

PROJECT HANDBOOK 2021-2022

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Florida Spaceport Improvement Program

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Cover photo: Launch from Space Florida's Space Launch Complex 46 – NASA Ascent Abort Launch – 2 July 2019 (source NASA)

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FDOT Florida Department of Transportation



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PREFACE

Space connects the global community in many ways. And in many ways, Florida connects the global community to space.

Since 1965, when the first international telecommunications satellite was launched from Cape Canaveral, the State of Florida has played a crucial role in all the ways that space has become integrated into the world's economy. Florida has attracted companies that construct rockets and spacecraft, launch them, recover them, refurbish them, and launch them again, and again... all within the State of Florida.

On May 30, 2020, American astronauts were launched on American rockets from American soil once again. The NASA Crew Dragon spacecraft was the first crewed orbital spaceflight launched from the United States since the final Space Shuttle mission in 2011. It was launched from historic Launch Complex 39A.

Over the past few years leading up to that historic day, FDOT and Space Florida were working behind the scenes, partnering with SpaceX on crucial infrastructure updates at Launch Complex 39A to make this launch possible. Upgrades included the construction of a new crew access arm, demolition of legacy-era infrastructure, and rehabilitation of the tower and launch pad. FDOT is proud of this momentous achievement from the Spaceport Improvement Program that benefits not only the State of Florida but the entire nation.



Blue Origin, SpaceX, OneWeb, and United Launch Alliance (ULA) have been long-term aerospace partners in commercializing the Cape Canaveral Spaceport (CCS) since 2012. Significant private-sector aerospace investment in infrastructure has enabled the transition from 3 active launch complexes at the CCS in 2011 to 5 active complexes today and 6 more under construction. With launches tripling from only 10 launches in 2011 to 32 launches in 2020, the future looks even brighter with upcoming launch companies operating from Florida's CCS including our newest aerospace partner FireFly.

Satellites launched from Florida have enabled such public benefits as global positioning systems (GPSs), weather forecasting, disaster response, smartphones, air traffic control, and worldwide communications. From the shores of our state, humans have left the planet to explore the Moon, and to live and work in space aboard the International Space Station. But Florida has become much more than a historic launch site. Today it is home to a thriving commercial space industry. As Florida's space transportation assets grow in importance to the world's space economy, the world's space economy becomes ever more important to Florida's future. Florida is poised to be the global leader in enabling space commerce throughout the 21st Century and beyond. Already, having one of the most dynamic transportation systems in the world, Florida is now leading the integration of space transportation in the fabric of its statewide multi-modal transportation network. Florida has recognized that space is not a program; it is a collection of high-value destinations for both cargo and people-destinations that require safe, reliable, and sustainable transportation systems operating on market-driven schedules.

In the early years of space travel, only the federal government operated Florida's space launch systems and spaceport sites, their use largely dedicated to government missions and priorities. Today, commercial space transportation systems are privately owned and operated in support of a wide diversity of both governmental and commercial customers requiring delivery of cargo or people to space. Commercial investment in space and in space transportation is driving the requirements for spaceport sites, operating environments, and infrastructure. There is growing competition among states and nations to host this rapidly evolving component of the transportation industry.

The Florida Spaceport Improvement Program responds directly to these trends and needs, as Florida secures its place as the global leader in space commerce. The Program is designed to stimulate private sector investment, commercial spaceport development, and most importantly, improve the quality of life for Floridians.

Simply stated, the Spaceport Improvement Program provides funding for projects that:

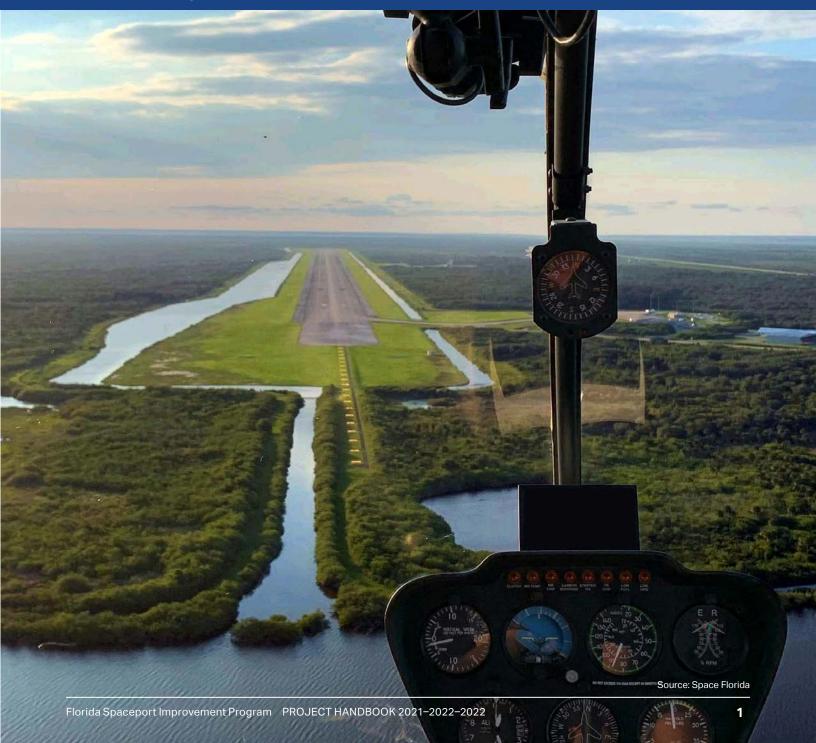
- Improve aerospace transportation facilities
- Encourage cooperation and integration between airports and spaceports
- Facilitate and promote inter-agency efforts to improve space transportation capacity and efficiency



SpaceX Transporter carrying recovered rocket booster from Port Canaveral to KSC

O1 INTRODUCTION

Launch and Landing Facility, Cape Canaveral Spaceport





Falcon 9 launch with the Endeavor capsule to the International Space Station in May 2020 and crew landing in August 2020. Source: SpaceX

PURPOSE OF THE HANDBOOK

The purpose of this handbook is to provide a general overview of the Spaceport Improvement Program administered by the Florida Department of Transportation (FDOT) and the processes used to fund and manage spaceport capital projects. This handbook describes key processes like how projects are identified, analyzed, prioritized, and approved for funding. It further includes guidance to manage projects once they are funded.

The handbook also serves as a useful resource for FDOT Program staff, interested stakeholders, and aerospace industry partners who are considering or managing such partnerships with FDOT and Space Florida.

In cases where the facts or circumstances require additional guidance, interpretation, or potential deviation from this guidance, stakeholders are encouraged to coordinate with the FDOT Spaceports office or Space Florida, as appropriate, to ensure compliance with applicable laws, rules, procedures, and plans. Points of contact are identified in the Appendix.

BACKGROUND: SPACEPORT IMPROVEMENT PROGRAM

Since the beginning of the United States' space program, Florida has played a pivotal role in development of the space industry. With Florida serving as the primary site for the National Aeronautics and Space Administration (NASA) and the U.S. Air Force's space launch infrastructure since the 1950s, space transportation has had a major effect on the state's economy and multimodal transportation system. Though accommodating this national mission has always been a significant role of FDOT, "space" itself was not previously considered a separate mode of transportation to be planned and developed by the state. This view began to change as space transportation

FDOT POWERS AND DUTIES:



"To assume the responsibility for coordinating the planning of a safe, viable, and balanced state transportation system serving all regions of the state, and to assure the compatibility of all components, including multimodal facilities."

—SECTION 334.044(1), FLORIDA STATUTES

technology continued to mature and the growth of commercial spaceflight became a reality.

