



KENNEDY SPACE CENTER



A Multi-User
Spaceport



Economic
Impact Study
FY 2021



Opening Message

Center Director Janet Petro



Sixty years ago, NASA established an independent launch operations center near Cape Canaveral to meet the challenge of landing a human on the Moon and returning him safely to Earth. Ever since then, Kennedy Space Center has supported America's space program and launched the dreams of our nation.

To meet today's challenges, Kennedy has transitioned into the world's preeminent multi-user spaceport. The work done here and the economic impacts derived from its activities – in excess of \$5.2B – are a testament to the more than 12,000 tireless spaceport workers who have maintained mission critical capability, even in the face of a multi-year pandemic.

The last human footprints left on the lunar surface are now almost a half-century old. Before this decade is out, we'll be back on the Moon – this time with the first woman and first person of color. You can read more about the amazing people at Kennedy Space Center and the incredible work they do by downloading our annual report: www.nasa.gov/centers/kennedy/about/annual_rpt/annual_rpt-index.html.

Janet Petro
Kennedy Space Center
May 2022



Research and analysis conducted by:

Dr. Michael H. Slotkin, Bisk College of Business
Dr. Alexander R. Vamosi, Bisk College of Business
Aymone Pointet, MBA (External Consultant)

Premier Multi-User Spaceport



Kennedy Space Center is thriving as the nation's premier multi-user spaceport, facilitating the largest concentration of space launch operators in the world. Historic Launch Complex 39B has been upgraded to support the launch of NASA's Space Launch System rocket and Orion spacecraft, which will land the first woman and first person of color on the Moon. Center planners are fielding inquiries from both seasoned space companies as well as future launch providers. SpaceX is constructing a new centralized campus, manufacturing facilities, and adding capabilities for its Starship vehicle on Launch Complex 39A. Blue Origin's facility in Exploration Park allows for manufacturing and provisioning of commercial space launch vehicles in close proximity to launch sites. These campus-like arrangements are the way of the future at Kennedy, enabling companies to unify manufacturing, integration, testing, and launch services in one location. Likewise, emerging small class vehicle companies are looking into short-term leases for the new Launch Complex 48, NASA's newest multi-user launch pad. Other partners are finding fertile ground at Kennedy, like Florida Power and Light, which has connected a 74.5-megawatt solar site to the electric grid. We are excited to be working with new partners like Orbite and Firefly Aerospace Inc. at Exploration Park and Terran Orbital Corp. at the Launch and Landing Facility. The presence of commercial companies – and the more than 90 private-sector partners and nearly 250 partnership agreements – are enabling Kennedy to embark on a new era of space exploration.

Executive Summary

From its inception more than six decades ago, NASA's Kennedy Space Center in Florida has served as the world's gateway to space exploration. Continuously evolving to meet changing mission needs and capabilities of both the public and private space sectors, Kennedy has transformed into a 21st century public-private space complex in which commercial launch providers play a pivotal role.

This report highlights the spaceport as an adaptive organization, evolving to meet the challenges of the present with an eye toward the future. Kennedy Space Center supports every launch from the Space Coast, and the number of planned launches in 2022 is unparalleled. Before the next decade arrives, NASA will launch the first woman and first person of color to the lunar surface and work to establish a long-term presence in preparation for missions to Mars. Other NASA-sponsored commercial and government launches from Kennedy will help further the study of our planet and the frontiers of space as missions to the International Space Station continue advancing exploration and research, laying the groundwork for a commercial future in low-Earth orbit.

The center's transformation to a multi-user spaceport has profoundly impacted space systems and exploration on the Space Coast, and Kennedy's structural changes have had a strong economic impact in the state of Florida. By establishing a vital anchor for launch operations, payload processing, scientific research, and technological innovation, the spaceport generates significant employment opportunities, with wage and non-wage compensation giving rise to the production of goods and services that increase regional gross domestic product (GDP).

Indeed, Kennedy Space Center produces an impressive economic stimulus within the state.* The FY2021 economic output effect associated with NASA Kennedy's expenditures was approximately \$5.25B for the Sunshine State, yielding a total income contribution of \$2.77B. Overall, the economic activity associated with the spaceport supports 27,004 jobs, providing a crucial pillar of support for Central Florida communities.

The spending categories that drive Kennedy's economic impacts include civil service compensation (\$346.4M) and contractual obligations (\$855.1M) as well as the budgetary expenses of its commercial launch provider partners (\$1,506.5M), which are partially supported by NASA contracts. Additionally, the center houses a number of tenants, whose operations (\$75.8M) play a complementary economic role.

Also contributing are space-related tourism expenditures made by out-of-state visitors to the Kennedy Space Center Visitor Complex

as well as the trip expenses of Kennedy's business travelers (\$75.5M). The Visitor Complex generated an economic output effect of approximately \$148.3M for the state of Florida in FY2021. This supported about 1,390 jobs and just over \$79.3M in total income (value added). The attraction remains one of Central Florida's most popular tourist destinations. In 2021, nearly 960,000 guests visited Kennedy Space Center Visitor Complex. Domestic travel has increased and remains strong, and international guests are expected to return in pre-pandemic numbers by the summer of 2022.

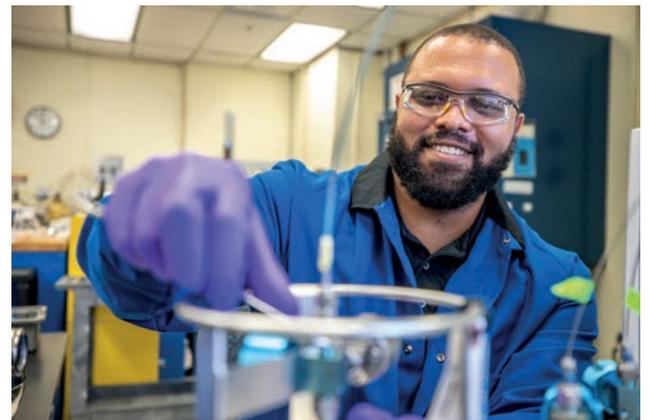
Kennedy's structural change into a public-private space gateway is reflected in the makeup of its workforce. In FY2021, the spaceport employed 12,312 people, with approximately 4,070 not under the direct auspices of NASA. In other words, non-NASA jobs comprised about 1 out of every 3.03 spaceport workers. For comparison, non-NASA jobs in 2010 comprised about 1 out of every 10 spaceport workers.

The spaceport is postured for continued growth of launch capacity. As of December 2021, Kennedy has more than 90 private sector partners and nearly 250 partnership agreements. The single-unit tenancies of the past are making way for campus-like arrangements, which allow companies to consolidate manufacturing, integration, testing, and launch services in a single area to enable more efficient operations.

Even with a busy launch cadence and continued growth, Kennedy Space Center remains committed to sustainability. The spaceport shares a boundary with the 140,000-acre Merritt Island National Wildlife Refuge, and the center's environmental program protects more than 1,000 species of plants, 117 species of fish, 68 species of amphibians and reptiles, 300 species of birds, and 31 different types of mammals.

As the spaceport marks its 60th anniversary in 2022, Kennedy Space Center is more committed than ever to building on the legacy of the work that has gone before, helping meet the demands of the future, preserving the natural environment, and remaining the world's preeminent launch complex for providing assured access to space for both government and commercial customers.

