federal job search process for job seekers and agencies. The USAJOBS.gov website (see: https://www.usajobs.gov/) provides a place where citizens can search for employment opportunities throughout the federal government. Through USAJOBS.gov, users have access to:

- A centralized repository for all competitive service job vacancies;

- Job vacancies;
- A resume repository used by agencies to identify critical skills;
- A standardized online recruitment tool and services;
- A standard application process; and
- Intuitive job searches including e-mail notifications for jobs of interest.

Integration with Recruitment One-Stop allows NASA to better attract individuals who can accomplish the agency's mission. The USAJOBS interface allows job-seekers to view and apply for all NASA employment opportunities, as well as those from other federal agencies.

In 2005, NASA adopted the USAJOBS resume as the basic application document for all NASA positions, except for astronaut positions. To date NASA has not identified any specific savings, either in terms of budgeted savings or cost avoidance. Although the agency believes that implementation of Recruitment One-Stop has resulted in significant intangible benefits in terms of providing better vacancy information to applicants, it has not resulted in any specific cost savings to NASA. The numerous intangible benefits Recruitment One-Stop provides to NASA and other agencies include:

- Decreasing hiring time for managers;
- Providing an integrated solution to agency applicant assessment systems;
- Providing a cost-effective marketing and recruitment tool;
- Realizing cost savings over commercial job posting boards;
- Reducing the delay associated with filling critical agency vacancies; and
- Enhancing competition with the private sector for the best and brightest talent for federal service.

Technology Transformation Services (TTS) under Federal Citizen Services Fund (Managing Partner GSA)

The Technology Transformation Services (TTS), supported through the Federal Citizen Services Fund (FCSF) and managed by the General Services Administration (GSA), plays a vital role in advancing key Administration priorities and strengthening federal digital service delivery. TTS also contributes to improved federal financial management by enabling secure, efficient, and user-centered technologies that support agency missions and the responsible stewardship of public funds.
TTS programs include:

- **Federal Risk and Authorization Management Program (FedRAMP):** FedRAMP promotes the adoption of secure cloud services across the U.S. Government by providing a standardized approach to security and risk assessment. This contributes to cost-effective procurement and enhances cybersecurity posture government-wide.
- **U.S. Web Design System (USWDS):** USWDS provides agencies with consistent, accessible, and mobile-friendly web design tools. Its use improves digital user experience and ensures compliance with federal standards, reducing duplication and promoting efficient investment in public-facing technology.
- **21st Century Integrated Digital Experience Act (21st Century IDEA):** This law mandates federal agencies to modernize websites and digital services. By adopting USWDS and other tools, agencies can provide more accessible and intuitive services, aligning with both legal requirements and efficient use of federal resources.
- **Digital.gov:** Serving as a central hub for federal digital practitioners, Digital.gov fosters collaboration, shares best practices, and supports communities of practice. It empowers agencies

to improve public service delivery while enhancing oversight and coordination of digital investments.

Together, these initiatives not only modernize government services but also support sound financial management by encouraging shared services, reducing redundant systems, and optimizing agency investment in technology.

LINES OF BUSINESS (LOB)

Budget Formulation & Execution LoB (Managing Partner Education) FY 2026 Benefits

The Budget Formulation and Execution LoB (BFELoB) provides significant benefits to NASA and other partner agencies by encouraging best practices crossing all aspects of federal budgeting – from budget formulation to execution to performance to human capital needs. To benefit all agencies, BFELoB continues to support the idea of shared service budget systems. As NASA currently has its own budgeting tools, the agency has not chosen to move to a new budget system; however, a shared service budget system is an option in the future.

Federal Audit Clearinghouse LoB (Managing Partner GSA) FY 2026 Benefits

The Federal Audit Clearinghouse LoB initiative is designed to support NASA in meeting federal requirements for the Single Audit process. GSA provides the platform in which single audit reporting packages and required audit data, as submitted by federal grantees, are collected enabling compliance with federal requirements. It allows for the dissemination of Single Audit information by maintaining a public database of Single Audits and streamlines the reporting process for auditors and federal award grantees.

Financial Management (FM) LoB (Managing Partners DOE and DOL) FY 2026 Benefits

NASA's contribution to the FM LoB supports efforts to transform federal financial management, reduce costs, increase transparency, and improve delivery of agencies' missions by operating at scale, relying on common standards and shared services, and using state-of-the-art technology. NASA benefits from the FM LoB because it provides a forum in which federal agencies can share information and weigh pros and cons of various initiatives (e.g., Quality Service Management Offices (QSMOs)). QSMOs offer modern technology and transaction processing solutions to drive scale, standardization and efficiency.

Geospatial LoB (Managing Partner DOI) FY 2026 Benefits

The Geospatial LoB was sunset when OMB released the Federal IT Shared Services Strategy in 2012. However, NASA continues to be active in the Federal Geographic Data Committee (FGDC) and supports FGDC standards wherever applicable. NASA also continues to provide support and data to the Geoplatform as required by statute, and supports three National Geospatial Data Assets in partnership with USGS.

Human Resources Management LoB (Managing Partner OPM) FY 2026 Benefits

The HR LoB vision is to create government-wide, modern, cost-effective, standardized, and interoperable HR solutions to provide common core functionality to support the strategic management of Human Resources through the establishment of shared service centers (SSCs).

E-GOV INITIATIVES AND BENEFITS

NASA works in partnership with one of the approved service providers, the Department of Interior's Business Center (IBC). Through this partnership, NASA shares and receives "best-in-class" HR solutions. The IBC delivers NASA-developed solutions to their customer agencies, enabling improved efficiencies and system integrations at a fraction of the cost and delivery time of similar solutions that could have been produced by the Interior Business Center. NASA achieves the benefits of "best- in-class" HR solutions through the implementation and integration of IBC and NASA-developed HR solutions. NASA's participation in the HR LoB provides the agency opportunities to implement modern HR solutions and benefit from government-wide strategic HR management best practices. NASA participates in the ongoing development of a 10-year Federal Human Resources Strategic Plan and government-wide data standards with the HR LoB managing partner (OPM) and member agencies.

Lead Agency Coordination Request (LACR) system LoB FY 2026 Benefits

The FY 2026 Budget will initiate the collection of funds from agencies to support the launch and maintenance of the LACR system, which will serve as the official workflow management system of the Interagency Suspension and Debarment Committee (ISDC). The LACR will help the ISDC meet its statutory responsibility pursuant to section 873 of P.L. 110-417 to coordinate suspension and debarment actions among agencies when two or more agencies may have an interest in initiating suspension and debarment proceedings pertaining to the same contractor or recipient. The new system will resolve cybersecurity risks associated with the ISDC's current collaboration process and provide added administrative efficiencies.

Performance Management LoB (Managing Partner GSA) FY2026 Benefits

Performance Management develops government-wide performance management capabilities to help meet the requirements of the Government Performance and Results Modernization Act of 2010 (GRPAMA), and support government-wide performance management efforts.

COMPARABILITY ADJUSTMENT TABLES

National Aeronautics and Space Administration FY2024 Budget Structure Crosswalk to FY 2026 Budget Structure

The amounts reflect the budget authority levels requested in 2024 President's Budget (not the enacted levels) and are presented for illustrative purposes only.

