



The Florida Senate

Issue Brief 2010-307

September 2009

Committee on Commerce

REVIEW OF SPACE FLORIDA'S INFRASTRUCTURE PROJECTS

Statement of the Issue

Space Florida is a legislatively created entity responsible for implementing the state's aerospace economic development and education policy. It either holds title to, or has leased or licensed, a number of physical infrastructure assets at Kennedy Space Center (KSC) or Cape Canaveral Air Force Station that have revenue-generating potential. Additionally, Space Florida has inherited from its predecessor agencies four conduit financing agreements where it, in effect, funneled proceeds of long-term debt to private companies to develop and operate space-related structures or attractions.

This issue brief describes the space-related infrastructure in which Space Florida has an interest.

Discussion

History of Space Florida

Prior to July 1, 2006, Florida had three statutorily created space entities: the Florida Space Authority, the Florida Space Research Institute, and the Florida Aerospace Finance Corporation. Each had its own set of responsibilities, but there was some overlap, as well, particularly in the area of developing commercial space activities.

Within these primary space entities were councils or committees that had specific focus. For example, the Spaceport Management Council was created within the Florida Space Authority. It was directed to coordinate with government agencies and commercial space operators for the development of recommendations on projects and activities that would improve the capabilities of the state's space launch facilities, increase statewide space-related industry and opportunities, and promote space education, research, and technology development.

Prompted in part by recommendations of the Governor's 2005 Commission on the Future of Space and Aeronautics in Florida, the Legislature passed HB 1489 (ch. 2006-60, L.O.F.). The legislation combined the three existing space entities into one, Space Florida, and substantially rewrote Part III of ch. 331, F.S. Space Florida's mission encompasses the responsibilities of all of its predecessor entities, but with a current emphasis on economic development. As expressed in s. 331.302(1), F.S., Space Florida was created to:

“... foster the growth and development of a sustainable and world-leading aerospace industry in this state. Space Florida shall promote aerospace business development by facilitating business financing, spaceport operations, research and development, workforce development, and innovative education programs.”

Among Space Florida's economic development powers is the authority to acquire, own, and operate facilities, launch pads, experimental spaceport facilities, landing areas, ranges, payload assembly and processing buildings, laboratories, aerospace business incubators, launch vehicles, payloads, space flight hardware, and other aerospace-related systems or initiatives, including utilities and educational and cultural initiatives.

Space Florida is governed by a 19-member board of directors:

- Twelve voting, private-sector members, appointed by the Governor, who are to represent a broad range of business interests;
- Five voting government representatives: the Governor, the secretary of the state Department of

Transportation, the state's Education Commissioner, the presidents of Enterprise Florida, Inc., and Workforce Florida, or their designees; and

- One state senator and one state representative, appointed by their respective leaders, to serve as ex officio, nonvoting members.

Twenty-seven staff persons, currently working out of two facilities at KSC,¹ handle Space Florida's day-to-day operations.

According to Space Florida's FY 2007-2008 annual independent auditor's report,² Space Florida had total revenues of \$35.38 million, including \$6.99 million in state operating funds,³ nearly \$2.9 million in rental fees and fees for other services, and about \$25 million in grants.⁴ Space Florida reported nearly \$14 million in total operating expenses in FY 2007-2008.

State-owned space infrastructure⁵

Space Florida, as an agent of the state, holds title to four aerospace-related infrastructure assets, and has obtained, or is in the process of obtaining, licenses or leases for two others. A brief description of each follows.

Space Life Sciences Lab (SLSL)⁶

The SLSL was built in 2004 with \$26.8 million in state appropriations to provide NASA with state-of-the-art lab space to process science experiments or equipment (collectively called "payloads") that were headed for or returning from the International Space Station (ISS). It replaced a hangar that NASA had been using, but which was inadequate for the ISS payloads.