**To highlight the diffusion of Kennedy's economic contribution across the state of Florida, output (i.e., sales), total income (i.e., value added or GDP), labor income (a subset of value added) and employment impacts are estimated for the following geographic areas: 1) Brevard County; 2) Central Florida (the multi-county region of Brevard, Flagler, Lake, Orange, Osceola, Seminole, and Volusia); and, 3) the state of Florida. Input-output models for the respective local and multi-county economies were constructed using IMPLAN, an integrated software and data package used by more than 1,300 academic institutions, federal and state government agencies, and private consulting firms.*



Clockwise from top:

The sun lights up the iconic Vehicle Assembly Building at NASA's Kennedy Space Center.

A close-up view of the Artemis I Space Launch System rocket inside the Vehicle Assembly Building during an umbilicals retract and release test in September 2021.

Chemist Trey Barnes prepares a gas sample to analyze it for level contaminants inside NASA Engineering's Analytical Laboratories.

An aerial view of the Atlantic Ocean coastline and dunes along NASA's Kennedy Space Center in Florida on Jan. 13, 2021

A SpaceX Falcon 9 rocket lifts off from Launch Complex 39A at NASA's Kennedy Space Center in Florida on April 23, 2021, carrying the Crew-2 astronauts to the International Space Station.

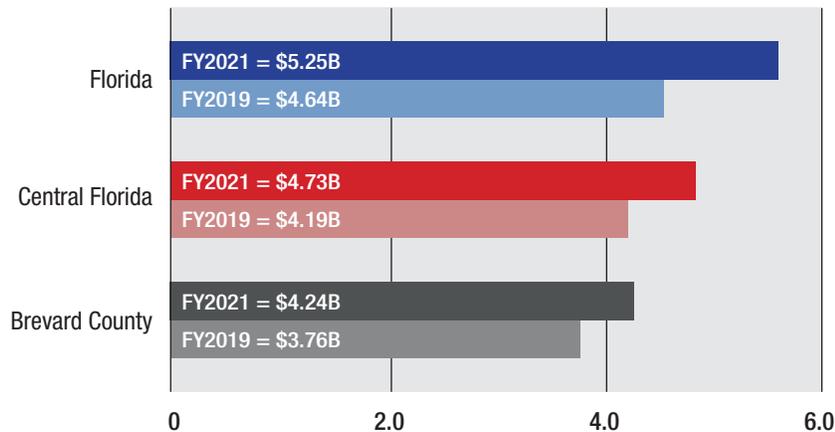
Aggregate NASA Kennedy Impacts – Output

NASA's Kennedy Space Center is a large, multi-dimensional organization that has evolved into a well-integrated hub for governmental and commercial space interests. Managed and resourced by scientific, professional, and trades personnel, Kennedy's labor force directs sizable external contracts, obligations that are significantly in excess of Kennedy's internal payroll. These include contracts with commercial launch providers. The spaceport's economic contribution is also strengthened by the presence of non-NASA tenants as well as the impacts derived from tourism.

Beginning with the FY2019 report, methodological changes were incorporated into the assessment that specifically integrated Multi-Regional Input-Output (MRIO) analysis as well as the re-classification of select NASA Kennedy contractual obligations. The feedback loops inherent in MRIO analysis provide for a more tailored, granular result, as does the re-classification of specific NASA contractual obligations from other tenants to the commercial launch providers category. In this report we adhere to that revised methodology to offer an apples-to-apples comparison between FY2021 and FY2019. The results for FY2019 are re-expressed in 2021 dollars to highlight real as opposed to nominal changes in impacts.

In FY2021, approximately \$2.89B in direct spending incurred over the range of NASA Kennedy activities ultimately generated a total output (i.e., sales) effect of about \$5.25B. This includes both supply chain responses and income re-spending effects, collectively known as the multiplier. The ratio of total to direct spending in Florida reveals an aggregate output multiplier of 1.82. With respect to the Central Florida region and Brevard County individually, the total output attributable to NASA Kennedy amounted to \$4.73B and \$4.24B, respectively. The corresponding figures for FY2019 are about 11.3 percent lower. To discern the impacts for Central Florida counties exclusive of Brevard, simply subtract the Brevard result from Central Florida's; likewise, for the state of Florida exclusive of Central Florida.

NASA KSC Total Output (Billions of 2021 Dollars)



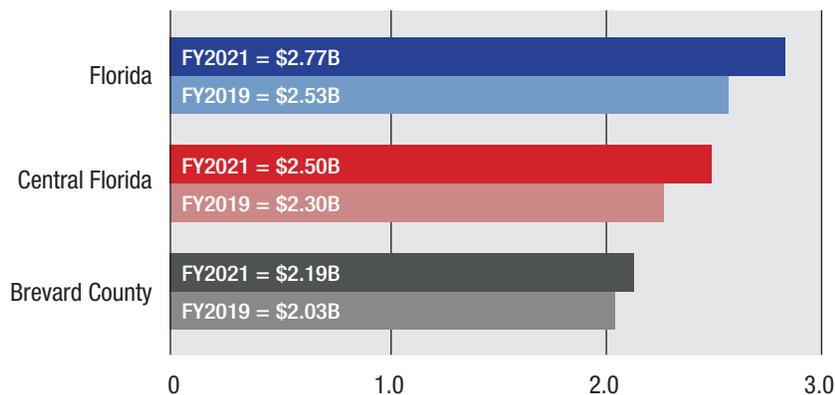
Aggregate NASA Kennedy Impacts – Income

The economic output generated by NASA Kennedy expenditures creates income streams – wages, dividends, interest, rents, etc. – for the various input factors used in the production process. These total incomes or value-added are the returns to the workers, proprietors, lenders, shareholders, and renters who serve as agents of production, and collectively are synonymous with regional gross domestic product.

In FY2021, the total value added created by all Kennedy associated expenditures amounted to \$2.77B, inclusive of multiplier effects. This constituted a 9.4 percent increase over FY2019. As for the Central Florida region and Brevard County, the total value added attributable to NASA Kennedy amounted to \$2.50B and \$2.19B, respectively, exceeding the FY2019 figures by about 8.5 percent. One key subset of value added is labor income, which is the sum of employee compensation and proprietors' income. For the state of Florida, the FY2021 labor income generated by all NASA Kennedy expenditures amounted to \$2.03B, about 7.5 percent greater than the corresponding figure for FY2019.

