



Agenda Report

2725 Judge Fran Jamieson
Way
Viera, FL 32940

Resolution/Award/Presentation

E.1.

2/25/2020

Subject:

Space Florida Presentation to Brevard County Commission, District 2

Fiscal Impact:

Dept/Office:

District 2

Requested Action:

Summary Explanation and Background:

Clerk to the Board Instructions:



Tammy Rowe, Clerk to the Board, 400 South Street • P.O. Box 999, Titusville, Florida 32781-0999

Telephone: (321) 637-2001
Fax: (321) 264-6972
Tammy.Rowe@brevardclerk.us

February 26, 2020

M E M O R A N D U M

TO: Commissioner Bryan A. Lober, District 2 Attn: Robert (Fritz) VanVolkenburgh

RE: Item E.1., Presentation by Frank DiBello and Jim Kuzma Concerning the Space Florida
Annual Update

The Board of County Commissioners, in regular session on February 25, 2020, acknowledged Presentation given by Frank DiBello and Jim Kuzma concerning the Space Florida Annual Update.

Your continued cooperation is greatly appreciated.

Sincerely,

BOARD OF COUNTY COMMISSIONERS
SCOTT ELLIS, CLERK

Tammy Rowe

Tammy Rowe, Deputy Clerk

/dt

SPACE FLORIDA



SPACE FLORIDA ANNUAL UPDATE BREVARD COUNTY COMMISSION

**Frank DiBello
Jim Kuzma**

February 25, 2020

Most Active Spaceports

18 – Cape Canaveral Spaceport

21 – Baikonur, Russia

12 – Xichang, China

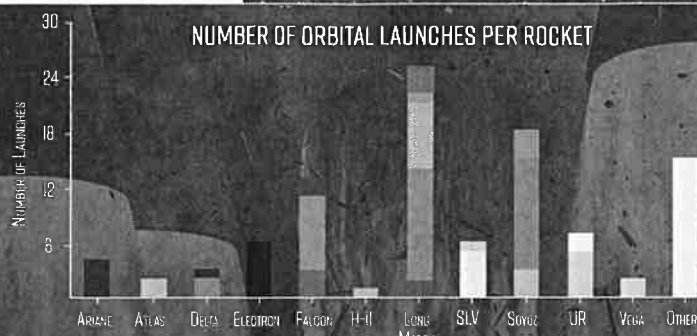
GDBARRETT.COM

NUMBER OF ORBITAL LAUNCHES PER COUNTRY



COUNTRY	LAUNCHES
CHINA	34
UNITED STATES	27
RUSSIA	25
INDIA	6
EUROPE	6
JAPAN	2
TOTAL	102

ceflight



ROCKET INNOVATION

