Cross-Agency Support

Overview

NASA's Cross-Agency Support (CAS) provides critical mission support activities that are necessary to ensure the efficient and effective operation and administration of the Agency but cannot be directly aligned to a specific program or project requirement. These functions align and sustain institutional and program capabilities for the purpose of supporting NASA's mission portfolio by leveraging resources to meet mission needs, establishing Agency-wide capabilities, and providing institutional checks and balances. NASA's CAS includes three themes: Center Management and Operations; Agency Management and Operations; and Institutional Investments. CAS institutional and program capabilities ensure core services are ready and available Agency-wide for performing our Mission roles and responsibilities. CAS institutional capabilities ensure agency operations are effective and efficient and activities are conducted in accordance with all statutory, regulatory, and fiduciary responsibilities. CAS program capabilities ensure vital skills and assets are ready and available to meet technical milestones for programs and projects; ensure missions and research are technically and scientifically sound; and ensure that Agency practices adhere to standards and processes that ensure safety and reliability through proper management of risk.

Center Management and Operations directly supports Agency programs and projects that are hosted and executed at NASA Centers. This theme provides for the care of institutional assets, for establishing and maintaining the staff and their competencies, and for the facilities required by current and future programs and projects at nine field Centers. Center Institutional Capabilities provides resources, oversees the assignment of workforce and facilities, and manages Center operations. Center Program Capabilities sustains the technical facilities, workforce expertise and skills, and equipment, tools, and other resources required to facilitate program and project execution.

NASA's Agency Management and Operations activities provide policy and oversight to assure compliance with external and internal requirements; assure safety and mission success; sustain Agency-wide critical capabilities; and support technology development. These activities provide effective and efficient management of human capital, acquisitions, financial performance, information technology, and performance improvement. Agency Management and Operations provides for near and long-term alignment of its human capital policy and a corporate approach to managing its unique or highly-specialized facilities. It maintains a core complement of civil service professionals to resolve its financial, acquisition, and business challenges.

NASA's Institutional Investments ensures that facilities and field installations are ready to meet the Agency's Mission requirements in a safe, secure and environmentally sound manner. The Agency identifies facility and environmental requirements for its missions and establishes investment activities to ensure readiness. Institutional Construction of Facilities provides for the construction, repair, rehabilitation, and modification of the Agency's basic infrastructure and institutional facilities. To ensure that the Agency's facilities can efficiently and effectively support its mission into the future, NASA has undergone a comprehensive review of its facilities and is developing plans to reduce and renew these critical assets. NASA's Environmental Compliance and Restoration Program provides the personnel, services, and activities necessary to complete the cleanup of hazardous materials and wastes that have been released to the surface or groundwater at NASA installations. These activities are mandated under a variety of federal and state environmental laws and regulations, as well as legally enforceable orders and agreements.

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	**3,251.4**	**3,356.4**	**3,400.6**	**3,468.4**	**3,525.7**	**3,561.4**	**3,621.4**
Center Management and Operations	2,011.7	2,024.0	2,084.0	2,119.2	2,142.5	2,166.1	2,189.9
Agency Management and Operations	834.1	921.2	961.2	956.9	964.5	972.3	981.5
Institutional Investments	325.5	343.7	355.4	392.3	418.7	423.0	450.0
Congressionally Directed Items	80.0	67.5	0.0	0.0	0.0	0.0	0.0
FY 2009 President's Budget Request	**3,242.9**	**3,299.9**	**3,323.9**	**3,363.7**	**3,436.1**	**3,511.3**	**--**
Center Management and Operations	2,013.0	2,045.6	2,046.7	2,088.0	2,155.3	2,211.6	--
Agency Management and Operations	830.2	945.6	945.5	939.8	950.5	961.3	--
Institutional Investments	319.7	308.7	331.7	335.9	330.4	338.3	--
Congressionally Directed Items	80.0	0.0	0.0	0.0	0.0	0.0	--
Total Change from FY 2009 President's Budget Request	**8.5**	**56.5**	**76.7**	**104.7**	**89.6**	**50.1**	**--**

Note: In all budget tables, the FY 2010 President's Budget Request depicts the September 2008 Operating Plan for the 2008 Actuals and the 2009 Omnibus Appropriations Act (P.L. 111-8) and the American Recovery and Reinvestment Act (P.L. 111-5) for the 2009 enacted.

Plans for FY 2010

Cross-Agency Support

Center Management and Operations

New Initiatives:

None

Major Changes:

None

Major Highlights for FY 2010

Center Management and Operations provides for continuing operations of nine field Centers in support of NASA's mission portfolio. It ensures that Centers can provide the basic support required to meet internal and external requirements; effectively manage its human capital, information technology, and facility assets; responsibly execute its financial management and acquisition responsibilities; ensure independent technical oversight of NASA's programs and projects in support of safety and mission success; and provide a safe, secure, and environmentally sustainable workplace. Additionally it provides increased funding to partially offset rising utility costs and the added repair requirements of NASA's aging technical and institutional facilities. Without such increase, many facility maintenance activities would be deferred, increasing the risk of costly emergency repairs in future years.

Agency Management and Operations

New Initiatives:

In FY 2010, NASA is initiating the Innovative Technology project to establish a process to identify, competitively select, and fund new technologies with high potential to increase capbilities of future programs.

Major Changes:

None

Major Highlights for FY 2010

Cross-Agency Support

The Agency Management and Operations programs will continue to deliver policies, controls, and oversight across a range of functional and administrative management service areas including procurement, finance, human capital, real property and infrastructure, security, diversity, equal opportunity, and small business.

The Safety and Mission Success program will continue to administer and refine policies, procedural requirements, and technical standards. Safety and Mission Success program activities are a key compenent of the 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 plans for FY 2010 provide for an effective NASA Engineering and Safety Center, NASA Safety Center, and Independent Verification and Validation Facility as established and recognized components of a well-rounded and complete remedial response to lessons learned from NASA's greatest tragedies. The plans include the required support for independent research, audit, and assessment of NASA activities that have risk for loss or failure.

NASA will complete deployment of several initiatives to improve security, efficiency and integration of information and systems. The NASA CIO will consolidate several IT contracts and implement centralized management of the IT infrastructure, which is expected to yield efficiencies and improved security of networks, end-user devices, and data center services. The Security Operations Center (SOC) will be fully implemented and enable improved incident detection and response via centralized monitoring and intrusion detection across all Centers. The NASA Communications Improvement (NCI) project will reconfigure border routers, gateways and circuits to better control and secure the network perimeter, enabling implementation of Trusted Internet Connections. The Center Zoned Architecture Project (CZAP) will establish network security zones to enable secure collaboration across NASA Centers and programs, while still allowing necessary connectivity with external partners and universities for research. Finally, the use of Smart Cards for logical access to many NASA systems will complete testing and undergo initial implementation.

Innovative Partnerships Program's portfolio of technology investments and partnerships will continue to address the technology needs of NASA's Mission Directorates, and IPP will continue to transfer NASA-derived technology for broad public benefit. Specifically IPP plans to achieve 105 instances of technology infusion into NASA programs in FY 2010.

Strategic Capabilities Assets Program (SCAP) will continue to provide strategic management and funding for critical facilities. The current portfolios consist of thermal vacuum chambers which provide for the thermal testing of spacecraft, flight simulators which provide for simulation of air and space vehicle flight characteristics, and arc jet for critical testing of re-entry materials.

Institutional Investments

New Initiatives:

None

Major Changes:

None

Major Highlights for FY 2010

Cross-Agency Support

Institutional Investments will improve mission assurance by making repairs to critical facilities supporting NASA programs. This will improve system reliability and reduce risk to mission success. Approximately 20 projects in the program will improve infrastructure reliability, having a direct impact on mission assurance.

NASA will continue to invest in a sustainable future through the construction of buildings and major renovations that incorporate sustainable features such as reduced energy and water usage, improved indoor environment, and reduced environmental impact.

NASA will mitigate identified risks to personnel and property with cleanup of hazardous materials and wastes, repairs to protection systems, security upgrades, and improvements for hurricane hardening. Several projects in the program will result in a safer environment for NASA workers and reduced damage to NASA property from weather events, fires, etc.

NASA will continue to reduce its infrastructure through the Construction of Facilities demolition program. NASA continues to identify obsolete, abandoned, and un-needed infrastructure and will use the demolition program to eliminate facilities that are costly to maintain and pose safety or environmental risks as they deteriorate.

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Mission Directorate:	Cross-Agency Support
Theme:	Center Management and Operations

Theme Overview

NASA's Center Management and Operations (CMO) budget request funds the ongoing management, operations, and maintenance of nine NASA field Centers, including four major component facilities, in ten separate states across the Country. It provides Center Institutional and Program Capabilities to satisfy program requirements and schedules. The Center Management and Operations budget request enables execution of NASA's mission at the Centers by providing the resources required to effectively oversee the assignment of workforce and facilities and manage Center operations to facilitate program and project execution while ensuring that statutory, regulatory, and fiduciary compliance requirements are met.

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	**2,011.7**	**2,024.0**	**2,084.0**	**2,119.2**	**2,142.5**	**2,166.1**	**2,189.9**
Center Management and Operations	2,011.7	2,024.0	2,084.0	2,119.2	2,142.5	2,166.1	2,189.9
FY 2009 President's Budget Request	**2,013.0**	**2,045.6**	**2,046.7**	**2,088.0**	**2,155.3**	**2,211.6**	**--**
Center Management and Operations	2,013.0	2,045.6	2,046.7	2,088.0	2,155.3	2,211.6	--
Total Change from FY 2009 Request	**-1.3**	**-21.6**	**37.3**	**31.2**	**-12.8**	**-45.5**	**--**

Plans for FY 2010

Center Management and Operations

Activities funded within the FY 2010 CMO budget request include a wide variety of essential operations:

Security, environmental management, and safety services to ensure that Centers meet basic workplace standards for the public and for the NASA workforce;

Facility maintenance and operations, including utility funding, to support the Agency's infrastructure, including support to more than 5,500 facilities with a Current Replacement Value of over $23B;

Information Technology services to provide video, voice, network, data center, and desktop computer support at the Centers;

Program Capability support required to ensure that the Agency's Science, Engineering, and Technical Authority staff have the resources, services, and laboratory support required to achieve the Agency's technical mission;

Training, logistics, occupational health, and human resources services required to support the Agency's 16,600 Center civil servants;

Senior management, legal, Equal Employment Opportunity, and public affairs support at the Centers;

Procurement and Financial services supporting contract and financial management; and

Labor for the civil servants and on-site contractors that provide the above essential services at the Centers.

Relevance

Relevance to national priorities, relevant fields, and customer needs:

Center program capability support to NASA's mission contributes to the development of advances in U.S. leadership in human space exploration,aeronautics, space and earth sciences, advancement of technical partnerships in the commercial space sector, and development of innovative technologies that benefit society.

Relevance to the NASA Mission and Strategic Goals:

NASA's Center Management and Operations contributes to the Agency's Strategic Goals by providing critical institutional and program capabilities to support NASA's missions. It provides critical mission support activities that are necessary to ensure the efficient and effective operation and administration of the Agency's field centers but cannot be directly aligned to a specific program or project requirement. These functions align and sustain institutional and program capabilities for the purpose of executing NASA's mission portfolio.

Relevance to education and public benefits:

Strategic communications activities at the Centers keep stakeholders and the public informed in a way that helps them understand our policies, programs, and plans. It also fulfills the mandate of the National Aeronautics and Space Act of 1958 "[to] provide for the widest practicable and appropriate dissemination of information concerning its activities and results thereof."

Performance Achievement Highlights:

Over the past year NASA Centers continued to provide high quality support for the execution of Programs and Projects. NASA faced the challenge of providing adequate levels of institutional support to the current programs while absorbing increasing labor and utility costs and new requirements from external initiatives and mandates.

To partially offset these increasing costs, NASA has implemented energy savings initiatives, consolidated activities, and reduced or deferred some Center Management and Operations activities, particularly in the area of facility maintenance.

To support energy savings, NASA updated its facilities maintenance and operations practices to strengthen the commitment to and use of sustainable procedures and methods within existing facilities as outlined by the U. S. Green Building Council LEED re-commissioning guidelines. NASA implemented plans to provide electrical service metering and monitoring for facilities, installing metering, as appropriate, in most facilities. This enables a reduction in electrical power use by monitoring real-time usage to identify and resolve inefficient practices. NASA initiated water conservation technical assessments in FY 2008 and will complete assessments in FY 2009, to enable NASA to achieve its goal of reducing water usage 15% by FY 2015.

Consolidation efforts included the migration of financial management's Accounts Payable and Accounts Receivable to the NASA Shared Services Center and initial implementation of an Information Technology (IT) infrastructure consolidation and renewal process. The IT activities improve the Agency's IT Security posture and control IT operation cost growth, now and into the future. The consolidation efforts maximize organizational effectiveness to achieve NASA's mission.

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Mission Directorate:	Cross-Agency Support
Theme:	Center Management and Operations
Program:	Center Management and Operations

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	2,011.7	2,024.0	2,084.0	2,119.2	2,142.5	2,166.1	2,189.9
Center Institutional Capabilities	1,555.6	1,579.0	1,608.6	1,626.1	1,631.7	1,637.2	1,644.5
Center Programmatic Capabilities	456.1	445.0	475.4	493.1	510.8	528.9	545.4
FY 2009 President's Budget Request	2,013.0	2,045.6	2,046.7	2,088.0	2,155.3	2,211.6	--
Center Institutional Capabilities	1,553.6	1,591.6	1,597.3	1,614.3	1,662.6	1,700.5	--
Center Programmatic Capabilities	459.4	454.0	449.4	473.8	492.6	511.1	--
Changes from FY 2009 Request	-1.3	-21.6	37.3	31.2	-12.8	-45.5	--

Project Descriptions and Explanation of Changes

Center Institutional Capability

NASA's Center Institutional Capability encompasses a diverse set of activities including financial and human capital management; acquisition services; facility maintenance; utilities; information technology; and safety and security. This capability manages and sustains the Center staff, facilities and operations required for program and project execution and provides for the ongoing operations of nine Center campuses to maintain a safe, healthy, and environmentally friendly workplace.

Most of NASA's facilities are more than 40 years old and are becoming increasingly expensive to operate and maintain. As a result, deferred maintenance of these facilities increased 6% in FY 2008. In addition, facility energy unit costs have increased 8% annually since FY 2000 due to rising energy costs, outpacing Agency efforts to reduce utility usage. The FY 2010 Center Management request includes additional funding to partially offset these increasing costs. In order to better adapt to these ongoing rising costs, NASA is pursuing a long-term facility strategy with the ultimate goal of reducing the size of NASA's infrastructure, improving building efficiency, and reducing operational facility costs across the Agency.

Center Program Capability

NASA's Center Program Capability supports the scientific and engineering staff across the Agency tasked with providing engineering assessment and safety oversight pertaining to the technical readiness and execution of NASA programs and projects. It also sustains NASA's analysis, design, research, test services, and fabrication capabilities; enabling efficient execution of the programs and projects hosted at the Centers. A key component of NASA's overall system of checks and balances is provided within Technical Capabilities through formally delegated Technical Authorities. The Technical Authorities at NASA's nine Centers number 900 civil servants who provide independent oversight and review of programs and projects in support of safety and mission success. This is to assure that NASA's activities are safely implemented in accordance with accepted standards of professional practice and applicable NASA requirements.

The FY 10 request reflects an increase above the FY 09 level due to a transfer of technical capability support at Ames Research Center from program budgets to CMO. This zero-sum transfer of content and budget aligns Ames CMO technical capability content with that of the rest of the Agency to improve consistency and clarity.