Budget Authority ($ in millions)	FY 2024 Structure	FY 2026 Structure
NASA TOTAL	**$27,185.0**	**$27,185.0**
Deep Space Exploration Systems (Changed to Exploration	**$7,971.1**	**$7,971.1**
Common Exploration Systems Development (Changed to Moon to Mars	**$4,525.4**	**$4,525.4**
Orion Program	$1,225.0	$1,225.0
Space Launch System	$2,506.1	$2,506.1
Launch Vehicle Development	*$2,427.2*	
Block 1B DDT&E	$462.2	
SLS Program Integration and Support	*$78.9*	*$78.9*
Block 1B Capability Upgrade		$462.2
Exploration Ground Systems	$794.2	$794.2
Exploration Ground Systems Development	*$273.2*	
Mobile Launcher-2	$273.2	$273.2
Exploration Ground Systems		$516.9
EGS Program Integration and Support	*$521.0*	
Exploration Ground Systems	$516.9	
Artemis Campaign Development (Moon to Mars Systems Development	**$3,234.8**	**$3,336.3**
Gateway	$914.2	$914.2
Gateway	*$914.2*	*$289.3*
Habitation & Logistics Outpost	$276.5	
Power and Propulsion Element	$348.4	
Gateway Initial Capability		$624.9
Habitation & Logistics Outpost		$276.5
Power and Propulsion Element		$348.4
Adv Cislunar and Surface Capabilities	$60.3	
Adv Cislunar and Surface Capabilities	*$60.3*	
Advanced Exploration Systems		$161.8
xEVA and Human Surface Mobility Program	$379.9	$379.9
xEVA and Surface Mobility	*$379.9*	*$379.9*
Human Landing System	$1,880.5	$1,880.5
Human Landing System	*$1,880.5*	
C Landing System	$1,139.8	
HLS Initial Capability		$1,139.8
SpaceX Landing System		$1,139.8
Human Exp Requirements & Architecture	**$49.1**	**$109.3**
Moon & Mars Architecture (Renamed Strategy and Architecture)	$49.1	$49.1
Future Systems		$60.3
Adv Cislunar and Surface Capabilities (Changed to Future Systems)		*$60.3*
Mars Campaign Development	**$161.8**	**$0.0**
Exploration Capabilities	$161.8	$0.0
Exploration Research & Development	**$0.0**	**$0.0**
Human Research Program	$0.0	$0.0

COMPARABILITY ADJUSTMENT TABLES

National Aeronautics and Space Administration FY2024 Budget Structure Crosswalk to FY 2026 Budget Structure

The amounts reflect the budget authority levels requested in 2024 President's Budget (not the enacted levels) and are presented for illustrative purposes only.

Budget Authority ($ in millions)	FY 2024 Structure	FY 2026 Structure
Space Operations	**$4,534.6**	**$4,534.6**
International Space Station	**$1,302.6**	**$1,302.6**
International Space Station Program	$1,302.6	$1,302.6
International Space Station		$1,302.6
ISS Systems Operations and Maintenance	*$1,036.0*	
ISS Research	*$266.6*	
Space Transportation	**$1,956.7**	**$1,956.7**
Crew and Cargo Program	$1,856.1	$1,856.1
Commercial Crew Program	$100.6	$100.6
Space and Flight Support (SFS)	**$1,047.0**	**$1,047.0**
Space Communications and Navigation	$579.7	$579.7
Space Communications and Navigation		*$579.7*
Space Communications Networks	*$493.9*	
Space Communications Support	*$85.8*	
Human Space Flight Operations	$102.0	$102.0
Launch Services	$103.8	$103.8
Rocket Propulsion Test	$48.6	$48.6
Communications Services Program	$59.4	$59.4
Human Research Program	$153.5	$153.5
21st Century Space Launch Complex	$0.0	$0.0
Commercial LEO Development	**$228.4**	**$228.4**
Commercial LEO Development Program	$228.4	$228.4
Exploration Operations	**$0.0**	**$0.0**
Exploration Operations Program	$0.0	

COMPARABILITY ADJUSTMENT TABLES

National Aeronautics and Space Administration FY2024 Budget Structure Crosswalk to FY 2026 Budget Structure

The amounts reflect the budget authority levels requested in 2024 President's Budget (not the enacted levels) and are presented for illustrative purposes only.

Budget Authority ($ in millions)	FY 2024 Structure	FY 2026 Structure
Space Technology	**$1,391.6**	**$1,391.6**
Space Technology	**$1,391.6**	**$1,391.6**
Early Stage Innovation and Partnerships	$138.1	
Agency Technology and Innovation	*$0.0*	
Early Stage Innovation	*$115.6*	
Technology Transfer	*$22.5*	
Technology Transfer	$22.5	
Catalysts & Innovative Mechanisms		$252.9
Partnerships, Early Stage Innovations, and Commercialization		*$222.1*
Technology Transfer		$22.5
Flight Opportunities		$84.0
Space Technology Operations		*$30.8*
Space Tech Management and Integration		$30.8
Technology Maturation	$402.3	
Technology Maturation	*$402.3*	
Space Tech Management and Integration	$30.8	
Surface Infrastructure & Explorat (LIVE)		$313.4
Space to Surface Access (LAND)		$21.0
Foundational Capabilities (ENABLE)		$37.1
In-Space Infrastruct & Discover (EXPAND)		$246.2
OSAM-1		*$227.0*
OSAM-1 (Restore & SPIDER)		$227.0
Technology Demonstration	$551.3	
Restore & SPIDER (OSAM-1)	*$227.0*	
TDM OSAM-1 (Restore & SPIDER)	$227.0	
Solar Electric Propulsion (SEP)	*$10.8*	
TDM Solar Electric Propulsion (SEP)	$10.8	
Small Spacecraft, Flight Opportunities & Other Tech Demo	*$313.5*	
TDM Space Nuclear Technologies Portfolio	$119.5	
Flight Opportunities & Small Spacecraft	$84.0	
TDM Cryogenic Fluid Management (CFM)	$90.9	
Space Transportation (GO)		$221.1
Solar Electric Propulsion		*$10.8*
Space Transportation Capabilities		*$210.3*
Cryogenic Fluid Management		$90.9
Nuclear Propulsion		$119.5
SBIR and STTR	$299.9	$299.9

COMPARABILITY ADJUSTMENT TABLES

National Aeronautics and Space Administration FY2024 Budget Structure Crosswalk to FY 2026 Budget Structure

The amounts reflect the budget authority levels requested in 2024 President's Budget (not the enacted levels) and are presented for illustrative purposes only.

Budget Authority ($ in millions)	FY 2024 Structure	FY 2026 Structure
Science	**$8,260.8**	**$8,260.8**
Earth Science	**$2,472.8**	**$2,414.7**
Earth Science Research	$577.9	$519.9
Earth Science Research and Analysis	*$393.5*	*$393.5*
Computing and Management	*$184.5*	*$126.4*
High End Computing Capability	$58.1	
Earth Systematic Missions	$1,027.1	$1,027.1
NASA-ISRO SAR	*$96.4*	*$96.4*
Sentinel-6	*$63.9*	*$63.9*
PACE	*$91.4*	
Plankton,Aerosols,Clouds,ocean Ecosystem	$91.4	
GRACE-Continuity		$35.5
GRACE-Continuity		$35.5
Other Missions and Data Analysis	*$775.5*	*$831.4*
Plankton,Aerosols,Clouds,ocean Ecosystem		$91.4
Mass Change	$35.5	
Earth System Explorers	$27.8	$27.8
Earth System Science Pathfinder	$235.6	$235.6
Earth Science Data Systems	$411.7	$411.7
Earth Science Technology	$105.3	$105.3
Applied Sciences	$87.3	$87.3
Planetary Science	**$3,383.2**	**$3,441.3**
Planetary Science Research	$307.4	$365.5
Planetary Science Research and Analysis	*$224.6*	*$224.6*
Other Missions and Data Analysis	*$82.8*	*$140.9*
High End Computing Capability		$58.1
Planetary Defense	$250.7	$250.7
Lunar Discovery and Exploration	$458.5	$458.5
VIPER	*$61.3*	
Volatiles Investiga Polar Explortn Rover	$61.3	
Other Missions and Data Analysis	*$397.2*	*$458.5*
Volatiles Investiga Polar Explortn Rover		$61.3
Mars Sample Return	$949.3	$949.3
Discovery	$247.5	$247.5
DAVINCI	*$55.8*	
Deep Atmospheric Venus Investigation of	$55.8	
VERITAS	*$1.5*	
Venus Emissivity, Radio Science, InSAR,	$1.5	
Psyche	*$57.7*	
Psyche	$57.7	
Other Missions and Data Analysis	*$132.5*	*$247.5*
Deep Atmospheric Venus Investigation of		$55.8
Psyche		$1.5
Venus Emissivity, Radio Science, InSAR,		$57.7
New Frontiers	$407.5	$407.5
Mars Exploration	$268.6	$268.6
Outer Planets and Ocean Worlds	$318.4	$318.4
Jupiter Europa	*$303.3*	
Europa Clipper	$303.3	
Other Missions and Data Analysis	*$15.1*	*$318.4*
Europa Clipper	$0.0	$303.3
Radioisotope Power	$175.5	$175.5

COMPARABILITY ADJUSTMENT TABLES

National Aeronautics and Space Administration FY2024 Budget Structure Crosswalk to FY 2026 Budget Structure

The amounts reflect the budget authority levels requested in 2024 President's Budget (not the enacted levels) and are presented for illustrative purposes only.