SPACE X'S STARHOPPER PROTOTYPE SUCCESSFULLY COMPLETED A 150 M TEST FLIGHT ON 27 AUGUST

LAST LAUNCH

DECEMBER 27TH
LONG MARCH 5 - WENCHANG LC-1



MAIDEN FLIGHTS

HYPERBOLA-1
JIELONG 1
ONE SPACE OS-1
PSLV-DL
PSLV-QL



BACKGROUND BY NATHAN BARKER @NASA_NERO

SPACE FLORIDA

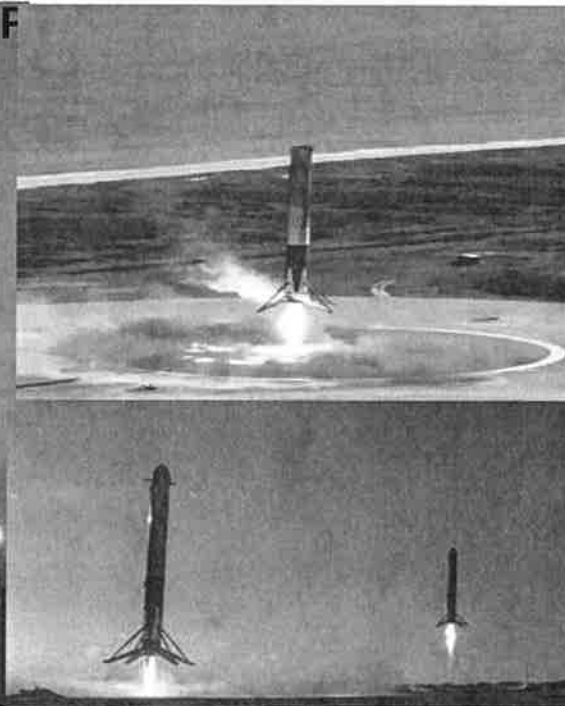


The Last Decade in Perspective

Last Space Shuttle Launch

Launch Reusability

Beginning of New Space

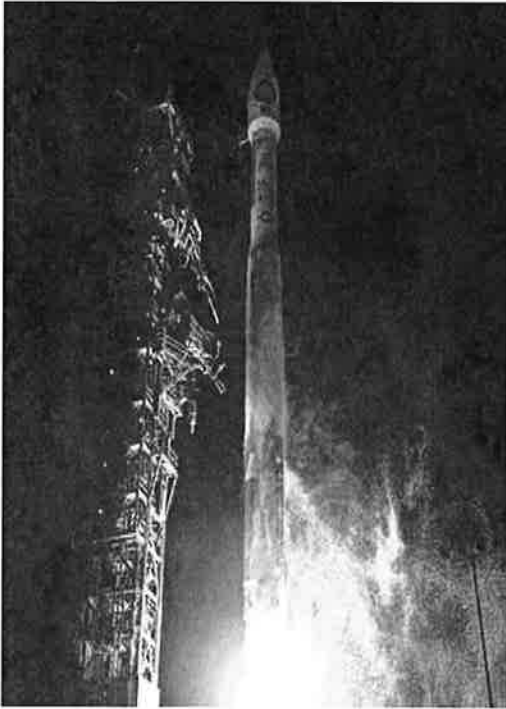


SPACE FLORIDA



The Last Decade in Perspective

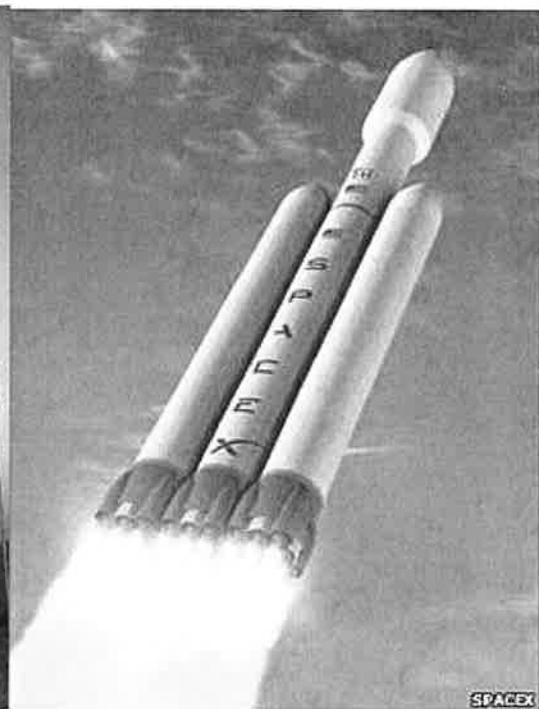
ULA Atlas/ Delta Rockets



Space X Falcon 9

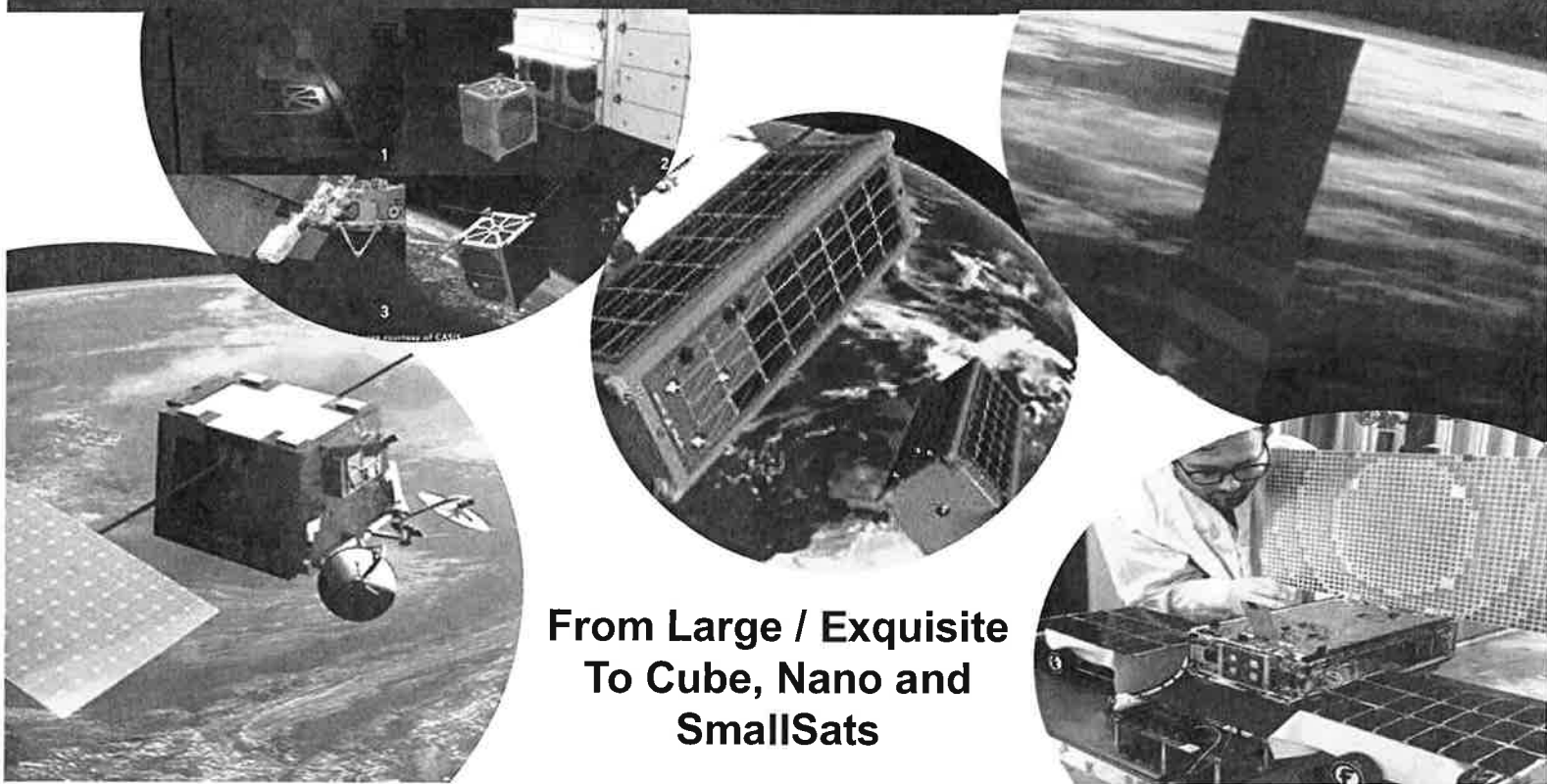


Space X Falcon Heavy



SPACE FLORIDA

The Last Decade in Perspective

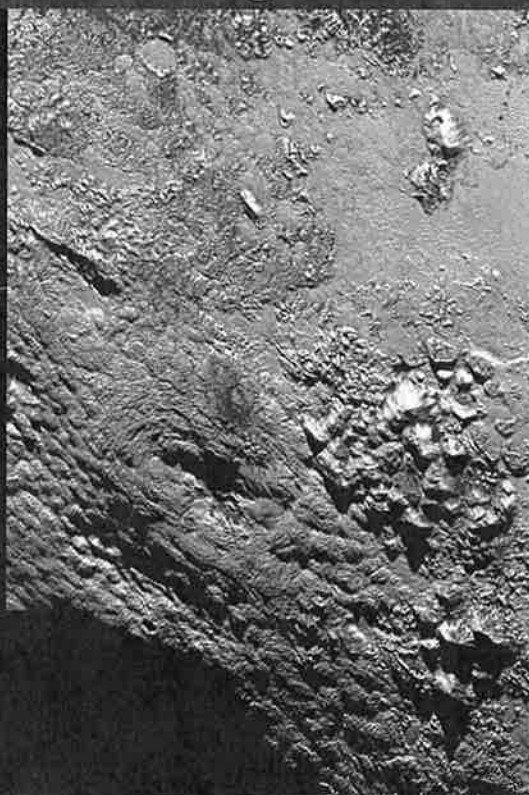
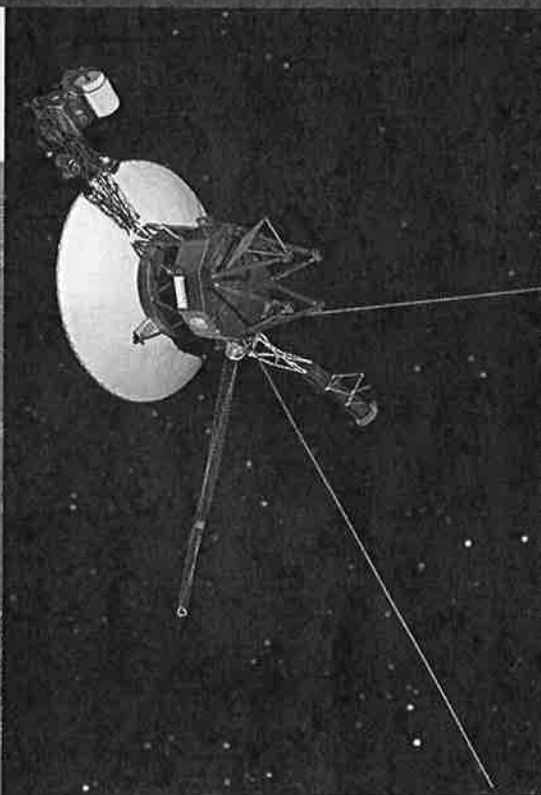


