





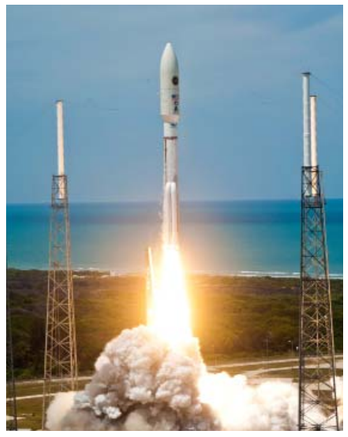
















Cape Canaveral Spaceport Complex Master Plan
2013

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Acronym	Definition
AA-2	Ascent Abort
AC	Advisory Circulars
AFB	Air Force Base
AGL	Above Ground Level
AIF	Aircraft Integration Facility
ASOC	Atlas V Spaceflight Operations Center
AST	Office of Commericial Space Transportation
ATM	Automatic Teller Machine
ATO	Air Traffic Organization
AUVSi	Unmanned Vehicle Systems International
AVS	Aviation Safety
C3PF	Commercial Crew and Cargo Processing Facility
CA	Carrier Aircraft
CAGR	Compounded Average Growth Rate
CASIS	Center for the Advancement of Science in Space
CASPER	Customer Assistance Service Program for the Eastern Range
CATEX	Categorical Exclusion
CBP	Customs and Border Protection
CCAFS	Cape Canaveral Air Force Station
CCiCap	Commercial Crew Integrated Capability
CCP	Commercial Crew Program
CCS	Cape Canaveral Spaceport
CDS	Central Data Subsystem
CFAPP	Continuing Florida Aviation Systems Planning Process
CFR	Code of Federal Regulations
CGWIC	China Great Wall Industry Corporation
CLC	Commercial Launch Complex
CNS	Canaveral National Seashore
COA	Certificates of Waiver or Authorization
COMSTAC	Commercial Space Transportation Advisory Committee
COTS	Commercial Orbital Transportation Services
CPDO	Center Planning and Development Office
CRS	Commercial Resupply Services
DARPA	Defense Advanced Research Projects Agency
DEP	Department of Environmental Protection
DoD	Department of Defense
DOT	Department of Transportation
DTH	Direct-to-Home
ECS	Environmental Control Systems
EELV	Evolved Expendable Launch Vehicles

Acronym	Definition
EIS	Environmental Impact Statement
ELSA	Electronic Library of Space Activity
ELV	Expendable Launch Vehicles
EPF	Eastern Processing Facility
EPIC	Electronic Privacy Information Center
FAA	Federal Aviation Administration
FAA/AST	Federal Aviation Administration Office of Commercial Space Transportation
FAR	Field Antenna Testing Range
FASP	Florida Aviation Systems Plan
FDC	Future Development Concept
FDOT	Florida Department of Transportation
FEC	Florida East Coast Railway
FIT	Florida Institute of Technology
FPL	Florida Power & Light Company
FS	Florida Statutes
FSI	Florida Space Institute
ft	Foot
FY	Fiscal Year
GAO	Government Accountability Office
GEO	Geostationary Orbit
GLV	Generic Launch Vehicle
GPD	Gallons per Day
GPS	Global Positioning System
GSO	Geosynchronous Orbit
HALE	High Altitude Long Endurance
HEPA	High efficiency particulate air
HLHL	Horizontal Launch Horizontal Landing
HMF	Hypergol Maintenance Facility
HVLV	High Value Low Value
ICAO	International Civil Aviation Organization
ILS	International Launch Services
INRMP	Integrated Natural Resources Management Plan
ISS	International Space Station
KARS	Kennedy Athletic, Recreation & Social
kg	Kilogram
KSC	Kennedy Space Center
LACB	Landing Aids Control Building

Acronym	Definition
LAS	Launch Abort System
LC	Launch Complex
LCC	Launch Control Center
LEED`	Leadership in Energy and Environmental Design
LEO	Low Earth Orbit
LOC	Launch Operations Center
LOCC	Launch Operations Control Center
LOPHT	Launch Operations/Production Hangar Terminal
LOS	Level of Service
LPF	Large Processing Facility
LPS	Launch Processing System
LUT	Launch Umbilical Tower
LV	Launch Vehicle
MALE	Medium Altitude Long Endurance
MARS	Mid-Atlantic Regional Spaceport
MAS	Mobile Access Structure
MGD	Million Gallons per Day
MHz	Megahertz
MINWR	Merritt Island National Wildlife Refuge
ML	Mobile Launcher
MLAS	Max Launch Abort System
MLP	Mobile Launcher Platform
MOC	Morrell Operations Center
MOSB	Multi-Operations Support Building
MPCV	Multi-Purpose Crew Vehicle
MPO	Metropolitan Planning Organization
MPPF	Multi-payload Processing Facility
MST	Mobile Service Tower
NAS	National Air Space
NASA	National Aeronautics and Space Administration
NDAA	National Defense Authorization Act
NEO	Near earth object
NGSO	Non-Geosynchronous Orbit
NOAA	National Oceanic and Atmospheric Administration
NOTU	Naval Ordnance Test Unit
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRO	National Reconnaissance Office

Acronym	Definition
O&C	Operations and Checkout Building
OIC	Operational Intercommunication System
OPA	Optionally-Piloted Aircraft
OPF	Orbiter Processing Facility
OTV	Operational Television
PAFB	Patrick Air Force Base
PCC	Processing Control Center
PHSF	Payload Hazardous Servicing Facility
PIEF	Payload Integration and Encapsulation Facility
Q/D	Quantity/Distance
QDC	Qualified Defense Contractor
R&D	Research and Development
RCS	Reaction Control System
RDT&E	Research, Development, Test & Evaluation
RF	Radio Frequency
RFI	Request for Information
RFP	Request for Proposal
RIMS II	Regional Input/Output Modeling System
RLV	Reusable Launch Vehicles
ROA	Remotely Operated Aircraft
RPA	Remotely Piloted Aircraft
RPSF	Rotation Processing and Surge Facility
RPV	Remotely Piloted Vehicles
SAB	Satellite Assembly Building
SAC-EC	Special Airworthiness Certificates - Experimental Category
SCETS	State Comprehensive Enhanced Transportation System
SCTPO	Space Coast Transportation Planning Organization
SEA	Supplemental Environmental Assessment
SFS	Space Florida Spaceport
SIS	Strategic Intermodal System
SJRWMD	St. Johns River Water Management District
SLC	Space Launch Complex
SLF	Shuttle Landing Facility
SLS	Space Launch System
SLSL	Space Life Sciences Lab
SNC	Sierra Nevada Corporation
SOCC	Space Operations Control Center
SpaceX	Space Exploration Technologies

Acronym	Definition
SPO	Systems Planning Office
SR	State Road
SRB	Solid Rocket Booster
SRM	Solid Rocket Motors
SRV	Suborbital Reusable Vehicle
SSMEPF	Space Shuttle Main Engine Processing Facility
SSO	Sun Syncrhonous Orbit
SSPF	Space Station Processing Facility
STEM	Science, Technology, Engineering, and Mathematics
STIM-Grants	Space Transportation Infrastructure Matching Grants
STS	Space Transportation System
STTF	State Transportation Trust Fund
STUAV	Small Tactical Unmanned Aircraft Vehicles
SUAS	Small Unmanned Aircraft Systems
TIP	Transportation Improvement Program
TPO	Transportation Planning Organization
TPSF	Thermal Protection System Facility
UA	Unmanned Aircraft
UAPO	Unmanned Aircraft Program Office
UAS	Unmanned Aircraft System
UAV	Unmanned Aircraft Vehicles
UCAV	Unmanned Combat Air Vehicle
UCF	University of Central Florida
ULA	United Launch Alliance
US	United States
USAF	United States Air Force
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VAB	Vehicle Assembly Building
VTOL	Vertical Takeoff and Landing
VTVL	Vertical Takeoff Vertical Landing

EXECUTIVE SUMMARY

I. The Cape Canaveral Spaceport

The Cape Canaveral Spaceport (CCS) is the planet's premier launch complex for sending humans and payloads to space. The CCS has served as the departure gate for every American manned mission, hundreds of advanced scientific spacecraft, and countless national security satellites. Over the past sixty years, thousands of payloads have been launched from Cape Canaveral. These include every operational Global Positioning System (GPS) satellite, hundreds of communication satellites, national-security remote sensing constellations, and early warning weather systems.

While government driven national security and exploration missions will continue to dominate the launch landscape, the types of missions are growing increasingly diverse. The diversity of upcoming missions will include more private sector launches for tourism and exploration, small satellite development and deployment, space tourism, providing zero-gravity environments for research, and environmental monitoring.

Space Florida, the state's spaceport authority and approved economic development agency, advocates for and funds infrastructure project in Florida's spaceport territory, including the CCS. Space Florida is an Independent Special District of the State of Florida, created by Chapter 331, Part II, Florida Statutes, for the purposes of fostering the growth and development of a sustainable and world-leading space industry in Florida. **Space Florida is designated by the Florida legislature as the single point of contact for state aerospace-related activities with federal agencies, the military, state agencies, businesses, and the private sector.**

Space Florida fosters bold economic development activities to expand and diversify domestic and international opportunities that support talent development, enhance infrastructure and support governments and organizations in improving the state's competitive business climate.

The CCS primarily consists of Kennedy Space Center (KSC) and the Cape Canaveral Air Force Station (CCAFS), as geographically defined by section 331.304 of the Florida Statutes.

The Cape Canaveral Spaceport offers many benefits to the emerging commercial aerospace industry. With the legacy of NASA and the Air Force its experienced local talent, innovative workforce, mature industrial base and suppliers make the CCS an ideal place for operations. More than just operations, the CCS has become the hub for human spaceflight transportation development. Both the Orion Multi-Purpose Crew Vehicle and the CST-100 Commercial Crew Transportation System have been slected to undergo final assembly and test operations at the CCS. Space Florida has played a central role in securing those facilities for development and eventual operations. Moreover, Space Florida has partnered with commercial launch providers and operators to provide infrastructure funding, and secure and finance upgrades to existing launch and related facilities at CCS. This plan supports Space Florida's role in assisting industry in financing and obtaining usage agreements for excess facilities on both KSC and CCAFS.

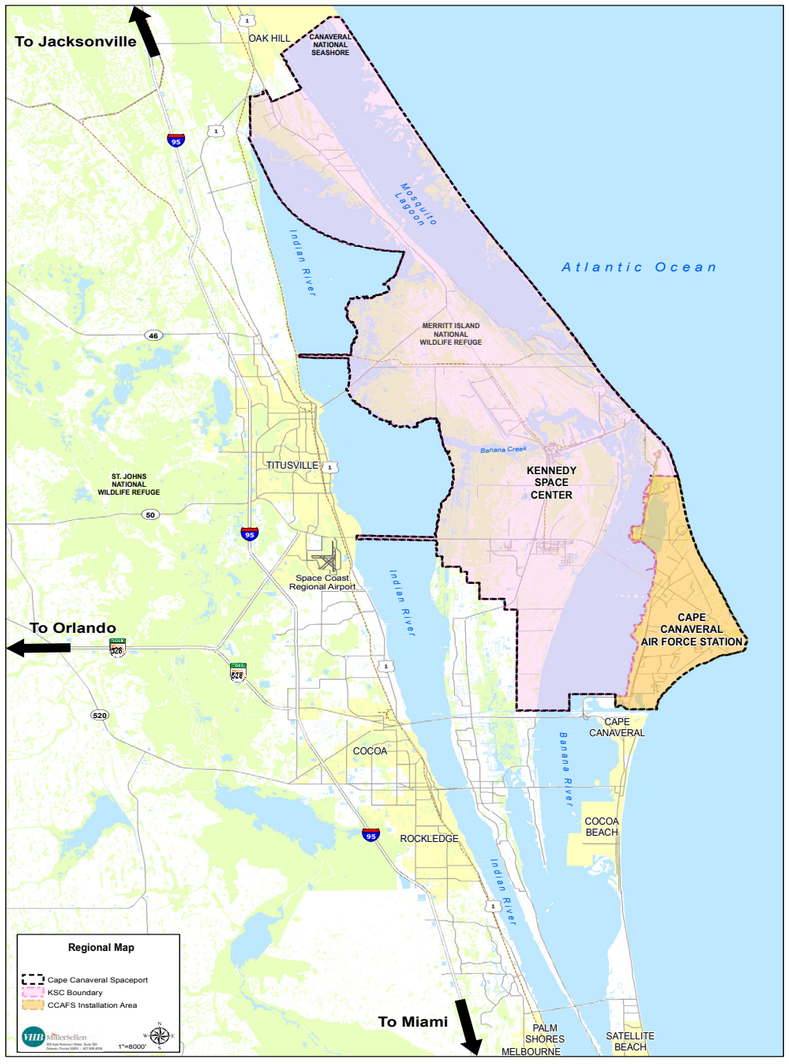


Figure E.I-1: Cape Canaveral Spaceport

CCS is uniquely positioned to face the market and grow the space industry through utilization and repurposing of existing assets and development of new assets.

- **Launch/Landing Infrastructure:** No other spaceport can match the existing infrastructure investments that are located within the CCS.
- **Operational Range/Airspace:** Well-established and has the capability to launch every current and projected launch vehicle in the U.S. inventory.
- **Skilled Workforce:** Exceptional and uniquely qualified with readily available world-class Florida universities nearby.
- **Established Users:** Diversified existing commercial and government user group with established support and logistics chain.
- **Leading Edge:** Unrivaled successful space exploration, development and transportation.
- **Governance/Organization:** Space Florida established as an independent special district and authority, to promote aerospace business development by facilitating business financing, spaceport operations, research and development, workforce development, and innovative education programs.

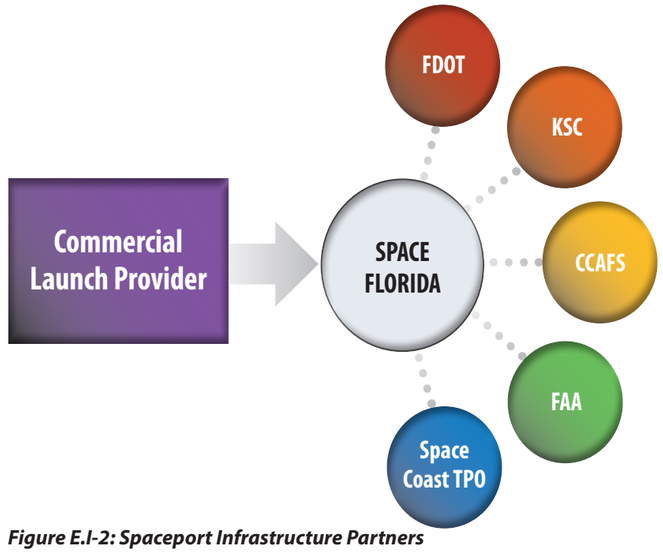


Figure E.I-2: Spaceport Infrastructure Partners

II. The Master Plan

Section 331.360(3) of the Florida Statutes requires Space Florida to "develop a spaceport master plan for the expansion and modernization of space transportation facilities within spaceport territories… The plan shall contain recommended projects to meet current and future commercial, national, and state space transportation requirements." This Master Plan provides information and analysis to guide Space Florida in its efforts to face the market, grow the space industry, and attract commercial space, technology, and life science related businesses through expansion and modernization of facilities infrastructure at the CCS. In fact, over the last 10 years, Florida has invested over $500 million in financing and infrastructure at the CCS in support of commercial, national and state space transportation requirements.

CCS COMPETITIVE CAPABILITIES	
LAUNCH/LANDING INFRASTRUCTURE	✔
LOCATION	✔
OPERATIONAL RANGE/AIRSPACE	✔
SKILLED WORKFORCE	✔
ESTABLISHED USERS	✔
LEADING EDGE	✔
GOVERNANCE	✔

PAYLOAD/LV CAPABILITIES	
SMALL LIFT	✔
MEDIUM LIFT	✔
HEAVY LIFT	✔

SPACE ACCESS	
SUBORBITAL	✔
GEOSTATIONARY ORBIT (GEO)	✔
LOW EARTH ORBIT (LEO)	✔

INFRASTRUCTURE AND FINANCING	
PROVIDE NEW INFRASTRUCTURE AND MAINTAIN EXISTING FACILITIES	✔
FINANCE AND ISSUE BONDS FOR DEVELOPMENT	✔
PROVIDE UTILITY SERVICES	✔

Figure E.II-1: CCS Competitive Capabilities

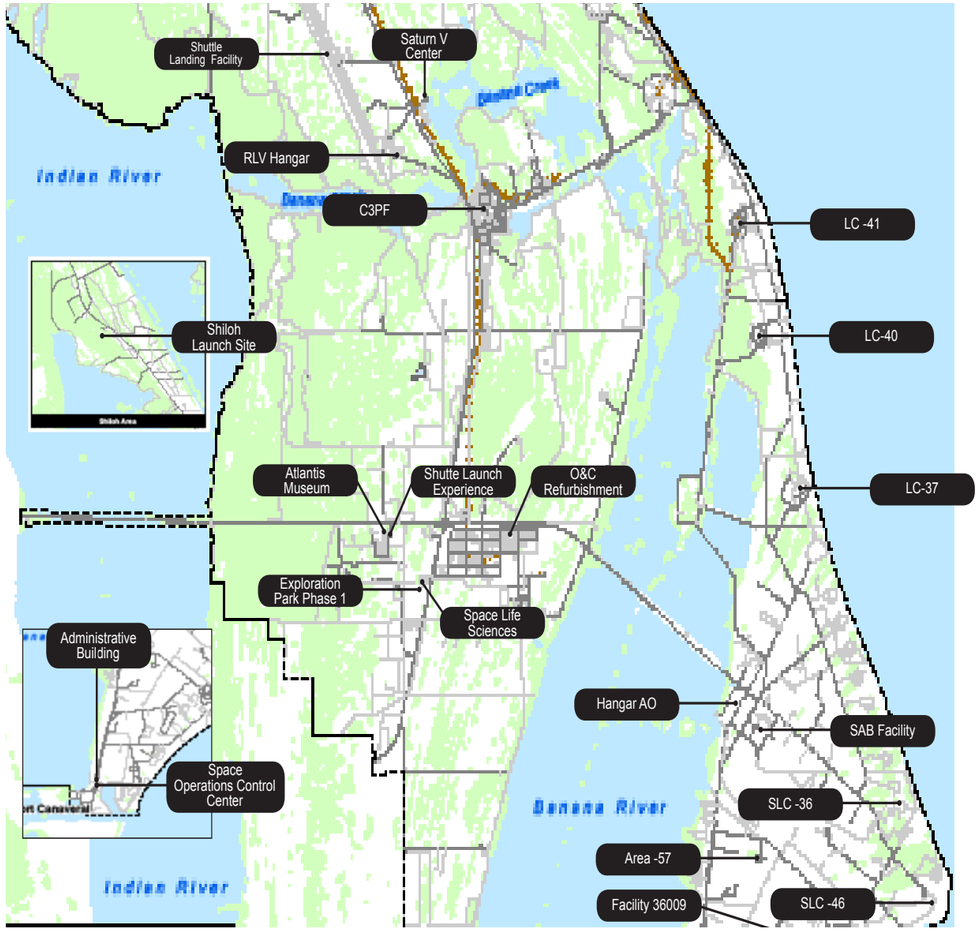


Figure E.II-2: CCS Facilities Investments by the State of Florida

Facility	Agreement Type	$ Funded/ Financed
Space Florida Current Real Property Agreements In Place:		
SLC-36	Real Property License	
SLC-46	Real Property License	$6,800,000
Space Life Sciences Laboratory	Land Lease	$25,500,000
RLV	Land Lease	$5,000,000
C3PF (formerly OPF3)	Use Permit	$10,000,000
SAB	Real Property License	
Exploration Park Phase I	Enhanced Use Agreement	$7,500,000
Space Florida Real Property Agreements In Work/In Renewal Status:		
Administration Building 90326	Real Property License	
Space Operations Control Center	Real Property License	
Area 57 Facilities	Real Property License	
Facility 36009	Real Property License	
Space Florida Financing Involement		
LC-41	Conduit Financing	$294,000,000
LC-37	Conduit Financing	$24,000,000
Saturn V Center	Conduit Financing	$25,000,000
Shuttle Launch Experience	Conduit Financing	$40,000,000
Atlantis Museum	Conduit Financing	$40,000,000
State of Florida/Space Florida Funding		
O&C Refurbishment at KSC		$35,000,000
LC-40 - Multiple Projects		$6,500,000
Hanger AO		$2,000,000
Space Florida Proposed Facility Acquisitions		
Shuttle Landing Facility		
Shiloh Launch Site(s)		
		Total Investment
		$516,300,000

Figure E.II-3: CCS Investments by the State of Florida

III. The Goals

Space Florida has set two major goals for this Master Plan.

The Florida Spaceport System Plan was used as the guiding document in defining the goals and direction for the development of the CCS Master Plan. The KSC, NOTU and 45th Space Wing Master Plans also informed the plan. The plan has been developed in accordance with the tenants of Federal Aviation Administration (FAA) Advisory Circulars 150/5070-6B Airport Master Plans and Section 331.360 of the Florida Statues.

This Master Plan has been developed to:

- Implement the Vision 2020 for Florida
- Explain the current infrastructure
- Explore the needs and depth of the market
- Evaluate current capacity
- Anticipate plans for modernization and expansion
- Illuminate a path for implementation

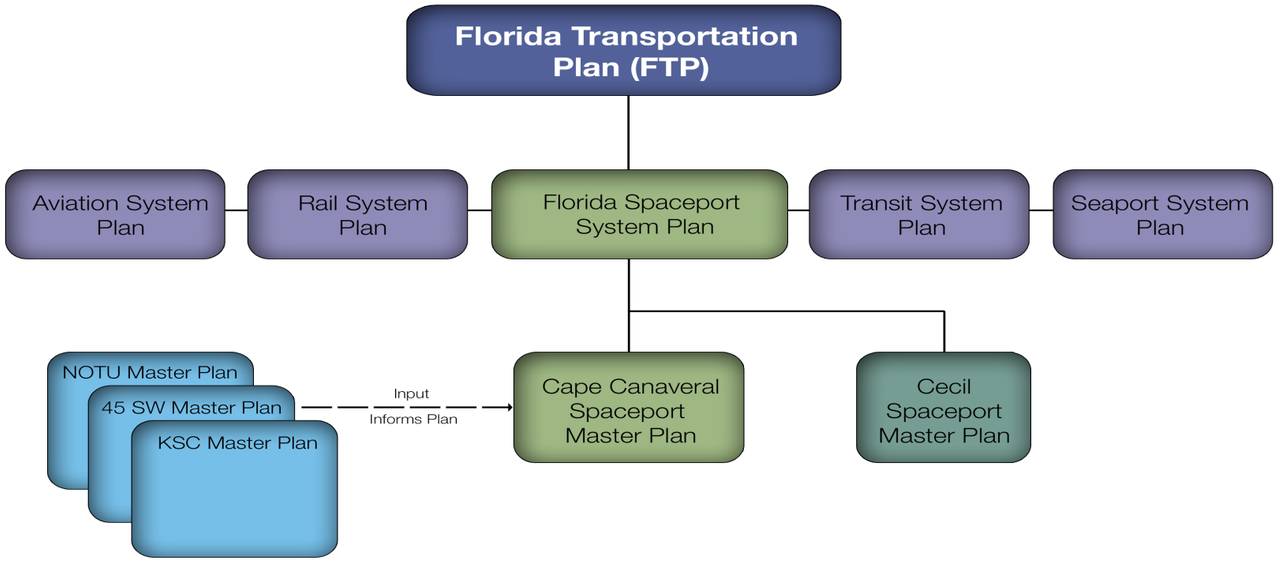


Figure E.III-1: Hierarchy of Spaceport System and Master Planning

GOAL ONE

Create a Spaceport that provides a positive economic benefit to the People of Florida.

- Objective 1.1: Advance Commercial Heavy Lift
- Objective 1.2: Support Commercial Crew and Cargo
- Objective 1.3: Attract New Emerging Space Systems
- Objective 1.4: Expand Horizontal Launch and Landing Capacity
- Objective 1.5: Expand Statewide Capacity

GOAL TWO

Ensure responsible environmental stewardship and an efficient, safe, and secure transportation system at the Spaceport.

- Objective 2.1: Utilize the Unique Market Position of the CCS to Promote Space Tourism
- Objective 2.2: Develop an Efficient and Competitive Organization Structure to Market and Promote the Cape Canaveral Spaceport
- Objective 2.3: Environmental Stewardship

Figure E.III-2: CCS Goals and Objectives

IV. Market Analysis and Forecasts

Space Florida works to position Florida as the ideal place for the aerospace enterprise to thrive. Specifically, the CCS infrastructure transformation envisioned in this Master Plan enables Florida aerospace companies to face a competitive market and win. To better understand that potential market, this master plan characterizes the launch market opportunities.

The space launch and spaceport markets are projected to remain relatively static from the public side with a few exceptions, such as China. Growth in these markets will come from the development of new spaceports and upgrading facilities at existing spaceports. The growth will facilitate the emergence of new launch markets along with the development of suborbital space tourism, research, and Unmanned Aerial Vehicles (UAV).

The future launch activity forecasts in the CCS Master Plan examined the following market segments:

- Commercial Geosynchronous Orbit Satellites (GSO)
- Commercial Non-Geosynchronous Orbit Satellites (NGSO)
- International Space Station (ISS) Cargo and Crew
- Space Tourism and Other Commercial Payloads
- Government National Security Satellites
- Space Tourism
- Research
- UAV Production
- Other Applications

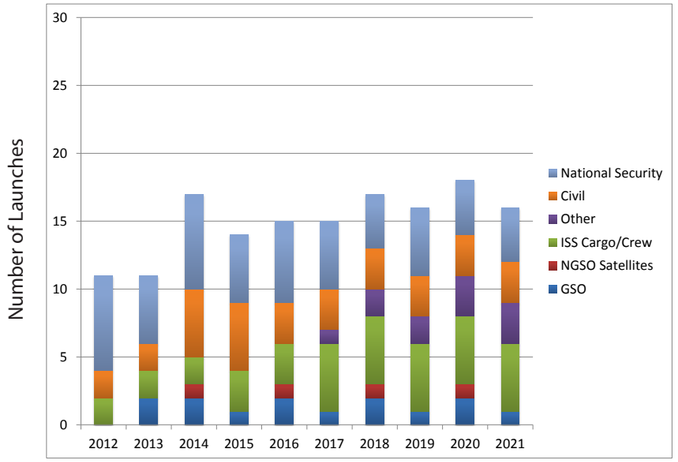
While national-defense and exploration missions will continue to dominate the CCS launch landscape, the types of missions are expected to grow increasingly diverse. The diversity of upcoming missions will include providing zero-gravity environments for research, environmental monitoring, space tourism, and small satellite development and deployment.

Two separate forecasts highlight the addressable CCS space launch market. The Baseline forecast was developed using past history and current projections. The Growth forecast was developed using the optimist marketplace assumptions.

Commercial orbital launch markets account for 25-30 launches per year.

Governmental orbital launch markets vary from 7-12 launches per year.

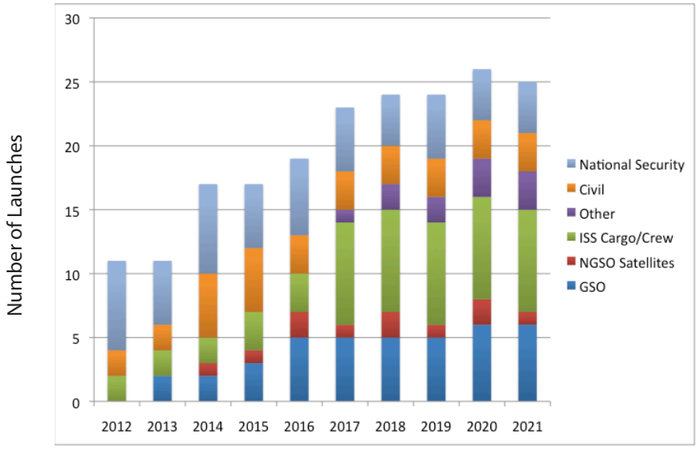
For the Baseline forecast the overall orbital space launch market is shown as relatively static with some modest growth.



SOURCE: FUTRON, INC.

Figure E.IV-1: Baseline Scenario Orbital Launches (Addessable Market)

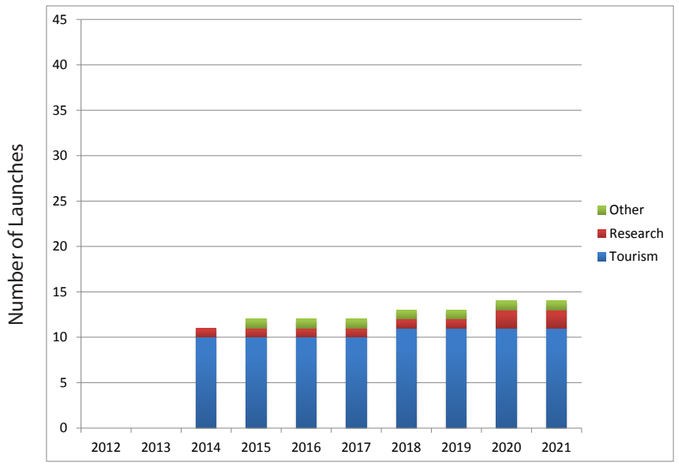
For the Growth forecast the overall orbital space launch market is shown as growing from just over 10 launches per year to 25 per year.



SOURCE: FUTURON, INC.

Figure IV.-3 Growth Scenario Orbital Launches (Addessable Market)

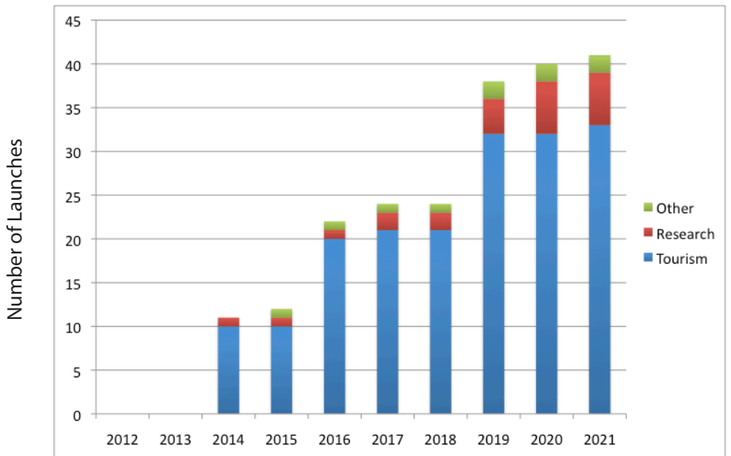
For the Baseline forecast the suborbital launch activity forecast is relatively flat, from 11 to 14 per year.



SOURCE: FUTURON, INC.

Figure E.IV-2: Baseline Scenario Suborbital Launches (Addessable Market)

For the Growth forecast the suborbital launch activity forecast is shown growing from 11 to 40 per year.



SOURCE: FUTURON, INC.

Figure E.IV-4: Growth Scenario Suborbital Launches (Addessable Market)

In addition to these markets there are other potential markets that could be "game changers" and significantly alter launch demand. These markets are still speculative and their development and effect on the market and launch demand at the CCS cannot be quantified. However, they need to be considered in the overall planning of future spaceport operations and facilities. These "game changers" include:

- Commercial Research
- Dedicated Smallsat Launches
- Fractionated Spacecraft
- Asteroid Mining
- Space-Based Solar Power
- On-Orbit Propellant Depots
- On-Orbit Satellite Servicing
- Other Breakthrough Technology Developments

V. Fiscal Impacts

Successful implementation of the CCS master plan provides a significant opportunity to generate a large amount of revenue for the region and the state in addition to creating a number of jobs with competitive salaries and spinning off a significant amount of economic output that flows through the economy. In terms of revenue, Fishkind Associates has calculated that launch and launch-related activities should generate over $2.8 billion in local revenue for the Baseline Scenario and over $3.5 billion in local revenue for the Growth Scenario.

A fully implemented, market-driven master plan, including all of the projects identified in this plan (Table E.VIII-3) will have significant economic impact. In terms of economic generation, implementation of the CCS master plan can generate nearly 6,000 direct and indirect permanent jobs with salaries totaling just over $280 million and an economic output of over $1 billion as shown in Figure E.V-1.

Economic Impacts	Direct Impacts	Indirect Impacts	Total Impacts
Jobs	3,669	2,334	6,003
Output/Total Sales	$755,539,896	$292,922,818	$1,048,462,7214
Earnings	$172,475,485	$109,718,665	$282,194,151

Figure E.V-1: Economic Impacts of CCS Master Plan
Source: U.S. Bureau of Economic Opportunity & Fishkind & Associates, Inc.

VI. Existing Facilities and Infrastructure

The Cape Canaveral Spaceport has been home to the planet's premier launch site for over 60 years. Its contributions and achievements in national defense, science, exploration and technology have been remarkable.

The CCS has the most advanced and complex system of space transportation facilities and management in the world. It has served as the departure gate for every American manned mission and for hundreds of advanced science and exploration missions. Over the past sixty years, thousands of payloads have been launched from Cape Canaveral. These include every operational Global Positioning System (GPS) satellite, hundreds of communication satellites, national-security remote sensing constellations, and early warning weather systems. From the early days of Project Mercury (CCAFS), Gemini (CCAFS), Apollo (CCAFS & KSC), Skylab to the Space Shuttle and International Space Station, from the Hubble Space Telescope to the Mars Exploration Rovers, the Cape Canaveral Spaceport enjoys a rich heritage in its vital role in America's space programs.

As a result, NASA and the Air Force have some of the most unique facilities and infrastructure in the world, ranging from the 3-mile long Shuttle Landing Facility which is large enough to accommodate any aircraft or spacecraft currently envisioned, to the Vehicle Assembly Building which has stacked the largest rockets ever flown, to the launch pads that delivered man to the Moon. From the Space Station Processing Facility which prepares payloads and experiments in a cleanroom environment to be flown to the ISS, to the Eastern Range which ensures public safety for over 15 million square miles of air, sea and land space. A summary of the existing major facilities is shown in Figure E.VI-1.

With the completion of the Shuttle Program and the maturing of the Air Force launch programs, both NASA and the Air Force are reducing their footprint and leasing/licensing facilities to commercial operators. As NASA moves forward with a new focus for the manned space program, the Space Launch System (SLS), the amount and frequency of use of the facilities and infrastructure is dramatically reduced. Thus NASA is promoting the repurposing of excess facilities and the multi-use of those facilities with excess capacity.

The strategic investments included in this plan will assist the emerging commercial providers in taking advantage of the available facilities and infrastructure and fully support the future growth and missions of the Cape Canaveral Spaceport.

CONTROL CENTERS AND AIRSPACE
SPACE OPERATIONS CONTROL CENTER (SOCC), 90327
PROCESSING CONTROL CENTER (PCC), K6-1094
LAUNCH CONTROL CENTER (LCC), K6-0900
ASOC LAUNCH OPERATIONS CENTER (LOC), 75251
DELTA OPERATIONS CENTER, 38835
MORRELL OPERATIONS CENTER (MOC), 81900
LAUNCH AND LAUNCH VEHICLE PROCESSING
REUSABLE LAUNCH VEHICLES (RLV) HANGAR, J6-2466
SLF & ASSOCIATED BUILDINGS
LC-39B, J7-0337
LC-39A, J8-1708
VEHICLE ASSEMBLY BUILDING (VAB), K6-0848
SPACE LAUNCH COMPLEX 36, SLC-36
SPACE LAUNCH COMPLEX 37, SLC-37
SPACE LAUNCH COMPLEX 40, SLC-40
SPACE LAUNCH COMPLEX 41, SLC-41
SPACE LAUNCH COMPLEX 46, SLC-46
ROTATION PROCESSING AND SURGE FACILITY (RPSF), K6-0494
HYPERGOLIC MAINTENANCE FACILITY, M7-1059
THERMAL PROTECTION SYSTEM FACILITY (TPSF), K6-0794
PARACHUTE REFURBISHMENT/PROCESSING FACILITY, M7-0657
SOLID ROCKET BOOSTER (SRB) ASSEMBLY AND REFURBISHMENT FACILITY, L6-247
AREA 57, 50801/50803/45601
PAYLOAD PROCESSING FACILITIES
SATELLITE ASSEMBLY BUILDING (SAB), 49904
COMMERCIAL CREW AND CARGO PROCESSING FACILITY (C3PF), K6-0696
ORBITER PROCESSING FACILITIES 1 AND 2 (OPF), K6-0894
OPERATIONS & CHECKOUT BUILDING (O&C), M7-0355
ASTROTECH
SPACE STATION PROCESSING FACILITY (SSPF), M7-0360 -
MULTI-PAYLOAD PROCESSING FACILITY (MPPF), M7-1104
PAYLOAD HAZARDOUS SERVICING FACILITY (PHSF), M7-1354
SPACE LIFE SCIENCES LABORATORY, M6-1025
LAUNCH ABORT SYSTEM FACILITY, M7-0777
RESEARCH AND DEVELOPMENT FACILITIES
ADMIN BUILDING, 90326
EXPLORATION PARK
FAR FIELD ANTENNA TESTING RANGE (FAR)
SPACE LIFE SCIENCES LABORATORY, M6-1025

Figure E.VI-1: Existing Mission-Related Facilities

VII. Capabilities

CCS currently has seven active and inactive orbital launch complexes and two active runways for horizontal take-offs and landings.

Figure E.6-1 identifies the launch complexes and vehicles currently being used to launch from the CCS, as well as those planned in the near future.

Three orbital vehicles will dominate activity at CCAFS during the next few years. These include the Atlas V and Delta IV, both built and operated by United Launch Alliance, and the SpaceX Falcon family of launch vehicles.

Other vehicles also flown from Florida, albeit rarely, include the Athena by Lockheed Martin, the Pegasus XL by Orbital Sciences Corporation and the Minotaur vehicle, also offered by Orbital. See Figure E.VII-2 for typical vehicles that can be supported at the CCS.

A variety of SRV's (Suborbital Resuable Vehicles) are expected to be introduced in the near future. California-based XCOR Aerospace is expected to manufacture and operate its Lynx vehicle from CCS during the next few years. Space Florida would welcome Virgin Galactic (which operates the SpaceShipTwo) to operate its vehicles from sites in Florida. For example, Cecil Spaceport and KSC's Shuttle Landing Facility (SLF) are well suited as locations for the operation of suborbital vehicles that launch and land horizontally. Vertically launched suborbital vehicles, such as those offered by Garvey Spacecraft Corporation, and Masten Space Systems, may operate routinely in Florida.

The Eastern Range, operated by the 45th Space Wing, has the capability of supporting all launch operations in the foreseeablefuture. Historically, the Range can reconfigure from one launch vehicle to another in less than 48 hours.