Florida's launch of the Lunar Prospector aboard an Athena 2 rocket on January 6, 1998, marked the first ever launch from a commercial site, the Spaceport Florida-operated Space Launch Complex (SLC) 46 at Cape Canaveral. A site license was issued the previous year by the Federal Aviation Administration (FAA) to Spaceport Florida, a predecessor organization to Space Florida.

In 1999, Florida made a landmark decision to designate space as an official mode of transportation and "spaceports" as the associated transportation facilities. This official designation recognizes space in the same manner as other long-established modes such as roads, bridges, rail, airports, and seaports. In 2019 the Florida Department of Transportation established a separate Spaceport office. With this designation, spaceports and space transportation were aligned to help FDOT achieve its primary responsibility. FDOT and Space Florida work closely together to plan and facilitate space transportation services on spaceport properties throughout the state. The FAA's licensure of the Cape Canaveral Spaceport (CCS) Launch and Landing Facility was issued in November 2018 and amended to add the Re-entry site license in January 2021. The FAA's licensure of Cecil Spaceport was in 2010 (site license has been renewed twice since 2010); and the licensure of the Space Coast Regional Airport/Spaceport occurred in May 2020. These commercial spaceports, coupled with the potential for additional system elements in the future, puts Florida in the position of having an expanding system of spaceports. In addition, Space Florida is working on a Programmatic Environmental Assessment approval for Balloon Launches at the CCS, Cecil Spaceport, and Space Coast Regional Airport/ Spaceport.

With NASA seeking to reduce its institutional footprint at the Kennedy Space Center (KSC) following retirement of the Space Shuttle Program in 2011, and similar pressures on the Cape Canaveral Space Force Station (CCSFS) operated by the US Space Force (USSF), an increasing number of unused federal space launch facilities have become available for repurposing to support commercial operations. As a result, Space Florida, in partnership with FDOT, has taken an active role in the planning and funding of spaceport infrastructure. This expanding role led to the Spaceport Improvement Program, which has already produced significant results in partnership with commercial space launch and spacecraft operators. Examples include:

- Expanding heavy-lift capability for commercial launches
- First ever launch vehicle manufacturing in Florida
- High volume satellite manufacturing in Florida
- Upgrading small launch vehicle capability to meet multiple space user needs
- Crewed Launch to the International Space Station in May 2020

These initiatives are securing Florida's place as a global leader in space transportation.



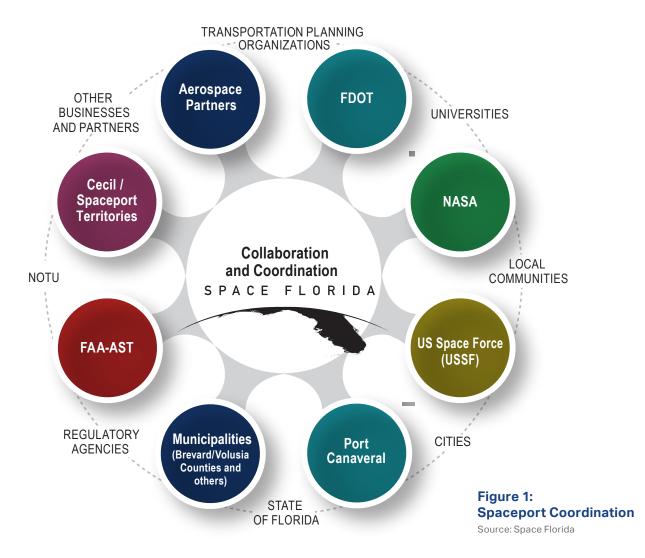
Space Life Sciences Lab – Space Florida Headquarters

PARTNERSHIPS, COORDINATION, AND COLLABORATION

Pursuant to Florida law, state aerospace activities are to be highly visible and wellcoordinated. The law specifically designates Space Florida (section 331.3011(3), Florida Statutes) as the single point of contact for state aerospace-related activities with federal agencies, the military, state agencies, businesses, and aerospace partners (Figure 1).

As Florida's aerospace industry development authority, Space Florida has broad statutory powers and responsibilities to foster bold, economic, and spaceport development activities. These are employed to expand and diversify domestic and international opportunities that will grow the industry in Florida. These efforts promote talent development, infrastructure enhancements, and support governments and organizations in improving the state's competitive business climate. Space Florida achieves this by supporting, facilitating, and consulting on space industry–related needs to attract, retain, and expand aerospace or related supply chain businesses (aerospace partners) that create economic opportunities in Florida by:

- Coordinating financial incentives, facilitating access to capital, and providing start up and relocation support
- Consulting on business formation, relocation, and venture development



- Developing and operating targeted infrastructure and facilities
- Supporting research and development opportunities that enable target industry growth

Space Florida employs a tool kit of statutory authorities to provide the non-federal investment. This remarkable example of how effective Space Florida can be in working with industry to re-capitalize and expand spaceport assets has been achieved through both public and private investments leveraged with the financial risk capital of commercial space providers. These investments advance Florida's leadership in civil, commercial, and military aerospace activity. They create jobs, economic growth, and mitigate the impacts of federal program realignments. Through the Spaceport Improvement Program, Space Florida has enabled more than 1,300 high paying jobs to be created and an additional 1,200 plus jobs are planned to be added through these partnerships with industry, federal agencies, and FDOT.

Space Florida's efforts are supported by other state agencies, such as the Florida Department of Economic Opportunity and FDOT. With the

incorporation of spaceports into the Florida Transportation Plan (FTP) and Space Florida's development of the Florida Spaceport System Plan, FDOT provides support and funding to Space Florida for high-priority spaceport projects through the Spaceport Improvement Program. This funding stimulates public and private investment into emerging and growing aerospace enterprises while advancing a safer and more secure spaceport transportation system.

Aerospace partners are eligible public or private entities who consider or request Spaceport Improvement Program funding for a proposed project. Private Company partners have included SpaceX, United Launch Alliance, Boeing, Blue Origin, OneWeb, Firefly, etc. as well as licensed spaceports such as Cecil Spaceport in Jacksonville and Space Coast Regional Airport/ Spaceport in Titusville. In other cases, the federal government (i.e., NASA/ Kennedy Space Center, USSF, and the US Navy), may also be considered an aerospace partner. Aerospace partners are integral in the implementation of the processes described in this handbook. In fact, aerospace partners have invested substantial amounts in space-related capital improvements.



LLF midfield development (rendering)

02 program overview

The CST-100 Starliner spacecraft rolls out from the Commercial Crew and Cargo Processing Facility, November 2019



CAPE CANAVERAL SPACEPORT

LEGEND r — — 1 Kennedy Space Center 222 Cape Canaveral Space Force Station Space Florida (Property Agreement) Payload Processing Facility or Multi-Function Support Areas Major Roadways -----Rail Water (not all facilities shown)