The SLSL is roughly 100,000 square feet in size, with 28 science labs, 15 controlled-environment chambers, and an isolated area of six "holding rooms" totaling 15,000 square feet for animal research.⁷ Most recently, working in the SLSL were 30 NASA employees and 85 contractors; 15 state university researchers; and 10 commercial researchers.

NASA is the primary user of the SLSL, and is running a number of experiments that include:

- Assessing the long-term effects of weightlessness on the human skeleton;
- Analyzing the challenges of growing food crops in outer-space environments to feed astronauts on lengthy missions;
- Developing ecological systems that will naturally recycle food, oxygen, nitrogen, and waste during outer-space missions to make them self-sufficient; and
- Simulating the atmosphere, weather, and geologic conditions of Mars.

Two other entities currently are renting space at the SLSL: The University of Florida, which is conducting astrobiology experiments to determine whether bacteria and other microorganisms common to Earth would die, thrive, or even mutate in lunar and Martian environments; and the Burnham Institute for Medical Research-Florida, which is conducting experiments at the SLSC on a temporary basis until its Lake Nona campus is completed.⁸

¹ Space Florida also maintains office space in Orlando for business meetings.

² Complete report available at http://www.spaceflorida.gov/docs/SF_Financial_Statements_6.30.08.pdf.

³ In the FY 2009-2010 General Appropriations Act, the Legislature gave Space Florida \$3.839 million for operations.

⁴ By "grant," Space Florida is referring to a \$25.36 million released by OTTED for the O & C facility renovations discussed on page 5 of this report.

⁵ The information in this section of the report is primarily derived from interviews with Space Florida staff and documents provided by the staff or which are posted on the Space Florida website, <http://www.spaceflorida.gov/about.php>.

⁶ Information for this section of the report is the result of interviews with Space Florida staff and document review. More information about the SLSL is available at <http://sfls.lssc.nasa.gov/about/>.

⁷ Only mice and rats have been experimental subjects at the SLSL, according to facility managers, per comments made Aug. 10, 2009.

⁸ General information about the Burnham Institute is available at <http://www.burnham.org/>. Site last visited Aug. 15, 2009.

Space Florida's FY 2008-2009 revenue⁹ from the SLSL leases was \$1.6 million. The FY 2008-2009 operating expenses were \$777,802.¹⁰ Since the SLSL's construction, Space Florida has made one major repair: \$1.32 million to repair and upgrade the lab's heating and cooling systems. The SLSL's book value¹¹ is \$21.9 million, according to Space Florida staff.

NASA's lease of the SLSL expires December 31, 2010. Complicating matters is the future of the United States' space program. NASA has been reducing its ISS-related research at the SLSL since the Bush Administration announced its 2006 "Exploration Initiative" to return astronauts to the moon and to explore Mars. Depending on policy and funding decisions made by the Obama Administration and Congress about NASA, the SLSL's revenues could be dramatically impacted.

Space Florida staff believes that the SLSL will remain a viable research setting and even grow its client base. Their rationale is based on the following:

- There remain seven scheduled Space Shuttle flights through the fall of 2010, and the Space Station currently is scheduled to be online at least until 2015, so payload processing will continue at the SLSL for the foreseeable future.
- Full implementation of the 2005 designation of the ISS as a "National Laboratory," where NASA partners with other governmental agencies and the private sector, is expected to bring more researchers to the SLSL, such as the National Institutes of Health and the Department of Agriculture. ISS advocates also believe this designation means political support for maintaining the ISS beyond 2015.
- If commercial launch companies are able to fill the projected 5-year gap between the Shuttle retirement and implementation of the Constellation program, by ferrying astronauts and cargo to the ISS, that results in more tenants and more research at the SLSL.

Space Florida staff anticipates that about half of the future research will be "exploration-related" and the other half will be research that has outer-space and earth-bound applications, such as medical research. They also are describing the SLSL as the "centerpiece" of Space Florida's planned Exploration Park,¹² a mixed-use, multi-tenant technology and commerce park supporting both government and commercial space activities. Space Florida, in April 2009, retained a development company to design and build the park in phases. The first phase is expected to cost between \$8 million and \$10 million, and be completed in 2011.