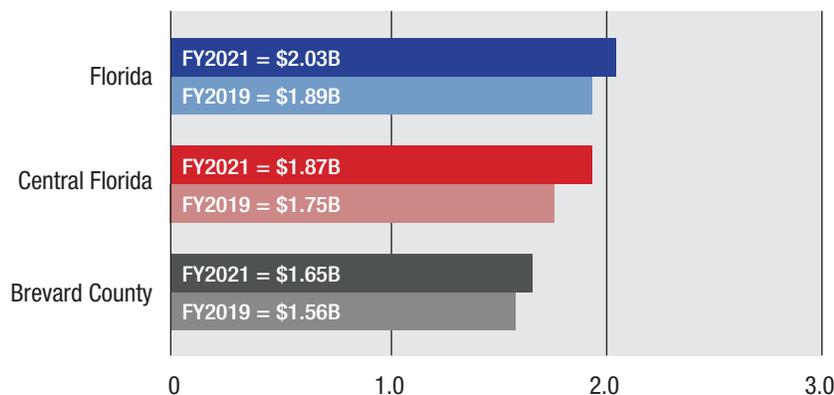
NASA KSC Value Added

(Billions of 2021 Dollars)



NASA KSC Labor Income

(Billions of 2021 Dollars)



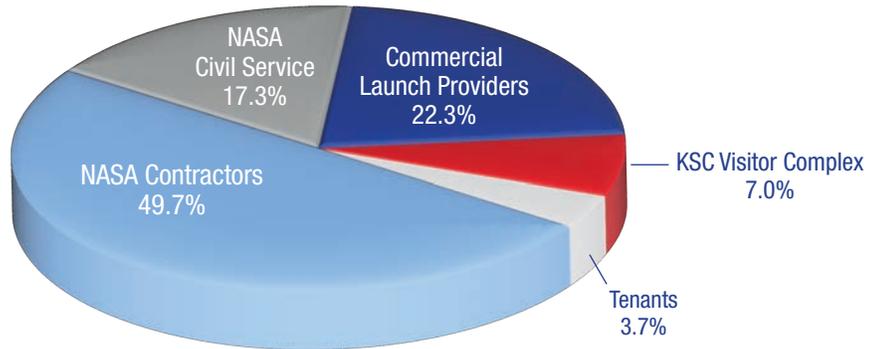
Aggregate NASA Kennedy Impacts – Jobs

The economic output produced and incomes earned are derived from the joint work of more than 12,312 job holders at the spaceport, gainfully employed as NASA civil servants, NASA contractors, commercial launch providers, and tenant and tourism-related workers. As the multi-user spaceport has matured into the world’s pre-eminent hub for commercial and government space exploration, the ratio of direct non-NASA to NASA workers has increased from about 10 percent in 2010 to just over 33 percent today.

But just like initial changes in output and income, the number of spaceport jobs is ultimately amplified through supply-chain and income re-spending effects, leading to an employment multiplier. In FY2021 the total jobs created in Florida by all NASA Kennedy associated expenditures amounted to 27,004, yielding an employment multiplier of about 2.19. In terms of jobs, this constituted a 11.8 percent increase over FY2019. As for the Central Florida region and Brevard County, the total jobs attributable to the center amounted to 21,444 and 24,382, respectively, exceeding the FY2019 figures by about 8.5 percent.

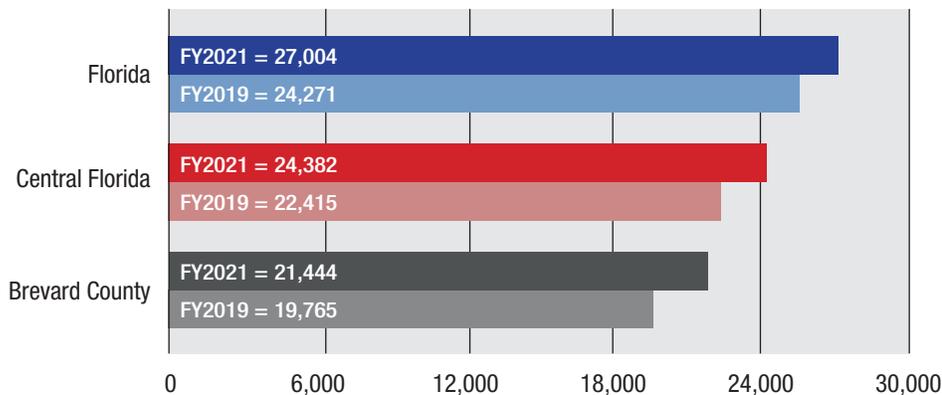
NASA KSC Spaceport Employment

(Job Distribution)



NASA KSC Total Employment

(Number of Jobs)

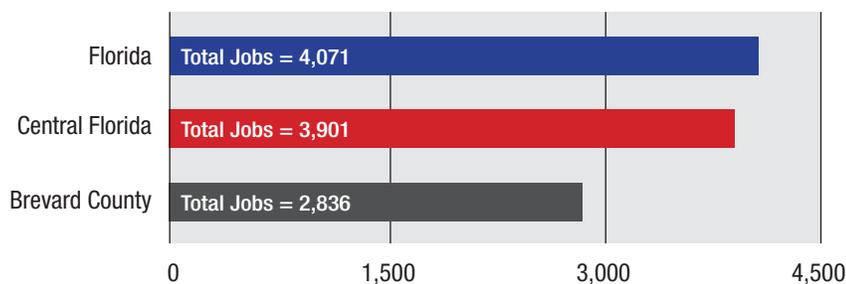


NASA Kennedy Civil Service Impacts

NASA Kennedy's civil service employees represent career paths in areas such as launch and launch control, payload processing, mission integration, enterprise research and technology development, as well as work tracks dedicated to planning, maintaining, operating, and managing the spaceport itself.

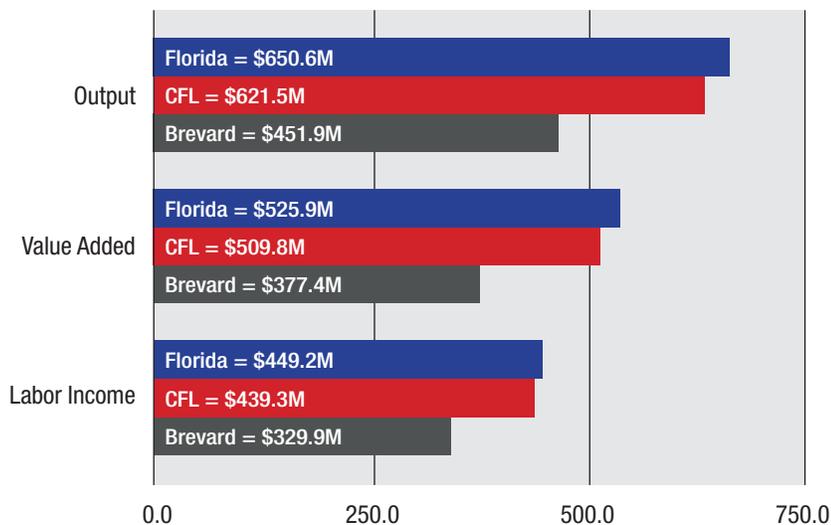
Numbering more than 2,000 people, Kennedy's civil service employees work with government contractors, commercial launch providers, tourism personnel, and other government workers, providing assured access to space for our nation, even during a multiyear global pandemic. In FY2021, approximately 2,124 Florida resident workers earning slightly more than \$346.4M in total employment compensation ultimately generated an economic output effect of approximately \$650.6M for the state of Florida. This supported just over 4,070 jobs and about \$525.9M in total income (i.e., value added). About 70 percent of both the output and employment impacts occurred within Brevard County.

Civil Service Employment



Civil Service Total Output and Income

(Millions of 2021 Dollars)

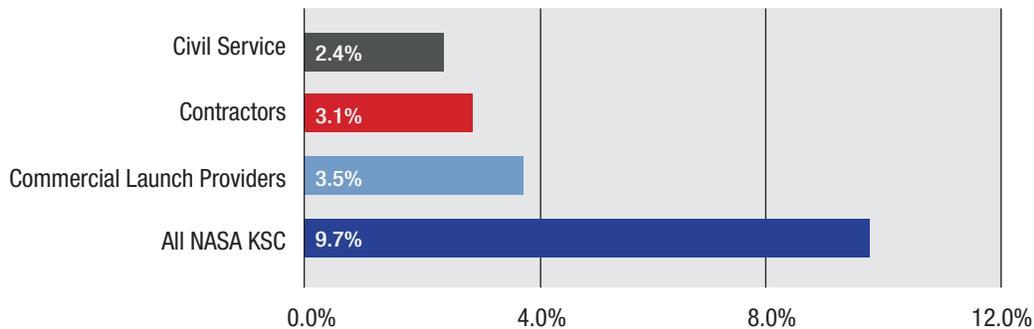


Did You Know?