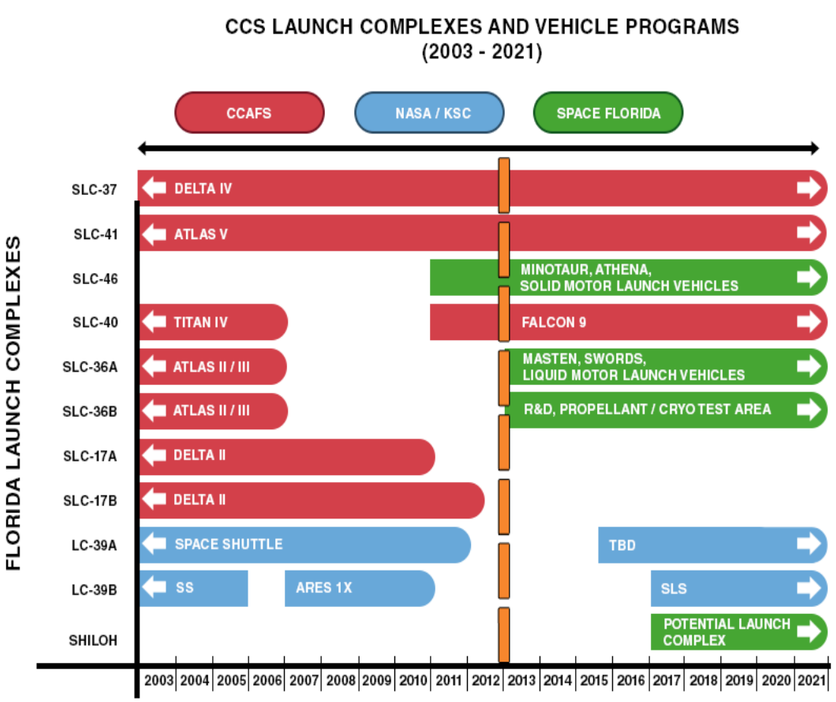


Figure E.VII-1: CCS Launch Complexes and Launch Vehicle Programs



Figure E.VII-2: XCOR Lynx SOURCE: XCOR

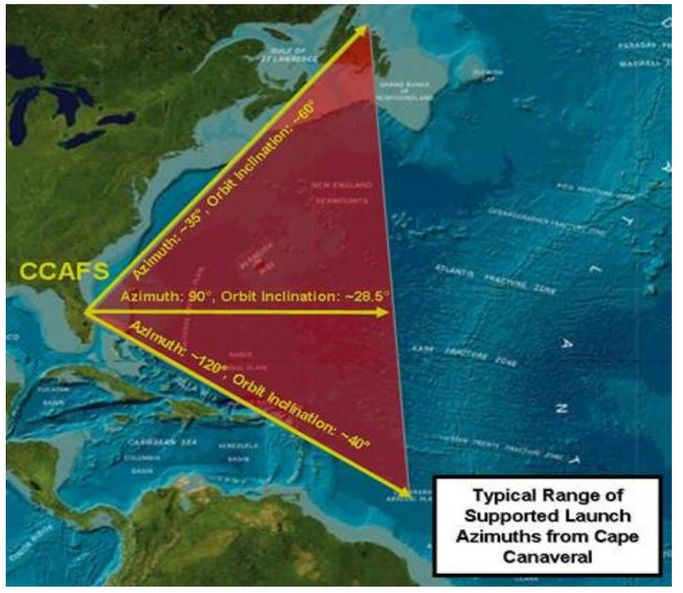


Figure E.VII-3: Eastern Range Launch Azimuths

	SMALL				INTERMEDIATE		HEAVY			
Vehicle	**Minotaur IV**	**Taurus I**	**Athena IIC**	**Pegasus XL**	**Atlas V**	**Delta IV**	**Falcon 9**	**Delta IVH**	**SLS**	**FALCON 9H**
Company	Orbital	Orbital	LMCO	Orbital	LMCLS/ULA	BLS/ULA	SpaceX	BLS/ULA	NASA	Space X
First Launch	2010	1994		1990	2002	2002	2010	2004	2017	TBD
Stages	4	4	3	3-4	2	2	2	2	3	2
Capacity to LEO kg(lb)	1735 (3830)	1320 (2910)	2065 (4550)	440 (970)	12,500 (27,558) to 20,520 (45,238)	9,390 (20,702) to 13,360 (29,440)	10,450 (23,050)	22,977 (50,646)	70.000 - 129,000 (154,000 - 286,000) (50,646)	53,000 (116,600)
Capacity to SSO kg(lb)	N/A	1050 (2315)	1165 (2570)	190 (420)	7,095 (15,642) to 14,096 (31,076)	7,510 (16,550) to 11,300 (24,920)	8,560 (18,870)	22,560 (49,740)		
Capacity to GTO kg(lb)	N/A	445 (981)	593 (1310)	N/A	4,750 (10,450) to 8,900 (19,580)	4,541 (10,012) to 7,020 (15,470)	4,500 (10,000)	13,399 (29,540)		21,200 (46,738)
Launch Sites	CCAFS VAFB Kodiak Wallops	VAFB	CCAFS Kodiak	Various (air-launched)	CCAFS VAFB	CCAFS VAFB	CCAFS Kwajalein	CCAFS VAFB	KSC	CCAFS VAFB

Figure E.VII-4: CCS Available ELV and Payload Performance (Typical)

VIII. Development Plan/Capital Improvement Plan

Space Florida is actively engaged in diversifying and enhancing the capabilities of the CCS spaceport.

Consistent with the Florida Spaceport System Plan, and guided by strong professional market analysis and forecasting, the CCS Master Plan charts the path toward the transitioning of CCS from a government customer base to a cohesive and coordinated spaceport; one that serves many customers, government, as well as commercial. In doing so, Space Florida has identified five funding categories for which Infrastructure Investment projects are evaluated and recommended for funding:

- Advances Commercial Heavy Lift Capability
- Supports Commercial Crew & Cargo
- Attracts New and Emerging Space Systems
- Expands Horizontal Launch and Landing Capacity
- Expands Statewide Space Capacity

Figures E.VIII-2 and E.VIII-3 provide a listing of the eligible projects submitted by industry and Space Florida.



Figure E.VIII-1: Space Florida Objectives

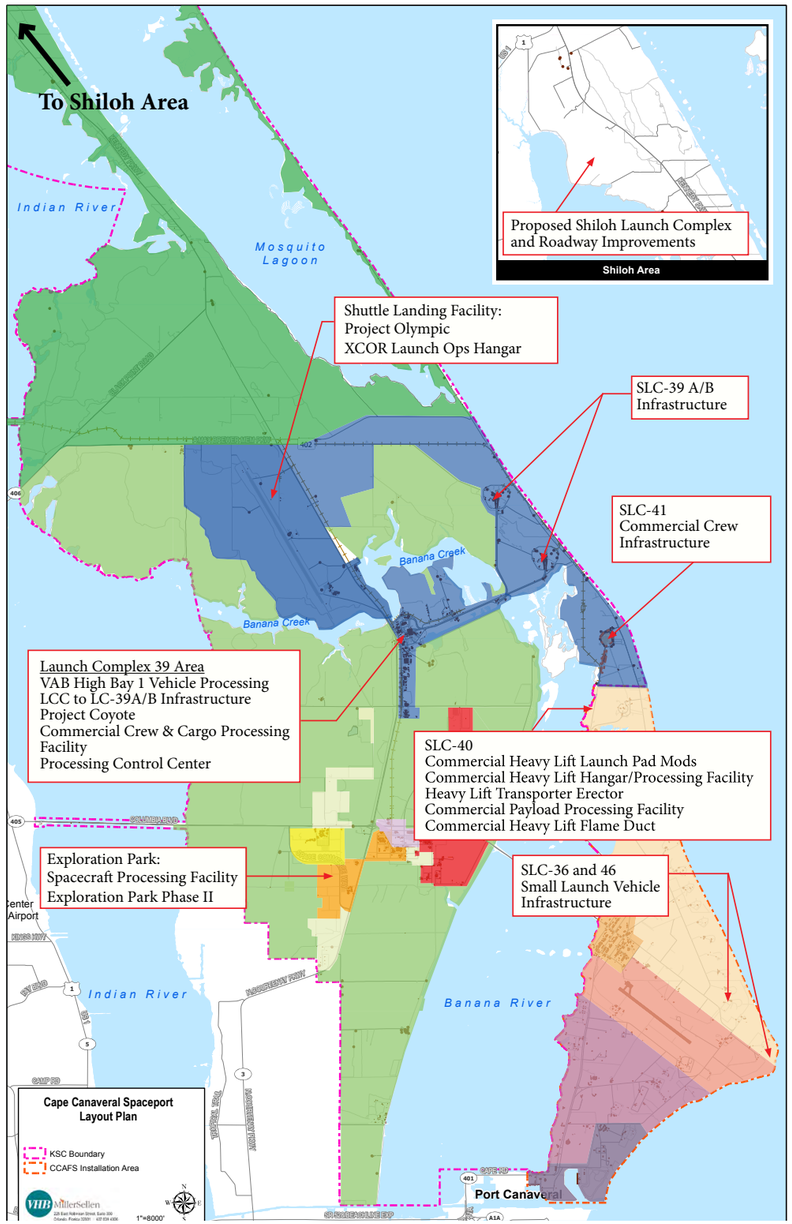


Figure E.VIII-2: FY 14/15 Submitted Projects ***Updated Annually***

As the State of Florida's spaceport authority and aerospace economic development agency, Space Florida, through this Master Plan, fosters bold economic development activities to expand and diversify domestic and international opportunities that support talent development, enhance infrastructure and support governments and organizations in improving the state's competitive business climate. The infrastructure investments recommended in this plan will attract, retain, and expand aerospace and related supply chain businesses. If fully implemented, this plan will generate nearly 6,000 direct and indirect permanent jobs with an economic output of over $1 billion.

As the goals of this plan are realized, the Cape Canaveral Spaceport will increasingly become the location of choice for the space industry – serving commercial, civil and national security missions. The CCS will realize the goals to provide positive economic benefit to the People of Florida while ensuring responsible environmental stewardship and a safe, and secure transportation system in Florida. This Spaceport Master Plan will play a critical role to secure Florida's position as a global leader in the Space enterprise.

"A robust and competitive commercial space sector is vital to continued progress in space. The United States is committed to encouraging and facilitating the growth of a U.S. commercial space sector that supports U.S. needs, is globally competitive, and advances U.S. leadership in the generation of new markets and innovation-driven entrepreneurship."

2010 National Space Policy of the USA

Project Site	Identified Projects
Advance Commercial Heavy Lift Capability	
SLC-40	Commercial Heavy Lift Launch Pad Modifications
SLC-40	Commercial Heavy Lift Hangar/Processing Facility
SLC-40	Heavy Lift Transporter Erector
SLC-40	Commercial Payload Processing Facility
SLC-40	Commercial Heavy Lift Flame Duct
SLC-40	Commercial General Purpose Storage Facility
LC-39A/B	LC-39B Launch Infrastructure
LC-39A/B	LCC to LC 39 A/B Infrastructure
LC-39A/B	LC-39A Launch Infrastructure
Support Commercial Crew & Cargo	
C3PF	Commercial Crew & Cargo Processing Facility
PCC	Processing & Control Center
Ex Park	Spacecraft Processing Facility
VAB	High Bay 1 Vehicle Processing
SLC-41	Commercial Crew Infrastructure
Attract New Emerging Space Systems	
OPF-1	Project Coyote
SLC-36	Small Launch Vehicle Infrastructure
SLC-46	Small Launch Vehicle Infrastructure
CLC	Shiloh - Commercial Launch Complex (CLC)
Ex Park	Exploration Park Phase II
Expand Horizontal Launch and Landing Capacity	
SLF	XCOR Launch OPS Hangar (LOPHT) Infrastructure
SLF	Project Olympic

Table E.VIII-3: CCS FY14/15 Eligible Projects
Note: Projects are not in priority order.

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1. Introduction

1.1 Cape Canaveral Spaceport Overview

1.1.1 Location

The Cape Canaveral Spaceport (CCS) primarily consists of Kennedy Space Center (KSC) and the Cape Canaveral Air Force Station (CCAFS), as geographically defined by section 331.304, of the Florida Statutes. KSC occupies approximately 140,000 acres, while CCAFS occupies approximately 17,420 acres, for a total spaceport area of about 157,420 acres. The large footprint of this area and relative geographic isolation has allowed for spaceflight operations to occur with minimal risk to public safety. CCS has a wonderful balance of open space and isolation for launch safety, combined with the local employment and tourism base to support the current and future spaceport needs.

Located on a unique and protected barrier island on the Atlantic Coast of Florida, the CCS is buffered by federally protected national seashore and wildlife refuge areas. It is also located immediately north of and adjacent to one of the busiest cruise and commercial shipping seaports in Florida, Port Canaveral. The CCS is within an hour's drive from the world's most popular tourist destinations located in Orlando. The City of Cocoa Beach and other popular beach communities are also nearby, making it an attractive visitor destination as well.

The City of Titusville and the City of Cocoa are located directly west of CCS, and are accessed by SR 405 (NASA Causeway) and SR 528 (Bennett Causeway). I-95 is located approximately 10 miles west of CCS and serves as the major regional north-south connector. The City of Orlando is approximately an hour drive due west on SR 528 or SR 50.

The territory consisting of areas within the KSC and the CCAFS may be referred to as the "Cape Canaveral Spaceport (CCS)." (Sec. 331.304, F.S.)

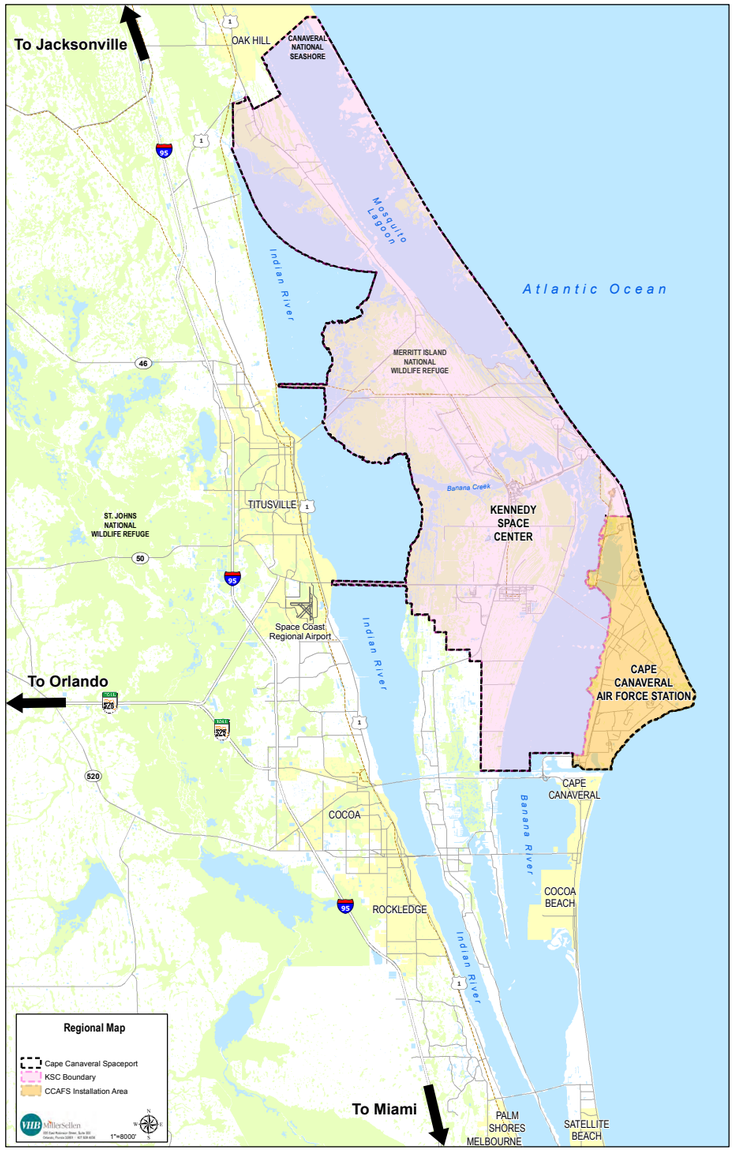


Figure 1.1-1: Cape Canaveral Spaceport

1.1.2 Competitive Advantages of the World's Leading Spaceport

The assets of the Cape Canaveral Spaceport provide it with a competitive advantage over that of any other spaceport in the world.

CCS is uniquely positioned to face the market and grow the space industry through utilization and repurposing of existing assets and development of new assets. CCS provides the ideal access to space for both geosynchronous and low to medium inclination earth orbit launches. These advantages include:

- **Launch/Landing Infrastructure:** No other spaceport can match the existing infrastructure investments that are located within the CCS. An extensive array of launch pads, control centers and payload processing facilities, two runways, and research and laboratory facilities are available within CCS for commercial, civil, and military uses.
- **Operational Range/Airspace:** CCS operates within the well-established Eastern Range. The Eastern Range is operated by the 45th Space Wing and has the capability to launch every current and projected launch vehicle in the U.S. inventory.
- **Skilled Workforce:** Exceptional and uniquely qualified human capital is a critical foundation of CCS. NASA and CCAFS employees and contractors provide an in-depth knowledge of all facilities and continuity of operations. In addition, a skilled and educated talent supply chain is readily available through nearby world-class Florida universities such as Daytona Beach's Embry Riddle Aeronautical University; the University of Central Florida (UCF) in Orlando; and Florida Institute of Technology (FIT) in Melbourne.
- **Established Users:** CCS has a diversified existing user group, including private commercial users such as SpaceX, Boeing, and Lockheed Martin. NASA, U.S. Air Force (USAF), and U.S. Navy are the Spaceport's major government/defense users. Established support users, such as Astrotech (payload processing), are located just outside the Spaceport property.
- **Leading Edge:** CCS is synonymous with unrivaled successful space exploration, ranging from mankind's first visit to the moon (the Apollo 11 mission), to interplanetary missions to Mars and other planets, to recent commercial launches to the International Space Station (ISS).
- **Governance/Organization:** In 2006, the State of Florida established Space Florida, an independent special district and authority, to promote aerospace business development by facilitating business financing, spaceport operations, research and development, workforce development, and innovative education programs. This innovative and forward focused organization demonstrates the State of Florida's commitment to growing the space industry in order to benefit the people and economy of Florida.

CCS COMPETITIVE CAPABILITIES	
LAUNCH/LANDING INFRASTRUCTURE	✔
LOCATION	✔
OPERATIONAL RANGE/AIRSPACE	✔
SKILLED WORKFORCE	✔
ESTABLISHED USERS	✔
LEADING EDGE	✔
GOVERNANCE	✔

PAYLOAD/LV CAPABILITIES	
SMALL LIFT	✔
MEDIUM LIFT	✔
HEAVY LIFT	✔

SPACE ACCESS	
SUBORBITAL	✔
GEOSTATIONARY ORBIT (GEO)	✔
LOW EARTH ORBIT (LEO)	✔

INFRASTRUCTURE AND FINANCING	
PROVIDE NEW INFRASTRUCTURE AND MAINTAIN EXISTING FACILITIES	✔
FINANCE AND ISSUE BONDS FOR DEVELOPMENT	✔
PROVIDE UTILITY SERVICES	✔

Figure 1.1.2-1: CCS Competitive Capabilities

1.2 Role of Space Florida

1.2.1 Goals and Mission

In response to changing market conditions and federal missions, Space Florida was established in 2006 as "an independent special district, a body politic and corporate, and a subdivision of the state, to foster the growth and development of a sustainable and world-leading aerospace industry in this state."

As the State of Florida's aerospace economic development agency, Space Florida fosters bold economic development activities to expand and diversify domestic and international opportunities that support talent development, enhance infrastructure and support governments and organizations in improving the state's competitive business climate. Space Florida accomplishes this by:

- Arranging financial incentives and providing start up and relocation support
- Providing financial and business consulting on business formation, relocation and venture development
- Providing resources, retraining and access to experienced professional workforce
- Developmening targeted infrastructure and facilities improvements
- Researching and developing opportunities that enable target industry growth

As an independent special district of the State of Florida, Space Florida has unique financing capabilities that can significantly reduce the overall cost of an infrastructure project for aerospace customers as described in section 1.2.2. Space Florida's tax exempt status enables the organization to negotiate optimal terms on loans and reduce the overall tax burden associated with the construction of such facilities. Space Florida is working with the State of Florida, NASA, the USAF, the FAA, and other important stakeholders and agencies to streamline the process of bringing space related businesses to Florida. In supporting this development, Space Florida is providing financial assistance, legislative support, customer assistance, and pre-negotiated access to launch complexes.

"Space Florida shall promote aerospace business development by facilitating business financing, spaceport operations, research and development, workforce development, and innovative education programs." (Sec. 331.302, F.S.)

1.2.2 Capabilities

The powers of Space Florida are described in Sec. 331.305, of the Florida Statutes. These powers provide Space Florida with considerable abilities. Space Florida serves as both a spaceport authority and an economic development organization. As a Spaceport Authority, Space Florida may provide the following:

- Provide new infrastructure, or maintain existing facilities:
  - Space Florida may own, acquire, construct, develop, create, reconstruct, equip, operate, maintain, extend, and improve launch and support facilities, including launch pads, landing areas, ranges, payload assembly buildings, payload processing facilities, laboratories, aerospace business incubators, facilities and equipment for the construction of payloads, space flight hardware, rockets, and other launch vehicles, and other spaceport facilities and aerospace-related systems. It may also provide educational, cultural, or parking facilities for aerospace related initiatives. (Sec. 331.305(11), Florida Statutes)
  - Space Florida may own, acquire, construct, reconstruct, equip, operate, maintain, extend, or improve transportation facilities appropriate to meet the transportation requirements of Space Florida and activities conducted within spaceport territory. (Sec. 331.305(12), Florida Statutes)

As an economic development organization, Space Florida may provide the following:

- Finance and issue bonds for development:
  - Space Florida may lend money, invest, and reinvest its funds. (Sec. 331.305(6), Florida Statutes)
  - Space Florida may issue revenue bonds, assessment bonds, or any other bonds or obligations and pay all or part of the cost of the acquisition, construction, reconstruction, extension, repair, improvement, or maintenance of any project or combination of projects. It may provide financial assistance for payloads and space flight hardware; and equipment for research, development, and educational activities, provide for any facility, service, or other activity of Space Florida. (Sec. 331.305(20), Florida Statutes)
- Provide utility services:
  - Space Florida may own, acquire, construct, reconstruct, equip, and operate utility services, including electrical power, natural gas, water, wastewater, and solid waste collection and disposal. (Sec. 331.305(13), Florida Statutes)

1.2.3 Business Objectives

In response to the challenge of NASA funding and mission shift following the conclusion of the Shuttle Program and cancellation of the Constellation Program, Space Florida adopted a forward thinking vision in 2010, known as "Vision 2020".

"The Vision of Space Florida is to be the world leader in developing tomorrow's aerospace enterprise, creating a diversified business environment and robust continued economic growth for Florida."

The purpose of this Vision is to fully utilize Florida's space launch and processing capabilities, existing skilled workforce, and infrastructure assets.

Three key markets are identified in Vision 2020:

- **Space Transportation and Technologies Support Systems**
- **Satellite Systems and Payloads**
- **Ground and Operations Support Systems**

In addition, there are seven other targeted markets that support the three key markets:

- **Agriculture, Climate, and Environmental Monitoring**
- **Civil Protection and Emergency Management**
- **ISS and Human Life Sciences**
- **Communications, Cybersecurity, and Robotics**
- **Adventure Tourism**
- **Clean Energy**
- **Advanced Materials and New Products**



The CCS Master Plan is intended to provide direction for Space Florida to capitalize on these market targets.

Figure 1.2.3-1: Space Florida Vision 2020 SOURCE: SPACE FLORIDA

1.2.4 Current Initiatives

Space Florida is actively engaged in diversifying and enhancing the capabilities of the CCS. Current initiatives include the following:

- **Space Life Sciences Laboratory (SLSL):** Space Florida is repurposing the SLSL for commercial market demand. The intent is to transition the SLSL from a single purpose facility to a multi-purpose multi-tenant facility, providing full-service capabilities to meet the broad commercial user demand for payload preparation and support to the ISS National Laboratory and its future development.
- **Shuttle Landing Facility (SLF):** In the Summer of 2013, NASA announced the selection of Space Florida to maintain and operate the Shuttle Landing Facility (SLF) at Kennedy Space Center (KSC). This historic 15,000 ft. long, 300 ft. wide launch and landing strip hosted 78 Shuttle landings over the past 30 years and provides a unique resource for growing commercial aerospace businesses that may have interest in operating from Florida. Space Florida will repurpose the SLF into a multi-user spaceport facility.
- **Shiloh Launch Complex Spaceport Project:** In 2012, the State of Florida requested 150+ acres of NASA land located at the north end of KSC. This area is near the former citrus community of Shiloh. This site will be developed into a purely commercial spaceport to help the state recapture the commercial payload market. Discussions are ongoing with NASA, the FAA and the Florida Department of Transportation (FDOT) regarding the future utilization of this land, and an Environmental Impact Study (EIS) will be conducted to determine the optimal parcel for commercial launch providers, which will also minimize environmental impact.
- **Commercial Crew and Processing Facility (C3PF):** Space Florida is commercializing former Orbiter Processing Facility 3 on KSC into a fully modernized aerospace facility that is poised to meet the demands of the growing commercial space sector. This project is the result of a first-of-its-kind partnership between NASA-KSC and Space Florida whereby Space Florida has secured full long-term rights to operate, maintain, and improve the C3PF under purely commercial standards and make it available to commercial tenants. The C3PF is ideally situated for commercial use, with direct access to the 15,000 ft. runway at the Shuttle Landing Facility which lies less than two miles away, as well as close proximity to all commercial, NASA, and Air Force launch pads located at KSC and CCAFS.
- **Launch Complex 46 (LC-46):** LC-46 has an FAA Launch Site Operator's License. Space Florida is upgrading LC-46 and ancillary support facilities to restore operational capability to support civil, commercial, and military launch capabilities. Other upgrades may include providing a rail launch system to support solid propellant small launch vehicles.
- **Launch Complex 36 (LC-36):** Space Florida is completing work on the initial re-design and re-development of LC-36. Space Florida is attracting viable commercial space business with the incentive of a ready, well-positioned, safe, FAA-licensed, environmentally sited, and easily-maintained launch complex. Currently, a Launch Site Operator License is in process. The FAA Supplemental Environmental Assessment has been submitted to the FAA for the inclusion of the launch vehicle and static testing that falls outside the characteristics of the Generic Launch Vehicle (GLV).



Figure 1.2.4-1 Conceptual Rendering of Commercial Launch Complex



Figure 1.2.4-2 Space Florida Space Life Sciences Laboratory



Figure 1.2.4-3 Shuttle Landing Facility

1.3 Purpose of Master Plan

1.3.1 Purpose of the Master Plan

Section 331.360(3), F.S. requires Space Florida to "develop a spaceport master plan for the expansion and modernization of space transportation facilities within spaceport territories". The Master Plan must contain recommended projects to meet current and future commercial, national, and state space transportation requirements. Following completion, Space Florida must submit the plan to the FDOT and the Metropolitan Planning Organization (MPO) for review of intermodal impacts and potential projects to be included in the FDOT five-year work program.

This CCS Master Plan provides information and analysis to guide Space Florida in its efforts to face the market; grow the space industry; and attract commercial space, technology, and life science related businesses through expansion and modernization of facilities infrastructure at the CCS.

This Master Plan:

- ***IMPLEMENTS* the Space Florida Vision 2020.** The Master Plan focuses on the target markets, as well as other potential game changers that can transform the industry.
- ***EXPLAINS* the current infrastructure.** The Master Plan inventories existing facilities infrastructure and recommends improvements necessary to capture the market.
- ***EXPLORES* the needs and depth of the market.** The Master Plan evaluates two different growth scenarios with a low and high amount of launch activity that is realistic to assume during the forecast period, then provides recommendations to meet those needs.
- ***EVALUATES* current capacity.** The Master Plan evaluates the current facilities and infrastructure, and recommends improvements necessary to face and capture the market.
- ***ANTICIPATES* plans for modernization and expansion.** The Master Plan is forward thinking and anticipates the infrastructure and facility needs of future users, markets, and missions.
- ***ILLUMINATES* a path for implementation.** A Prioritized Action Plan and metrics will provide a clear path for plan implementation, funding, reinvestment, and evaluation over time.

1.3.2 Planning Process

In addition to the statutory requirements described previously, Space Florida utilized the planning framework of FAA Advisory Circulars 150/5070-6B Airport Master Plans, further described in Section 1.5. This planning framework is a successful tool for multi-tenant aviation authorities, and serves as a model for CCS planning and development.

Generally, development of the CCS Master Plan followed a four step process:

- **Phase I - Research:** Space Florida inventoried existing facilities and infrastructure, studied projected market conditions, and identified issues and challenges that will affect future spaceport operations. Stakeholders, including KSC, CCAFS, US Fish and Wildlife Service (USFWS), FDOT, National Park Service (NPS), Port Canaveral Authority, Delaware North, and the Space Coast Transportation Planning Organization (SCTPO) were engaged to discuss these issues and challenges.
- **Phase II - Application and Requirements:** Building upon the lessons learned in Phase I, Space Florida identified potential opportunities for growth and market capture, including a determination of future facility needs necessary to support the projected market demand.
- **Phase III - Capital Improvement Program Priorities and Phasing:** Space Florida identified and prioritized the capital improvements necessary to support increased and diverse space launch operations projected by the market studies.
- **Phase IV - Realization/Implementation:** In addition to capital improvements, the Spaceport Master Plan provides recommendations for expanding Space Florida's role and prominence, as well as strategies to attract additional commercial spaceflight operations to the CCS.

The Master Plan illuminates a path for implementation by recommending projects to meet current and future commercial, national, and state space transportation requirements.



Figure 1.3.2-1 CCS Master Plan Public Work Shop - Presentation



Figure 1.3.2-2 CCS Master Plan Public Work Shop - Panel Discussion

1.3.3 Goals and Objectives

To realize this Vision for the CCS, certain goals must be pursued and measurable objectives achieved over the next decade. (See Section 5 for detailed goals and objectives.)

CCS GOALS

GOAL ONE

Create a Spaceport that provides a positive economic benefit to the People of Florida.

- Objective 1.1: Advance Commercial Heavy Lift
- Objective 1.2: Support Commercial Crew and Cargo
- Objective 1.3: Attract New Emerging Space Systems
- Objective 1.4: Expand Horizontal Launch and Landing Capacity
- Objective 1.5: Expand Statewide Capacity

GOAL TWO

Ensure responsible environmental stewardship and an efficient, safe, and secure transportation system at the Spaceport.

- Objective 2.1: Utilize the Unique Market Position of the CCS to Promote Space Tourism
- Objective 2.2: Develop an Efficient and Competitive Organization Structure to Market and Promote the Cape Canaveral Spaceport
- Objective 2.3: Environmental Stewardship

Figure 1.3.3-1: CCS Goals and Objectives

1.4 Relationship to Other Master Plans

Space Florida has developed a System Plan for all space-related facilities and infrastructure in the State of Florida. The Florida Spaceport System Plan is the first statewide spaceport system plan in the U.S. and will further strengthen Florida's multi-modal infrastructure. In support of the Florida Spaceport Systems plan goals, this CCS Master Plan identifies projects and project initiatives for inclusion into the Florida Spaceport System Plan. The System Plan is described further in Section 1.4.1.

Although the CSS is geographically defined as "territory consisting of areas within the John F. Kennedy Space Center and the Cape Canaveral Air Force Station," it is recognized that these federal agencies have existing forward looking plans for their respective jurisdictions. This CCS Master Plan is intended to function in cooperation with the existing master plans of the KSC and the CCAFS General Plan. It is not intended to supersede or replace those adopted plans. Sections 1.4.2 and 1.4.3 describe the physical layout, history, and capabilities of both KSC and the CCAFS.

1.4.1 Florida Spaceport System Plan

The Florida Spaceport System Plan is the first statewide spaceport system plan to be developed in the U.S. and will strengthen Florida's multi-modal infrastructure even further. The primary purpose of creating the Florida Spaceport System Plan was to understand Florida's space infrastructure and its interrelationships to guide public investment on behalf of Florida residents for an emerging and growing enterprise. Specifically, this plan examined the interactions between spaceports and user needs, the economy, population, and the surface infrastructure needed to support a statewide system.

The System Plan develops system-wide goals to determine how to maximize the use of scarce resources. It is intended to offer information and guidance regarding the infrastructure development needed to position Florida nationally and globally for growth and to provide the state with a competitive edge for capturing new aerospace business.

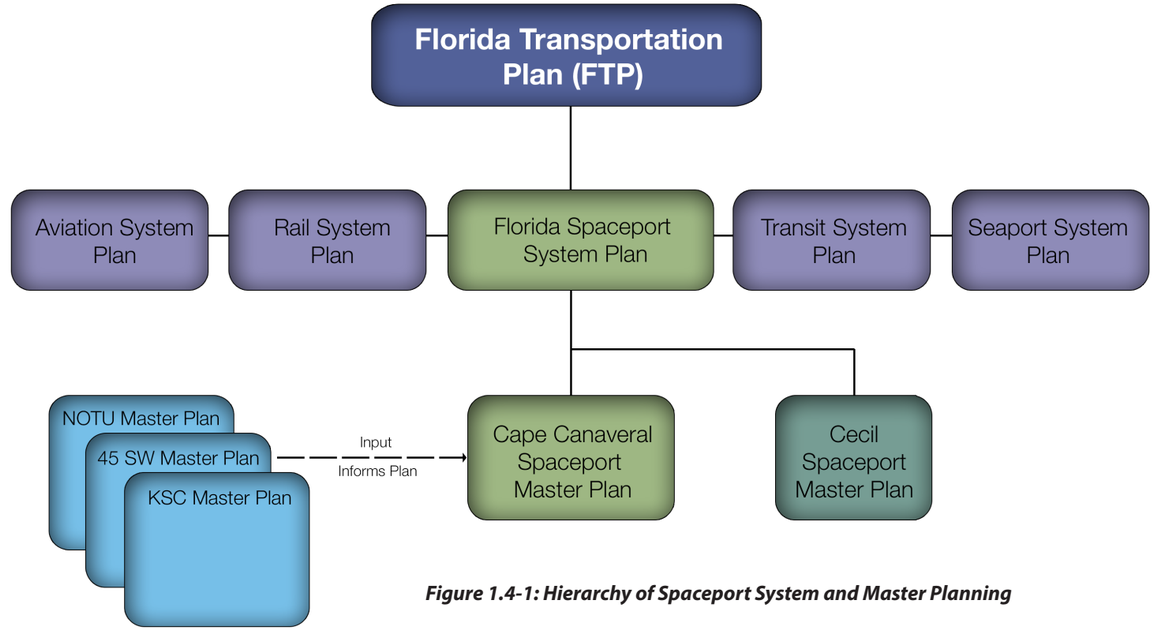


Figure 1.4-1: Hierarchy of Spaceport System and Master Planning

1.4.2 KSC Master Plan

For more than 50 years the John F. Kennedy Space Center (KSC), in Florida, has been the home to NASA's launch complexes in support of their primary mission. Located on Merritt Island, between the Banana and Indian Rivers, the area is approximately 34 miles long and 6 miles at its widest point, covering 219 square miles. Because much of KSC is a restricted area and only nine percent of the land is developed, the site also serves as an important wildlife sanctuary. KSC stretches over 139,490 acres of land and coexists with the Merritt Island National Wildlife Refuge. This environmentally unique Federal property includes: 41,000 acres of Canaveral National Seashore managed by the National Park Service; 1,800 acres of active producing orange groves; and 70,000 acres of estuary designated as a system of national importance by the U.S. Environmental Protection Agency, including 35,000 acres of protected wetlands and 35,000 acres of uplands. KSC is a major tourist destination for visitors to Florida.

CCAFS and KSC have served as the departure gate for every American manned mission and hundreds of advanced scientific spacecraft. From the early days of Project Mercury (CCAFS), Gemini (CCAFS), Apollo (CCAFS & KSC), Skylab to the Space Shuttle and International Space Station, from the Hubble Space Telescope to the Mars Exploration Rovers, the launch center enjoys a rich heritage in its vital role as NASA's processing and launch center. As a result, KSC has some of the most unique infrastructure in the world, ranging from the three-mile-long Shuttle Landing Facility runway big enough for any aircraft or spacecraft currently envisioned, to the Vehicle Assembly Building, which has stacked the largest rockets NASA has ever flown.

With the completion of the Shuttle program, the cancellation of the Constellation program, the evolution of the Commercial Crew and Cargo program for resupply of the ISS, and the onset of the new Space Launch System, NASA and KSC are facing new challenges and opportunities.

In response to these new challenges and opportunities, KSC is in the process of creating a new Master Plan that describes how the center will transform itself from a single user federal entity to one that supports a multitude of users and operations. This agency mandated plan will span a twenty year horizon and will detail the land uses, business policies and infrastructure that the center will require to remain the launch site of choice for all providers. The new Master Plan is scheduled to be completed by the end of 2013.

As a precursor for the update of the Master Plan, NASA developed the Future Development Concept (FDC) which defined the agency's path to the future.

Kennedy Space Center's Future Development Concept has three succinct themes that will guide activity during the next 20 years:

- To adopt new business practices allowing companies and outside organizations to make investments in the center to operate their enterprises,

- To transfer or otherwise dispose of facilities that are not being used enough and won't be needed by future NASA programs,

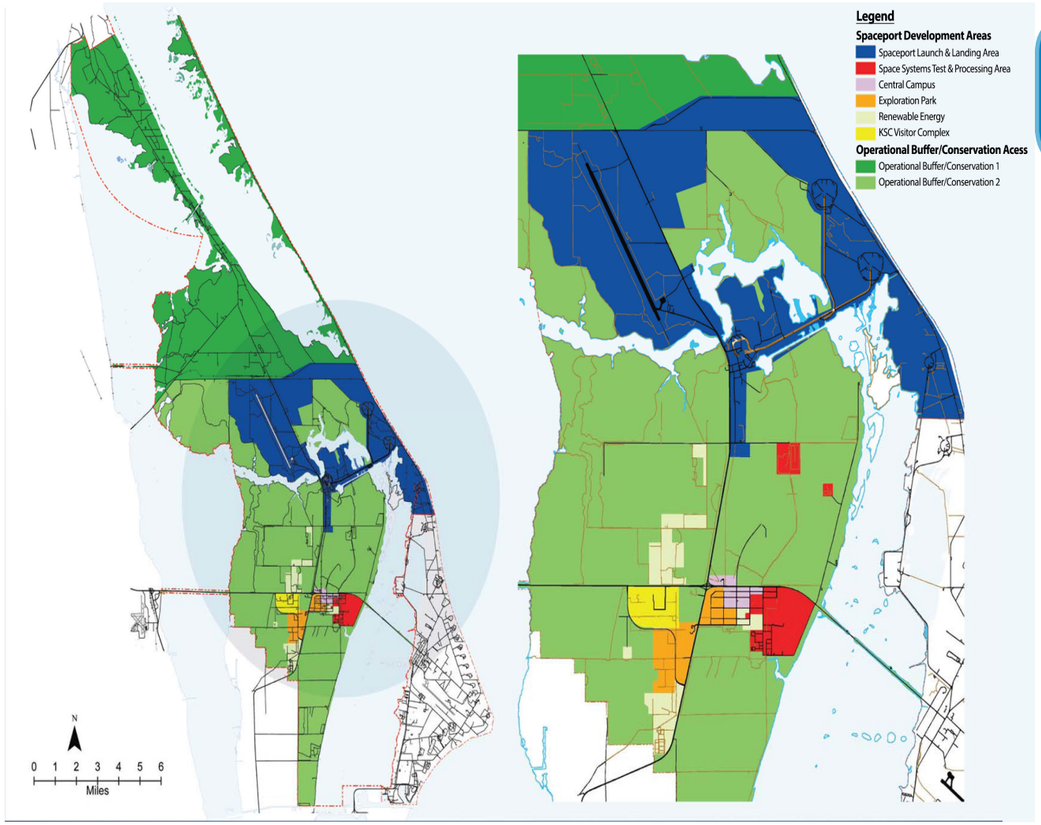


Figure 1.4.2-1: KSC Future Spaceport Land Use Concept (KSC Center Planning and Development Office (CPDO) http://www.nasa.gov/centers/kennedy/news/kscmasterplanrevision.html)

- To build new facilities that are economically and environmentally sustainable and can be used by a variety of people, organizations and programs.