Budget Authority ($ in millions)	FY 2024 Structure	FY 2026 Structure
Astrophysics	**$1,557.4**	**$1,557.4**
Astrophysics Research	$289.9	$289.9
Cosmic Origins	$342.5	$342.5
Physics of the Cosmos	$202.0	$202.0
Exoplanet Exploration	$463.7	$463.7
Nancy Grace Roman Space Telescope	*$407.3*	
Nancy Grace Roman Space Telescope	$407.3	
Other Missions and Data Analysis	*$56.4*	*$463.7*
Nancy Grace Roman Space Telescope		$407.3
Astrophysics Explorer	$259.3	$259.3
SPHEREx	*$70.1*	
Spectro-Photometer for the History of th	$70.1	
Compton Spectrometer and Imager (COSI)	*$15.0*	
Compton Spectrometer and Imager	$15.0	
Other Missions and Data Analysis	*$174.2*	*$259.3*
Spectro-Photometer for the History of th		$70.1
Compton Spectrometer and Imager		$15.0
Heliophysics	**$750.9**	**$750.9**
Heliophysics Research	$231.3	$229.1
Heliophysics Research and Analysis	*$54.9*	*$54.9*
Sounding Rockets	*$68.1*	*$68.1*
Research Range	*$26.9*	*$26.9*
Other Missions and Data Analysis	*$81.3*	*$79.1*
SOHO	$2.2	
Living with a Star	$100.0	$100.0
Solar Terrestrial Probes	$194.0	$189.1
Interstellar Mapping and Acceleration Probe (IMAP)	*$139.8*	*$139.8*
Other Missions and Data Analysis	*$54.2*	*$49.3*
Solar Terrestrial Relations Observatory (STEREO)	$4.9	
Heliophysics Explorer Program	$190.7	$190.7
HelioSwarm	*$9.5*	
HelioSwarm	$9.5	
Multi-Slit Solar Explorer	*$47.4*	*$47.4*
Other Missions and Data Analysis	*$133.8*	*$143.2*
HelioSwarm		$9.5
Heliophysics Technology	$8.4	$8.4
Space Weather	$26.6	$33.6
Space Weather	*$26.6*	*$33.6*
SOHO		$2.2
Solar Terrestrial Relations Observatory (STEREO)		$4.9
Biological and Physical Sciences	**$96.5**	**$96.5**

COMPARABILITY ADJUSTMENT TABLES

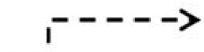
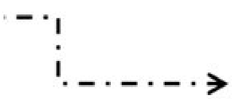
National Aeronautics and Space Administration FY2024 Budget Structure Crosswalk to FY 2026 Budget Structure

The amounts reflect the budget authority levels requested in 2024 President's Budget (not the enacted levels) and are presented for illustrative purposes only.

Budget Authority ($ in millions)	FY 2024 Structure	FY 2026 Structure
Aeronautics	**$995.8**	**$995.8**
Airspace Operations and Safety Program	$158.7	$158.7
Airspace Operations and Safety Program	*$158.7*	*$158.7*
Air Traffic Management-eXploration	$72.0	
System-Wide Safety	$36.5	
ATM-X & Safety Technologies		$108.6
Adv Cap for Emergency Response Ops	$7.7	
Advanced Air Mobility	$42.4	
Air Mobility Pathfinder Technologies	$0.0	$50.2
Advanced Air Vehicles Program	$295.2	$295.2
Advanced Air Vehicles Program	*$295.2*	*$295.2*
Hypersonic Technology Project	$45.2	
Hybrid Thermally Efficient Core	$38.9	
Hi-rate Composite Aircraft Manufacturing	$33.5	$33.5
Advanced Air Transport Technology (Now Subsonic Vehicle Technologies & Tools)	$105.5	$184.0
Revolutionary Vertical Lift Technology	$39.6	
Commercial Supersonic Technology	$32.5	
High Speed Flight	$0.0	$77.6
Integrated Aviation Systems Program	$264.9	$264.9
Transformative Aero Concepts Program	$160.0	$160.0
Aerosciences Eval. & Test Capab. Program	$117.0	$117.0
STEM Engagement	**$157.8**	**$157.8**
Safety, Security, and Mission Services	**$3,369.4**	**$3,369.4**
Mission Services & Capabilities	**$2,259.3**	**$2,259.3**
Information Technology (IT)	$681.8	$681.8
Mission Enabling Services	$802.4	$802.4
Mission Enabling Services	*$802.4*	*$802.4*
Diversity & Equal Opportunity-Enterprise (Changed to Office of Equal Opportunity-Enterprise)	$22.4	
Infrastructure & Technical Capabilities	$775.1	$775.1
Infrastructure & Technical Capabilities	*$775.1*	*$775.1*
Environments Testing - External Radiatio	$1.3	
Facility Services	$521.7	$578.1
Environments Testing - Space Environment	$5.7	
Environments Testing - Flight Simulation	$10.2	
Environment Testing - High Enthalpy Test	$9.1	
Environments Testing Maintenance Project	$30.2	
Engineering, Safety, & Operations	**$1,110.1**	**$1,110.1**
Agency Technical Authority	$200.1	$200.1
Agency Technical Authority	*$200.1*	*$200.1*
Safety and Mission Assurance	$53.8	$94.0
Chief Engineer	$18.9	$85.3
Technical Authority (TA) Project	$4.2	
IV&V Program	$40.2	
NASA Eng Safety Ctr Project	$62.2	
Center Engineering, Safety, & Operations	$910.0	$910.0
Construction & Envrmtl Compl Restoration	**$453.7**	**$453.7**
Environmental Compliance and Restoration	**$77.8**	**$77.8**
Inspector General	**$50.2**	**$50.2**
NASA TOTAL	**$27,185.0**	**$27,185.0**

COMPARABILITY ADJUSTMENT TABLES

KEY-

	Main Line to identify movement amongst Program/PRA/Project
	Used to identify between intersecting lines
	Used to identify between intersecting lines
	Used to identify between intersecting lines
	Used to identify between intersecting lines
	Used to identify between intersecting lines

RE-BASELINED PROJECTS

FY 2026 Congressional Justification

Original Agency Baseline Commitments vs. Re-baseline Life Cycle Calculation Section

As part of the NASA Corrective Action Plan related to the Government Accountability Office High Risk List, re-baselined projects are reported periodically to Congress, GAO, and OMB. For projects that have been re-baselined due to performance (vice scope change), and for transparency purposes, NASA includes original cost and schedule Agency Baseline Commitments (ABCs) in quarterly, semi-annual, and annual external cost and schedule reports alongside the current re-baselined life-cycle costs.

Low Boom Flight Demonstration	Date	Prior	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	BTC	Total
Original Life Cycle Cost	2018	565	14	4	-	-	-					582
Rebaselined Life Cycle Cost	2023	624	51	43	-	44	6	-				839

NISAR	Date	Prior	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	BTC	Total
Original Life Cycle Cost	2016	798	25	21	-	-	-	-			7	867
Rebaselined Life Cycle Cost	2022	886	80	93	-	21	12	0	-	-		1,118

Orion	Date	Prior	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	BTC	Total
Original Life Cycle Cost	2015	11,162	121	-	-	-	-	-	-	-		11,283
Rebaselined Life Cycle Cost	2021	13,160	404	156	-	-	-	-	-	-		13,811

Solar Electric Propulsion (SEP)	Date	Prior	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	BTC	Total
Original Life Cycle Cost	2019	321	9	6	-	-	-	-	-	-		336
Rebaselined Life Cycle Cost	2021	308	21	22	-	11	-	-	-	-		382

Dollars in Millions
BTC: Budget To Complete

COST AND SCHEDULE PERFORMANCE SUMMARY

2025 Major Program Annual Report Summary

The 2025 Major Program Annual Report (MPAR) is provided to meet the requirements of Section 103 of the NASA Authorization Act of 2005 (P.L. 109-155). The 2025 MPAR consists of this summary and FY 2026 Congressional Justification pages designated as "Projects in Development" for the projects outlined below. These project pages constitute each project's annual report or, if this is the first year for which it is reporting, the baseline report. The MPAR summary also includes the confidence level of achieving the commitments, as requested in the Conference Report accompanying the FY 2010 Consolidated Appropriations Act (P.L. 111-117).