Like many organizations around the country, when the global COVID-19 pandemic reached our nation in 2020, NASA quickly pivoted agency operations to continue mission-critical work without compromising the health of our workforce. Using collaborative tools that were secure and accessible, more than 80 percent of the civil service workforce was engaged in significant telework at the height of the pandemic, with Kennedy meeting milestones, supporting the demands of operating a spaceport, and continuing a robust launch cadence while still prioritizing safety. As the agency begins to transition to a post-pandemic future, NASA is leveraging the lessons learned over the course of the pandemic to support a future of work that will continue using technological advancements and evolving culture to redefine employment through remote, hybrid, and telework opportunities.

As for the impact of civil service employment compensation on the Space Coast economy, Brevard County's latest estimate for wages, salaries, and supplements by place of work amounts to about \$16.49B. Given that the sum of Kennedy's direct compensation (fully-loaded) and the estimated induced impact via the multiplier process amounts to \$390.5M, this implies that about 2.4 percent of all Brevard County employment compensation is attributable to Kennedy civil service. That translates into about 1 out of every 42 dollars of employment compensation. When all of NASA Kennedy related expenditure streams are considered, the spaceport is responsible for 1 out of every 10.4 dollars of employment compensation earned on the Space Coast.

Share of Brevard Employment Compensation Attributable to NASA KSC



Teams participate in the first joint integrated launch countdown simulation for Artemis I inside Firing Room 1 of the Launch Control Center on July 8, 2021.



Chemists Misle Tessema (left) and Macy Mullen (right) discuss scanning electron microscope operations inside NASA Engineering's Analytical Laboratories at Kennedy Space Center in Florida on July 7, 2021.

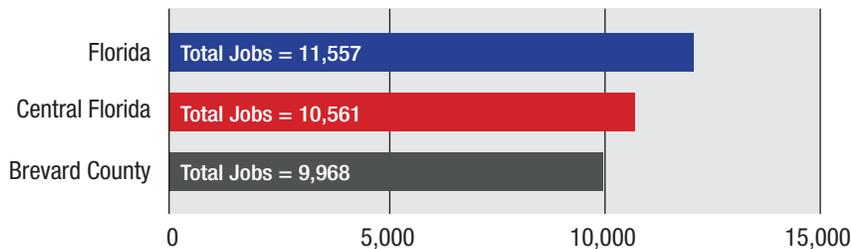
NASA Kennedy's Contractor Impacts

NASA Kennedy's contract employees help fulfill the center's mission and meet operational requirements. From manufacturing and construction to engineering, architectural, and computing services, Kennedy's procurement and service contracts span the gamut of industry classifications. With the retirement of the Space Shuttle Program and Kennedy's pivot to a multi-user, government and commercial spaceport, the contractor system still constitutes the largest segment of agency expenditures.

The Space Launch System (SLS) under development by NASA exemplifies the government contracting side. The SLS, the most powerful rocket the agency has ever built, and the Orion spacecraft, will launch in FY2022 as part of Artemis I from the spaceport's Launch Complex 39B. This maiden, uncrewed voyage of Artemis I is the first step toward a return to the Moon.

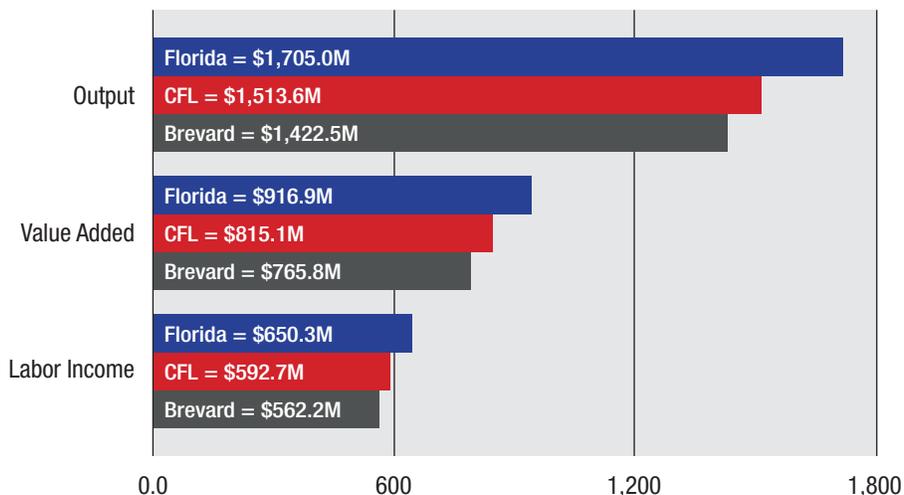
The expenditures associated with the contracted workforce are notable. Excluding commercial launch provider contracts, which will be presented separately, total obligations in which Florida is designated as the place of performance amount to just over \$869.4M, about two and a half times the size of civil service employment compensation. In FY2021 almost 6,118 contractor workers were employed at the spaceport, and the \$869.4M in contractual obligations ultimately generated an economic output effect of approximately \$1.70B for the state of Florida. This supported about 11,557 jobs and approximately \$916.9M in total income (i.e., value added), with the bulk of impact – 84 percent – felt in Brevard County.

Contractor Employment



Contractor Total Output and Income

(Millions of 2021 Dollars)



Did You Know?

Other collaborative partnerships also serve to spur commercial development. Take, for example, NASA Kennedy's Exploration Research & Technology Division (ER&T) which, with a funding base of just over \$51M, manages the research, development, testing, and demonstration of cutting-edge flight systems and technologies to advance exploration and space systems

Fruitful engagement between Kennedy and a range of diverse industry and academic organizations has fostered technology transfer and the development of new commercial space capabilities. Focus areas include plant research and space crop food production, logistics reduction, resource extraction and production on the Moon and Mars, cryogenic research, technologies that support ground processing and spaceflight, and many others.

ER&T activities occur throughout the United States. That fact, combined with associated obligations that are orders of magnitude smaller than those detailed in the balance of this report, yields a very modest economic impact for the state of Florida. But the contribution nationally, both in the commercialization of new products and advancement of space exploration with next-generation technologies, provides long-term economic benefits which do not fall under the purview of a traditional economic impact report. Key stakeholders consider some of these ER&T offspring game changers. A few of them are highlighted below.