1.4.3 Cape Canaveral Air Force Station (CCAFS) General Plan

CCAFS located on Cape Canaveral is the primary launch site of the Eastern Range and the USAF's 45th Space Wing. The Eastern Range has been operational since 1950. Some of the launch vehicles that have operated from CCAFS include: Athena I/II, Atlas I/II/III/V, Delta II/IV, Pegasus, Poseidon, Saturn IB, Titan 34D, Titan IV, and Trident. Current launch vehicles in use include the Delta IV, Atlas V, and Falcon 9.

"A new way of doing business, for a new generation of explorers."

- NASA KSC Director's Planning Guidance (http://kscpartnerships.ksc.nasa.gov/masterplan/summary.htm)

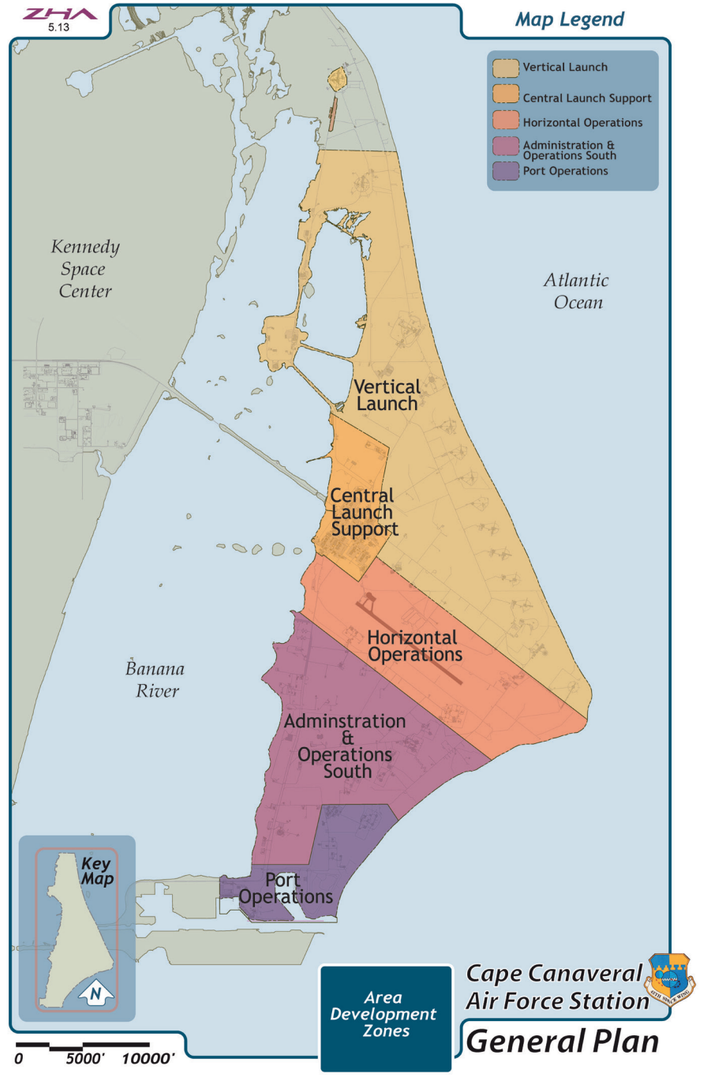


Figure 1.4.3-1: CCAFS Development Plan Source: ZHA

CCAFS conducts launch operations and provides range support for military, civil, and commercial launches. Existing infrastructure includes telemetry and tracking facilities, an operational runway (Skid Strip), special vehicle reentry corridors, operations control center, hangars, fuel tanks, water towers, and launch pads. CCAFS currently supports three active orbital Space Launch Complexes (SLC) (with others reserved for future use) and the Skid Strip and more than 25 inactive or dismantled launch complexes. The CCAFS Skid Strip is an airfield with a 10,000 ft. runway for military airlift aircraft delivering heavy and outsized satellite payloads to the Cape, and is capable of supporting the horizontal launch of a Pegasus carrier aircraft and unmanned aerial systems.

Presently at CCAFS only launch complexes SLC-37, SLC-40, and SLC-41 are active and capable of immediately supporting space launch missions. Space Florida has a 45th Space Wing real property license for SLC-36 and SLC-46. SLC-46 has a Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST) site operator's license. Space Florida is in the process of updating its license for SLC-46 to include additional vehicles and obtaining an FAA/AST site operator's license for SLC-36.

SpaceX has a 45th Space Wing real property license for SLC-40 to launch their Falcon 9 launch vehicle. SpaceX has currently submitted projects to Space Florida for funding for new facilities and upgrades to support a heavy lift rocket.

Other changes planned at another CCAFS launch complex are slated for SLC-41, which is where the Atlas V rocket is launched. Those plans include upgrades to the pad to support manned spacecraft such as Boeing's CST-100 and Sierra Nevada's Dream Chaser. ULA has currently submitted projects to Space Florida for funding for upgrades to support human spaceflight from SLC-41.

1.5 FAA and FDOT Requirements

The CCS was developed in accordance with FDOT and the FAA requirements.

1.5.1 FAA Master Plan Regulations

The FAA has the mission to provide the safest, most efficient aerospace system in the world. To fulfill this mission, the FAA is made up of 14 distinct offices that have management over the various aspects of the FAA's mission. One of the newest offices is the Office of Commercial Space Transportation (AST). AST was created in 1984 as a part of the Commercial Space Launch Act and later transferred from the DOT to the FAA. Its mission is to "ensure protection of the public, property, and the national security and foreign policy interests of the U.S. during commercial launch or reentry activities, and to encourage, facilitate, and promote U.S. commercial space transportation." AST was established to:

- Regulate the U.S. commercial space transportation industry, to ensure compliance with international obligations of the U.S., and to protect the public health and safety, safety of property, and national security and foreign policy interests of the U.S.
- Encourage, facilitate, and promote commercial space launches and reentries by the private sector
- Recommend appropriate changes in Federal statutes, treaties, regulations, policies, plans, and procedures
- Facilitate the strengthening and expansion of the U.S. space transportation infrastructure

The AST has five divisions - the Space Transportation Development Division, the Licensing and Evaluation Division, the Regulations and Analysis Division, the Safety Inspection Division, and the Operations Integration Division. Through these divisions, the AST issues FAA licenses and permits for commercial launches of orbital rockets and suborbital rockets. Since 1989, AST has licensed over 200 launches. The AST also issues licenses for the operations of non-federal launch sites, or commercial spaceports. Since 1996, AST has issued site operator licenses for eight commercial spaceports.

The majority of the AST's regulations are codified in Title 14 C.F.R. Chapter III, AST, FAA, and DOT. In addition, the AST has developed six Advisory Circulars. These are similar to the Advisory Circulars that have been developed in other offices of the FAA. The AST Advisory Circulars (AC) are listed below:

- AC 460.11-1-A, *Environmental Control and Life Support Systems for Flight Crew and Space Flight Participants in Suborbital Space Flight*
- AC 437.55-1, *Hazard Analyses for the Launch or Reentry of a Reusable Suborbital Rocket Under an Experimental Permit*
- AC 413-1, *License Application Procedures*
- AC 440-1, *Part 440 Insurance Conditions*
- AC 431.35-3, *Licensing Test Flight Reusable LV Missions*
- AC 431.35-2A, *Reusable Launch and Reentry Vehicle System Safety Process*

Space Florida, has looked for guidance in developing the CCS Master Plan to the FAA Office of Airports, which in addition to several hundred other Advisory Circulars, has developed the Advisory Circular 150/5070-6B, Airport Master Plans. These guidelines were used to develop the CCS Master Plan.

1.5.2 FDOT

Section 331.360 Florida Statutes directs FDOT to promote the further development and improvement of aerospace transportation facilities. Within FDOT, spaceport activities and programs are handled by multiple offices. The Aviation and Spaceports Office has been assigned the lead responsibility for FDOT spaceport related issues. FDOT District offices are responsible for administering infrastructure grant agreements with Space Florida. Space Florida is working with FDOT to create a process for funding and for identifying project requirements.
The Strategic Intermodal System (SIS) is a transportation system comprised of facilities and services across the entire State of Florida and having interregional significance, including major air, space, water, rail, and highway facilities. In 2003, the SIS was established by the Florida Legislature and is focused on the efficient movement of passengers and freight. The SIS contains capital improvement projects that are improvements to eligible SIS transportation facilities.

The FDOT Systems Planning Office (SPO) develops three inter-related sequential SIS documents that collectively are called the SIS Funding Strategy.

- *First Five Year Plan*, which contains those projects that have been funded by the Legislature in the FDOT Work Program (year one) and projects that are programmed for proposed funding in the next two to five years.
- *Second Five Year Plan*, which contains projects that are planned to be funded in the five years (years six through ten) beyond the adopted Work Program.
- *Cost Feasible Plan*, which contains projects on the SIS that are considered to be financially feasible during the last 15 years (years 11 through 25) of the SIS Funding Strategy, based on current revenue forecasts.

Similar to the FAA, the FDOT Aviation Program has a number of guidances and regulations with respect to airport master plans. FDOT has two documents that relate directly to airport master plans that are available for download from their website.

- FDOT Topic No. 725-040-100f, *Airport Master Plans*, which is a guidance on FDOT participation in the preparation, funding, review, and approval of airport master plans developed by individual airports.
- *Guidebook for Airport Master Planning*, which outlines the methodology for developing airport master plans within Florida. While this process mirrors the FAA process, there are a number of pertinent Florida Statutes and FDOT requirements that are also discussed.

The FAA and FDOT both require airport master plans to identify projects that are to be developed. It is important that the master plans be realistic, well thought out, and compatible with the surrounding environment. Additionally, the funds available will not meet the combined desires of all of the airports. Therefore, the master plans serve as a mechanism to determine those projects that are justified on the basis of safety, performance, capacity, noise, and environmental issues.

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2. Market Analysis and Forecasts

2.1 Introduction

Modern satellite and space technology usage is a staple of our daily lives. Consider how satellites and space technology affected you from the time you woke up this morning. You first turned on the television to get the morning news. Communication satellites in space transmit global news and information instantly. Weather satellites provided real-time weather information to help forecasters determine the weather for today and tomorrow and next week. Even print media moves more efficiently and quickly because newspapers and magazines can now share their layouts with multiple printing sites over wide geographic areas via satellite transmission. You ate your cereal with strawberries on it. Those strawberries are monitored from satellites to determine the most optimal time to pick them. You stop by the ATM on the way to work to obtain cash. The time on ATMs comes from satellites. Your GPS in the car turns on and guides you to your destination. That guidance system receives information from satellites. Swiping your credit card at a point-of-sale terminal such as a gasoline pump relies on satellite communications and GPS timing.

While you are at work, satellites and space technology are continually monitoring near earth objects (NEOs) to keep us safe and are constantly monitoring forces around the globe in an effort to maintain national security. When you get a phone call at work, many of your telephone services rely on satellite technologies.

Without satellites and space technology we would be lost. We would not know what the weather is going to be tomorrow. We would not know what the world looks like from space. Without satellites and space technology our travel would be dramatically different. We rely on satellites and space technology in everyday life. They are an integral part of our lives and will continue to be so in the future.

2.2 Space Launch Market and Competing World Spaceports

The global dependence on space and space technology require the ability to launch satellites into orbit. In the 1980s, the U.S. dominated the global launch market from its spaceports in Florida and California. Over the last 30 years, competition has developed in Russia, the Ukraine, French Guiana, and China. This competition has led to a migration of commercial launch business from the U.S. to those overseas spaceports.

The overall space launch market is a relatively static market, with only modest variations in launch activity globally. With a few exceptions, such as an increased pace in Chinese government launches over the last several years, government demand for launches, has been flat. The most prominent commercial launch market, the launch of communications satellites to geosynchronous orbit, is relatively stable.

Nonetheless, there has been considerable interest in the development of new spaceports, or upgraded facilities at existing spaceports. Part of this reflects interest in some emerging launch markets, including cargo and crew transportation to the ISS, as well as suborbital space tourism and research. In both the U.S. and overseas, there are efforts underway to modernize existing spaceports or develop new ones, in some cases converting former or even active airports into spaceports. This section briefly examines the major existing or proposed spaceports that do or will compete with Cape Canaveral for commercial or U.S. government launches.

2.2.1 Orbital Spaceports

Baikonur Cosmodrome: This spaceport dates back to the mid1950's, but remains the major spaceport for Russian LVs, including the Soyuz and Proton. Many of its facilities are dated, and its remote location is not convenient to access, but is sufficient to support launches of commercial and government satellites, as well as missions to the ISS.

Vostochny Cosmodrome: Russia is currently developing a new spaceport in the Russian Far East, that will assume at least some of the launches that take place at Baikonur, but there is no sign Russia plans to abandon Baikonur entirely within the foreseeable future.

Guiana Space Centre: This spaceport, frequently called "Kourou" for its location near Kourou, French Guiana, has evolved in recent years into a full-service spaceport. Previously used only for launches of the large Ariane 5 rocket, the spaceport has developed facilities for the medium-sized Soyuz rocket and the small Vega launcher, allowing the spaceport to support launches of almost all classes of spacecraft. The spaceport is one of the world's most advanced and a premier commercial launch site.

Mid-Atlantic Regional Spaceport (MARS): This commercial spaceport on Wallops Island, Virginia, operated by the Virginia state government, has traditionally hosted sounding rockets and small orbital LVs, such as the Minotaur, but is moving into the medium-class launch market by developing a launch facility for Orbital Sciences Corporation's Antares rocket. The spaceport poses a minor competitive threat to Cape Canaveral for both commercial and U.S. government missions, although to date Orbital has not won any Antares launch contracts beyond its space station resupply missions, and other vehicle operators have not expressed an interest in launching from the new MARS launch pad.

Potential SpaceX Commercial Launch Facility: SpaceX has shown an interest in developing its own commercial launch facility to meet what it anticipates to be launch demand high enough that it cannot be accommodated solely at Cape Canaveral. SpaceX is examining several sites for this facility, including locations in Florida, Georgia, Puerto Rico, and the Texas Gulf Coast near Brownsville.

2.2.2 Suborbital Spaceports

Cecil Field Spaceport: The Jacksonville Aviation Authority, which operates Cecil Airport, obtained a spaceport license for the airport in 2010 from the FAA's AST. No operator has committed to flying out of Cecil Field at this time. The spaceport previously worked closely with Rocketplane Global, a suborbital vehicle developer that has since gone out of business. It could support vehicles that can take off and land horizontally, including Virgin Galactic's SpaceShipTwo and XCOR Aerospace's Lynx.

Front Range Airport (Colorado): Front Range Airport, located just east of Denver, is making plans to become a licensed spaceport and support suborbital spaceflight, in addition to its ongoing general aviation activities. The airport has secured a number of grants, including some from the FAA, to support the work needed to obtain a spaceport license from the FAA. The airport has no firm spaceport customers at this time, although it does have an agreement with Rocket Crafters, a company planning to develop a suborbital spaceplane, to potentially support operations there.

Midland International Airport (Texas): In 2012 the Midland Development Corporation, the economic development authority for the City of Midland, Texas, struck an agreement with XCOR Aerospace that will move the company's headquarters and R&D operations from Mojave, California, to Midland International Airport. As part of that process, the airport authority plans to obtain a spaceport license from the FAA to allow XCOR to conduct suborbital test flights from the airport. This could potentially evolve into revenue flights from the airport itself, although future plans remain uncertain.

Mojave Air and Space Port: Companies like Masten Space Systems, Virgin Galactic, and XCOR Aerospace maintain operations at this facility, making it a major hub for the development of suborbital vehicles. The spaceport, which is also an active airport for general aviation and test flights, sees itself primarily as a facility to support the development of suborbital vehicles, rather than a spaceport hosting regular revenue-generating flights.

Spaceport America: The State of New Mexico and several local jurisdictions have spent approximately $200 million to develop a new suborbital spaceport, purpose-built for Virgin Galactic. As of late 2012, the spaceport was mostly complete, with some work remaining to outfit the interiors of its major buildings, as well as extending its runway from 10,000 to 12,000 ft. Virgin Galactic will be the anchor tenant of the spaceport, but the facility has also hosted vertically-launched suborbital rockets by Armadillo Aerospace and UP Aerospace.

Spaceport Sweden: Spaceport Sweden is an effort to establish a commercial spaceport near the northern Swedish city of Kiruna, which is already hosting sounding rocket flights. In the past, Virgin Galactic has expressed an interest in operating from there, and the facility could be the first European base of operations for the company, ahead of potential locations in the Netherlands, Scotland, and Spain.



Figure 2.2-1: Spaceport America, New Mexico SOURCE: ALBUQUERQUE JOURNAL NEWS

2.3 Developments in the Spaceport Industry

As seen in the previous section, there is considerable interest in either the development of new spaceports or the conversion of existing facilities, including operational commercial airports, into spaceports. This reflects a diversification of the overall launch market, as the conventional markets for launching government and commercial satellites are augmented by new markets for orbital launches (to support the ISS, as well as other emerging applications for both cargo and crew) and emerging suborbital markets, including tourism and research. These markets are discussed in greater detail in the next section.

This raises the potential for a spaceport "glut" in the years to come, particularly in the suborbital market. There may be more facilities for these vehicles than operational vehicles themselves. While suborbital vehicles in particular have the flexibility to operate from a wide range of facilities, vehicle operators are likely to concentrate their activities at just one or a few facilities, until demand grows and additional operators emerge. The selected spaceports will have an inside track for gaining additional launch activity in the future from these and newer operators. Spaceports that are unable to attract operators may have to revisit their plans, as entities like Spaceport Oklahoma has done after the bankruptcy of its initial primary tenant, Rocketplane Global.

2.4 Launch Forecast 2012–2021

An essential element in developing a Spaceport Master Plan is forecasting the launch activity that the spaceport will host for the foreseeable future. Knowing changes in overall launch activity, as well as the types of launch activity (small vs. large orbital LVs, suborbital versus orbital launches, etc.) can guide assessments of the need for new or upgraded launch facilities and other infrastructure, as well as supporting activities and businesses that can make use of the spaceport.

As part of this master planning activity, launch forecasts have been developed for both orbital and suborbital launches that could take place from CCS through 2021. This forecast leverages existing, publicly-available launch forecasts, coupled with additional analysis, to refine the projected number of launches that could take place from CCS. This process also includes the development of scenarios of launch activity that could then take place. This "addressable forecast" is based on several existing reports, including:

- "*2012 Commercial Space Transportation Forecasts*" by the FAA/AST
- "*Suborbital Reusable Vehicles: A 10-Year Forecast of Market Demand*" by the Tauri Group for FAA/AST and Space Florida, published in 2012
- "*NASA Commercial Market Assessment,*" published in 2011 by NASA in cooperation with FAA/AST

These forecasts were augmented with additional analysis of commercial and government launch markets, using the Electronic Library of Space Activity (ELSA) database and other tools. To create an addressable launch forecast, those launches that cannot take place from CCS facilities for technical or policy reasons were eliminated. This includes launches to Sun-synchronous and other polar orbits, as well as involving payloads and launch vehicles captive to other spaceports, such as launches by Chinese, European, Russian, and other non-U.S. launch vehicles. In theory, the remaining launches could take place from CCS, although many near-term (into 2014) launches may already be contracted for vehicles flying from other spaceports.

2.4.1 Orbital Launches

For the purposes of this analysis, the orbital launch market is divided into six distinct markets, based on the types of customers for launches and the choice of LVs. Four of these are considered commercial:

- Satellites, principally for communications, to GSO;
- Satellites for communications, remote sensing, or other commercial applications to non-geosynchronous orbits;
- Delivery of cargo and crew to the ISS and
- Space tourism and other emerging commercial space applications.

The other two markets serve government customers:

- Launches of satellites for civil government agencies, principally NASA and
- Launches of national security satellites for the Defense Department and related agencies.

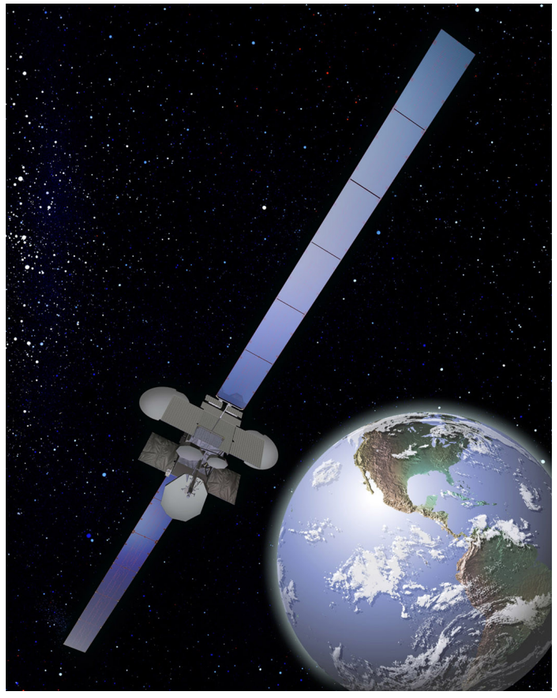


Figure 2.4-1: Boeing 702 SOURCE: BOEING

2.4.1.1 Commercial GSO Satellites

The largest and most mature existing commercial launch market is for launches of satellites to GSO. These satellites are used almost exclusively for communications. Major customers include the four global operators of such satellites: Eutelsat, Intelsat, SES, and Telesat; as well as a number of smaller, regional operators. Direct-to-home (DTH) television companies, such as DIRECTV and DISH Network in the U.S., also use GSO satellites, as does satellite radio company Sirius/XM.

Commercial GSO satellites range in mass from approximately 2,000 to more than 6,000 kilograms. Most commercial GSO satellites are built by six companies: Boeing, Lockheed Martin, Orbital Sciences Corporation, and Space Systems/Loral in the U.S., and EADS Astrium and Thales Alenia Space in Europe. A smaller number are built by companies in China, Japan, and Russia.

The commercial GSO launch market is dominated today by two companies: Europe's Arianespace, which operates the Ariane 5 rocket; and International Launch Services (ILS), a U.S.-based company owned by Russian firm Khrunichev, which operates the Proton rocket. Sea Launch, now majority owned by Russia's Energia, operates the Zenit-3SL rocket, which exclusively launches commercial GSO satellites, but at only the rate of a few missions per year. SpaceX is a new entrant in this market, with contracts for several launches, and China Great Wall Industry Corporation (CGWIC) is reentering the market after U.S. export control restrictions largely locked Chinese vehicles out of the market in 2000.

In principle, all commercial GSO launches are addressable from Cape Canaveral, as there are no technical or policy restrictions that would prohibit such launches from facilities there. The Atlas V, Delta IV, and Falcon 9 can all serve this market, as well as the planned Falcon Heavy. In practice though, commercial GSO launches are rare from the Cape since the Atlas and Delta have priced themselves out of the market, focusing instead on U.S. government launches, and the Falcon 9 has yet to begin such launches. The success of the Falcon 9 in capturing commercial GSO launch contracts represent a growth opportunity for the spaceport.

The commercial GSO satellite market is a mature one for the space industry, and thus a relatively flat one. It is also generally insensitive to price changes, as the cost to launch a satellite is typically only a modest fraction of the overall system cost. While a launch may cost on the order of $100 million, the satellite itself can cost two to three times that amount, as well as the costs of ground systems and other business experiences. Forecasts by FAA/AST's Commercial Space Transportation Advisory Committee (COMSTAC), an industry group that includes LV operators, satellite operators, and satellite manufacturers, predicts a flat market of between 15 and 19 launches a year through 2021, all of which are addressable by vehicles launching from CCS.

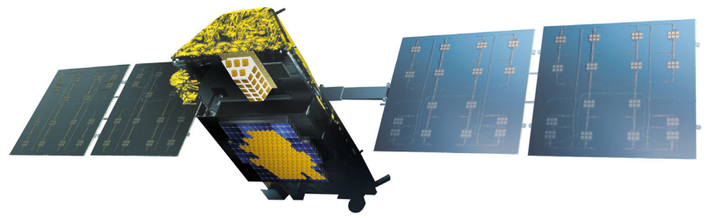


Figure 2.4-2: Iridium Next-Generation Satellite SOURCE: WORDPRESS

2.4.1.2 Commercial Non-Geosynchronous Orbit Satellites

While the commercial GSO satellite launch market is a stable one consisting entirely of communications satellites, the market for commercial launches of NGSO satellites is more diverse and variable. This market includes all satellites commercially launched to orbits other than GSO, including low Earth orbit, sun-synchronous and polar orbits (used generally for remote sensing satellites), and higher orbits, as well as for spacecraft leaving Earth orbit entirely. In the past, communications satellites contributed a large volume of commercial NGSO launches. In the late 1990s, three companies—Globalstar, Iridium, and ORBCOMM—launched constellations of 30 to more than 70 satellites each to provide global communications services, including phone services. The business failures of these ventures (all filed for Chapter 11 bankruptcy protection, and operate today in restructured forms) diminished the market's appetite for follow-on ventures, including Teledesic, which at one time proposed a network of approximately 900 low Earth orbit satellites. Those three companies have plans to launch, or are already in the process of launching, a new generation of satellites to replace the original constellations.

The commercial NGSO market today consists mostly of launches of remote sensing satellites, as well as miscellaneous technology demonstration and other government satellites by countries that purchase launches commercially because they do not have their own launch systems. In general, remote sensing satellites are not addressable by vehicles launching from CCS because these spacecraft need to go into high inclinations. Some NGSO satellites are similarly not addressable from the Cape, depending on the parameters of each system's orbital constellation. Overall, this is a much smaller addressable market for the Cape than GSO and other emerging markets.

CCS is an emerging commercial launch market particularly well positioned to launch cargo and crews to the ISS



Figure 2.4-3: Mission to the ISS SOURCE: TECHNOBUFFALO.COM

2.4.1.3 ISS Cargo and Crew

CCS is an emerging commercial launch market particularly well positioned to launch cargo and crews to the ISS. While these launches are carried out for NASA, a government customer, they are considered commercial here because of the manner in which such resupply services are procured, and the fact that such launches are licensed by FAA/AST.

Two companies are, or will soon be, providing cargo services to the ISS. SpaceX has already demonstrated its ability to transport cargo to the ISS with two Falcon 9 launches of its Dragon spacecraft under NASA's Commercial Orbital Transportation Services (COTS) program. SpaceX carried out the first of twelve cargo missions to the ISS under a separate Commercial Resupply Services (CRS) contract in October 2012. These and subsequent launches will take place from CCS. Orbital Sciences launched its first Antares rocket, also developed under the COTS program, from the MARS in Virginia in April 2013. It is scheduled to begin its eight CRS missions carrying cargo to the ISS later in 2013.

The initial size of the cargo and crew market is small, but may grow considerably beyond the end of the forecast period in this report.

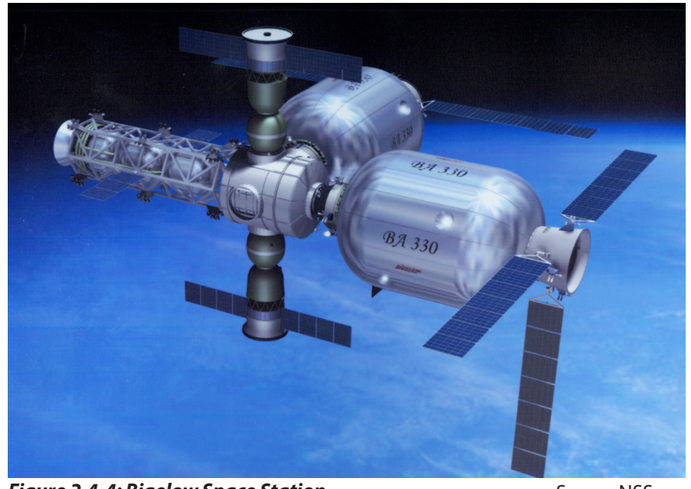


Figure 2.4-4: Bigelow Space Station SOURCE: NSS.ORG

Bigelow Aerospace has already expressed an interest in purchasing such flights to support its plans for commercial space stations, using expandable habitats that the company demonstrated in space with the Genesis I and II missions in the late 2000s. The company is actively planning the development of larger modules for the sovereign client and commercial research markets in particular, but has held off manufacturing and launching these modules until commercial crew and cargo vehicles are available to support them. If successful, Bigelow could emerge as a significant source of launch demand, both for launching the modules themselves, as well as cargo and crew missions to them. As with ISS cargo and crew, all of these launches are addressable by CCS. This market is likely not to ramp up until late this decade, once commercial crew systems enter service to support NASA. The initial size of this market is small, but may grow considerably beyond the end of the forecast period in this report.

NASA's separate Commercial Crew Program (CCP) is also supporting the development of systems to transport astronauts to and from the ISS. Boeing, Sierra Nevada Corporation (SNC), and SpaceX all have awards under the Commercial Crew Integrated Capability (CCiCap) program to mature development of these systems, with test flights expected to begin in 2015 or 2016, and operational missions in 2017. All of these vehicles are expected to launch from Cape Canaveral, using Atlas V and Falcon 9 rockets.

In principle, all of these launches are addressable by CCS, although for the time being it is splitting the ISS cargo market with MARS. Depending on the lifetime of the ISS and the performance of Orbital Sciences and SpaceX, the CRS contract may be reauthorized upon the completion of the currently contracted launches, which could allow for a new entrant operating from the Cape to capture launches. Alternatively, Orbital Sciences could decide to shift its ISS cargo missions from MARS to the Cape after completing its contracted CRS missions.

2.4.1.4 Space Tourism and Other Commercial Payloads

Another emerging commercial market takes advantage of the vehicles NASA is developing under the COTS and CCP efforts. The same vehicles designed to transport cargo and crew to the ISS can also be used for other commercial missions. NASA's decision to take a more commercial approach to supporting the development of these vehicles was predicated on the assumption that there would be additional markets for these vehicles above and beyond NASA's demand for ISS resupply.

NASA's 2011 Commercial Market Assessment report identified several markets that could support additional launches of cargo and crew vehicles. The best known is space tourism, which is an existing market given the sales of seats on Soyuz taxi missions to the ISS by Russia, dating back to 2001. In addition, there are so-called "sovereign clients," or governments without human spaceflight programs that seek to purchase flights into space. Commercial research, media and entertainment, and related activities may also stimulate demand for such missions.

2.4.1.5 Government Civil Satellites

NASA has been and remains a major customer for satellite launches in order to support its scientific missions. These include astronomy, planetary science, heliophysics, and Earth sciences missions, as well as some technology demonstration missions. NASA also supports the National Oceanic and Atmospheric Administration (NOAA) in the development and launch of its earth and space weather satellites. Most of these launches use the Atlas V and Delta IV rockets, although some smaller spacecraft use Pegasus and Minotaur vehicles, and SpaceX is now entering this market with the Falcon 9 and Falcon Heavy. NASA's SLS heavy-lift rocket will also be entering service during the forecast period, but with a very low flight rate. Only two launches are forecasted through 2021 - all with the exception of polar orbiting Earth science and weather satellites, which require inclinations not accessible from CCS.

The size of this market is relatively flat, averaging approximately three addressable launches per year. This reflects the constrained budgets at NASA, which limit its ability to increase the number of missions it launches and in some cases has resulted in mission delays or cancellations.

2.4.1.6 Government National Security Satellites

A much larger government launch market is national security payloads to service the needs of the Department of Defense (DoD) and the intelligence community. These

launches include satellites that carry out communications, navigation, missile early warning, reconnaissance, signals intelligence, and technology demonstration missions. Most large satellites are launched on Atlas V and Delta IV rockets, with smaller satellites using Pegasus or Minotaur rockets. SpaceX recently won its first military launch contract for its Falcon 9 and Falcon Heavy rockets, and could win additional business in the years to come.

NASA and DoD will remain major customers for satellite launches in order to support their scientific missions.



Figure 2.4-5: NASA TDRS Communications Satellite SOURCE: BOEING

As with government civil satellites, these launches are addressable by CCS with the exception of those satellites that require polar or other high-inclination orbits not accessible from the Cape. This market is relatively flat, with four to seven addressable launches a year. There is a slight downward trend in the later years of the forecast as existing programs complete their planned deployments of satellites. This also reflects budgets that will be flat or declining for space systems as part of broader decreases in defense spending as the decade progresses.

2.4.2 Suborbital Launches

There has long been, and continues to be, a small market for launches of suborbital sounding rockets for research and development. The development of reusable suborbital vehicles, in particular those that can carry people, holds the promise of opening much larger markets in tourism, research, and other applications. Several companies are actively developing these vehicles, including Armadillo Aerospace, Blue Origin, Masten Space Systems, Virgin Galactic, and XCOR Aerospace. The latter two companies are working on crewed vehicles with operational flights planned within the next few years. These vehicles could fly dozens of times a year. Some companies envision launch tempos of multiple flights a day.

2.4.2.1 Space Tourism

The largest and best known market for these emerging suborbital vehicles is space tourism. Virgin Galactic has already signed up more than 500 customers for flights on its Space Ship Two, while XCOR Aerospace's business partners, such as Space Expedition Corporation, have also sold tickets for flights on XCOR's Lynx vehicle. In principle, all such flights are addressable by the CCS, although these companies have in many cases already made plans for initial flights elsewhere, including Spaceport America in New Mexico.

To forecast demand for suborbital space tourism, this study used data from the "*Suborbital Reusable Vehicles: A 10-Year Forecast of Market Demand*." That report forecasted demand in terms of individuals, which for this forecast are converted to launches by assuming an average of 3.5 spaceflight participants (excluding crew) per launch. This number represents an average of the capacity of Virgin Galactic's SpaceShipTwo (six people) and XCOR Aerospace's Lynx (one person.) Other vehicles that may enter service in this market during the forecast period will likely have capacities between these two endpoints.



Figure 2.4-6: Virgin Galactic SOURCE: *VIRGIN ATLANTIC*

2.4.2.2 Research

A second major market for suborbital reusable vehicles is performing research. There is growing interest in the scientific community to use these vehicles to perform a wide range of experiments, taking advantage of the several minutes of microgravity available on such flights and the brief excursions above the atmosphere to either look down at the Earth or out into space. Potential suborbital research activities range from astronomical observations at ultraviolet or infrared wavelengths absorbed by the atmosphere, biomedical experiments, and materials sciences and fluid dynamics experiments. Many of the same suborbital vehicles being developed to serve the space tourism market can also be used for research, either tended by payload specialists flying on the mission or controlled from the ground.



Figure 2.4-7: XCOR Lynx SOURCE: XCOR

As in the suborbital space tourism market, these launches are all, in principle, addressable by CCS, although suborbital vehicle operators may have committed to near-term launches from other facilities elsewhere in the U.S. or other nations. The addressable launch forecast comes from the forecast data in the "*Suborbital Reusable Vehicles*" report, which forecasts demand in "seat equivalents," which are again converted to launches by dividing by 3.5. This market is significantly smaller than the tourism market, but does show some growth in the later years of the forecast period.

2.4.2.3 Other Applications

The "*Suborbital Reusable Vehicles*" report also identified several other markets for such vehicles. These include technology demonstration, where suborbital vehicles fly payloads to demonstrate their capabilities in the space environment; media and public relations, including the use of such flights for advertising and promotions; and education. The report also examined additional markets and found no evidence of demand from them during their ten-year forecast period. None of these markets individually are as large as tourism or research, but collectively do constitute a noteworthy source of demand.

As in the tourism and research forecasts, the report quantified demand for these markets in terms of seat equivalents, which is again converted into launches by dividing by 3.5. All of the launches in this part of the forecast are addressable by CCS, but again some suborbital vehicle operators have near-term commitments to fly from other facilities.

2.5 Game Changers

While we rely heavily on current satellites and space technology throughout the day, scientists are working on the development of other markets or technologies that have the potential to be "game changers" with the ability to significantly alter launch demand, including increasing launch activity at Cape Canaveral. These developments are still speculative enough that the timing of their development and the effect they will have on launch demand and related spaceport activities cannot be quantified. These "game changers" are qualitatively discussed here so that they can inform overall spaceport planning and development.

Commercial Research: Initial successes on the ISS in areas such as pharmaceutical research and materials science may lead to a sharp increase in demand for such activities on the ISS, Bigelow Aerospace facilities, or other free flyers (robotic or crewed). These will stimulate launch demand and may also support research activities at facilities on or near Cape Canaveral, such as the SLSL.

Dedicated Smallsat Launches: Small satellites today are typically launched as secondary payloads on larger LVs. However, several companies are investigating the development of small LVs to provide dedicated launches of smallsats, in some cases supporting satellites weighing as little as 10 kilograms. Examples include Virgin Galactic's LauncherOne and XCOR Aerospace's Lynx Mark III. These vehicles may increase the number of launches at CCS by taking payloads that previously would have flown as secondary payloads, and/or stimulating additional demand from those customers who had considered smallsat solutions because of the difficulties involved with secondary payloads. Because the smallsat manufacturing field is not as mature as the larger spacecraft field, it may be more feasible to attract smallsat manufacturers to the Cape Canaveral area in order to be close to launch facilities.



Figure 2.5-1: F6 Concept SOURCE: DARPA

Fractionated Spacecraft: Defense Advanced Research Projects Agency (DARPA) is studying the concept of "fractionated" spacecraft, where the components that normally comprise the subsystems of a single spacecraft are divided up among several spacecraft (sometimes called "satlets") that use wireless power transmission and local area networks for communications. Such systems make it possible to easily upgrade components to take advantage of technology improvements or replace faulty systems. Such systems, if feasible (and it may take a decade or more to demonstrate their capabilities), could stimulate demand, particularly for smaller LVs.

Asteroid Mining: Planetary Resources announced its plans to develop a series of spacecraft to study, prospect, and eventually extract resources from near Earth asteroids. Their business plan could support ancillary markets for the small satellites they plan to develop and sell to other customers. This could result in increased launches from the Cape and, in the long term, other business activities in and around Cape Canaveral.