Changes in MPAR Composition since the FY 2025 NASA Budget Estimates

There are six new projects with an estimated lifecycle cost greater than $250 million, which received authority to proceed into the development phase since NASA submitted its 2024 MPAR in the FY 2025 NASA Congressional Justification. They are Compton Spectroscopy and Imager (COSI), Dragonfly, Electrified Powertrain Flight Demonstration (EPFD), Gravity Recovery and Climate Experiment Continuity (GRACE-C), Mobile Launcher (ML-2), and Mult-slit Solar Explorer (MUSE).

There is one project, Sentinel-6, that completed development reporting as the first spacecraft (S6-MF) successfully launched in November 2020 and the second spacecraft (S6-B) is fully assembled and in storage at Airbus for launch in November 2025.

The five projects below are no longer reporting because of launches or cancelations.

1. The Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) project successfully launched on February 8, 2024.
2. The Europa Clipper project successfully launched on October 14, 2024.
3. The SPHEREx project successfully launched on March 11, 2025.
4. On-orbit Servicing, Assembly, and Manufacturing-1 (OSAM-1) has been cancelled and Congress was notified on September 4, 2024, that an orderly closeout is underway.
5. Volatiles Investigating Polar Exploration Rover (VIPER) received concurrence from Congress that the project has been cancelled, and the project is working an orderly shutdown and storage of the VIPER rover and systems with the potential for a commercial partnership in the future.

Changes to Cost and Schedule Estimates since the 2024 MPAR

There are four projects with development cost increases/decreases and/or schedule changes since last year's MPAR. (Note: percent changes in this section are measured against last year's MPAR, not from the project Baseline which is shown in Table 1)

1. Low Boom Flight Demo (LBFD) development costs increased eight percent with an 11-month delay to first flight.
2. NEO-Surveyor development costs decreased almost two percent with no change to the Launch Readiness Date (LRD).
3. NASA-ISRO Synthetic Aperture Radar (NISAR) development costs increased six percent with an eight-month delay to the launch date.
4. Orion development costs increased seven percent with a seven-month delay to the Artemis II LRD date.

5. Space Launch System (SLS)-Block 1B development costs increased six percent with no change to the Design Certification Review milestone date.

There are five projects with no changes to their development cost or schedule estimates over the last year including: Gateway Initial Capability, Human Landing System Initial Capability (HLS-IC), Interstellar Mapping and Acceleration Probe (IMAP), Nancy Grace Roman telescope, and Solar Electric Propulsion (SEP).

MPAR Summary Table

Table 1 provides cost, schedule, and confidence level information for NASA projects currently in development with lifecycle cost estimates of $250 million or more. A number of these projects are proposed for cancellation in the FY 2026 President's Budget Request; the cost and schedule estimates provided for those projects are denoted with an asterisk and different coloration. Additionally, the cost and schedule estimates for projects continuing will continue to be refined. This data was current as of April 15, 2025.

The Base Year column is the calendar year when project was confirmed at KDP-C, or the year of any subsequent rebaseline. NASA records the project's estimated development cost and a key schedule milestone (i.e., baseline or base year) and then tracks changes from that point forward. NASA tracks one of several key milestones, listed below, for reporting purposes:

- Approved delivery and inspection (DD250);
- Initial Operating Capability (IOC);
- Full Operational Capability (FOC);
- Launch Readiness Date (LRD);
- Launch Readiness for Artemis II;
- Design Certification Review (DCR); or
- Lunar Orbit Checkout Review (LOCR).

As a note for clarification, LRD schedule milestones, as reported here, are not typically the launch dates on the NASA launch manifest but are the desired launch dates as determined by the payload mission and approved by the NASA Flight Planning Board (FPB). A launch manifest is a dynamic schedule that is affected by real world operational activities conducted by NASA and multiple other entities. It reflects the results of a complex process that requires the coordination and cooperation by multiple users for the use of launch range and launch contractor assets. The launch dates shown on the NASA FPB launch manifest are a mixture of confirmed range dates for missions launching within approximately six months and contractual/planning dates for the missions beyond six months from launch. The NASA FPB launch manifest date is typically earlier than the reported schedule dates reported here, thereby allowing for the operationally driven fluctuations to the launch schedule that may be outside of the project's control. The NASA FPB launch manifest is updated on a periodic basis throughout the year.

Additional information on the projects shown in the table below can be found in their individual program and project pages.

COST AND SCHEDULE PERFORMANCE SUMMARY

Table 1: MPAR Summary and Confidence Levels

Project	Base Year [1]	JCL (%)	Development Cost Estimate ($M)		Cost Change[3] (%)	Key Milestone Event	Key Milestone Date		Schedule Change (months)
			Baseline	Current Estimate[2]			Baseline	Current Estimate	
COSI*	2024	60	224.0	224.0	0.0%	LRD	Nov 2027	Nov 2027	0
Dragonfly	2024	70	1,963.5	1,963.5	0.0%	LRD	Jul 2028	Jul 2028	0
EPFD*	2024	80	237.3	237.3	0.0%	First Flight	May 2028	May 2028	0
Gateway IC*	2023	70	3,561.8	3,561.9	0.0%	LRD	Dec 2027	Dec 2027	0
GRACE-C	2024	70	441.7	441.7	0.0%	LRD	Jul 2029	Jul 2029	0
HLS IC	2023	70	2,339.0	2,339.0	0.0%	LOCR	Feb 2028	Feb 2028	0
IMAP	2021	70	589.5	589.5	0.0%	LRD	Dec 2025	Dec 2025	0
LBFD	2023 (2018)	N/A [4]	709.2	768.9	8.4%	First Flight	Oct 2024	Sep 2025	11
ML-2*	2024	70	1,873.1	1,873.1	0.0%	DD250	Sep 2027	Sep 2027	0
MUSE	2024	70	296.9	296.9	0.0%	LRD	Nov 2027	Nov 2027	0
NEO Surveyor	2022	86	1,228.6	1,209.3	-1.6%	LRD	Jun 2028	Jun 2028	0
NISAR	2022 (2016)	70	921.1	962.0	4.4%	LRD	Oct 2024	Jun 2025	8
Orion	2021 (2015)	70	9,301.2	9,985.4	7.4%	Artemis II LRD	May 2024	Apr 2026	23
Roman	2020	78	2,898.1	3,269.0	12.8%	LRD	Oct 2026	May 2027	7
SEP[5]	2021 (2019)	70	203.2	223.2	9.8%	Electric Propulsion Thruster Life Qual Test	Oct 2028	Jan 2029	3
SLS Block 1B*	2023	70	3,675.3	3,904.7	6.2%	DCR	Jan 2028	Jan 2028	0

** These projects are proposed for cancellation in the FY 2026 budget.*

1 Original year of KDP-C approval shown in parenthesis

2 Most current project Development cost estimate

3 Percent change is from Baseline or Rebaseline

4 An updated JCL was not conducted for the rebaseline due to the level-of-effort & nature of remaining work

5 Electric Propulsion Thruster Life Qual Test: The test demonstrates continuous long-term operation of the system sufficient to characterize and predict the capability and lifetime of the system.

Initial Operating Capability (IOC) Launch Readiness Date (LRD) Lunar Orbit Checkout Review (LOCR)

FY 2026 PROPOSED APPROPRIATIONS LANGUAGE

SCIENCE

For necessary expenses, not otherwise provided for, in the conduct and support of science research and development activities, including research, development, operations, support, and services; maintenance and repair, facility planning and design; space flight, spacecraft control, and communications activities; program management; personnel and related costs, including uniforms or allowances therefor, as authorized by sections 5901 and 5902 of title 5, United States Code; travel expenses; purchase and hire of passenger motor vehicles; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $3,907,600,000, to remain available until September 30, 2027.

AERONAUTICS

For necessary expenses, not otherwise provided for, in the conduct and support of aeronautics research and development activities, including research, development, operations, support, and services; maintenance and repair, facility planning and design; space flight, spacecraft control, and communications activities; program management; personnel and related costs, including uniforms or allowances therefor, as authorized by sections 5901 and 5902 of title 5, United States Code; travel expenses; purchase and hire of passenger motor vehicles; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $588,700,000, to remain available until September 30, 2027.