- Merritt Island, Florida-based Eta Space, a company working to increase cryogenic efficiency, was recently awarded \$27million as part of NASA's 2020 Tipping Point solicitation. Eta Space's second NASA award furthers its collaboration with the agency in the development of a small-scale complete cryogenic oxygen fluid management system. Incubating commercial space capabilities to benefit future NASA missions perfectly aligns with the mission of the ER&T.
- Through its Technology Transfer Program, Kennedy provides patent licenses for NASA technologies that can be transformed into commercial products and solutions. Of a total of 47 active licenses, 24 are with companies in the state of Florida, with GenH2 in Titusville as an example of a company commercializing the hydrogen economy and leveraging Kennedy technologies to do so.
- In addition, through the Small Business Innovation Research and Small Business Technology Transfer program, Kennedy works with small businesses, usually high-tech startups, to solve some of NASA's hardest problems. The resulting technology development is done by the company using program funds, with the intellectual property retained by the company to enable their growth through commercialization. Local companies like Winter Springs, Florida-based Pegasense LCC, an innovator in wireless sensors, have been able to thrive as a result.
- The Electrostatic Regolith Interaction Experiment (ERIE), funded by the Flight Opportunities Program, was launched in January 2021 on Blue Origin's New Shepard NS-14 to study charged dust behavior in microgravity. The experiment is a testament to the beneficial collaboration between NASA Kennedy and the University of Central Florida.



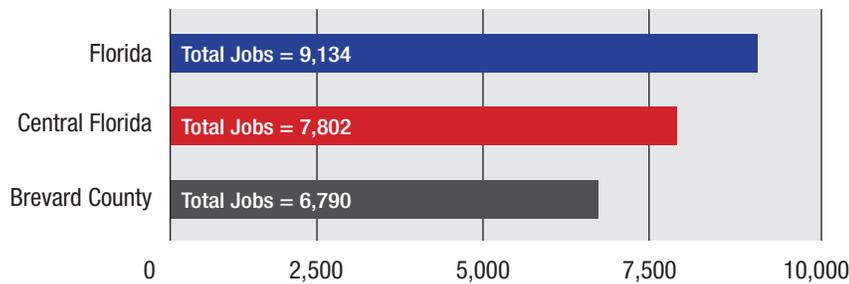
- 1.** Workers with NASA's Exploration Ground Systems and contractor Jacobs are preparing to lift the 188,000-pound core stage of the Space Launch System (SLS) and place it on the mobile launcher in between the two solid rocket boosters in High Bay 3 of the Vehicle Assembly Building on June 10, 2021.
- 2.** Ryan Kiechle of Jacobs Technology gives a thumbs-up inside the transporter as he prepares to take the Orion space capsule for processing to the Multi-Payload Processing Facility on Jan. 16, 2021.
- 3.** Researchers harvest peppers as part of a growth assessment in preparation for sending the plants to space.
- 4.** Kennedy's Cryogenics Test Laboratory conducts research with government and industry partners to innovate new technologies for commercial and industrial applications.

Commercial Launch Providers Impacts

Epitomizing NASA Kennedy Space Center's transition to a multi-user, government, and commercial services spaceport in early FY2021 was the November 2020 launch of NASA's SpaceX Crew-1, the first operational crewed mission to the International Space Station as part of NASA's Commercial Crew Program. Just before the end of FY2021, and emblematic of a nascent space tourism industry, the same space vehicle used for SpaceX Crew-1 – Crew Dragon Resilience – achieved the first ever orbital spaceflight with only private astronauts aboard. NASA's efforts to facilitate the growth of the commercial space industry and the development of the economy in low-Earth orbit have generated significant local impacts at Kennedy. Blue Origin, Boeing, Lockheed Martin, SpaceX, Sierra Nevada, and United Launch Alliance are among the major companies that have facilities on Kennedy to support the manufacturing, processing, and launching from Florida's Space Coast.

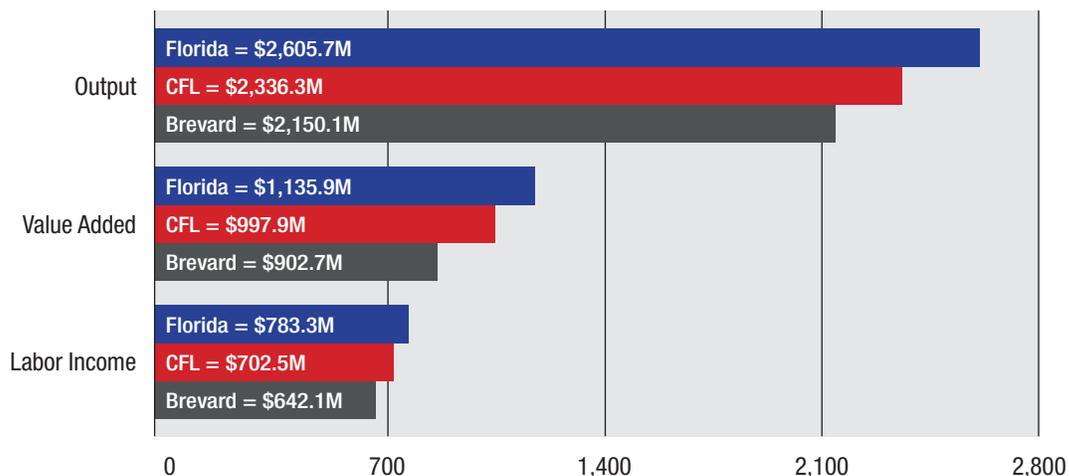
In FY2021, just under 2,750 commercial launch provider workers were employed at the spaceport in the areas of spacecraft, launch vehicles, payloads, and other components. For economic impact purposes, one of the attendant difficulties with this category of spending is the direct siphoning of contractual obligations to other, non-Florida production sites. These deflected expenditures are a familiar reality to NASA Kennedy stakeholders, but unknown in terms of their magnitude. Accordingly, the analysis in this section is anchored on known employment figures and what these jobs numbers impute in terms of industry activity. In FY2021, about \$1.51B in industry sales ultimately generated an economic output effect of approximately \$2.61B for the state of Florida. This supported almost 9,134 jobs and about \$1.14B in total income (i.e., value added).

CLP Employment



CLP Total Output and Income

(Millions of 2021 Dollars)

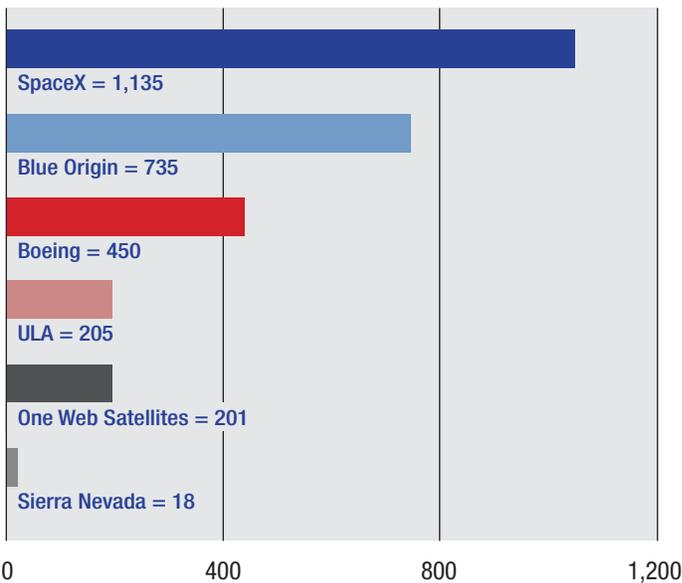


Did You Know?