CENTER MANAGEMENT AND OPERATIONS TECHNICAL AUTHORITY

Budget Authority ($ millions)	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Safety & Mission Assurance Technical Authority Total	**50.0**	**51.1**	**51.7**	**53.4**	**55.3**	**56.6**
Ames Research Center	0.8	1.5	1.5	1.6	1.7	1.8
Dryden Flight Research Center	4.7	4.7	4.8	5.0	5.2	5.4
Glenn Research Center	2.1	2.1	2.2	2.3	2.4	2.5
Goddard Space Flight Center	13.7	13.0	13.3	13.6	14.0	13.9
Johnson Space Center	6.4	6.7	6.5	6.7	7.0	7.2
Kennedy Space Center	10.0	10.4	10.3	10.6	11.0	11.3
Langley Research Center	3.0	3.1	3.2	3.3	3.4	3.6
Marshall Space Flight Center	8.1	8.2	8.5	8.8	9.2	9.4
Stennis Space Center	1.3	1.3	1.4	1.4	1.5	1.5
Engineering Technical Authority Total	**118.2**	**125.2**	**129.6**	**134.6**	**139.4**	**143.7**
Ames Research Center	2.6	3.3	3.5	3.6	3.8	4.0
Dryden Flight Research Center	5.9	6.1	6.3	6.5	6.8	7.0
Glenn Research Center	13.2	13.7	14.3	14.9	15.6	16.0
Goddard Space Flight Center	11.1	11.8	12.6	13.4	14.3	15.2
Johnson Space Center	19.8	21.5	21.7	22.4	22.5	22.5
Kennedy Space Center	11.9	12.3	12.7	13.1	13.6	14.0
Langley Research Center	15.7	16.3	17.0	17.6	18.4	19.1
Marshall Space Flight Center	35.2	37.1	38.4	39.7	41.2	42.3
Stennis Space Center	3.0	3.1	3.2	3.3	3.4	3.5

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Theme Overview

Agency Management and Operations provides for the management and oversight of Agency missions, programs, functions and performance of NASA-wide activities.

Agency Management and Operations activities at NASA Headquarters ensure that 1) core services are ready and available Agency-wide for performing our Mission roles and responsibilities, 2) the Agency operations are effective and efficient, and 3) our activities are conducted in accordance with all statutory, regulatory, and fiduciary responsibilities.

NASA Headquarters develops policy and guidance for the Centers and provides strategic planning and leadership on the issues concerning availability, readiness, and sustainability. They also establish programs and initiatives to maximize individual and organizational capabilities.

NASA Headquarters establishes Agency-wide requirements and capabilities that improve collaboration, efficiency, and effectiveness. Agency management leverages resources and capabilities to meet mission needs, eliminate excess Agency capacity, and scale assets accordingly.

Agency Management and Operations includes the Headquarters management of all essential corporate functions such as human capital, finance, information, infrastructure, procurement, chief counsel, security, occupational health and safety, equal opportunity and diversity, small business programs, external relations, and strategic communications.

This theme is divided into the following five programs: Agency Management, Safety and Mission Success, Agency Information Technology Services, Innovative Partnerships Program, and Strategic Capabilities Assets Program.

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	**834.1**	**921.2**	**961.2**	**956.9**	**964.5**	**972.3**	**981.5**
Agency Management	353.8	390.0	412.7	417.4	422.0	426.6	431.3
Safety and Mission Success	171.5	179.1	183.9	186.1	188.6	190.9	193.0
Agency IT Services (AITS)	134.9	163.9	150.4	138.3	138.0	138.3	139.7
Innovative Partnerships Program	146.8	160.2	184.8	184.9	185.7	186.3	187.0
Strategic Capabilities Assets Program	27.2	28.0	29.4	30.2	30.2	30.2	30.5
FY 2009 President's Budget Request	**830.2**	**945.6**	**945.5**	**939.8**	**950.5**	**961.3**	**--**
Agency Management	361.5	414.6	422.5	430.6	438.8	447.3	--
Safety and Mission Success	161.6	163.4	165.4	167.3	169.3	171.3	--
Agency IT Services (AITS)	133.1	163.9	145.9	133.1	133.5	133.9	--
Innovative Partnerships Program	146.8	175.7	181.9	178.0	178.1	178.1	--
Strategic Capabilities Assets Program	27.2	28.0	29.8	30.7	30.7	30.7	--
Total Change from FY 2009 Request	**4.0**	**-24.4**	**15.7**	**17.1**	**14.0**	**11.0**	**--**

Plans for FY 2010

Agency Management

The Agency Management program will continue to deliver policies, controls, and oversight across a range of functional and administrative management service areas including procurement, finance, human capital, real property and infrastructure, security, diversity, equal opportunity, and small business.

Safety and Mission Success

The Safety and Mission Success program will continue to administer and refine the pertinent policies, procedural requirements, and technical standards. The program will participate 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 plans for FY 2010 provide for an effective NASA Engineering and Safety Center, NASA Safety Center, and Independent Verification and Validation Facility as established and recognized components of a well-rounded and complete remedial response to lessons learned from NASA's greatest tragedies. These organizations form a basis for a more disciplined execution of safety, reliability, quality and system engineering needed for the successful pursuit of NASA's missions.

Agency IT Services (AITS)

NASA will continue operations for essential Agency IT services such as the Agency business applications, the NASA Scientific and Technical Information (STI) program, NASA Public Web portal, NASA Enterprise Architecture, and E-Government in FY 2010. The NASA Information Resources Management Strategic Plan focuses on four goals in this budget year associated with the Agency IT Services program. The four goals are: 1) improve the management of information and information technology, 2) improve the security of NASA information and information technology, 3) improve IT efficiency and collaboration capabilities, and 4) improve IT service delivery and visibility.

Innovative Partnerships Program

Innovative Partnerships Program's (IPP) portfolio of technology investments and partnerships will continue to address the technology needs of NASA's Mission Directorates, and IPP will continue to transfer NASA-derived technology for broad public benefit. Specifically IPP plans to achieve 105 instances of technology infusion into NASA programs in FY 2010. Sources of technology for infusion come from many elements of the IPP portfolio including Small Business Innovative Research (SBIR), Small Business Technology Transfer Research (STTR), Seed Fund, Centennial Challenges, and other partnerships. IPP also plans to advance technologies that have potential for use by NASA, as measured by improvements in their technology readiness level. In FY 2010, IPP plans to achieve 200 Technology Readiness Levels (TRL) step advancements through its technology portfolio.

Strategic Capabilities Assets Program

Strategic Capabilities Assets Program (SCAP) will continue to provide management oversight and critical funding for our current portfolio of assets. These portfolios include thermal vacuum chambers which provide capability for thermally testing spacecraft, flight simulators which test air and space vehicles flight characteristics, and arc jet which provides capability for critical testing of re-entry materials.

Relevance

Relevance to national priorities, relevant fields, and customer needs:

Through the Innovative Partnerships Program (IPP), NASA provides technology transfer out of NASA for commercial and other benefits to the Nation, facilitating protection of the government's rights in NASA's inventions, as mandated by legislation. NASA's Small Business Innovative Research (SBIR) and Small Business Technology Transfer (STTR) programs provide the high-technology small business sector with an opportunity to develop technology for NASA. Technology partnerships and Centennial Challenges tap into sources of innovation outside NASA and leverage NASA's resources with private or other external resources to develop new technologies for NASA mission use. Seed Fund contributes to the development of technology through leveraged development with industry and other partners, and to support NASA programs and priorities. IPP serves NASA's mission interests, both in the near and long terms, through developing a broad range of technologies and advancing their technology readiness and provides opportunities to a broad spectrum of U.S. industrial and non-profit entities for direct involvement in addressing NASA's technology needs in exploration and other missions.

Relevance to the NASA Mission and Strategic Goals:

NASA's Agency Management and Operations (AMO) contributes to the Agency's Strategic Goals by providing critical institutional and program capabilities to support NASA's missions. AMO provides ongoing management support, technology alternatives to NASA programs and projects, and IT operations to benefit all Mission Directorates. The management of the Agency's unique test facilities and technical capability, including independent engineering and safety oversight provided in AMO are critical to NASA's success.

Relevance to education and public benefits:

Strategic communications at NASA Headquarters keep stakeholders and the public informed in a way that helps them understand our policies, programs, and plans. It also fulfills the mandate of the National Aeronautics and Space Act of 1958 to provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof.

Mission Directorate:	Cross-Agency Support
Theme:	Agency Management and Operations

Performance Achievement Highlights:

AMO supported on-going management and operations activities across the Agency and was responsible for operational efficiency gains in many mission support areas during this past year. With the initiation of the IT infrastructure consolidation, the Agency's IT security posture was improved and IT operational cost was brought under control. Network consolidation and security operations center initiatives successfully completed their Critical Design Review.

NASA established a fully integrated state-of-the-art photo and ID/access control system in compliance with Homeland Security Presidential Directive (HSPD-12) requirements and deadlines. Currently, NASA has issued 95% of HSPD-12 compliant credentials/badges to NASA's eligible workforce and is on target to achieve 100% by the end of the 2nd quarter FY2009. Noted counterintelligence accomplishments included conducting 17 full field investigations and producing Agency and Center-specific CI/CT threat assessments for all 9 centers and JPL.

The Agency established a solid baseline for the successful implementation of an Agency Safety Center in Cleveland, Ohio. Accomplishments include the 1) development of a technical qualification program for Agency Safety and mission assurance technical excellence, 2) trending of root causes and communication of lessons learned from Agency mishap investigations, and 3) continuation and improvement of the Agency safety and mission assurance review and audit program.

The NASA Engineering and Safety Center made progress resolving NASA's most critical mission success issues including the Shuttle Engine Cut-off Sensor reliability, Shuttle Wing Leading Edge reinforced carbon spallation, ISS rotary joint bearing life, and Orion seat landing loads attenuation, power system optimization, and acceleration options. The Agency developed a strategy for Agency-wide support of Product Data Management/Product Lifecycle Management standards and implementation.

The Agency negotiated fifty-five Space Act Agreements with domestic and foreign government entities, processed 3,000 Agency-wide export control related actions including 230 export license reviews, and 500 foreign national visit reviews. NASA implemented the Continuous Monitoring Program which provided an overall framework of management controls that NASA uses to assess and evaluate internal controls, compliance with Generally Accepted Accounting Principles, and evidence that balances and activity reported in its financial statements are accurate and complete. After establishing the FY08 Small Business Improvement Plan oriented toward increasing the number of competitively awarded small business prime contracts, the Agency increased small business prime contract awards by $291M. The Agency also enhanced acquisition planning and implementation by increasing the success of NASA programs, projects, and institution in meeting their commitments.

Independent Reviews:

Review Type	Performer	Last Review	Purpose/Outcome	Next Review
All	IPAO (Independ Program Assmt)	2009	Review Implementation of Strategic Capabilities Assets Program providing a credible, objective assessment of program performance and management. Review is completed and has been closed.	none

Mission Directorate:	Cross-Agency Support
Theme:	Agency Management and Operations
Program:	Agency Management

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	353.8	390.0	412.7	417.4	422.0	426.6	431.3
Agency Management	353.8	390.0	412.7	417.4	422.0	426.6	431.3
FY 2009 President's Budget Request	361.5	414.6	422.5	430.6	438.8	447.3	--
Agency Management	361.5	414.6	422.5	430.6	438.8	447.3	--
Changes from FY 2009 Request	-7.6	-24.6	-9.8	-13.2	-16.8	-20.7	--

Program Overview

Agency Management provides governance and functional and administrative management oversight for the Agency. Through Agency Management, policies, controls, and oversight are delivered across a range of functional and administrative management service areas. This program function primarily supports on-going operations. Agency Management support reflects the activities required for being in business in the federal sector and provides the capability to respond to legislated or other mandated services that the Agency must provide.

Agency Management activities are performed at NASA Headquarters with critical support provided by multiple NASA field centers including the NASA Management Office (NMO) at the Jet Propulsion Laboratory and the NASA Shared Services Center (NSSC) at Stennis Space Center. The Agency Management program supports over thirty-five discrete operations and mission support projects with over 210 separate activity line items.

Agency Management governance and oversight activities include the NASA Administrator and staff, finance, security, general counsel, public affairs, external relations, legislative affairs, training, human capital, procurement, real property and infrastructure, budget management, systems support, internal controls, diversity, equal opportunity, program analysis and evaluation, and small business programs.

The Agency Management program provides for the operational activities of Headquarters as an installation. These activities include building lease costs, facility operations costs such as physical security, maintenance, logistics, information technology hardware and software costs, and automated business systems implementation and operations costs including e-Government initiatives.

Agency Management provides for all the Headquarters civil service labor and related personnel costs including the civil service labor for all the Mission Directorates. The program also covers the travel and business costs for over twenty mission support and staff offices of the Headquarters workforce.

The program is responsible for conducting independent technical assessments of Agency programs and delivers strategic planning services. Through Agency Management efforts, NASA program and mission performance are assessed and evaluated.

Plans For FY 2010

Agency Management will deliver policies, controls, and oversight across a range of functional and administrative management service areas, and provide independent technical assessments and strategic planning service, and direct the activities in procurement, finance, human capital, real property and infrastructure, security and program protection, diversity, equal opportunity, and small business.

Project Descriptions and Explanation of Changes

Agency Management

The Agency Management budget includes Headquarters personnel salaries, benefits, travel, training, and operational costs such as rents, IT support, payroll information services, and facility services. Civil Service labor components include employee salaries and benefits and associated employee costs, such as, employee awards, promotions, lump sum retirement payments, worker's compensation, permanent change of station, recruit and retention allowances, transit subsidy program, student loan repayments and employee training. The FY 2010 labor budget supports 1,200 FTE. This reflects the HQ downsizing of 40 FTEs from the 1,240 funded level in FY 2009.

HQ Operations elements include the lease costs for the rent of the HQ office building, and Inspector General leased space in New Jersey and California. Other significant operations activities include: IT and Communications infrastructure hardware and software acquisitions and maintenance, contracted IT support services, printing, graphics; facility operations support including physical security, custodial and maintenance services, equipment, expendable supplies, mail services, motor pool operations, logistics services, emergency preparedness, employee occupational health/fitness and medical services; human resources staffing, employee payroll and benefits processing, retirement services, grants awards, and employee training; costs of support provided by the Goddard Space Flight Center for accounting and procurement operations; costs of operations support, configuration maintenance, automated business and administrative systems; contract close-out services and payments to the Office of Naval Research for grants management ; equal opportunity alternate dispute resolution services, EEO complaint investigations and special emphasis diversity recognition program; and human resources.

Agency Management also provides the functions of finance, security, and program analysis. The Chief Financial Officer (CFO) is responsible for the financial leadership of NASA and its primary duty is to uphold strong financial management and accountability while providing timely, accurate, and reliable financial information and enhancing internal control. The Security and Program Protection (OSPP) office serves as the focal point for policy formulation, oversight, coordination and management of the Agency security, counter-intelligence (CI), counter-terrorism (CT), emergency preparedness planning, and continuity of operations functions. Program Analysis and Evaluation (PA&E) is an independent assessment organization that provides objective, transparent, and multidisciplinary analysis to support strategic decision making.