SPACE TECHNOLOGY

For necessary expenses, not otherwise provided for, in the conduct and support of space technology research and development activities, including research, development, operations, support, and services; maintenance and repair, facility planning and design; space flight, spacecraft control, and communications activities; program management; personnel and related costs, including uniforms or allowances therefor, as authorized by sections 5901 and 5902 of title 5, United States Code; travel expenses; purchase and hire of passenger motor vehicles; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $568,900,000, to remain available until September 30, 2027.

EXPLORATION

For necessary expenses, not otherwise provided for, in the conduct and support of exploration research and development activities, including research, development, operations, support, and services; maintenance and repair, facility planning and design; space flight, spacecraft control, and communications activities; program management; personnel and related costs, including uniforms or allowances therefor, as authorized by sections 5901 and 5902 of title 5, United States Code; travel expenses; purchase and hire of passenger motor vehicles; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $8,312,900,000, to remain available until September 30, 2027.

FY 2026 PROPOSED APPROPRIATIONS LANGUAGE

SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS ENGAGEMENT

Unobligated balances previously appropriated under this heading shall be available for necessary expenses to carry out the closure of the Office of STEM Engagement.

SAFETY, SECURITY, AND MISSION SERVICES

For necessary expenses, not otherwise provided for, in the conduct and support of science, aeronautics, space technology, exploration, space operations and education research and development activities, including research, development, operations, support, and services; maintenance and repair, facility planning and design; space flight, spacecraft control, and communications activities; program management; personnel and related costs, including uniforms or allowances therefor, as authorized by sections 5901 and 5902 of title 5, United States Code; travel expenses; purchase and hire of passenger motor vehicles; not to exceed $63,000 for official reception and representation expenses; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $2,118,300,000, to remain available until September 30, 2027.

CONSTRUCTION AND ENVIRONMENTAL COMPLIANCE AND RESTORATION

For necessary expenses for construction of facilities including repair, rehabilitation, revitalization, and modification of facilities, construction of new facilities and additions to existing facilities, facility planning and design, and restoration, and acquisition or condemnation of real property, as authorized by law, and environmental compliance and restoration, $140,100,000, to remain available until September 30, 2031: Provided, That proceeds from leases deposited into this account shall be available for a period of 5 years to the extent and in amounts as provided in annual appropriations Acts: Provided further, That such proceeds referred to in the preceding proviso shall be available for obligation for fiscal year 2026 in an amount not to exceed $33,000,000: Provided further, That each annual budget request shall include an annual estimate of gross receipts and collections and proposed use of all funds collected pursuant to section 20145 of title 51, United States Code.

SPACE OPERATIONS

For necessary expenses, not otherwise provided for, in the conduct and support of space operations research and development activities, including research, development, operations, support and services; space flight, spacecraft control, and communications activities, including operations, production, and services; maintenance and repair, facility planning and design; program management; personnel and related costs, including uniforms or allowances therefor, as authorized by sections 5901 and 5902 of title 5, United States Code; travel expenses; purchase and hire of passenger motor vehicles; and purchase, lease, charter, maintenance, and operation of mission and administrative aircraft, $3,131,900,000, to remain available until September 30, 2027.

FY 2026 PROPOSED APPROPRIATIONS LANGUAGE

OFFICE OF INSPECTOR GENERAL

For necessary expenses of the Office of Inspector General in carrying out the Inspector General Act of 1978, $40,700,000, of which $2,500,000 shall remain available until September 30, 2027.

ADMINISTRATIVE PROVISIONS

(INCLUDING TRANSFERS OF FUNDS)

Funds for any announced prize otherwise authorized shall remain available, without fiscal year limitation, until a prize is claimed or the offer is withdrawn.

Not to exceed 10 percent of any appropriation made available for the current fiscal year for the National Aeronautics and Space Administration in this Act may be transferred between such appropriations, but no such appropriation, except as otherwise specifically provided, shall be increased by more than 20 percent by any such transfers. Any funds transferred to "Construction and Environmental Compliance and Restoration" for construction activities shall not increase that account by more than 20 percent. Balances so transferred shall be merged with and available for the same purposes and the same time period as the appropriations to which transferred. Any transfer pursuant to this provision shall be treated as a reprogramming of funds under section 504 of this Act and shall not be available for obligation except in compliance with the procedures set forth in that section.

Not to exceed 5 percent of any appropriation provided for the National Aeronautics and Space Administration under previous appropriations Acts that remains available for obligation or expenditure in fiscal year 2026 may be transferred between such appropriations, but no such appropriation, except as otherwise specifically provided, shall be increased by more than 10 percent by any such transfers. Any transfer pursuant to this provision shall retain its original availability and shall be treated as a reprogramming of funds under section 504 of this Act and shall not be available for obligation except in compliance with the procedures set forth in that section.

The spending plan required by this Act shall be provided by the National Aeronautics and Space Administration at the theme, program, project, and activity level. The spending plan, as well as any subsequent change of an amount established in that spending plan that meets the notification requirements of section 504 of this Act, shall be treated as a reprogramming under section 504 of this Act and shall not be available for obligation or expenditure except in compliance with the procedures set forth in that section.

Amounts made available in the current-year Construction and Environmental Compliance and Restoration (CECR) appropriation may be applied to CECR projects funded under previous years' CECR appropriations. Use of current-year funds under this provision shall be treated as a reprogramming of funds under section 504 of this Act and shall not be available for obligation except in compliance with the procedures set forth in that section.

Not to exceed $32,600,000 made available to the National Aeronautics and Space Administration for the current fiscal year in this Act may be transferred to the Working Capital

Fund of the National Aeronautics and Space Administration. Balances so transferred shall be available until expended only for activities described in section 30102(b)(3) of title 51, United States Code, as amended by this Act, and shall remain available until expended. Any transfer pursuant to this provision shall be treated as a reprogramming of funds under section 504 of this Act and shall not be available for obligation except in compliance with the procedures set forth in that section.

There is hereby established in the Treasury of the United States a fund to be known as the "National Aeronautics and Space Administration Nonrecurring Expenses Fund" (the Fund). Unobligated balances of expired discretionary funds appropriated for this or any succeeding fiscal year from the General Fund of the Treasury to the National Aeronautics and Space Administration (NASA) by this or any other Act may be transferred (not later than the end of the fifth fiscal year after the last fiscal year for which such funds are available for the purposes for which appropriated) into the Fund. Amounts deposited in the Fund shall be available until expended, and in addition to such other funds as may be available for such purposes, for facilities infrastructure improvements, including nonrecurring maintenance, necessary for the operation of NASA, subject to approval by the Office of Management and Budget. Amounts in the Fund shall not be available for the purpose described in subsection (b)(3) of section 30102 of title 51, United States Code. Amounts in the Fund may be obligated only after the Committees on Appropriations of the House of Representatives and the Senate are notified at least 15 days in advance of the planned use of funds.

ACRONYMS AND ABBREVIATIONS

AACES	Advanced Aircraft Concepts for Environmental Sustainability
AAM	Advanced Air Mobility
AAMP	Advanced Air Mobility Pathfinders
AAO	Agency Applications Office
AAVP	Advanced Air Vehicles Program
AC	Alternating Current
ACE	Advanced Composition Explorer
ACIPP	Agency Capital Investment Program Plan
ACO	Announcements of Collaborative Opportunity
ACS3	Advanced Composite Solar Sail System
ACSI	American Customer Satisfaction Index
ADAP	Astrophysics Data Analysis Program
ADCAR	Astrophysics Data Curation and Archival Research
AES	Advanced Exploration Systems
AETC	Aerosciences Evaluation and Test Capabilities
AFRC	Armstrong Flight Research Center
AFRL	Air Force Research Laboratory
AI	Artificial Intelligence
AIM	Aeronomy of Ice in Mesophere
AMMOS	Advanced Multi-Mission Operation System
AMP	Agency Master Plan
AMR	Advanced Microwave Radiometer
AO	Announcement of Opportunity
AOGA	Advanced Oxygen Generation Assembly
AOS	Atmosphere Observing System
AOSP	Airspace Operations and Safety Program
APL	Applied Physics Laboratory
APRA	Astrophysics Research and Analysis
ARC	Ames Research Center
ARMD	Aeronautics Research Mission Directorate
ASI	Italian Space Agency
ASMPO	Astrophysics Strategic Mission Program Office
ATA	Agency Technical Authority
ATD	Advanced Technology Development
ATI	Advanced Technology Initiatives
ATLAS	Asteroid Terrestrial-impact Last Alert System
ATMS	Air Traffic Management and Safety
AU	Astronomical Units
AWE	Atmospheric Wave Experiment
BAA	Broad Agency Announcement
BPS	Biological and Physical Sciences

