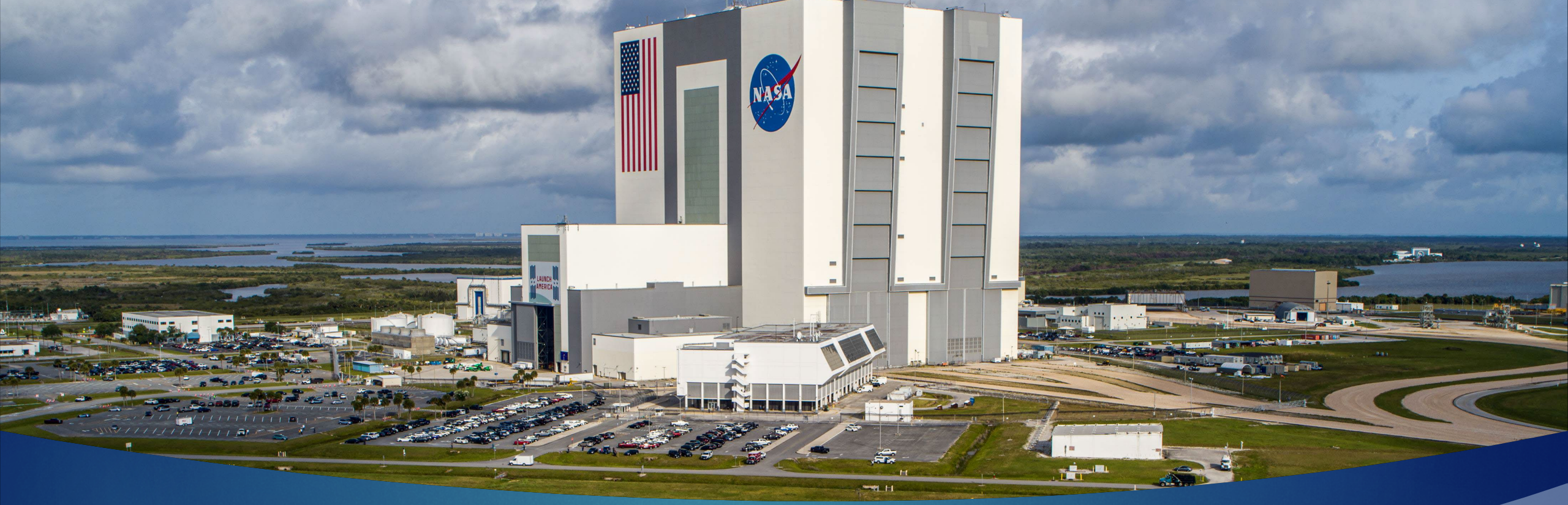
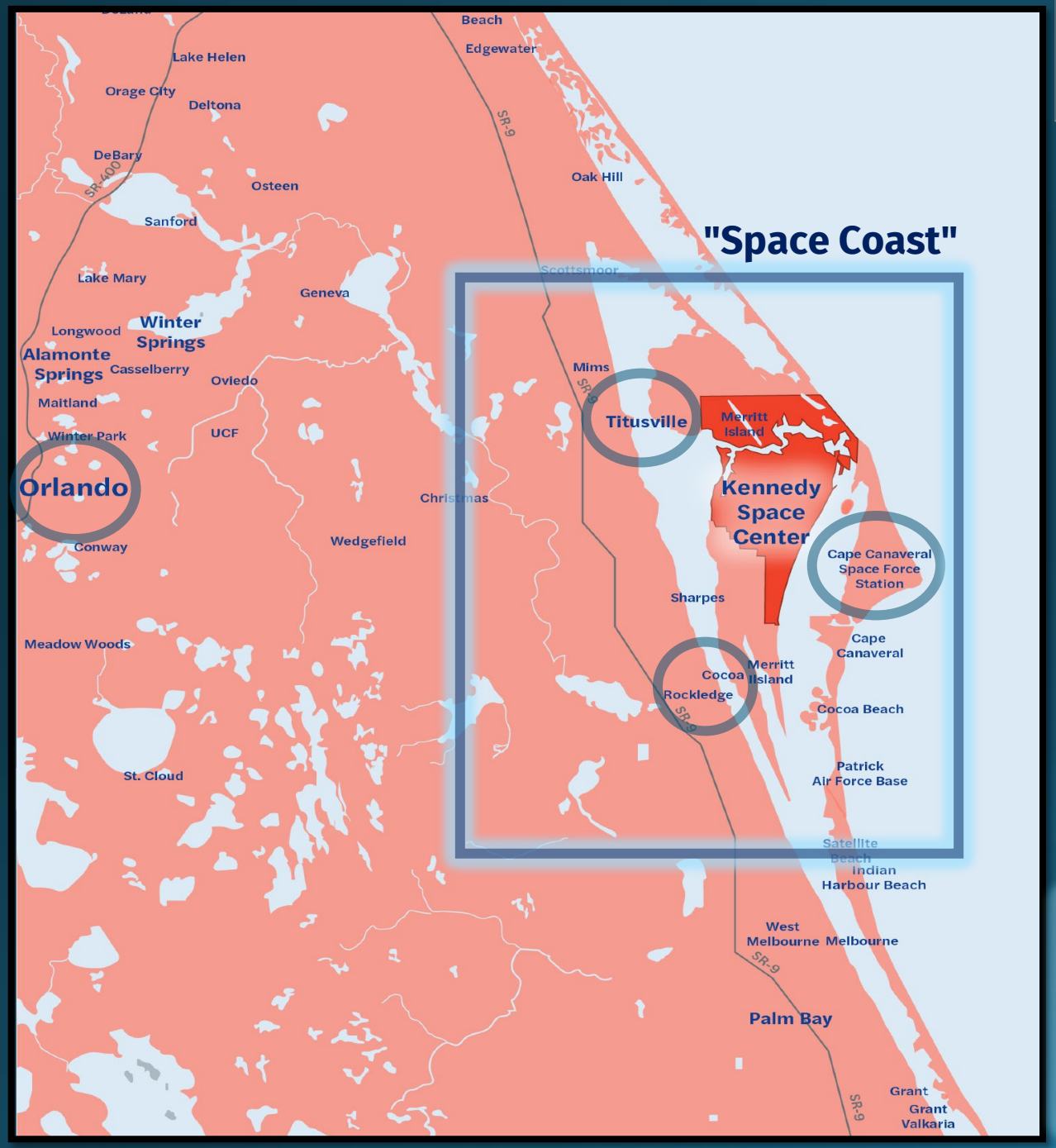
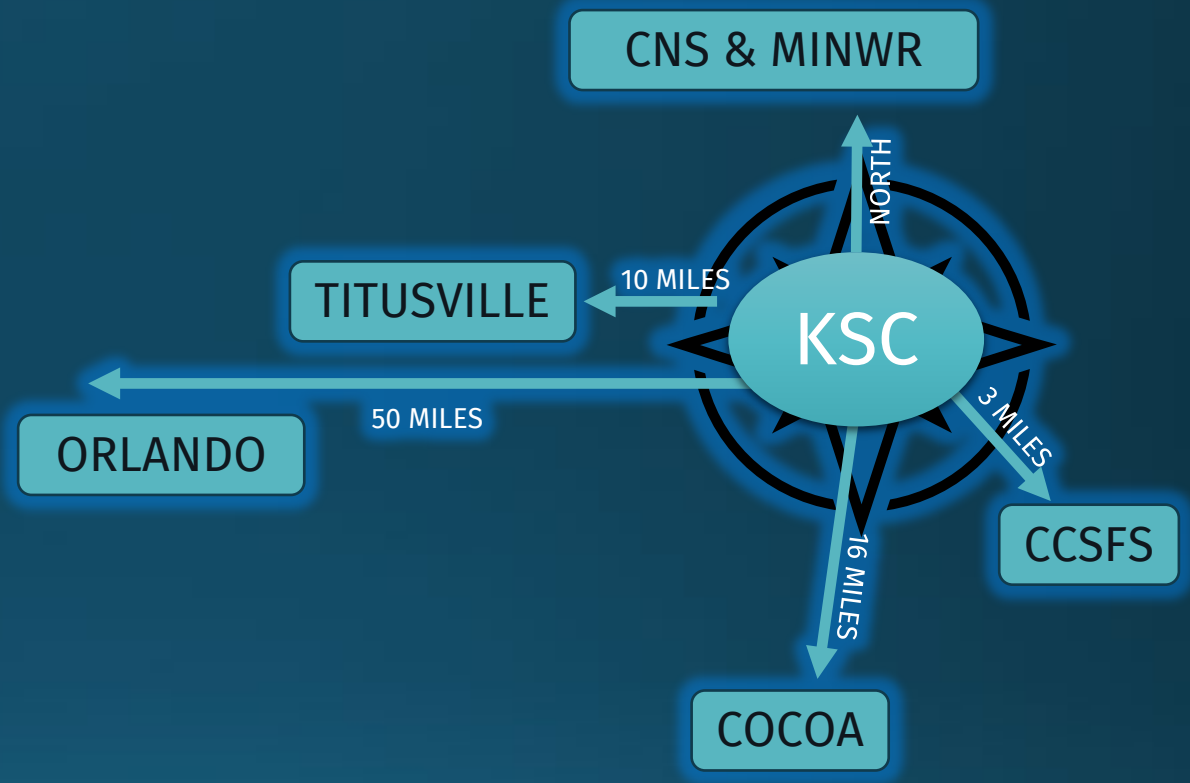