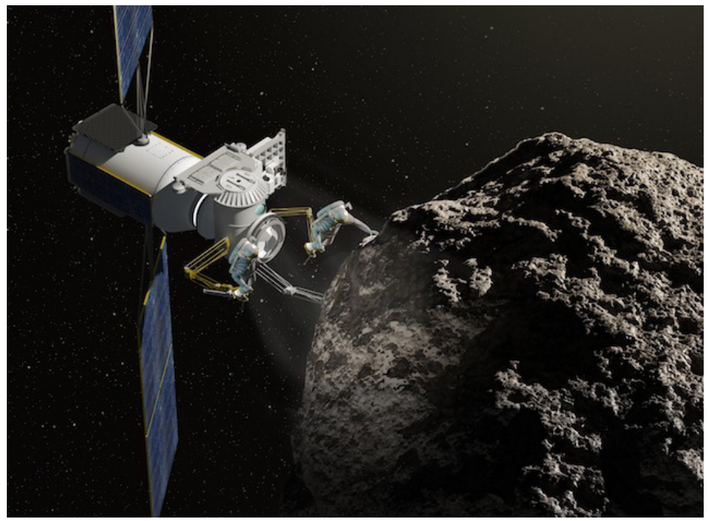


Figure 2.5-2 SEP Airlock Concept SOURCE: WIRED

Space-Based Solar Power: There has been a long-running interest in developing space-based systems to generate electricity from sunlight, but their progress has been limited by various technology challenges and the high costs of developing and launching such systems. A combination of improved technologies, lower launch costs, and increasing demand for energy could stimulate this market. CSS would be well-positioned to support this market given its existing launch facilities and interest in terrestrial solar power.

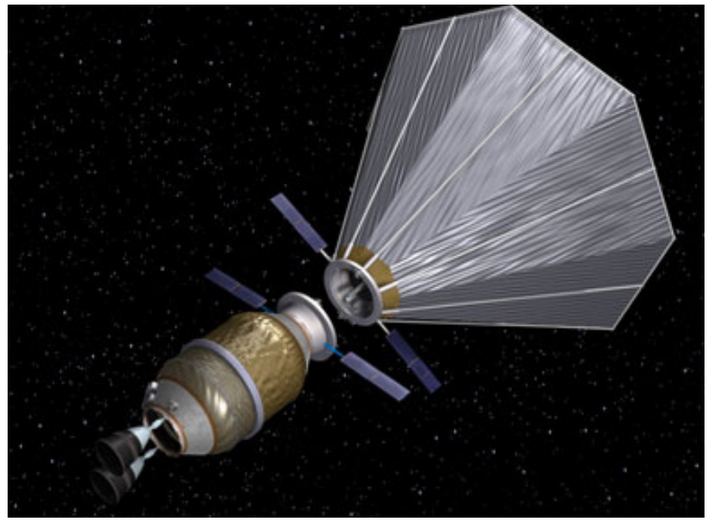


Figure 2.5-3 On-Orbit Propellant Depot Concept SOURCE: ULA

On-Orbit Propellant Depots: Some space exploration architectures call for the development of fueling stations, or propellant depots, in Earth orbit or cislunar space, eliminating the need for very large vehicles carrying heavy loads of propellant. Such concepts could create a market for a sharp increase in launch demand for smaller (EELV class and smaller, including the Atlas, Delta, and Falcon, versus NASA's SLS) vehicles to ferry propellant to the depots and provide other support services.

On-Orbit Satellite Servicing: Commercial and government entities are studying satellite servicing concepts, ranging from simple systems that reposition satellites and perform station keeping to complex systems that could perform repairs on such satellites. These systems could generate additional demand for launches to deploy and support them.

Other Technology Developments: Advancements in a wide range of technology areas can also have a major, although not necessarily direct, impact on launch demand. Improvements in the miniaturization electronics and other spacecraft components, for example, are enabling an increase in interest in small satellites, as these spacecraft are now more capable and are able to carry out more missions. Advances in biotechnology may stimulate additional research to take advantage of the unique attributes of the space environment, either on long-term missions to the ISS or other facilities, or on brief suborbital flights. Advances in robotics technology could support space applications and stimulate launch demand as well.

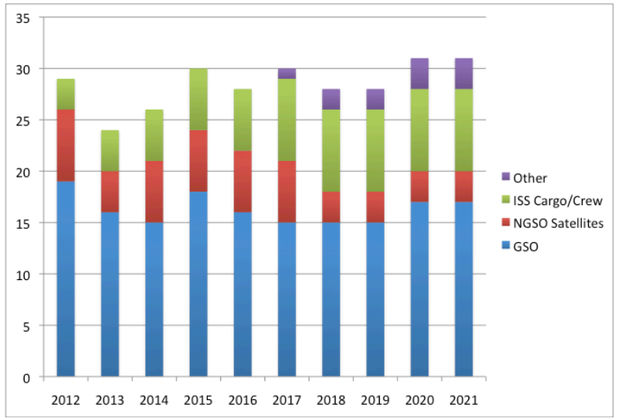


Figure 2.6-1: Overall Addressable Market: Commercial Orbital

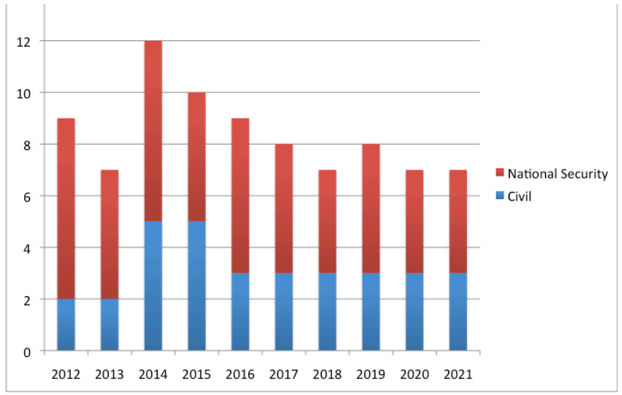


Figure 2.6-2: Overall Addressable Market: Government Orbital

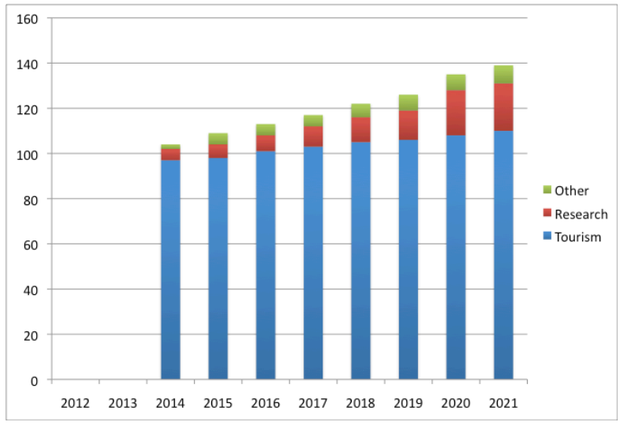


Figure 2.6-3: Overall Addressable Market: Commercial Suborbital

Source for Figures 2.6-1, 2, and 3: Futron, Inc

The addressable commercial orbital launch markets (commercial GSO satellites, commercial NGSO satellites, ISS cargo and crew, and tourism and other commercial applications) constitute between 25 and 30 launches a year.

All of these "game changers" could significantly alter the way we approach space exploration and the resulting change in our launch facilities world-wide which will foster the growth of current and future spaceports. While the master planning of CSS will have a keen eye on these "game changers" and how they will affect the development of the master planning, it is important to take a look at the space launch market and competing world spaceports.

2.6 Market Scenarios

The market segments together constitute the potential launches from CCS. The commercial orbital launch markets (commercial GSO satellites, commercial NGSO satellites, ISS cargo and crew, and tourism and other commercial applications) constitute between 25-30 launches a year, with a bit of growth in the final years of the forecast as emerging markets start generating launch demand. The government orbital launch markets (civil and national security satellites) vary from 7-12 launches a year, with some decrease in the later years of the forecast due to anticipated declines in military launch activity. The addressable suborbital launch market grows from just over 100 launches to nearly 140 by 2021, with tourism constituting the bulk of the overall suborbital market.

However, the addressable launch forecast should not be confused with a realistic forecast of customers' selections of particular LVs using metrics such as price, reliability, and schedule assurance. This is especially true in the near term (through 2014), as most contracts for launches during this period have already been awarded.

Instead, this study offers two scenarios that attempt to identify a low and a high amount of launch activity that is realistic to assume can take place during the forecast period. These two scenarios, called the "Baseline Scenario" and "Growth Scenario," are described below.

2.6.1 Baseline Scenario

The Baseline Scenario attempts to estimate the likely minimum level of launch activity from CCS based on historical launch activity and emerging trends. This scenario is based on taking a share of the addressable launch forecast in each of the markets, as follows:

Commercial GSO: An average of 1–2 launches a year, based on recent low levels of such launches by rockets at CCS.

Commercial NGSO: An average of 0–1 launches a year, based on the recent low levels of such launches by rockets at CCS.

ISS Cargo and Crew: All ISS crew launches, as the companies with existing NASA awards all plan to launch from CCS, and half of ISS cargo launches, reflecting the split between SpaceX's CCS launches and Orbital Sciences' launches from MARS.

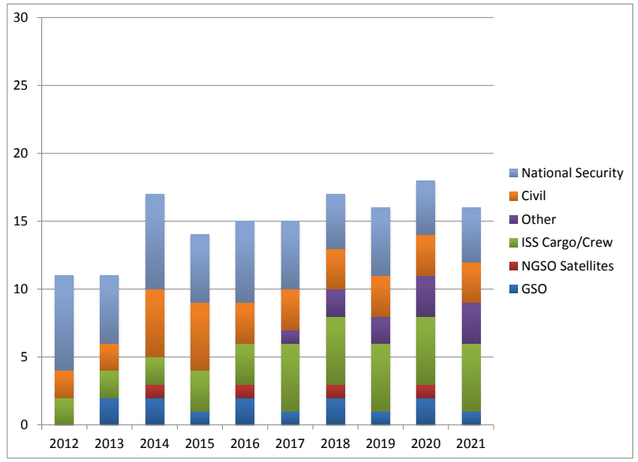


Figure 2.6-4: Baseline Scenario Orbital Launches

Source: Futron, Inc.

Forcast shows some modest growth in the number of orbital launches from 10-12 to 16-18 per year.

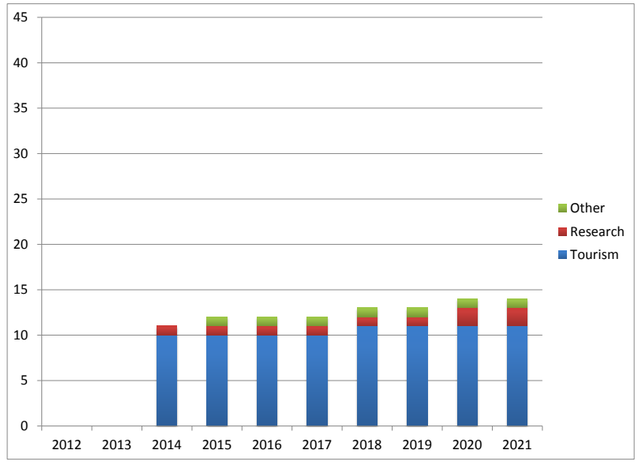


Figure 2.6-5: Baseline Scenario Suborbital Launches

Source: Futuron, Inc.

Suborbital launch activity forecast is relatively flat, from 11 to 14 per year

Other Commercial: All launches, as these are primarily of the same crewed vehicles supporting the ISS.

Government Civil: All launches, based on historical activity for such launches.

Government National Security: All launches, based on historical activity for such launches.

Suborbital (all markets): Ten percent of the overall addressable market, reflecting that other spaceports, including Mojave Air and Spaceport America, have already attracted vehicle operators.

The resulting forecast shows some modest growth in the number of orbital launches, from 10–12 a year in the early years of the forecast to 16–18 in the final years. This reflects the introduction and growth of ISS cargo and crew launch activities and other emerging commercial space markets, which offset slight declines in government launches during the forecast period. Suborbital launch activity is relatively flat, from 11 flights a year in the beginning of the forecast to 14 by the end of the forecast.

2.6.2 Growth Scenario

The Growth Scenario estimates a likely maximum level of launch activity from the markets identified in this study. This scenario makes assumptions about trends in these markets that would positively affect CCS by shifting addressable launches that would take place elsewhere to facilities at the Cape. The differences between the Growth Scenario and the Baseline Scenario are:

Commercial GSO: Growth in market share for these launches to one third of the addressable market by 2016, reflecting success by SpaceX in winning contracts for such missions using its Falcon 9 and later Falcon Heavy.

Commercial NGSO: Same as the baseline scenario.

ISS Cargo and Crew: Same as the baseline scenario with the exception that the share of ISS cargo missions grows to 100% in 2017, as the current CRS contracts expire and new contracts make exclusive use of CCS facilities.

Other Commercial: Same as the Baseline Scenario.

Government Civil: Same as the Baseline Scenario.

Government National Security: Same as the Baseline Scenario.

Suborbital (all markets): Growth in market share from 10% of the addressable market at the beginning of the forecast period and rising to 30% as additional vehicle operators begin service from CCS and/or increase the number of launches.

The Growth Scenario for orbital launches shows a steady increase in launch activity from 10 –12 launches a year at the beginning of the forecast period to about 25 launches a year by the end of the forecast. Growth in the number of commercial GSO satellite launches and, in later years of the forecast, additional ISS cargo missions, account for the increase. The growth scenario represents an increase of as much as 8 –10 launches a year versus the Baseline Scenario in the final years of the forecast period.

The Growth Scenario for suborbital launches also shows a considerable increase in launch activity due to the increase in market share, from just over 10 launches a year in the early years of the forecast to approximately 40 per year in the final years of the forecast. This is approximately three times the launch activity as compared to the final years of the baseline forecast, because of the increased market share assumptions of the Growth Scenario.

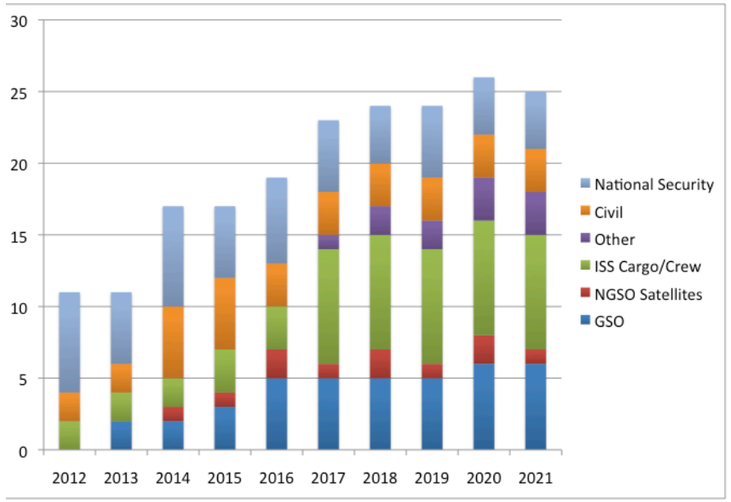


Figure 2.6-6: Growth Scenario Orbital Launches
SOURCE: FUTURON, INC.

The Growth Scenario for orbital launches shows a steady increase in launch activity from 10–12 launches per year to about 25 launches per year.

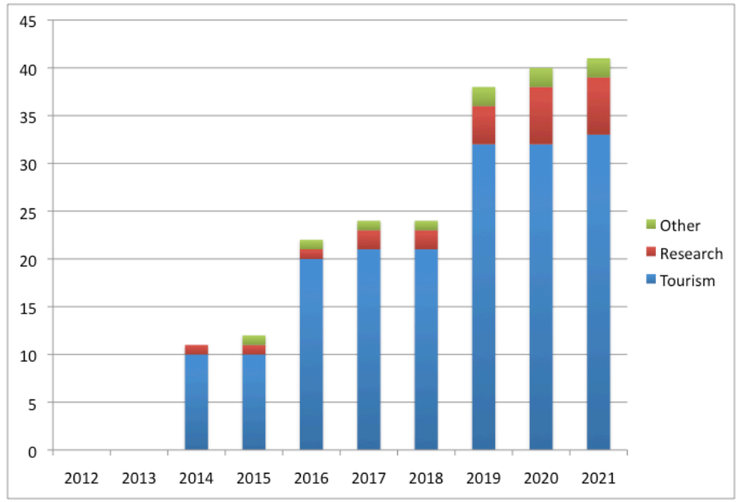


Figure 2.6-7: Growth Scenario Suborbital Launches
SOURCE: FUTURON, INC.

The Growth Scenario for suborbital launches also shows a considerable increase in launch activity due to the increase in market share, from just over 10 launches per year to approximately 40 per year.

2.7 Fiscal Impacts

2.7.1 Revenue Generation and Economic Analysis

The successful implementation of the CCS master plan provides a significant opportunity to generate a large amount of revenue for the region and the state in addition to creating a number of jobs with good salaries and spinning off a significant amount of economic output that flows through the economy. In terms of revenue, the projected launch and launch-related activity should generate over $2.8 billion in local revenue (base case Figure 2.7-1) for the Baseline Scenario and over $3.5 billion in local revenue for the Growth Scenario (growth case Figure 2.7-2).

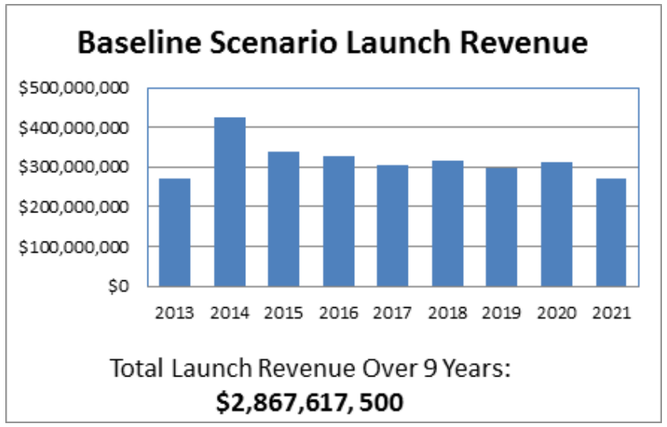


Figure 2.7-1: Baseline Scenario Launch Revenue
SOURCE: FUTRON, INC. & FISHKIND & ASSOCIATES, INC.

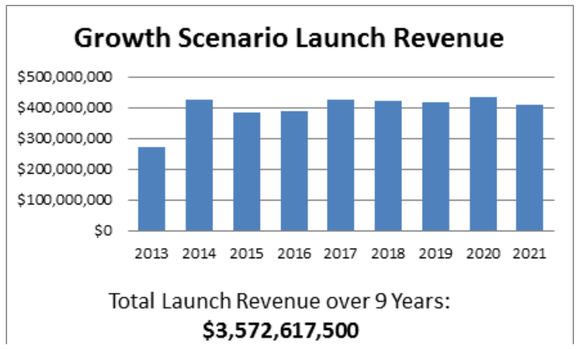


Figure 2.7-2: Growth Scenario Launch Revenue
SOURCE: FUTRON, INC. & FISHKIND & ASSOCIATES, INC.

Revenue Generation

The first step in the analysis of determining the fiscal and economic impact the master planning of CCS will have on the economy is to determine the number of potential launches that will take place in the near future.

The data used was the Baseline Scenario and Growth Scenario generated by Futron. In the base case, Futron looked at the various types of launches and forecasted them from 2013 - 2021. The types of launches included orbital and suborbital launches, which include subcategories of government, civil, national security launches plus tourism, research, and other passenger launches. The Baseline Scenario totaled 1,106 launches over the 9-year period. The growth scenario totaled 1,152 launches over the same time period.

In order to calculate the total amount of revenue generated from all launches, the cost per launch was determined by launch type then a percentage of those costs was calculated to stay local due to launch preparation, and other supporting activities, assuming that the LVs were manufactured and assembled out of state. The cost percentage used in determining the various launch activities in the marketplace was based on Futron's experience. Futron estimated the percentage of costs ranged from 10% to 20% depending on the launch facility and its activities. The middle ground of 15% was used in this case. Figure 2.7-3 shows the calculation of the local revenues staying in the local and regional economy.

Launch and Seat Type	Cost Analysis
Falcon Heavy	High Orbit
Average Launch Cost:	$100,000,000
Percent of launch cost staying local:	15%
Launch Cost Staying Local:	$15,000,000
Cost Per Seat Analysis	Split the difference between XCOR and VIRGIN
Average Seat Price:	$150,000
Percent of Ticket Price staying local:	15%
Cost Staying Local:	$22,500

Table 2.7-3: Notional Cost per Launch and Seat Calculation
SOURCE: ENCYCLOPEDIA ASTRONAUTICA AND FUTRON, INC.

By combining the cost per launch and seat calculation with the launch forecast, the revenue generated per scenario can be calculated. The Baseline Scenario scenario is forecasted to generate just over $2.8 billion of total revenues during the nine-year period. The Growth Scenario is forecasted to generate approximately $3.5 billion over that same nine-year period. Figures in Appendix C show both the Baseline and Growth Scenarios on a yearly basis. A detailed economic analysis was prepared to forecast revenues from the baseline and growth launch scenarios. This detailed economic analysis data is located in Appendix D.

ECONOMIC GENERATION FROM MASTER PLAN IMPLEMENTATION

In terms of economic generation, if fully implemented, the CCS will generate nearly 6,000 direct and indirect permanent jobs with salaries totaling just over $280 million and an economic output of over $1 billion as shown in Figure 2.7-4.

Economic Impacts	Direct Impacts	Indirect Impacts	Total Impacts
Jobs	3,669	2,334	6,003
Output/Total Sales	$755,539,896	$292,922,818	$1,048,462,7214
Earnings	$172,475,485	$109,718,665	$282,194,151

Table 2.7-4: Economic Impacts of CCS Master Plan
SOURCE: U.S. BUREAU OF ECONOMIC OPPORTUNITY & FISHKIND & ASSOCIATES, INC.

SUMMARY

Satellite and space technology is a staple that effects all of us and will be an integral part of our lives for the foreseeable future.

The overall space launch market is predicted to be a relatively static market with only modest increases or decreases in launch activity globally with very few exceptions. However, there continues to be considerable interest in the development of new spaceports or upgrading existing spaceports.

Driving this diversification is the augmentation of the conventional government and commercial satellites markets by new and emerging applications including the crew and supply transportation to the ISS, space tourism and space based research.

Future orbital launches will include commercial GSO satellites, ISS cargo and crew, space tourism and other commercial payloads, government civil satellites and government national security satellites. Suborbital launches will include space tourism, research, technology demonstration including advertising, promotion and education.

In the coming years there may and probably will be the "Game Changers" that could have a significant effect on the landscape and the number and types of future launches. The effects of these "Game Changers" on the markets cannot be predicted and are not included in this plan. The possible "Game Changers" include commercial research, dedicated small-sat launches, fractionated spacecraft, asteroid mining, space-based solar power, on-orbit propellant depots, on-orbit satellite servicing and other technology developments.

Two scenarios, a Baseline Scenario and a Growth Scenario, were considered in developing the launch forecast and fiscal and economic impacts for this plan. The Baseline Scenario estimates that the government orbital launch markets will vary from 7-12 launches per year. The Growth Scenario shows a steady increase in launch activity from 10-12 launches per year to about 25 launches per year by the end of the forecast. The suborbital launches forecast also shows a considerable increase from just over 10 launches per year in the beginning of the forecast to approximately 40 launches per year at the end of the forecast.

The economic analysis and revenue generation calculations were driven by the launch forecasts. In terms of economic generation, the re-master planning of Cape Canaveral should generate just over 6,000 direct and indirect jobs that produce just over $280-million in salaries annually. The economic output is forecasted to be just over $1-billion annually. Revenue generation is forecasted to be between $2.9-billion to $3.5-billion that would stay locally over the 9-year forecast period.

3. Existing Facilities and Infrastructure

3.1 Existing Facilities

Florida is geographically situated in a near perfect launch location for space missions requiring access to either equatorial or inclined orbits up to 60 degrees (North or South). In addition, several billion dollars' worth of launch infrastructure already in place makes Florida a leader in military and civil launch operations and affords entry into a burgeoning commercial market.

Florida's CCS is located entirely within the bounds of FDOT District 5 and includes KSC and CCAFS. CCAFS is operated by the US Air Force 45th Space Wing and conducts launch operations and provides range support for military, civil, and commercial launches. KSC has served as NASA's only launch site for human spaceflight.

With the legacy of NASA and the USAF, the CCS offers many benefits to the emerging commercial aerospace industry. Its experienced local talent, innovative workforce, mature industrial base and suppliers make the CCS an ideal place for operations. More than just operations, the Cape has become the hub for human spaceflight transportation development. Both the Orion Multi-Purpose Crew Vehicle and the CST-100 Commercial Crew Transportation System have chosen to do final assembly and test operations at the CCS. Space Florida has played a central role in securing those facilities for development and eventual operations. Moreover, Space Florida has partnered with commercial launch providers and operators to provide infrastructure funding, and secure and finance upgrades to existing launch and related facilities at CCS.

Both KSC and CCAFS provide a number of existing facilities that can and have accommodated the commercial market. Space Florida is assisting industry in obtaining usage agreements for these excess facilities.

Figure 3.1-1 provides an inventory of major mission-related facilities located within or near the spaceport.

The following pages provide a brief description of these facilities.

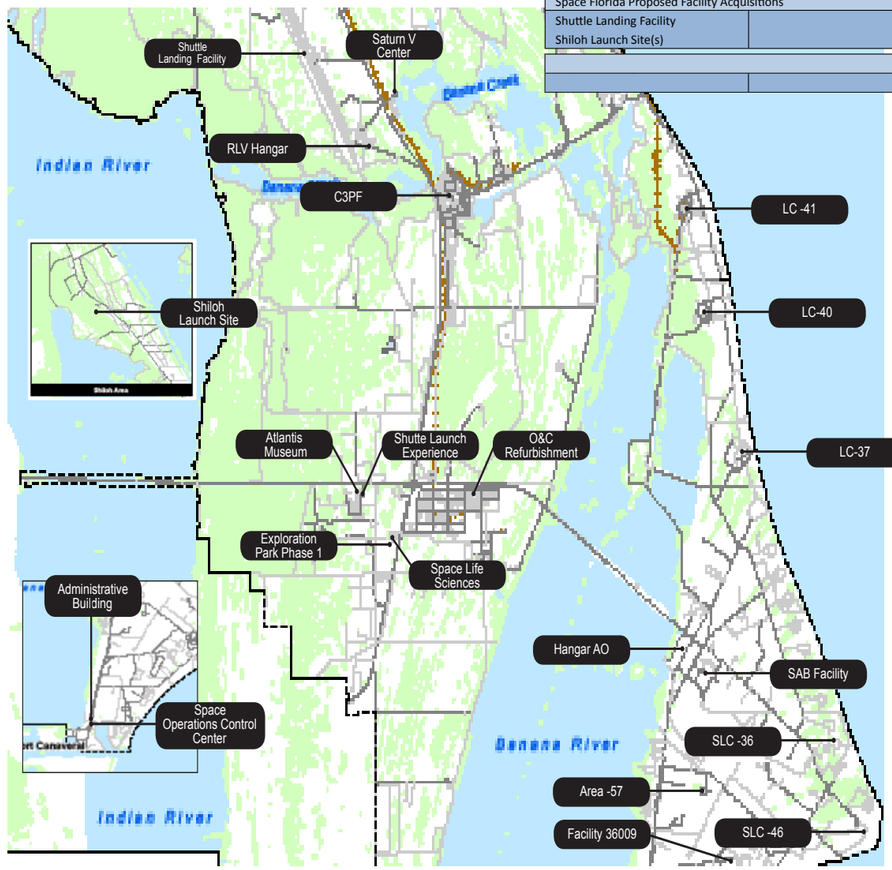


Figure 3.1-1: CCS Facilities Invested in the State of Florida

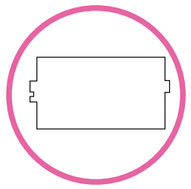
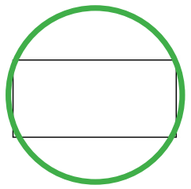
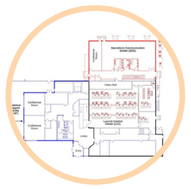
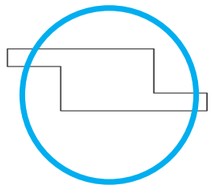
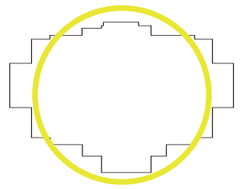
Facility	Agreement Type	$ Funded/ Financed
Space Florida Current Real Property Agreements In Place:		
SLC-36	Real Property License	
SLC-46	Real Property License	$6,800,000
Space Life Sciences Laboratory	Land Lease	$25,500,000
RLV	Land Lease	$5,000,000
C3PF (formerly OPF3)	Use Permit	$10,000,000
SAB	Real Property License	
Exploration Park Phase I	Enhanced Use Agreement	$7,500,000
Space Florida Real Property Agreements In Work/In Renewal Status:		
Administration Building 90326	Real Property License	
Space Operations Control Center	Real Property License	
Area 57 Facilities	Real Property License	
Facility 36009	Real Property License	
Space Florida Financing Involement		
LC-41	Conduit Financing	$294,000,000
LC-37	Conduit Financing	$24,000,000
Saturn V Center	Conduit Financing	$25,000,000
Shuttle Launch Experience	Conduit Financing	$40,000,000
Atlantis Museum	Conduit Financing	$40,000,000
State of Florida/Space Florida Funding		
O&C Refurbishment at KSC		$35,000,000
LC-40 - Multiple Projects		$6,500,000
Hanger AO		$2,000,000
Space Florida Proposed Facility Acquisitions		
Shuttle Landing Facility		
Shiloh Launch Site(s)		
		Total Investment
		$516,300,000

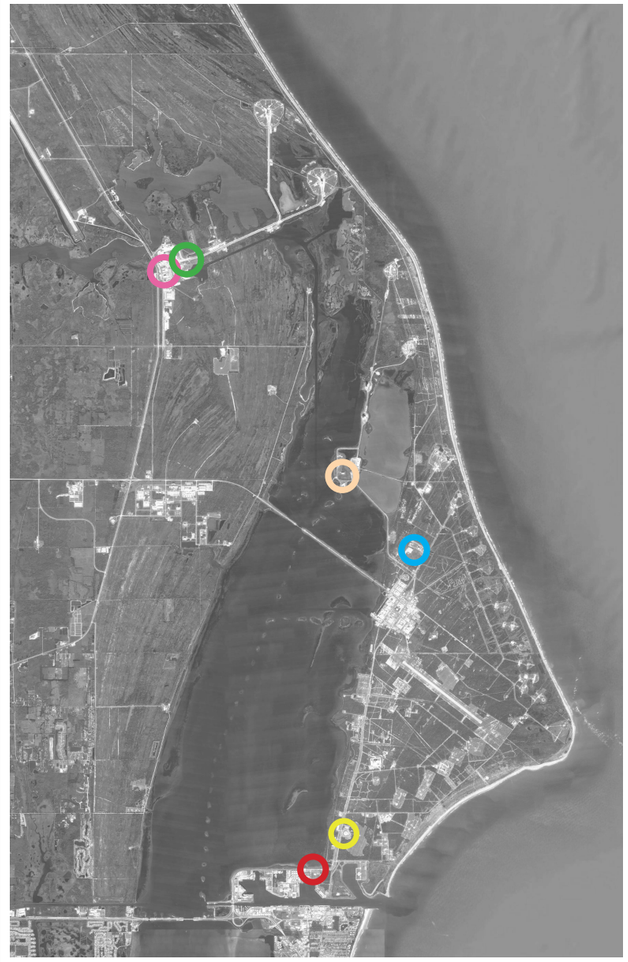
Figure 3.1-2: CCS Facilities Investments by the State of Florida

CONTROL CENTERS AND AIRSPACE
SPACE OPERATIONS CONTROL CENTER (SOCC), 90327
PROCESSING CONTROL CENTER (PCC), K6-1094
LAUNCH CONTROL CENTER (LCC), K6-0900
ASOC LAUNCH OPERATIONS CENTER (LOC), 75251
DELTA OPERATIONS CENTER, 38835
MORRELL OPERATIONS CENTER (MOC), 81900
LAUNCH AND LAUNCH VEHICLE PROCESSING
REUSABLE LAUNCH VEHICLES (RLV) HANGAR, J6-2466
SLF & ASSOCIATED BUILDINGS
LC-39B, J7-0337
LC-39A, J8-1708
VEHICLE ASSEMBLY BUILDING (VAB), K6-0848
SPACE LAUNCH COMPLEX 36, SLC-36
SPACE LAUNCH COMPLEX 37, SLC-37
SPACE LAUNCH COMPLEX 40, SLC-40
SPACE LAUNCH COMPLEX 41, SLC-41
SPACE LAUNCH COMPLEX 46, SLC-46
ROTATION PROCESSING AND SURGE FACILITY (RPSF), K6-0494
HYPERGOLIC MAINTENANCE FACILITY, M7-1059
THERMAL PROTECTION SYSTEM FACILITY (TPSF), K6-0794
PARACHUTE REFURBISHMENT/PROCESSING FACILITY, M7-0657
SOLID ROCKET BOOSTER (SRB) ASSEMBLY AND REFURBISHMENT FACILITY, L6-247
AREA 57, 50801/50803/45601
PAYLOAD PROCESSING FACILITIES
SATELLITE ASSEMBLY BUILDING (SAB), 49904
COMMERCIAL CREW AND CARGO PROCESSING FACILITY (C3PF), K6-0696
ORBITER PROCESSING FACILITIES 1 AND 2 (OPF), K6-0894
OPERATIONS & CHECKOUT BUILDING (O&C), M7-0355
ASTROTECH
SPACE STATION PROCESSING FACILITY (SSPF), M7-0360 -
MULTI-PAYLOAD PROCESSING FACILITY (MPPF), M7-1104
PAYLOAD HAZARDOUS SERVICING FACILITY (PHSF), M7-1354
SPACE LIFE SCIENCES LABORATORY, M6-1025
LAUNCH ABORT SYSTEM FACILITY, M7-0777
RESEARCH AND DEVELOPMENT FACILITIES
ADMIN BUILDING, 90326
EXPLORATION PARK
FAR FIELD ANTENNA TESTING RANGE (FAR)
SPACE LIFE SCIENCES LABORATORY, M6-1025

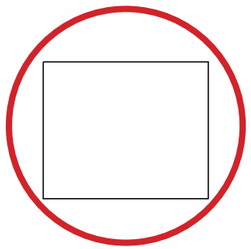
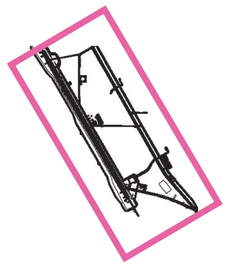
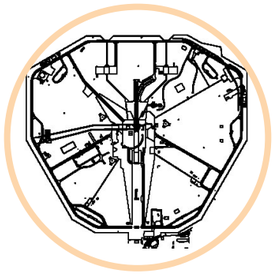
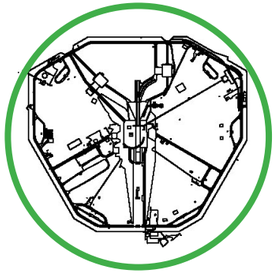
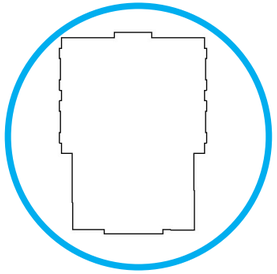
Figure 3.1-3: Existing Mission-Related Facilities

CONTROL CENTERS AND AIRSPACE

TITLE	90327 - SPACE OPERATIONS CONTROL CENTER (SOCC)	K6-1094 - PROCESSING CONTROL CENTER (PCC)	K6-0900 - LAUNCH CONTROL CENTER (LCC)	75251 - ASOC LAUNCH OPERATIONS CENTER (LOC)	38835 - DELTA OPERATIONS CENTER	81900 – MORRELL OPERATIONS CENTER (MOC)
USER	SPACE X	SPACE FLORIDA	NASA/KSC	ULA	ULA	CCAFS/45th SPACE WING
CR USE / DESCRIPTION STATUS	The SOCC is located at the Space Florida CCAFS South Gate Campus, just outside the south security gate to CCAFS. The SOCC is currently occupied by SpaceX and is being operated as a LCC for their SLC-40 Falcon 9 operations. The LCC has a primary control room, a support room, a smaller auxiliary support room, and a conference room. The primary room has fourteen consoles, the support room has eleven consoles, and the auxiliary room has eight.	The PCC building is a three-story, 99,000 SF facility originally built for Shuttle orbiter testing, launch team training, and Launch Processing System (LPS) maintenance. It is located between the Orbiter Processing Facility (Bays 1 and 2) and the Operations Support Building.	The LCC is a four-story building that is the electronic "brain" of LC-39. The LCC is attached to the southeast corner of the VAB and is about 3.5 miles from Pad 39A. The LCC contains four main control rooms which are also refered to as firing rooms.	The ASOC is located approximately 4 miles from the SLC-41 complex. The LOC in the ASOC provides interfaces for command, control, monitoring, readiness reviews, anomaly resolution, office areas, and day of launch viewing. The LOC design provides maximum flexibility to support varying customer requirements. The main areas of the LOC include the LCC; the Mission Director's Center (MDC); the Spacecraft Operations Center (SOC); the Engineering Support Area (ESA); the Customer Support Facility (CSF); the Operations Communication Center (OCC); Mission Support Rooms (MSRs); and the Ground Command, Control, and Communication (GC3) Support Area.	The LCC for LC-37 is located in the Delta Operations Center, Building 38835.	The Morrell Operations Center was built in March of 1995. The facility is named after Major General Jimmey R. Morrell, who served as the first commander of the 45th Space Wing. The MOC was formerly known as the Range Operations Control Center prior to November of 2007. This facility was designed to consolidate and house the facilities which manage tests and control launches for the nation's eastern launch site. The Morrell Operations Center controls launches, both military and civilian, from all Cape Canaveral launch complexes.
IMAGE						
FOOT PRINT						
AVAILABLE AREA	AREA: 4,378 SF LAYOUT: Open office plans MODIFICATION SCHEDULE: No items scheduled	AREA: 99,000 SF LAYOUT: Open office plans MODIFICATION SCHEDULE: Renovation to be completed by 3rd quarter 2014	AREA: 230,436 SF LAYOUT: Open office plans MODIFICATION SCHEDULE: No items scheduled	AREA: 82,981 SF LAYOUT: Open office plans MODIFICATION SCHEDULE: No items scheduled	AREA: 70,993 SF LAYOUT: Open office plans MODIFICATION SCHEDULE: No items scheduled	AREA: 127,000 SF/ +80,000 SF Basement LAYOUT: Open office plans MODIFICATION SCHEDULE: No items scheduled
CAPITAL IMPROVEMENT PLAN		Renovation upgrades include: » Modifications to the HVAC equipment and controls » Replacement of all obsolete and near obsolete electrical systems » Upgrades to the communications infrastructure » Floor plan area modifications » Modifications to the access security system » Modifications to the fire suppression and detection systems	A recent study was completed to review options to turn Firing Room 4 into a multi-user facility which could accommodate up to four users. Each user space would accommodate approximately 25 consoles.	Proposed renovation upgrades include: » Conference room and office space additions		

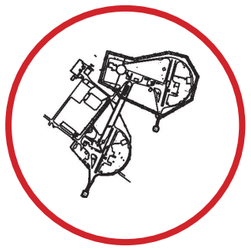
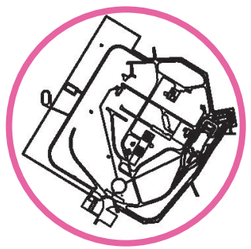
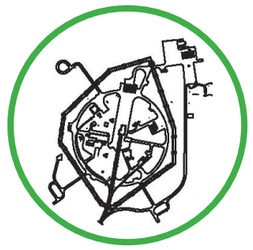
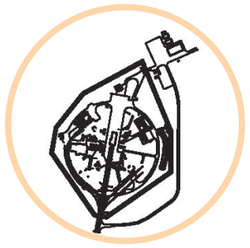
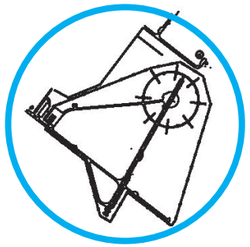