HEADQUARTERS BUDGET BY OFFICE

Agency Management Budget by Office ($ in millions)	FY 2008 Funding	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Total Agency Management (1)	**353.8**	**390.0**	**412.7**	**417.4**	**422.0**	**426.6**	**431.3**
	//						
Mission Directorates	**57.4**	**58.9**	**63.3**	**66.1**	**69.9**	**74.2**	**78.5**
Science	23.3	24.5	26.4	27.6	29.1	30.9	32.7
Aeronautics Research	5.7	5.5	5.9	6.2	6.5	6.9	7.3
Exploration Systems	13.2	14.1	15.1	15.8	16.7	17.7	18.7
Space Operations	15.2	14.8	15.9	16.6	17.5	18.6	19.7
Mission Support and Staff Offices	**189.9**	**201.5**	**215.1**	**219.9**	**227.8**	**233.5**	**242.6**
Office of the Administrator	3.4	3.3	3.5	3.6	3.8	4.0	4.2
Safety and Mission Assurance	6.5	6.5	7.0	7.3	7.7	8.2	8.7
Program Analysis and Evaluation	25.4	28.1	30.2	30.8	31.6	32.5	33.4
Chief Engineer	3.4	4.2	4.5	4.7	5.0	5.3	5.6
Program and Institutional Integration	10.2	10.2	11.1	11.2	11.4	11.8	12.2
Chief Financial Officer	22.2	23.9	25.1	25.8	26.9	28.0	29.1
Chief Health and Medical Officer	1.3	1.2	1.3	1.4	1.5	1.5	1.6
Chief Information Officer	4.4	5.5	6.0	6.2	6.6	7.0	7.4
External Relations	11.0	12.0	12.6	13.0	13.5	13.3	13.8
General Counsel	8.0	9.2	9.8	10.2	10.6	11.0	11.5
Innovative Partnership Program	1.7	1.8	1.9	2.0	2.1	2.3	2.4
Institutions and Management							
Institutions and Management	1.2	0.8	0.6	0.6	0.6	0.7	0.7
Diversity and Equal Opportunity	3.7	5.8	4.5	4.5	4.7	4.9	5.1
Human Capital Management	25.2	28.8	33.2	34.3	35.7	36.0	36.9
Infrastructure	15.5	16.3	16.8	17.2	17.8	17.9	18.6
Internal Controls and Management Systems	2.1	2.5	2.5	2.6	2.7	2.8	2.9
Procurement	6.8	7.0	7.9	7.8	8.3	8.3	8.8
Small Business Programs	1.5	1.8	2.2	2.3	2.3	1.8	1.9
Security and Program Protection	17.1	13.2	15.2	14.8	15.1	15.6	16.1
Strategic Communications							
Strategic Communications	2.5	2.4	2.5	2.5	2.6	2.8	2.9
Education	2.8	2.9	3.1	3.3	3.4	3.7	3.9
Legislative and Intergovernmental Affairs	3.8	4.2	4.5	4.7	4.9	5.1	5.4
Public Affairs	10.1	9.9	9.0	9.0	9.0	9.1	9.5
Operations	**106.6**	**129.6**	**134.3**	**131.4**	**124.3**	**119.0**	**110.2**
Office of Headquarters Operations	99.0	122.3	126.1	123.0	115.7	110.1	101.5
Budget Management and Systems Support	7.6	7.3	8.2	8.4	8.6	8.8	8.7

Footnote:
(1) An additional $39.3M of prior year funds were obligated in FY 2008, for a total executed budget of $393.2M.

HEADQUARTERS TRAVEL BUDGET BY OFFICE

Headquarters Travel Budget ($ in millions)	FY 2008 Actuals	FY 2009 Enacted	FY 2010
Total Headquarters Travel Budget	**9.4**	**9.4**	**9.1**
Mission Directorates	**4.6**	**4.9**	**4.8**
Science	1.4	1.3	1.2
Aeronautics Research	0.5	0.4	0.4
Exploration Systems	1.2	1.5	1.5
Space Operations	1.5	1.7	1.7
Mission Support and Staff Offices	**4.6**	**4.4**	**4.2**
Office of the Administrator	0.3	0.4	0.4
Safety and Mission Assurance	0.3	0.3	0.3
Program Analysis and Evaluation	0.3	0.2	0.2
Chief Engineer	0.2	0.2	0.2
Program and Institutional Integration	0.2	0.2	0.2
Chief Financial Officer	**0.3**	0.4	0.4
Chief Health and Medical Officer	0.1	0.1	0.1
Chief Information Officer	0.2	0.1	0.1
External Relations	0.8	0.7	0.7
General Counsel	0.1	0.1	0.1
Innovative Partnership Program	0.1	0.1	0.1
Institutions and Management			
Institutions and Management	0.0	0.0	0.0
Diversity and Equal Opportunity	0.1	0.1	0.1
Human Capital Management	0.1	0.1	0.1
Infrastructure	0.5	0.4	0.4
Internal Controls and Management Systems	0.0	0.1	0.0
Procurement	0.2	0.2	0.2
Small Business Programs	0.1	0.1	0.1
Security and Program Protection	0.2	0.2	0.1
Strategic Communications //			
Strategic Communications	0.1	0.1	0.1
Education	0.1	0.2	0.2
Legislative and Intergovernmental Affairs	0.1	0.1	0.1
Public Affairs	0.2	0.1	0.1
Operations	**0.2**	**0.1**	**0.1**
Office of Headquarters Operations	0.0	0.1	0.1
Budget Management and Systems Support	0.2	0.0	0.0

HEADQUARTERS FTE ASSIGNMENTS BY OFFICE

Headquarters	FY 2008 Total FTE	FY 2008 SES	FY 2008 Non-Career	FY 2008 Contract WYE	FY 2009 Total FTE	FY 2009 SES	FY 2009 Non-Career	FY 2009 Contract WYE	FY 2010 Total FTE	FY 2010 SES	FY 2010 Non-Career	FY 2010 Contract WYE
Total Agency Management	**1,193**	**134**	**17**	**636**	**1,200**	**142**	**17**	**629**	**1,200**	**142**	**17**	**628**
Mission Directorates	**354**	**40**	**0**	**164**	**353**	**43**	**0**	**153**	**353**	**43**	**0**	**153**
Science	145	16		62	144	17		62	144	17		62
Aeronautics Research	34	6		11	33	8		10	33	8		10
Exploration Systems	81	8		46	83	8		45	83	8		45
Space Operations	94	9		45	93	10		36	93	10		36
Mission Support and Staff Offices	**740**	**92**	**17**	**181**	**737**	**96**	**17**	**189**	**737**	**96**	**17**	**188**
Office of the Administrator	22	5	4	0	19	5	4	**0**	**19**	**5**	**4**	**0**
Safety and Mission Assurance	39	6		0	37	6		0	37	6	0	0
Program Analysis and Evaluation	61	7		0	64	8		0	64	8	0	0
Chief Engineer	21	8		8	24	8		8	24	8	0	8
Program and Institutional Integration	36	3		0	36	3		0	36	3	0	0
Chief Financial Officer	91	7	2	53	98	9	2	53	98	9	2	53
Chief Health and Medical Officer	9	1		1	8	1		1	8	1	0	0
Chief Information Officer	26	5		15	32	6		18	32	6	0	18
External Relations	51	8		6	51	7		6	51	7	0	6
General Counsel	47	6	1	0	44	5	1	0	44	5	1	0
Innovative Partnership Program	11	1		0	11	1		0	11	1	0	0
Institutions and Management												
Institutions and Management	4	1		0	3	1		0	3	1	0	0
Diversity and Equal Opportunity	18	2		0	19	3		0	19	3	0	0
Human Capital Management	39	5		11	38	5		11	38	5	0	11
Infrastructure	63	6		0	61	7		0	61	7	0	0
Internal Controls and Management Systems	11	1		1	11	1		1	11	1	0	1
Procurement	39	4		0	35	4		0	35	4	0	0
Small Business Programs	5	1		3	5	1		3	5	1	0	3
Security and Program Protection	46	2		58	46	2		58	46	2	0	58
Strategic Communications												
Strategic Communications	13	2	3	0	10	2	3	0	10	2	3	0
Education	17	3		3	17	3		3	17	3	0	3
Legislative and Intergovernmental Affairs	30	3	4	0	28	4	4	0	28	4	4	0
Public Affairs	42	4	3	22	40	4	3	27	40	4	3	27
Operations	**99**	**3**	**0**	**291**	**110**	**4**	**0**	**287**	**110**	**4**	**0**	**287**
Office of Headquarters Operations	**81**	**2**		276	92	3		272	92	3		272
Budget Management and Systems Support	18	1		15	18	1		15	18	1		15

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Mission Directorate:	Cross-Agency Support
Theme:	Agency Management and Operations
Program:	Safety and Mission Success

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	171.5	179.1	183.9	186.1	188.6	190.9	193.0
Safety and Mission Assurance	43.9	42.9	48.3	48.8	49.3	49.7	50.4
Chief Engineer	94.8	87.0	102.2	103.6	105.3	106.8	107.0
Chief Health and Medical Officer	2.3	4.1	3.7	3.7	3.7	3.8	3.8
Independent Verification and Validation	30.5	45.0	29.7	30.0	30.3	30.6	31.9
FY 2009 President's Budget Request	161.6	163.4	165.4	167.3	169.3	171.3	--
Safety and Mission Assurance	42.2	42.9	43.4	43.8	44.2	44.6	--
Chief Engineer	87.7	87.0	88.2	89.4	90.6	91.9	--
Chief Health and Medical Officer	2.8	4.1	4.1	4.2	4.2	4.2	--
Independent Verification and Validation	29.0	29.3	29.7	30.0	30.3	30.6	--
Changes from FY 2009 Request	9.9	15.7	18.5	18.8	19.3	19.6	--

Mission Directorate:	Cross-Agency Support
Theme:	Agency Management and Operations
Program:	Safety and Mission Success

Program Overview

The Safety and Mission Success (SMS) program includes the NASA Headquarters programs for technical excellence, assurance and technical authority. SMS includes the corporate work managed by the offices of the Chief, Safety and Mission Assurance (including the NASA Safety Center and the Independent Verification and Validation Facility), the Chief Engineer (including the NASA Engineering and Safety Center), and the Chief Health and Medical Officer. The elements of SMS reflect the recommendations of many studies, boards and panels including the direct recommendations from two major accident investigations resulting in the loss of 14 astronauts (Challenger, 1986 and Columbia, 2003). The features of these programs directly support NASA's core values and serve to improve the likelihood for safety and mission success for NASA's programs, projects, and operations while protecting the health and safety of NASA's workforce. Aerospace technology advancement, because it is leading the edge of known capability, will always present a risk of catastrophe. SMS is the only resource that has as its exclusive mission the objective to extend the intervals between success and the ever-present possibility of failure.

SMS is responsible for developing policy and procedural requirements. The program provides advice to the Administrator, Mission Directorates, Program Managers and Center Directors who, due to their line management responsibilities, are ultimately accountable for the safety and mission success of all NASA programs, projects and operations and the safety and health of the associated workforce. In addition, SMS resources provide the foundation for NASA's system of "checks and balances" enabling the effective application of the strategic management framework and the technical authorities defined in NASA's Strategic Management and Governance Handbook. SMS funding maintains and trains a competent technical workforce within the disciplines of system engineering (including system safety, reliability, and quality) and space medicine.

Resources provided by SMS are essential for judging the implications on safety and mission success, as well as the health and medical aspects of new requirements and departures from existing requirements. With this funding, an array of professionals judge the criticality of the associated risk and evaluate the risk acceptability through an established process of independent review and assessment. The information and advice from these experts is critical for developing key decision information for the proper execution of the delegated technical authority applied at program and project decision forums.

Plans For FY 2010

For FY 2010, the individual plans for each element of the SMS align with and directly support the objectives of the Agency's four Mission Directorates by helping to improve the likelihood of safety and mission success for all NASA programs, projects, and operations. SMS managers will continue to administer and refine the pertinent policies, procedural requirements, and technical standards. The managers will participate 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 plans for FY 2010 provide for an effective NASA Engineering and Safety Center, NASA Safety Center, and Independent Verification and Validation Facility as adjuncts and necessary to fulfilling the organization's assigned missions. This support assures that NASA civil service employees have, and continue to apply, the appropriate knowledge, skills, abilities, and tools for sound and well-informed decision-making on matters critical to safety and mission success. The plans will include prioritized development, maintenance, and conduct of training and education necessary for assuring the existence of a competent technical workforce. The plans include the required support for independent research, audit, and assessment of NASA activities that have risk for loss or failure.

These organizations charter independent reviews under SMS resources that judge the safety and likelihood of success of NASA activities and the health of those individuals exposed to risks that are not commonplace. The ability to author effective requirements, evaluate precisely the departures from conformance with existing requirements, and determine the criticality of the risk and evaluate and advise on its acceptability are totally reliant on the proper investment in SMS. This established process of independent review supports informed decision-making through the execution of delegated technical authority applied to program and project decisions. Without a robust application of these resources, the Agency strategy to challenge the validity of complex engineering and operational plans and proposals is flawed and subject to incuring unneccessary risks.

Due to the tremendous energies possessed by space debris, the collision between a piece of debris only a half-inch in diameter and an operational spacecraft has the potential for catastrophic consequences. The intentional destruction of the Chinese Fengyun-1C weather satellite in January of 2007 and the accidental collision of American and Russian spacecraft in February 2009 have increased the cataloged debris population by nearly 40 percent, in comparison with all the debris remaining from the first 50 years of the Space Age. For FY 2010, NASA, in connection with the U.S. Space Surveillance Network, will increase its effort in scientific studies to characterize the near-Earth space debris environment, to assess its potential hazards to current and future space operations, and to identify and to implement means of mitigating its growth. Enhancements to this space situational awareness data program during FY 2010, especially close approach predictions, offer the greatest near-term and lowest cost improvement to space safety.

Mission Directorate:	Cross-Agency Support
Theme:	Agency Management and Operations
Program:	Safety and Mission Success

Project Descriptions and Explanation of Changes

Safety and Mission Assurance

The SMS supports the Office of Safety and Mission Assurance (OSMA) by providing resources for independent evaluations of their approaches to improving mission success. OSMA is responsible for establishing and maintaining an acceptable level of technical excellence and competence in safety, reliability, maintainability and quality engineering within the Agency. OSMA assures that the risk presented by either a lack of safety requirement or from lack of compliance with a safety requirement is analyzed, assessed, communicated and used for proper decision-making and risk acceptance by the appropriate organizational leader.

Fundamental to these two responsibilities is the definition and execution of a robust and well understood methodology and process for the application of the disciplines of safety, reliability and quality (S, R and Q) in defining the level of risk. In addition, the organization conducts a schedule of review and assessments that focus on the life cycle decision milestones for crucial NASA programs and projects and S, R, and Q processes. Embodied in this program is a structured development of methodology and investigation into system attributes that improve the probability of mission success.

The NASA Safety Center (NSC) in Cleveland, OH assists OSMA in achieving its objectives in consolidating SMS efforts agency-wide in four key areas: safety and mission assurance (SMA) technical excellence, knowledge management, audits and assessments, and mishap investigation support. Since being established in FY 2007, the NSC has: (1) established a Technical Excellence initiative to improve and formalize training and qualification requirements for five SMA engineering disciplines (system safety; reliability and maintainability; quality; software assurance; and operational and aviation safety); (2) undertaken streamlined processes to increase and sustain domain knowledge within the SMA community through the facilitation, storage and retrieval of important documents and lessons learned; by providing data analysis and trending of mishap-related data; by rapidly disseminating mishap-related Agency Safety Alerts; and improving the Agency Incident Reporting Information System, a comprehensive, Agency-wide tool used for reporting mishaps and close calls; (3) continued to evaluate and streamline the conduct of facilities, programmatic and supplier audits; and (4) assembled and deployed a trained team of mishap investigators to support mishap investigations boards. The end result of these activities is to promote the highest level of safety and reliability for NASA's programs and projects. This increase in request is to make the NASA Safety Center in Cleveland, OH fully operational.

Chief Engineer

The SMS supports the Office of Chief Engineer (OCE) by providing the resources for independent and senior engineering expertise to enhance mission success. The OCE promulgates policy and requirements for program and project management, for the engineering excellence of the Agency, system engineering methodology, and for the Agency's system of engineering standards. The Office of Chief Engineer manages the NASA Engineering and Safety Center (NESC), which is responsible for rapid, cross-Agency response to mission-critical engineering issues and for improving the state of practice in critical engineering areas. OCE also sponsors the Academy of Program/Project and Engineering Leadership (APPEL) to develop Program and Project Management and Systems Engineering skills.