**From Large / Exquisite
To Cube, Nano and
SmallSats**

SPACE FLORIDA



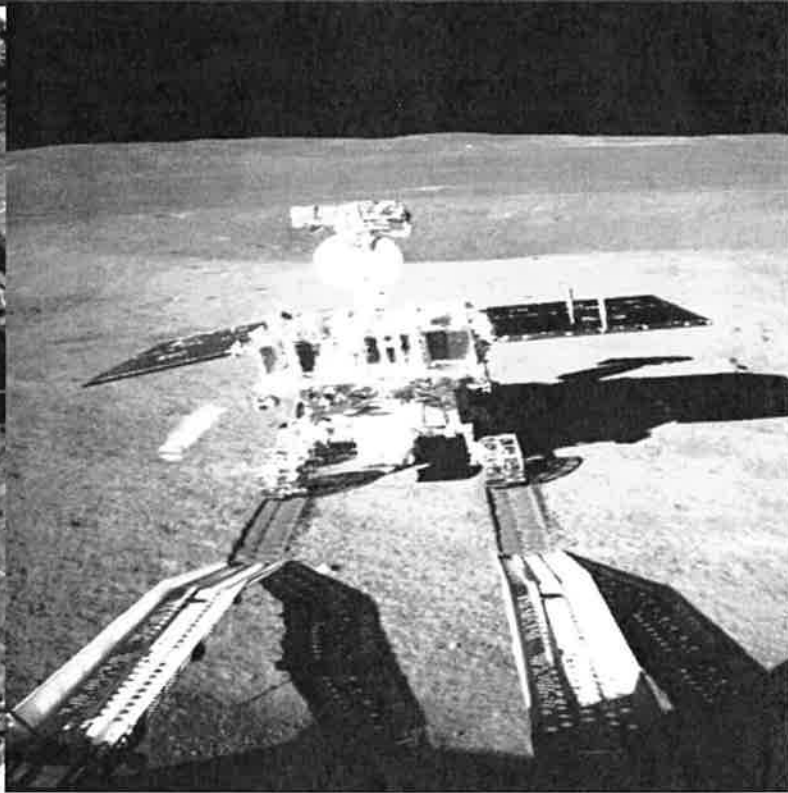
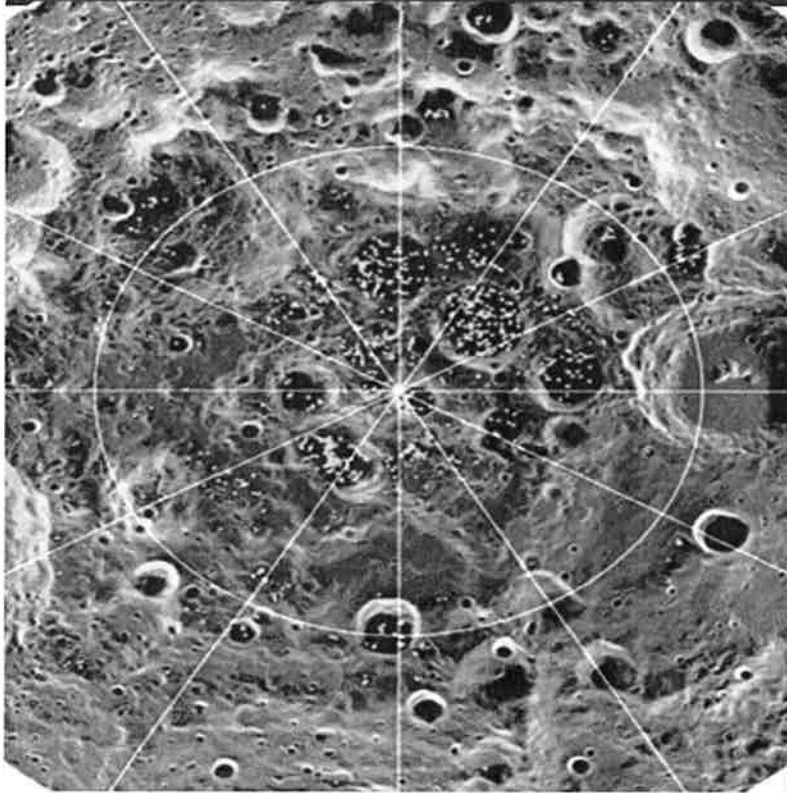
Planetary Science Reaches New Heights



SPACE FLORIDA



Resurgence of Interest in the MOON





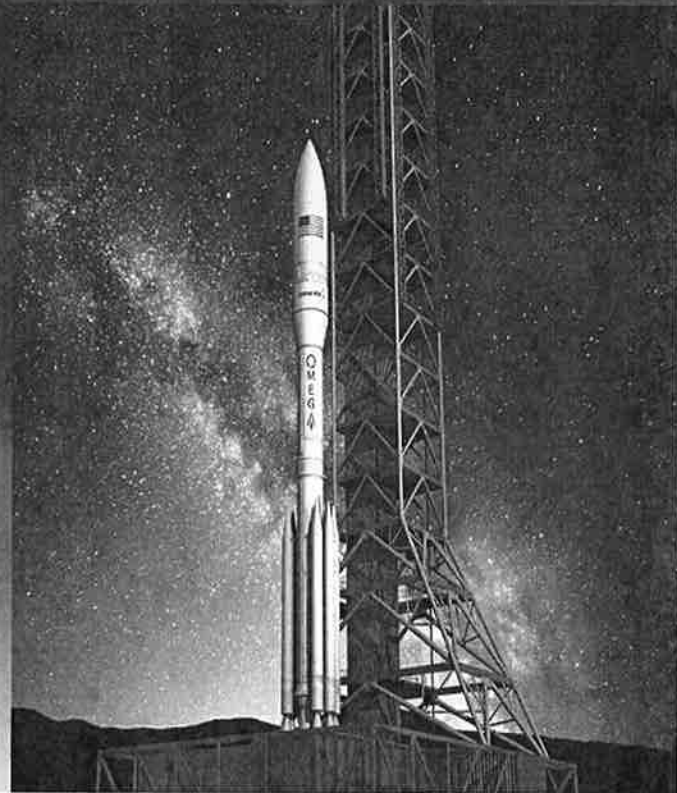
LOOKING BACK ... THE DECADE PAST

- Space Shuttle Retired on July 8, 2011
- Curiosity landed on MARS in 2012
- Voyagers I and II left the Solar System
- New Horizon reached Pluto (Flyby)
- 2015 First landing of a Space X Rocket Booster
- 2018 India's Chandrayaan I Reached the Moon
- ChangE4 Landed on the Far Side of the Moon