SPACECRAFT AND LAUNCH FACILITIES

J6-2466 - REUSABLE LAUNCH VEHICLES (RLV) HANGAR	SHUTTLE LANDING FACILITY & ASSOCIATED BUILDINGS	J7-0337 - LC-39B	J8-1708 - LC-39A	K6-0848 - VEHICLE ASSEMBLY BUILDING (VAB)	TITLE
SPACE FLORIDA	NASA/KSC - SPACE FLORIDA	NASA/KSC	NASA/KSC	NASA/KSC	USER
The RLV Hangar is a 50,000 SF multi-purpose facility that was developed in partnership with NASA KSC. It was originally designed to serve as a host for RLV development and operations delivered to the Space Center. Features: » 185 ft. wide by 30 ft. high vehicle access door with additional tall door height of 65 ft. » Full environmental controlled space » 12 ft. thick, 3,000 psi concrete slabs for jacking operations » Adjacent to SLF » Processesing area is 200 ft. long by 239 ft. wide and 66 ft. high	The SLF served as the primary landing and recovery site for the space shuttle orbiter. The SLF is 15,000 ft. long and 300 ft. wide. The SLF area houses a Control Tower, Airfield Rescue and Fire Facility, office complex, convoy equipment shelter, Landing Aids Control Building (LACB), and a hangar used to support RLV which is operated by Space Florida.	LC-39 has served America's most significant manned space flight endeavors, Apollo, Skylab, and the Space Shuttle Program. Modification of Pads 39A and 39B began in July 1975 to support the Space Shuttle Program.	LC-39 has served America's most significant manned space flight endeavors, Apollo, Skylab, and the Space Shuttle Program. Modification of pads 39A and 39B began in July 1975 to support Space Shuttle program.	The VAB was constructed in the 1960s to support the Apollo program and was sized to fit the Saturn V LV and Mobile Launcher (ML) with Launch Umbilical Tower (LUT). The VAB is 525 ft. tall and has four high bays, each sized for processing a single Saturn V LV.	CR USE / DESCRIPTION STATUS
					IMAGE
					FOOT PRINT
AREA: 50,000 SF LAYOUT: Hangar space MODIFICATION SCHEDULE: No items scheduled	AREA: 500 ac. LAYOUT: Runway MODIFICATION SCHEDULE: Completion of current assessments by 3rd quarter 2014	AREA: 57,589 SF LAYOUT: Launch pad MODIFICATION SCHEDULE: No items scheduled	AREA: 66,211 SF LAYOUT: Launch pad MODIFICATION SCHEDULE: No items scheduled	AREA: 1,831,549 SF LAYOUT: Optimized for the vertical integration of rockets MODIFICATION SCHEDULE: No items scheduled	AVAILABLE AREA
	Current Assessments include: » Concept for stormwater management » A geotechnical assesment » Assessment of any existing or potential toxic soil issues Proposed upgrades include: » Common Infrastructure improvements (taxiways, comm/ utilities, security enhancements, customer experience center, etc.) » Provisions for permanent fueling capabilities	LC-39B will be the future launch site for NASA's SLS program.	LC-39A is a potential launch pad to be used by commercial space companies.	A recent study was completed to review options to turn the VAB into a multi-user facility. Currently, High Bay 3 is under renovation for the SLS program.	CAPITAL IMPROVEMENT PLAN

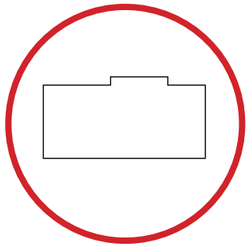
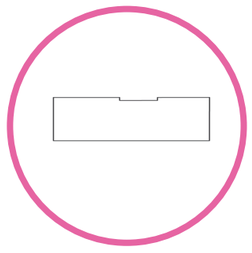
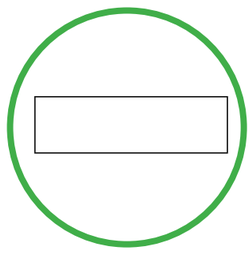
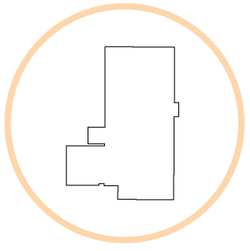
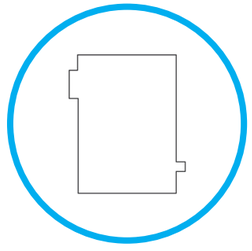
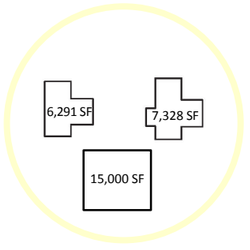


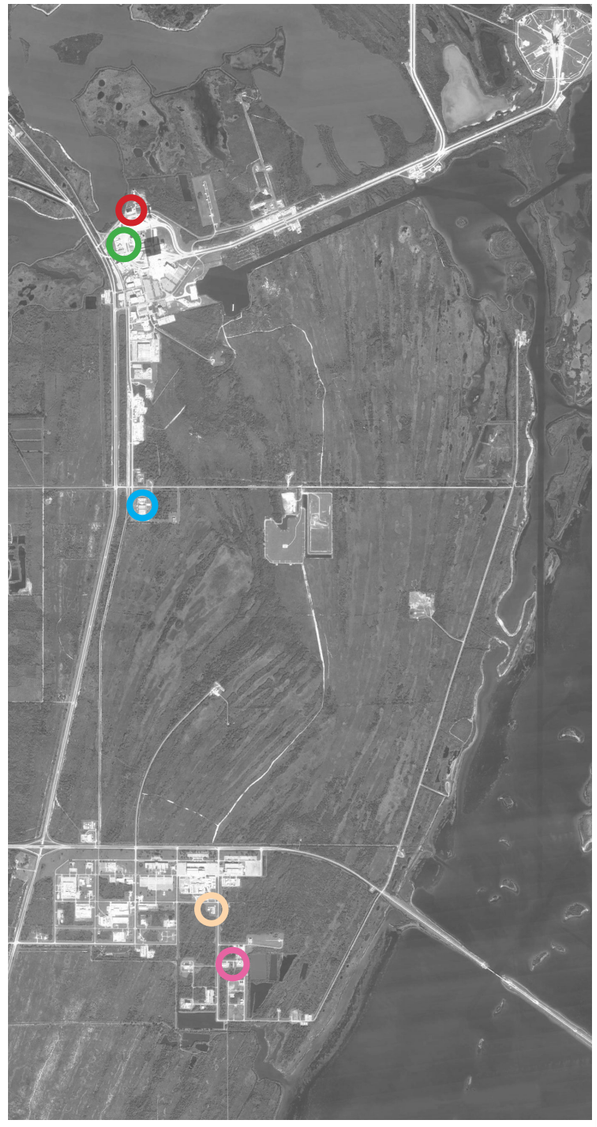
SPACECRAFT AND LAUNCH FACILITIES

TITLE	SLC-36	SLC-37	SLC-40	SLC-41	SLC-46
USER	SPACE FLORIDA	UNITED LAUNCH ALLIANCE (ULA)	SPACE X	ULA	SPACE FLORIDA
CRUSE / DESCRIPTION STATUS	SLC-36 at CCAFS has a long and interesting history. SLC-36A and B were built under the sponsorship of NASA in support of the Atlas/ Centaur program in 1961 and 1963 respectively. SLC-36 has seen hundreds of Atlas I and II launches. It was deactivated in 2006 and turned over to Space Florida in 2009.	SLC-37 is operated by United Space Alliance to launch Boeing's Delta IV Evolved Expendable Launch Vehicles (EELV). SLC-37 previously supported NASA's Saturn I program in the 1960s. The pad was modified recently to support the Delta IV program including the addition of a 330 ft. Mobile Service Tower (MST), two large lightning protection towers, and a fixed pad erector.	SLC-40 supports the launch of SpaceX Falcon 9 Rockets. SpaceX is a commercial space transport company. The LC is licensed by the Air Force to SpaceX to launch Falcon 9 series of rockets. SLC-40 has seen over 50 Titan launches. It was deactivated in 2006 and turned over to SpaceX in 2007 and has been renovated to support the Falcon 9 LV.	SLC-41 was originally developed to support the Titan III program in the 1960s. Following the last Titan launch in 1999, the launch site was renovated by Lockheed Martin to support their Atlas V EELV.	The SLC-46 site was established in 1954 as a fire-fighter training area and utilized for this purpose until 1965. SLC-43, located adjacent to SLC-46s current location, was used for meteorological rocket launches from 1962 through 1985. From 1987 - 1989 the U.S. Navy used SLC-46 to launch ground-based Trident II ballistic missiles. Space Florida supported two Athena launches from SLC-46 in 1998 and 1999.
IMAGE					
FOOT PRINT					
AVAILABLE AREA	AREA: 138 ac. LAYOUT: Two launch pads 36A and 36B MODIFICATION SCHEDULE: Ready for first launch by 4th quarter 2013	AREA: 450,000 SF LAYOUT: Pad 37B active MODIFICATION SCHEDULE: No items scheduled Launch Vehicle: Delta IV family	AREA: LAYOUT: Single launch pad MODIFICATION SCHEDULE: Planned upgrades through 2015 Launch Vehicle: Falcon 9, Falcon Heavy (future)	AREA: LAYOUT: Single launch pad MODIFICATION SCHEDULE: Planned upgrades through 2015 Launch Vehicle: Atlas V family	AREA: 70 ac. LAYOUT: Single launch pad MODIFICATION SCHEDULE: Ready for first launch by 4th quarter 2015
CAPITAL IMPROVEMENT PLAN	Infrastructure upgrades at the launch site include: » Cryo and IPA storage Facility » Small test article storage magazine » Lightning protection system » Propellant loading skids » Liquid propellant static test stand	Proposed Renovation upgrades include: » MST elevator replacement	Proposed launch site upgrades include: » Commercial Payload Processing Facility » Commercial Heavy Lift Flame Duct Modifications » Commercial Heavy Lift Launch Pad Modifications » Commercial Heavy Lift Hangar and Processing Facility » Commercial General Purpose Storage Facility	Proposed launch site upgrades include: » Commercial Crew Accommodations » Vertical Integration Facility Modifications » MLP » Vertical Integration Facility	Infrastructure upgrades at the launch site include: » Continued corrosion control efforts on the MST » Communication refurbishment » Rail Launch System » Evaluation of flame duct (2013) » Drainage improvements » Modifications for Orion Abort test launch



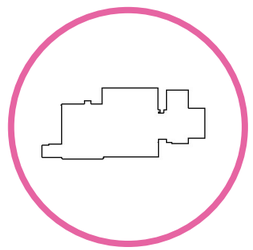
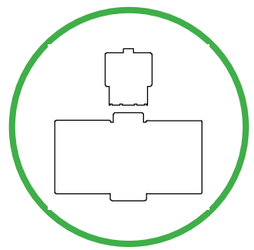
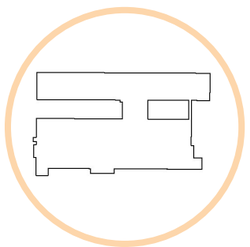
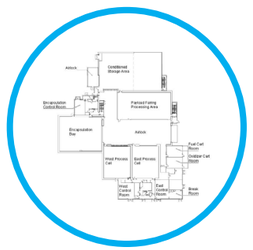
SPACECRAFT AND LAUNCH FACILITIES

TITLE	K6-0494 - ROTATION PROCESSING AND SURGE FACILITY (RPSF)	M7-1059 HYPERGOLIC MAINTENANCE FACILITY	K6-0794 - THERMAL PROTECTION SYSTEM FACILITY (TPSF)	M7-0657 - PARACHUTE REFURBISHMENT/PROCESSING FACILITY	L6-247 - SOLID ROCKET BOOSTER (SRB) ASSEMBLY AND REFURBISHMENT FACILITY	50801/50803/45601 - AREA 57
USER	NASA/KSC	NASA/KSC - UNITED PARADYNE	NASA/KSC	NASA/KSC - BRS AEROSPACE	NASA/KSC	AIR FORCE
CR USE / DESCRIPTION STATUS	The RPSF consists of a primary building for rotating and processing the SRB segments, and two secondary surge (storage) buildings. It is anticipated that the RPSF will be used to support NASA's future SLS but has been identified by NASA as a potential multi-use facility available to commercial and/or government launch providers on a non-interference basis.	This facility contains several buildings in the KSC Industrial Area. They include hazardous explosion-rated processing buildings, storage areas, waste staging and hypergol support buildings, and associated engineering control rooms.	The two-story, 44,000 SF at KSC is also known as the shuttle tile factory. This facility was constructed to support the Space Shuttle Program. The thermal protection system or Shuttle tiles, are manufactured and repaired in this facility. This facility will likely be made available to multiple users as a provided service.	This facility provides for the cleaning (washing) of parachutes from Space Shuttle missions in an outside wash rack and for the repair of these parachutes within several rooms.	This facility was constructed to support the Space Shuttle Program. It contains high bays and control rooms for the processing of unfueled SRB segments. It also contains connected office space for administrative personnel and an area for testing of hydrazine powered devices. It is anticipated that the RPSF will be used to support NASA's future SLS.	Area 57 is comprised of three buildings (50801, 50803, 45601) which are used for spacecraft and LV processing.
IMAGE						
FOOT PRINT						
AVAILABLE AREA	AREA: 17,871 SF LAYOUT: Large bays for SRB segment rotation MODIFICATION SCHEDULE: No items scheduled	AREA: 17,550 SF LAYOUT: Hazardous explosion-rated processing MODIFICATION SCHEDULE: No items scheduled	AREA: 44,100 SF LAYOUT: Optimized for shuttle tile processing MODIFICATION SCHEDULE: No items scheduled	AREA: 35,758 SF LAYOUT: Optimized for parachute processing MODIFICATION SCHEDULE: No items scheduled	REA: 168,014 SF LAYOUT: Optimized for SRB processing MODIFICATION SCHEDULE: No items scheduled	AREA: Total for the 3 buildings is 28,619 SF LAYOUT: LV processing MODIFICATION SCHEDULE: Upgrades completed by 3rd quarter 2014
CAPITAL IMPROVEMENT PLAN						Infrastructure upgrades include: » Facility structural modifications » Fluid system support » Facility and technical grounding » Fire suppression and detection » New bridge crane in high bay » Access security systems

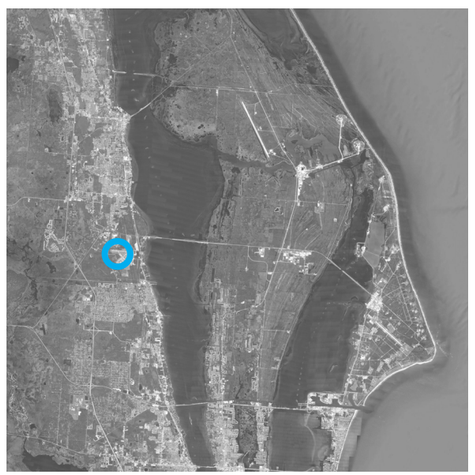




PAYLOAD PROCESSING FACILITIES

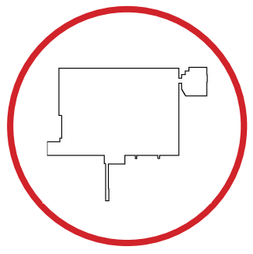
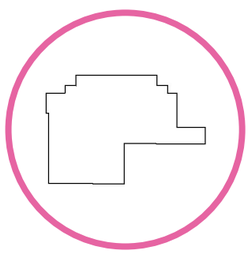
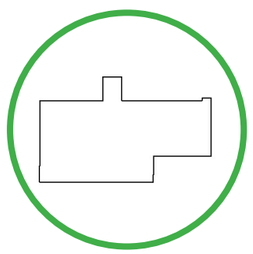
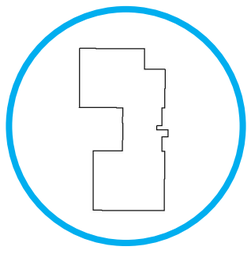
TITLE	SATELLITE ASSEMBLY BUILDING (SAB)	K6-0696 - COMMERCIAL CREW AND CARGO PROCESSING FACILITY (C3PF)	K6-0894 - ORBITER PROCESSING FACILITIES 1 AND 2 (OPF)	M7-0355 - OPERATIONS & CHECKOUT BUILDING (O&C)	
USER	**SPACE FLORIDA**	**SPACE FLORIDA**	**NASA/KSC**	**NASA/KSC**	**ASTROTECH**
CR USE / DESCRIPTION STATUS	The SAB (Facility Number 49904) is a 26,733 SF, single level, facility built in 1964 for the USAF and other U.S. DoD affiliates to process flight hardware. Features: » 100,000 ft. high bay clean room capable » High bay is 116 ft. long by 37 ft. wide by 38 ft. high » Low bay is 50 ft. long by 37 ft. wide by 21 ft. high » High bay cranes: 10-ton and 5-ton » Low bay crane: 2-ton » Services include: vacuum, compressed air, and chilled water	The C3PF previously known as the Orbiter Processing Facility 3, is located north of the VAB. It is leased to Space Florida from NASA and is being repurposed for the manufacturing, processing, testing, and development of the Commercial Space Transportation Crew Capsule, CST-100.	Located west of the VAB, the Orbiter Processing Facility 1/2 were originally built in 1977 for horizontal processing of the Space Shuttle Orbiters. The facility consists of two highbays with a lowbay between them which houses storage, shops, conference rooms, data processing rooms, and offices.	O&C Building is located in the KSC Industrial Area. The O&C building consists of a central high-bay area with a four-story laboratory and control area on one side and a single story service area on the other. There is over 60,000 SF of high-bay area with overhead cranes which are used for processing horizontally integrated payloads.	The Astrotech Florida facilities are located on 62 ac. of company-owned property just outside the gate of KSC, in Titusville approximately 20 miles West of most CCAFS LCs. With 125,000 SF of processing space, the Florida facility consists of nine major buildings dedicated to spacecraft non-hazardous and hazardous processing, payload and hardware storage, and customer office accommodations.
IMAGE					
FOOT PRINT					
AVAILABLE AREA	AREA: 26,733 SF LAYOUT: Large bays for payload processing MODIFICATION SCHEDULE: No items scheduled	AREA: 148,470 SF LAYOUT: Optimized for spacecraft processing MODIFICATION SCHEDULE: Renovation to be completed by 2nd quarter of 2014	AREA: 131,948 SF LAYOUT: Optimized for spacecraft processing MODIFICATION SCHEDULE: Renovation underway	AREA: 604,912 SF LAYOUT: Optimized for spacecraft processing MODIFICATION SCHEDULE: No items scheduled	AREA: Processing area of 125,000 SF LAYOUT: Optimized for payload processing MODIFICATION SCHEDULE: No items scheduled
CAPITAL IMPROVEMENT PLAN	Replacement of obsolete electrical switch gear: » HVAC modernization	High Bay: » Installation of a new test cell for CST-100 fueling » Installation of an ante room » HVAC and electrical upgrades Low Bay: » Service module processing modifications for CST-100	Modifications and upgrades to OPF 1 and the annex are in work.	Modifications and upgrades to the O&C building for Orion assembly and checkout were complete in 2011.	

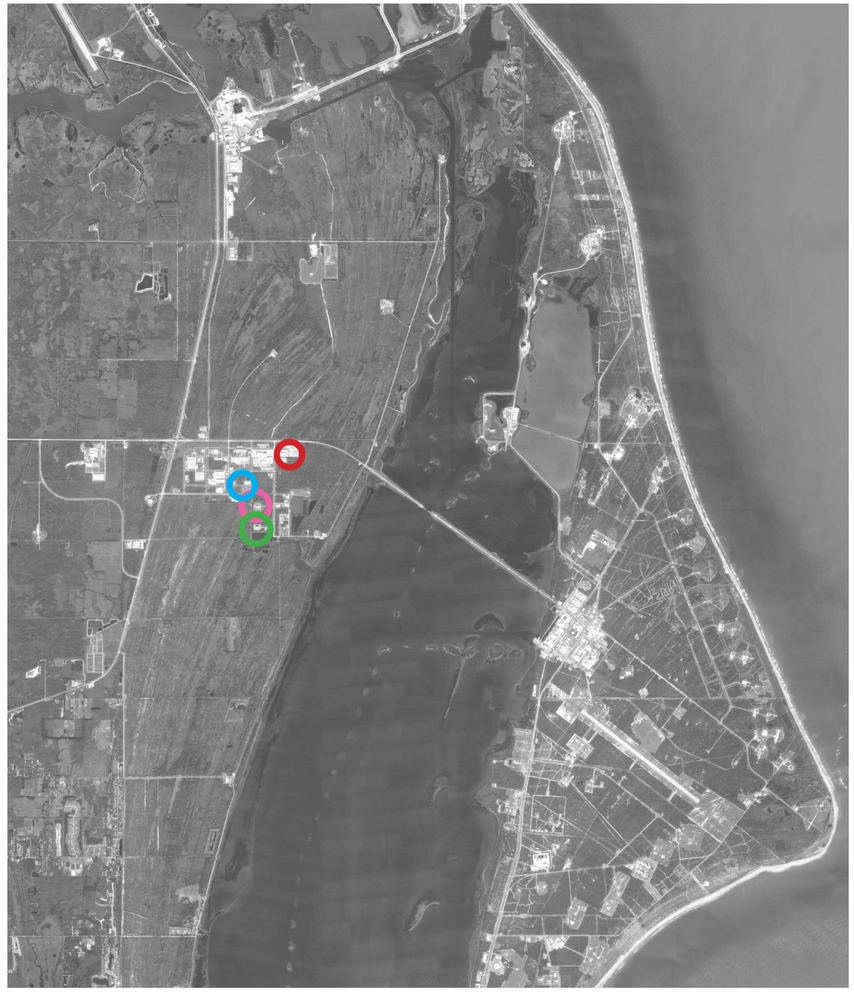




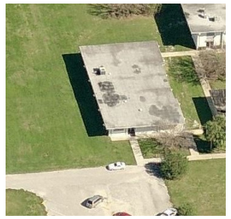
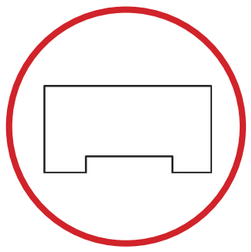
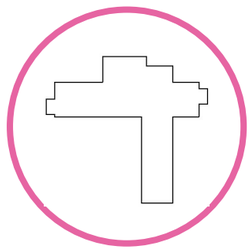
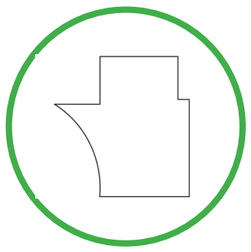
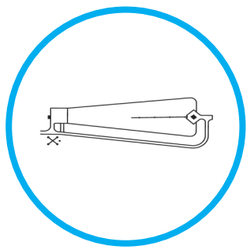
SPACE FLORIDA

PAYLOAD PROCESSING FACILITIES

TITLE	M7-0360 - SPACE STATION PROCESSING FACILITY (SSPF)	M7-1104 - MULTI-PAYLOAD PROCESSING FACILITY (MPPF)	M7-1354 - PAYLOAD HAZARDOUS SERVICING FACILITY (PHSF)	LAUNCH ABORT SYSTEM FACILITY
USER	NASA/KSC	NASA/KSC	NASA/KSC	NASA/KSC
CR USE / DESCRIPTION STATUS	The SSPF is located in the KSC industrial area just east of the O&C Building. Construction for the SSPF was completed in 1992 and the facility was designed specifically to support the ISS flight hardware. Features: » Class 100k Airlock • 108 ft. long by 46 ft. wide by 61 ft. high • 51 ft. wide by 41 ft. high door • 5-ton and 15-ton bridge cranes » Class 100k high bay • 363 ft. long by 79 ft. wide by 61 ft. high • 50 ft. wide by 41 ft. high door • Two 30-ton bridge cranes	MPPF is located south of the O&C building in the KSC industrial area. The MPPF complex, which was constructed in 1995 consists of the MPPF building and the Multi-Operations Support Building (MOSB). The MPPF building contains a highbay, a lowbay, and an equipment airlock. Features: » Class 300k Airlock • 28 ft. long by 39 ft. wide by 20 ft. high • 20 ft. wide by 15 ft. high door » Class 100k high bay • 135 ft. long by 60 ft. wide by 62 ft. high • 28 ft. wide by 42 ft. high door • 20-ton bridge crane • Capable of processing 3 small, 2 medium, or 1 large payload at one time	PHSF Building was built in 1986 and is located in the KSC Industrial Area south of the MPPF. The PHSF is a payload processing facility that is capable of hazardous processing operations. The PHSF is designed to accommodate a variety of NASA and NASA customer payloads. Features: » Class 100k Airlock • 80 ft. long by 58 ft. wide • 35 ft. wide by 75 ft. high door • 15-ton bridge crane with 75 ft. hook height » Class 100k high bay • 110 ft. long by 70 ft. wide • 35 ft. wide by 75 ft. high door • 50-ton bridge crane with 85 ft. hook height	A steel frame building consisting of a 142 ft. high, high-bay area for erection of Shuttle cargo payload canister. Entire high-bay building is pressurized with HEPA-filtered conditioned air and houses a 100-ton bridge crane with 112 ft. hook height.
IMAGE				
FOOT PRINT				
AVAILABLE AREA	AREA: 522,313 SF LAYOUT: Optimized for payload processing MODIFICATION SCHEDULE: No items scheduled	AREA: 25,667 SF LAYOUT: Optimized for payload processing MODIFICATION SCHEDULE: No items scheduled	AREA: 18,813 SF LAYOUT: Optimized for payload processing MODIFICATION SCHEDULE: No items scheduled	AREA: 25,121 SF LAYOUT: Large bay for canister rotation and processing MODIFICATION SCHEDULE: No items scheduled
CAPITAL IMPROVEMENT PLAN				Planned upgrades include: » High bay door enlargement » LAS processing and assembly modifications



RESEARCH AND DEVELOPMENT FACILITIES

TITLE	90326 - ADMIN BUILDING	M6-1025 - SPACE LIFE SCIENCES LAB (SLSL)	EXPLORATION PARK	FIELD ANTENNA TESTING RANGE (FAR)
USER	SPACE FLORIDA	SPACE FLORIDA	SPACE FLORIDA - LEASE	NASA/KSC
CRUSE / DESCRIPTION STATUS	Space Florida's Office near the south entrance gate to CCAFS, used as incubator space for new business development. Features: » Single floor » 18 offices » Approximately 8 ft. ceilings » Conference room with over-head projection and teleconference capabilities » Reception area » Kitchenette area with double sink and dishwasher	The SLSL is a State of Florida owned world-class facility built in 2003 for Life Sciences Research with 28 labs supporting cutting-edge life sciences space research containing 15 controlled environmental chambers and 15,000 SF of certified Animal Care Facility with a 100K Class clean room. Features: » Services include vacuum, compressed air, deionized water, steam, and natural gas » 25 laboratories approximately 10 ft. wide by 10 ft. long » Steel structure and concrete tilt-up panels » 6 ft. chemical hood in every laboratory » 4 conference rooms » Office rooms measuring 8 ft. wide by 8 ft. long	NASA's KSC and Space Florida have partnered to enable the development of a mixed-use technology and commerce park known as Exploration Park at KSC. Exploration Park will become home to diverse private sector technology and innovation enterprises. Initial site work has been completed in Exploration Park, including site clearing, transporting fill dirt, initial site grading, and road and utilities infrastructure. Exploration Park's initial 60-acre phase, located just outside the security gates at KSC, will accommodate up to nine separate LEED-certified buildings, and is expected to include educational, office, research/ lab space, and flexible high-bay facilities.	The FAR, located in the Northeast area of the HMF of KSC, is certified to test antennas from 100 MHz to 18 GHz. It can test a variety of antenna types, which include Parabolic, Dipole, Strip-line, Quad Ridged Horn, Mono-pulse Phased, etc.
IMAGE				
FOOT PRINT				
AVAILABLE AREA	AREA: 5,160 SF LAYOUT: office space MODIFICATION SCHEDULE: No items scheduled	AREA: 104,000 SF LAYOUT: MODIFICATION SCHEDULE:	AREA: Phase I is 60 ac.re and phase II is 139 acre LAYOUT: MODIFICATION SCHEDULE: Building 'A' to be completed mid 2014	AREA: 25 acre LAYOUT: MODIFICATION SCHEDULE: No items scheduled
CAPITAL			Phase I construction includes: » Construction of Building 'A' Phase II construction: » TBD	



3.2 Multi-modal connections to CCS (Roadways, Rail, Air, Port, Transit)

3.2.1 Site Access

The CCS is supported by a comprehensive network of intermodal access facilities.

Roadway Facilities
From the north and south, I-95 provides highway access to the CCS. Multi-lane arterial highways, including SR 50 and SR 528, provide access to the west and connect the spaceport to Orlando, located about 50 miles to the west. Major roadways within the Spaceport include SR 3 (N Courtenay Parkway becomes Kennedy Parkway within KSC), the NASA Causeway, Space Commerce Way and Samuel C. Phillips Parkway.

Aviation Facilities
Nearby aviation facilities include military, air carrier, and general aviation airports in Brevard County, including the Melbourne International Airport. The Orlando International Airport in Orange County, and Orlando Sanford International Airport in Seminole County, are both major gateways to and from the U.S., located less than fifty miles from the Spaceport. Even closer to the Spaceport are the Space Coast Regional Airport and the Merritt Island Airport, which are both designated as Florida Aviation Systems Plan (FASP) reliever airports. For specialized space related shipments to CCS, the skid strip military airport is located at CCAFS.

Port Facilities
A major cargo and cruise ship terminal, Port Canaveral is adjacent to CCS. To allow for barge delivery of large spacecraft components, additional deepwater port facilities are located within the CCS territory itself. Waterways are used at the CCS and Port Canaveral to transport payloads, construction material, and other large spacecraft components. Within the SIS CCS hub, waterfront facilities at KSC include the VAB basin and Kennedy Athletic, Recreation and Social (KARS) park boat basin. Areas within CCAFS that are port related include the Air Force wharf (used by Military Sealift Command), the EELV berth (used by United Launch Alliance), the Poseidon and Trident wharves and the Trident turning basin (used by the Naval Ordnance Test Unit).

Rail Facilities
The NASA rail at CCS connects to the main line of the Florida East Coast Railway line (FEC) at the SIS rail connector, which crosses the Indian River via the Jay Jay railroad bridge. Within the Spaceport, the NASA rail extends east-west, with two north-south branches serving the majority of the facility. The western branch runs parallel to Kennedy Parkway and extends from Max Brewer Parkway south past the VAB Turning Basin to NASA Parkway. The eastern branch begins near the coast and runs south to serve the northern third of CCAFS. There is no rail connection to Port Canaveral.

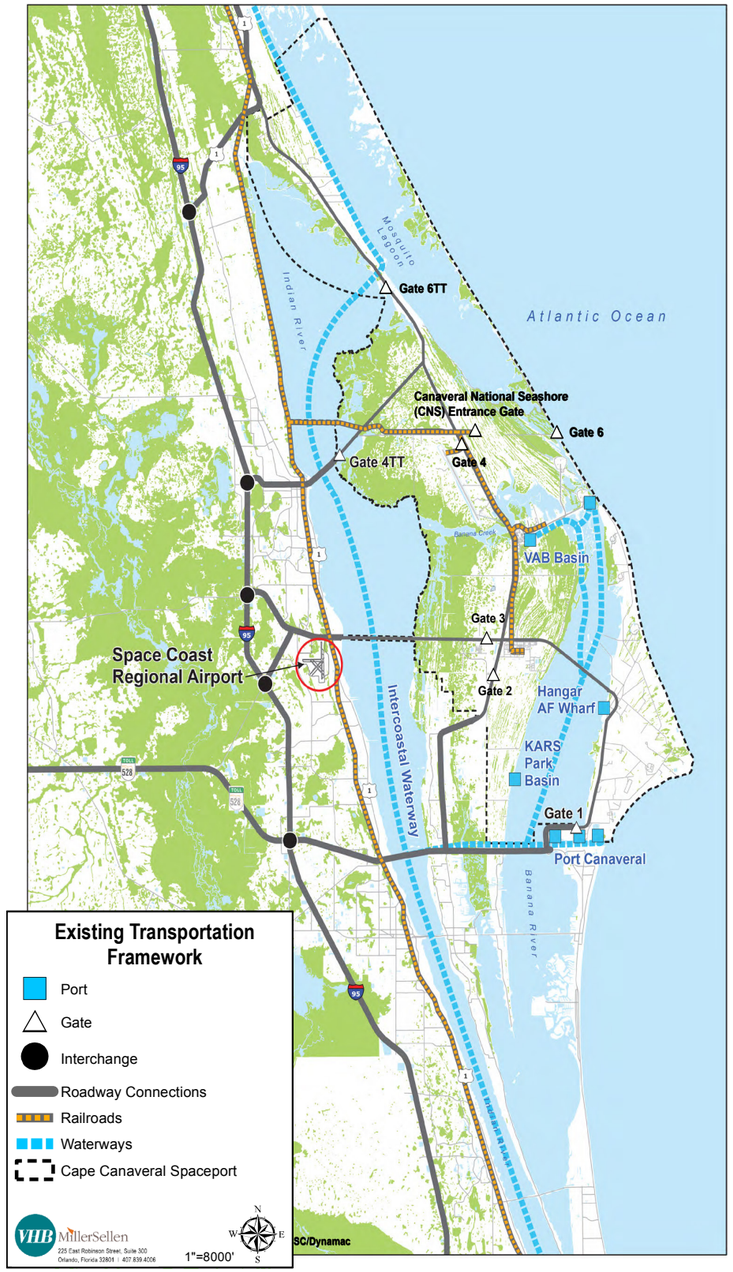


Figure 3.2-1: Existing Transportation Framework

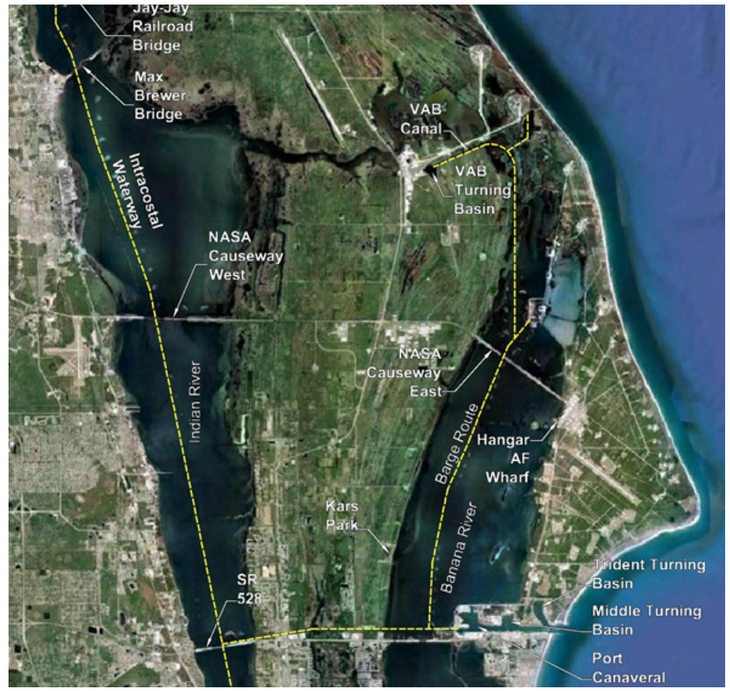


Figure 3.2-2: Spaceport Area Waterways

SIS Facilities
Plans for surface transportation facilities, including highway, rail, and waterway facilities, are developed and maintained by the FDOT, primarily through Florida's SIS. The SIS is a statewide network of high-priority transportation facilities, including the State's largest and most significant commercial service airports, spaceport, deepwater seaports, freight rail terminals, passenger rail and intercity bus terminals, rail corridors, waterways, and highways. Under current FDOT policy, capacity projects that are included in the Florida SIS have a higher priority for state funding than other capacity projects that are not included in the SIS.

The CCS is the only spaceport hub currently identified as an SIS facility that presently includes the CCS facilities, as well as additional spaceport facilities located at both the KSC and the CCAFS. All of the hubs in the SIS are linked together via a network of designated corridor and connector facilities, including highway, rail, and waterway facilities. The officially designated SIS facilities and connectors to Port Canaveral and the CCS include:

Corridors
- Interstate 95 and SR 528
- Florida East Coast Railroad
- Intracoastal Waterway
- Shipping Lane from Port Canaveral

EXISTING FACILITIES AND INFRASTRUCTURE

Hubs

- Port Canaveral

Connectors

- SR 405, up to the boundary of KSC links the Spaceport to I-95
- SR 401 links SR 528 with Port Canaveral and the southern security gate of Canaveral Air Force Station.
- JJ Rail Bridge connects the Florida East Coast Railroad to the KSC spur line.
- Canaveral Barge Canal connects Port Canaveral with the Atlantic Ocean and Intracoastal Waterway

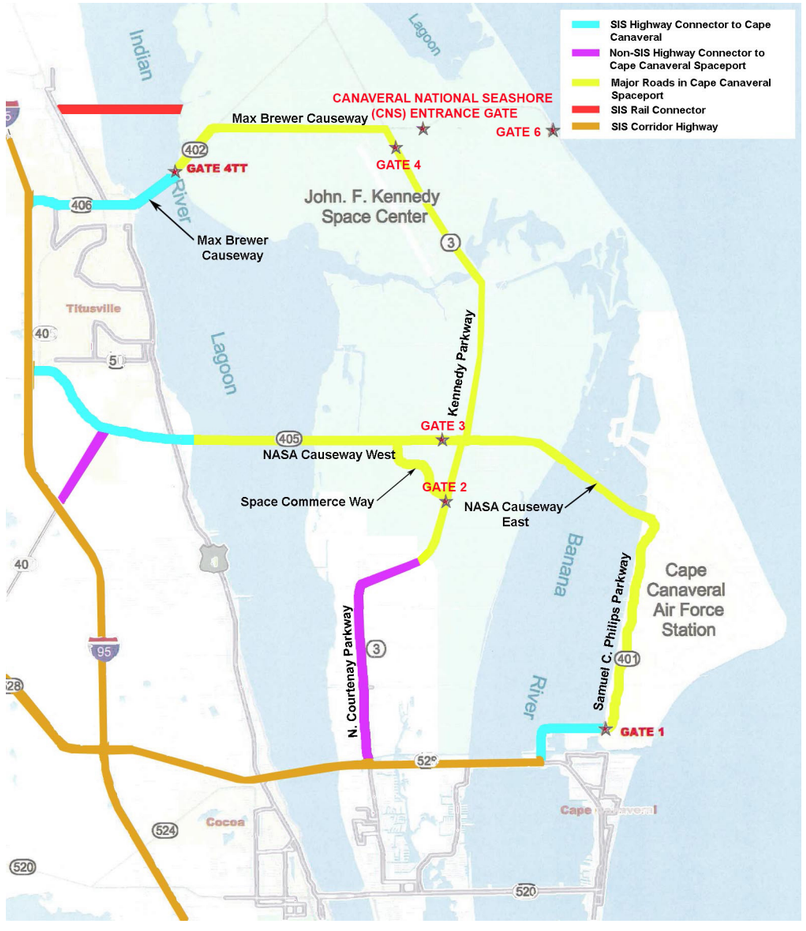


Figure 3.2-3: SIS Highways and Connectors

3.2.2 Funded Projects

The projects listed below currently have committed FDOT SIS funding and are listed in the FDOT Adopted Five-Year Work Program (8/31/12) or in the FDOT SIS-Space Infrastructure Funding list.