ACRONYMS

	ACRONYMS
Shiloh Launch Complex (Proposed) Atlantic Ocean	C3PF Commercial Crew and Cargo Processing Facility CCSFS Cape Canaveral Space Force Station EPF Eastern Processing Facility KSC Kennedy Space Center LC Launch Complex LCC Launch Control Center LPF Large Payload Facility MOC Morrell Operations Center MPF Multi-Payload Processing Facility NCB North Cargo Berth NOTU Naval Ordinance Test Unit NRO National Reconnaissance Office O ØF Orbiter Processing Facility 1 & 2 PCC Processing Control Center PHSF Payload Hazardous Servicing Facility RLY Reusable Launch Vehicle Hangar
Praxair Max Brewer	SLC Space Launch Complex SLSL Space Life Sciences Lab SSPF Space Station Processing Facility SVPOC Space Vehicle Processing & Operations Complex SWS Strategic Weapons System ULA United Launch Alliance VAB Vehicle Assembly Building
Max Brewer Memorial Parkway	—— Notional LC 49 (planned)
	LC 39B & LC 39C (NASA)
Launch and Landing Facility	
(formerly Shuttle Landing Facility)	LC 39A (SpaceX)
	LC 48 (NASA/under construction)
C3PF & PCC (Space Florida/Boeing) OPF 1 & 2	LC 41 (ULA)
SVPOC (Boeing)	– SLC 40 (SpaceX)
(SpaceX) VAB (NASA)	LPF (SpaceX)
	- SLC 37 (ULA)
Astrotech	 SLC 20 (Space Florida, Firefly, future pads)
	CCSFS Industrial Area
Space commerce way	SLC 16 (Relativity Space)
Space Exploration Park	Landing Zones 1 & 2 (SpaceX)
Coast Blue Origin, Regional and OneWeb)	SLC 36 (Blue Origin)
Coast (Space Florida, Blue Origin, and OneWeb) Air Liquide (Space Florida) Area 59 (SpaceX)	- SLC 46 (Space Florida, NOTU)
EPF (NRO)	Area 57 (Space Florida, Areojet)
SR 3 MOC	
Banana River	SLC 17/18
Canaveral/ NCB-8 (Space Support) 520	Naval Ordnance Test Unit (NOTU) rida South Campus/SpaceX LCC efurb Facility
8 Florida Spaceport Improvement Pr	ogram PROJECT HANDBOOK 2021–2022

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THE BASICS

FDOT has significant responsibilities relative to aerospace and spaceports in Florida.¹ Most notably, Florida law establishes a process for incorporating spaceport and aerospace industry–related needs into the Florida Transportation Plan (FTP) and the Strategic Intermodal System (SIS). Florida's SIS consists of the state's largest and most significant commercial service airports, spaceports, roadways, seaports, and freight rail terminals. Incorporating space- and aerospace-related needs into the FTP and the SIS is a significant commitment by the state to support a major sector of Florida's economy.

The Spaceport Improvement Program was created to implement the aerospace and spaceport goals and objectives set out in the FTP and SIS. It also implements the goals and objectives established in the Florida Spaceport System Plan and the master plans of individual spaceports.

Florida law places several aerospace and spaceport responsibilities on FDOT and incorporates them into the Spaceport Improvement Program. Most notably, the Program provides technical assistance and funding for projects that:

- · Improve aerospace transportation facilities;
- Encourage coordination between airports and spaceports;
- Foster interagency efforts to improve space transportation capacity and efficiency

To implement state law and FTP/SIS goals and objectives, FDOT collaborates with Space Florida. Recent examples of the Program's partnership includes:

- Providing funds to Space Florida for refurbishing Launch Complex 39A, (historic Apollo and Shuttle launch pad) and Launch Complex 36 for heavy lift commercial launches;
- Supporting Space Florida's efforts to obtain FAA commercial launch site operators licenses and reentry site licenses for the Launch and Landing Facility (LLF) and the proposed Shiloh launch complex, both at the Cape Canaveral Spaceport;
- Providing Space Florida with engineering and technical expertise for facility assessments and infrastructure development of the LLF, Exploration Park, Cecil Spaceport and Statewide Telemetry Studies, Space Launch Complex 46, solid propellant processing areas, and future launch pad sites.



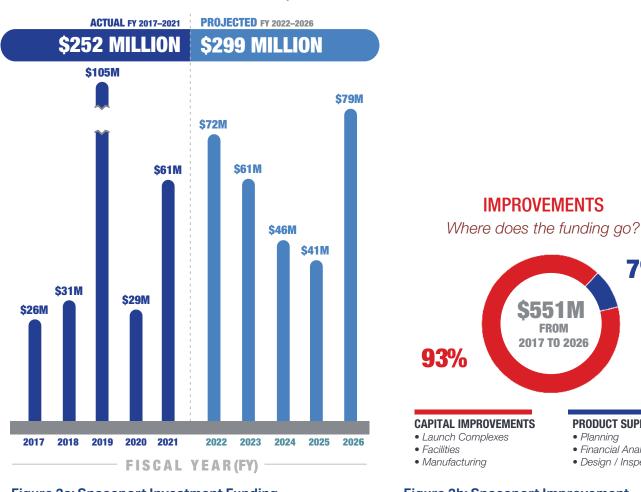
Exploration Park

1 See Sections 331.3051, 331.360, 334.044, and 339.362, Florida Statutes.

For the 10-year period 2017–2026, program funding has been dedicated to capital improvements. Through 2026, approximately \$551 million is programed in the Five Year Work Program for Spaceport Improvement Program projects. However, this is not a guarantee of future funding (Figure 2a). For the same period, more than 93 percent of the program funds are used for actual capital improvements and the remainder are used to support implementing the program (Figure 2b).

The work program is updated annually to account for changes in FDOT revenue, statewide transportation funding priorities, legislative approval, and many other factors. Therefore, the actual funding level is subject to change. Most importantly, the five-year funding allocation demonstrates Florida's ongoing commitment to invest in the state's growing spaceport transportation system.

One challenge for FDOT is to identify, balance, and incorporate the various regulatory and economic aspects of the evolving commercial space market and activities with its mission to provide a safe and secure transportation system.



INVESTMENTS

How much does FDOT fund each year?



Figure 2b: Spaceport Improvement **Program Funding** Source: FDOT

5551M FROM 2017 TO 2026 7%

PRODUCT SUPPORT

• Financial Analysis

Design / Inspection

Planning

KEY POINTS

Before beginning any discussion on the project development process, stakeholders must be aware of challenges and limitations when funding spaceport capital projects. For example, Florida has a broad public records law and aerospace partners may not be aware of specific requirements pertaining to the release of information. FDOT capital funding is limited to designated areas called spaceport territories, and infrastructure ownership and responsibilities at Cape Canaveral Spaceport require coordination with our federal partners (i.e., NASA/Kennedy Space Center, the USSF, the Navy, the National Park Service, and the U.S. Fish and Wildlife Service).

PUBLIC RECORDS AND PROPRIETARY INFORMATION

Florida's broad public records law is governed by Florida Statutes (FS), Chapter 119. Frequently, spaceport projects involve sensitive or proprietary information from aerospace partners that could fall under the public record law as part of a contract or project funding agreement. Care must be taken from the beginning of the process to ensure that all public information is made available and that sensitive or proprietary information is not improperly disclosed.

SINGLE AUDIT ACT REQUIREMENTS

In accordance with the requirements of Section 215.97(2)(a), Florida Statutes, each non-state entity that expends a total amount of state financial assistance equal to or in excess of \$750,000 in any fiscal year shall be required to have a state single audit, or a project-specific audit, for such fiscal year. Essentially, this means project-related financial records are public records and audited as part of the project.



Cecil Spaceport: Airport Traffic Control Tower / Space Operations Control Center (under construction)

SPACEPORT TERRITORIES

Space Florida's ability to develop spaceport infrastructure is statutorily limited to geographic areas called spaceport territories pursuant to Section 331.304, Florida Statutes. Florida's Spaceport Territories are illustrated in Figure 3.