Reusable Launch Vehicle (RLV) Hangar

Built in 2000 with \$5.3 million in state appropriations, the RLV Hangar was a joint initiative with Kennedy Space Center to expand the spaceport's ability to participate in government and commercial aircraft R&D, such as the X-33 and X-34 next-generation space vehicles, and to accommodate the wide-bodied L-1011 that had commercial, military, and potential aerospace applications. A year later, NASA announced that it was canceling the X-33 and X-34 because of cost and/or design concerns. That also eliminated the need for the L-1011 (already out of production), which would have been modified to carry the X-34, strapped to its underbelly, to its launch altitude.¹³

In the years since its construction, the 50,000-square-foot RLV Hangar has been used primarily for storage. For example, the pieces of the Shuttle *Columbia*, which disintegrated as it re-entered the Earth's atmosphere on February 1, 2003, killing all seven crew members, were laid out on the floor of the RLV Hangar for engineers to reconstruct the craft and determine the cause of the accident.¹⁴ Currently, the hangar is leased by a company that

⁹ This and all the other references to FY 2008-2009 revenues from Space Florida assets is derived from the entity's unaudited financial data.

¹⁰ This and all other references to FY 2008-2009 operating expenditures to maintain Space Florida assess is derived from the entity's unaudited financial data.

¹¹ This and all other references to a Space Florida asset's "book value" is computed as the original cost of the asset less any depreciation, amortization, or impairment costs made against the asset.

¹² More information is available at <http://www.explorationpark.com/>. Site last visited Aug. 13, 2009.

¹³ Photograph available at <http://www.nasaimages.org/luna/servlet/detail/nasaNAS~5~5~22384~126962:X-34-Mated-to-Modified-L-1011>. Site last visited Aug. 14, 2009.

¹⁴ Investigative report is available at <http://caib.nasa.gov/>. Site last visited Aug. 15, 2009.

is storing several de-commissioned U.S. military aircraft originally designed to intercept and destroy surface-to-air missiles, but which the company is considering adapting for space-tourist flights, to transport satellites into lower earth orbit, or to participate in aeronautical research.

The current lease generated \$60,560 in annual revenues in FY 2008-2009 for Space Florida. The RLV Hangar's FY 2008-2009 operating expenses, including utilities, were nearly \$119,000. Over the last couple of years, Space Florida has paid for two major renovations of the RLV Hangar: \$1.53 million to install a high-quality foam fire-suppression system and \$309,469 for a new roof. The hangar's book value is \$3.76 million.

Space Florida's board recently directed staff to explore the option of transferring the RLV Hangar to NASA in exchange for property or fees associated with the SLSL or the planned Exploration Park.

Space Launch Complex 46 (SLC-46)

Located at the eastern end of the Cape Canaveral Air Force Station, SLC-46 was constructed in 1985 to support Trident missile testing by the U.S. Navy. Since then, it has been used to launch U.S. Air Force rockets, commercial satellites, and NASA lunar exploration missions. The state of Florida began using the facility in 1993.

More than \$6.8 million in state, federal, and private funds have been invested to build a launch tower, launch stand, and support infrastructure, including camera stands, pad lighting, and an underground equipment room. The state does not own SLC-46; instead it has an agreement with the U.S. Air Force and the U.S. Navy to operate the facility.¹⁵ Space Florida also has a Federal Aviation Administration (FAA) Launch Site Operator's License for SLC-46, which it is in the process of renewing.

Space Florida spent nearly \$53,000 on expenses in FY 2008-2009 at SLC-46, and earned no revenue. Over the years, the state has invested \$500,000 into the site, and made \$3,017 in improvements.

The agency is moving forward with its plans to market SLC-46 as a multi-use, commercial launch facility for solid-fuel rockets only. Its goal is to host at least four commercial launches a year from SLC-46.