APPEL delivers the necessary program/project management and engineering competence learning through the application of learning strategies, methods, models and tools. APPEL provides professional development products and services for individual practitioners and program and project teams. This includes: a formal training curriculum designed to address four career levels from recent college graduate to executive; direct support to project teams in the field through workshops, coaching, and technical experts; and conferences, forums and publications.

The NESC, established in 2003 in response to the Columbia accident, responds rapidly to cross-Agency mission-critical engineering issues and for improving the state of the practice in critical engineering areas. The NESC performs value-added independent testing and analyses and technical assessments of NASA's projects and technical activities to enhance safety and mission success. The NESC works proactively to help NASA avoid problem recurrence and to prevent future problems. SMS funding provides for the core NESC organization of senior engineering experts from across the Agency, including the NASA Technical Fellows and their Technical Discipline Teams composed of experts from NASA, industry, and academia.

Chief Health and Medical Officer

The Office of the Chief Health and Medical Officer (OCHMO) promulgates Agency health and medical policy, standards, and requirements, assuring the medical technical excellence of the Agency, assuring the physical and mental well being of the NASA workforce, and assuring the safe and ethical conduct of NASA-sponsored human and animal research. OCHMO exercises oversight of NASA medical and health related activities through audit processes, and monitors the implementation of health and medical related requirements in all developmental human spaceflight programs through designated discipline experts at NASA Centers. OCHMO also provides oversight of medical and health related activities in operational human spaceflight through Center-based discipline experts and clinical boards. On-going medical and health discipline professionalism and licensure is supported through annual certified Continuing Medical Education (CME) activities, and flight surgeon education and clinical currency is provided through OCHMO-sponsored, university based physician training programs. NASA's biomedical research programs in support of human spaceflight are guided by OCHMO-developed health and medical standards. Center-based review boards under OCHMO sponsorship provide direct supervision of NASA-sponsored human and animal research safety and ethics, completing a comprehensive system of oversight to maintain robust health and medical support of NASA personnel at all levels.

Mission Directorate:	Cross-Agency Support
Theme:	Agency Management and Operations
Program:	Safety and Mission Success

Independent Verification and Validation

The NASA Independent Verification and Validation (IV&V) Project, as a part of the Agency's overall Software Assurance and Risk Mitigation strategy, provides systems engineering activities that improve software safety, reliability, and quality of NASA programs and projects through effective applications of systems and software IV&V methods, practices, techniques, and tools. The NASA IV&V Facility applies software engineering best practices to evaluate the correctness and quality of critical and complex software systems throughout the project's System Development Life Cycle.

Mission Directorate:	Cross-Agency Support
Theme:	Agency Management and Operations
Program:	Agency IT Services (AITS)

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	134.9	163.9	150.4	138.3	138.0	138.3	139.7
IT Management	17.3	17.3	31.9	25.8	25.1	24.0	23.0
Applications	68.3	67.2	70.2	66.1	66.7	67.1	68.8
Infrastructure	49.3	79.4	48.3	46.4	46.2	47.2	47.9
FY 2009 President's Budget Request	133.1	163.9	145.9	133.1	133.5	133.9	--
IT Management	33.2	24.2	24.9	23.5	22.3	22.3	--
Applications	68.0	61.4	65.0	61.7	62.0	62.2	--
Infrastructure	31.9	78.4	56.0	48.0	49.1	49.5	--
Changes from FY 2009 Request	1.7	0.0	4.5	5.2	4.5	4.4	--

Program Overview

NASA's Agency IT Services (AITS) program provides business and management applications, common IT infrastructure, IT security, and IT management services necessary for Agency operations in accordance with OMB guidance, federal laws and regulations, and industry best practices. The three following projects constitute the AITS program; 1) Applications, 2) IT Infrastructure (which includes IT security), and 3) IT Management.

Mission Directorate:	Cross-Agency Support
Theme:	Agency Management and Operations
Program:	Agency IT Services (AITS)

Plans For FY 2010

The AITS program provides sustaining operations for essential Agency IT services, such as, Agency business applications, the NASA Scientific and Technical Information (STI) program, NASA Public Web portal, NASA Enterprise Architecture, and E-Government.

The NASA Information Resources Management Strategic Plan focuses on the following four goals.

1) Improve the management of information and information technology
2) Improve the security of NASA information and information technology
3) Improve IT efficiency and collaboration capabilities
4) Improve IT service delivery and visibility

To meet the four goals, significant events planned for FY 2010 are:
1) Improving security operations and incident response by maturing the central NASA Security Operations Center, which provides the capability for improved incident detection, response, management, and mitigation.
2) Deploying smart cards and an integrated identity, account, active directory, and smart card management system for logical access to NASA IT systems. All systems/applications will be required to integrate into the NASA logical access system, with all systems with High security categorization implemented in FY10.
3) Improving integration and security of NASA networks by deploying an Agency level zoned architecture that will enable better definition of the network perimeter and NASA intranet and locate information systems and assets in appropriate zones based on the information sensitivity and access requirements.
4) Improving management and security of NASA networks by deploying an Agency network services contract for consolidated management and provisioning of local area and wide area network services. This will provide NASA with end to end network management and visibility to improve incident detection and response and improve the ability to securely collaborate across multiple Centers. Expected efficiencies will be applied towards upgrading aging network infrastructure. All Centers will migrate to the enterprise contract.
5) Increasing standardization and security of end-user devices (desktops, laptops, etc) by competing an Agency contract for properly configured and managed end-user devices that integrate with the planned Agency network and application environment. This will enable the Agency to apply patches and secure configurations more quickly, and provide for the greatest economy of scale in service provisioning.
6) Simplifying and integrating the NASA applications portfolio by utilizing a portfolio management approach to identify opportunities for consolidation. AITS budget will be applied to conduct business cases and to fund consolidation initiatives. An initiative to consolidate product lifecycle management and product data management applications and infrastructure, leading to a more integrated and standardized IT architecture to support engineering processes with an initial focus on supporting the Constellation Program.
7) Improving security and efficiency of data center services through the implementation of an Agency outsourced data center capability. This will avoid the cost of upgrading the current NASA Data Center facility, and will improve continuity of operations, and reduce electrical costs.
8) Making NASA's information easier to discover and access by making NASA's public facing content available through the NASA.GOV portal, increasing use of meta-data and tagging, and continuing to integrate improvements in commercial search technologies.

Mission Directorate:	Cross-Agency Support
Theme:	Agency Management and Operations
Program:	Agency IT Services (AITS)

Project Descriptions and Explanation of Changes

IT Management

The IT Management Project provides Agency level services for managing IT and meeting internal and external requirements relative to Agency CIO responsibilities. Included in this project are fees paid to E-Gov managing partners for the various E-Gov activities and Federal CIO Council Committees in which NASA participates. This project also constitutes the budget for the NASA Office of the CIO to meet OMB guidance, Executive Orders, laws and regulations relative to E-Government, Paperwork Reduction and Information Collection, the Federal Information Security Management Act, Records Management, Mail Management, Forms Management, Privacy, Capital Planning and Investment Control, and IT Budget Formulation under Circular A-11.

Applications

The Applications Project provides steady state operations of NASA's business and management systems developed under the Integrated Enterprise Management Program, such as, the Core Financial System (SAP), Integrated Asset Management System, the Human Capital Information Environment, and Aircraft Management Module. It also supports the implementation of E-Gov initiatives, such as, E-Travel, Grants.gov and E-Training. For FY10, relatively minor development is planned to address gaps in business and management systems capabilities. This project also provides Scientific and Technical Information (STI) services for the Agency.

Infrastructure

The IT Infrastructure Project provides common core infrastructure services across the Agency, such as, the NASA Public Web portal, enterprise licensing, Personal Identification Verification (PIV) card systems required for logical access control, and configuration control capabilities for networks, end-user services, and data centers. This Project also provides IT security capabilities at the Agency level, such as the Security Operations Center (SOC), third party penetration testing, vulnerability scanning, and patch management. For FY10, an increase in funding will be applied to several initiatives to improve IT security and harden Agency IT infrastructure and applications, such as, SOC operations, E-authentication for Web services, Cyber Threat identification, Trusted Internet Connection deployment, implementation of a zoned network architecture, and Desktop Smartcard Integration.

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Mission Directorate:	Cross-Agency Support
Theme:	Agency Management and Operations
Program:	Innovative Partnerships Program

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	146.8	160.2	184.8	184.9	185.7	186.3	187.0
Technology Infusion	6.7	9.1	13.5	13.1	13.5	13.7	14.0
Small Business Innovative Research	86.9	113.4	124.1	124.1	124.1	124.1	124.1
Small Business Technology Transfer Research	13.2	13.6	14.1	14.1	14.1	14.1	14.1
Innovation Incubator	0.0	0.0	2.5	2.5	2.5	2.5	2.5
Future Centennial Challenges	0.0	0.0	4.0	4.0	4.0	4.0	4.0
Partnership Development	39.9	24.1	23.8	20.2	19.9	19.7	21.3
Innovative Technology	0.0	0.0	2.8	6.8	7.5	8.1	7.0
FY 2009 President's Budget Request	146.8	175.7	181.9	178.0	178.1	178.1	--
Technology Infusion	8.5	13.1	11.8	11.0	11.2	11.4	--
Small Business Innovative Research	103.7	117.9	124.1	124.1	124.1	124.1	--
Small Business Technology Transfer Research	12.5	14.1	14.1	14.1	14.1	14.1	--
Innovation Incubator	0.0	2.5	2.5	2.5	2.5	2.5	--
Future Centennial Challenges	0.0	4.0	4.0	4.0	4.0	4.0	--
Partnership Development	22.0	24.1	25.4	22.3	22.2	22.0	--
Changes from FY 2009 Request	0.0	-15.5	2.9	6.9	7.6	8.2	--

Mission Directorate:	Cross-Agency Support
Theme:	Agency Management and Operations
Program:	Innovative Partnerships Program

Program Overview

NASA's Innovative Partnerships Program (IPP) is focused on adding value to NASA and the Nation through partnerships. Advancing technology through partnerships has always been important to NASA, not only to address NASA's needs, but also to apply NASA-derived technology to a range of applications that provide broad benefit to the public. NASA seeks partnerships that match technology needs with technology capabilities, moving technology both into (technology infusion) and out of (technology transfer) the Agency. IPP is administered at NASA Headquarters and has program offices at each of the agency's nine field centers and JPL.

The Innovative Partnerships Program consists of three elements: Technology Infusion, Innovation Incubator, and Partnership Development. Together, these program elements serve to increase the range of technology solutions for NASA, enable cost avoidance, and accelerate technology maturation. Dual-use partnerships and licensing create socio-economic benefits through technology transfer or spinoffs.

Technology Infusion includes the Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) programs and the Program Seed Fund. The SBIR/STTR programs exist to stimulate technological innovation in the private sector; to strengthen the role of small businesses in meeting federal R&D needs; to increase the commercial application of these research results; and to encourage participation by disadvantaged persons and women-owned small businesses. The IPP Seed Fund enhances NASA's ability to meet mission technology goals by providing seed funding to resolve partnership barriers and to initiate cost-shared, joint-technology development partnerships.

Innovation Incubator includes Centennial Challenges, Facilitated Access to the Space Environment for Technology Development and Training (FAST), Innovation Ambassadors, Innovation Scouts, and new efforts to facilitate purchase of services from the emerging commercial space sector.

Partnership Development includes Intellectual Property Management, Technology Transfer, and new innovative partnerships. For Intellectual Property Management, IPP facilitates the protection of NASA's rights in its inventions, thereby enabling NASA's ability to license its technologies for public benefit. IPP is NASA's agent for technology transfer, commercializing space flight technologies and seeking Earth-bound applications for NASA-derived technologies. IPP works with industry, universities, and other agencies to put NASA technologies to use in areas such as health, medicine, transportation, public safety, consumer goods, environmental and agricultural resources, computer technology, and industrial productivity. IPP continuously seeks new partnerships with a broad range of partners to both address NASA's technology needs and facilitate transfer of NASA-derived technology for public benefit.

For additional information see http://ipp.nasa.gov

Plans For FY 2010

IPP's portfolio of technology investments and partnerships will continue to address the technology needs of NASA's Mission Directorates, and IPP will continue to transfer NASA-derived technology for broad public benefit. Specifically IPP plans to achieve 105 instances of technology infusion in FY10. Sources of technology for infusion come from elements of the IPP portfolio including SBIR/STTR, Seed Fund, Centennial Challenges, FAST, and other partnerships. IPP also plans to advance technologies that have potential for use by NASA, as measured by improvements in their Technology Readiness Level (TRL). In FY10, IPP plans to achieve 200 TRL step advancements through its technology portfolio.

Through the Agency's Technology Transfer partnerships in FY10, IPP intends to continue successful movement of NASA intellectual property to put it to work in the economy, by achieving (over the prior five years) 38 licenses generated for every 100 patented technologies in NASA's intellectual property inventory. In FY10, IPP also intends to document 40-50 notable new technology transfer successes in the annual Spinoff publication. As an important step in identifying NASA technology for transfer, IPP intends to facilitate the documentation of 1,800 New Technology Reports. IPP also seeks commercialization success of SBIR/STTR technologies by commercializing 30% of SBIR/STTR phase II awards over the prior five years.

In Technology Infusion, IPP will continue to implement NASA's SBIR and STTR programs with the primary objective of providing the high-technology small business sector with an opportunity to develop technology for NASA, but also seeking commercialization of those technologies for broader application. In FY10, NASA's SBIR/STTR programs will continue to provide high-priority technology needs for NASA with specific technology needs developed in close coordination with NASA's Mission Directorates and other NASA-wide efforts to determine priorities for future technology requirements. Specific plans for SBIR/STTR will reflect pending reauthorization for these government-wide programs. IPP will also seek approximately 15-20 new leveraged technology development partnerships through the IPP Seed Fund that also help address high-priority technology needs of the agency.

In Innovation Incubator, Centennial Challenges will continue to address key technology needs with new sources of innovation including small businesses outside the traditional aerospace community. IPP will continue the ongoing prize competitions, in which prizes have not yet been won and formulate new prizes in the most relevant technology areas. IPP will continue to encourage the pursuit of appropriate partnerships with the emerging commercial space sector through FAST and other activities. IPP anticipates conducting the third round of reduced-gravity testing on parabolic aircraft flights in FY10 and to begin planning for technology testing activities on suborbital flights if the expected commercial services have begun operations.

Partnership Development will continue to seek opportunities for partnership with businesses, academia and other government agencies to address NASA's needs and also transfer NASA technology for use in other important applications. This includes operation of IPP offices at all 9 NASA centers and JPL, which provide essential IPP functions including new technology reporting, software release, outreach to generate partnership opportunities, licensing of technologies, and negotiation of partnerships.

Project Descriptions and Explanation of Changes

Technology Infusion

SBIR/STTR Program Support provides direct support in the administration of NASA's SBIR and STTR programs. Support includes managing the "electronic handbook," NASA's system for processing proposals, and managing the SBIR and STTR award budgets.

The FY 2010 NASA SBIR solicitation will be implemented with newly defined topic areas divided into sub-topics developed by each of the 4 NASA Mission Directorates. Subtopics include current and future Agency program needs and priorities. IPP expects to receive approximately 2000 proposals. For each solicitation, Phase I proposals are given 2 independent evaluations by the NASA field centers for scientific and technical merit, key staff qualifications, soundness of the work plan, and plans for commercial application. The FY2010 program support budget must also support evaluation of FY2009 Phase II proposals which represent about 12% of the Phase I proposals.