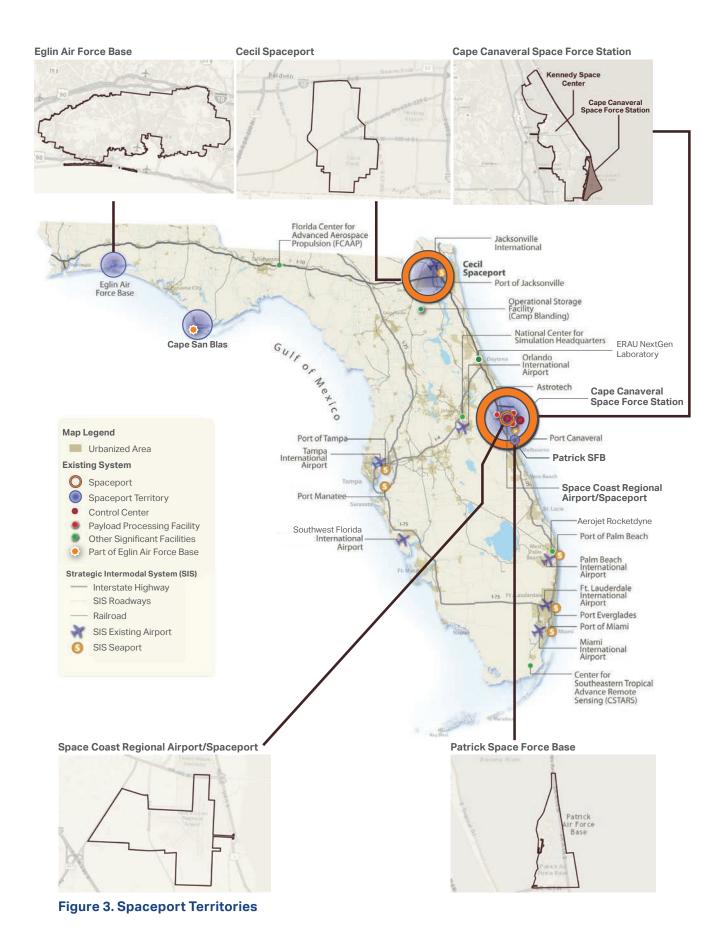
INFRASTRUCTURE OWNERSHIP AND RESPONSIBILITY

NASA and the USSF are the primary property owners of the Kennedy Space Center and the Cape Canaveral Space Force Station, respectively. The State of Florida retains title to more than 55,000 acres dedicated to the U.S. government's use for the nation's space program. Land and existing spaceport infrastructure are licensed, leased, or otherwise granted, to Space Florida or aerospace partners by NASA and the USSF. Both Space Florida and aerospace partners may construct and own new infrastructure on federal land but, in doing so, assume responsibility for the site and infrastructure under their control. Spaceport infrastructure that may be developed in other spaceport territories will be under the ownership and responsibility of the operating authority (e.g. Jacksonville Aviation Authority for Cecil Spaceport) or its aerospace partners.

As Florida's statewide spaceport development authority, Space Florida is tasked to support the continuing NASA and the USSF missions while facilitating the growth of Florida's commercial space sector. Responsibility for specific space facilities at Cape Canaveral Spaceport varies between Space Florida, aerospace partners, and lease agreements with NASA and the USSF. Ownership, lease arrangements, and responsibility for spaceport infrastructure may also vary for the remaining spaceport territories, depending on contractual agreements with the spaceports, Space Florida, and future aerospace partners.



Launch Complex 41 Atlas V, July 2020 (NASA Mission – Mars Perseverance Rover)



03 program management

Kennedy Space Center Visitor Complex

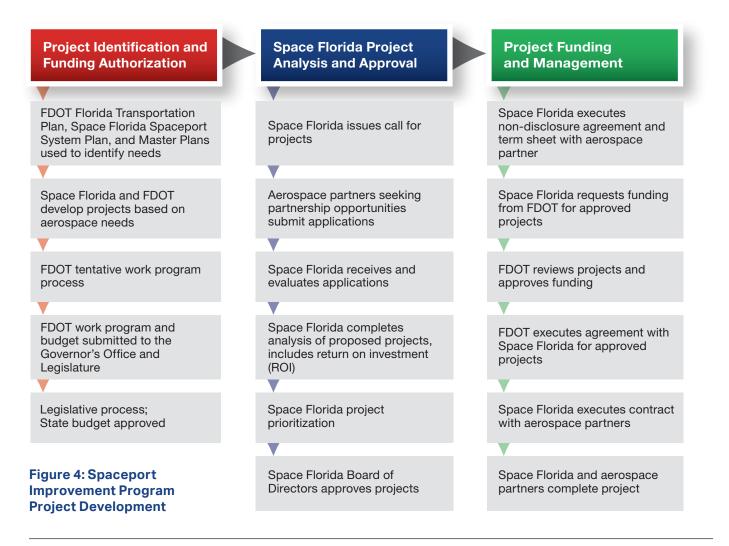


PROJECT DEVELOPMENT

One of the nationally recognized features of the Spaceport Improvement Program is the use of FDOT funds for spaceport transportation planning, development, and capital improvements.² These funds have been successfully used to attract aerospace partner investment, turning Cape Canaveral Spaceport into a one-of-a-kind spaceport evolving to become the Center of Global Space Commerce. The use of FDOT funds indicates Florida's strong commitment to aerospace partners with an average of approximately \$60 million designated for each year of FDOT's 5-year capital improvement plan. To take projects from concept to implementation, FDOT and Space Florida have developed, and continue to refine, the following three phases to identify, allocate, and manage Spaceport Improvement Program funds for capital projects:

- 1. Project identification and funding authorization
- 2. Space Florida's project analysis and approval
- 3. Project funding and management

These three phases are illustrated in more detail in Figure 4.



2 Planning projects are developed and managed like Spaceport infrastructure projects, however planning projects are for Spaceport System's program and project development process. They do not go through the "call-for-projects" process.

PROJECT IDENTIFICATION AND FUNDING AUTHORIZATION

This phase establishes the specific needs of aerospace partners and individual spaceports in the Florida Transportation Plan (FTP), the Florida Spaceport System Plan, and the various spaceport master plans. Project-related needs are identified by Space Florida through these sources and communicated to FDOT. Once needs are identified, FDOT includes the projects in the Five Year Tentative Work Program and submits the plan to the Governor's office and the Legislature for review and approval as part of the state budget approval process.

FLORIDA TRANSPORTATION PLAN

FDOT has significant responsibilities relative to aerospace and spaceports in Florida. Space was designated as a mode of transportation by Florida law in 1999. Florida law also establishes a process for incorporating spaceport and aerospace industry–related needs into the FTP and the SIS, both of which are primary drivers for delivering state transportation products in Florida.

The FTP provides the policy framework for allocating FDOT's funding and is used to satisfy the long-term transportation needs of residents, tourists, and businesses. The FTP identifies the goals and objectives and addresses the needs of the entire state transportation system. One of the stated goals of the FTP is to strengthen coordination among seaports, airports, spaceports, railroads, and other modal partners.

The SIS is a statewide system of transportation facilities that have a critical role in moving people



Launch Complex 46 Mobile Access Structure, flame duct, and lightning towers

and goods to and from other states and nations, as well as among economic regions within Florida. The SIS serves as the state's highest priority for statewide mobility. Incorporating space and aerospace-related needs into the FTP and the SIS reflects a significant commitment by the state to support this major sector of Florida's economy.