ACRONYMS AND ABBREVIATIONS

BWG	Beam Waveguide
CADRE	Cooperative Autonomous Distributed Robotic Exploration
CALIPSO	Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations
CAPSTONE	Cislunar Autonomous Positioning System Technology Operations and Navigation Experiment
CAS	Convergent Aeronautics Solutions
CASE	Contributions to Ariel Spectroscopy of Exoplanets
CCMC	Community Coordinated Modeling Center
CCP	Commercial Crew Program
CCRPP	Civilian Commercialization Readiness Pilot Program
CCSC	Collaborations for Commercial Space Capabilities
CDCS	Core Data and Computing Services
CDFF	Commercial Destinations Free Flyers
CDISS	Commercial Destinations for ISS
CDR	Critical Design Review
CDRILS	Carbon Dioxide Removal by Ionic Liquids
CDSCC	Canberra Deep Space Communication Complex
CECR	Construction and Environmental Compliance and Restoration
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERISS	Commercially Enabled Rapid Space Science
CESO	Center Engineering, Safety, and Operations
CFM	Cryogenic Fluid Management
CFR	Code of Federal Regulations
CFT	Crew Flight Test
CGE	Concur Government Edition
CHS	Crew Health and Safety
CIF	Center Innovation Fund
CIGIE	Council of the Inspectors General on Integrity and Efficiency
CLARREO	Climate Absolute Radiance and Refractivity Observatory
CLD	Commercial LEO Destination
CLPS	Commercial Lunar Payload Services
CM	Crew Module
CMA	Crew Module Adapter
CMPS	Commercial Mars Payload Services
CNEOS	Center for Near-Earth Object Studies
CoF	Construction of Facilities
COMSEC	Communications Security
COSMIC	Consortium for Space Mobility and ISAM Capabilities
COTS	Commercial Orbital Transportation Services
CPF	Climate Absolute Radiance and Refractivity Observatory Pathfinder
CPNT	Communication, Position, Navigation & timing
CRS	Commercial Resupply Services

ACRONYMS AND ABBREVIATIONS

CSA	Canadian Space Agency
CSESP	Citizen Science for Earth Systems Program
CSP	Communications Services Program
CSSP	Committee for Solar and Space Physics
CST	Commercial Supersonic Technology
CYGNSS	Cyclone Global Navigation Satellite System
DAAC	Distributed Active Archive Center
DAEP	DSN Aperture Enhancement Project
DAEP	Deep Space Network Aperture Enhancement Program
DALI	Development and Advancement of Lunar Instrumentation
DARPA	Defense Advanced Research Projects Agency
DC	Direct Current
DCIS	Defense Criminal Investigative Service
DDAP	Discovery Data Analysis Program
DDT&E	Design, Development, Test, and Evaluation
DHS	Department of Homeland Security
DIMPLE	Dating an Irregular Mare Patch with a Lunar Explorer
DLR	German Aerospace Center
DM	Deferred Maintenance
DoD	Department of Defense
DoE	Department of Energy
DOI	Department of Interior
DOJ	Department of Justice
DORIS	Doppler Orbitography Radio-positioning Integrated by Satellite
DRACO	Demonstration Rocket for Agile Cislunar Operations
DS	Deceleration Systems
DSE	Data System Evolution
DSI	Data Science Innovation
DSN	Deep Space Network
DSOC	Deep Space Optical Communications
DSRC	DoD Supercomputing Resource Center
DTN	Delay Tolerant Networking
EAST2	Enterprise Applications Service Technologies Contract
ECC	ERP Center Component
ECF	Early Career Faculty
ECI	Early Career Initiative
ECLS	Environmental Control & Life Systems
ECLSS	Environmental Control and Life Support System
ECOSTRESS	Ecosystem Spaceborne Thermal Radiometer Experiment on Space Station
ECR	Environmental Compliance and Restoration
EDL	Entry, Descent, and Landing

ACRONYMS AND ABBREVIATIONS

EEO	Equal Employment Opportunity
EGS	Exploration Ground Systems
EHP	EVA and Human Surface Mobility Program
EHRI	Enterprise HR Integration
EIO	Earth Independent Operations
EIS	Enterprise Infrastructure Solutions Contract
EM&I	Entry Modeling & Instrumentation
EMIT	Earth Surface Mineral Dust Source Investigation
ENABLE	Foundational Capabilities
EO	Equal Opportunity
eOPF	electronic Official Personnel Folder
EOS	Earth Observation Systems
EOSDIS	Earth Observing System Data and Information System
EPA	Environmental Protection Agency
EPFD	Electrified Powertrain Flight Demonstration
EPSCoR	Established Program to Stimulate Competitive Research
ERB	Earth Radiation Budget
ERDC	Earth Radiation Data Continuity
ERP	Enterprise Resource Planning
ESA	European Space Agency
ESCAPADE	Escape and Plasma Acceleration and Dynamics Explorers
ESDIS	Earth Science Data and Information System
ESDMD	Exploration Systems Development Mission Directorate
ESDS	Earth Science Data Systems
ESE	Earth System Explorers
ESI	Early Stage Innovations
ESIP	Early Stage Innovation and Partnerships
ESM	European Service Module
ESM	Entry Systems Modeling
ESM	Earth Systematic Missions
ESO	Engineering, Safety, and Operations
ESSP	Earth System Science Pathfinder
ESTP	Earth Science Technology Program
ETS2	Electronic Government Travel System 2
EUL	Enhanced Use Leasing
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
EUS	Exploration Upper Stage
EUV	Extreme Ultraviolet
EUVST	Extreme Ultraviolet High-Throughput Spectroscopic Telescope
EVA	Extravehicular Activity
EVS	Earth Venture Suborbital

ACRONYMS AND ABBREVIATIONS

EXPAND	In-Space Infrastructure and Discovery
EZIE	Electrojet Zeeman Imaging Explorer
FAA	Federal Aviation Administration
FDC	Flight Demonstrations and Capabilities
FDMS	Federal Docket Management System
FFATA	Federal Funding Accountability and Transparency Act
FGDC	Federal Geographic Data Committee
FINESST	Future Investigators in NASA Earth and Space Science and Technology
FM	Financial Management
FM2	Flammability of Materials on the Moon
FOIA	Freedom of Information Act
FORTE	Frontlines Of Rapidly Transforming Ecosystems
FP&D	Facility Planning and Design
FPKI	Federal Public Key Infrastructure
FRR	Flight Readiness Review
FSS	Farside Seismic Suite
FTE	Full-Time Equivalent
G&NS	Guidance & Navigation Systems
GDC	Geospace Dynamics Constellation
GDSCC	Goldstone Deep Space Communications Complex
GEDI	Global Ecosystem Dynamics Investigation
GEO	Geosynchronous Equatorial Orbit
GISS	Goddard Institute for Space Studies
GLIDE	Global Lyman-alpha Imager of the Dynamic Exosphere
GNSS	Global Navigation Satellite System
GO	Space Transportation
GOLD	Global-scale Observations of the Limb and Disk
GPM	Global Precipitation Measurement
GRACE-C	Gravity Recovery and Climate Experiment-Continuity
GRAM	Global Reference Atmospheric Model
GRC	Glenn Research Center
GRPAMA	Government Performance and Results Modernization Act of 2010
GSA	Government Services Administration
GSFC	Goddard Space Flight Center
GWAC	Government-Wide Acquisition Contract
HAMAQ	Hemispheric Airborne Measurements of Air Quality
HDL	Human-class Cargo Delivery Lander
HECC	High-End Computing Capability
HEDDL	Highly Efficient watt-class Direct Diode LiDAR
HEPA	High Efficiency Particulate Air
HERA	Human Exploration Requirements and Architecture