Roadway Projects

- Port Canaveral Access Intersection Improvements – Intersection Improvements at SR 401 ($1 million, FY 2013)

Port Projects

- Port Canaveral Widening and Deepening – Maintenance Dredging – Seaport Safety Project ($1.17 million, FY 2013)
- Port Canaveral Improvements – West Turn Basin Channel Widening ($18 million, FY 2017)
- Port Canaveral Improvements – Container N. Cargo 5&6 and Terminal ($4.83 million, FY 2013)
- Port Canaveral Improvements – North Side Development Container Yard Expansion ($19.5 million, FY 2015)

FY 13 Space Projects

- Commercial Heavy Lift Launch Facilities – Repurpose a launch complex for a new heavy lift launch vehicles ($5 million, FY 2013)
- Orbiter Processing and Launch Facilities – Repurpose commercial spacecraft, cargo processing, and launch facilities for civil and private sector customers. Total funds represent $5 million for OPF 1/2 and $5 million for OPF 3 ($10 million, FY 2013)

Both KSC and CCAFS seek a divestment of excess infrastructure to future users in order to reduce O&M costs.

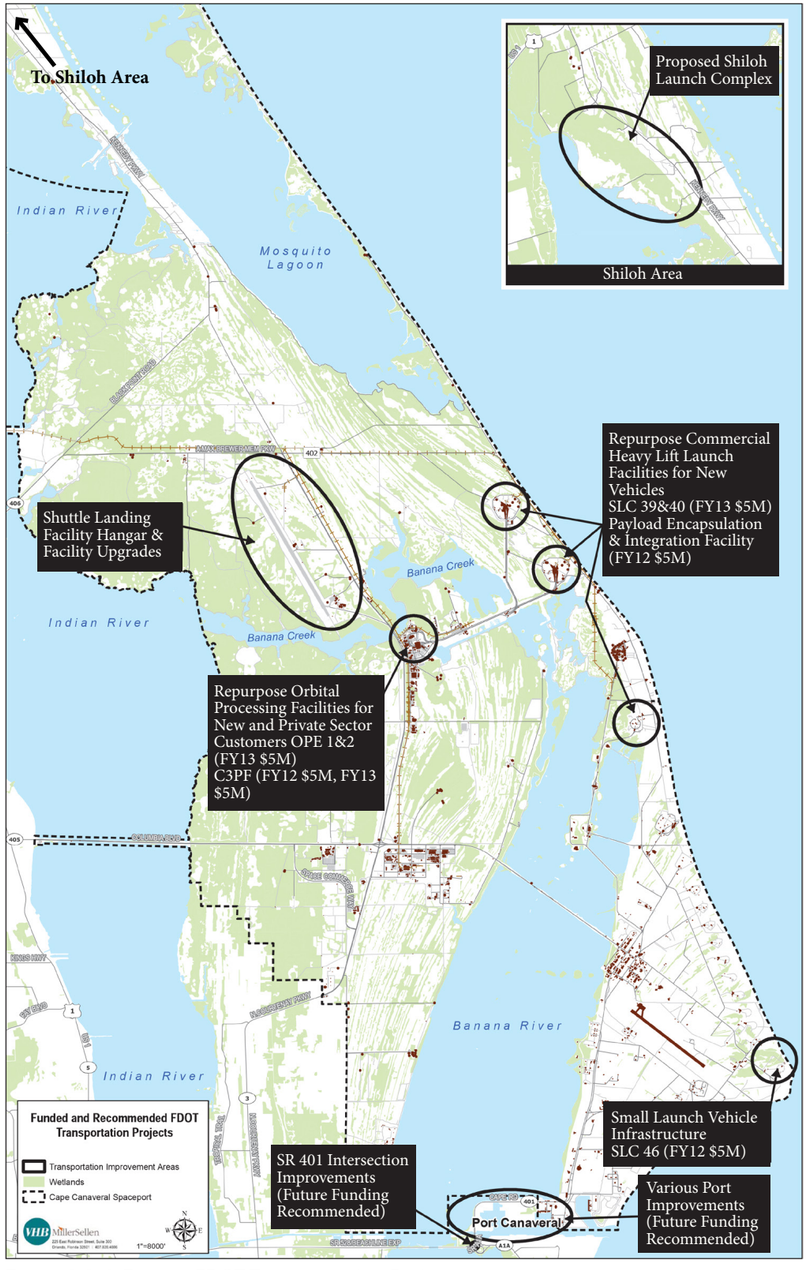


Figure 3.2-4: Funded FDOT Transportation Projects

3.3 Utilities and Infrastructure

3.3.1 Introduction

As the user base on the CCS continues to grow and evolve, the utilities and infrastructure, both on-site and off-site, must be evaluated. The purpose-built infrastructure that supported the Space Shuttle program must be transitioned to meet the needs of multiple new customers.

As an Authority established by the State, Space Florida has powers to finance new infrastructure, maintain existing facilities, and own and operate utility services.

Unused facilities and infrastructure, if not required for future missions, will be either abandoned in place or demolished. The KSC, CCSAFS and Space Florida have worked closely together to identify sustainable users for facilities not required for NASA or DoD future missions.These abilities demonstrate the State's commitment to grow the space industry, and provide the means for Space Florida to incentivize potential new customers by "setting the table."

Section 331.305(12), Florida Statutes authorizes Space Florida to "own, acquire, construct, reconstruct, equip, operate, maintain, extend, or improve transportation facilities appropriate to meet the transportation requirements of Space Florida and activities conducted within spaceport territory."

3.3.2 Potable Water

Potable Water for CCS is provided by the City of Cocoa. According to the City's adopted Comprehensive Plan Data & Analysis, the City of Cocoa has two water treatment plants: Wewahootee Water Treatment Plant and Claude H. Dyal Water Treatment Plant, with a total systemwide production capacity of 48 million gallons per day (MGD) and an average usage of 25 MGD in 2008. The City's surface water supply comes from the nearby Taylor Creek Reservoir, which is a 5 billion gallon water impoundment constructed in Taylor Creek. Taylor Creek is a tributary to the St. Johns River and its water withdrawals are regulated by the St. Johns River Water Management District (SJRWMD). The SJRWMD permits Cocoa to withdraw an average of 8.83 MGD on an annual average basis and 12.0 MGD on a maximum daily basis. The combined total water supply capacity of all the City's water sources on an average daily basis is 47.83 MGD.

Based on the adopted Level of Service (LOS) standards established by the Potable Water Element of the City's Comprehensive Plan, the City anticipates that it has sufficient water production and storage capacity to meet current and future average daily and typical peak day demands generated by customers in its water service area through the 2020 planning horizon.

The City of Cocoa also has a Mutual Aid Agreement to ensure adequate provision of fire and water services with KSC, and a Water Franchise Agreement for the provision of water and wastewater services with Patrick Air Force Base (PAFB) and CCAFS.

3.3.3 Wastewater

Wastewater for CCS is treated by CCAFS. Currently, this facility is discharging an annual average daily flow of approximately 550,000 gallons per day (GPD) of treated domestic and industrial waste effluent to three percolation ponds. The facility is permitted to discharge up to 800,000 GPD, and is therefore operating under capacity. Recently, the CCAFS was granted a variance from Rule 62-520.420(1) Florida Administrative Code by the Florida Department of Environmental Protection (DEP) in order to meet the requirements of ground water standards for the effluent disposal system (percolation ponds) monitoring including wells for parameters, total dissolved solids, sodium, chloride, and manganese. The CCAFS General Plan anticipates that the current facility will continue to have sufficient wastewater capacity for both CCAFS and KSC without the need for capital improvements.

3.3.4 Electrical

Electrical power is provided by Florida Power & Light Company (FPL), the largest electric utility in Florida and one of the largest rate-regulated utilities in the U.S. Electrical infrastructure is in place in all KSC and CCAFS facilities, although improvements may be required to respond to the specific needs of future customers.

In 2010, KSC and FPL completed a 5-acre, 1-megawatt site on center that provides 1% of KSC's power needs. NASA and FPL have partnered through a long-term land lease to build a 60-acre, 10-megawatt solar energy site south of the SR3 KSC gate utilizing a fallow citrus grove. Both facilities provide solar energy power similar to that on the ISS.

3.3.5 Communications

Extensive communications systems are provided throughout the CCS to ensure the telephone and data transmission services necessary to support all aspects of users' requirements. Systems supported include conventional telephone service, launch/test data, countdown and timing, SLF launch and landing aids and control tower, weather, range safety, paging and operational intercommunication systems (OIS), radio-frequency (RF) communications, wideband fiber-optics, operational television (OTV), video transmission and recording, and video teleconferencing. The extents to which the systems are available are dependent on the particular area.

3.3.6 Stormwater

CCS is located within the SJRWMD. Many of the existing facilities were built prior to modern stormwater management regulations, such as the 1972 Clean Water Act, National Pollutant Discharge Elimination System (NPDES) permitting process, and Phase I requirements for construction sites of 5 acres or greater. All new development or redevelopment, including roadway improvements, will be subject to applicable District criteria for stormwater management facilities.

3.3.7 Infrastructure

Off-site transportation infrastructure improvements are noted in Section 5. New infrastructure necessary to support future projects and facilities, such as the proposed Commercial Launch Complex, are also described in Section. 5.

The Spaceport currently has sufficient water and wastewater capacity for the facilities projected to be needed under this master plan.

3. 4 Regional Assets

3.4.1 Natural Systems

3.4.1.1 Natural Systems Introduction

The CCS is located within one of the most productive and biologically diverse ecosystems in the U.S.: the Merritt Island National Wildlife Refuge (MINWR) and the Canaveral National Seashore (CNS). This natural landscape contains habitat suitable for a number of federally listed Threatened and Endangered Species, including bald eagle (Haliaeetus leucocephalus), Florida scrub jay (Aphelocoma coerulescens), piping plover (Charadrius melodus), caracara (Falconidae), and wood stork (Mycteria americana). Approximately 46% of the land area (less water bodies) of KSC and CCAFS within Merrit Island National Wildlife Refuge (MINWR) is wetlands (approximately 43,500 total acres).

The presence of unique natural resources has made the Cape Canaveral region a prominent outdoor recreation and eco-tourism destination, attracting over half a million visitors per year.

NASA has been successfully balancing space industry activities and the ecologically sensitive environment for decades. Industry needs can be addressed more quickly within CCS because of the NASA, Canaveral Nation Seashore (CNS), and MINWR mitigation plan.

Approximately 7,500 acres of KSC are managed by the U.S. Fish and Wildlife Service (USFWS) and NPS. NASA remains the landowner and retains jurisdiction to remove lands from the MINWR or operate within the CNS as needed to support the space program.

To coordinate between these agencies, NASA involves CNS, MINWR, and CCAFS in master planning and site planning/review processes within the KSC boundaries.

Within the CCAFS, approximately 18,000 acres of upland, estuarine, and marine resources are managed by the DoD and 45th Space Wing Integrated Natural Resources Management Plan (INRMP). The primary future development objective of this plan is to avoid impacts to natural resources, wetlands, and floodplains. Impacts to the environment are documented in the Air Force's Environmental Impact Analysis Process.

The partnership between KSC, CCAFS, MINWR, and CNS has resulted in a 50+ year track record of successfully managing and balancing the needs of the environment with the needs of the space program. The natural assets at MINWR and CNS add value to the Spaceport by providing a natural and protected buffer from incompatible land uses, abundant recreational opportunities, and a unique setting for the future of space exploration and commerce.

The following sections describe the management plans for MINWR and CNS. This Spaceport Master Plan is not intended to supersede or replace those adopted plans. However, Space Florida will coordinate with the applicable agencies when changing market conditions or emerging state and federal priorities necessitate amending the adopted management plan.

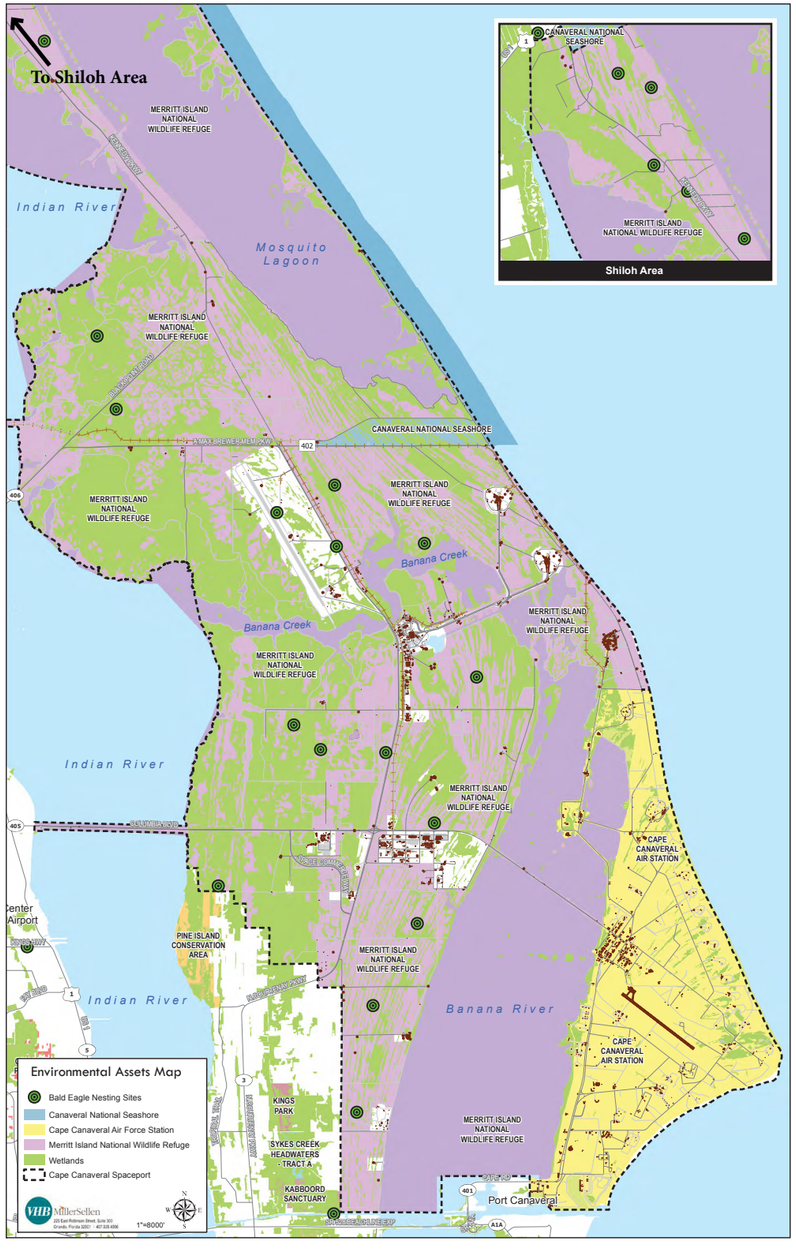


Figure 3.4-1: Environmental Assets

3.4.1.2 Merritt Island National Wildlife Refuge

MINWR was established in 1963 as an overlay of KSC. Land areas within the MINWR are defined as operational buffer for activities occuring at KSC and are designated as either public use or conservation.

MINWR comprises approximately 140,000 acres and includes the Indian River Lagoon, Mosquito Lagoon, and Banana River, some of the most productive estuaries in the country. This Refuge features more species of plants and animals than any other estuary in North America, supporting more than 1,000 species of plants and more than 500 species of fish and wildlife, including 93 federal and state listed species. Ten federally listed threatened and endangered species regularly occupy the refuge.

MINWR is managed by USFWS, according to the 2008 Comprehensive Conservation Plan. This plan outlines the refuge's programs and corresponding resource needs for the next 15 years, as mandated by the National Wildlife Refuge System Improvement Act of 1997. The Plan directs the development of programs to best achieve the Refuge's purpose and goals, emphasizes a landscape approach to land management, establishes a program for collection of habitat and wildlife data, and ensures long-term achievement of Refuge objectives.

3.4.1.3 Canaveral National Seashore

CNS was established by Congress in 1975 and is managed by the NPS, in partnership with NASA. It is approximately 58,000 acres in size, including barrier islands, open lagoon, coastal hammock, pine-flatwoods, and offshore waters. Approximately two-thirds of the acreage is owned by NASA. CNS features 24 miles of undeveloped barrier island ecosystem, the longest stretch of undeveloped beach along Florida's east coast, and features prime habitat for many threatened and endangered species, providing nesting beaches for several thousand protected marine turtles. The Mosquito Lagoon is designated as an estuary of national significance, an outstanding Florida water, and one of the most diverse and productive estuaries in North America. The national seashore also contains cultural resources that reflect human history in the Florida peninsula from 2000 BC to the early 20th century Florida settlement. CNS is managed by the draft 2011

The partnership between KSC, CCAFS, MINWR and CNS has resulted in a 50+ year track record of successfully managing and balancing the needs of the environment with the needs of the space program.

General Management Plan and Environmental Impact Statement, which describes the general path that the NPS would follow in managing the national seashore during the next 20 years and beyond. After evaluating several alternative management directions, as well as a "no-action" alternative, the Plan recommends Alternative B, which "preserves and enhances the natural and historic landscape features associated with the national seashore's eastern Florida coastal barrier island system."

Similar to the intent of the MINWR, the CNS General Management Plan acknowledges that a primary purpose of this section of the national seashore is to support the space program. Therefore, portions of the national seashore may at some point be closed to public access, and future development of visitor use facilities is limited.







3.4.2 Port Canaveral

Port Canaveral is located immediately south of CCAFS and the NOTU. It was officially dedicated in 1953. The Port is a major tourism draw, serving more than 3 million cruise ship passengers in 2011, through Disney, Carnival, and Royal Caribbean International cruise lines.

A 2009 Economic Impact Study by Martin Associates estimated that Port Canaveral cruise, cargo, marina, and real estate activity generates 13,093 total jobs and $648.8 million of direct, induced, and indirect wages and salaries. Businesses providing services at port-owned marine cargo and cruise terminals, marinas, and real estate received approximately $1.1 billion in revenue. Approximately $48 million of state and local taxes were generated by activity at the port.

Recently, Port Canaveral received approval from the U.S. Army Corps of Civil Engineers to widen the existing 400 ft. channel by 100 ft., while deepening it by 2 ft. along its 3.5-mile length. This will enable the port to more easily accommodate large cargo and cruise ships. The FDOT SIS Funding is contributing $24.4 million to the estimated $32.5 million project.

3.4.3 Tourism Assets

3.4.3.1 Ecotourism

Approximately 550,000 visitors per year enjoy the MINWR. Birdwatching, canoeing, kayaking, wildlife photography, waterfowl hunting, and hiking are all popular recreational activities within the Refuge. In addition, an estimated 160,000 anglers a year access the shallow lagoon waters for redfish, seatrout, and other sport fish. Ecotourism can have many economic benefits for the local community, including sales tax, purchase of goods, outdoor recreational equipment and licenses, and demand for lodging and other services.

3.4.3.2 KSC Visitor Complex

The KSC Visitor Complex hosts over 1.5 million visitors every year. Attractions include the KSC Tour, featuring an actual Saturn V moon rocket, Shuttle Launch Experience, the Shuttle Atlantis Museum, 3D IMAX® space films, and the U.S. Astronaut Hall of Fame®, featuring historic spacecraft and the world's largest collection of personal astronaut memorabilia. The Visitor Complex recently unveiled a new visitor entry and plaza, the first phase of a 10-year master plan to improve the guest experience.

3.4.3.3 Space Tourism

As noted in the Market section of the Master Plan, CCS has the potential for 10 Space Tourism launches per year under the Baseline Scenario and 33 launches per year under the Growth Scenario by the year 2021. This new industry represents a new market opportunity for the CCS and surrounding communities. Space Tourism visitors will need training, lodging, provisions, additional recreational opportunities, and other services for a complete experience.

Space Tourism is an emerging market that will further diversify the operations of the CCS.





This represents a strong opportunity for the emerging Space Tourism market and provides a rationale for a private provider to establish launch operations at CCS. No other Spaceport can claim the unique tourism and recreational assets that the CCS features. In addition, the Orlando tourism attractions (Walt Disney World Theme Parks and Resorts; Universal Studios Theme Parks and Resorts; and International Drive attraction area), Daytona attractions (International Speedway, and Daytona Beach), and other popular beach communities are less than an hour drive from the CCS.

Port Canaveral, the KSC Visitor Complex, and the National Wildlife Refuge attract approximately five million visitors per year.

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4. Capability & Opportunity Analysis

The CCS has the most advanced and robust system of space transportation facilities and management in the world. Over the past sixty years, thousands of payloads have been launched from Cape Canaveral. These include every operational Global Positioning System (GPS) satellites, hundreds of communication satellites, national-security remote sensing constellations, and early warning weather systems. While national-defense and exploration missions will continue to dominate the launch landscape, the types of missions are growing increasingly diverse. The diversity of upcoming missions will include providing zero-gravity environments for research, environmental monitoring, space tourism, and small satellite development and deployment. Although the government is still a major investor in the space transportation system, the market is expanding to commercial operators with more diverse objectives and needs.

The CCS has the most advanced and complex system of space transportation facilities and management in the world.

Although the government is still a major investor in the space transportation system, the market is expanding to commercial operators with more diverse objectives and needs.

The chart below describes Florida's existing system and identifies the five definable components of a spaceport system: spaceports, control centers and airspace, payload processing facilities, LVs and space craft, and intermodal connections. This section discusses the capabilities of the components at the CCS.

SYSTEM COMPONENT	DEFINITION	ASSETS
Spaceport	A public gateway to space that typically provides both launch and re-entry sites. In the U.S., launch facilities that serve commercial, non-governmental customers must be licensed by the FAA.	• CCS: commercial facilities at KSC and the 45th Space Wing at CCAFS • FAA licensed launch facilities
Control Centers and Airspace	Centers that coordinate the details for space flight operations. Airspace in space transportation is primarily concerned with ranges, a geographical area used for launching rockets, missiles, and vehicles designed to reach high altitudes.	• LCC at KSC • Morrell Operations Center (MOC) at CCAFS manages the 15-million square mile Eastern Range • Dedicated LV Control Centers for the Atlas V, Delta IV, and Falcon 9
LVs and Spacecraft	A LV is a rocket used to launch a spacecraft or satellite into high altitude or orbit. Typically they are classified as RLVs or Expendable Launch Vehicles (ELVs). Spacecraft are manned or unmanned vehicles that are designed to operate in space to accomplish a specific mission.	• The Atlas V, Delta IV, and the Falcon 9 that launch from CCAFS • Development of the SLS at KSC • Orbital and Suborbital-ready facilities
Payload Processing Facilities	Facilities that prepare payloads (the cargo necessary to complete a mission or flight's purpose) for launch, and processing following the flight.	• 12 major facilities at KSC and CCAFS with the capability to process a variety of payload types and sizes • Astrotech in Titusville
Intermodal Connections	Transportation modes that enable the movement of people and goods to spaceports, including roadways, airports, seaports, and rail lines.	• SIS, a system of key roadway, rail, airport, seaports, and spaceport infrastructure identified by the FDOT

Figure 4.1-1: Spaceport Systems Components

4.1 Cape Canaveral Spaceport

With CCAFS and KSC combined, Cape Canaveral Spaceport currently has seven active and inactive orbital launch complexes and two active runways for horizontal take-offs and landings. The spaceport capabilities of the CCS include the following:

- Vertical launch (orbital, suborbital)
- Horizontal launch (orbital, suborbital)
- Vertical test
- Horizontal test
- UAS test
- Re-entry

KSC is currently NASA's only launch site for human spaceflight. Located on Merritt Island, KSC occupies a site covering 352 square kilometers (219 square miles). Only about 9% of the site can be developed, the rest being managed by the MINWR and CNS. Since 1962, KSC and CCAFS have served as the place of departure for every American-manned mission and hundreds of advanced scientific spacecraft. With the cancellation of the Shuttle Program, KSC is in a state of transition. Of its 823 facilities, 442 were involved with the Shuttle Program as of 2010.

The CCAFS is part of the Air Force Space Command's 45th Space Wing, headquartered at nearby PAFB. Currently, CCAFS conducts launch operations and provides range support for military, civil, and commercial launches. The spaceport has a variety of facilities including three active orbital launch complexes and a Skid Strip with a 3,048-meter (10,000-foot) runway. It also features special vehicle re-entry corridors, operations control center, and launch pads. CCAFS is the operational hub of the Eastern Range, which covers over 15 million square miles and has been in operation since 1954.

4.2 Launch Vehicle Facilities

With the conclusion of the Shuttle Program there are only three remaining active SLCs at CCS and three additional launch facilities are in-development. The three pads that are currently active are SLC-37, SLC-40, and SLC-41. Space Florida's licensed launch facilities, SLC-36 and SLC-46, are currently in re-development to support a variety of customers. NASA is in the process of reconfiguring LC-39B for the SLS program. LC-39A has been decommissioned and has been identified as available for use by commercial customers. Space Florida has also initiated plans for development of the infrastructure for a commercial launch complex at Shiloh (see Figure 4.2-1).

Figure 4.2-2 identifies the launch vehicles currently being launched from the CCS, as well as those planned to be launched in the near future. Following retirement of the Space Shuttle in 2011, no orbital launches are expected from KSC until about 2017, when the SLS is introduced. This Shuttle-derived vehicle will be capable of sending 70 metric tons to low Earth orbit and will consist of a version for cargo and a version that will carry the seven-person Orion-Multi-Purpose Crew Vehicle (MPCV). Other future vertical launch missions for the CCS may include the SpaceX Falcon Heavy, the ATK and EADS Astrium Liberty vehicle, and other small launch vehicles including Athena, Minotaur, SWORDS, Masten Space Systems, and new nano satellite launchers.

CAPABILITY ANALYSIS

Three orbital vehicles are expected to dominate activity at CCAFS during the next few years. These include the Atlas V, Delta IV, and the SpaceX Falcon family of launch vehicles. The Atlas V and Delta IV were developed by the United Launch Alliance (ULA) in the late 1990s under the Air Force's Evolved Expendable Launch Vehicle (EELV) Program, and entered service in 2002. Eighteen versions of the Atlas V are theoretically available, though only nine have actually been used in the past decade. Five versions of the Delta IV are available, and all versions have flown. The Delta IV launches from SLC-37 and the Atlas V launches from SLC-41. The Falcon 9 has launched successfully and is the first commercial re-supplier to service the ISS. The Falcon 9 is launched from SLC-40. The Falcon Heavy is in development with its first scheduled flight from Vandenberg AFB in 2014. Additionally, new launch vehicles are being developed that will become increasingly dominant at the CCS within the next decade.

Other vehicles are also flown from Florida, albeit rarely. Among these are the Pegasus XL, the air launched small-capacity vehicle operated by Orbital Sciences Corporation and the Minotaur vehicle, also offered by Orbital. The Pegasus XL is carried by an L-1011 TriStar aircraft that can take off from either the SLF at KSC or the CCAFS Skid Strip. Lockheed Martin Commercial Launch Services plans to provide an upgraded version of its Athena small- and medium-class vehicle, and this system may be launched from SLC-46 . The Minotaur can launch from Space Florida's SLC-46, which may serve as a launch complex for Athena in the future.

A variety of Suborbital Reusable Vehicles (SRVs) are expected to be introduced in the near future. California-based XCOR Aerospace is expected to manufacture and operate its Lynx vehicle from CCS during the next few years. Space Florida would welcome Virgin Galactic (which operates the SpaceShipTwo) to operate its vehicles from sites in Florida. For example, Cecil Spaceport and KSC's SLF are well suited as locations for the operation of suborbital vehicles that launch and land horizontally. Vertically launched suborbital vehicles, such as those offered by Garvey Spacecraft Corporation, and Masten Space Systems, may operate routinely from Florida.

The Eastern Range has the potential to serve a great number of launch vehicles and spacecraft. Currently, facilities at KSC and CCAFS can support small- to heavy-class orbital launch vehicles.

At CCAFS, there are currently five orbital SLCs (both active and inactive).

- SLC-36 was built by NASA to support NASA's Atlas/Centaur program in the 1960s; although most of its associated structures have been demolished, there are still utilities available at the pads. Space Florida holds the real property license to the site and is prepared to develop it for private companies using liquid-propellant vehicles.
- SLC-37 is currently used to support ULA Delta IV launches.
- SLC-40 is currently used to support SpaceX Falcon 9 launches.
- SLC-41is currently used to support ULA Atlas V launches. It was originally built to support the Titan III/IV program with its first launch in 1965. It was modified to support the Atlas V in the early 2000s with the first Atlas V launch in 2002. Modifications are being designed to provide Commercial Crew capabilities from SLC-41.
- SLC-46 was designed to support the U.S. Navy's Trident II ballistic missile efforts. Spaceport Florida supported launches of the Athena I and II from SLC-46 in 1998/99. Currently the complex could support solid-propellant launch vehicles such as Orbital Sciences Corporation's Minotaur vehicle, and the Navy maintains the capability of resuming Trident missile testing as required. The NASA Orion MPCV Ascent Abort test is planned to be flown from SLC-46 in 2018.

At KSC, there are two NASA LCs and a Space Florida proposed LC.

- LC-39A has been decommissioned but has been identified as available for use by commercial customers.
- LC-39B is in the process of being outfitted for the SLS.
- Space Florida has proposed to develop a 200 acre commercial launch complex on current KSC property north of SR-406 and the Haulover Canal on a site near the former citrus community of Shiloh. The Shiloh Launch Complex is expected to accommodate the development of launch and associated vehicle processing/integration facilities for one, and potentially two, commercial launch providers operating dedicated pad areas independently.

A summary of the planned CCS LCs and vehicle programs is provided in Figure 4.2-1.

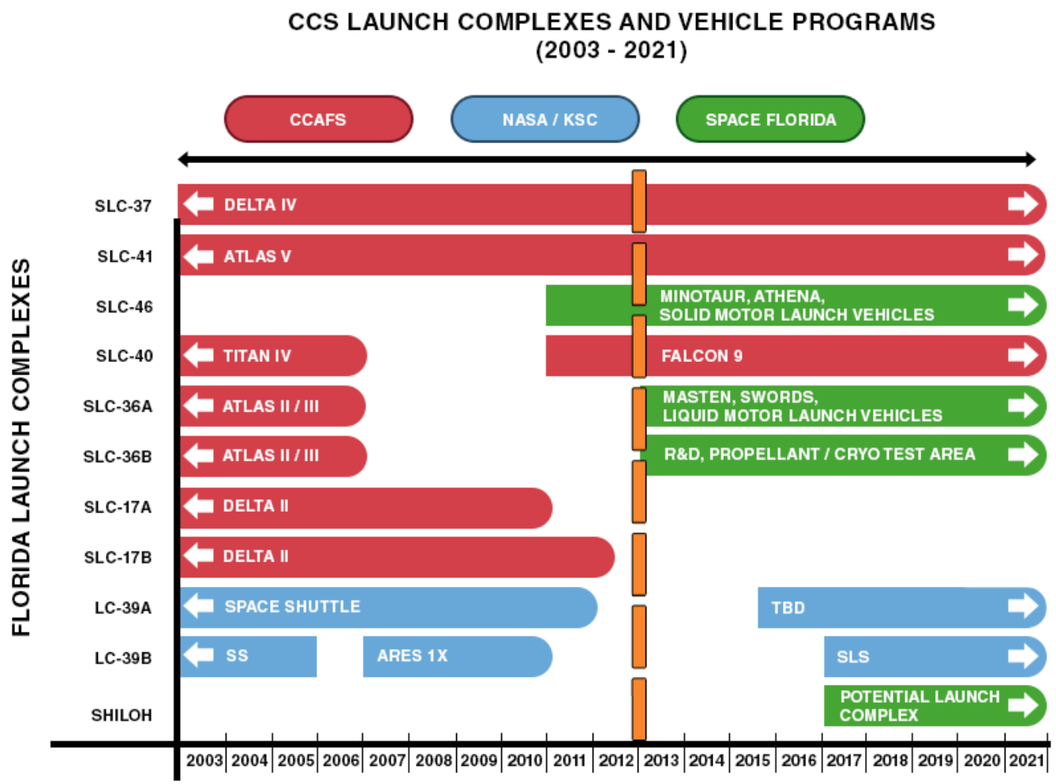


Figure 4.2-1: CCS Launch Complexes and Launch Vehicle Programs

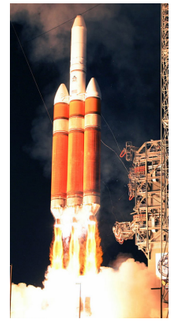
	SMALL				INTERMEDIATE		HEAVY			
										
Vehicle	**Minotaur IV**	**Taurus I**	**Athena IIC**	**Pegasus XL**	**Atlas V**	**Delta IV**	**Falcon 9**	**Delta IVH**	**SLS**	**FALCON 9H**
Company	Orbital	Orbital	LMCO	Orbital	LMCLS/ULA	BLS/ULA	SpaceX	BLS/ULA	NASA	Space X
First Launch	2010	1994		1990	2002	2002	2010	2004	2017	TBD
Stages	4	4	3	3-4	2	2	2	2	3	2
Capacity to LEO kg(lb)	1735 (3830)	1320 (2910)	2065 (4550)	440 (970)	12,500 (27,558) to 20,520 (45,238)	9,390 (20,702) to 13,360 (29,440)	10,450 (23,050)	22,977 (50,646)	70.000 - 129,000 (154,000 - 286,000) (50,646)	53,000 (116,600)
Capacity to SSO kg(lb)	N/A	1050 (2315)	1165 (2570)	190 (420)	7,095 (15,642) to 14,096 (31,076)	7,510 (16,550) to 11,300 (24,920)	8,560 (18,870)	22,560 (49,740)		
Capacity to GTO kg(lb)	N/A	445 (981)	593 (1310)	N/A	4,750 (10,450) to 8,900 (19,580)	4,541 (10,012) to 7,020 (15,470)	4,500 (10,000)	13,399 (29,540)		21,200 (46,738)
Launch Sites	CCAFS VAFB Kodiak Wallops	VAFB	CCAFS Kodiak	Various (air-launched)	CCAFS VAFB	CCAFS VAFB	CCAFS Kwajalein	CCAFS VAFB	KSC	CCAFS VAFB

Figure 4.2-2: CCS Available ELV & Payload Performance (Typical)

GTO - Geostationary transfer orbit
SSO - Sun-synchronous orbit
LEO - Low Earth orbit

4.2.1 Launch Vehicle Availability

The last 10 years (2003-2012) of launch history for the Delta II, Delta IV, Atlas V and Space Shuttle are shown in the Figure 4.2-3. The maximum historical launch rate between 1999 and 2008 for the Delta II, Space Shuttle, Atlas V, and Delta IV launch vehicles is summarized in Figure 4.2-4, demonstrating CCS's historical launch capacity.

In the mid 1990s, there were over 35 launches a year from the Cape. While it is useful to review the historical capacity of the active launch vehicle programs in Florida, it should be noted that this information does not provide the full picture of Florida's capacity to support the projected space launch market. Since the conclusion and deactivation of the Delta II and Space Shuttle launch complexes, the number of launches from the CCS have dropped. However, with additional launch complexes and shortened turn-around times, the number of launches could significantly increase. Moreover, the Eastern Range capacity is a function of range turn-around time. The Eastern Range, operated by the 45th Space Wing, has demonstrated the capability to routinely reconfigure the range between different launch vehicles in 48 hours.

Historically, the Range can reconfigure from one launch vehicle to another in less than 48 hours.

In December 2007, when NASA's STS-122 space shuttle mission was scrubbed, the range successfully reconfigured for Atlas V launch of an NRO payload in less than 36 hours. As a result, the theoretical throughput of the Eastern Range is well over 50 launches per year. While many perceive a capacity limitation to launches from the Eastern Range, the real capacity limitation comes from the launch vehicles, not the Range. For example, in the mid 1990s, there were five different launch systems operating at the Cape, each with two launch pads. Today, there are currently only three operational launch systems, each with a single pad and missions scheduled in the near term (SLC -37, 40, and 41).

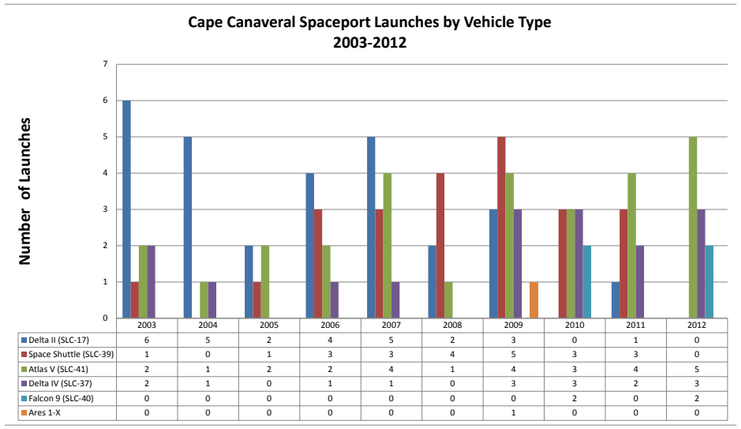


Figure 4.2-3: Annual Vehicle Launches

Different satellites have different orbital requirements. While a large number of satellites can reach their desired orbit from the Eastern Range, certain satellites are designed to operate in orbits unattainable from the Eastern Range without significant difficulties and must be launched from other locations.

The 45th Space Wing has streamlined processes and made significant organizational changes to increase flexibility and support for all operations at CCAFS. The Wing has held multiple events to streamline processes and improve transparency in Safety Processes, Range Scheduling, Facility Allocation, and cost accounting. Moreover, the licensing of SLC-40 to SpaceX and the licensing of SLC-36 and SLC-46 to Space Florida communicates clearly that the Eastern Range is committed to supporting new programs to the greatest extent that is authorized.