SBIR/STTR Program Support funds the outreach efforts needed to increase participation in SBIR/STTR by the small business community. The percentage of new firms participating in NASA's SBIR/STTR programs each year has been in the 30-50% range, yielding new applicants each year. New participants have submitted between 20-35% of the total number of proposals in any given year.

The Investment Seed Fund is an annual process that provides seed funding to resolve partnership barriers and initiate cost-shared joint development partnerships that leverage funding, resources, and expertise from non-NASA partners, NASA programs and projects, and NASA Centers. The Seed Fund supports the future technology needs of NASA's four Mission Directorates. Proposals selected must demonstrate scientific/technical merit and feasibility, relevance and value to NASA Mission Directorates, capability and strength of partnership team (composed of representatives from industry, programs, and IPP), and leveraging of resources as demonstrated by a realistic budget and schedule needed to complete the Seed Fund activity. Proposed projects are 1 year in duration and include 1 or more non-NASA partners willing to provide cost-sharing equal to or greater than the IPP funding provided. To date, IPP has initiated over 80 collaborative Seed Fund projects, leveraging IPP resources nearly 4:1 with $19M in IPP funding yielding a total of $73M in project funding. Projects have resulted in partnerships in 35 states between NASA and 81 businesses (large and small), 20 universities, 4 FFRDCs, and 6 other government agencies.

The objective of these technology development partnerships is to achieve infusion of technological innovations into NASA's programs and projects. Successfully maturing technologies to reduce the risk of infusion is a key factor in success.

Small Business Innovative Research

IPP implements NASA's SBIR and STTR programs with the primary objective of providing the high technology small business sector with an opportunity to develop technology for NASA. In FY 2008, IPP selected 396 Small Business Innovation Research projects, with nearly $100 million awarded to 205 firms across 31 states.

The Small Business Innovation Research Program was established by Congress in 1982 to increase research and development opportunities for small businesses, to increase employment, and to improve U.S. competitiveness. The program's specific objectives are to stimulate U.S. technological innovation, employ small businesses to meet federal research and development needs, increase private-sector commercialization of innovations derived from federal research and development, and encourage and facilitate participation by socially disadvantaged businesses. NASA, as a mission driven agency, seeks small, high-technology companies to participate in government-sponsored research and development efforts in technology areas critical to NASA's missions. IPP will implement the SBIR program consistent with pending reauthorization. Current authorization provides for SBIR funding at 2.5 percent of NASA's extramural research and development expenditures.

The SBIR program is for small businesses with 500 or fewer employees. NASA encourages these organizations to learn more about its program needs and promotes SBIR to the small business community as a significant source of seed funding for the development of innovations.

The SBIR Phase I contracts have a term of six months with a maximum funding of $100,000, and Phase II contracts have a term of 24 months with a maximum funding of $600,000 (up to $750,000 with Phase IIE and matching $150,000 from a Mission Directorate). Historically, the ratio of the number of Phase I proposals to awards for SBIR is 8:1. About 40 percent of the completed Phase I projects receive funding for Phase II development.

NASA is now tracking the maturity of technologies funded by SBIR/STTR through use of Technology Readiness Levels (TRLs). This is important for understanding when technologies will be ready for infusion into NASA's programs and projects and their readiness for commercial use. Tracking TRLs will also provide insight into the progress that technologies are making, and over time, the performance of different firms for successful maturing technologies.

Technologies funded by SBIR/STTR have made invaluable contributions to NASA programs and projects and have also been commercial successes that are bringing important benefits to society. The agency is actively working to increase the number of NASA-funded SBIR/STTR technologies with applicability and adequate maturity for use in NASA's missions and projects. SBIR/STTR technologies are making important contributions to some of NASA's high-profile programs including the Space Shuttle, ISS, Mars rovers, and the Phoenix lander.

Small Business Technology Transfer Research

IPP implements NASA's STTR program with the primary objective of facilitating the transfer of technology developed by a research institution through the entrepreneurship of a small business, resulting in technology to meet NASA's needs. The Small Business Technology Transfer Research (STTR) Program awards contracts to small business concerns for cooperative research and development with a non-profit research institution, such as a university. The small business and its partnering institution are required to sign an intellectual property agreement. In FY 2008, IPP selected 35 Small Business Technology Transfer (STTR) projects, with $8 million awarded to 24 small businesses partnered with 22 universities and research institutions across 14 states.

Modeled after the SBIR Program, STTR is a separately funded activity. STTR is smaller than SBIR, with funding set at three-tenths of a percent of the extramural research and development budget, approximately one-eighth of the amount for SBIR. The small company must take the research and intellectual property of the research institution and convert it into a useful product. While the proposal is still submitted by small business concerns, at least 30 percent of the funding and work must originate with the research institution and a minimum of 40 percent must come from the small business concerns.

Phase I STTR projects receive up to $100,000 in funds for a one-year effort. The maximum contract value for STTR Phase II is $600,000 (up to $750,000 with Phase IIE and matching $150,000 from a Mission Directorate). Historically, the ratio of the number of Phase I proposals to awards for STTR is 5:1. About 40 percent of the completed Phase I projects receive funding for Phase II development. The STTR Program Solicitation research areas correspond to the central underlying technological competencies of each participating NASA Center with the goal of ensuring that small business innovations are part of NASA's success. The Jet Propulsion Laboratory (JPL) participates in the management of the STTR Program.

Innovation Incubator

Innovation Incubator includes Centennial Challenges (budgeted separately), Facilitated Access to the Space Environment for Technology Development and Training (FAST), Innovation Ambassadors, Innovation Scouts, and new efforts to facilitate purchase of services from the emerging commercial space sector. FAST has the dual objectives of demonstrating the purchase of commercial services from the emerging commercial space sector and advancing technology maturity through use of those services. Innovation Transfusion will create connections between innovative external organizations and NASA for increased Agency benefit from external creativity.

The FAST program provides opportunities for emerging technologies to be tested in the space environment thereby increasing infusion of new technologies into NASA and industry. Currently, the program focuses on testing technologies on parabolic aircraft flights that can simulate microgravity and the reduced gravity environments of the Moon or Mars. The FAST program promotes the growth of emerging commercial space services by employing a private reduced gravity flight service for these test flights.

In 2008, an initial set of FAST reduced gravity flights were accomplished. During these flights, five SBIR companies demonstrated a range of new technologies and increased the readiness of these technologies for future application. The FAST program leveraged previous NASA investments in SBIR technology developments by providing a testing opportunity that increased the Technology Readiness Level (TRL) of the technologies. This approach provides a continuum for technology insertion via the SBIR and STTR programs.

In 2009, IPP plans to select at least 20 FAST participants, not limited to SBIR companies, and anticipates larger numbers in future years. IPP also expects to expand this program to offer enhanced testing capabilities on suborbital and orbital flights when those services become commercially available. A measure of FAST program success will be the extent to which it can infuse new technologies into NASA programs while encouraging the development of commercial space services by enlarging the customer base for this emerging industry.

The Innovation Transfusion program will increase the exchange of ideas between NASA employees and the most innovative segments of the private sector and government. There are two elements of the program: Innovation Ambassadors (NASA employees spend up to 1 year at a private company/organization known for innovation in order to share expertise and learn about innovative products, processes and business models) and Innovation Scouts (small groups of NASA employees visit innovative external organizations for 1- or 2-day workshops to exchange ideas and learn about products, processes, and business models that will help NASA become more effective). Both elements will focus on exchanges with organizations outside the traditional aerospace field to seek fresh ideas and create new partnerships.

Future Centennial Challenges

Centennial Challenges program seeks innovative solutions to technical problems related to NASA's programs in space operations, science, exploration and aeronautics. NASA's current seven prize challenges have been successful in encouraging broad participation by innovators across our nation and across generations. Many of these technical challenges also have direct relevance to national and global needs such as energy and transportation.

Prize programs encourage diverse participation and multiple solution paths. A measure of diversity is seen in the geographic distribution of participants (from Hawaii to Maine) that reaches far beyond the locales of the NASA Centers and major aerospace industries. The participating teams have included individual inventors, small startup companies, and university students and professors. An example of multiple solution paths was seen in the Regolith Excavation Challenge. NASA can typically afford one or two working prototypes but at this Challenge event, sixteen different working prototypes were demonstrated for the NASA technologists. All of these prototypes were developed at no cost to the government.

The return on investment with prizes is high as NASA expends no funds unless the accomplishment is demonstrated. NASA provides only the prize money and the administration of the competitions is done at no cost to NASA by non-profit allied organizations. For the Lunar Lander Challenge, twelve private teams spent nearly 70,000 hours and the equivalent of $12 million trying to win $2 million in prize money. Prizes also focus public attention on NASA programs and generate interest in science and engineering. During the recent Lunar Lander Challenge, a live webcast had over 45,000 viewers and over 100,000 subsequent downloads. Prizes also create new businesses and new partners for NASA. The winner of the 2007 Astronaut Glove Challenge started a new business to manufacture pressure suit gloves. Armadillo Aerospace began a partnership with NASA related to the reusable rocket engine that they developed for the Lunar Lander Challenge, and they also sell the engine commercially.

In selecting topics for prize competitions, NASA will consult widely within and outside of the Federal Government. Topics for future challenges that are under consideration include revolutionary energy storage systems, solar and other renewable energy technologies, laser communications, demonstrating near-Earth object survey and deflection strategies, innovative approaches to improving the safety and efficiency of aviation systems, closed-loop life support and other resource recycling techniques, and low-cost access to space. The goal in future challenges is to address common NASA and national technology needs, balance the challenges across the fields of science, exploration, space operations, and aeronautics, and broaden the geographical distribution of competitor teams and host venues.

Partnership Development

IPP is NASA's agent for facilitating the transfer of NASA-derived technology for commercial application and other national benefit. The National Aeronautics and Space Act of 1958 and subsequent legislation direct NASA to have a formal technology transfer program, and take an active role in transferring technology to the private sector and state and local governments for the purposes of commercial and other application of the technology for the national benefit. IPP does this for NASA through Partnership Development, with offices at each of NASA's ten field centers.

The Partnership Development Program element, formerly Technology Transfer Partnerships, includes Intellectual Property Management, Technology Transfer, and new innovative partnerships. Space exploration provides the scientific and technological progress to meet challenging mission requirements. Many commercial technologies are the direct result of NASA-supported funding for internal research and development projects performed at NASA's Centers, and NASA-supported external research performed by the small business community. Through Partnership Development, IPP seeks partnerships for transfer of new or improved technology and innovations to NASA missions, and facilitates transfer out of NASA technology for commercial or other benefits to the Nation. Partnership Development encourages participation by all firms, from small to Fortune 500 companies, including companies from the non-aerospace ("non-traditional") sectors that otherwise might not recognize the opportunity to partner with NASA. Partnerships often involve state and other federal agencies, academic institutions, and other non-profit entities.

Partnership Development includes managing NASA's intellectual property. IPP seeks out potential licensees and negotiates license agreements to transfer NASA technology. In FY 2008, IPP documented 1,100 New Technology Reports on NASA-funded technology that could lead to patenting and transfer. 110 patent applications were filed and 112 patents were awarded in FY 2008. In addition, during FY 2008 IPP executed 30 license agreements and 800 software use agreements transferring NASA technology for broad use and public benefit. IPP has also begun to auction licenses for NASA technologies through an auctioning intermediary at no cost to NASA - previously unprecedented in government. Thus, NASA cultivates partnerships with private industry, academia, and other government agencies to bring its science back down to Earth.

Each year, IPP documents recent successes in its "Spinoff" publication with over 1,600 successes having been documented. The most recent issue, "Spinoff 2008" highlights 50 new examples of how NASA innovation can be transferred to the commercial marketplace.

IPP has strengthened the involvement of the Mission Directorates and Mission Support Offices in all of its program elements to better serve Agency-wide and public needs.

Innovative Technology

The National Research Council review of the Exploration Technology Development Program as well as NASA's internal assessments have noted that NASA does not currently have a robust way to solicit or identify low maturity ideas which are potentially high reward but risky because of their immaturity. Investments in these basic research areas provide the innovation that enables new and more capable missions in the future.

NASA is establishing an Innovative Technology Project that is intended to identify and competitively select, low maturity research projects, and to establish a process to successively eliminate low potential ideas and mature those with high potential. This project will be managed jointly by the Innovative Partnership Program and the Office of the Chief Engineer. The project will issue regular internal and external calls for proposals for small amounts, nominally $50K for 3-6 months study, with successive, phased follow-up awards possible for amounts of $250K-$2M for 6 months to 2 years of research. All selections will be subject to peer review endorsement for the initial and any successive awards. The core funding for this project, $2.8M in FY 2010 within the IPP program, may be augmented by up to $20M in funds from the Mission Directorate's program technology projects, to manage investments in specific disciplines of interest to the Agency's programs.

Program Commitments

Commitment/Output FY 2010	Program/Project	Changes from FY 2009 PB Request
105 technologies infused into NASA programs/projects from total Innovative Partnerships Program portfolio.	All IPP projects.	New metric
0.23 ratio of SBIR/STTR technologies successfully infused into NASA programs relative to the number of Phase II awards issued over the prior five years.	Small Business Innovative Research (SBIR)/ Small Business Technology Transfer (STTR)	New metric
200 technology readiness level (TRL) advancements achieved from the Innovative Partnerships Program portfolio.	All IPP projects.	New metric
35 SBIR/STTR Phase III contracts initiated or expanded.	SBIR/STTR	New metric
0.60 ratio of licenses generated from the Intellectual Property (IP) portfolio of patents from the last five years relative to the	Partnership Development.	New metric
40 notable technology transfer successes documented annually in NASA's Spinoff publication	All IPP projects.	New metric
1800 New Technology Reports (NTRs) produced each year, representing the new technologies available for potential transfer.	All IPP projects.	New metric
0.34 ratio of SBIR/STTR technologies used in commercial products or services, relative to the number of Phase II awards issue over the prior five years.	SBIR/STTR	New metric

Mission Directorate:	Cross-Agency Support
Theme:	Agency Management and Operations
Program:	Innovative Partnerships Program

Program Management

Project	Management Responsibility	NASA Center Performers	Cost-Sharing Partners
Small Business Innovative Research (SBIR)	NASA HQ IPP	All	NASA Programs/Projects for Phase IIE
Small Business Technology Transfer Research (STTR)	NASA HQ IPP	All	NASA Programs/Projects for Phase IIE
Partnership Development	NASA HQ IPP	All	All NASA Centers, external partners in industry, academia, other agencies
SBIR-STTR Program Support	NASA HQ IPP	All	N/A
Future Centennial Challenges	NASA HQ IPP	NASA HQ	5 allied organizations and their sponsors, competition partners.
Faciliatated Access to the Space Environment for Technology Development and Training (FAST)	NASA HQ IPP	All	NASA Program/Projects and non-NASA organizations
Investment Seed Fund	NASA HQ IPP	All	NASA Mission Directorates and non-NASA organizations
Innovation Transfusion	NASA HQ IPP	All	External organization hosts

Acquisition Strategy

NASA's SBIR/STTR programs represent major annual acquisitions, with a combined solicitation typically in July and selections announced in November. Other IPP activities are primarily partnerships not acquisitions.