ACRONYMS AND ABBREVIATIONS

HERMES	Heliophysics Environmental and Radiation Measurement Experiment Suite
HESTO	HEliophysics Strategic Technology Office
HFOS	Heliophysics Flight Opportunities Studies
HICAM	Hi-Rate Composite Manufacturing
HLS	Human Landing System
HMTA	Human Medical Technical Authority
HPSC	High Performance Spaceflight Computing
HQ	Headquarters
HR	Human Resources
HRP	Human Research Program
HSF	High Speed Flight
HSFO	Human Space Flight Operations
HSM	Human Surface Mobility
HST	Hubble Space Telescope
HT	Hypersonic Technology
Hubble	Hubble Space Telescope
HUD	Housing and Urban Development
HWO	Habitable Worlds Observatory
HyTEC	Hybrid Thermally Efficient Core
I&T	Integration and Test
I&TC	Infrastructure and Technical Capabilities
I3P	Information Technology Infrastructure Integration Program
IA	Independent Assessment
IAE	Integrated Award Environment
I-ALiRT	IMAP Active Link for Real-Time
IASP	Integrated Aviation Systems Program
IBC	Interior's Business Center
IBEX	Interstellar Boundary Explorer
ICESat	Ice, Cloud, and Land Elevation Satellite
ICON	Ionospheric Connection Explorer
IESM	Integrated Earth System Modeling
iESO	Integrated Earth System Observatory
IG	Inspector General
IMAP	Interstellar Mapping and Acceleration Probe
IMC	International Mission Contributions
IMPACT	Interagency Implementation and Advanced Concepts Team
INSPYRE	INjected Smoke and PYRocumulonimbus Experiment
IRAD	Independent Research and Development
IRIS	Interface Region Imaging Spectrograph
IRT	Independent Review Team
IRTF	Infrared Telescope Facility

ACRONYMS AND ABBREVIATIONS

ISAM	In-space Servicing, Assembly, and Manufacturing
ISD	Interstellar Dust
ISDC	Interagency Suspension and Debarment Committee
ISON	Interagency Satellite Observation Needs
ISRO	Indian Space Research Organization
ISRU	In-Situ Resource Utilization
ISS	International Space Station
IT	Information Technology
IV&V	Independent Verification and Validation
IXPE	Imaging X-ray Polarimetry Explorer
JAXA	Japanese Aerospace Exploration Agency
JCL	Joint Confidence Level
JEDI	Joint Effort for Data assimilation Integration
JEDI	Joint Extreme ultraviolet coronal Diagnostic Investigation
JPL	Jet Propulsion Laboratory
JPSS	Joint Polar Satellite System
JSC	Johnson Space Center
JUICE	JUpiter ICy Moons Explorer
KARI	Korea Aerospace Research Institute
KASA	Korea AeroSpace Administration
KDP	Key Decision Point
KGS	Kuiper Government Solutions
KPLO	Korea Pathfinder Lunar Orbiter
KSC	Kennedy Space Center
kW	Kilowatt
L1	Lagrange Point 1
L5	Lagrange Point 5
LACCE	Landslide Change Characterization Experiment
LACR	Lead Agency Coordination Request
LAND	Space to Surface Access
LARADO	Lightsheet Anomaly Resolution and Debris Observation
LaRC	Langley Research Center
LAS	Launch Abort System
LASP	Laboratory for Atmospheric and Space Physics
LASSO	Lunar Assay via Small Satellite Orbiter
LBFD	Low Boom Flight Demonstrator
LCC	Life Cycle Cost
LCS	Launch Communications Segment
LDEP	Lunar Discovery and Exploration Program
LEAF	Lunar Effects on Agricultural Flora
LEAP	Long Endurance Advanced Prototype

ACRONYMS AND ABBREVIATIONS

LEIA	Lunar Explorer Instrument for space biology Applications
LEO	low-Earth orbit
LIGO	Laser Interferometer Gravitational-wave Observatory
LISA	Laster Interferometer Space Antenna
LISM	Local Interstellar Medium
LITMS	Lunar Interior Temperature and Materials Suite
LIVE	Surface Infrastructure & Exploration
LMA	Liquid Oxygen and Methane Assessment
LOCR	Lunar Orbit Checkout Review
LRA	Laser Retroreflector Array
LRD	Launch Readiness Date
LRI	Laser Ranging Interferometer
LRO	Lunar Reconnaissance Orbiter
LS&E	Landing Systems & Environments
LSIC	Lunar Surface Innovation Consortium
LSII	Lunar Surface Innovation Initiative
LSITP	Lunar Surface Instrument and Technology Payloads
LSP	Launch Services Program
LTV	Lunar Terrain Vehicle
LTVS	Lunar Terrain Vehicle Services
LUPEX	Lunar Polar Exploration Mission
LuSEE	Lunar Surface Electromagnetics Experiment
LWS	Living With a Star
M2M	Moon to Mars
MAGIC	Magneometers for Innovation and Capability
MAP	Modeling, Analysis, and Prediction
MAVEN	Mars Atmosphere and Volatile EvolutioNn
MCO	Mars Campaign Office
MDSCC	Madrid Deep Space Communications Complex
MEGANE	Mars-moon Exploration with GAmma rays and NEutrons
MES	Mission Enabling Services
MIDEX	Medium-Class Explorers
MLAI	Machine Learning and Artificial Intelligence
MMRTG	MultiMission Radioisotope Thermoelectric Generator
MMS	Magnetospheric Multiscale Mission
MMX	Martian Moons eXploration
MO	Missions of Opportunity
MOF	Mobile Operations Facility
MPC	Minor Planet Center
MPH	Multi-Purpose Habitat
MRO	Mars Reconnaissance Orbiter

ACRONYMS AND ABBREVIATIONS

MSaC	Mission Services and Capabilities
MSD	Mission Support Directorate
MSFC	Marshall Space Flight Center
MSL	Mars Science Laboratory
MUREP	University Research and Education Project
MUSE	Multi-slit Solar Explorer
MV	Medium Voltage
NAS	National Airspace System
NAVAIR	Naval Air Systems Command
NAVO	NASA Astronomical Virtual Observatories
NCAPS	NASA Consolidated Applications and Platform Services
NCCIPS	National Center for Critical Information Processing and Storage
NCRP	National Council on Radiation Protection and Measurements
NCST	Naval Center for Space Technology
NEAR	Near-Earth Asteroid Rendezvous
NEO	Near-Earth Object
NEOO	Near-Earth Object Observations
NEPA	National Environmental Policy Act
NESC	NASA Engineering and Safety Center
NExT	New Exploration of Tempel
NextSTEP	Next Space Technologies for Exploration Partnerships
NHPA	National Historic Preservation Act
NIAC	NASA Innovative Advanced Concepts
NICER	Neutron Star Interior Composition Explorer
NIH	National Institutes of Health
NIRCam	Near-Infrared Camera
NIRSpec	Near-Infrared Spectrograph
NISAR	NASA-ISRO Synthetic Aperture Radar
NIST	National Institute of Standards and Technology
NMO	NASA Office of Management and Oversight
NOAA	National Oceanic and Atmospheric Administration
NOMAD	Nadir and Occultation for MArs Discovery
NPLP	NASA Provided Lunar Payloads
NPR	NASA Procedural Requirement
NPS	National Park Service
NRA	NASA Research Announcements
NRHO	Near-Rectilinear Halo Orbit
NRO	National Reconnaissance Office
NSF	National Science Foundation
NSIDS	National Snow and Ice Data Center
NSN	Near Space Network