FLORIDA SPACEPORT SYSTEM PLAN

Space Florida is required under state law to "develop a spaceport master plan for the expansion and modernization of space transportation facilities within spaceport territories". The Florida Spaceport System Plan first adopted in 2013, updated in 2018, with an upcoming update functions in this role, incorporating the various individual spaceport master plans across the state, including the Cape Canaveral Spaceport Master Plan and the Cecil Spaceport Master Plan (Figure 5). The Florida Spaceport System Plan is consistent with and considered a supporting document to the FTP and SIS. In conjunction with the Florida Spaceport System Plan, Space Florida maintains a list of recommended capital projects eligible to be funded through FDOT. Each year,

FLORIDA SPACEPORT SYSTEM PLAN GOALS:

- Create a stronger economy where Florida's spaceports and aerospace businesses can thrive
- Guide public and private investment into emerging and growing aerospace enterprises and maximize the use of existing aerospace resources
- Enrich our quality of life while providing responsible environmental stewardship
- Advance a safer and secure spaceport transportation system for residents, businesses, and others

the project list is updated based on new project applications for funding and unfunded projects from the previous year. Coordination between FDOT, Space Florida, and each Florida spaceport maximizes the use of state funds and enables Florida's spaceport system to improve and accommodate future needs.

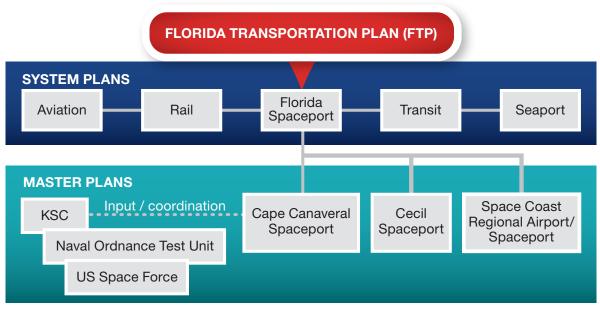


Figure 5: Florida Spaceport System Plan

SOURCES OF SPACEPORT IMPROVEMENT PROGRAM FUNDS

The Spaceport Improvement Program receives FDOT funds in two ways: first, a specific allocation is made to the Spaceport Improvement Program as part of a base allocation; and second, funding is allocated through the FDOT's Strategic Intermodal System (SIS) (Figure 6). The SIS was established to enhance Florida's mobility and economic competitiveness. It is made up of facilities of statewide and interregional significance.

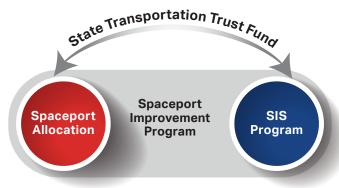
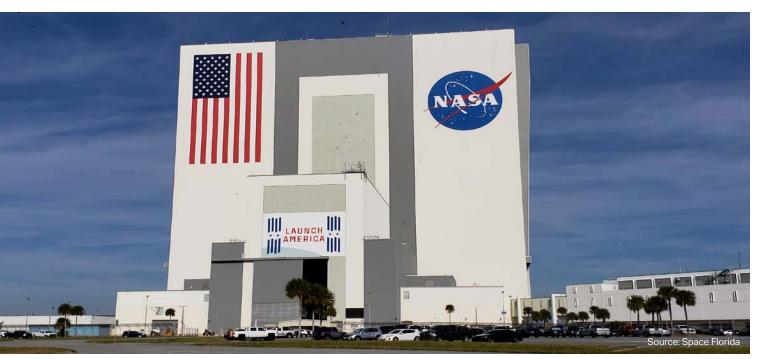


Figure 6: Spaceport Improvement Program Funding

Together, these funds help to sustain the most progressive and expansive spaceport system in the world. This handbook provides information only on the Spaceport Improvement Program and does not include information on federal, local, or other state funding sources. Further, the Spaceport Improvement Program does not include a federal contribution or state aviation fuel tax funds.³ Although the background, eligibility requirements, and project prioritization processes differ between the two funding sources, the three processes used to identify, approve, and manage projects are the same.

Spaceport funds are allocated annually to the FDOT Central office and distribution is coordinated by the Spaceports office. As detailed in this handbook, the Spaceports office collaborates closely with FDOT District offices and Space Florida to effectively evaluate funding requests, allocate funds to projects, and manage project delivery.



NASA Vehicle Assembly Building

³ Section 332.009, Florida Statutes, prohibits the use of aviation fuel tax revenues on space transportation projects.

TENTATIVE AND ADOPTED WORK PROGRAMS

Section 331.360, Florida Statutes, directs FDOT to coordinate in the development of spaceports and related transportation facilities, encourage coordination between airports and spaceports, and foster interagency efforts to improve space transportation capacity and efficiency. The law also authorizes FDOT to provide technical assistance and funding to Space Florida for transportation-related capital improvements to aerospace transportation facilities in Florida.

Space Florida developed the Florida Spaceport System Plan in 2013, and revised the plan in 2018, to satisfy its statutory direction to develop a statewide master plan for expansion and modernization of space transportation facilities within Florida's designated spaceport territories. The 2018 Plan⁴ integrates Space Florida's Cape Canaveral Spaceport Master Plan (2017) and the Jacksonville Aviation Authority's Cecil Spaceport Master Plan (2012).

In the future, the Florida Spaceport System Plan will also incorporate the individual spaceport plans prepared by other operating authorities. Space Florida submits the plan to FDOT for funding, subject to the availability of funds. After review and approval, the Spaceports office submits the approved projects to the appropriate FDOT Districts to be included in the Districts' Tentative Work Programs, where the list of projects is subject to a public hearing before the Metropolitan Planning Organization within the District. Following submission of each District's Tentative Work Program to the Central Office, FDOT develops the statewide Tentative Work Program.

The FDOT Tentative Work Program is submitted to the Governor and the Legislature no later than 14 days after the regular legislative session begins.

During the legislative session, FDOT's budget is finalized as part of the overall state budget. Once the budget is passed by the Legislature, spaceport project priorities may need to be adjusted to account for the approved final funding amounts.

Such adjustments are authorized in law and is intended to discourage the process of legislatively adding specific projects in the appropriations bill. The law states: "the adopted work program... may include only those projects submitted as part of the tentative work program developed under subsection (4), plus any projects that are separately identified by specific appropriation in the General Appropriations



Blue Origin manufacturing complex

⁴ Chapter 331, Part II, Florida Statutes, references a "master plan" which Space Florida for clarity has designated the Florida Spaceport System Plan to incorporate planning performed by different entities in the various spaceport territories, as some of those location specific plans carry the designation of master plan.

Act... However, any FDOT transportation project which is identified by specific appropriation in the General Appropriations Act shall be deducted from the funds annually distributed to the respective district."

The new state budget takes effect on July 1, which is the first day of each new fiscal year. The FDOT Secretary adopts the work program, which authorizes the FDOT to participate in funding approved spaceport transportation projects.

SPACE FLORIDA PROJECT ANALYSIS AND APPROVAL

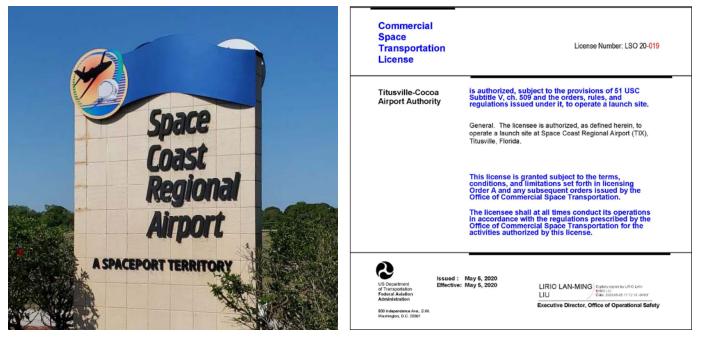
PROJECT SUBMITTALS, ANALYSIS, AND PRIORITIZATION

Once a year, Space Florida solicits aerospace partner interest in spaceport partnership opportunities through a "Call for Projects" process. Interested aerospace partners submit project applications,⁵ which then compete for Spaceport Improvement Program funding. The addition of a new spaceport project, not included in the Tentative Work Program, would likely reduce the funding available for requested projects and could impact funding for projects already approved and underway!