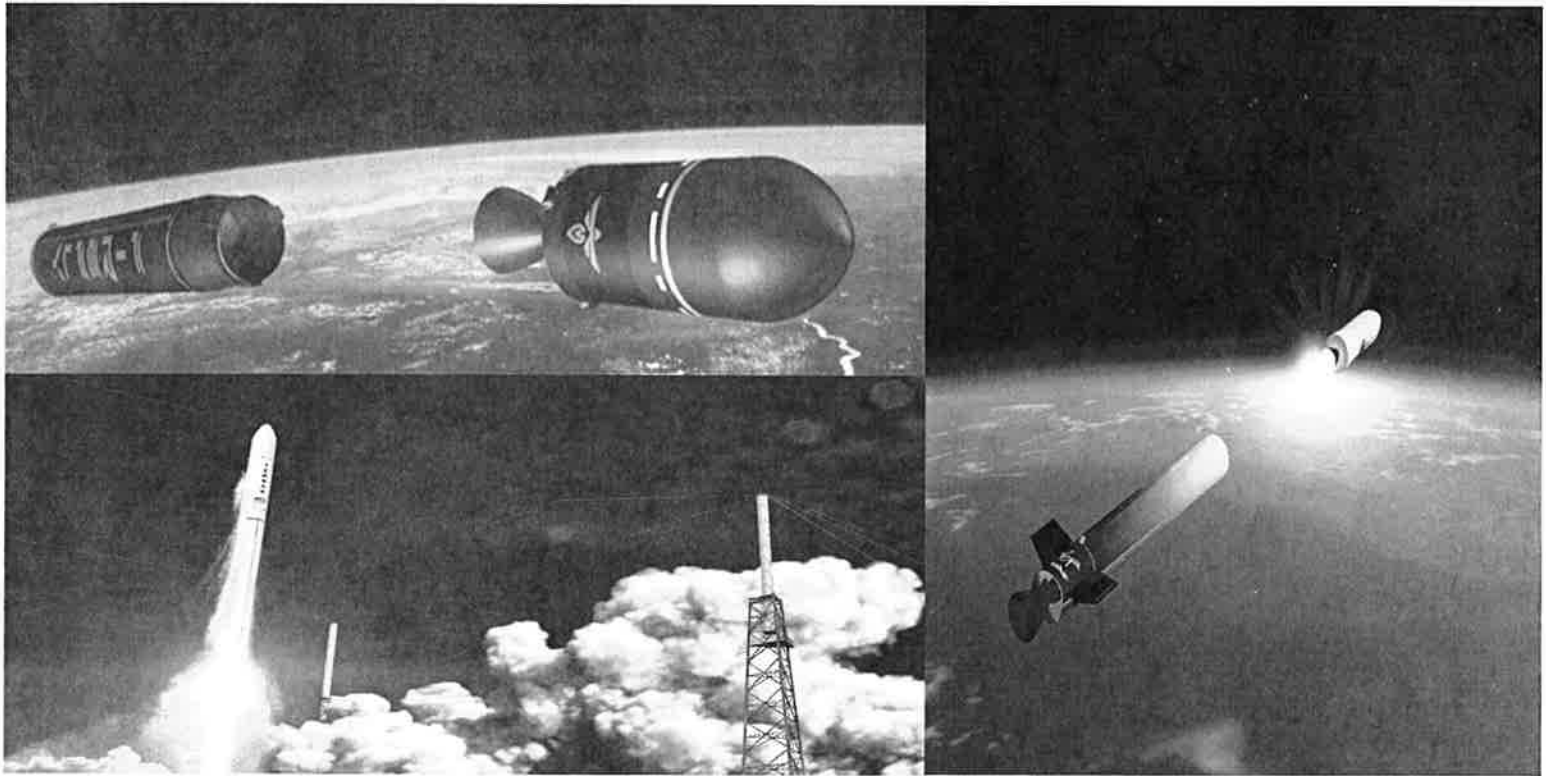
***Decade of Technology Leveling
Internationalization of Space Activity***



A View of the Next Decade ... What to Expect!

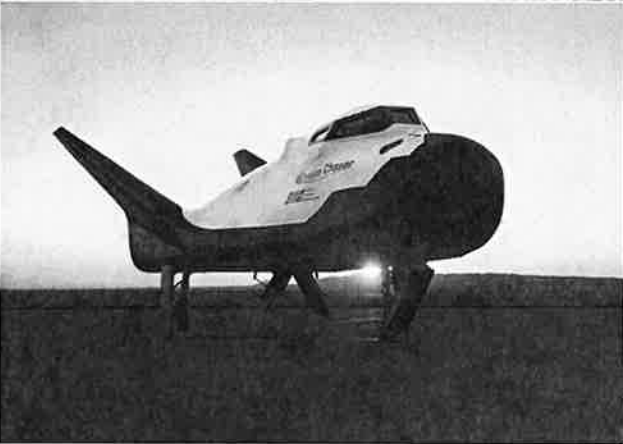
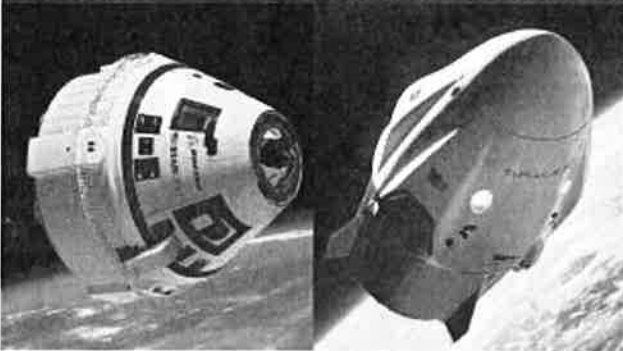