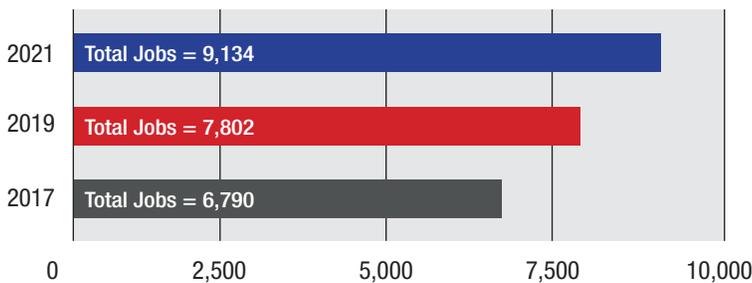
In FY2021, approximately 2,744 commercial launch provider workers were employed by one of six commercial partners: Blue Origin, Boeing, One Web Satellites, Sierra Nevada, SpaceX, and United Launch Alliance (ULA). In just four years' time – FY2017 to FY2021 – and in the face of a raging pandemic, commercial launch provider employment at the Spaceport increased by more than 100 percent.

By the time the next issue of this report is published, the Boeing Starliner is expected to join the SpaceX Crew Dragon as a reusable space vehicle for missions launching crews and cargo to the International Space Station. In the years ahead, commercial launch provider space activity, and the associated employment and production impacts, are expected to grow. The photos below provide a showcase for some of the key milestones achieved by commercial launch providers at Kennedy in FY2021.

CLP Employees by Firm FY2021



Total CLP Employment by Fiscal Year



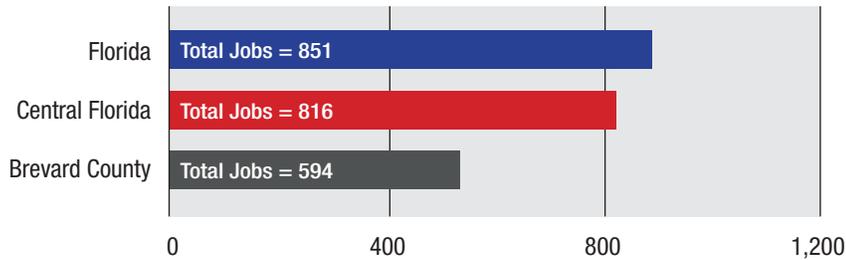
1. NASA SpaceX Crew-3 astronauts wave to family and friends outside the Neil A. Armstrong Building on launch day, Nov. 10, 2021. **2.** Technicians prepare to replace Boeing Starliner's service module in the high bay of the company's Commercial Crew and Cargo Processing Facility in preparation for Orbital Flight Test-2. **3.** A United Launch Alliance V 401 rocket, with NASA's Lucy spacecraft atop, powers off the pad at Cape Canaveral Space Force Station's Space Launch Complex 41 in Florida at 5:34 a.m. EDT on Saturday, Oct. 16, 2021. **4.** Mary Lakaszcyck, a technician with ASRC Federal Data Solutions, wears a pair of augmented reality goggles, provided by Orion manufacturer Lockheed Martin, to assist in preparing the spacecraft's crew module adapter for NASA's Artemis II mission.

Impacts from Spaceport Tenants

Those new to NASA's Kennedy Space Center may be unaware that more than 460 workers are employed at the spaceport with other federal agencies or commercial affiliates. These other spaceport tenants support the center's space exploration mission directly or indirectly, in either their stewardship of the Merritt Island National Wildlife Refuge and Canaveral National Seashore, or by providing consumer services (e.g., banking, food and beverages, childcare, etc.) for the center's workers. By benchmarking both residential and compensation patterns to the broader civil service population, economic impacts for this cohort can be established.

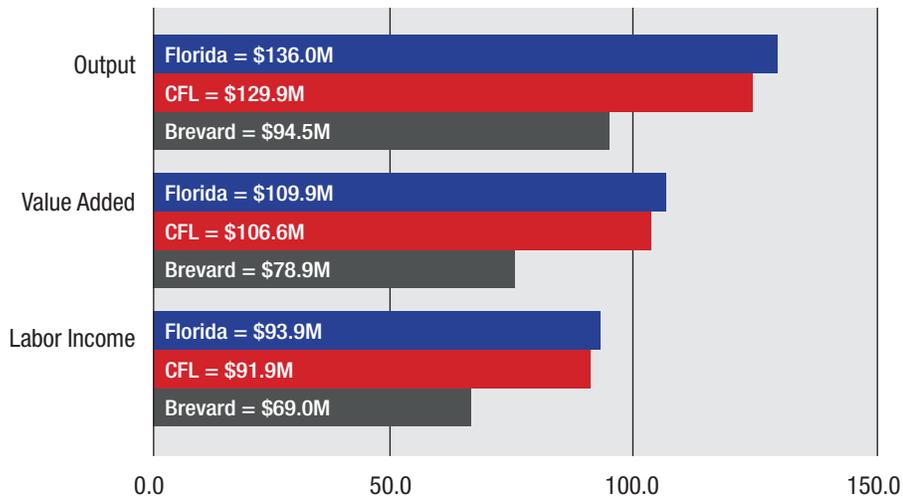
In FY2021, about 444 spaceport tenant workers (Florida residents) earning slightly less than \$54.5M in total employment compensation ultimately generated an economic output effect of about \$136.0M for the state of Florida. This supported about 850 jobs and about \$109.9M in total income (i.e., value added). For purposes of clarity, it should be noted that the spaceport tenants employed in consumer services were excluded from the analysis to avoid double-counting. Their economic contribution would be accounted for under the induced impact associated with other NASA Kennedy workers. It should also be noted that economic impacts associated with the Florida Power and Light solar farm construction were also excluded due to the absence of informed expenditure flows. Therefore, the contributions enumerated in this section underreport the likely true economic impact.

Other Tenants Employment



Other Tenants Total Output and Income

(Millions of 2021 Dollars)



Did You Know?

The tenant workers considered in this economic impact include scientific and field personnel from the Department of the Interior. For those readers perplexed about the presence of marine and terrestrial biologists in a world of electrical, mechanical, and aerospace engineers, it just so happens that the world's preeminent multi-user spaceport is also an ecological paradise. Located within the Merritt Island National Wildlife Refuge and adjacent to Canaveral National Seashore, Kennedy hosts vital sea turtle nesting sites as well as habitats for a variety of birds – more than 330 native and migratory types – and 25 mammal, 117 fish, and 65 amphibian and reptile species. In fact, many of these species are classified as threatened or endangered.

At the intersection of storied grounds where nature meets space, NASA Kennedy is a committed environmental steward dedicated to sustainable practices. Through an array of conservation efforts – from shoreline restoration to groundwater remediation, solar energy generation to endangered species preservation – Kennedy and her valued spaceport tenants, through collective and dedicated efforts, have created a highly favorable environmental scorecard. The photos below depict some of their vital work.

Technology and nature coexist on Kennedy Space Center, which is a refuge to many endangered and threatened species, like the gopher tortoise below.



An American bald eagle takes flight at Kennedy Space Center. The spaceport shares a boundary with the Merritt Island National Wildlife Refuge, consisting of 140,000 acres of land, water, and marshes.



Protecting beach mice promotes the health of coastal dunes. Beach mice disperse seeds throughout the dune system promoting new plant growth.