Earmarks are subject to being vetoed by the Governor and could affect a project's future funding.

Requests for spaceport capital funds must be submitted to Space Florida for review and prioritization.

Initially, Space Florida separates space transportation capital projects from nontransportation projects, such as manufacturing, research, workforce development, and education. FDOT funding can only be used for the transportation projects, such as launch and re-entry or payload processing facilities.



Space Coast Regional Airport/Spaceport, Titusville, FL

5 An example application is available on Space Florida's website: https://www.spaceflorida.gov/page/call-for-projects

AT A MINIMUM, PROPOSED PROJECTS MUST:

- Be on spaceport territory property
- Be included in an approved spaceport master plan
- Have or be likely to obtain appropriate licenses, permits, and leases
- Satisfy the eligibility requirements in section 331.303(21), Florida Statutes¹
- Have an aerospace partner match

Space Florida then develops a proposed list of spaceport capital projects from the qualifying applications for submission to FDOT.

Although Space Florida issues its Call for Projects once a year, it does accept applications on a continuous basis. Space Florida examines each application to determine whether projects also qualify for various funding programs. Next, proposed projects are evaluated according to various metrics in accordance with existing spaceport system and master plans and are prioritized for available funding. The project justification, economic benefits, state benefits, project cost and level of funding requested, project schedule, launch schedule, and other economic development related data are all reviewed to maximize the use of state funds. (Figure 7).

FDOT emphasizes the Return On Investment (ROI) that the state will realize by contributing funds toward major modal transportation projects. Space Florida performs either an economic or financial analysis on spaceport capital projects before requesting FDOT funds.



COLLECT PROJECTS (February – April)

- Call for projects
- Hold public/applicant workshop
- Receive applications



QUALIFY (April)

- Review project applications
- Categorize
- Determine benefits to the state
- Return on investment



- (May)
- Perform initial prioritization
- Assess alignment with Space Florida goals/ objectives
- Classify projects based on capital investment and job growth



ALLOCATE (May – June)

- Identify projects and allocations for approved projects
- Compare to available funding sources
- Strategically invest in Florida

Figure 7: Space Florida's Project Analysis / Prioritization Process *Note: Dates are typical but may vary.*

¹ Section 331.303(21), Florida Statutes, relates to project funding eligibility and states, "capacity improvements that enhance space transportation capacity at spaceports that have had one or more orbital or suborbital flights during the previous calendar year or have an agreement in writing for installation of one or more regularly scheduled orbital or suborbital flights upon the commitment of funds for stipulated spaceport capital improvements."

In most cases, the information Space Florida needs to conduct this analysis is provided in the application. If not, additional information is requested from the applicant.

Space Florida prepares an annual list of eligible projects for inclusion in the Spaceport System Plan or master plans, as appropriate. The Space Florida's Board of Directors approves the list and each prioritized project prior to entering into agreements with FDOT and the applicant.

PROJECT FUNDING AND MANAGEMENT

Under the Spaceport Improvement Program, Space Florida submits Board-approved funding requests for capital projects to FDOT. The Spaceports office reviews each request and determines whether to provide funding for the project.

Each request includes a budget summary for the project reflecting requested state match and aerospace partner investment, project schedule, and other required financial information FDOT needs to evaluate the funding request. The funding request includes:

- Nominal Internal Rate of Return (IRR); Return on Investment (ROI)
- Benefit-Cost Analysis (BCA)
- Economic benefits of the project
- Project readiness
- Long-term customer commitment
- Narrative statement summarizing the project analysis and justification, and the financial and economic basis for requesting state funding participation



Orbiter Processing Facility 1 (OPF 1), Home of the X-37B Source: US Air Force

FDOT evaluates each funding request based on consistency with the FTP and SIS, benefits to the state, and capital investment.

FDOT also considers the aerospace partner's current Spaceport Improvement Program commitments and their record to draw-down previously awarded project funds. It is important that Spaceport Improvement Program funds are properly managed and expeditiously used.

GRANT AGREEMENTS

The Grant Agreement is the contract mechanism used to fund spaceport projects as authorized by Section 331.360, Florida Statutes.

Essentially, a Grant Agreement is a contract between FDOT and Space Florida, where FDOT agrees to reimburse Space Florida for eligible project costs. Key provisions in the Grant Agreement include:

- Scope of work
- Quantifiable deliverables
- Budget
- Schedule
- Invoicing requirements
- Method of compensation
- Accounting practices
- Records management requirements
- Public information requirements
- Single audit act requirements
- Other terms and conditions

Grant Agreements are processed in accordance with the FDOT Contract Funds Management Funds Approval, Procedure Topic No. 350-020-200 and the Department of Financial Services Reference Guide for State Expenditures.

On most projects, Space Florida will opt to have a third party perform the work.⁶ The scope of work

for third party agreements should be consistent with the Grant Agreement and reviewed by FDOT prior to execution by Space Florida.

PROJECT TYPES

PLANNING VERSUS CAPITAL PROJECTS

Every spaceport project has a unique context, goals, program needs, and requirements, so a determination of the eligibility of specific projects is made during the early stages of a project. Spaceport projects fall into two primary categories: spaceport planning projects and spaceport capital projects. Specific types of projects may include project planning, land mitigation, processing facilities, utilities, safety improvements, and launch facilities.

SPACEPORT PLANNING PROJECTS

Spaceport planning projects identify aerospace needs and guide the development of future spaceport capital projects. Through the Spaceport Improvement Program, FDOT may provide up to 100 percent funding assistance to Space Florida for spaceport planning and project development. Space Florida must provide FDOT a scope of work and proper cost estimate prior to committing funds for a planning project. If another entity, such as a consultant, is expected to perform the work, a third-party agreement must be provided in advance of committing Program funds.

The Spaceport Improvement Program has funded several planning projects, including:

- Florida Spaceport System Plan (2018). Defines the statewide spaceport system, develops statewide spaceport policies and processes, and priorities
- Cape Canaveral Spaceport Complex Master Plan 2013. Guides capital

⁶ On most, if not all, projects, the aerospace partner will be considered a sub-recipient. This is an important distinction because sub-recipients are subject to Single Audit Act requirements.

development and investment at Cape Canaveral Spaceport

- Cape Canaveral Spaceport Master Plan 2017. Updated the 2013 plan based on new strategic vision and dynamic changes in space transportation technologies, business models, and markets
- Kennedy Space Center Strategic Framework. Prepared a strategic framework for future development concept alternatives at Kennedy Space Center
- **Special Studies.** Examines topics of special interest, such as enhanced weather forecasting capabilities at horizontal launch and recovery facilities and assessments of legacy federal facilities for potential use by aerospace partners

EXAMPLES OF PLANNING PROJECTS ELIGIBLE FOR FUNDING

The purpose of spaceport planning is to lay the groundwork for the development of future spaceport infrastructure and aerospace economic development while protecting the public, the environment, and the cultural resources of the state.