Next Decade – Era of New Small Launch Vehicles



SPACE FLORIDA

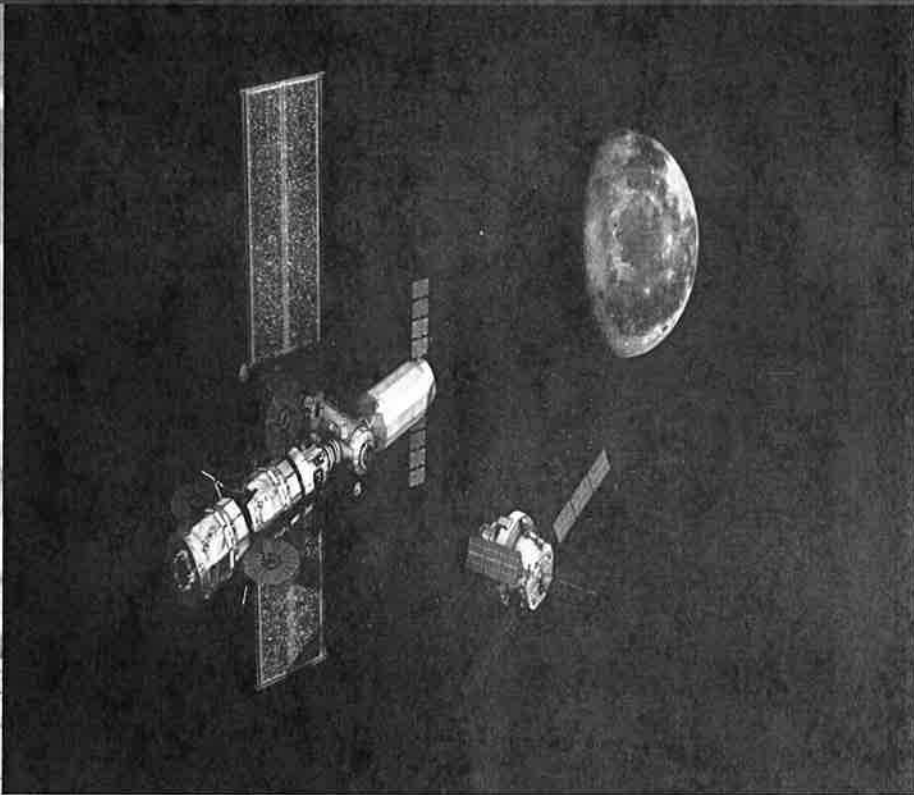
A View of the Next Decade ... Return of Manned Space Flight!