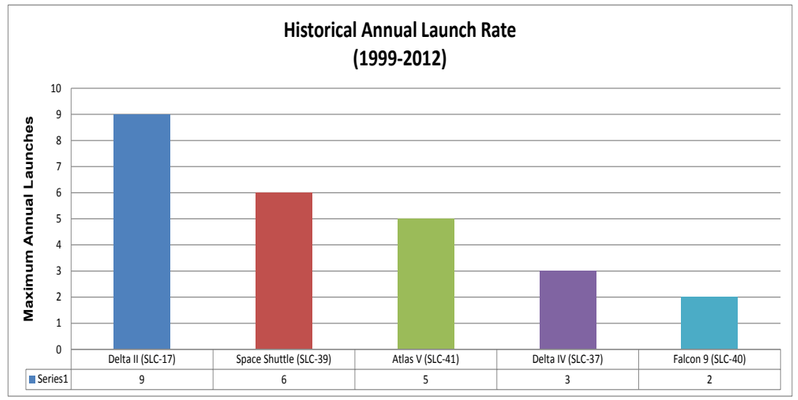


Figure 4.2-4: Historical Annual LV Throughput Capacity

Launch Vehicle	Current**	Potential*
Atlas V	6	8
Delta IV	3	8
Falcon 9	6	9-12
Total	15	25+

*With Substantial Changes Infrastructure/Processes

** Based on Launch Manifest

Figure 4.2-5: Annual Launch Rate Potential for Eastern Range

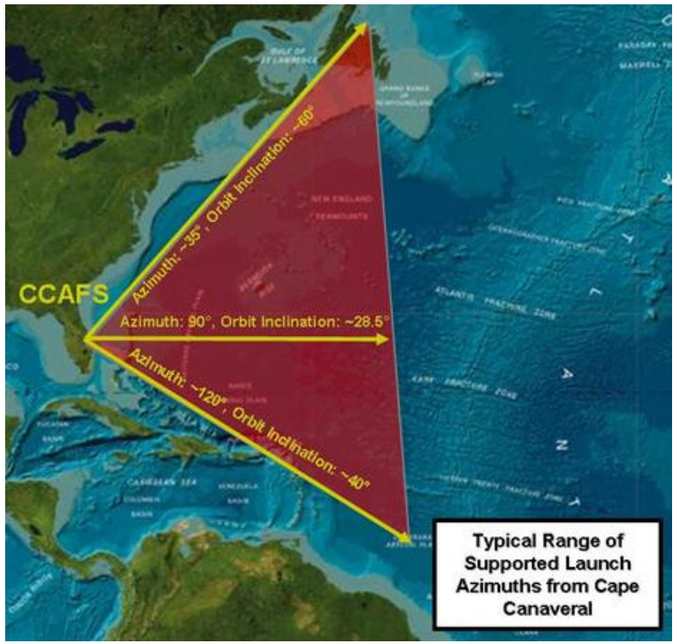


Figure 4.2-6: Eastern Range Launch Azimuths

Launch Vehicles	Destination	Launch/Takeoff	Process	Return
Atlas V	Orbit	Vertical	Vertical	Sea
Athena Ic/IIc	Orbit	Vertical	Vertical	Sea
Delta IV	Orbit	Horizontal	Horizontal/Vertical	Sea
Falcon 9	Orbit	Vertical	Horizontal/Vertical	Sea
Masten	Sub-Orbit	Vertical	Vertical	Return to Launch Site
SuperStrypi	Orbit	Rail	Horizontal	Sea
UASs	Pt-Pt	Horizontal	Horizontal	Return to Launch Site / Destination
StratoLaunch	Orbit	Horizontal	Horizontal	Return to Launch Site
Minotaur	Orbit	Horizontal	Horizontal/Vertical	Sea
StarFighters	Pt-Pt	Horizontal	Horizontal	Return to Launch Site / Destination
Pegasus	Orbit	Horizontal	Horizontal	Return to Launch Site
Trident	Sub-Orbit	Vertical	Vertical	Sea

Figure 4.2-7: Typical Eastern Range Users

4.3 Payload Processing Facilities

Existing capabilities for processing commercial and non-commercial payloads are adequate to meet the future forecasted demand.

The CCS is home to thirteen major payload processing facilities:

- Operations and Checkout (O&C) Building
- Multi-Payload Processing Facility (MPPF)
- Orbiter Processing Facility 1 (OPF-1)
- Orbiter Processing Facility 2 (OPF-2)
- Commercial Crew and Cargo Processing Facility (C3PF)
- Payload Hazardous Servicing Facility (PHSF)
- Space Station Processing Facility (SSPF)
- Large Processing Facility (LPF)
- SpaceX Payload Integration and Encapsulation Facility (PIEF)
- Eastern Processing Facility (EPF)
- CCAFS Satellite Processing and Storage Area
- Space Life Sciences Laboratory (SLSL)
- Astrotech, Titusville

The Payload User Guides for the Atlas V, Delta IV, and Falcon 9 each identify potential facilities for use when processing payloads for their vehicles. Located in Titusville, Florida, Astrotech supports commercial payload processing for KSC and CCAFS. The company-owned, state-of-the-art facilities support hazardous and non-hazardous spacecraft and associated payload fairing processing. Since inception, Astrotech has successfully processed more than 300 government and commercial spacecraft.

Astrotech can accommodate processing five full-service (14-week duration) missions simultaneously, resulting in an annual throughput of 15 full-service missions, with significantly more throughput capacity for shorter 4-week duration missions. Missions processed at Astrotech have flown on Atlas II, III, and V, Delta II, Delta III, and IV as well as Space Shuttle launch vehicles.

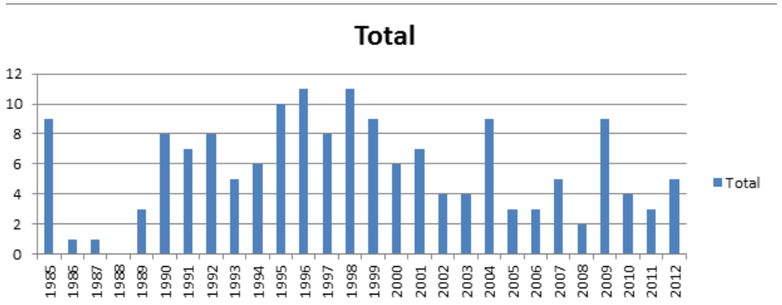


Figure 4.3-1: Astrotech Payloads Processed Annually SOURCE: ASTROTECH

Florida's worldwide share of global commerical orbital launches, based on data from the last 10 years, is approximately 12%. Assuming that Florida continues to support 12% of the global commercial market, Florida's projected market share will be about three commercial launches annually over the next 10 years. Since Astrotech has significant excess capacity due to the Delta II program termination, they are equipped to meet all forseeable market demands.



4.4 CCS Airspace and Control Centers

Currently all existing LCCs in Florida are at CCAFS and KSC. Commercial launch service providers operate control centers of their own. ULA operates an Atlas V Spaceflight Operations Center (ASOC) for Atlas V launches from SLC-41 and a Delta Operations Center near SLC-37 for Delta IV launches. SpaceX leases a launch control center from Space Florida on Air Force property just outside of the gate of CCAFS used for Falcon 9 launches from SLC-40.

Within KSC, LC-39 features NASA's four-story LCC that contains a number of essential facilities, such as the Central Data Subsystem (CDS) computers, four firing rooms, telemetry, radio frequency tracking, instrumentation, and data reduction equipment. NASA has developed plans to allow up to four commercial launch providers to utilize one of the firing rooms as a control center.

The Morrell Operations Center (MOC) at CCAFS is the hub of Eastern Range operations. The MOC serves as the command and control center for the array of instrumentation systems along the range that tracks launch vehicles, monitors their performance, and sends destruct signals if necessary.

These control centers must interact constantly with the state's aviation system. Florida has 131 airports, including 19 commercial service airports that handle about 120 million passengers every year. Additionally, the state has the most large hub airports of any

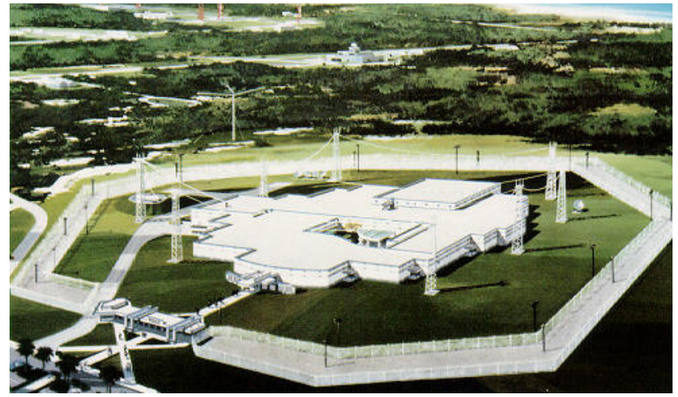


Figure 4.4-1Morrell Operations Center (MOC), CCAFS

state in the nation, and over 2,000 international departures occur every week. A large hub airport is defined as a commercial service airport that has at least 1% or more of the total U.S. annual passenger boardings.

Airspace around the CCS has been activated frequently over the years to enable space flights launching from KSC and CCAFS. The Eastern Range coordinates the restricted airspace activation with the Federal Aviation Administration as needed to support launches from the Cape. Florida's Air Route Traffic Control Centers include JAX Center in Jacksonville and the Miami Center. These Centers are responsible for controlling aircraft at high altitudes between airport approaches and departures. Figure 4.4-2, shows the different layers of restriction of airspace immediately surrounding the Cape.

The Eastern Range has supported over 3,400 launch missions over the past 50 years, and many of them have been commercial payloads. From January-September 2009, the Eastern Range supported 16 major launch operations in a nine-month period. In the mid 1990s, there were over 35 launches a year from the Cape.

There are presently no capacity limitations for the Eastern Range to support launch operations in the foreseeable future.

As the CCS transitions to the new multiuser commercial and government spaceport capable of supporting the following variety of space launch systems new Range/ FAA approvals and processes will need to be established to accommodate the multiple users and provide the required safety. In order to fulfill its commitment to attracting and expanding the next generation of space industry businesses, Space Florida is working closely with the 45th Space Wing, the FAA and NASA to identify and improve any existing physical, operational, or administrative restrictions that may exist.

To reduce the overall time for a new customer to initiate their program in Florida, Space Florida has been focused on securing access to previously disturbed launch sites that can be developed for future commercial launch operations. By working with the Air Force and obtaining the proper and generic licensing for the launch site prior to having a specific launch operator, Space Florida is able to provide future launch operators with schedule and cost structure options in Florida that are more competitive than other locations. Moreover, Space Florida is also pursuing

the possibility of developing a separate FAA-licensed spaceport near the former citrus community of Shiloh to support future launch operators that wish to operate independently of the existing federal infrastructure and range.

Space Florida's strategic spaceport plans, as well as legislative and business development plans, are designed to establish Florida as the clear choice for international commercial space services in the world's commercial space marketplace.

Working together Space Florida and the Eastern Range are providing tools, services, and infrastructure to support new programs and help customers navigate the requirements of the Eastern Range that will ultimately reduce program schedule and cost.



Figure 4.4-2: Cape Canaveral Air Space restrictions
Note: R2935 will only be activated for justifiable launch operations as determined by ranger safety.

4.5 Horizontal Launch and Landing Facilities

The Suborbital Launch market is an emerging market with multiple companies developing capabilities for suborbital and eventually orbital flight. Both the Baseline and the Growth Scenarios for Suborbital Launches indicate that the earliest that these launches would occur from the CCS would be in 2014. At that time, a total of 11 suborbital launches are anticipated to occur per year. If all of those launches occur from the CCS, it would mean an average of one every 33 days. The Baseline Scenario shows the number of suborbital launches rising to 14 in 2021. The Growth Scenario shows the number of suborbital launches rising to a total of 41 suborbital launches by 2021, or one launch on average every nine days. Suborbital flights would typically would last up to two hours in duration with two to three days of pre-flight training for passengers.

Currently, each suborbital launch could have a payload of up to 600 kg or up to six passengers. This payload capacity is likely to increase somewhat, but not substantially, over the planning period. There is more than adequate payload processing capacity on the CCS to accommodate the anticipated payloads associated with suborbital launches. Training facilities for six or more passengers for two to three days at a time can also be accommodated at facilities at the CCS.

The ideal facility to support this emerging market of RLVS and UAS's is the Shuttle Landing Facility (SLF). In June 2013, NASA announced its selection of Space Florida to maintain and operate the SLF. The SLF is 15,000 ft. long by 300 ft. wide and could more than accommodate the 41 launches forecast for 2021 under the Growth Scenario. As Space Florida develops the SLF to serve the horizontal launch and landing market, the Unmanned Aerial System (UAS) market, and the aviation research and test markets, additional improvements and facilities to support those markets will be required. Facilities such as a new taxiway, additional hangar facilities, payload processing facilities, fuel storage and fueling areas, passenger training facilities, communciations upgrades, security zones, and customer viewing centers will be required.

4.6 UAS Global Leadership

> "The SLF provides a unique capability for new and expanding suborbital launch providers, unmanned aerial vehicle operators and other aerospace-related businesses to thrive in a location that maximizes the resources of the Space Center and Eastern Range operations. We look forward to working with NASA-KSC leadership in the coming months to finalize the details of this transaction in a way that will provide the greatest benefit to incoming commercial aerospace businesses." Space Florida President Frank DiBello.

The demand for UAS technology is migrating from military and law enforcement agencies to now include commercial enterprises, public institutions and non-defense government agencies. The potential benefits that UAV/UASs can bring to areas such as disaster relief, imaging, resource monitoring, and law enforcement has resulted in an accelerating interest in the UAS market.

The February 2013 GAO Report of the Unmanned Aircraft Systems Industry indicates there is a total UAS global market of $89 billion over the next ten years with $28.5 billion being in research. Teal Group's 2013 market study estimates that UAV spending will more than double over the next ten years from the current worldwide annual expenditures of $5.2 billion to $11.6 billion. The United States is shown capturing 62% of the research market (over $17 billion) in the 10 year period.

Integration of UASs into the FAA National Air Space (NAS) system and the ability to support the needs and requirements of the UAS industry are keys for the United States to remain the global leader in UAV/UAS technology.

Congress' 2012 FAA Reauthorization Act contained a 2015 date for the development of an integration plan for UAV/UAS into the National Air Space (NAS). A key step in that process was the release of a request for proposal (RFP) in support of establishing six test sites to study the integration of UAV/UAS into the NAS.

The UAS pilot program mandates the FAA select six test sites to do the following:

- Safely designate airspace for integrated manned and unmanned flight operations in the national airspace system
- Develop certification standards and air traffic requirements for unmanned flight operations at test ranges
- Coordinate with and leverage the resources of the NASA and the Department of Defense
- Address both civil and public unmanned aircraft systems
- Ensure that the program is coordinated with the Next Generation Air Transportation System
- Ensure the safety of unmanned aircraft systems and related navigation procedures before they are integrated into the national airspace system.

In February 2013 the FAA released the test site RFP for supporting the FAA's safe, prudent integration of UAS technologies into National Air Space. Space Florida responded to the FAA UAS Test Site solicitation in May 2013. Florida's state-wide UAS capabilities include ranges and air space, simulation and research centers, unique FAA approved next generation systems, university curriculums and industry partners. FAA selection is advertised for December 2013. Final selection will include FAA Site verification visits, formalizing agreements & procedures.

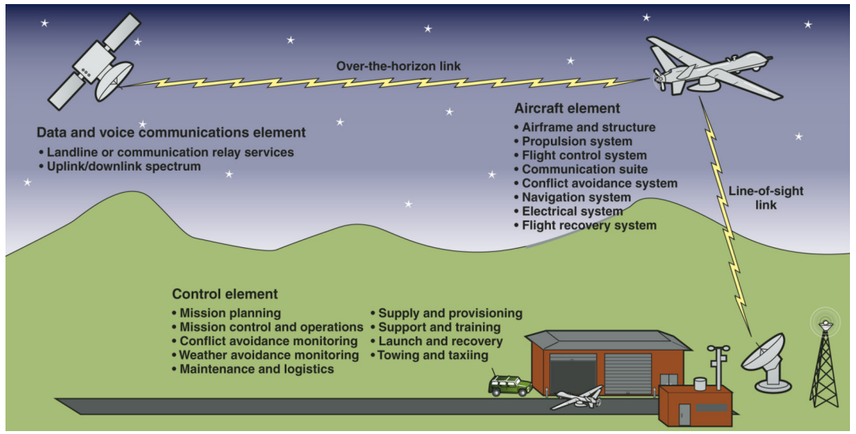


Figure 4.6-1: Conceptual Rendering of Unmanned Aircraft System SOURCE: GAO AND NASA

The elements and infrastructure needed for deploying and testing of the unmanned aircraft systems is depicted in Figure 4.6-1. Florida's state-wide capabilities includes ranges & air space, simulation & research centers, unique FAA approved next generation systems, university curriculums and industry partners. The SLF and the associated facilities and systems on the CCS provide the capabilities and resources necessary to meet the needs and the demands of the growing commercial unmanned aircraft systems market. The CCS is positioned to play a key role in assuring that the United States continues to be the global leader in this market.

The potential economic impact for Florida as reported by the Association for Unmanned Vehicle Systems International, AUVSI, in "The Economic Impact of Unmanned Aircraft Systems Integration In The United States" is shown in Figure 4.6-2 Projected vFlorida Detailed UAS Economic Impact.

Year	Direct Employment	Total Employment Impact	Total Direct Spending ($M)	Total Economic Impact ($M)	Total State Taxes ($K)	Percent Change Over Previous
2015	557	1084	$54.09	$105.35	$0.00	
2016	1115	2167	$108.18	$210.70	$0.00	100%
2017	1672	3251	$162.27	$316.05	$0.00	50%
2018	1756	3414	$170.38	$331.86	$0.00	5%
2019	1844	3584	$178.90	$348.45	$0.00	5%
2020	1936	3763	$187.85	$365.87	$0.00	5%
2021	2033	3952	$197.24	$384.16	$0.00	5%
2022	2135	4149	$207.10	$403.37	$0.00	5%
2023	2241	4357	$217.46	$423.54	$0.00	5%
2024	2353	4574	$228.33	$444.72	$0.00	5%
2025	2471	4803	$239.75	$466.95	$0.00	5%

Figure 4.6-2: Projected Florida Detailed UAS Economic Impact SOURCE: AUVSI

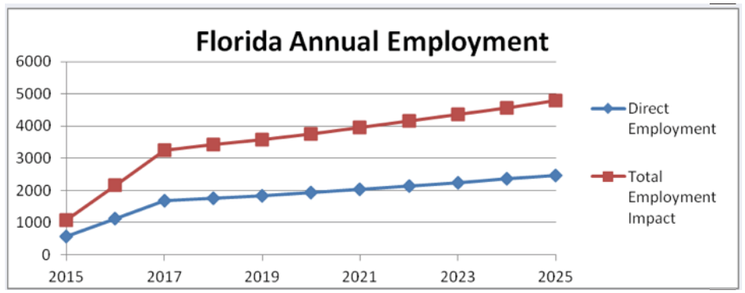


Figure 4.6-3: Projected Florida Annual Employment Impact SOURCE: AUVSI

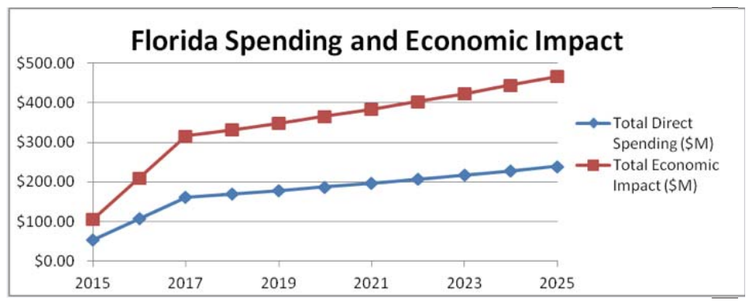


Figure 4.6-4: Projected Florida Spending and Economic Impact SOURCE: AUVSI

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5. CCS Development Plan

The CCS Development Plan provides the capital improvement planning for the infrastructure necessary to address the needs of the emerging spaceport markets discussed in Section 2. Moreover, this plan meets the requirements set forth in Sec. 331.360 for Space Florida to develop a "master plan for expansion and modernization of space transportation facilities within spaceport territories, as defined in Sec. 331.303. The plan shall contain recommended projects to meet current and future commercial, national, and state space transportation requirements." These projects include Space Florida initiatives to support the emerging market needs and includes eligible spaceport discretionary capacity improvement projects specifically requested for matching grants from the FDOT.

FDOT may fund space transportation projects per Sec. 331.360, Florida Statutes.

- (3) …Space Florida shall submit the spaceport master plan to the Department of Transportation, and such plan may be included within the department's 5-year work program of qualifying aerospace discretionary capacity improvement under subsection (4). The plan shall identify appropriate funding levels and include recommendations on appropriate sources of revenue that may be developed to contribute to the State Transportation Trust Fund.
- (4) Subject to the availability of appropriated funds, the department may participate in the capital cost of eligible spaceport discretionary capacity improvement projects. The annual legislative budget request shall be based on the proposed funding requested for approved spaceport discretionary capacity improvement projects.

5.1 CCS Master Plan Goals and Objectives

The CCS Master Plan goals and objectives were developed to flow from and support the goals stated in Florida's Spaceport System Plan (see Figure 5.1-1).

The Florida Spaceport System Plan goals are to:

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

From these overarching system plan goals, the following goals will enable the CCS to serve growing markets.

1. Create a Spaceport that provides a positive economic benefit to the People of Florida.
2. Ensure responsible environmental stewardship and an efficient, safe and secure transportation system at the Spaceport.

Each goal has specific objectives for infrastructure investment.

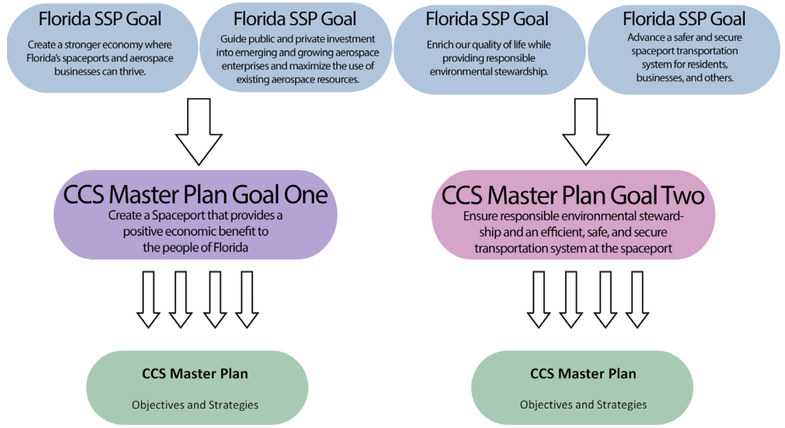


Figure 5.1-1: CCS Master Plan Goals Development

Goal 1: Create a Spaceport that provides a positive economic benefit for the People of Florida.

Objective 1.1: Advance Commercial Heavy Lift

Strategies:

a. Support infrastructure development to enable Commercial Heavy Lift development and operations.

Objective 1.2: Support Commercial Crew & Cargo

Strategies:

a. Partner with NASA and the 45th Space Wing to provide access to existing infrastructure.

b. Partner with industry to repurpose existing infrastructure to support commercial Crew and Cargo initiatives.

c. Partner with industry, NASA and the 45th Space Wing to develop new infrastructure to support Commercial Crew and Cargo initiatives.

Objective 1.3: Attract New Emerging Space Systems

Strategies:

a. Repurpose commercial spacecraft, cargo processing, and spaceport facilities for public and private sector customers.

b. Incentivize development of the next generation aerospace industry through:
   - Active recruitment of suppliers, developers and manufacturers.
   - Integration with Florida's Universities
   - Commercialization of the Space Life Sciences Lab
   - Development of Exploration Park

c. Explore options to develop new commercial launch complex in the vicinity of northern Kennedy Space Center.

d. Continue to modernize LC-36 and LC-46 to support new emerging missions.

e. Develop, market, and field engine test capability at the CCS.

Objective 1.4: Expand Horizontal Launch and Landing Capacity

Strategies:

a. Partner with industry and NASA to develop the Shuttle Landing Facility into a market-facing asset for new horizontal launch and landing space missions.

b. Expand Unmanned Aerial System (UAS) capabilities by providing appropriate infrastructure necessary to support operations.

c. Support low volume, high demand aerospace research and development.

Objective 1.5: Expand Statewide Space Capacity

Strategies:

a. Participate in initiatives to ensure CCS investments are supported by statewide investments in infrastructure.

b. Create a cost-competitive, responsive and reliable operating environment that allows industry to execute their business plans.

c. Provide infrastructure for a small and medium-lift launch capability in support of commercial and academia customers.

d. Support initiatives to right-size existing infrastructure, based on market demand, to create a cost competitive business friendly environment.

e. Add new capabilities in partnership with the 45th Space Wing, NASA and industry to existing facilities to accommodate customer needs in close proximity to launch sites, such as payload processing, research and development and manufacturing.

f. Eliminate barriers to the transportation of supply chain components required to serve the Spaceport.

g. Aggressively market this launch complex to attract and recruit one or more commercial payload and launch providers.



Figure 5.1-2: Space Florida Objectives

Goal 2: Ensure responsible environmental stewardship and an efficient, safe and secure transportation system at the Spaceport.

Objective 2.1: Utilize the unique market position of the CCS to promote space tourism.

Strategies:

a. Collaborate with commercial space tourism operators, the KSC Visitors Center, Port Canaveral, Merritt Island National Wildlife Refuge and the CNS to identify market opportunities that capture and build upon the synergy between ecotourism and space tourism and research.

Objective 2.2: Develop an efficient and competitive organizational structure to market the CCS.

Strategies:

a. Establish a formalized decision-making structure for planning and programming projects to support infrastructure developments at the CCS.

b. Utilize Space Florida as an initial "clearinghouse" and coordinating entity to provide a "clear path" for commercial space and related activities.

c. Utilize Space Florida's unique (Special District) financial capabilities to develop infrastructure that enable operations at the Cape.

d. Explore options to organize and resource Space Florida to operate as a fully functioning sapceport authority to coordinate operations at the CCS.

Objective 2.3: Environmental Stewardship

Strategies:

a. Obtain environmental permits necessary to balance commercial spaceport operations with environmental stewardship goals.

b. Continue to coordinate with environmental regulatory agencies to ensure that environmental stewardship is a key factor in all future Spaceport development.

5.2 Recommended Projects

To realize the goals of the CCS Master Plan, Space Florida annually requests input from federal and state partners, industry, and its various stakeholders. This annual "Call for Projects" enables Space Florida to position infrastructure investment to enable its mission to foster the growth and development of a sustainable and world-leading space industry in Florida. This master plan lists projects that will benefit from state infrastructure investment to "meet current and future commercial, national, and state space transportation requirements" (331.360 f.s.). Space Florida has identified the following five infrastructure investment areas:

1. Advance Commercial Heavy Lift
2. Support Commercial Crew and Cargo
3. Attract New and Emerging Space Systems
4. Expand Horizontal Launch and Landing Capacity
5. Expand Space Launch Capacity Statewide

Figure 5.2-1 is a list of representative projects that have been submitted by partners and stakeholders for funding Fiscal Years 2014 and 2015. It important to note that all projects currently funded by Space Florida through the Florida DOT grants require at least a 50% match of non-state funds. Each year, specific projects are approved by the Space Florida Board of Directors.

Advance Commercial Heavy Lift

This initiative includes infrastructure investment to enable the development, processing, and launching of commercial heavy lift launch vehicles for travel to and beyond LEO from Florida. Projects identified for inclusion and possible funding in the plan include:

- SpaceX development of heavy lift capabilities at the CCS
- ATK development of heavy lift capabilities at the VAB, LCC and LC-39

Support Commercial Crew and Cargo

This initiative includes infrastructure investment to support NASA's selected providers for the Commercial Crew Program to accommodate human space flight activities. It also includes infrastructure investment for future projects to enable commercial crew and cargo infrastructure development at the CCS. Projects identified for inclusion and possible funding in the plan include the following:

- Space Florida's repurposing of the Commercial Crew and Cargo Processing Facility (aka OPF-3) to enable commercial operations.
- Space Florida's repurposing of the Processing Control Center (PCC) in support of commercial operations at the CCS.
- SpaceX Commercial Heavy Lift Crew and Cargo modifications
- United Launch Alliance LC-41 Commercial Crew Infrastructure
- Sierra Nevada Corporation Launch Operations Facility

Attract New and Emerging Space Systems

This initiative includes infrastructure investment for new and emerging space access providers to provide statewide cargo processing, vehicle assembly, and range capabilities for civil and private sector customers. Projects identified for inclusion and possible funding in the plan include the following:

- Small Launch Vehicle Infrastructure at SLC-36 and 46
- Repurposing OPF-1 in support of Project Coyote
- Space Florida Launch Site Infrastructure, Shiloh
- SpaceX Commercial General Purpose Storage Facility SLC-40
- Exploration Park Phase II Development

Expand Horizontal Launch and Landing Capacity

This initiative includes infrastructure and planning for commercial horizontal launch and landing at the SLF to include infrastructure investment for new and emerging hangars and facilities. Projects identified for inclusion and possible funding in the plan include the following:

Project Site	Identified Projects
Advance Commercial Heavy Lift Capability	
SLC-40	Commercial Heavy Lift Launch Pad Modifications
SLC-40	Commercial Heavy Lift Hangar/Processing Facility
SLC-40	Heavy Lift Transporter Erector
SLC-40	Commercial Payload Processing Facility
SLC-40	Commercial Heavy Lift Flame Duct
SLC-40	Commercial General Purpose Storage Facility
LC-39A/B	LC-39B Launch Infrastructure
LC-39A/B	LCC to LC 39 A/B Infrastructure
LC-39A/B	LC-39A Launch Infrastructure
Support Commercial Crew & Cargo	
C3PF	Commercial Crew & Cargo Processing Facility
PCC	Processing & Control Center
Ex Park	Spacecraft Processing Facility
VAB	High Bay 1 Vehicle Processing
SLC-41	Commercial Crew Infrastructure
Attract New Emerging Space Systems	
OPF-1	Project Coyote
SLC-36	Small Launch Vehicle Infrastructure
SLC-46	Small Launch Vehicle Infrastructure
CLC	Shiloh - Commercial Launch Complex (CLC)
Ex Park	Exploration Park Phase II
Expand Horizontal Launch and Landing Capacity	
SLF	XCOR Launch OPS Hangar (LOPHT) Infrastructure
SLF	Project Olympic

Figure 5.2-1: CCS FY14/15 Eligible Projects

Note: Projects are not in priority order.

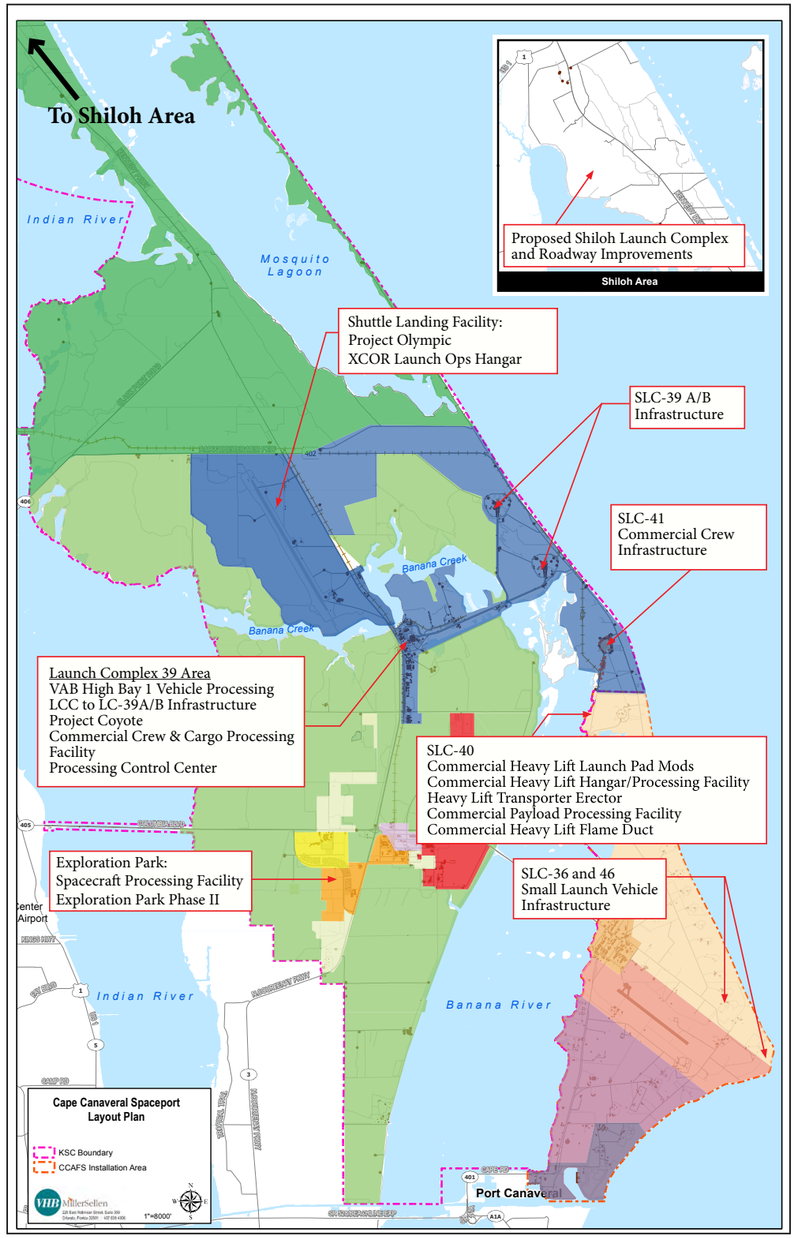


Figure 5.2-2: CCS Land Use and Development Plan with FY 14/15 Submitted Projects
Note: Updated Annually

- Common Use Infrastructure (Aprons, Taxiways, Hangars, Utility Expansion, Security upgrades, Fueling facility, Local range infrastructure, Customer Experience and Viewing Center, etc)
- XCOR Launch Operations / Production Hangar (LOPHT) Infrastructure
- Processing facilities / hangars
- Environmental Assessment for SLF taxiway and expansion

Expand Statewide Space Capacity

- Cecil Spaceport RLV Operator Site Development

The CCS Land Use and Development Plan is shown in figure 5.2-2. This plan integrates the planned land use of NASA KSC, CCAFS, and the SFS. It also integrates the Space Florida Initiatives and facility needs with the industry requested projects.

STRATEGIC OBJECTIVES	FY 2013 FDOT ACTUAL	FY 2014 FDOT/SF REQUEST	FDOT FY 2015 REQUEST	FDOT FY 2016 REQUEST	FDOT FY 2017 REQUEST	FDOT FY 2018 REQUEST	FDOT FY 2019 REQUEST	FDOT FY 2020 REQUEST	FDOT FY 2021 REQUEST
Advance Commercial Heavy Lift Capability	$5,000,000 LC-40	$2,800,000	$3,000,000	$5,000,000	$7,000,000	$10,000,000	$5,000,000	$5,000,000	$5,000,000
Support Commercial Crew and Cargo	$5,000,000 OPF3	$5,000,000	$6,000,000	$6,000,000	$8,000,000	$5,000,000	$5,000,000	$5,000,000	$5,000,000
Attract New Emerging Space Systems	$5,000,000 OPF 1/2	$4,400,000	$2,500,000	$4,000,000	$5,000,000	$5,000,000	$15,000,000	$15,000,000	$15,000,000
Expand Horizontal Launch/Land Capacity		$6,000,000	$7,000,000	$7,000,000	$15,000,000	$20,000,000	$10,000,000	$10,000,000	$10,000,000
Increase Space Launch Capacity Statewide		$1,800,000	$1,500,000	$3,000,000	$5,000,000	$5,000,000	$10,000,000	$10,000,000	$10,000,000
TOTAL WORK PROGRAM JPA - MATCH	$15,000,000	$20,000,000	$20,000,000	$25,000,000	$40,000,000	$45,000,000	$45,000,000	$45,000,000	$45,000,000
State of Florida Common Use Spaceport Infrastructure			$25,000,000	$25,000,000	$10,000,000	$5,000,000	$5,000,000	$5,000,000	$5,000,000
TOTAL	$15,000,000	$20,000,000	$45,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000	$50,000,000

Figure 5.2-3: Capital Improvment Plan Funding Recommendations

5.3. Implementation

Space Florida's mission is to foster the growth and development of a sustainable and world-leading space industry in Florida. One key element of that industry growth is to position infrastructure investment to "meet current and future commercial, national, and state space transportation requirements" (331.360 F.S.). Space Florida accomplishes this mission in collaboration with its federal, state and industry stakeholders shown below.

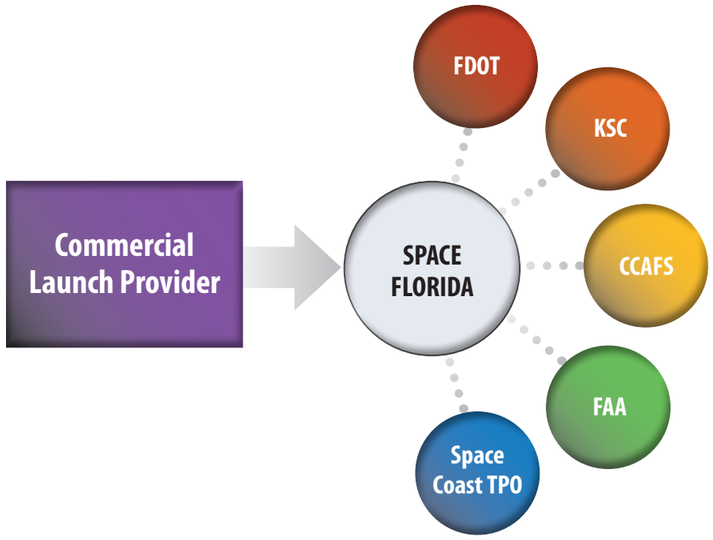


Figure 5.3-1: Spaceport Infrastructure Partners

5.3.1 - Annual Project List Development:

Each Spring, Space Florida annually requests input from federal and state partners, industry, and its various stakeholders. This annual "Call for Projects" enables Space Florida to position infrastructure investment to enable its mission to foster the growth and development of a sustainable and world-leading space industry in Florida. Each Summer, Space Florida qualifies submissions, develops a list of proposed projects and secures Space Florida Board of Director approval for the following fiscal year. That project list is submitted to FDOT in the Fall for potential inclusion in the Five Year Work Program for the following fiscal year.

5.3.2 - Project Prioritization

Project prioritization is a structured multistep process involving:

- Collection
- Qualification
- Prioritization
- Allocation

The CCS Master Plan includes this basic description of the process but does not control the process. Final project selection is dependent on senior management evaluation, qualification for available funding or resources, and the opportunities associated with diversification of portfolios for Space Florida infrastructure investments.

Collection is the first step in the process. The data is primarily collected through the Space Florida Call for Projects (See Appendix B). More data is collected than is strictly required for the structured prioritization analysis or the funding determination to ensure that the project is adequately documented and understood. A project application may remain active over multiple selection periods.

Qualification ensures requested projects meet the minimum criteria necessary to be prioritized. Some qualification criteria are developed internally within the Space Florida and funding organizations and some may be found in statute, legislation, or an executive order. Qualification is based on state and federal criteria focused on Space Florida's due diligence, business plan analysis, availability of partner financial contributions and "readiness" of the project (e.g., partners agree to advance to the next phase of the project planning and delivery process). Qualification is generally a "yes/no" effort.

Prioritization is the process through which the qualifed projects are relative rank ordered independent of potential funding sources. It is performed on all active and eligible projects at the same time, and may occur multiple times a year as needed by Space Florida. Prioritization is performed utilizing an analytical hierarchical process. The same process is used on all projects within a year and from year to year. Evaluative criteria include areas such as alignment with Space Florid goals/objectives, job growth, other capital investment, market capture opportunity and stakeholder benefits.

Allocation is then considered based on the available funding sources, job growth, capital investment in Florida, and anticipated return and contribution to Florida, the CCS and the Florida Spaceport System.