Independent Reviews

Review Type	Performer	Last Review	Purpose/Outcome	Next Review
Performance	OMB	09/2008	Program Assessment Rating Tool (PART) Outcome: Program rated "Moderately Effective" due to lack of demonstrated results with new program metrics.	3 Years
Performance	National Research Council	09/2008	Review of SBIR/STTR Program: Review is currently in Phase II of a 2-phase study; each study phase to be completed within a 3-year period, currently in the 2nd year of study phase. Phase I results are available. Phase II planned to be completed in FY 2008.	TBD

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Mission Directorate:	Cross-Agency Support
Theme:	Agency Management and Operations
Program:	Strategic Capabilities Assets Program

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	27.2	28.0	29.4	30.2	30.2	30.2	30.5
Simulators	10.9	11.5	11.7	12.1	12.1	12.1	11.9
Thermal Vacuum Chambers	7.7	7.2	8.3	8.4	8.4	8.4	8.7
Arc Jets	8.6	9.3	9.4	9.7	9.7	9.7	9.9
FY 2009 President's Budget Request	27.2	28.0	29.8	30.7	30.7	30.7	--
Simulators	10.9	11.5	11.9	12.3	12.3	12.3	--
Thermal Vacuum Chambers	7.7	7.2	8.2	8.4	8.4	8.4	--
Arc Jets	8.6	9.3	9.7	10.0	10.0	10.0	--
Changes from FY 2009 Request	0.0	0.0	-0.4	-0.5	-0.5	-0.5	--

Program Overview

NASA's Strategic Capabilities Assets Program (SCAP) ensures that identified operational core assets and capabilities are available to support NASA's current and future missions. The SCAP establishes an alliance between all centers with like assets; makes decisions on disposition of capabilities no longer required; identifies re-investment/re-capitalization requirements within and among classes of assets; and implements changes. SCAP reviews the assets' capabilities each year to ensure the requirements continue to be valid.

SCAP ensures that essential test facilities are in a state of "ready to test". It maintains the skilled operational workforce and performs essential preventative maintenance to keep core facilities available to meet program requirements. The core capabilities supported within SCAP are Thermal Vacuum Chambers, Simulators, and Arc Jet facilities.

For additional information on SCAP, please see: http://oim.hq.nasa.gov/oia/scap/index.html.

Plans For FY 2010

SCAP will sustain the strategic technical capabilities needed by NASA for successful missions. SCAP will institute consistency in reimbursable pricing policies, perform quarterly program performance reviews continually reassess the strategy and provide a forum for cooperation between all centers within asset classes.

SCAP will ensure maximum benefit across government by broadening its alliances outside of the Agency for capabilities, such as, thermal vacuum chambers. By initiating new organizations, such as, the Space Environments Simulation Facilities Alliance (SESFA) between NASA, DOD, and other entities. This year an arc jet alliance will be established to allow coordination between DOD and NASA in this test area. SCAP will examine and scrutinize new proposals for additional capabilities that are submitted as part of the FY 2011 budget process.

SCAP is committed to continue developing and implementing disposition plans for assets which are no longer required by the Agency.

Project Descriptions and Explanation of Changes

Simulators

SCAP sustains operations of simulators which are critical components of the success of NASA's Aeronautics Research in the areas of fundamental aeronautics and aviation safety. This capability includes an array of research and development manned flight simulator assets at ARC and LaRC which are in the operations phase. Principal assets include the Vertical Motion Simulator, a large motion system, and its supporting cabs, laboratories, and equipment at ARC which provides scientists and engineers with tools to explore, define, and resolve issues in both vehicle design and missions operations. The Cockpit Motion Facility and its supporting suite of simulators (the Differential Maneuvering Simulator and the Visual Motion Simulator) and other central support facilities at LaRC are designed to support aeronautics and spaceflight vehicle research studies in which motion cues are critical to the realism of the experiments being conducted.

Thermal Vacuum Chambers

SCAP sustains thermal-vacuum, vacuum, and acoustic chambers at NASA facilities (Glenn Research Center, Goddard Space Flight Center, Jet Propulsion Laboratory, Johnson Space Center, Kennedy Space Center, Marshall Space Flight Center, and Plum Brook Station) that simulate conditions in the launch and space environments. These assets are large enough to accommodate a spacecraft with adequate space surrounding the structure for safe, easy access while inside the chamber. Chambers with minimum outline dimensions of 10 ft. by 10 ft. will generally meet this provision. These chambers have the capability of producing pressures of 1 X 10-2 torr or lower and thermal shrouds capable of liquid nitrogen temperatures or lower. Acoustic chambers are capable of generating approximately 150 dB at frequencies in the range of 25 to 1000 Hertz. These chambers perform significant risk mitigation for most of NASA payloads launched into space as well as many in other government agencies such as NOAA, and DOD. Almost all spacecraft launched into space must first be tested in one of NASA's thermal vacuum chambers.

Arc Jets

The NASA SCAP sustains arc-jet complexes located at Ames Research Center and the Johnson Space Center. An arc jet provides simulated high temperature, high velocity environments that support the design, development, test and evaluation (DDT&E) activities in thermal protection materials, vehicle structures, aerothermodynamics, and hypersonics. A gas (typically air) is heated and accelerated to supersonic/hypersonic speeds by a continuous electrical arc. This high-temperature gas passes over a test sample, producing an approximation of the surface temperature and pressure environments experienced by a vehicle on atmospheric entry. Arc jet testing has been critical in the safe return of Space Shuttles from orbit with tile damage. In addition, arc jet testing performed essential validation of materials for the Mars entry missions such as Mars Science Laboratory. NASA maintains two of the four arcjets in the United States providing a critical national capability.

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Mission Directorate:	Cross-Agency Support
Theme:	Institutional Investments

Theme Overview

Institutional Investments provides for design and execution of non-programmatic discrete and minor revitalization construction of facilities projects, facility demolition projects, and environmental compliance and restoration activities.

The Institutional Construction of Facilities (CoF) program funds all institutional CoF projects. These projects are managed via NASA's Capital Facility Investment Program which also includes programmatic facility investments funded by Mission Directorates. The construction planning process starts several years in advance, with design being funded two budget years prior to construction start. The CoF program is developed through a process involving both internal and external stakeholders. All of the Centers' requirements are reviewed and prioritized annually to ensure that only the highest ranking priorities are funded.

The purpose of NASA's Environmental Compliance and Restoration (ECR) program is to clean up chemicals released to the environment from past activities. Cleanups are prioritized to ensure that the highest priority liabilities are addressed first in order to protect human health and the environment and preserve natural resources for future missions.

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	**325.5**	**343.7**	**355.4**	**392.3**	**418.7**	**423.0**	**450.0**
Institutional Construction of Facilities	249.0	268.9	284.2	326.0	367.4	371.6	397.4
Environmental Compliance and Restoration	76.5	74.8	71.2	66.3	51.3	51.4	52.6
FY 2009 President's Budget Request	**319.7**	**308.7**	**331.7**	**335.9**	**330.4**	**338.3**	**--**
Institutional Construction of Facilities	243.2	233.9	260.5	269.6	279.1	286.9	--
Environmental Compliance and Restoration	76.5	74.8	71.2	66.3	51.3	51.4	--
Total Change from FY 2009 Request	**5.8**	**35.0**	**23.7**	**56.4**	**88.3**	**84.7**	**--**

Plans for FY 2010

Institutional Construction of Facilities

The Construction of Facilities Program will make capital repairs to NASA's critical infrastructure and make improvements that will improve safety and security, protect NASA's infrastructure, and improve NASA's operating efficiency by reducing utility usage. The program will continue to right size the infrastructure by demolishing infrastructure that is no longer needed.

Projects with initial cost estimates between $1.0 million and $10.0 million are included in the program as Minor Revitalization and Construction projects, and projects with initial cost estimates of $10.0 million or greater are budgeted as discrete projects. Projects with initial cost estimates of $1.0 million or less are accomplished by routine day-to-day facility maintenance and repair activities provided for in program and Center operating budgets. NASA is requesting five-year fund availability to enable effective and efficient management of institutional and programmatic construction projects.

NASA will invest in projects that protect the agency's critical assets, improve mission assurance, and reduce mission risk. Investment in projects such as utility tunnel upgrades at JSC and launch facility protection at Wallops Island will protect NASA's critical assets in the case of natural disasters. Fire protection system repairs and upgrades such as the fire main system repairs at Stennis Space Center's largest test stands will improve worker safety and provide safer testing and operations.

NASA's repair by replacement program will provide sustainable and energy efficient infrastructure by replacing old, inefficient, deteriorated buildings with new efficient high performance buildings. In some cases, NASA will be able to refurbish existing facilities into sustainable buildings that will meet NASA's future technology needs by retaining only the structure and replacing the systems necessary for mission operations. When this approach is viable, the projects will save capital investment over wholesale replacement but still yield a good return on investment through reduced operating costs.

By investing in demolition, NASA will be able to reduce un-needed infrastructure and avoid future expenses for maintaining this infrastructure. The FY 2010 program will demolish some of the first facilities that the agency has identified as un-necessary once the Space Shuttle is retired. This will allow the agency to shift some investment in Shuttle facilities to support new programs shortly after the Shuttle's last flight.

More than 80% of NASA's infrastructure is beyond its design life. As NASA's facilities age beyond their useful life, the facilities become unreliable and put NASA's programs and operations at risk. To mitigate the increasing risk to NASA's missions from infrastructure failure, NASA must maintain its investment in infrastructure repair and refurbishment.

Environmental Compliance and Restoration

For FY 2010 Environmental Compliance and Restoration (ECR) major cleanup activities with the highest priority requirements are:

1) Decontamination and demolition of NASA's Plum Brook Reactor Facility
2) Address ground water and drinking water issues at the Jet Propulsion Laboratory
3) Continue cleanup of ground water contamination at White Sands Test Facility
4) Accelerate cleanup of contamination at Santa Susana Field Laboratory

Relevance

Relevance to national priorities, relevant fields, and customer needs:

Institutional Investments funding ensures that NASA's facilities and field installations meet the Agency's infrastructure needs in a safe, secure, and environmentally sound manner. Activities implement sustainable design practices and support compliance with state and national environmental laws and initiatives outlined under the Energy Policy Act of 2005.

Relevance to the NASA Mission and Strategic Goals:

Institutional Investments contributes to the Agency's Strategic Goals by providing critical institutional and program capabilities to support NASA's missions. NASA's Construction of Facilities supports NASA's mission by making capital repairs to the infrastructure necessary for testing space flight hardware, processing spacecraft payloads, launching aircraft and spacecraft and monitoring NASA flight tests and missions. Investment in NASA's ground infrastructure ensures successful space exploration and research. Proper investment in NASA's infrastructure is vital to reducing the risk to NASA's programs and missions resulting from unreliable facilities. Further, the program protects NASA's investments toward its strategic goals by protecting the people and equipment necessary for the execution of the exploration and research mission.

Relevance to education and public benefits:

The Environmental Compliance and Restoration program ensures that the public is not exposed to hazards and that impacted natural resources are restored for future use.

Performance Achievement Highlights:

NASA continued essential infrastructure repair and revitalization activities, completing $122 million of institutional construction of facility projects and awarding 57 institutional construction projects and 46 program construction funded projects.

Additionally NASA continued reducing its infrastructure by disposing of 107 un-needed facilities. Assertive recycling strategies and sustainable demolition practices facilitated demolishing a large inactive Wind Tunnel.

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Mission Directorate:	Cross-Agency Support
Theme:	Institutional Investments
Program:	Institutional Construction of Facilities

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	249.0	268.9	284.2	326.0	367.4	371.6	397.4
Institutional Construction Of Facilities	249.0	268.9	284.2	326.0	367.4	371.6	397.4
FY 2009 President's Budget Request	243.2	233.9	260.5	269.6	279.1	286.9	--
Institutional Construction Of Facilities	243.2	233.9	260.5	269.6	279.1	286.9	--
Changes from FY 2009 Request	5.8	35.0	23.7	56.4	88.3	84.7	--

Program Overview

The Construction of Facilities (CoF) program ensures that the facilities critical to achieving NASA's space and aeronautics programs are the right size and type, and that they are safe, secure, environmentally sound, and operated efficiently and effectively. NASA manages over 5500 facilities with a current replacement value in excess of $23 billion. The CoF Program provides on-going capital improvements to protect the Nation's investment in these facilities. It also ensures that NASA installations conform to requirements and initiatives for the protection of the environment and human health. NASA facilities are essential to the Agency and facility revitalization is needed to maintain infrastructure that is safe and capable of supporting NASA's missions. The facilities being revitalized or constructed in this program are expected to remain active in the long term and are consistent with current and anticipated Agency roles and missions. Projects with initial cost estimates between $1.0 million and $10.0 million are included as Minor Revitalization and Construction projects, and projects with initial cost estimates of $10.0 million or greater are budgeted as discrete projects. Projects with initial cost estimates of $1.0 million or less are accomplished by routine day-to-day facility maintenance and repair activities provided for in program and Center operating budgets. Activation and outfitting costs are not included in CoF funding but are described when they exceed industry standards due to unique NASA requirements.

Institutional CoF projects are required for components of NASA's basic infrastructure and institutional facilities. Funding for Institutional CoF projects is included within the Agency's Institutional Investment account. Funding for construction projects required for specific programs is included in the appropriate budget line item within each Mission Directorate and summarized herein as programmatic projects. Descriptions and cost estimates of FY 2010 institutional and programmatic projects are provided to show a complete picture of NASA's budget requirement for facilities revitalization and construction.

Plans For FY 2010

The institutional facility projects requested for FY 2010 continue the vital rehabilitation, modification, and repair of facilities to renew and help preserve and enhance the capabilities and usefulness of existing facilities and ensure the safe, economical, and efficient use of NASA's physical plants. The projects repair and modernize deteriorating and obsolete building and utility systems that have reached or exceeded their normal design life, are no longer operating effectively or efficiently, and cannot be economically maintained. These projects include mechanical, structural, cooling, steam, electrical distribution, sewer, and storm drainage systems. Some projects replace substandard facilities in cases where it is more economical to demolish and rebuild than it is to restore. Funds requested for construction planning, design and management cover labor, travel, advance planning and design requirements for future projects; preparation of facility project design drawings and bid specifications; master planning; facilities studies; engineering reports and studies; and critical functional leadership activities directed at increasing the rate of return of constrained Agency resources while keeping the facility infrastructure safe, reliable, and available.

Institutional facilities projects support NASA's mission and strategic goals by revitalizing the infrastructure to ensure reliable ground systems critical for NASA's flight, space flight, and research missions. Projects will reduce un-needed infrastructure through demolition and disposal and reduce the Agency's liability resulting from facilities that the Agency no longer needs. The Agency will reduce energy usage and energy dependence by constructing high performance, sustainable facilities and replacing old failing systems with new energy efficient systems. Projects within the Institutional Construction of Facilities program will improve mission safety and success, protect the NASA workforce and mission equipment, and improve employee health by improving indoor air quality.

NASA will initiate several recapitalization projects in 2010. These projects will mitigate the Agency's highest facility risks and bring facilities back to their design life and parameters by revitalizing major systems and eliminating their associated maintenance backlog, or replacing facilities when it is not economically viable to revitalize. The projects that comprise this request are of the highest priority based on relative urgency and expected return on investment.