Solid Rocket Operational Storage Facility (OSF) at Camp Blanding

Built in 1996 to store the large solid-fuel Titan rockets, the OSF is located on Florida National Guard property at Camp Blanding, and is owned and operated by Space Florida. The previous owner, Lockheed Martin, deeded the facility to the state in 2007 when the Titan series of rockets was decommissioned.

The OSF consists of four buildings totaling 80,000 square feet in a fenced area deep within Camp Blanding. With the facility came a support building, two heavy cranes, an air pallet used to move the rockets, a railcar, and other equipment. Heavy-rail access connects the facility to the CSX rail line, but it is not used; the Atlas V solid-fuel rockets now stored at the OSF are trucked in from California, and also trucked to Cape Canaveral when needed for launches. The facility can store as many as 17 of the Atlas V rockets in a climate-controlled warehouse.

OSF is leased to one tenant, the United Launch Alliance¹⁶ (ULA) for the storage of Atlas V rockets. ULA entered into a lease with Space Florida in 2007 for 10 one-year renewal options. ULA has exercised two of the options and is expected to renew for at least another year.

According to Space Florida, the OSF's FY 2008-2009 operating expenditure was \$351,770, and its revenues were \$448,186, from its ULA lease. Over the years, Space Florida has made \$114,121 in improvements, primarily to repair the heating and cooling systems in the rocket storage areas. The book value of the OSF is \$7.3 million. The OSF is staffed by two Space Florida employees.

¹⁵ Space Florida operates SLC-46 in conjunction with the Naval Ordnance Test Unit, which ensures the site remains available for land-based Trident launches, if necessary.

¹⁶ United Launch Alliance is a joint venture formed in December 2006 by Lockheed Martin and The Boeing Company to provide spacecraft launch services for the U.S. Department of Defense, NASA, and other customers. More information is available at <http://www.unitedspacealliance.com/>. Site last visited Aug. 15, 2009.

Other space-related infrastructure assets in which the state has an interestSpace Launch Complex 36 (SCL-36)

In 2008, Space Florida received from the U.S. Air Force a “Right of Entry” to SLC-36, similar to a lease, and is seeking a Site Operator’s License from the FAA. Space Florida envisions developing SLC-36 into a commercial launch complex for private companies using liquid-fuel rockets.

For FY 2008-2009, the Legislature appropriated \$14.5 million to Space Florida specifically to renovate SLC-36 into a multi-use, multi-vehicle launch facility. But Space Florida’s plan for SLC-36 raised numerous questions about its feasibility, and about Space Florida’s apparent inability to find clients, as detailed in a research memorandum prepared by the Florida Office of Program Policy Analysis and Government Accountability (OPPAGA).¹⁷ Several legislators sought to freeze the \$14.5 million appropriation until Space Florida completed a required update of its Spaceport Master Plan,¹⁸ but a portion of the funds (\$3.7 million) has been released to Space Florida. During the FY 2010 legislative session, Space Florida may seek to amend the state budgetary proviso language that appropriated the \$14.5 million, in order to give more flexibility on how the funds can be spent.

So far, the state has spent \$2.45 million on infrastructure at SLC-36. In FY 2008-2009, its operating expenses totaled \$2,700. There were no revenues last fiscal year.

Space Launch Complex 47 (SLC-47)

SLC-47 was developed in 1984 on Cape Canaveral’s Eastern Range as a weather-rocket launch site. In 2003, the U.S. Air Force awarded the state a Real Property License to operate SLC-47 to support educational programs offered by the Florida Space Institute and Brevard Community College. Over the years, students have launched small payloads on Super Loki rockets (about 10 feet long and weighing 68 pounds total) for mostly weather-related experiments. Space Florida is pursuing opportunities for military academies and other educational programs to use SC-47.

According to Space Florida, the state has spent \$50,000 at SLC-47 over the years. Space Florida has received no revenue from events at SLC-47, and its FY 08-09 operating expenses were less than \$200.