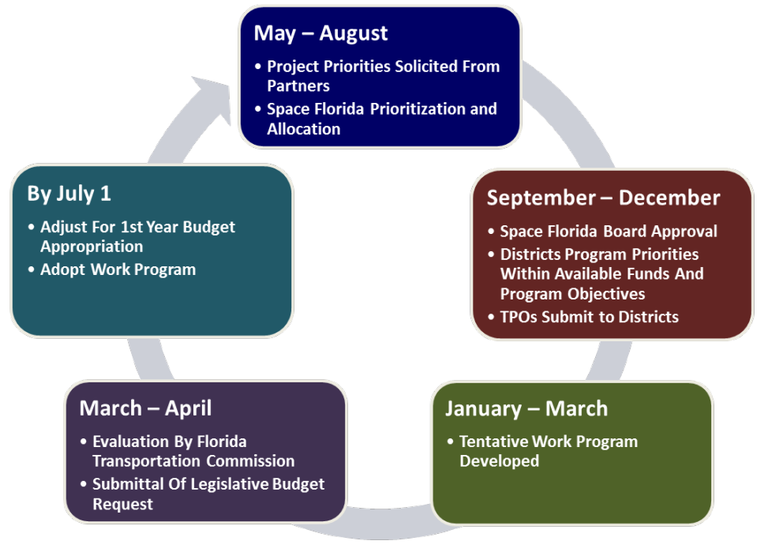


Figure 5.3-2: FDOT Five Year Work Program Process

ANNUAL PROJECT ADOPTION SCHEDULE Current Fiscal Year = CFY Next Fiscal Year = NFY	
July	CFY funds available SCTPO submits preliminary NFY-->NFY + 5 projects to FDOT
August	FDOT set preliminary NFY funding pool for each mode Space Florida Board adopted projects
September	SCTPO submits final NFY projects to FDOT
October	FDOT submits draft NFY budget to Governor
November	FDOT public hearings re: NFY-->NFY+ 5 projects
December	FDOT submits final NFY budget to Governor SCTPO receives FDOT NFY draft budget
January	Governor's proposed budget released for NFY
February	Space Florida call for NFY + 1 projects
March	FL legislature convenes for 60 days
April	First FDOT budget projection for NFY+1 SCTPO call for NFY + 1-->NFY + 6 transportation projects
May	FL legislature adopts NFY budget Last month to contract CFY funds
June	30 days - Governor to sign/veto NFY budget Space Florida submits NFY + 1 projects to SCTPO

Figure 5.3-3: Typical FDOT Space Infrastructure Funding Cycle

Sustainable Funding Sources

- Given the historic and anticipated future economic contributions of space transportation to Florida and to the country, coupled with the launch facility project needs identified in this Spaceport Master Plan, Florida's space transportation funding sources will need to keep up with long-term future space transportation needs in a way that continually upholds and protects public welfare.

Performance Measures and Criteria

- Establishing performance measures and evaluation criteria for potential space transportation funding sources should play a role in the process of fully evaluating the funding sources. Performance measures should establish parameters within which revenue and investments can reach desired results, and gauge financial performance and resource utilization. Potential suggested evaluation criteria are revenue potential, sustainability, political support, ease/cost of administration/implementation/compliance, etc.

Figure 5.3-4: Space Transportation and the STTF – Next Steps

Appendix A
Stakeholder Engagement

Stakeholder engagement to consider all viewpoints and needs is an important aspect to any planning project. Six (6) Stakeholder Work Sessions and a Public Workshop were held at key review points during the planning process. A brief description of each meeting is listed below:

Work Session #1 was an orientation to the role of Space Florida, an introduction to the master planning team, and roles of the different stakeholders. Stakeholders provided their perspective on the current and future needs of the spaceport.

Work Session #2 included a review of the master planning process and Space Florida's Vision. The bulk of the session was Stakeholder presentations; each stakeholder presented an overview of their agency's management plans, proposed capital improvement plans, and needs for the future. This information was used by the master planning team to identify potential challenges, opportunities and needs for the spaceport.

Work Sessions #3 and 4 was a discussion about Challenges, Opportunities, and Needs for spaceport facilities, transportation facilities, natural systems, and infrastructure. Stakeholders also reviewed the results of a competitive analysis prepared for a competing spaceport and discussed how the CCS could address perceptions of others. A ten-year launch forecast was presented to illustrate the potential demand for CCS facilities over the next ten years. Finally, stakeholders engaged in a brainstorming exercise to discuss future needs for two scenarios (one scenario described successful capture of the market and how this was accomplished; the other scenario described falling short of capturing the demand, and what improvements were necessary).

Work Session #5 was a review of the first draft of the CCS Master Plan. Attendees provided recommendations and comments on the draft plan. Following this work session, a public workshop was held to solicit comments from other stakeholders and interested parties.

Work Session #6 was a review of the final draft of the CCS Master Plan. Comments from the first draft review and public workshop were incorporated into this final draft.

Work Sessions were well attended and included representation from the following agencies:

- Kennedy Space Center (KSC / NASA)
- Cape Canaveral Air Force Station (CCAFS / USAF)
- Naval Ordnance Training Unit (NOTU / US Navy)
- Florida Department of Transportation (FDOT)
- Space Coast Transportation Planning Organization (TPO)
- US Fish and Wildlife Service (USFWS)
- National Park Service (NPS)
- Port Canaveral Authority
- Delaware North (KSC Visitor Complex management)

Appendix B
Call For Projects

Each year, Space Florida submits a list of project priorities to the FDOT for consideration in preparing a 5-year work program in partnership with local TPOs. This 5-year Transportation Improvement Program (TIP) serves as the basis for receiving Federal and State transportation funds for aerospace-related projects.

Spaceport Infrastructure Facilities Projects may be included in the FDOT TIP if they are included in the Space Florida Spaceport Master Plan and adopted by the local TPO.

All spaceport users operating within the territory of the CCS, which includes CCAFS and KSC, are invited to submit a list of Spaceport Infrastructure Facilities Project Priorities. These projects will be considered for adoption by the Space Florida Board of Directors as an amendment to the Spaceport Master Plan.

The FDOT is authorized to fund spaceport transportation facilities within spaceport territories. Current Florida law defines that territory as the property within the boundaries of PAFB, CCAFS, or KSC. As the Spaceport Master Plan is a long-term planning document, projects outside the boundaries of spaceport territories may be included in the Spaceport Master Plan and considered for future funding opportunities.

There is a required FDOT Spaceport Project Scope of Work that must be filled out for all candidate projects to be considered for prioritization and potential inclusion in any FDOT Transportation Improvement Program.

Appendix E contains the Space Florida Matching Fund Application; Space Florida-FDOT Definitions 2013; and Statutory Requirements and Policies of Space Florida FDOT.

Appendix C

Revenue Generation Baseline and Growth Scenario

By combining the cost per launch and seat calculation with the launch forecast, the revenue generated per scenario can be calculated. The Baseline Scenario scenario is forecasted to generate just over $2.8 billion of total revenues during the nine-year period. The Growth Scenario is forecasted to generate approximately $3.5 billion over that same nine-year period. Figures in Appendix C show both the Baseline and Growth Scenarios on a yearly basis.

Baseline Scenario	2013	2014	2015	2016	2017	2018	2019	2020	2021	Totals
Orbital Satellites	2	2	1	2	1	2	1	2	1	14
Cost Per Launch	$30,000,000	$30,000,000	$15,000,000	$30,000,000	$15,000,000	$30,000,000	$15,000,000	$30,000,000	$15,000,000	$210,000,000
Commercial Orbital (NGSO) Satellites	0	1	0	1	0	1	0	1	0	4
Cost Per Launch	$0	$15,000,000	$0	$15,000,000	$0	$15,000,000	$0	$15,000,000	$0	$60,000,000
Commercial Orbital ISS Cargo/Crew	2	2	3	3	5	5	5	5	5	35
Cost Per Launch	$30,000,000	$30,000,000	$45,000,000	$45,000,000	$75,000,000	$75,000,000	$75,000,000	$75,000,000	$75,000,000	$525,000,000
Commercial Orbital: Other Applications	0	0	0	0	1	2	2	3	3	11
Cost Per Launch	$0	$0	$0	$0	$15,000,000	$30,000,000	$30,000,000	$45,000,000	$45,000,000	$165,000,000
Governmental Orbital: Civil	2	5	5	3	3	3	3	3	3	30
Cost Per Launch	$60,000,000	$142,500,000	$135,000,000	$76,500,000	$72,000,000	$67,500,000	$63,000,000	$58,500,000	$54,000,000	$729,000,000
Governmental Orbital: National Security	5	7	5	6	5	4	5	4	4	45
Cost Per Launch	$150,000,000	$199,500,000	$135,000,000	$153,000,000	$120,000,000	$90,000,000	$105,000,000	$78,000,000	$72,000,000	$1,102,500,000
Commercial Suborbital: Tourism (seats)	0	340	344	353	359	366	372	379	385	2,898
Cost Per Launch (seat)	$0	$7,650,000	$7,740,000	$7,942,500	$8,077,500	$8,235,000	$8,370,000	$8,527,500	$8,662,500	$65,205,000
Commercial Suborbital: Research (seats)	0	19	21	25	32	40	44	71	73	325
Cost Per Launch (seat)	$0	$427,500	$472,500	$562,500	$720,000	$900,000	$990,000	$1,597,500	$1,642,500	$7,312,500
Commercial Suborbital: Other (seats)	0	7	17	18	19	21	23	26	29	160
Cost Per Launch (seat)	$0	$157,500	$382,500	$405,000	$427,500	$472,500	$517,500	$585,000	$652,500	$3,600,000
Total Local Dollars Generated:	$270,000,000	$425,235,000	$338,595,000	$328,410,000	$306,225,000	$317,107,500	$297,877,500	$312,210,000	$271,957,500	$2,867,617,500

Figure A.C-1: Baseline Scenario

Growth Scenario	2013	2014	2015	2016	2017	2018	2019	2020	2021	Totals
Orbital Satellites	2	2	3	5	5	5	5	6	6	39
Cost Per Launch	$30,000,000	$30,000,000	$45,000,000	$75,000,000	$75,000,000	$75,000,000	$75,000,000	$90,000,000	$90,000,000	$585,000,000
Commercial Orbital (NGSO) Satellites	0	1	1	2	1	2	1	2	1	11
Cost Per Launch	$0	$15,000,000	$15,000,000	$30,000,000	$15,000,000	$30,000,000	$15,000,000	$30,000,000	$15,000,000	$165,000,000
Commercial Orbital: Other Applications	2	2	3	3	8	8	8	8	8	50
Cost Per Launch	$30,000,000	$30,000,000	$45,000,000	$45,000,000	$120,000,000	$120,000,000	$120,000,000	$120,000,000	$120,000,000	$750,000,000
Commercial Orbital ISS Cargo/Crew	0	0	0	0	1	2	2	3	3	11
Cost Per Launch	$0	$0	$0	$0	$15,000,000	$30,000,000	$30,000,000	$45,000,000	$45,000,000	$165,000,000
Governmental Orbital: Civil	2	5	5	3	3	3	3	3	3	30
Cost Per Launch	$60,000,000	$142,500,000	$135,000,000	$76,500,000	$72,000,000	$67,500,000	$63,000,000	$58,500,000	$54,000,000	$729,000,000
Governmental Orbital: National Security	5	7	5	6	5	4	5	4	4	45
Cost Per Launch	$150,000,000	$199,500,000	$135,000,000	$153,000,000	$120,000,000	$90,000,000	$105,000,000	$78,000,000	$72,000,000	$1,102,500,000
Commercial Suborbital: Tourism (seats)	0	340	344	353	359	366	372	379	385	2898
Cost Per Launch (seat)	$0	$7,650,000	$7,740,000	$7,942,500	$8,077,500	$8,235,000	$8,370,000	$8,527,500	$8,662,500	$65,205,000
Commercial Suborbital: Research (seats)	0	19	21	25	32	40	44	71	73	325
Cost Per Launch (seat)	$0	$427,500	$472,500	$562,500	$720,000	$900,000	$990,000	$1,597,500	$1,642,500	$7,312,500
Commercial Suborbital: Other (seats)	0	7	17	18	19	21	23	26	29	160
Cost Per Launch (seat)	$0	$157,500	$382,500	$405,000	$427,500	$472,500	$517,500	$585,000	$652,500	$3,600,000
Total Local Dollars Generated:	$270,000,000	$425,235,000	$383,595,000	$388,410,000	$426,225,000	$422,107,500	$417,877,500	$432,210,000	$406,957,500	$3,572,617,500

Figure A.C-2: Growth Scenario

Appendix D
Economic Analysis

The economic analysis for the master planning of the Cape Canaveral Spaceport involves determining the number of permanent and construction/temporary jobs that will be created by the re-master planning process. From there, the total amount of output and salaries generated will be calculated and that will determine the effect the process will have on the local and regional economy. The first step in this calculation is to determine the number of jobs that will be created from the re-master planning. That is determined by using a known square foot per employee ratio. The ratio used came from the numbers used for the proposed Shiloh site. The Shiloh site will have two 38,000 square foot buildings with 60 employees each. Figure shows the per square foot calculation used to determine the number of employees.

Shiloh buildings	
Square Feet	38,000
Number of Employees	60
Employees per Square Foot	633

Figure A.D-1 Employee per Square Foot Calculation
Source: BRPH, Inc.

The per square foot calculation was then used to determine the number of employees that would be generated from the square footage of the Space Florida facilities either in existence or planned to be constructed. Figure A.D-2 outlines the employee calculations based on the Space Florida facilities square footages.

The proposed and existing 2,271,325 square feet of Space Florida Facilities will generate 3,669 permanent employees. Those employment numbers are the basis for calculating the economic output of the master plan with the Regional Input/Output Modeling System ("RIMSII") developed by the United States Bureau of Economic Analysis.

Employment is the basis for the RIMSII multiplier system and is essential in calculating the economic numbers of total construction and permanent employment, earnings and economic output. Both permanent and construction employment must first be calculated by year as the RIMSII results are annual. Construction of certain facilities such as the Shiloh complex and Exploration Park were estimated to start in 2014 and permanent employees start in 2013. Figure A.D-3 shows the forecasted construction and permanent employment through 2021.

Space Florida Facilities	Square Feet	Square Feet per Employee	Total Employees
• RLV Hangar, J6-2466 (52,000 sq. ft.)	52,000	633	82
• Space Life Sciences Lab, M6-1025 (104,000 sq. ft.)	104,000	633	164
• Orbiter Processing Facility 3, K6-0696 (148,470 sq. ft.)	148,470	633	235
• Processing Control Center, K6-1094 (99,000 sq. ft.)	99,000	633	156
• Space Launch Complex 36			
o Blockhouse 5501 (48,994 sq. ft.)	48,994	633	77
o Support building 5550 (3,000 sq. ft.)	3,000	633	5
• Space Launch Complex 46			82
• Satellite Assembly Building (SAB), 49904 (26,733 sq. ft.)	26,733	633	42
• Space Florida Admin/Offices, 90326 (3,178 sq. ft.)	3,178	633	5
• Space-X Launch Control Center, 90327 (4,378 sq. ft.)	4,378	633	7
• Delta Horizontal Processing Facility, 36009 (9,500 sq. ft.)	9,500	633	15
• Area 57 (Buildings 50801/50803) (50801 is 6,291 sq. ft., 50803 is 7,328 sq. ft.)	13,619	633	22
• Exploration Park Phase 1 (In development)	350,000	633	553
• Exploration Park Phase 2 (Future)1	580,000	633	916
1 - Exploration Park Phase 2 was projected as a ratio from Phase 1			
Planned Future Facilities			
• Shuttle Landing Facility			
• Shiloh 150 Acres			
o 75 Acres one building (38,3000 sq. ft.) for heavy capabilities	38,300	633	60
o 75 Acres one building (38,3000 sq. ft.) for medium capabilities	38,300	633	60
• Area 57 (Building 45601) (15,000 sq. ft.)	15,000	633	24
Other Space Florida Investments			
• Orbiter Processing Facilities 1 and 2 (K6-0894) (131,948 sq. ft.)	131,941	633	208
• Operations and Checkout (M7-0355) (604,912 sq. ft.)	604,912	633	956
• Space Launch Complex 40			82
	2,271,325		**3,669**

Figure A.D-2 Employee Calculation by Space Florida Facilities Source: Space Florida and Fishkind & Associates, Inc.

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total Construction Employees by Year:	0	84	282	203	112	113	95	0	0
Permanent Employment By Year:	1,058	3,525	3,525	3,669	3,669	3,669	3,669	3,669	3,669

Figure A.D-3 Construction and Permanent Employment by Year Source: Fishkind & Associates, Inc.

The employment numbers are then used to calculate the RIMSII output results. Based on the recommendation from the U.S. Bureau of Economic Opportunity, the RIMSII multipliers from Brevard County were used to determine the economic output for the region. There were two categories that related to Cape Canaveral. The first category is Construction to accommodate the construction employees and the second category is Other Government Enterprises to accommodate the permanent employees since it was the category closest to the Cape activities. Figure A.D-4 below shows the total annual direct and indirect impacts in terms of output, earnings and employment from the re-master planning process. On average, the project will employ 3,446 permanent jobs and generate just under $700,000,000 in output (the dollar rolling through the regional economy). On average, the project will employ a total of 5,601 employees with over $262-million in earnings and generating an output of $970,549,298. Upon completion, the master plan will generate 3,669 permanent jobs and 6,003 direct and indirect jobs. Earnings will top $280,000,000 a year and the overall output will be just over $1-billion.

That is determined by using a known square foot per employee ratio. The ratio used came from the numbers used for the proposed Shiloh site. The Shiloh site will have two 38,000 square foot buildings with 60 employees each. Figure A.D-1 shows the per square foot calculation used to determine the number of employees.

Activity Type	Year	Direct Impacts		Direct and Indirect Impacts		
Construction & Other Government Enterprises		Employment (Jobs)	Output (Dollars)	Output (Dollars)	Earnings (dollars)	Employment (Jobs)
	2013	1,058	$217,868,959	$302,336,754	$81,374,056	1,731
	2014	3,609	$735,049,842	$1,019,332,263	$275,241,184	5,874
	2015	3,807	$756,648,784	$1,047,663,596	$284,958,548	6,124
	2016	3,872	$777,684,267	$1,077,509,485	$292,156,903	6,260
	2017	3,781	$767,757,480	$1,064,488,519	$287,690,842	6,145
	2018	3,782	$767,866,565	$1,064,631,606	$287,739,920	6,146
	2019	3,764	$765,903,025	$1,062,056,030	$286,856,523	6,123
	2020	3,669	$755,539,896	$1,048,462,714	$282,194,151	6,003
	2021	3,669	$755,539,896	$1,048,462,714	$282,194,151	6,003
Average:		**3,446**	**$699,984,302**	**$970,549,298**	**$262,267,364**	**5,601**

Figure A.D-4 RIMSII Output for the Brevard County region

Source: U.S. Bureau of Economic Opportunity Regional Input/Output Modeling System

Appendix E
Call for Projects Forms

Space Florida
Space Transportation Infrastructure Matching Fund Application
Introduction

This application solicits proposals to continue the development of space transportation infrastructure that supports Space Florida's legislative intent and the spaceport master plans for eligible Florida spaceport territories. Space Florida is designated in Florida Statute 331.3011 (3) to be the "single point of contact for state aerospace-related activities with federal agencies, the military, state agencies, businesses, and the private sector."

Space Florida will use the qualifying applications to develop a proposed list of spaceport discretionary capacity improvement projects for submission to the Florida Department of Transportation. Prioritized spaceport projects may be included in the FDOT five-year Transportation Improvement Program (TIP). This application is mandatory before Space Florida can prioritize candidate projects for available State and/or Federal funding. Matching funds may be used for preliminary design, environmental study, design, engineering, and/or construction of spaceport facilities infrastructure.

The Space Florida Space Transportation Infrastructure Matching Fund Application requirements must be complete with clear documentation of matching funds for candidate projects to be considered for prioritization and potential inclusion in the State of Florida FY 2015 – FY 2019 TIP or a future TIP. The earliest funds would be available for use is FY 2015 which begins July 1, 2014.

DUE TO SPACE FLORIDA BY FRIDAY, JUNE 7, 2013, 3:00 PM

SUBMIT ELECTRONICALLY TO:

Spaceport Operations, Space Florida
505 Odyssey Way, Ste 300
Exploration Park, FL 32953
321-730-5301 ext. 245

Figure A.E-1 Space Florida Notional Matching Fund Application (See spaceflorida.gov for current versions)

Space Florida
Space Transportation Infrastructure Matching Fund Application
Part 1 – Cover Sheet

1.1 APPLICANT ORGANIZATION: _____

Name and contact information for person to be contacted on matters involving this submission:

Contact Person Name: Title:
Organization: Email:
Address: City/State/Zip:
Phone: Fax:

1.2 PROJECT NAME: _____

Physically located within Spaceport territory:

A. __ Cape Canaveral Spaceport
A.1. __Cape Canaveral Air Force Station
A.2. __John F. Kennedy Space Center
B. __ Cecil Spaceport

1.3 PROJECT ABSTRACT: *The Project Abstract must not exceed 50 words and must contain a summary of the proposed activity suitable for dissemination to the public. It should be a self-contained description of the project. It should be informative to other persons working in the same or related fields and insofar as possible understandable to a technically literate lay reader. This abstract must not include any proprietary/confidential information.*

PUBLIC RECORDS NOTICE: *Space Florida is governed by the State of Florida public records law. Applications, including contact information and any attachments and information received, might be disclosed to any person making a public records request. If you have any question about the Florida public records law refer to Chapter 119 Florida Statutes.*

Figure A.E-1 Space Florida Matching Fund Application (cont)

Space Florida
Space Transportation Infrastructure Matching Fund Application
Part 2 – Summary of Request

2.1 TOTAL FUNDING REQUESTED:_____

Total project cost: $_____
Percentage FDOT share of cost (maximum 50%): _____%

Provide an estimate of the total cost of the infrastructure project phase(s). FDOT prioritizes projects that "leverage federal government, local government, private sector, or other funding sources." FDOT funds may not be used for more than 50% of the project cost.

	Federal	State FDOT Request		Local	Other*	TOTAL
		$	%			
PD&E						
Design						
Construction						
Design/Build						
Other _____						

**One potential option for applicants is Conduit Financing. Space Florida serves as a special purpose entity for companies seeking to fund projects and infrastructure improvements within Florida's spaceport territories. Space Florida uses a conduit (pass-through) financing capability to work with companies to access non-traditional funding and assist with special arrangements (i.e.: synthetic leases) that enable companies to recover financing costs associated with specific projects. Contact Space Florida to determine if this funding source is appropriate for inclusion with your application.*

2.2 PUBLIC BENEFIT SUMMARY:

#_____ Estimated number of jobs created
$_____ Estimated annualized average wage (excluding benefits)
$_____ Estimated total capital investment
$_____ Estimated total program expenditures July 1, 2014 to June 30, 2019
#_____ Number of scheduled launches
#_____ Total launch customers
_____ Civil
_____ Military
_____ Commercial
_____ Projected date of next launch

Figure A.E-1 Space Florida Matching Fund Application (cont)

Space Florida
Space Transportation Infrastructure Matching Fund Application
Part 3 – Project Description/Narrative

Maximum Five (5) pages

3.1 NARRATIVE DESCRIPTION OF THE PROJECT: Provide a narrative description of the project that includes program goals, business case, economic benefits, market expectations, and revenue projections.

3.2 PROJECT BUDGET: Outline the project budget. Include documentation that the grant will not be for more than 50% of the total cost of the project and indicate sources of matching funds.

3.3 TIMELINE: Describe readiness to begin the project and include proposed dates to begin operations and/or contractually obligated dates for delivering services.

3.4 STATE REQUIREMENTS: Indicate how the proposed project will advance the legislative mandates, requirements, and policies of Space Florida and The Florida Department of Transportation.

3.5 STATE BENEFIT: Summarize how the project contributes to meeting the goals of the spaceport territory's master plan.

Part 4 – Attachments

4.1 AUTHORIZATION LETTER: Signed by a senior official acknowledging the legal authority to engage in the project. Letter must include commitment for at least 50% of the total cost of the project.

4.2 PROJECT APPROVALS: Verify consent from the head of the appropriate agency, should the project use Government property (land, equipment, etc.).

DUE TO SPACE FLORIDA BY FRIDAY, JUNE 7, 2013, 3:00 PM

SUBMIT ELECTRONICALLY TO:

Spaceport Operations, Space Florida
505 Odyssey Way, Ste 300
Exploration Park, FL 32953
321-730-5301 ext. 245

Figure A.E-1 Space Florida Matching Fund Application (cont)

Space Transportation Infrastructure Matching Fund Application Definitions 2013

Aerospace	The industry that designs and manufactures aircraft, rockets, missiles, spacecraft, satellites, space vehicles, space stations, space facilities or components thereof, and equipment, systems, facilities, simulators, programs, and related activities, including, but not limited to, the application of aerospace technologies in air-based, land-based, and sea-based platforms for commercial, civil, and defense purposes.	FS 331.303(1)
Connectivity, transportation	The ease with which destinations may be reached because the locations are well connected and more accessible.	2060 FTP
Corridors	Highways, rail lines, waterways and other exclusive-use facilities connecting major origin/destination markets within Florida or between Florida and other states/nations. Also see "Transportation Corridor."	2010 SIS Strategic Plan
Destination	The point in a trip where travel ends.	2010 SIS Strategic Plan
DOT	Department of Transportation	2010 SIS Strategic Plan
Economic competitiveness	A state or region's ability to compete in global markets, as evidenced in the attraction of new businesses and the expansion of existing businesses.	2010 SIS Strategic Plan and 2060 FTP
Emergency management and response	Actions taken to prepare for, respond to, and recover from an incident threatening life, property, operations, or the environment (natural and manmade hazards).	2060 FTP
Environmental stewardship	A philosophical concept of government, the public, resource users, and businesses all taking responsibility and working together to care for natural resources.	2010 SIS Strategic Plan
Environmental stewardship	Protecting and responsibly managing all of our resources for present and future ecological and human uses.	2060 FTP
FDOT	Florida Department of Transportation	2010 SIS Strategic Plan
FTP	Florida Transportation Plan	2060 FTP
Hub	Ports and terminals moving goods or people between Florida regions or between Florida and other origin/destination markets in the U.S. and the rest of the world.	2010 SIS Strategic Plan
Hub, trade	A place where cargo is exchanged between vehicles or transport modes, as well as moves through value added activities (logistics, manufacturing, assembly).	2060 FTP
Impacts	The effects of a transportation project, including a) direct (primary) effects; b) indirect (secondary) effects; and c) cumulative effects.	2010 SIS Strategic Plan
Interregional	Relating to connection having both ends within a single region.	2010 SIS Strategic Plan
Intermodal	Denotes the seamless movement of people and cargo between transportation modes.	2010 SIS Strategic Plan and 2060 FTP
Landing area	The geographical area designated by Space Florida within the spaceport territory for or intended for the landing and surface maneuvering of any launch or other space vehicle.	FS 331.303(9)
Launch pad	Any launch pad, runway, airstrip, or similar facility used for launching space vehicles	FS 331.303(10)
Launch support facilities	Facilities that are located at launch sites or launch ranges that are required to support launch activities, including launch vehicle assembly, launch vehicle operations and control, communications, and flight safety functions, as well as payload operations, control, and processing.	FS 331.303(11)
Long-range goal	A long-term (20-25 years) end toward which programs and activities are ultimately directed.	2010 SIS Strategic Plan
Long-range objective	A long-term (20-25 years) general end achievable in the future and marking progress toward a goal.	2010 SIS Strategic Plan

Figure A.E-2 Space Florida-FDOT Definitions 2013

Long-Range Transportation Plan (LRTP)	A long-range (at least 20 years) strategy and capital improvement program developed to guide the effective investment of public funds in transportation facilities. The plan is updated at least every five years, and may be amended as a result of changes in projected Federal, state and local funding, major improvement studies, congestion management system plans, interstate interchange justification studies and environmental impact studies.	2010 SIS Strategic Plan
Maintenance	Activities are undertaken to keep the state's transportation infrastructure and equipment operating as intended, to eliminate deficiencies, and to extend or achieve the expected life of facilities before reconstruction is needed. These include routine or day-to-day activities (such as pothole patching, mowing, litter removal, guardrail repair and striping, routine bus inspection and maintenance, and periodic dredging of channels) and periodic major projects (such as resurfacing roadways and runways, and rehabilitating bridges and bulkheads at seaports).	2060 FTP
Metropolitan Planning Organization (MPO)	An organization made up of local elected and appointed officials responsible for developing, in cooperation with the state, transportation plans, and programs in metropolitan areas containing 50,000 or more residents. MPOs are responsible for the development of transportation facilities functioning as an intermodal transportation system and the coordination of transportation planning and funding decisions.	2010 SIS Strategic Plan and 2060 FTP
Military Access Facility	For the purpose of the SIS designation process, these are transportation facilities linking SIS corridors to the state's strategic military installations. These are generally access facilities designated as part of the federal Strategic Highway Network and/or the Strategic Rail Corridor Network.	2010 SIS Strategic Plan
Military Installation	For the purpose of the SIS designation process, military installations refer to U.S. Department of Defense or Florida National Guard bases to which active duty soldiers, sailors or aviators are assigned.	2010 SIS Strategic Plan
Mobility	The degree to which the demand for the movement of people and goods can be satisfied. Mobility is measured in Florida by the quantity, quality, accessibility, and utilization of transportation facilities and services.	2010 SIS Strategic Plan and 2060 FTP
Mode	Any one of the following means of moving people or goods: aviation, bicycle, highway, paratransit, pedestrian, pipeline, rail (commuter, intercity passenger and freight), transit, space and water.	2010 SIS Strategic Plan and 2060 FTP
Need	A demand for a mobility improvement identified on the basis of accepted and adopted standards and other assumptions (e.g., land use) and documented in a formal long-range or master plan.	2010 SIS Strategic Plan
Payload	Any property or cargo to be transported aboard any vehicle launched by or from the spaceport.	FS 331.303(12)
Partners, Transportation	Parties with interests in transportation facilities and services, including both transportation and transportation-related interests. Transportation partners include the general public, local governments, metropolitan planning organizations and other regional entities and organizations, public and private sector users and providers, Native American Nations, the Florida Department of Transportation, and other state and federal transportation-related agencies. Transportation-related partners include public and private organizations with an interest in land use, economic development, community livability, environmental stewardships, public health and safety, and other issues related to transportation.	2010 SIS Strategic Plan
Range	The geographical area designated by Space Florida or other appropriate body as the area for the launching of rockets, missiles, launch vehicles, and other vehicles designed to reach high altitude.	FS 331.303(15)
Recovery	The recovery of space vehicles and payloads which have been launched from or by a spaceport.	FS 331.303(16)
Region	An area of distinctive communities, cities, and counties where residents share a geographic identity and are socially, economically, and culturally interdependent; a capacity for planning and function; and a capacity to create competitive advantage.	2060 FTP
Security	Actions taken to protect system users and workers, critical infrastructure, cargo and other assets, and communities from terrorism and crime related to the transportation system.	2060 FTP
Spaceport	Any area of land or water, or any manmade object or facility located therein, developed by Space Florida under this act, which area is intended for public use or for the launching, takeoff, and landing of spacecraft and aircraft, and includes any appurtenant areas which are used or intended for public use, for spaceport buildings, or for other spaceport facilities, spaceport projects, or rights-of-way.	FS 331.303 (17)

Figure A.E-2 Space Florida-FDOT Definitions 2013 (cont)

Spaceport territory	The geographical area designated in s. 331.304 and as amended or changed in accordance with s. 331.329.	FS 331.303 (18)
	331.304 Spaceport territory.—The following property shall constitute spaceport territory: (1) Certain real property located in Brevard County that is included within the 1998 boundaries of Patrick Air Force Base, Cape Canaveral Air Force Station, or John F. Kennedy Space Center. The territory consisting of areas within the John F. Kennedy Space Center and the Cape Canaveral Air Force Station may be referred to as the "Cape Canaveral Spaceport." (2) Certain real property located in Santa Rosa, Okaloosa, Gulf, and Walton Counties which is included within the 1997 boundaries of Eglin Air Force Base. (3) Certain real property located in Duval County which is included within the boundaries of Cecil Airport and Cecil Commerce Center. (4) Real property within the state which is a spaceport licensed by the Federal Aviation Administration, as designated by the board of directors of Space Florida.	FS 331.304
	Space Florida shall designate new launch pads outside the present designated spaceport territories by statutory amendment of s. 331.304.	FS 331.329(4)
Spaceport user	Any person who uses the facilities or services of any spaceport; and, for the purposes of any exemptions or rights granted under this act, the spaceport user shall be deemed a spaceport user only during the time period in which the person has in effect a contract, memorandum of understanding, or agreement with the spaceport, and such rights and exemptions shall be granted with respect to transactions relating only to spaceport projects. ("Person" means any individual, child, community college, college, university, firm, association, joint venture, partnership, estate, trust, business trust, syndicate, fiduciary, corporation, nation, government (federal, state, or local), agency (government or other), subdivision of the state, municipality, county, business entity, or any other group or combination.)	FS 331.303 (19)
Spaceport discretionary capacity improvement projects	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.	FS 331.303 (21)
Strategic	Highly important to or an integral part of a long term plan of action.	2010 SIS Strategic Plan
SIS - Strategic Intermodal System	A transportation system comprised of facilities and services of statewide and interregional significance, including appropriate components of all modes.	2010 SIS Strategic Plan
System	Individual facilities, services, forms of transportation (modes) and connectors combined into a single, integrated transportation network.	2010 SIS Strategic Plan
Transportation corridor	Any land area designated by the state, a county, or a municipality which is between two geographic points and which is used or is suitable for the movement of people and goods by one or more modes of transportation, including areas necessary for management of access and securing applicable approvals and permits. Transportation corridors shall contain, but are not limited to, the following: a) existing publicly owned rights-of-way; b) all property or property interests necessary for future transportation facilities, including rights of access, air, view and light, whether public or private, for the purpose of securing and utilizing future transportation right-of-way, including but not limited to, any lands reasonably necessary now or in the future for securing applicable approvals and permits, borrow pits, drainage ditches, water retention areas, rest areas, replacement access for landowners whose access could be impaired due to the construction of a future facility, and replacement right-of-way for relocation of rail and utility facilities.	2010 SIS Strategic Plan
Transportation corridor	Any land area designated by the state, a county, or a municipality which is between two geographic points and which is used or is suitable for the movement of people and goods by one or more modes of transportation (aviation, bicycle, highway, paratransit, pedestrian, pipeline, rail [commuter, intercity passenger, and freight], transit, space, and water), including areas necessary for management of access and securing applicable approvals and permits.	2060 FTP
Transportation infrastructure	Capital assets that convey or move people, freight, or vehicles (included but not limited to roads, highways, railways, waterways, seaports, airports, spaceports, transit systems, bicycle paths, pedestrian walkways, ferries).	2060 FTP
Transportation system	Individual facilities, services, forms of transportation (modes), and connectors combined into a single, integrated transportation network.	2060 FTP
Transportation vehicle	Any means in or by which someone travels or something is carried or conveyed; a means of conveyance or transport.	2060 FTP
Work Program	The five-year listing of all transportation projects planned for each fiscal year by the FDOT, as adjusted for the legislatively approved budget for the first year of the program.	2010 SIS Strategic Plan

Space Transportation Infrastructure Matching Fund Application Definitions 2013 Page 3

Figure A.E-2 Space Florida-FDOT Definitions 2013 (cont)

Statutory Requirements and Policies
SPACE FLORIDA AND THE FLORIDA DEPARTMENT OF TRANSPORTATION

Space Florida legislative mandates

- Improve launch complexes and space transportation facilities in order to attract new space vehicle testing and launch business to the state
- Address intermodal requirements and impacts of the launch ranges, Spaceports, and other space transportation facilities
- Advance aerospace technology to meet the current and future needs of the United States commercial space transportation industry
- Assist in the development of joint-use facilities and technology that support aviation and aerospace operations, including high-altitude and suborbital flights and range technology development.
- Streamline access for commercial launch users

FDOT Space transportation legislative mandates

- Develop and/or improve aerospace transportation facilities
- Address intermodal requirements and impacts of the launch ranges, Spaceports, and other space transportation facilities
- Develop joint-use facilities and technology that support aviation and aerospace operations
- Integrate airports and Spaceports in order to meet transportation-related needs
- Improve space transportation capacity and efficiency

Florida's 2060 long-range transportation vision and goals

- A statewide, multimodal system of trade gateways, logistics centers, and transportation corridors to position Florida as a global hub for commerce and investment
- An evolving air and space transportation system enabling Florida to remain a global leader for moving people and cargo between Florida and destinations in other states, nations, and orbit
- Invest in transportation systems to support a prosperous, globally competitive economy.
- Make transportation decisions to support and enhance livable communities.
- Make transportation decisions to promote responsible environmental stewardship.
- Provide a safe and secure transportation system for all users.
- Maintain and operate Florida's transportation system proactively.
- Improve mobility and connectivity for people and freight.

FDOT Strategic Intermodal System (SIS) strategic plan objectives

- Interregional Connectivity: Enhance connectivity between Florida's economic regions and between Florida and other states and nations for both people and freight.
- Efficiency: Reduce delay on and improve the reliability of travel and transport using SIS facilities.
- Choices: Expand modal alternatives to SIS highways for travel and transport between regions, states, and nations.
- Intermodal Connectivity: Provide for safe and efficient transfers for both people and freight between all transportation modes.
- Economic Competitiveness: Provide transportation systems to support statewide goals related to economic diversification and development.
- Energy, Air Quality, and Climate: Reduce growth rate in vehicle-miles traveled and associated energy consumption and emissions of air pollutants and greenhouse gases.
- Emergency Management: Help ensure Florida's transportation system can meet national defense and emergency response and evacuation needs.

Figure A.E-3 Statutory Requirements and Policies of Space Florida-FDOT

National Space Policy

The United States will pursue the following goals in its national space programs:

- Energize competitive domestic industries to participate in global markets and advance the development of: satellite manufacturing; satellite-based services; space launch; terrestrial applications; and increased entrepreneurship.
- Expand international cooperation on mutually beneficial space activities to: broaden and extend the benefits of space; further the peaceful use of space; and enhance collection and partnership in sharing of space-derived information.
- Strengthen stability in space through: domestic and international measures to promote safe and responsible operations in space; improved information collection and sharing for space object collision avoidance; protection of critical space systems and supporting infrastructures, with special attention to the critical interdependence of space and information systems; and strengthening measures to mitigate orbital debris.
- Increase assurance and resilience of mission-essential functions enabled by commercial, civil, scientific, and national security spacecraft and supporting infrastructure against disruption, degradation, and destruction, whether from environmental, mechanical, electronic, or hostile causes.
- Pursue human and robotic initiatives to develop innovative technologies, foster new industries, strengthen international partnerships, inspire our Nation and the world, increase humanity's understanding of the Earth, enhance scientific discovery, and explore our solar system and the universe beyond.
- Improve space-based Earth and solar observation capabilities needed to conduct science, forecast terrestrial and near-Earth space weather, monitor climate and global change, manage natural resources, and support disaster response and recovery.

Figure A.E-3 Statutory Requirements and Policies of Space Florida-FDOT (cont)