- Spaceport System Plan
- Spaceport master plans
- Environmental Assessments (EAs)
- Environmental Impact Statements (EISs)
- Economic impact studies
- Master drainage plans
- Noise studies
- Launch site or launch vehicle licensing
- Program and project support
- Spaceport facility and feasibility assessments
- Siting studies

SPACEPORT CAPITAL PROJECTS

The purpose of capital improvement projects is to provide for capital facilities and equipment at spaceports. These improvements are generally specified and supported in masterplans or by project plans. Capital projects eligible for funding through the Spaceport Improvement Program include:

- · Launch and re-entry facilities
- Vehicle/spacecraft/payload final assembly, integration and processing facilities
- Other landside projects (parking lots, structures, launch control facilities, etc.)
- Specialized equipment, control facilities, clean rooms to support launch
- Safety and security projects

Some capital projects are considered "common use" and support multiple users as needed:

- Taxiways/aprons/runways
- Range facilities
- Utilities
- Fuel farms



SpaceX booster landing













The following projects are examples of FDOT-funded capital projects:

1. Blue Origin – Orbital Launch Vehicle Manufacturing Facility

First-ever rocket manufacturing in Florida

- 2. SpaceX Launch Complex 39A Expanding heavy-lift capacity for commercial launches
- 3. Space Florida Launch and Landing Facility

Creating space logistics hub for horizontal launch and landing opportunities

4. OneWeb Satellites – Spacecraft Integration Facility

High volume satellite manufacturing in Florida

5. Space Florida – Space Launch Complex 46

Upgrading small launch vehicle capacity to meet space user needs

This list is not exhaustive, and some potentially eligible projects may not fall precisely into these categories. Further, not all projects that fall into these categories are guaranteed funding. FDOT has the responsibility for making the final determination on the eligibility of each project.⁷

⁷ Section 331.303(21), Florida Statutes, relates to project funding eligibility and states, "capacity improvements that enhance space transportation capacity at spaceports that have had one or more orbital or suborbital flights during the previous calendar year or have an agreement in writing for installation of one or more regularly scheduled orbital or suborbital flights upon the commitment of funds for stipulated spaceport capital improvements."

FDOT FUNDING FOR CAPITAL PROJECTS

A key component of developing a Grant Agreement is FDOT's level of funding participation toward a project.

Although Section 331.360, Florida Statutes, does not specify project funding shares, FDOT policy is to provide up to 50 percent of eligible project costs for spaceport capital projects. The remainder must be provided by others, such as Space Florida, licensed spaceports, or other aerospace partners. This policy was developed to:

- Be consistent with the funding participation rates of other FDOT modal programs, i.e., SIS, seaports, and rail
- Maximize the use of state funds
- Ensure aerospace partners have a substantial and vested interest in the projects

For some projects, there may be overlap between the Spaceport Improvement Program and FDOT's Airport Improvement Program. For example, airport runways, taxiways, and aprons may be used by both space vehicles and aircraft and could be eligible for funding under both programs. In cases where such overlap exists, requests to fund space-related projects through the FDOT's Airport Improvement Program, or other similar programs, are handled as follows:

For a project that is predominately aviation related, but has some limited space-related application or function, normal Airport Improvement Program funding shares apply.

A project that is predominately space related is not eligible for funding under the Airport Improvement Program. FDOT funding for spaceport-related projects is provided under the Spaceport Improvement Program. Examples of predominately space-related projects include:

- Fuel farms for spacecraft hazardous fuels
- Launch control centers
- Range safety infrastructure
- Projects exceeding FAA design standards to accommodate spaceport operations

In 2014, section 331.371, Florida Statutes, was enacted to address strategic spaceport investments. The law authorizes FDOT, in



Space Launch Complex 36 Blue Origin pad reconstruction (left) and rendering (right)

consultation with Space Florida, to fund up to 100 percent of a project at strategic spaceport launch support facilities if the following criteria have been met:

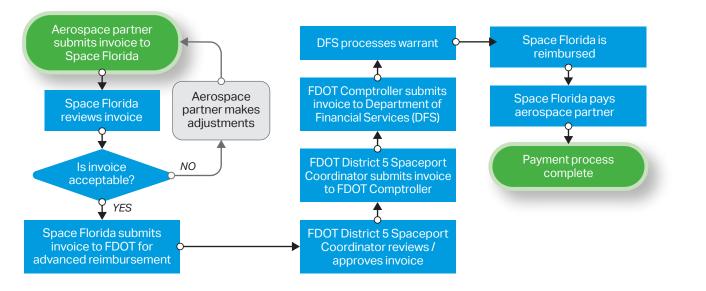
- Important access and on-spaceport and commercial launch facility capacity improvements are provided
- Capital improvements that strategically position the state to maximize opportunities in international trade are achieved
- Goals of an integrated intermodal transportation system for Florida are achieved
- Feasibility and availability of matching funds through federal, local, or private partners are demonstrated

Finally, section 331.360, Florida Statutes, prohibits FDOT from funding Space Florida's

operational and administrative costs. FDOT interprets operational and administrative costs as those costs related to Space Florida's operation as an organization. Spaceport Program and project-related costs are not considered part of Space Florida's operations or administration and are eligible for FDOT funding.

INVOICING AND PAYMENT FOR CAPITAL IMPROVEMENT PROJECTS

As noted under the Grant Agreement section, FDOT reimburses Space Florida for eligible project costs (Figure 8 explains this process). This ensures that Spaceport Improvement Program funds are properly used. Under this system, the aerospace partner incurs the cost, and submits an invoice. Space Florida then submits a request to FDOT for advanced reimbursement of expenditures. Space Florida reimburses the aerospace partner after payment is received.



Space Florida Financial Tracker Grant Payment Coordination

CAPITAL PROJECT	Aerospace partner submits invoice	Space Florida project and accounting review	Space Florida CFO approval for SF→FDOT invoice	FDOT review and comment resolution	FDOT payment to Space Florida	Space Florida payment to aerospace partner complete	

Figure 8: Invoicing and Reimbursement Process

The invoicing process begins when the aerospace partner incurs costs associated with the spaceport project, as per the conditions of the Grant Agreement. The aerospace partner then submits the invoice to Space Florida for review and payment. If Space Florida does not identify any changes to the invoice, it is approved and submitted to the FDOT District Office Spaceport Coordinator for review/ approval. When approved, the invoice is then forwarded to the FDOT Comptroller who submits the invoice to the DFS for advanced reimbursement to Space Florida. Space Florida then pays the aerospace partner. (See Figure 8 on page 28.) The FDOT District will review the invoice for:

- Completeness
- Accuracy
- Compliance with the Grant Agreement contract conditions
- Progress
- Deliverables
- Consistency with field reviews
- Eligibility of expense line items

Per standard language in the Grant Agreement, FDOT staff have 20 calendar days to either approve or reject the invoice. Approved invoices must be paid by the Department of Financial Services within 40 days of submittal to the District. When approved, FDOT reimburses Space Florida. If an invoice is rejected, the process starts over when the corrected invoice is resubmitted.

There are two important points to reinforce regarding the reimbursement process:

- Only eligible expenses incurred during the contract period may be reimbursed. Invoices containing costs incurred before the execution of the contract or after the expiration of the contract are not eligible for reimbursement.
- Only eligible expenses are subject to reimbursement. Invoices containing ineligible expenses will be rejected.

It is in the aerospace partner's interest that Space Florida and FDOT's invoice review and reimbursement processes function smoothly and in a timely manner. Invoices need to be submitted in good form as soon as possible after the expense was realized to ensure proper accounting and timely reimbursement



NASA Crawler with Mobile Launch Platform

Examples of typically eligible and ineligible expenses are provided below (Figure 9). The eligibility of any specific cost is ultimately dictated by state law, FDOT policy, and the terms of the Grant Agreement.

To ensure timely reimbursement of expenses, questions should be addressed to Space Florida or the FDOT District Spaceport Coordinator before submitting the invoice.