Operations and Checkout (O&C) Facility

In May 2006, the Legislature appropriated \$35 million in non-recurring General Revenue to renovate the unused O&C Facility at KSC, in hopes that Lockheed Martin would be awarded the NASA contract to assemble the “Crew Exploration Vehicle” (CEV) planned to replace the Shuttle. Three months later, Lockheed Martin won the CEV contract to build the Orion.¹⁹

Under its current contract with NASA, Lockheed Martin will assemble two Orions a year in the O&C, but in future years as many as four a year can be built. At least 250 people will be hired to work on the Orion assembly but the number of employees could increase to 1,000, depending on other factors.

Since winning the original contract, Lockheed Martin has won bids for assembling or manufacturing individual parts of the Orion, including the wire harnesses and tiles that will be part of the capsule’s heat shield. According to Space Florida and Lockheed Martin officials, more Orion-related contracts may be brought to the O&C.

The FY 2006-2007 state “economic incentive” appropriation of \$35 million has been spent to rewire the building, replace the heating and cooling system, install new cranes, repaint the interior, and make other infrastructure improvements. The renovations are expected to be completed by the end of 2009.

Lockheed-Martin is leasing the building from NASA, but will pay approximately \$1.9 million to Space Florida in

¹⁷ “Review of Space Florida,” dated Jan. 30, 2009, is on file with the Senate Commerce Committee.

¹⁸ Space Florida staff expect to complete work on the updated Spaceport Master Plan before December, 2009.

¹⁹ Orion is the name of the crew capsule, which will be launched by Ares rockets, for the Constellation space exploration program. The first launch is tentatively set for 2015, but the entire Constellation program is under review by the Obama Administration, and changes in scheduling, scope, and even the craft and rockets used are possible.

administrative fees, under the terms of the economic incentive agreement.

The O&C improvements are not Orion-specific; Lockheed Martin will have the capability to assemble and test other types of vehicles in the O&C, as contracts are signed.

Space Florida officials say the expansion of Lockheed Martin's contract duties related to the Orion, into manufacturing and R&D, are positive developments for KSC and the Space Coast, which until now has been responsible mainly for launching spacecraft. They anticipate that the influx of Orion, Constellation-related, and other aerospace contracts will retain some of jobs expected to be lost with the retirement of the Space Shuttle, and create new jobs for workers with different technical or scientific skill sets.

Cape San Blas

On Aug. 22, 1992, the Spaceport Florida Authority (one of Space Florida's predecessors) launched a 10-foot-tall, 90-pound Microstar rocket from Cape San Blas in Gulf County as part of a suborbital weather experiment by university researchers to take ozone measurements. According to an article in the Gainesville Sun,²⁰ this was the first rocket launched within the United States by any state space agency. No other space-related launches have occurred at Cape San Blas.

The launch pad at Cape San Blas appears to be owned by Eglin Air Force Base, and it is unclear under what contractual arrangement the Spaceport Florida Authority used it for the 1992 launch. Two sections of law refer to Cape San Blas: one generally, the other specifically. Section 331.304(2), F.S., defines "spaceport territory" as "certain real property within Santa Rosa, Okaloosa, Gulf and Walton Counties which is included within the 1997 boundaries of Eglin Air Force Base." And, s. 331.307, F.S., establishes certain conditions on the space entity's use of the Cape San Blas launch site.

Space Florida officials are researching the history and intent of this statutory provision, and what role this provision might have in spaceport development.

Space Florida has spent no funds or earned revenues at the Cape San Blas launch pad, according to the entity's financial records.

Space Florida's role as a financial conduit for other aerospace infrastructure

Section 331.305, F.S., specifies Space Florida's powers, including borrowing money, issuing revenue bonds, and the ability to:

(9) Make and execute any and all contracts and other instruments necessary or convenient to the exercise of its powers, including financing agreements with persons or spaceport users to facilitate the financial, construction, leasing, or sale of any project.