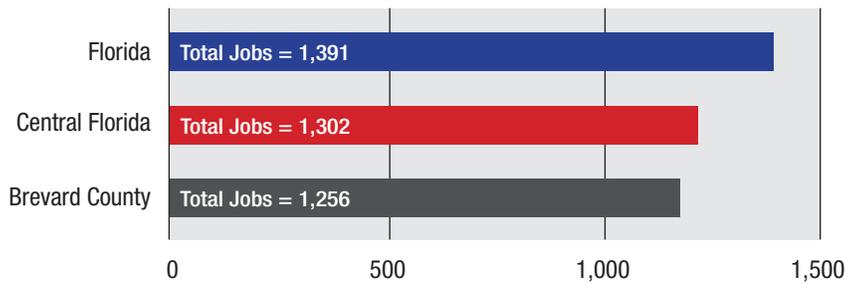
A manatee swims in the water near the NASA Causeway Bridge at Kennedy Space Center in Florida.

Impacts from Visitor & Business Travel

The signature tourism destination devoted to our nation’s legacy of space exploration – the iconic Kennedy Space Center Visitor Complex – draws visitors from across the United States and around the globe. The out-of-state dollars which flow through visitor complex coffers support operational expenditures generating significant economic impacts. In addition, capital upgrades funded by a dedicated trust expand that impact while serving its purpose of modernizing and rejuvenating existing facilities. Complementing both of these visitor complex economic contributions is the fact that business travelers in the thousands visit NASA’s Kennedy Space Center on a regional, national, and international basis. Collectively, these three silos of visitor-originated spending constitute NASA Kennedy’s tourism impact.

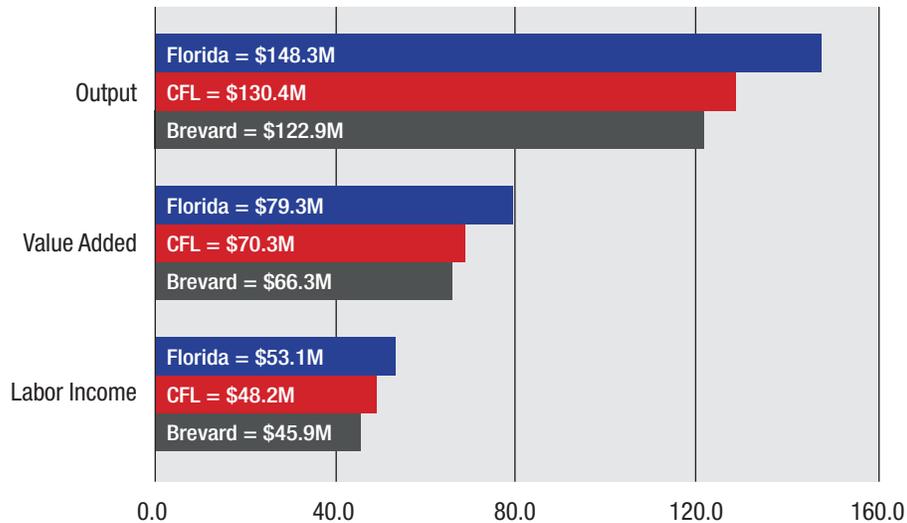
In FY2021, operating, capital, and trip-related expenditures of \$75.5M ultimately generated an economic output effect of approximately \$148.3M for the state of Florida. This supported about 1,390 jobs and just over \$79.3M in total income (i.e., value added). The corresponding figures for Central Florida and Brevard County reveal that about 89 percent of the output impacts occurred within the former and about 84 percent in the latter.

KSCVC & Business Travel: Employment



KSCVC & Business Travel: Total Output and Income

(Millions of 2021 Dollars)



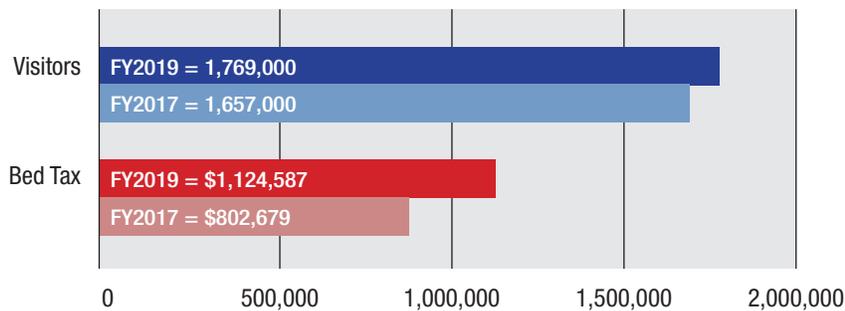
Did You Know?

With the pace of launch activity increasing, and with consumer interest in the Space Shuttle Atlantis Exhibit at a heightened level, Delaware North, the commercial operator of Kennedy Space Center Visitor Complex, embarked on a project partnership with Marriott to build a new hotel adjacent to Kennedy Space Center. At a distance of 6.4 miles, this recently opened Courtyard by Marriott is the closest ever lodging establishment to the spaceport, providing a beacon for recreational enthusiasts as well as governmental and commercial business travelers. With 152 rooms, including extended suites, as well as conference facilities and a rooftop bar for premium launch viewing, the project is both a reflection of enhanced market demand for space tourism as well as potential driver of area visitation.

The ultimate barometer of a region's tourism health is revealed through its bed tax collections, those revenues garnered from a percentage-based levy (e.g., 5 percent in Brevard County) imposed on room night stays in overnight accommodations. From FY2016 to FY2019, bed tax collections increased by about 40 percent in the Titusville area.

Unfortunately for those stakeholders in the tourism and hospitality industry, including the visitor complex, COVID-19 took a substantial toll on area visitation. For obvious reasons, FY2020 saw a decrease in Titusville area bed tax collections of about 16.7 percent over the previous year. But a healthy rebound (about 13.3 percent) ensued for FY2021, and with space exploration as an anchor, and new capacity being built, tourism should continue to flourish along the Space Coast.

Titusville Bed Tax Collections: FY2016–FY2021



Planet Play is a multiple-story play experience for young space explorers at the Kennedy Space Center Visitor Complex. Photo credit: Kennedy Space Center Visitor Complex.



The Rocket Garden at the Kennedy Space Center Visitor Complex is a tribute to the scientists and engineers who turn dreams of spaceflight into reality. Photo credit: Kennedy Space Center Visitor Complex