SUMMARY OF RESOURCES INCLUDED IN BUDGET REQUEST

In Millions of Dollars	FY 2008 Actuals	FY 2009 Enacted	FY 2010
Total Construction of Facilities	**366.1**	**402.2**	**412.0**
Science	43.9	21.6	12.6
Exploration	64.0	97.0	88.4
Space Operations	9.2	14.7	26.8
Cross-Agency Support	249.0	268.9	284.2

PROJECT DESCRIPTIONS AND EXPLANATIONS OF CHANGES

SUMMARY OF FY 2010 NON-PROGRAMMATIC CoF PROJECTS

SUMMARY OF FY 2010 NON-PROGRAMMATIC CoF PROJECTS

In Millions of Dollars	FY 2008 Actuals	FY 2009 Enacted	FY 2010
Institutional CoF Projects	249.0	268.9	284.2
Repair Hangar, Fire Protection and Electrical, B4820 (DFRC)	---	---	10.0
Repair Primary Electrical Distribution System (DFRC)	---	---	12.0
Construct Centralized Office Building (GRC)	---	---	25.3
Construct Shipping and Receiving Facility (GSFC)	---	---	12.8
Revitalize Administrative Support Building 12 (JSC)	---	---	22.0
Renovation of Operations & Checkout Building (KSC)	7.0	6.5	18.0
Revitalize High and Medium Voltage Electrical Distribution Systems (KSC)	---	---	18.1
Replace Asbestos Siding and Provide Energy Upgrades to Building 4707 (MSFC)	---	7.4	5.0
Construct Collaboration Support Facility, Building N232 (ARC)	---	29.0	---
Upgrade Electrical Supply Reliability, NASA Advanced Supercomputing Facility (ARC)	---	11.5	---
Construct Replacement Propellants North Maintenance Facility (KSC)	---	5.0	---
Revitalize Electrical Maintenance Facility (KSC)	---	5.9	---
Repair and Construct Consolidated Information Technology Center, Phase 2 (DFRC)	---	10.8	---
Upgrade Auxiliary Chiller Plant (JSC)	---	7.5	---
Repair Hurricane Damage, American Recovery and Reinvestment Act (JSC)	---	50.0	---
Construct Flight Project Center (JPL)	3.9	---	---
Construct New Office Facility (JSC)	11.9	---	---
Construct Replacement Administrative Office Bldg (LaRC)	28.8	---	---
Construct Replacement Engineering Building (MSFC)	34.0	---	---
Replace Asbestos Siding and Provide Energy/Safety Upgrades, Bldg 4705 (MSFC)	8.9	---	---
Minor Revitalization of Facilities at Various Locations (less than $10M per project)	105.6	80.9	94.6
Demolition of Facilities	14.4	15.0	20.0
Construction Planning, Design and Management	34.5	39.4	46.4

NON-PROGRAMMATIC DISCRETE PROJECTS

Project Title: Repair Hangar, Fire Protection and Electrical, B4820
Location: Dryden Flight Research Center, Kern County, CA
FY 2010 Estimate: $10.0M

The building 4820 aircraft hangar currently has a high bay deluge fire protection system. This project replaces components of the existing system necessary to provide a fire protection system compliant with current policy for hangars with fueled aircraft. The project also replaces the electrical power distribution system, including the installation of explosion proof duplex outlets with dedicated circuit breakers for each outlet. About half of the duplex outlets will be supplied through an uninterruptible power supply (UPS) which is required to protect test systems. Power control cabinets will be replaced. The existing power control cabinets were manufactured in the 1960s, are obsolete, and have significant safety concerns. Personnel emergency egress from room 121, a control room, office space in rooms 121 and 122, and storage areas in rooms 221 and 222, will be brought into life safety code compliance. This includes the construction of a safe egress corridor from the first floor rooms to the outside of the building. A second floor office area with conference room and restroom will also be constructed, and will address the Americans with Disabilities Act requirements for rooms 221 and 222 which are currently non-compliant.

Project Title: Repair Primary Electrical Distribution System
Location: Dryden Flight Research Center, Kern County, California
FY 2010 Estimate: $12.0M

This project will replace Dryden's main electrical distribution Substation 16 by constructing a new electrical substation with two sources of power, and integrating it with the existing emergency generators. A new building for the switchgear assemblies will also be provided. These switchgear assemblies will provide a source for power distribution throughout the center. Substation 16 is failing and difficult to repair. If this substation fails, DFRC will no longer be able to support any missions. The repair of this system is essentially a constant effort due to the age of the equipment and the extreme desert weather/environment. Critical components of this substation have already failed including one of two main incoming power circuit breakers for which no replacement parts are available. Some equipment in this substation is more than 35 years old and beyond its design life. There is no way to predict future equipment failures.

Project Title: Construct Centralized Office Building
Location: Glenn Research Center, Cleveland, Ohio
FY 2010 Estimate: $25.3M

This project will construct an 80,000 to 90,000 square foot office building designed to consolidate 300 of Glenn Research Center's program, project management, and engineering personnel onto the main Lewis Field campus. This will allow for the deconstruction* of 205,000 square feet of deteriorated North Campus Office Buildings Numbers 500 and 501. The new building will be three or four stories with a partial basement, contain ten conference rooms, and include an auditorium sized to seat 400 persons. Included in the project scope will be site work, underground utilities, and surface parking for 200 to 250 vehicles. The building will be energy and water efficient, use materials with significant recycled and recyclable content, and provide an exceptional indoor environment that will achieve a LEED (Leadership in Energy and Environmental Design) Silver rating and employ sustainable design principles to comply with energy and water efficiency standards for Federal buildings. In order to clear the main campus site needed for the new office building and surface parking requirements, the deconstruction* of the 10,000 square foot Storage Building No. 84, and the 8,000 square foot Warehouse Building No. 137 is also required. These old structures are no longer weather-tight and have significant mold and moisture problems. A new 18,200 square foot warehouse will be constructed in the GRC Lewis Field West Area

to replace these old facilities. The new building will be one story above grade with high bay framing, have 12,000 square feet of high capacity storage space, include office space for approximately

16 persons, and include approximately 20 new parking spaces. Site work and underground utilities for the new warehouse are also included.

*Note: Deconstruction work is being funded through our normal demolition account and is not part of this project.

Project Title: Construct Shipping and Receiving Facility
Location: Goddard Space Flight Center, Greenbelt, Maryland
FY 2010 Estimate: $12.8M

The project will construct an approximately 25,000 gross square foot building located in a relatively isolated area of the eastern perimeter of GSFC. The building will house the shipping and receiving functions for GSFC including mail room and duplication, packing and crating, a small amount of office space, temporary storage space, and bathrooms and other institutional support space. Associated work includes loading docks, new and upgraded roadways, parking, traffic control, security station and fencing, site lighting, new and upgraded utilities, erosion and sediment control, storm water management, forest conservation, and landscaping. Capacity for warehouse expansion and ultimate site build out is included to limited extents. This project is within the scope of the GSFC's master plan. The Building 16 Complex was built in 1964 to house GSFC's Logistics functions. When built the facility was on the perimeter of the Center's west campus adjacent to a public roadway. That is no longer the case. The facility now lies approximately in the middle of a unified east/west Center and deliveries must be inspected at perimeter Center security gates which are inadequate for proper receipt and inspection of bulk deliveries. These functions need to be relocated to the perimeter of the Center for security purposes. Complete and proper inspections need to occur before shipments reach to highly populated areas and critical facilities on the Center. The Complex has been added to over the years to provide additional office spaces which now house over 200 Program Project Management personnel. These two disparate functions housed together in the same Complex make this building a single point of failure for missions in the event of an attack through the mail/delivery system.

Project Title: Revitalize Administrative Support Building 12
Location: Johnson Space Center, Houston, Texas
FY 2010 Estimate: $22.0M

This project will provide for total refurbishment of Administrative Support Building 12 which houses Finance, Education, Human Resources, Information Systems and Business Management personnel. It contains a film vault, the Center language lab, software design labs and Center computer training rooms. The refurbishment will be LEED Silver and strive to attain Gold certification. The project will remove asbestos sprayed on the underside of the decking, contained in floor tile, pipe insulation, and sheet rock. Indoor air quality will be improved by replacing HVAC systems. Accessibility issues for the disabled will be addressed. Obsolete fire protection equipment will be replaced, and a sprinkler system will be installed. All electrical switchgear and Motor Control Center equipment will be replaced. Building architectural issues, such as the floor plan, lighting, open stairwell (fire issue) will be replaced or upgraded. Building 12 is a two-story, 63,511 square feet facility that houses over 220 people who will be relocated during construction. It is the oldest building on site, and was constructed in 1963 as a main frame computer building. The function of the building has changed significantly, resulting in inadequate and oversized HVAC systems with marginal fresh air to meet indoor air quality standards. The facility has experienced high failure rates of equipment and critical components are obsolete. Repair work orders in 2006 numbered 208. For 2007, the trend has increased to 298 repair work orders. Mechanical and electrical equipment rooms are combined and equipment cannot be replaced without cutting the equipment into pieces.

Project Title: Renovation of Operations and Checkout Building
Location: Kennedy Space Center, Merritt Island, Florida
FY 2010 Estimate: $18.0M

This project revitalizes the Operations and Checkout Building for indoor air quality, energy efficiency and life safety compliance in various locations. The revitalization will consist of installing a sprinkler system, energy-efficient office lighting, complete updating of the Heating, Ventilation, and Air Conditioning (HVAC) systems and demolishing the existing HVAC ductwork that contributes to poor indoor air quality and asbestos abatement. Other facility systems include HVAC controls, lighting and fire protection. This phase will include the demolition and renovation of the remaining portion of the North Wing, including the three walkways between the north and the south wings. It also includes selected facility systems that support the institutional laboratories in the south wing, such as the air handling units, the motor control centers, and the lightning

protection system. In addition, this project will upgrade employees' office areas in the north wing, including power, communications and data systems. A critical need exists at the Kennedy Space Center to revitalize substandard facilities affecting the health, safety and welfare of personnel. The deteriorated substandard facilities are contributing to costly maintenance requirements, highly inefficient energy consumption and unhealthy working environments. The facility has not been updated to current Florida Building Codes, Florida Fire Prevention Codes, or National Fire Protection Association Life Safety Standards. This project will relieve personnel of the health dangers associated with poor Indoor Air Quality and Building Related Illnesses. An increase in space utilization will be realized. This is the fifth and final phase of this project.

Project Title: Revitalize High and Medium Voltage Electrical Distribution Systems
Location: Kennedy Space Center, Merritt Island, Florida
FY 2010 Estimate: $18.1M

This project will replace deteriorated, degraded and defective high-voltage (HV) and medium-voltage (MV) electrical equipment including but not limited to feeder cables, switchgears, duct banks, transformers, unit substations, protective relays, and corrosion control on electrical equipment enclosures and supporting structures. Selected portions of the power system duct banks will be replaced where deterioration precludes re-use for new cabling. Much of the existing medium voltage cable installed between 1960 and 1980 is deteriorated, obsolete, and failing. Corrosion is a major contributor to deterioration of electrical equipment at KSC resulting from the proximity to the coast and salt-water laden environment. The majority of KSC MV cables are installed in underground duct banks that are submerged in water due to the high water table. Moisture migration through sheath and insulation is a factor for accelerated deterioration of these types of cables. The new cables being installed are EPR and have a better performance in wet environments.

Project Title: Replace Asbestos Siding and Provide Energy Upgrades to Building 4707, Phase 2
Location: Marshall Space Flight Center, Huntsville, Alabama
FY 2010 Estimate: $5.0M

This project provides upgrades to mechanical and electrical distribution systems that no longer meet the current and future operational needs of this facility. Air handling units will be replaced, centralized and/or supplemented. The mechanical and electrical systems will be added to the Utility Control System network for automated control for improved energy conservation. This project will contribute toward meeting MSFC's requirement to operate at or below the established 2010 energy efficiency goals and will also reduce deferred maintenance, enhance indoor air quality, and optimize operational and maintenance practices. Building 4707 offers unique capabilities not otherwise available on or off-site. It is defined as a "Significant" mission support facility in MSFC's Master Plan and will continue to be a showcase of unique technological capabilities. This one-of-a-kind facility houses the highest state-of - the-art equipment that supports both national collaborative strategies and joint programs for

manufacturing research and development including the National Center for Advanced Manufacturing (NCAM) that are applicable to a broad spectrum of programs and projects. Mechanical systems are fragmented, subject to breakdown, and operating, maintenance and repair costs are increasing. The facility does not provide an adequate environment for its current functions and without these upgrades will not be able to support the Mission and Programs. This is the second of two phases with the total estimated cost of $12.4M.

INSTITUTIONAL MINOR REVITALIZATION AND CONSTRUCTION OF FACILITIES (PROJECTS LESS THAN $10.M EACH)

This request includes facility revitalization and construction needs with initial cost estimate greater than $1.0 million but less than $10.0 million per project. Projects with initial cost estimates of $1.0 million or less are normally accomplished by routine day-to-day facility maintenance and repair activities provided for in direct program and Center operating budgets. Proposed FY 2010 Institutional minor revitalization and construction projects total $94.6 million for components of the basic infrastructure and institutional facilities, funded in Institutional Investments, and $55.8 million for Program funded projects. These resources provide for revitalization and construction of facilities at NASA field installations and government-owned industrial plants supporting NASA activities. Revitalization and modernization projects provide for the repair, modernization, and/or upgrade of facilities and collateral equipment. Repair projects restore facilities and components to a condition substantially equivalent to the originally intended and designed capability. Repair and modernization work includes the substantially equivalent replacement of utility systems and collateral equipment necessitated by incipient or actual breakdown. It also includes major preventive measures that are normally accomplished on a cyclic schedule and those quickly needed out-of-cycle based on adverse condition information revealed during predictive testing and inspection efforts. Modernization and upgrade projects include both restoration of current functional capability and enhancement of the condition of a facility so that it can more effectively accomplish its designated purpose or increase its functional capability or so that it can meet new building, fire, and accessibility codes.

The minor revitalization and construction projects that comprise this request are of the highest priority, based on relative urgency and expected return on investment. The titles of the projects are designed to identify the primary intent of each project and may not always capture the entire scope or description of each project. Also, during the year, some rearrangement of priorities may be necessary which may cause a change in some of the items to be accomplished.

INSTITUTIONAL MINOR REVITALIZATION PROJECTS: $94.6 MILLION

A. Ames Research Center (ARC), $18.8 million for the following:

1. Emergency/Fire Water Storage and Valves
2. Restore Electrical Distribution System, Phase 8
3. Replace Feedwater Tank and De-aerator
4. Upgrade Perimeter Fence Line
5. Automatic Fire Suppression Systems, Various Buildings
6. Replace Unitary Plan Wind Tunnel 7200V Transformer Secondary Cables

B. Glenn Research Center (GRC), $10.2 million for the following:

1. Repair Raw Water System, Plum Brook Station
2. Security Requirements for GRC Lewis Field Main Gate Area, Phase 3
3. Repair Boiler, Electric Power Laboratory, Building No. 301
4. Repair High Voltage System, Plum Brook Station, Phase 2

C. Goddard Space Flight Center (GSFC), $25.1 million for the following:

1. Repair Central Power Plant Equipment, Building 24, Greenbelt
2. Revitalize X-141 Switching Station, Wallops
3. Replace Roofs, Various Buildings, Greenbelt & Wallops
4. Upgrade Fire Alarm System, Various Buildings, Greenbelt
5. Launch Facility Protection, Wallops Island
6. Replace Building 25 Geothermal Heat Pump

D. Johnson Space Center (JSC), $15.8 million for the following:

1. Upgrade Sanitary Sewer System, WSTF
2. Upgrade Site Electrical Distribution System
3. Replace Potable Water Piping Distribution System
4. Rehabilitate Emergency Electrical Systems, Various Areas and 300 Area Substation, WSTF

E. Kennedy Space Center (KSC), $4.5 million for the following:

1. Repair Center Wide Fire Monitoring, Detection and Alarm System, Phase 1
2. Revitalize/Upgrade Water & Waste Water Systems, Various Locations, Phase 2

F. Langley Research Center (LaRC), $9.3 million for the following:

1. Replace Unit Substations, Various Facilities
2. Repair Underground Utility Tunnels #1 & #2 and Steam Distribution Systems and Components inside the Tunnels

G. Marshall Space Flight Center (MSFC), $4.5 million for the following:

1. Repair Electrical Distribution System, Site Wide, Phase 2

H. Stennis Space Center, $6.4 million for the following:

1. Refurbish Test Stand Fire Main System, Phase 1
2. Repair High and Low Voltage Electrical System Sitewide

DEMOLITION OF FACILITIES

Cognizant Office: Office of Infrastructure
FY 2010 Estimate: $20.0M

The amount requested is required to fund major demolition projects Agency-wide. NASA owns over 2,500 buildings, and over 2,300 other structures, totaling more than 40 million square feet with a current replacement value of over $24 billion. About 420 of these facilities are "mothballed" or "abandoned." Closed facilities are a drain on NASA resources and should be demolished because they can deteriorate into eyesores and possible safety hazards. Demolition projects have accounted for a significant deferred maintenance reduction and have an estimated payback period of seven years.