Center Master Plan Digest

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)
KENNEDY SPACE CENTER (KSC)

REGIONAL CONTEXT





11,144 TOTAL SPACEPORT EMPLOYMENT + **15,499** ADDITIONAL FLORIDA JOBS CREATED

Every **10** Jobs at KSC

Creates approx. **13.9** additional Jobs in Florida

Every **$1** spent at KSC ultimately results in **$1.88** for Florida's Economy

VISITORS

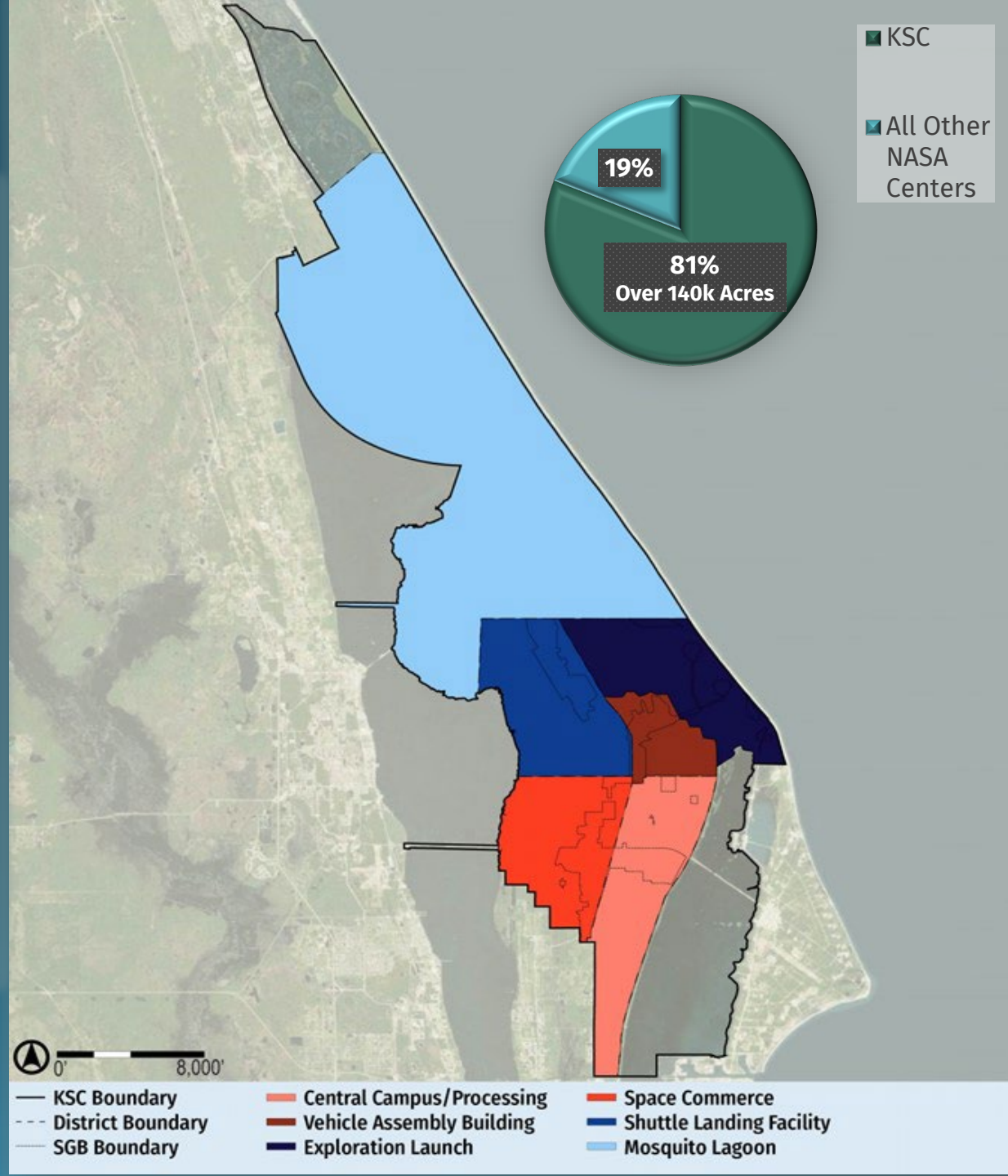
1,651,470 TOTAL VISITORS TO THE KSC VISITORS COMPLEX®

1,301,385 OUT-OF-STATE VISITORS

$123,718,720 OUT-OF-STATE VISITOR SPENDING

FACILITIES & LAND

- KSC represents almost 81% of NASA's agency-wide land holdings.
- A little more than 5K acres (3.5%) of KSC's 140K acres are developed. KSC's undeveloped land acts as a critical safety buffer for launch operations.
  - This property is jointly managed by the Merritt Island National Wildlife Refuge (MINWR) and Canaveral National Seashore (CNS)
- KSC has an operational partnership with the Cape Canaveral Space Force Station to provide shared services including utilities, launch commodities, security, range services, and facilities.
- The updated Master Plan includes a Programmatic Environmental Assessment (PEA) to ensure KSC continues its responsible stewardship of NASA's assets.
  - MINWR and KSC have a 50 plus year partnership which prioritizes NASA's space mission while coexisting with and supporting the Refuge's nature-centric mission. Successfully balancing nature and technology has always been the cornerstone of this partnership.



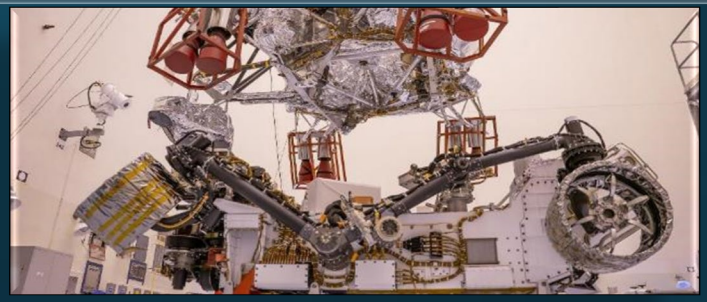
MAJOR KSC PROGRAMS

EXPLORATION GROUND SYSTEMS

EGS was established to develop and operate the systems and facilities necessary to process and launch rockets and spacecraft during assembly, transport and launch. EGS's mission is to transform the center from a historically government-only launch complex to a spaceport that can handle a diversity of spacecraft and rockets—both government and commercial.

COMMERCIAL CREW PROGRAM

NASA's Commercial Crew Program is a partnership to develop and fly human space transportation systems. Enabling safe, reliable and cost-effective crew transportation to and from the International Space Station. NASA's Commercial Crew Program works with the American aerospace industry as companies develop and operate a new generation of spacecraft and launch systems capable of carrying crews to low-Earth orbit and the ISS.



LAUNCH SERVICES PROGRAM (LSP)

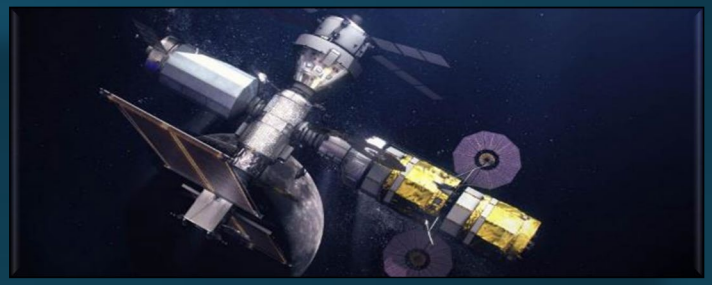
LSP, "Earth's bridge to space," is responsible for launching uncrewed rockets delivering spacecraft that observe the Earth, visit other planets and explore the universe - from weather satellites to telescopes to Mars rovers and more. LSP assists customers world-wide and enables some of NASA's greatest scientific missions and technical achievements.