SPACE FLORIDA

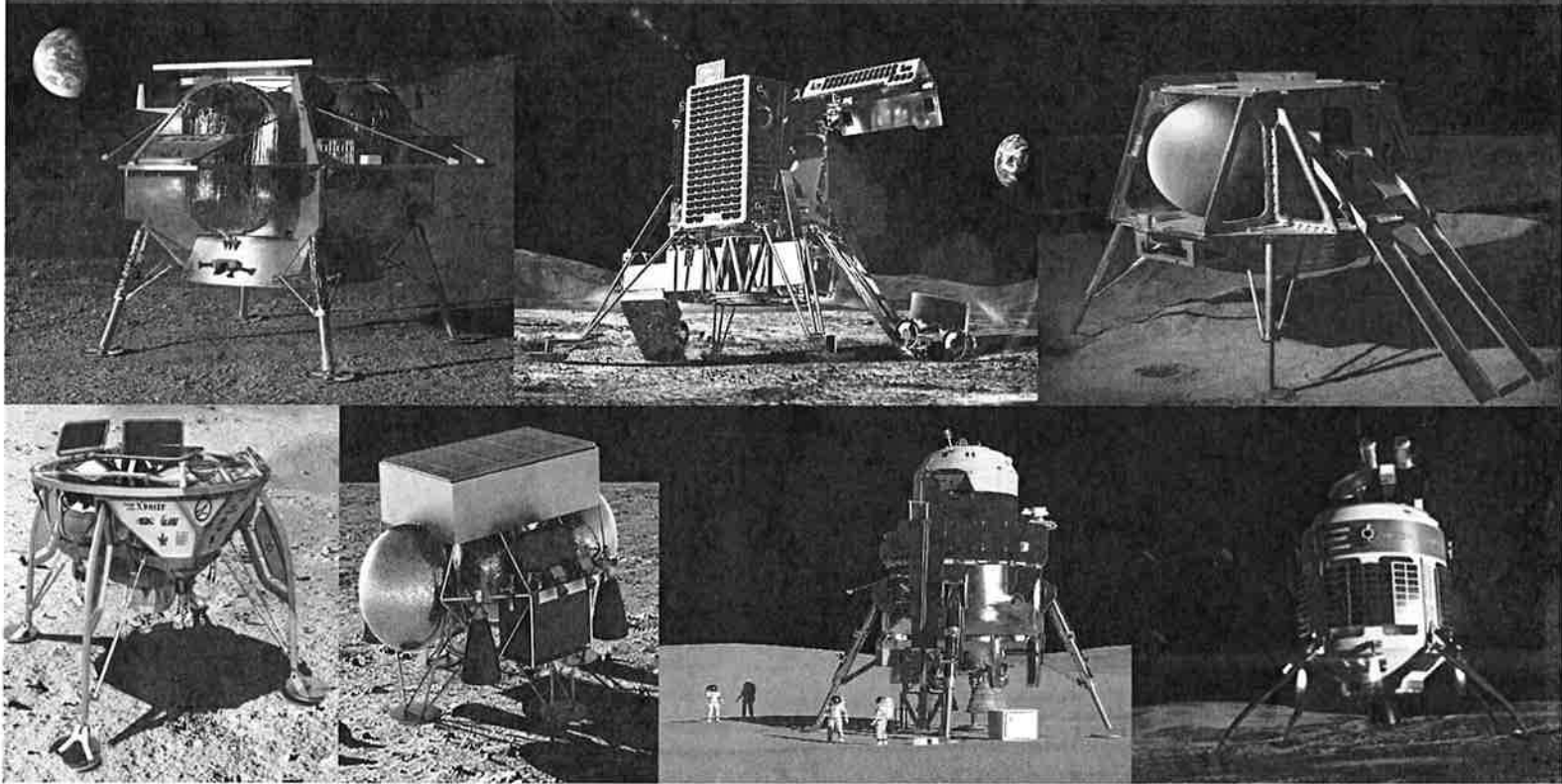


NASA Plans its own Return to the MOON



SPACE FLORIDA

Next Gen On-Orbit and Destination Hardware





LOOKING to the FUTURE ... THE DECADE AHEAD

- **Space X / Boeing Begin Human Spaceflight Services (ISS)**
- **Virgin Galactic / Blue Origin – Era of Private Space Travel**
- **Sierra Nevada's Dreamchaser Becomes Operational
and On-Orbit Services Industry Blossoms**
- **Commercial Providers Dominate Global Space Markets**
- **China Establishes Space Station and Lunar Outpost**
- **NASA Returns to the Moon; Completes Lunar Gateway**

***Decade of Democratized Space
Emergence of Cis-Lunar Economy***



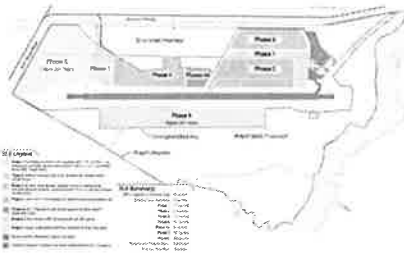
LOOKING AHEAD ... 2020 AND DECADE BEYOND

- **Evolution of the New Space / Cis-Lunar Economy:**
 - Transportation and Space Access
 - Satellite and Space Platforms
 - Ground Systems and Support
 - Telecommunications / Data / Global Connectivity
 - Earth Observation and Data-derived Awareness
 - On-Orbit and Lunar Operations and Support Services
- **An Estimated 12,000 New Satellites / Space Operations Platforms Deployed ... *"The Space Segment"***
- **A new Era of On-Orbit and Lunar Research, Space Manufacturing and Value-Added Products & Services**



Active Spaceport Infrastructure Projects

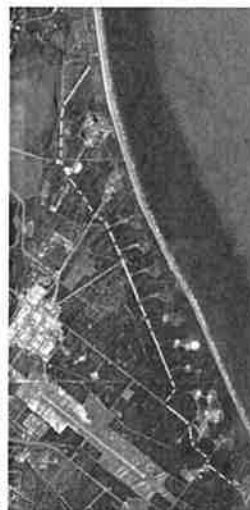
**12 Active Projects totaling \$149.5M+
Additional \$771.2M+ Private Sector Match**



Launch and Landing Facility



Space Vehicle Operations Facility



**Helium & Electrical
Infrastructure Upgrades**



Heavy Lift Orbital Launch Sites



Power Infrastructure Upgrades



Next Gen Launch Complex Upgrades



Aerospace Manufacturing Facilities



OUR 2030 VISION How We'll Get There

“Florida as Global Leader in Enabling Commercial Space”

1. Execute on Strategies in Three Key Goal areas:
 - Industry Growth
 - Industry Leadership / Positioning
 - Spaceport Leadership Standing
2. Achieve a “Five Times Growth” of Portfolio Value by 2030
3. Work to Integrate and Position Florida’s Spaceport, Regional Logistics and Trade-System as ... “An Inter-Stellar Trade-Port”
... .. *and Principal State Enabler of the Cis-Lunar Economy*

USDOT INFRA Grant

Cape Canaveral Spaceport Indian River Bridge & Space Commerce Way Connector Project

*A project to facilitate 21st century multi-
modal freight mobility for space
commerce at the world's premiere
spaceport*