TYPICALLY ELIGIBLE EXPENSES:

Design/studies

Demolition/site work

Direct construction costs

- Construction labor
- Construction materials
- Construction equipment rental

Capital equipment purchases

- · Will transfer with delivery of the project
- Are agreed to in advance by the Department and Space Florida

Permits

Consultant support

TYPICALLY INELIGIBLE EXPENSES:

Maintenance costs

Operational costs

Food, travel, and lodging are usually ineligible on capital projects, but are highly dependent on the contract conditions.

Non-capital equipment purchases will not transfer with delivery of the project:

- Tools
- Clothing

Figure 9: Typical Eligible and Ineligible Expenses

SAFEGUARDING THE STATE'S INVESTMENT

FDOT and Space Florida make every effort to ensure the state's investment is protected and benefits are realized. FDOT and Space Florida work together to maximize the return on investment for all spaceport capital projects.

PROJECT MONITORING AND INSPECTION

Space Florida and FDOT strive to ensure projects are delivered in accordance with the Grant Agreement. **Both Space Florida and FDOT routinely review and monitor projects to ensure accountability and performance objectives are met.** Progress reports and management review of specific deliverables are accomplished periodically with the aerospace partners.

Representatives of Space Florida and FDOT District staff may attend pre-construction and project status meetings with the aerospace partner and contractor team. Regular field visits to the project site are also conducted by staff or their representative to verify:

- The conditions of the Grant Agreement are being met
- Progress is being reported accurately
- The work being performed is consistent with the scope of work

To help ensure a safe, productive, and timely field visit, these reviews are coordinated ahead of time with Space Florida, the aerospace partner, and contractor team, as appropriate.

SPACEPORT IMPROVEMENT PROGRAM SUSTAINABILITY

The Spaceport Improvement Program provides funding and technical support to Space Florida for aerospace transportation–related capital improvements. Priorities are based on the Florida Spaceport System Plan, which reflects a sustainability framework consisting of goals and objectives to guide public and private investment into Florida's emerging and growing aerospace sector. Like other transportation modes, such as aviation and transit, FDOT encourages spaceports to use Spaceport Improvement Program funds for projects that ensure the facility's financial sustainability. This includes placing a priority on funding space infrastructure projects that generate revenue and greater Return On Investment that allows resources to be reinvested into spaceport infrastructure. FDOT and Space Florida have determined that it is necessary to require and satisfy Return on Investment (ROI) and state benefit requirements to ensure the sustainability of the program. Sustainable infrastructure enables sound economic development, job

creation and the purchase of local goods and services to enhance quality of life for citizens, increase positive impacts (benefits), helps protect our vital natural resources and environment, and promotes a more effective and efficient use of public financial resources.

INVESTMENT RECAPTURE FOR SPACEPORT CAPITAL PROJECTS

The FDOT and Space Florida work closely together on the allocation of state resources for spaceport capital projects to achieve strategic capital investment goals and facilitate nonstate investment into emerging and growing aerospace markets. When appropriate, Space



NASA Crew Dragon astronaut landing, August 2020

Florida may require the aerospace partner to satisfy certain benchmarks as a condition of state funding participation on a project. Such requirements are commonly referred to as "recapture" provisions and are intended to ensure benchmarks are met and protect the public's investment in a project against the risk of nonperformance. Recapture may be implemented by assessing land use fees, lease payments, franchise fees and Space Florida property rights to property and ownership of the improvements to facilitate ensuring sustainability of the program.



04 conclusion

Launch and Landing Facility Runway 15-33 (C-5 and Antonov aircraft)



The State of Florida has been at the forefront of the growth and development of a sustainable and world-leading aerospace industry in the United States. The benefits of FDOT funded projects are evident in everyday life activities, not only of Floridians but billions of people around the world. The Spaceport Improvement Program is designed to stimulate private sector investment and commercial spaceport development. Most importantly, the quality of life for Floridians will continue to improve as a direct result of these infrastructure investments. This handbook describes key requirements for partnerships, application submittals, and project selection processes; Grant Management provisions, invoicing, and other project management topics; and strategies used to maintain the integrity of the program and its resources. Because the market, industry, and Program continues to evolve at a rapid pace, stakeholders are encouraged to coordinate with Space Florida or FDOT's Spaceport office. This will ensure compliance with applicable laws, rules, procedures, and plans, especially in cases where the facts or circumstances require additional guidance, interpretation, or deviation from this guidance.



Cecil Spaceport Tenant Generation Orbit rendering of the X-60A air-launched single-stage liquid booster. Inset: Initial integrated engine firing of a full-scale, functional prototype of the GOLauncher1 (GO1) hypersonic flight test booster (June 2018).

APPENDIX

STATEWIDE CONTACTS

FDOT Spaceport Office:

Wayne Lambert Spaceport office Manager wayne.lambert@dot.state.fl.us 850-414-4513

Space Florida:

Mark Bontrager Vice President Spaceport Operations 321-730-5301, ext. 235

Steve Szabo, PE Director of Planning and Development 321-730-5301, ext. 107

HELPFUL LINKS

Please use the links below to access or download the specified information. For more information, please contact the FDOT Spaceport Office or Space Florida.

Florida Statutes

Chapter 287 Florida Statutes – Section 287.057

Procurement of commodities or contractual services

Chapter 331 Florida Statutes – Aviation and Aerospace Facilities and Commerce

Chapter 332 Florida Statutes – Airports and Other Air Navigation Facilities

Chapter 334 Florida Statutes – Transportation Administration

Chapter 339 Florida Statutes – Transportation and Finance

All statutes are available at www.leg.state.fl.us/STATUTES

FDOT

Contract Funds Management - Funds Approval: https://fdotwp1.dot.state.fl.us/ ProceduresInformationManagementSystemInternet/FormsAndProcedures/ ViewDocument?topicNum=350-020-200

FDOT Spaceport Office: www.fdot.gov/spaceport

FDOT Work Program Instructions – Freight, Logistics & Passenger Operations Part III – Chapter15, Aviation and Spaceports: https://www.fdot.gov/workprogram/development/wp-instructions.shtm

Space Florida

Space Transportation Infrastructure Matching Fund (STIMF) Application: www.spaceflorida.gov/page/call-for-project

Florida Department of Financial Services

Department of Financial Services: www.myfloridacfo.com/Division/AA/Manuals (click on the Payments link)

Cecil Spaceport

Cecil Spaceport website: http://www.flyjacksonville.com/Home.aspx?sMP=CECIL

Space Coast Regional Airport/Spaceport

Space Coast Regional Airport/Spaceport website: http://www.ticoairportauthority.com/space-coast-regional-airport--tix-.html

Federal Aviation Administration (FAA)

FAA Office of Commercial Space Transportation: https://www.faa.gov/about/office_org/ headquarters_offices/ast/

FAA Memorandum: Proposed commercial space facilities and operations at federally obligated or Part 139 airports: https://www.faa.gov/airports/media/ARP-interim-Spaceport-Guidance.pdf

COMMERCIAL SPACE TRANSPORTATION REGULATIONS

FAA commercial space transportation regulations are in Chapter III, Parts 400 to 460, of Title 14 Code of Federal Regulations (CFR). The regulations implement statutory requirements. Amateur Rocket Activities are not regulated under 14 CFR Chapter III; they are regulated under 14 CFR Chapter I, by the FAA Air Traffic Organization. For more information, visit https://www.faa.gov/space/legislation_regulation_guidance/.

Florida at night from space

Space touches everyone.

THIS RESOURCE DOCUMENT WAS DEVELOPED BY:

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