INTERNATIONAL SPACE STATION (ISS)

The ISS Program brings together international flight crews, multiple launch vehicles, globally distributed launch, operations, training, engineering, and development facilities; communications networks, and the international scientific research community. The station is a critical testbed for NASA to understand and overcome the challenges of long-duration spaceflight.

EXPLORATION, RESEARCH AND TECHNOLOGY

Researchers at KSC provide support for both government and commercial launch vehicles and spacecraft. Developments by the scientists and engineers working at Kennedy labs and its unique facilities are critical to the future success of space exploration and also play important roles in improving the quality of life for all Americans.



DEEP SPACE LOGISTICS (DSL)

DSL is leading the commercial supply chain in deep space by procuring services for transporting cargo, equipment and consumables to and from the Gateway. The agency's Launch Services Program, International Space Station cargo, and resupply mission experience propels space exploration to the Moon, Mars and beyond.

KEY PARTNERSHIPS

Kennedy Space Center

"The World's Premier Multiuser Spaceport"

- **Blue Origin:**
  - 295 Acres: New Glenn Rocket Manufacturing
- **Boeing:**
  - C3PF: CST-100: Starliner
  - OPF 1/2: DoD X37
  - Processing Control Center
- **Florida Power & Light (FPL)**
  - ~491 Acres: 74.5 Mw Discovery Solar Center
- **Lockheed Martin**
  - O&C High bay: Orion Manufacturing
- **Space Florida**
  - 199 Acres: Exploration Park
    - OneWeb
    - Space Life Science Lab
  - Shuttle Landing Facility
- **SpaceX**
  - LC-39A: Falcon 9, Falcon Heavy
  - ~67 Acres: Roberts Rd Campus
    - Logistics, Starship Support

BOTTOM LINE UP FRONT

THE KSC STORY

- KSC is the world's premier Spaceport, supporting government and commercial processing and launch capabilities and playing a critical role in National Security Space Launches (NSSL)
- NASA programs increasingly rely on commercial launch capabilities to meet mission requirements to advance the nation's space exploration objectives.
- The pace of launch and processing activities is greater than at any time in the history of KSC. Without immediate improvements, current operations and future growth are at risk.

NEXT STEPS

- The size and variation of vehicles along with an increased launch cadence requires infrastructure improvements to support critical national missions.
- The Master Plan addresses urgent infrastructure needs and promotes efficient land use, positioning the Center for future success and long-term operational effectiveness.
- The investments prioritized in the Master Plan will enable next-generation commercial systems that will help put the nation on a path to achieve lunar exploration goals and land the first human on Mars.

FOR KSC & NASA TO CONTINUE TO LEAD IN SPACE EXPLORATION, THE TIME TO INVEST IS NOW.

THE NEXT FRONTIER IS ALREADY HERE

OVERVIEW

You Are Here:
Strategic Context

Project Needs (ADP)

Where (POA+ parcelization tool)

How (CDP)

So what?

Strategic Context:

Setting the Stage

- *Regional Context*
- *KSC Facilities and Land*
- *Planning Goals and Objectives*
- *Driving Trends*
- *Partner Master Plans*
- *NASA Master Planning*
- *KSC Center Master Plan*

NEXT STEPS IN KSC'S EVOLUTION

The success of NASA's mission is mutually dependent on commercial partners and commercial success is dependent on NASA.

However, KSC has reached an inflection point at which aging and capacity-constrained infrastructure may limit the continued evolution of the multi-user spaceport and impact NASA's mission.

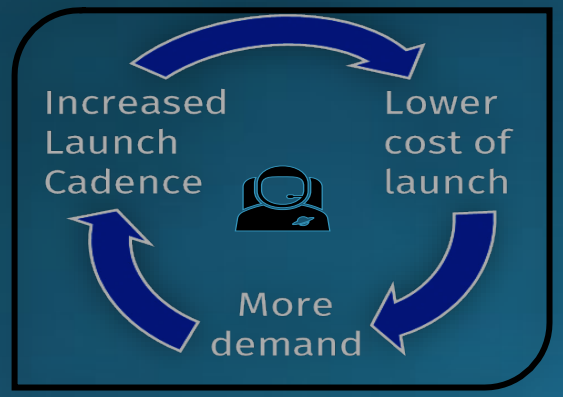
Commercial launch capabilities are now integral to accomplishing NASA's mission. The availability of common-use infrastructure to support partner launches has avoided the need for new duplicative infrastructure and associated costs that would have been passed on to NASA missions.

Increasing vehicle size, diversity, and launch cadence driven by NASA, national security, and commercial requirements have placed new demands on KSC's infrastructure. Targeted upgrades are required to sustain these critical national missions and minimize delays caused by capacity constraints.

NASA ENABLING SUPPORT

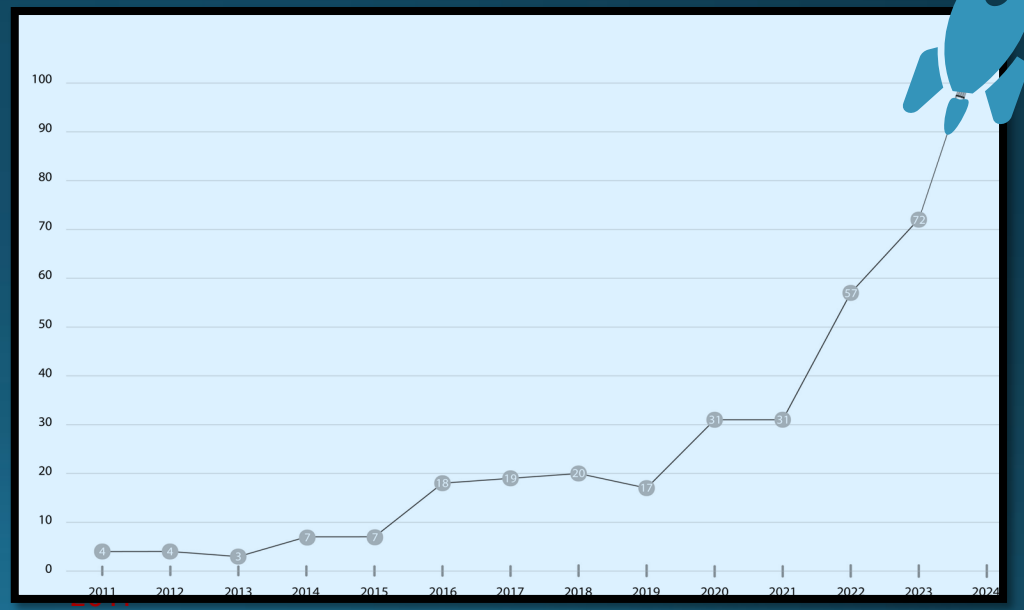
NASA's successful enablement of the commercial space industry has resulted in:

- A higher launch cadence, significantly reducing the cost of access to space and creating a thriving space commerce ecosystem.
- Avoidance of operations and maintenance costs associated with transferred facilities, while still preserving KSC's unique capabilities.
- More efficient and cost-effective options for NASA Programs to access space and fulfill Mission requirements.



Commercial launches at KSC have surged by 720% since 2011 and outpaced government launches 8-to-1. Infrastructure demand now exceeds the supply.

With launch rates projected to exceed 225 by 2030, prioritizing infrastructure investments has become an urgent, near-term priority to ensure this manifest is achievable.



SPACEPORT DEVELOPMENT

KSC's initial post-shuttle era partnership strategy focused on divesting facilities that were no longer required for future NASA operations. Even before shuttle's retirement, KSC has served as the Agency's "Commercial Center of Excellence" since 1998.

Once landmark partnership agreements such as LC-39A and the SLF were signed and executed, KSC began transitioning towards identifying vacant property to lease to partners. This transition has led to billions of dollars worth of private investment which has provided NASA Programs with additional support.