2021 IMPACTS OF SPACEPO

Spaceport Workforce



27,004

FLORIDA JOBS



2,124

NASA CIVIL SERVANTS



6,118

NASA CONTRACTOR EMPLOYEES



2,744

COMMERCIAL LAUNCH PROVIDER EMPLOYEES



461

OTHER SPACEPORT TENANT EMPLOYEES



865

KSC VISITOR COMPLEX EMPLOYEES

12,312 + 14,692

TOTAL SPACEPORT EMPLOYMENT

ADDITIONAL FLORIDA JOBS CREATED



Every **10** Jobs at KSC

Creates approx. **11.9** additional Jobs in Florida

VISITORS



790.4K

TOTAL VISITORS TO THE KSC VISITORS COMPLEX**



456.7K

OUT-OF-STATE VISITORS



\$39.1M

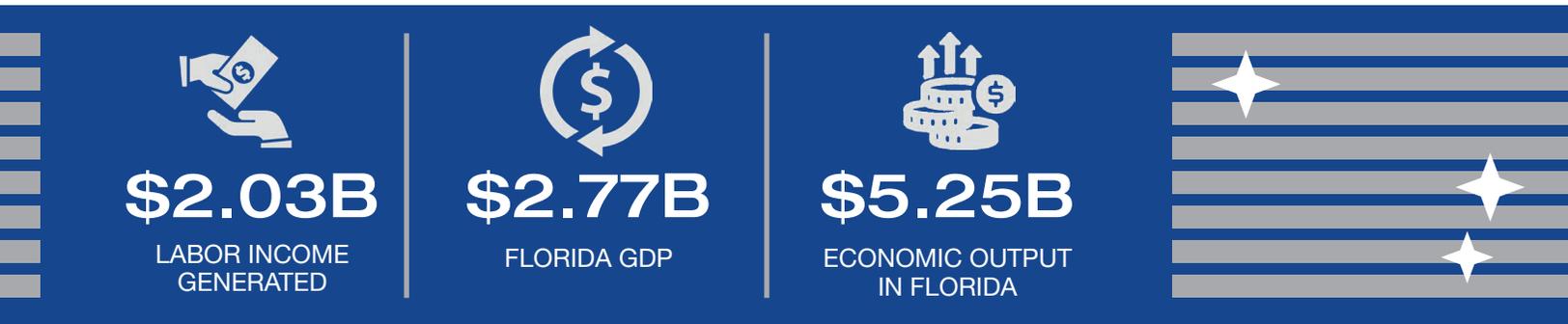
OUT-OF-STATE VISITOR SPENDING

**COVID Protocols in place

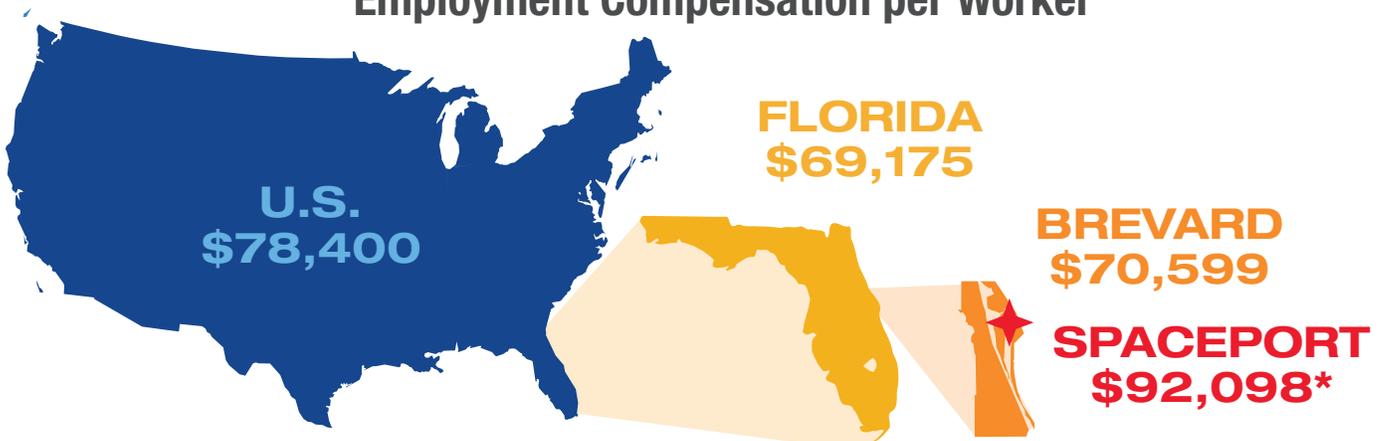
Every **\$1** spent at KSC ultimately results in **\$1.82** for Florida's Economy

PORT OPERATIONS IN FLORIDA

Measures of Economic Activity



Employment Compensation per Worker



*All jobs generated by Spaceport Activities

ECONOMIC IMPACT STUDY HIGHLIGHTS

27,004 FLORIDA JOBS

In FY2021, the Spaceport employed 12,312 people directly, but this initial jobs number is multiplied by secondary rounds of spending by workers and suppliers. Ultimately, an additional 14,692 jobs were created in the state of Florida, resulting in 27,004 total jobs statewide due to the work performed at Kennedy multi-user Spaceport. Thus, for every 10 direct jobs at the Spaceport an additional 11.9 jobs were created statewide, yielding a jobs multiplier of 2.19.

\$5.25 BILLION ECONOMIC OUTPUT (SALES) IN FLORIDA

In FY2021, Spaceport operations had a direct economic impact of \$2.89B in sales on Florida's economy. This subsequently resulted in additional indirect and induced impacts of \$2.36B in sales. These secondary effects are set in motion by supply-chain responses triggered by the initial sales purchases (i.e., the indirect effect) as well as the spending activity of workers who accrued income as part of the production process (i.e., the induced effect). The result: a total Spaceport economic impact of \$5.25B in sales in the state of Florida.

\$2.77 BILLION VALUE ADDED TO FLORIDA'S GDP

A subset of the \$5.25B in sales activity accrues to labor and non-labor resources as income payments for their productive efforts. This value-added or gross domestic product (GDP) is the sum of labor income, capital income, and indirect business taxes, and in FY2021 directly resulted in \$1.51B in GDP for Florida's economy. Factoring in an additional indirect and induced impact of \$1.26B, the Spaceport ultimately generated a total of \$2.77B in GDP for Florida's economy.

\$2.03 BILLION LABOR INCOME GENERATED

In FY2021, workers and proprietors directly earned about \$1.30B in labor income. Factoring in an additional \$0.73B in indirect and induced labor income, the Spaceport ultimately generated total labor income of \$2.03B in the state of Florida.

SPACEPORT WORKFORCE GLOSSARY



NASA KSC CIVIL SERVANTS

NASA'S Direct Federal employees employed by KSC or other NASA centers.



NASA CONTRACTOR EMPLOYEES

All workers, located at NASA KSC, employed by private companies providing a good or service to NASA on a contractual basis. This number includes all types of contractors including all NASA construction/maintenance contractors.



COMMERCIAL LAUNCH PROVIDER EMPLOYEES

All workers employed by companies providing launch vehicles, spacecraft, payloads, and other components directly related to launch operations for NASA, the Department of Defense or commercial entities at the Spaceport.



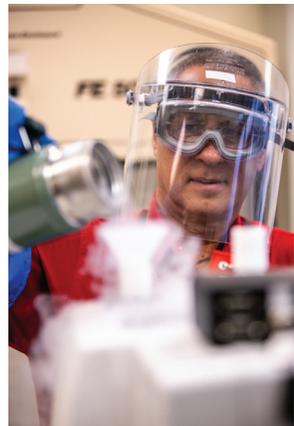
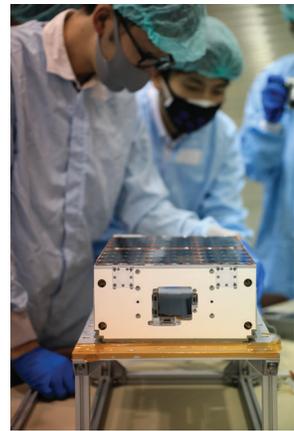
OTHER SPACEPORT TENANT EMPLOYEES

All workers not directly employed by NASA or a Spaceport launch provider which are located on-site or near-site due to NASA KSC'S close proximity. This includes other Non-NASA Federal civil servants and their contractors, workers who provide support services, and workers associated with research, development, experimentation, and testing in support of new technologies, procedures and products to enhance the multi-user Spaceport and humankind.



KSC VISITOR COMPLEX EMPLOYEES (KSCVC)

All workers employed by the Kennedy Space Center Visitor Complex, including all workers associated with construction activities at the KSCVC.



National Aeronautics and Space Administration
John F. Kennedy Space Center
Kennedy Space Center, FL 32899

www.nasa.gov