CONSTRUCTION PLANNING, DESIGN AND MANAGEMENT

Cognizant Office: Office of Infrastructure
FY 2010 Estimate: $46.4M

These funds are required to provide for: advance planning and design activities; special engineering studies; facility engineering research; preliminary engineering efforts required to initiate design-build projects; preparation of final designs, construction plans, specifications, and associated cost estimates; Center labor and travel required to support Institutional CoF Program management; and participation in facilities-related professional engineering associations and organizations. These resources provide for project planning and design activities associated with non-programmatic construction projects. Project planning and design activities for construction projects required to conduct specific programs or projects are included in the appropriate budget line item. Other activities funded include: master planning; value engineering studies; design and construction management studies; facility operation and maintenance studies; facilities utilization analyses; engineering support for facilities management systems; and capital leveraging research activities.

SUMMARY OF FY 2010 PROGRAM DIRECT BY MISSION DIRECTORATE

SUMMARY OF FY 2010 PROGRAM DIRECT PROJECTS BY MISSION DIRECTORATE

In Millions of Dollars	FY 2008 Actuals	FY 2009 Enacted	FY 2010*
PROGRAMMATIC COF PROJECTS	117.1	133.3	127.8
SCIENCE	43.9	21.6	12.6
Construct Laser Fabrication and Test Facility (GSFC)	---	5.4	---
Improve Launch Pad Infrastructure, WFF (GSFC)	---	14.0	---
Construct Exploration Sciences Building (GSFC)	20.0	---	---
Construct Flight Projects Center (JPL)	14.2	---	---
Minor Revitalization of Facilities at Various Locations funded by Earth Science Research	---	---	11.4
Minor Revitalization of Facilities at Various Locations funded by Heliophysics Research	---	1.5	1.2
Minor Revitalization of Facilities at Various Locations funded by Cosmic Origins	2.9	.6	---
Minor Revitalization of Facilities at Various Locations funded by Planetary Science Research	1.1	.1	---
Minor Revitalization of Facilities at Various Locations funded by Deep Space Network	5.7	---	---
EXPLORATION SYSTEMS	64.0	97.0	88.4
Modify Launch Complex 39B for ARES 1 Vehicles (KSC)	---	21.7	6.8
Modify Vehicle Assembly Building (KSC)	---	2.5	35.8
Modify Multi-Payload Processing Facility for Orion (KSC)	---	---	1.0
Modify Building 103 to Support Upper Stage Manufacturing, MAF (MSFC)	---	11.0	2.5
Construct A-3 Propulsion Test Facility (SSC)	---	---	16.8
Modify Space Power Facility for Orion Integrated Environmental Testing, Plum Brook Station (GRC)	4.0	---	2.3
Modify Multi-Payload Processing Facility for Crew Exploration Vehicle (KSC)	---	7.7	---
Construct Vertical Assembly & Welding High Bay in Building 103, MAF (MSFC)	---	42.3	---
Modify A-1 Propulsion Test Facility (SSC)	---	0.9	---
Construct Center for Human Space Flight Performance and Research (JSC)	5.0	---	---
Construct Crew Exploration Vehicle Avionics and Integration Lab (JSC)	23.0	---	---
Revitalize Operations and Checkout Building for Orion Crew Vehicle (KSC)	18.2	---	---
Minor Revitalization of Facilities at Various Locations funded by Constellation Systems	13.8	10.9	21.2
Minor Revitalization of Facilities at Various Locations funded by Exploration Technology Development Program	---	---	2.0
SPACE OPERATIONS	9.2	14.7	26.8
Construct 34-Meter Beam Waveguide Antenna, DSS-35, Canberra, Australia (JPL)	---	---	6.8
Construct Center for Human Space Flight Performance and Research (JSC)	4.0	---	---
Minor Revitalization of Facilities at Various Locations funded by Space Station	1.9	---	---
Minor Revitalization of Facilities at Various Locations funded by Deep Space Network	---	12.2	4.3
Minor Revitalization of Facilities at Various Locations funded by Space and Flight Support	3.3	2.5	15.7

* The human spaceflight review may result in changes to the budget for Exploration activities.

PROGRAMMATIC DISCRETE PROJECTS

Exploration

Project Title: Modify Launch Complex 39B for ARES I Vehicles
Location: Kennedy Space Center, Merritt Island, Florida
Mission Directorate: Exploration Systems
FY 2010 Estimate: $6.8 M

This project modifies and upgrades Launch Complex 39B to support launch of the Orion crew exploration vehicle on the ARES I crew launch vehicle. Launch Complex 39B is currently configured to support launch of the Space Shuttle. The differences in vehicle architecture between ARES I and Shuttle are significant enough to necessitate considerable changes to the existing launch complex. Implementation of these changes is critical to enable safe and affordable operation of the ARES I crew launch vehicle. This is the second increment of a multi-year funded project. The $38.4 million first phase of this project is already underway and is funded using fiscal year 2006 and 2007 resources. Two additional phases are planned in FY11 and FY12 for a total project cost estimate of $96.9 million.

Project Title: Modify Vehicle Assembly Building
Location: Kennedy Space Center, Merritt Island, Florida
Mission Directorate: Exploration Systems
FY 2010 Estimate: $35.8 M

This project modifies the Vehicle Assembly Building to accommodate assembly of the ARES I crew launch vehicles. This is the second increment of a multi-year funded project. The first increment of this project was funded with $2.5 million in fiscal year 2009. The original description provided to Congress for the first increment reflected our plans at the time to modify the existing work platforms, lifting devices, lighting, and other building infrastructure systems. Trade studies performed as part of our preliminary engineering work determined it would be more cost effective to replace the existing platforms rather than modify them. Additional facility modifications are required and critical to enable the safe and affordable operation of the ARES-I crew launch vehicle. Two additional phases are planned in FY11 and FY12 for a total project cost estimate of $64 million.

Project Title: Modify Multi-Payload Processing Facility (MPPF) for Orion
Location: Kennedy Space Center, Merritt Island, Florida
Mission Directorate: Exploration Systems
FY 2010 Estimate: $1.0 M

This project modifies and upgrades the Multi-Payload Processing Facility to enable off-line Orion spacecraft processing for hazardous fueling operations, as well as non-hazardous cargo loading and system testing. The capability to conduct hazardous operations of the Orion spacecraft off-line will provide a safer environment for personnel conducting the hazardous operations, a four day critical path reduction for launch processing, and a rollback and de-servicing capability for contingency operations. These capabilities are critical requirements to enable safe and affordable deployment of the Orion Crew Exploration Vehicle, and cannot be economically accommodated in any other facility. The first phase of this project is $1 million, and the second phase is projected to be $9.5 million for a total project cost estimate of $10.5 million.

Project Title: Modify Building 103 to Support Upper Stage Manufacturing
Location: Michoud Assembly Facility, New Orleans, Louisiana
Mission Directorate: Exploration Systems
FY 2010 Estimate: $2.5 M

This project provides for modifications to Building 103 at MAF for horizontal welding, reaction control system assembly, avionics integration, test and assembly, machining, and common bulkhead assembly and cleaning. This is the second increment of a multi-year funded project. The first increment of this project is funded with $11 million of FY 2009 resources. The project will modify various locations in Building 103 to accommodate robotic weld tools, humidity and temperature controlled environments, heavy machinery, ovens, and cleaning tanks. Modifications will include the installation of mass foundations, various mechanical systems such as shop air, pneumatics, hydraulics, and electrical systems such as power, lighting and grounding. An additional phase is planned in FY11 for a total project cost estimate of $19 million.

Project Title: Construct A-3 Propulsion Test Facility
Location: Stennis Space Center, Mississippi
Mission Directorate: Exploration Systems
FY 2010 Estimate: $16.8 M

This project consists of construction of a new propulsion test facility in Stennis Space Center A-complex including Test Stand, Test Control Center, Operations Support Building, and auxiliary buildings. The new test facility will enable long duration altitude testing of the J-2X engine. The facility will have the capability to simulate high altitude testing, sea-level testing, and engine gimbaling. Infrastructure systems included are test stand structure, access roadways and parking, propellant storage and delivery systems, gas storage and delivery systems, propellant barge docks, engine handling and staging, altitude simulation systems, electrical power systems, and other supporting sub-systems to make the facility operational. This is the third increment of a multi-year funded project. The first and second phases of this project are already underway, and are funded using fiscal year 2006 and 2007 resources totaling $71.7 million. An additional phase is planned in FY11 for a total project cost estimate of $94 million. The project cost estimate has grown by $22 million from the 2009 President's Budget due to increased program requirements, as well as an increase in labor and material costs.

Project Title: Modify Space Power Facility for Orion Integrated Environmental Testing
Location: Glenn Research Center, Plum Brook Station, Sandusky, Ohio
Mission Directorate: Exploration Systems
FY 2010 Estimate: $2.3M

This project provides for modifications to the Space Power Facility at Plum Brook Station to enable thermal vacuum, electromagnetic, acoustic and vibration testing of the Orion and Altair spacecrafts. New construction within the existing facility creates a radiant acoustic test chamber and a mechanical vibration test position. Changes related to technical and testing requirements maturation for the Orion crew module have increased the complexity and cost of this project, since first presented. The first and second phases of this project are already underway, and are funded using fiscal year 2007 and 2008 resources totaling $55.0 million. Two additional phases are planned in FY11 and FY12 for a total project cost estimate of $103 million. The state of Ohio is funding $5 million for construction services.

Space Operations

Project Title: Construct 34-Meter Beam Waveguide Antenna, DSS-35
Location: Canberra, Australia
Mission Directorate: Space Operations
FY 2010 Estimate: $6.8 M

This project includes fabrication and installation of the antenna structure, panels, gearboxes, bearings, electric drives, encoders, beam waveguide mirrors, subreflector and subreflector positioner. It also includes the design and construction of the foundation and pedestal, as well as facilities in and around the Canberra Complex, antenna structure and pedestal, such as paved

access road, trenches, drainage, flood control devices, water main and distribution system, antenna apron, security fence, HVAC, electrical power distribution, fire detection and suppression system, and surveillance system assembly. A Beam Waveguide antenna is needed to add resilience in the southern hemisphere for the Deep Space Network. This antenna is needed to support additional mission loading from projects currently under development and scheduled for launch during or after 2015. This is the first of three increments with a total estimated construction cost of $25.7 million with the last phase planned for FY 2012.

PROGRAMMATIC MINOR REVITALIZATION PROJECTS: $55.8 MILLION

SCIENCE

A. Ames Research Center (ARC), $4.9 million for the following:

1. Renovate Electrical Systems, Building N233 (Earth Science Research)

B. Goddard Space Flight Center (GSFC), $1.2 million for the following:

1. Modification and Rehabilitation of Vehicle Assembly Building, White Sands Missile Range (WSMR), Phase 2 (Heliophysics Research)

C. Jet Propulsion Laboratory (JPL), $6.5 million for the following:

1. Restore Data Center, B320, Phase 1 (Earth Science Research)

EXPLORATION *

A. Ames Research Center (ARC), $2.0 million for the following:

1. Replace Steam Vacuum System, Arcjet Facility (Exploration Technology Development Program)

B. Kennedy Space Center (KSC), $5.0 million for the following:

1. Install Pier Scour Protection (Constellation)

C. Marshall Space Flight Center (MSFC), $16.2 million for the following:

1. Modify Building 110 for Upper Stage LO2 Proof Test, MAF (Constellation)
2. Modify Cell N Building 131 for Thermal Protection System, MAF (Constellation)
3. Rehabilitate Production Wastewater Tanks, MAF, Phase 2 (Constellation)
4. Replace Fire Alarm System in Various Buildings, MAF, Phase 3 (Constellation)
5. Replace Transformer, West Master, MAF, Phase 3 (Constellation)
6. Rehabilitate Cranes and Trolleys/Controls, MAF, Phase 1, (Constellation)
7. Replace Substations 25, 454A/45B, MAF (Constellation)
8. Replace and Upgrade Bridge Cranes Control Systems (Constellation)

SPACE OPERATIONS

A. Jet Propulsion Laboratory (JPL), $4.3 million for the following:

1. Modify Power Distribution System, Canberra, Australia (Space Communication)
2. Replace 'B' Bank Generator Switchgear, Canberra, Australia (Space Com.)

* The human spaceflight review may result in changes to the budget for Exploration activities.

B. Johnson Space Center (JSC), $9.9 million for the following:

1. Install Firefighting Foam System, Ellington Field Hangers (Human Space Flight Operations (HSFO))
2. Upgrade Utility Tunnel (HSFO)

C. Kennedy Space Center (KSC), $4.3 million for the following:

1. Repair Roof and Gutters Payload Hazardous Servicing Facility (Launch Services)
2. Upgrade Fire Protection Systems Various Buildings (HSFO)

D. Stennis Space Center (SSC), $1.5 million for the following:

1. Modify Fluid Processing Facility (Rocket Propulsion Testing)

Mission Directorate:	Cross-Agency Support
Theme:	Institutional Investments
Program:	Environmental Compliance and Restoration

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	76.5	74.8	71.2	66.3	51.3	51.4	52.6
Environmental Compliance and Restoration	76.5	74.8	71.2	66.3	51.3	51.4	52.6
FY 2009 President's Budget Request	76.5	74.8	71.2	66.3	51.3	51.4	--
Environmental Compliance and Restoration	76.5	74.8	71.2	66.3	51.3	51.4	--
Changes from FY 2009 Request	0.0	0.0	0.0	0.0	0.0	0.0	--

Program Overview

NASA's Environmental Compliance and Restoration (ECR) Program primarily provides for personnel, services, and activities necessary to complete the cleanup of hazardous materials and wastes that have been released to the surface or groundwater at NASA installations, NASA-owned industrial plants supporting NASA activities, and other current or former sites where NASA operations have contributed to environmental problems and where the agency is legally obligated to address these hazardous releases. Liquidating these liabilities is estimated to cost nearly one billion dollars with much of that work planned in the next decade. Specific program activities include projects, studies, assessments, investigations, plans, designs, related engineering, program support, sampling, monitoring, regulatory agency oversight costs, and any land acquisitions necessary to ensure operation of remedial treatment processes and sites as part of the remediation and cleanup measures.

This program also invests in methodologies for sustainably reducing energy intensity and greenhouse gas emissions and supports operational activities by ensuring that advances in chemical risk management are incorporated early in the mission project design phase.

Additional information concerning NASA's ECR program can be found at http://oim.hq.nasa.gov/oia/emd/ecr.html

Mission Directorate:	Cross-Agency Support
Theme:	Institutional Investments
Program:	Environmental Compliance and Restoration

Plans For FY 2010

The FY 2010 funding request represents a prioritized, risk-based approach for addressing a total of 135 cleanup projects remaining at all NASA centers and is based upon the relative urgency and the potential health and safety hazards related to each individual cleanup. As studies, assessments, investigations, plans, regulatory approvals, and designs progress and as new discoveries or regulatory requirements change, it is expected that program priorities may change requiring revisions to planned activities.

Major cleanup activities with the highest priority requirements planned for accomplishment in FY 2010 include the following:

1) Continue decontamination and demolition of NASA's Plum Brook Reactor Facility. FY 2010 funding is projected to move us very close to our goal of Nuclear Regulatory Commission (NRC) license termination and return of the land to productive use.

2) Address ground water and drinking water issues associated with contamination emanating from NASA's Jet Propulsion Laboratory;

3) Continue cleanup of ground water contamination at White Sands Test Facility; and

4) Accelerate cleanup of contamination at Santa Susana Field Laboratory to facilitate property transfer.