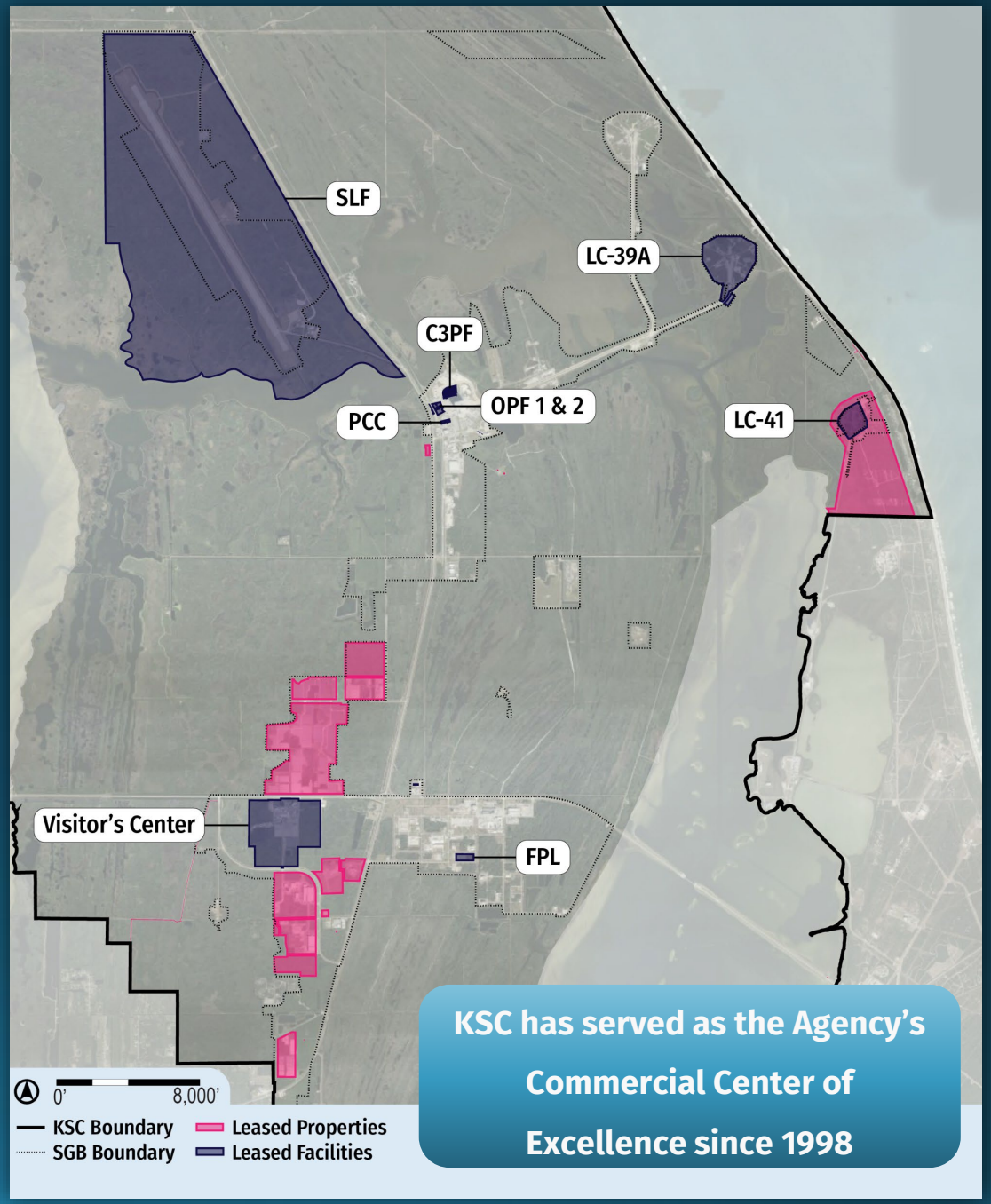
Since 2015, KSC has leased over 5,000 acres, leaving fewer than 2,000 acres within its Space Growth Boundary (SGB) for future development.

Leased Facilities:

Year	Partner	Property (acres)
2011	OPF1,2,&3; PCC	14
2014	LC-39A	173
2015	Shuttle Landing Facility (SLF)	4,433

Leased Property:

Year	Partner	Property (acres)
2015	Space Florida (Exploration Park Ph 2)	139
2018	Blue Origin	90
2018	FPL Solar	491
2018	SpaceX Roberts Rd	67
2023	Blue Origin	66
2024	SpaceX Roberts Rd North	100
2025	Amazon Kuiper/Saturn Substation	43



INFRASTRUCTURE CONSTRAINTS

KSC supports ALL government and commercial launches at both KSC and CCSFS. However, the launch rates, size, and diversity of vehicles from NASA, DoW, and commercial partners have put an extensive strain on KSC's common-use infrastructure.

As partner operations become increasingly integrated with NASA's, it is critical that KSC's infrastructure is upgraded and modernized to support NASA, DoW, and evolving partner operations.

Much of KSC infrastructure is still in place from the 1960s. Investments are needed immediately to ensure it can keep up with the growing demand and modernized requirements for both NASA and commercial spacecraft.

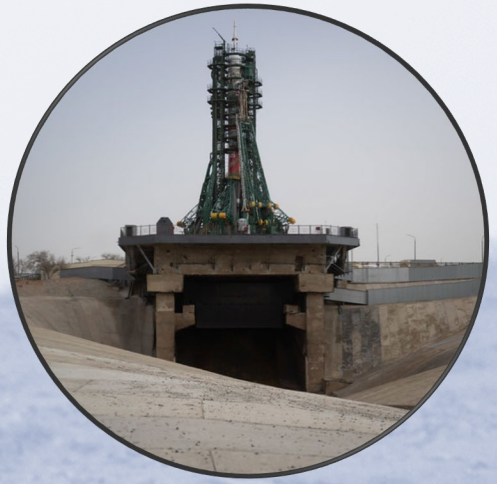
As the pace of KSC operations continues to increase, KSC must work with its regional partners to prioritize larger scale infrastructure investments that NASA cannot afford. **More flexible mechanisms are needed to provide NASA with the ability to accept funding for shared-use infrastructure projects.**

KSC SPACEPORT TRENDS

↑ COMMERCIAL PARTNERSHIPS

↑ LAUNCH TEMPO

↓ NASA FUNDING

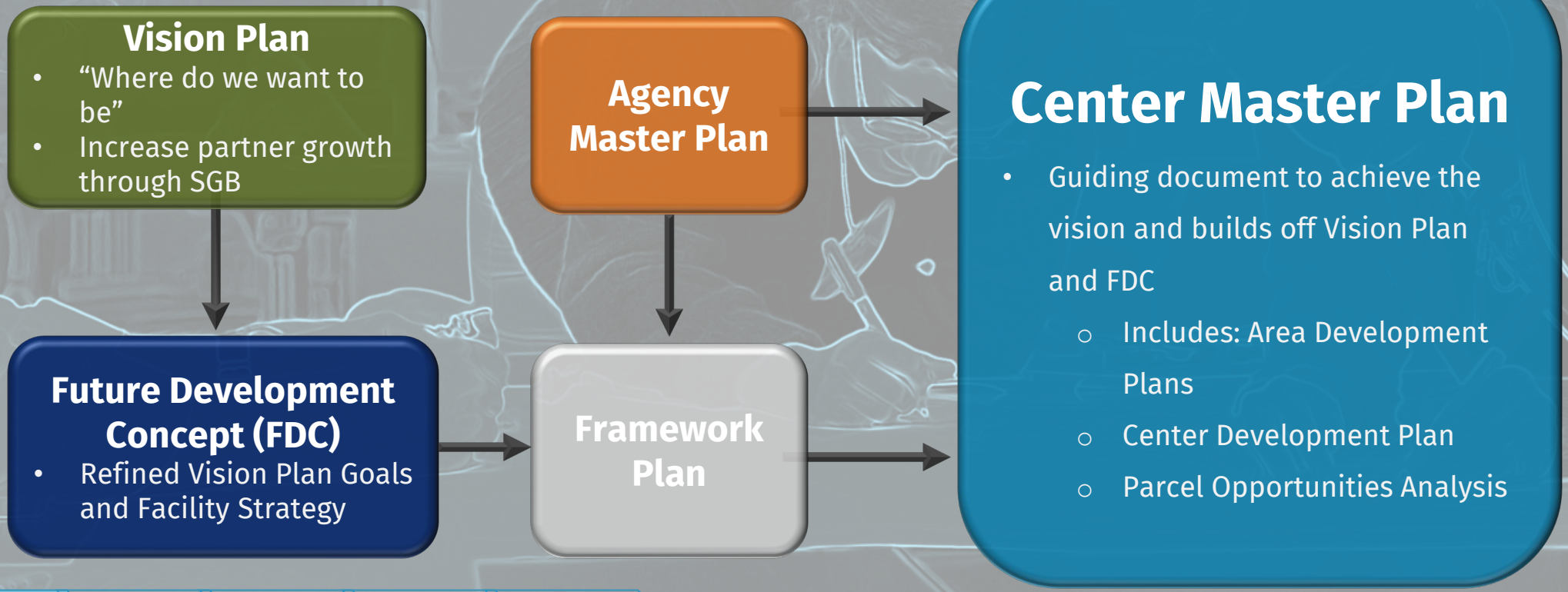


↑ INFRASTRUCTURE STRAIN

How do we align today's actions with tomorrow's realities? Investment now will position KSC and the Agency to meet future missions ahead

MASTER PLAN CONTEXT

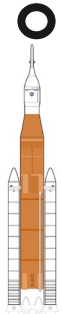
As the evolution to a multi-user spaceport accelerated, KSC initiated a comprehensive Master Planning Process that incorporated input from Agency Mission Directorates, federal and state stakeholders, and commercial partners. This effort began with an initial Vision Plan that provided a strategic framework for future development. The 2025 Master Plan builds on that foundation, guiding how KSC can meet Agency requirements in a coordinated and sustainable manner.