US Department of Transportation INFRA Grant

Indian River Bridge & Space Commerce Way Project Map

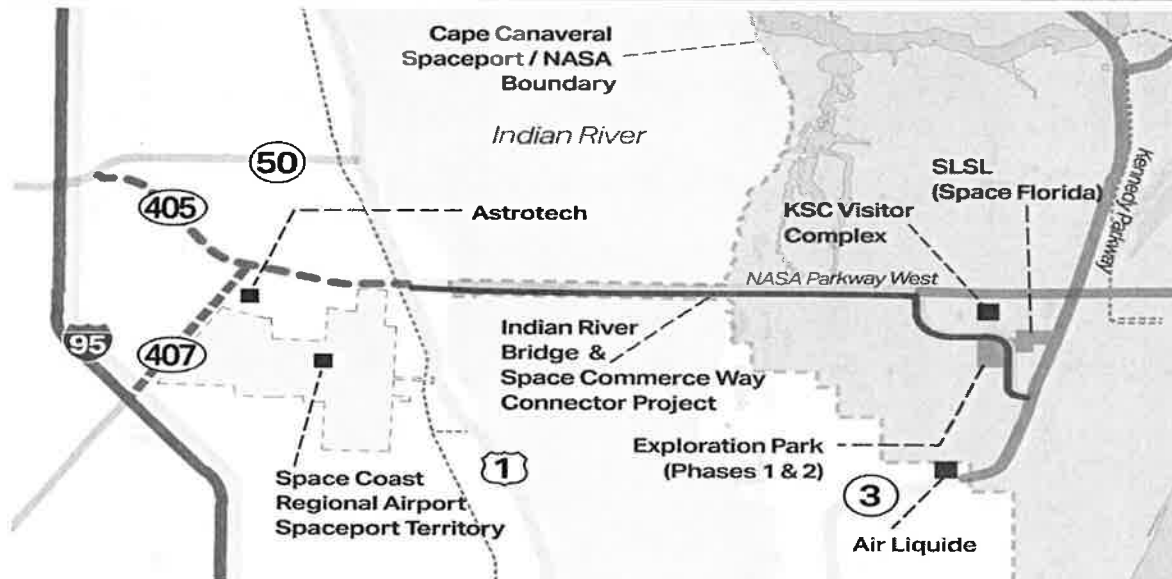


Figure 1: Highway/Bridge Project within Cape Canaveral Spaceport's intermodal facility depicts space-related freight and manufacturing workforce route that also serves as both a routine and emergency public transportation route through the Spaceport. Map illustrates the Project's existing integration into the National Highway System, and its connection to the National Highway Freight Network (NHFN) at Interstate 95.

Project & Overview

Title: *Cape Canaveral Spaceport Indian River Bridge & Space Commerce Way Connector*

Purpose/Need: *Facilitate 21st century multi-modal freight mobility and workforce access for space commerce at world's premiere spaceport*

Description: *Replace NASA's obsolete 1964 bridge, expand capacity of connector highway, and transfer asset life-cycle responsibilities from federal to state spaceport entity*

Eligibility for USDOT INFRA Grant:

- **Eligible Applicant:** *Space Florida, an Independent Special District, Florida's space transportation authority*
- **Partners:** *NASA, Florida Dept. of Transportation, FDOT District 5, Space Coast TPO*
- **Project Type:** *Nationally-significant improvement of the multi-modal freight network to enable economic growth/vitality*

**Space Florida INFRA Grant Fundamental Tenets for the project:**

- Brevard County Residents not burdened with cost of bridge replacement, Space Commerce Way widening or long term maintenance**
- Florida Residents not burdened for the cost of bridge replacement, Space Commerce Way widening or long term maintenance**
- FDOT's Work Program priorities not impacted**
- SCTPO Program priorities not impacted**
- Spaceport Territorial boundaries maintained as part of grant related property transfer to spaceport mission and safety**



INFRA Grant Overview

Project Components

Indian River Bridge (+/- \$130M)

Space Commerce Way Connector (+/- \$35M) *(includes NASA Parkway West resurfacing)*

INFRA Application submitted March 4, 2019

Resolution approval March 4, 2019

FDOT & NASA Partnership Letters March 2019

USDOT **Proposed Award announcement July 22, 2019; Official September**

FHWATerm Sheet approval, goal of February 2020

Project obligated for construction by September 22, 2022

Funding

USDOT/FHWA \$90M

up to 60% of project costs

Other Federal Match NASA up to \$33M

*up to 20% of project costs for Utilities,
Maintenance of Traffic, Demolition &*

Resurfacing

Space Florida +/- \$42M

responsible for all cost with reimbursement from FHWA

INFRA Grant Current Schedule

	2018				2019				2020				2021				2022				2023				2024			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
INFRA Milestones																												
Term Sheet																												
FHWA Obligate-Authorization																												
Indian River Bridge Replacement (FDOT)																												
Environmental Study (NEPA)																												
Permitting																												
Final Design																												
Bid & Award																												
Construction																												
Space Commerce Way Connector (Space Florida)																												
Environmental Study (NEPA)																												
Permitting																												
Final Design																												
Bid & Award																												
Construction																												
NASA Parkway West Mill & Resurface (NASA)																												
Final Design																												
Bid & Award																												
Construction																												
<div><div></div>Baseline Schedule (INFRA Application)</div> <div><div></div>Start variance from baseline</div> <div><div></div>Finish variance from baseline</div> <div>9/30/22 All funds must be obligated</div>																												

SPACE FLORIDA

THANK YOU