Florida's various space entities have entered into four "conduit debt" obligations, which can be revenue bonds, certificates of deposit, or other debt instruments issued by a government agency for the express purpose of providing capital financing for a specific, usually private, third-party. In a typical conduit debt arrangement, a governmental entity issues debt, the proceeds of which are used to build infrastructure for a private, commercial enterprise.²¹ Even though the governmental entity is named on the debt instruments, it is not liable to repay the debt in case of default or shortfalls; the private third-party is. The debt is typically repaid through fees or revenues collected by the third-party. The benefits of conduit financing for a third-party are lower interest rates (because the debt instrument is technically issued to a governmental entity) which means a lower repayment and more profit, and the ability to build on or use public property. The governmental entity benefits through the creation of private-sector jobs and the resulting economic development.

²⁰ On file with the Senate Commerce Committee.

²¹ The discussion on conduit debt financing in this paragraph was based on information in the 2009 Governmental GAAP Guide for State and Local Governments, by Michael A. Crawford and D. Scot Loyd. Published 2008. Pages 12.05-12.06.

Space Florida's involvement allowed commercial development on federal property, in this case, at KSC or on the Cape Canaveral Air Force Station. For each one, Space Florida receives a financing fee. A brief description of the four transactions follows:

- Space Launch Complex 41 (SLC-41) on Cape Canaveral Air Force Station: In January 2000, the Space Florida Authority (Space Florida's predecessor) entered into a \$294 million conduit financing agreement with Lockheed Martin to renovate Launch Complex 41, formerly a Titan III launch pad, for use in the Atlas V Evolved Expendable Launch Vehicle (EELV) program.²² The EELV rockets are used primarily to launch NASA, military, other governmental and commercial satellites into orbit. In June 2009, the agreement was reassigned to United Launch Alliance, which is a joint venture by Lockheed Martin and Boeing to handle the companies' launch business with the U.S. government. Over the term of the agreement, the state's space entities have earned about \$150,000.
- Horizontal Integration Facility at Cape Canaveral Air Force Station: In March 2003, the Spaceport Florida Authority (Space Florida's predecessor) entered into a \$24 million conduit financing agreement with Boeing to help build an 88,960-square-foot facility for use by Boeing's Delta IV EELV program. The Delta IVs are integrated and tested in the building before launch. The Deltas have been used to lift NASA and commercial satellites into orbit. Over the term of the one-year deal, the state's space entity earned about \$300,000 in financing fees.
- Shuttle Launch Experience (KSC):²³ The state's space entities have twice entered into financing agreements to construct this tourist attraction, which mimics the final pre-launch preparations and the take-off of the Shuttle. In July 2005, the Florida Space Authority (Space Florida's predecessor agency) entered into a \$35 million conduit financing agreement, and in March 2007, Space Florida entered in a subsequent agreement for \$5 million in additional financing. The state space entities so far have earned about \$900,000 in financing fees from the deals.
- "Saturn V" Visitor Center (KSC):²⁴ In August 1994, the Spaceport Florida Authority (Space Florida's predecessor) entered into a \$35 million funding agreement to finance the construction of a museum and tourism center, housing a Saturn V rocket, and to purchase a new bus fleet. Over the term of the financing, the state's space entity has earned \$800,000 in financing fees.

²² The launch systems in an evolved expendable launch vehicle (EELV) are designed to be used only once, and their components are not recovered after launch. The vehicle typically consists of several rocket stages, discarded one by one as the vehicle gains altitude and speed. The goal of the EELV designers was to establish standard parts and components for all rockets, so that a launch vehicle can be constructed quickly and less expensively.

²³ More information about the attraction is available at <http://www.kennedyspacecenter.com/shuttle-launch-experience.aspx>. Site last visited Aug. 15, 2009.

²⁴ More information is available at <http://www.kennedyspacecenter.com/apollo-saturn-v-center.aspx>. Site last visited Aug. 15, 2009.