AMP TO CMP PROCESS OVERVIEW

Stakeholder Engagement *Missions, Portfolios, Mission Support*

Mission Requirements
MD informed



Vision & Goals

Leadership Intent

STRATEGIC DIRECTION *(NASA mission first)*

Agency Master Plan (AMP)

- **AIA: MR Scores and Buckets**
- **Sets Agency Goals and Metrics**
- **Identifies Strategic Leaps**

Site Assessments

Alternative Analysis

Plan Documentation w/ Phasing

CORRELATED CENTER PLANNING

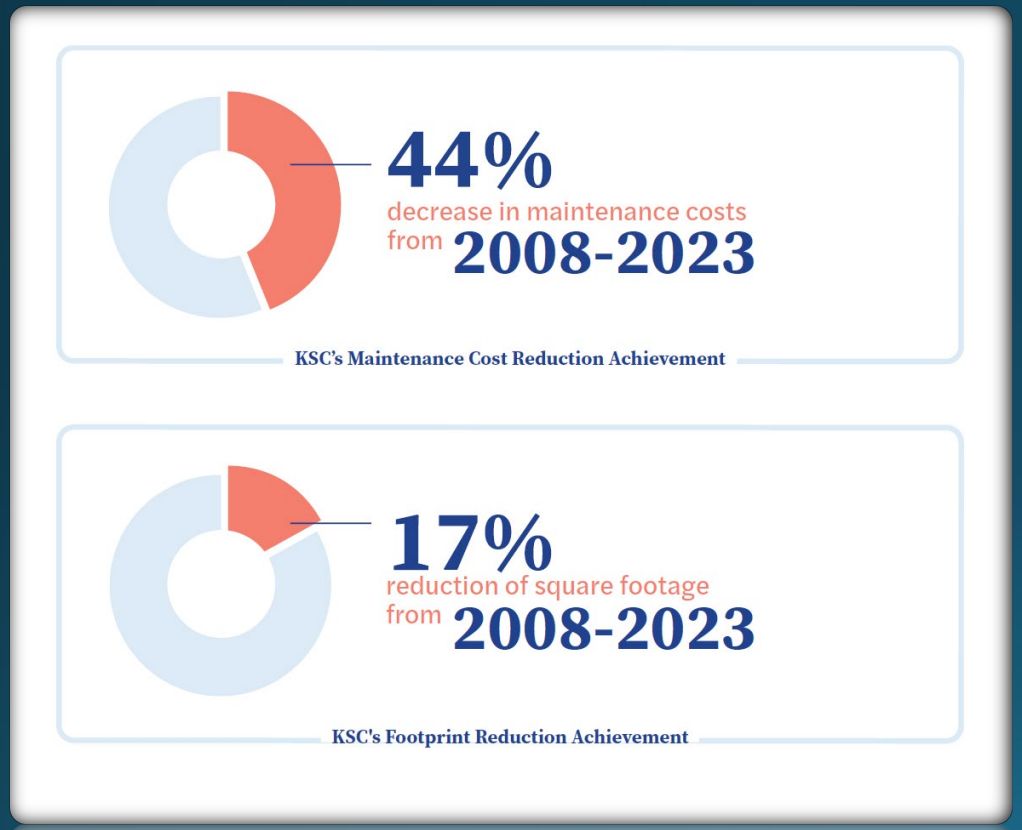
CENTER MASTER PLAN (CMP)

- **Current state constraints mapping**
- **Feasibility analysis**
- **Illustrative**
- **Affordability**
- **Network**

IMPLEMENT

Agency Capital Investment Program Plan (ACIPP)

AGENCY MASTER PLAN ALIGNMENT



- NASA's Agency Master Plan established an Agency-wide requirement to reduce assets by 25% by 2038, based on a 2008 baseline.
- KSC has contributed significantly towards this goal, reducing its real property footprint by 17% and lowering O&M costs by 44% between 2008 and 2023.
- While future planning efforts, including this Center Master Plan, will continue to support divestment through co-location, consolidation, and demolition, **additional investment will still be required to ensure NASA programs and partners at KSC can meet mission requirements**, particularly as federal budget resources become more constrained.

PLANNING GOALS

KSC Mission: Igniting space exploration and discovery for all.
KSC Vision: Provide continuous access to space from Earth's premier spaceport through creativity and innovation.

Center Core Competencies

- Acquisition and management of launch services, deep space logistics project, and commercial crew systems deployment and operations.
- Certification of new commercial launch vehicles to launch high-value civil sector payloads
- Launch vehicle and spacecraft processing, including servicing, maintenance, command, control, telemetry, launch, landing, and recovery operations; including support for processing crews
- Payload and flight science experiment processing, assembly, integration and testing
- Designing, developing, operating, and sustaining flight and ground systems and supporting infrastructure including integration and testing
- Development, testing, and demonstration of advanced flight systems and transformational technologies to advance exploration and space systems.

Future Development Strategies

1. Flexible Processing & Launch Capabilities
2. Robust Infrastructure
3. Sustainable Facilities
4. Responsible Stewardship of NASA Assets

Spaceport Objectives

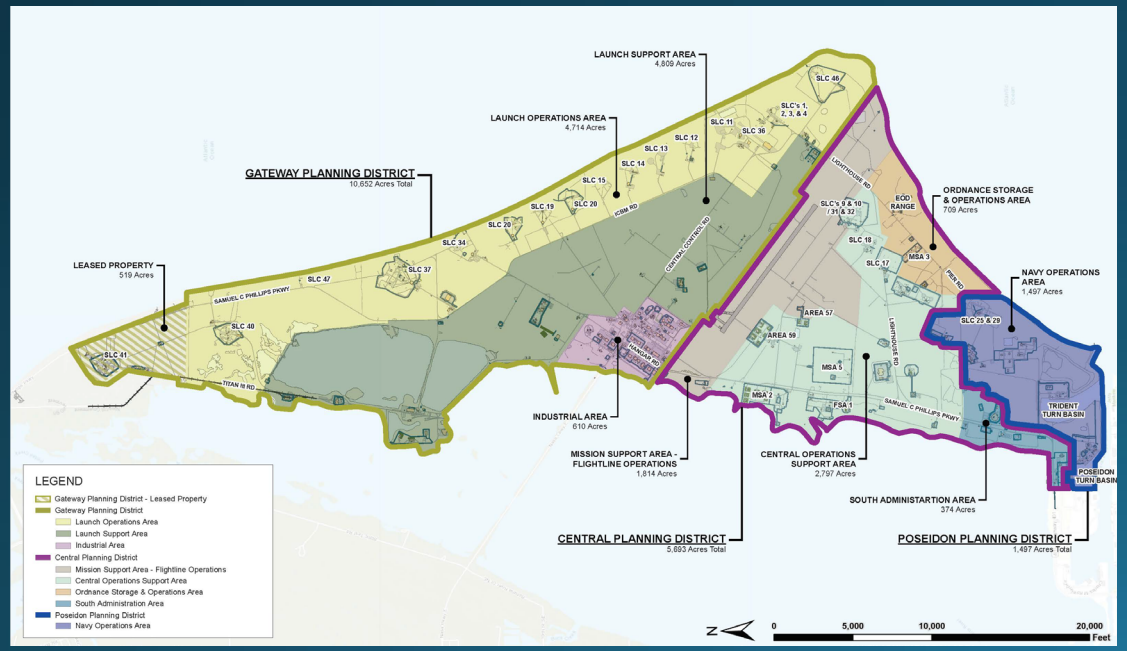
1. Maintain KSC's leadership for NASA and the nation as Earth's Premier Spaceport building on science, research, and technology capabilities.
2. Maximize Spaceport launch/recovery throughput.
3. Modernize Spaceport infrastructure to be robust and sustainable.
4. Achieve a seamless experience with CCSFS for our commercial partners.
5. Support commercial activity at the speed of business.
6. Maximize development opportunities while continuing responsible stewardship of the environment.