ACRONYMS AND ABBREVIATIONS

NSPIRES	NASA Solicitation and Proposal Integrated Review and Evaluation System
NSS	Neutron Spectrometer
NSSC	NASA Shared Services Center
NSTGRO	NASA Space Technology Graduate Research Opportunities
NuSTAR	Nuclear Spectroscopic Telescope Array
OA	Office of Audits
OBE	Optical Bench Electronics
OCE	Office of the Chief Engineer
OCFO	Office of the Chief Financial Officer
OCHCO	Office of the Chief Human Capital Officer
OCHMO	Office of the Chief Health and Medical Officer
OCI	Ocean Color Instrument
OCOMM	Office of Communications
OEO	Office of Equal Opportunity
OGC	Office of the General Counsel
OI	Office of Investigations
OIG	Office of Inspector General
OIIR	Office of International and Interagency Relations
OLIA	Office of Legislative and Intergovernmental Affairs
OM	Office of Management
OMB	Office of Management and Budget
OMPS	Ozone Mapping and Profiler Suite
ONERA	Office National d'Etudes et Recherches Aérospatiales
OP	Office of Procurement
OPM	Office of Personnel Management
OPOC	Orion Production and Operations Contract
OPS	Office of Protective Services
OPSEC	Operations Security
OSBP	Office of Small Business Programs
OSMA	Office of Safety and Mission Assurance
OSST	Ocean Salinity Science Team
OSTEM	Office of Science, Technology, Engineering, and Math
OSTST	Ocean Surface Topography Science Team
OVWST	Ocean Vector Wind Science Team
PACE	Plankton, Aerosol, Cloud, Ocean Ecosystem
PCC	Prizes, Challenges, and Crowdsourcing
PDCO	Planetary Defense Coordination Office
PDR	Preliminary Design Review
PDS	Planetary Data System
PEOMM	Planetary Origins and Evolution Multispectral Monochrometer
PESTO	Planetary Exploration Science Technology Office

ACRONYMS AND ABBREVIATIONS

PFAS	Polyfluoroalkyl Substances
PhysCOS	Physics of the Cosmos
PI	Principal Investigator
PME	Program Mission Execution
PMM	Precipitation Measuring Mission
PMPO	Planetary Missions Program Office
PNG	Pulse Neutron Generator
PolSIR	Polarized Submillimeter Ice-cloud Radiometer
PPBE	Planning, Programming, Budgeting, and Execution
PPE	Power and Propulsion Element
PPTM	Payload, Power, and Thermal Module
PR	Pressurized Rover
PREFIRE	Polar Radiant Energy in the Far Infrared Experiment
PRISM	Payloads and Research Investigations on the Surface of the Moon
PROSWIFT	Promoting Research and Observations of Space Weather to Improve the Forecasting of Tomorrow
PSI	Plume Surface Interaction
PSP	Parker Solar Probe
PSR	Pre-Ship Review
PSU	Provider for Services for UAM
PUEO	Payload for Ultrahigh Energy Observation
PUNCH	Polarimeter to Unify the Corona and Heliosphere
R&A	Research and Analysis
R&D	Research and Development
RAD	Radiation Assessment Detector
RAP	Robotics Alliance Project
RAR	Radar Antenna Reflector
RAVEN	Research Aircraft for eVTOL Enabling techNologies
RBI	Radiation Budget Instrument
RCRA	Resource Conservation and Recovery Act
RDAP	Rosetta Data Analysis Program
ROI	Return on Investment
ROSA	Rosalind Franklin Support and Augmentation
ROSES	Research Opportunities in Space and Earth Science
RPS	Radioisotope Power Systems
RPT	Rocket Propulsion Test
RSGS	Robotic Servicing of Geosynchronous Satellites
RSI	Responsive Science Initiatives
RTCA	Radio Technical Commission for Aeronautics
RTG	Radioisotope Thermoelectric Generator
RVLT	Revolutionary Vertical Lift Technology
S&B	Salaries & Benefits

ACRONYMS AND ABBREVIATIONS

S&MA	Safety and Mission Assurance
SA	Special Agents
SAIDA	Scientific Artificial Intelligence, Data & Analytics
SAM	Sample Analysis at Mars
SAO	Strategy and Architecture Office
SAR	Synthetic Aperture Radar
SATCOM	Commercially Provided Satellite Communications
SATERN	System for Administration, Training, and Educational Resources at NASA
SBG	Surface Biology and Geology
SBIR	Small Business Innovation Research
SCA	Sensor Chip Assemblies
SCALPSS	Stereo CAmeras for Lunar Plume-Surface Studies
SCE	Sensor Chip Electronics
SCIFLI	Scientifically Calibrated In-Flight Imagery
SDAC	Solar Data Center
SDE	Science Discovery Engine
SDL	Space Dynamics Laboratory
SDO	Solar Dynamics Observatory
SDR	System Definition Review
SDS	Survey Data System
SEP	Solar Electric Propulsion
SES	Senior Executive Service
SETMO	Space Environments Testing Management Office
SEWP	Solutions for Enterprise-Wide Procurement
SFCO	Space Flight Crew Operations
SFD	Sustainable Flight Demonstrator
SFS	Space and Flight Support
SGP	Space Geodesy Project
SIMPLEx	Small Innovative Missions for Planetary Exploration
SIR	System Integration Review
SIT	System Integration & Test
SL	Senior Level
SLI	Sustainable Land Imaging
SLS	Space Launch System
SMAP	Soil Moisture Active and Passive
SMD	Science Mission Directorate
SMOS	Soil Moisture and Ocean Salinity
SNWG	Satellite Needs Working Group
SOC	Solar Orbiter Collaboration
SOHO	Solar and Heliospheric Observatory
SOMA	Science Office for Mission Assessments

ACRONYMS AND ABBREVIATIONS

SOMD	Space Operations Mission Directorate
SOST	Subcommittee on Ocean Science and Technology
SPDA	Space Physics Data Archive
SPHEREx	Spectro-Photometer for the History of the Universe, Epoch of Reionization, and Ices Explorer
SPLICE	Safe and Precise Landing-Integrated Capabilities Evolution
SR&T	Supporting Research and Technology
SRB	Standing Review Board
SSC	Shared Service Center
SSC	Stennis Space Center
SSE	Surface Systems and Environments
SSL	Space Sciences Laboratory
SSMO	Space Science Mission Operations
SSMS	Safety, Security, and Mission Services
SSPICY	Small Spacecraft Propulsion and Inspection Capability
STEREO	Solar Terrestrial Relations Observatory
STMD	Space Technology Mission Directorate
STP	Solar Terrestrial Probes
STP	Space Test Program
STRG	Space Technology Research Grants
STRI	Space Technology Research Institutes
STROFIO	STart from a ROtating FIeld mass spectrOmeter
STScI	Space Telescope Science Institute
STTR	Small Business Technology Transfer
SunRISE	Sun Radio Interferometer Space Experiment
SVTT	Subsonic Vehicle Technologies and Tools
Swift	Neil Gehrels Swift Observatory
SWOT	Surface Water and Ocean Topography Mission
TACP	Transformative Aeronautics Concepts Program
TAMD	Technology Analysis and Mission Design
TBIRD	TerraByte InfraRed Delivery
TCPS	Trash Compaction Processing System
TDRS	Tracking and Data Relay Satellite
TEMPO	Tropospheric Emissions: Monitoring of Pollution
TESS	Transiting Exoplanet Survey Satellite
TGO	Trace Gas Orbiter
THEMIS	Time History of Events and Macroscale Interactions during Substorms
TIGERISS	Trans-Iron Galactic Recorder for the International Space Station
TIMED	Thermosphere Ionosphere Mesosphere Energetics and Dynamics
TIR	Thermal Infrared Radiometer
TRACERS	Tandem Reconnection and Cusp Electrodynamics Reconnaissance Satellites

ACRONYMS AND ABBREVIATIONS

TRL	Technology Readiness Level
TROPICS	Time-Resolved Observations of Precipitation structure and storm Intensity with a Constellation of Smallsats
TSCA	Toxic Substance Control Act
TTT	Transformational Tools and Technologies
UAM	Urban Air Mobility
UCF	University of Central Florida
UCLA	University of California, Los Angeles
UFE	Unallocated Future Expense
UI	University Innovation
UKSA	United Kingdom Space Agency
ULA	United Launch Alliance
ULI	University Leadership Initiative
ULTRASAT	Ultraviolet Transient Astronomy Satellite
USA	Universal Stage Adapter
USDV	United States Deorbit Vehicle
USGS	U.S. Geological Survey
USOS	U.S. Orbital Segment
USSF	United States Space Force
UVEX	UltraViolet EXplorer
UWMS	Universal Waste Management System
VAB	Vehicle Assembly Building
VIPER	Volatiles Investigating Polar Exploration Rover
VLEO	Very low-Earth orbit
VSWIR	Visible & Shortwave Infrared Spectrometer
VTOL	Vertical Take-Off and Landing
WCF	Working Capital Fund
Webb	James Webb Space Telescope
WFF	Wallops Flight Facility
WSA	Wang-Sheeley-Arge
WSC	White Sands Complex
XMM	X-ray Multi-Mirror Mission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