CRITICAL PARTNER INVOLVEMENT – SPACE FORCE

KSC's Spaceport Objectives align with the Cape Canaveral Space Force Station's (CCSFS) Spaceport of the Future Plan, which identifies critical infrastructure investments needed to support evolving launch requirements.

KSC and CCSFS infrastructure is inherently interconnected due to proximity, shared mission objectives, and overlapping partner operations. For example, KSC owns and operates the pipeline systems, spanning across CCSFS and KSC, that provide propellants (gaseous nitrogen (GN2) and gaseous helium (GHe)) directly to launch providers for every launch.

Since KSC infrastructure supports all launches that occur on both installations, KSC's Master Plan builds off Space Force planning initiatives to maximize synergies between the two federal installations.

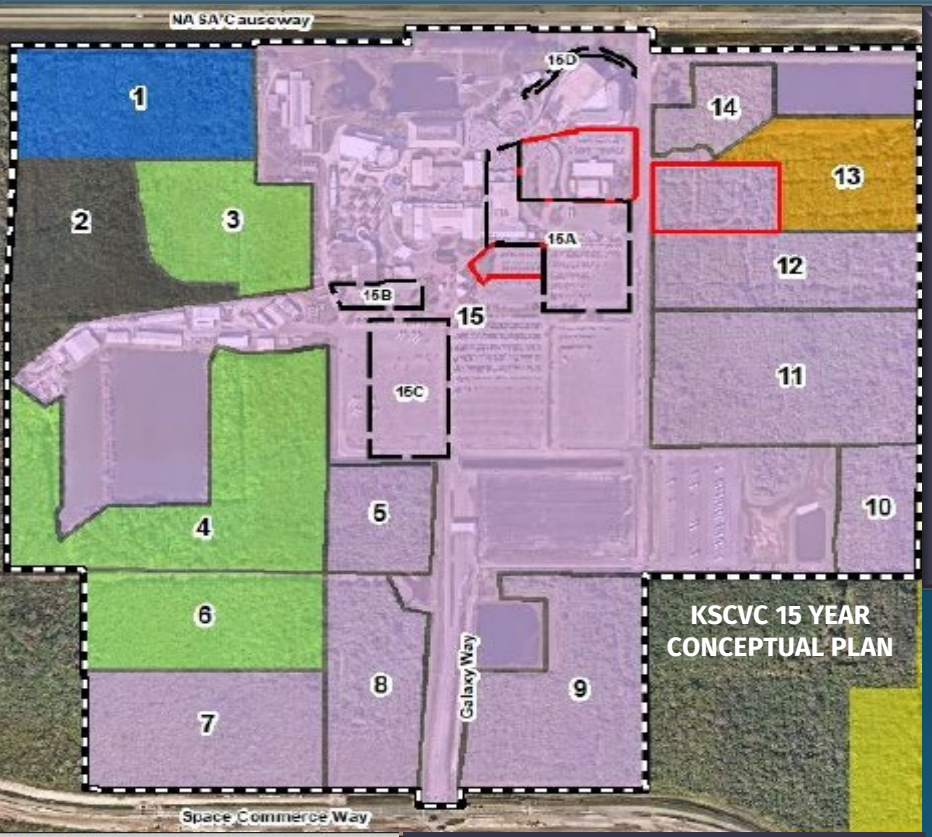


KSC and CCSFS are collaborating more closely than ever before to posture the installations that form the busiest spaceport on the planet for a demanding future and long-term success. A strategic, unified approach will allow the **S**paceport to:

- Establish a routine cadence of communication to stakeholders.
- Mutually identify which infrastructure investments are most critical to support Government needs and commercial partners on each installation.
- Strategically assess new development requests in a holistic manner to ensure KSC and CCSFS utilize remaining developable property most efficiently.

This approach builds on the long-standing collaboration of KSC and CCSFS by unifying the two installations under a single spaceport initiative to more effectively and efficiently serve the needs of the commercial and government market by jointly advocating for strategic resources.

PARTNER CONTRIBUTIONS TO KSC MASTER PLAN

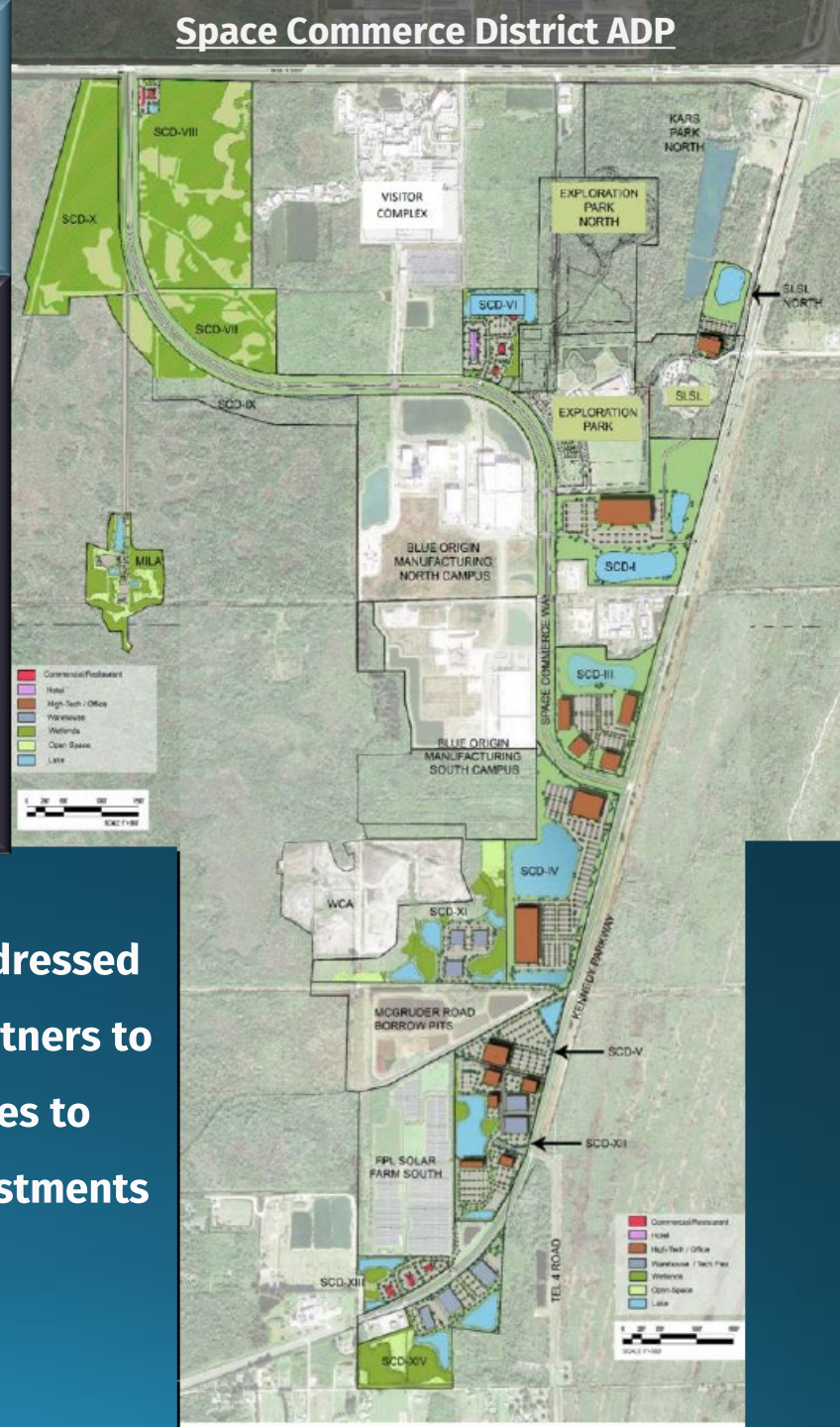


Space Commerce District Area Development Plan (ADP)

KSC partnered with Space Florida to create an Area Development Plan for the Space Commerce District.

The Space Commerce District ADP, along with other partner plans, identifies future development opportunities that could be offered to partners in accordance with Master Plan strategies.

Space Commerce District ADP



To ensure future requirements are addressed in the Master Plan, KSC requires its partners to provide 5-year requirement packages to ensure larger scale infrastructure investments can be planned for.

Legend
- DN PEA Proposed Action Boundary
- Future Attraction Redevelopment Areas
- Environmental Assmt in Process
- Exploration Park North EA Bndy

Proposed Development Areas
- Administrative
- Community
- Light Industrial
- Open Space
- Outreach/Education

KSC Visitors Complex Master Plan:

KSC worked with the Visitors complex on a 15-year development plan that identifies expansion opportunities, new exhibits, and attractions.

KSC SPACEPORT TRENDS

Resilience

KSC Infrastructure supports every launch and operation on KSC and CCSFS. But due to its age, its systems are in dire need of repair.

KSC has identified this backlog of repair projects, but Agency funding is limited. Critical infrastructure cannot be sustained under current operating model and funding structures

To ensure KSC infrastructure can support NASA mission and national security requirements, additional funding mechanisms are needed.

Modernization

KSC legacy infrastructure was not designed to accommodate requirements of today's launch vehicles and propellant types. The Agency is working with partners to enable system modernizations for:

Power – Upgraded transmission lines and capabilities to meet growing electrical demand
Wastewater – New conveyance system to route non-NASA wastewater off site
Gas and propellants – increased flow rates and larger pipelines to support evolving launch requirements and systems
Transportation – Modernized transport routes to help alleviate payload congestion and strain of additional road wear and tear

Investment now will position KSC and the Agency to ensure KSC has assured access to space, meets national security requirements, and meets tomorrow's space exploration goals.

CRITICAL NEEDS

The master planning process identified several items as critical needs. These are actions that, if not resolved, will hamper the evolution of KSC into the multi-user Spaceport envisioned by the Plan, KSC leadership, and Agency stakeholders.

Critical Infrastructure Investments:

1. **Power** – Replacement of current 115 KV power transmission lines from offsite with redundant 230 KV transmission is necessary to enable additional partner development.
2. **Wastewater** – New wastewater conveyance to an offsite treatment plant will be necessary to treat additional effluent associated with future commercial partner development
3. **Gases** – Increased supply of GN2 and LOX will enable next generation launch technologies and capabilities.
4. **Propellants** – A natural gas pipeline and liquefaction plant(s) will be necessary to support an increased launch tempo.
5. **Stormwater** – A stormwater detention basin on the west side of KSC is needed to facilitate future commercial partner development.
6. **Transportation** – Road and bridge infrastructure replacement is needed to ensure KSC and CCSFS have reliable and redundant transportation routes.

Critical Policy/Operational Adjustments:

1. **Operating Flexibility** – An operating model that provides greater flexibility towards funding shared-use infrastructure upgrades is critical for NASA to meet Agency mission requirements while also enabling additional partner development.
2. **Burn Policy** – Current habitat maintenance for Scrub Jays requires regular prescribed burns but burn days must be deconflicted from launch days due to concerns about smoke and particulates. New policies and/or BMPs that enable concurrent burns and launches will enable a higher launch tempo.
3. **Wetlands and Scrub Jay Habitat Mitigation** – KSC has nearly exhausted its supply of land usable for both wetland mitigation and Scrub Jay habitat mitigation. Future development will likely require alternative or cooperative wetland mitigation policies/agreements.
4. **Land Landing** – As future launch technologies incorporate land landing capabilities, KSC will need to develop a comprehensive policy to safely enable this possibility in tandem with CCSFS.

WHERE WE FIND OURSELVES

THE PAST

NASA's investments in infrastructure and strategic land partnerships significantly enhanced development and spurred a surge in activity.

THE PRESENT

Challenges with infrastructure and funding hinders efforts to meet partnership demands and the increased pace of launch tempo.

THE FUTURE

Achieving a sustainable "Spaceport City" requires smart growth and shared costs to land the first human on Mars and protect National Security interests.

Spaceport Sprawl

Resource Constraints

Smart Growth

Are we building for the moment, or for the mission ahead?

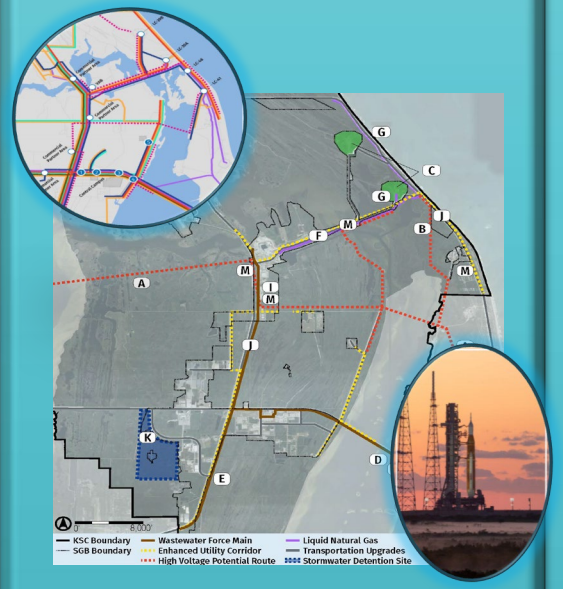
2025 CENTER MASTER PLAN COMPONENTS

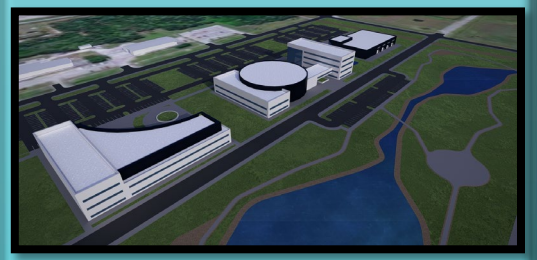
Area Development Plans (ADPs)

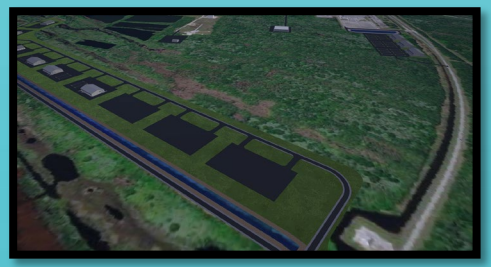
Includes: Future Facility Strategy and Phasing plan

Center Development Plan (CDP)

Includes: Utility Network Plan, Regulating plan, Parcelization Plan





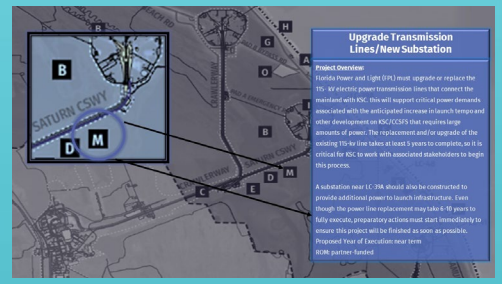


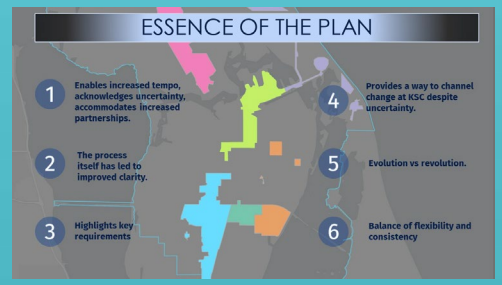
Parcel Opportunity Analysis (POA)

Includes: Parcel/Site Analysis and Future Development Constraints and Concepts

Center Master Plan Digest

Includes: Summary of Planning Projects and KSC's Strategic Vision





OVERVIEW

Background

You Are Here:
Project Needs (ADP)

Where (POA+ parcelization tool)

How (CDP)

So what?

Project Needs:

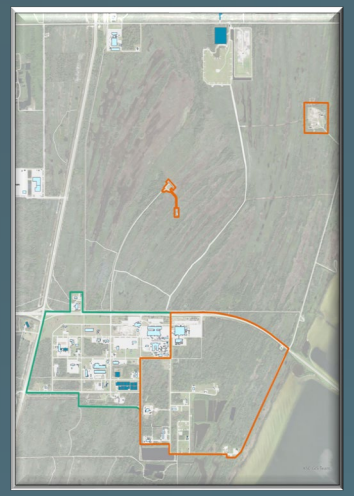
What's Driving This?

- *Agency Master Planning*
- *ADP Process*
- *Illustrative Plans*

AREA DEVELOPMENT PLAN OVERVIEW

KSC Districts

Central Campus & Central Processing



- *1,515 acres*
- *179 RP assets*

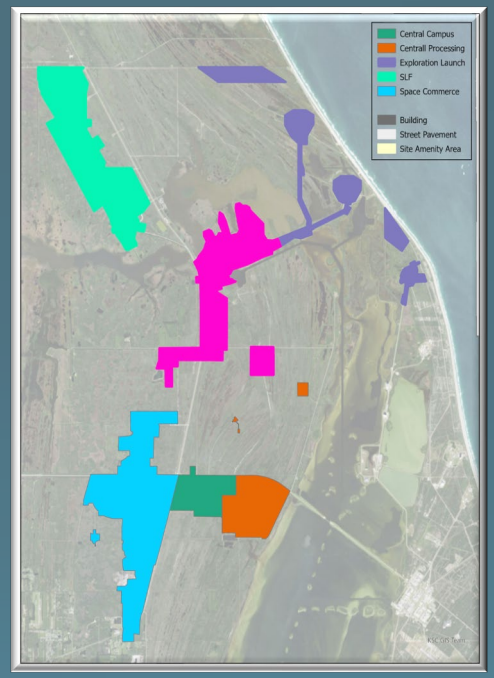
Vehicle Assembly Building

- *1,979 acres*
- *265 RP assets*

Exploration Launch

- *1,023 acres*
- *133 RP assets*

Spaceport Growth Boundary



An Area Development Plan (ADP) identifies where future facility and infrastructure investments should be sited within KSC's three primary Districts:

- Central Campus & Processing
- Vehicle Assembly Building
- Exploration Launch

In alignment with UFC 3-210-01A, each District's ADP provides planning-level guidance for land use, facility siting, and infrastructure investment to support future NASA Institutional, Programmatic, and Commercial requirements. The projects identified in each ADP are contingent upon future funding availability and Agency prioritization.

CENTRAL CAMPUS PROCESSING DISTRICT ILLUSTRATIVE PLAN

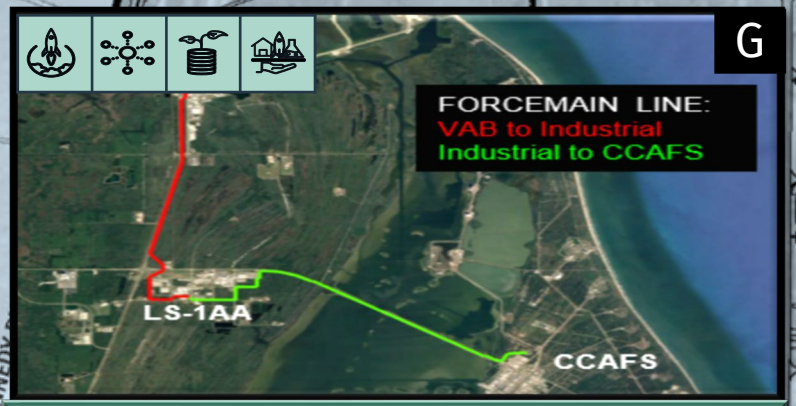
	Project	Phasing
A	Contemplative Green Space	Short
B	EV Charging Infrastructure	Short
C	Pedestrian Improvements	Short
D	Construct Orion Clamshell	Short
E	Construct Engineering Lab and Testing Facility	Short
F	Repair/Upgrade Sewage Conveyance System	Short
G	Renovate CD&SC & IT Network	Short, Mid
H	Implement Stormwater Improvements	Short, Mid
I	Replace CDC	Mid
J	Repurpose SSPF	Mid
K	Upgrade Orsino Substation	Mid
L	Modernize and Upgrade Physical Security	Mid
M	Extend Chilled Water Loop	Mid
N	Spaceport Emergency Support Facility	Mid
O	Replace Roy D. Bridges Bridge	Mid
P	Demo Facilities Programmed for Mission Support Consolidation Facility (CCPH2)	Long
Q	Construct Mission Support Consolidation Facility (CCPH2)	Long
R	Demo Facilities Programmed for Consolidated Warehouse Facility	Long
S	Demo Facilities Programmed for Consolidated Maintenance Complex	Long
T	Construct New CD&SC	Long
U	Repurpose O&C South Wing Labs	Long
V	Extend 3rd Street Southeast	Long
W	Redevelop Fire Training Area (not shown on map)	Capacity
X	Implement Banana River Drive	Capacity

Planning Goals

GOAL 1	GOAL 2	GOAL 3	GOAL 4
FLEXIBLE PROCESSING & LAUNCH CAPABILITIES	ROBUST INFRASTRUCTURE	SUSTAINABLE FACILITIES	RESPONSIBLE STEWARDSHIP OF NASA ASSETS

FUNDING SOURCE: NASA Multiuse Partner

CENTRAL CAMPUS/PROCESSING DISTRICT KEY PROJECTS



Wastewater Upgrades - Replaces KSC's existing force main that connects to CCSFS wastewater plant. Current force main is at increasingly high risk to blockages and can no longer reliably support flow rates. Another wastewater main would redirect commercial wastewater flow to off site.

CD&SC & IT Upgrades - Enhancements to KSC's IT network are needed to ensure NASA and its partners have reliable, efficient means of transferring technology securely and meeting the needs of a variety of evolving comm demands.

Repurpose SSPF - When ISS retires, SSPF high bay can be repurposed to accommodate future NASA Program or Partner requirements, including relocating other admin to other KSC facilities that could provide a repurposed SSPF with a wider range of operational possibilities.

Engineering Lab & Testing Facility - Consolidates center-wide non- or minimally-hazardous lab capabilities from space within operational facilities and functionally obsolete facilities into a dedicated test facility.

Spaceport Emergency Support Facility - Would house an upgraded fire station, emergency health functions, spaceport command control operations, and other spaceport functions scattered across KSC.

Mission Support Consolidation Facility (CCHQ Ph 2) can support KSC's growing and evolving workforce requirements, especially those that continue to emerge as NASA's contractor and partner base grows and diversifies.

EXPLORATION LAUNCH DISTRICT ILLUSTRATIVE PLAN

	Project	Phasing
A	Conduct Dune/Beach Restoration	Short
B	Implement Wetland Mitigation Strategies	Short
C	Replace Launch Complex LC-39 Area Duct Bank	Short
D	Construct Liquefied Natural Gas (LNG) Line	Short
E	Upgrade Stormwater Treatment Infrastructure	Short
F	Enable/Construct LC-48	Short
G	Improve Pad 39B Bypass Road to Serve as Improved Access to Phillips Parkway	Mid
H	Renovate Phillips Parkway Roadway	Mid
I	Add/Repair High-Pressure Gas Batteries	Mid
J	Elevate/Improve Phillips Parkway	Long
K	Improve Titusville Beach Road Access (two-way, paved)	Long
L	Create Titusville Beach Road Utility Corridor	Long
M	Construct Substation	Long
N	Construct/Preserve LC-49 Future Medium/Heavy Launch Pad	Capacity
O	Construct Future Small Class Vehicle Landing Site	Capacity
P	Construct Future Landing Site	Capacity

FUNDING SOURCE: NASA Multiuse Partner

EXPLORATION LAUNCH DISTRICT KEY PROJECTS

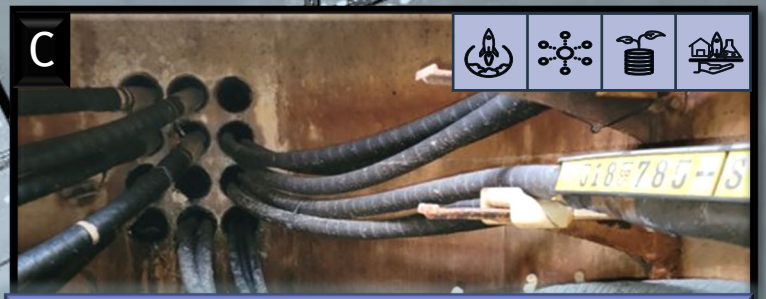
Upgrade Transmission Lines/New Substation - FPL must upgrade or replace the 115- kV electric power transmission lines that connect the mainland with KSC to support growing power demands associated with the anticipated increased launch tempo and other development on KSC/CCSFS.

LC48 - The existing LC-48 launch pad is designed for small-class launch vehicles with additional property to the south that could accommodate other new launch infrastructure.

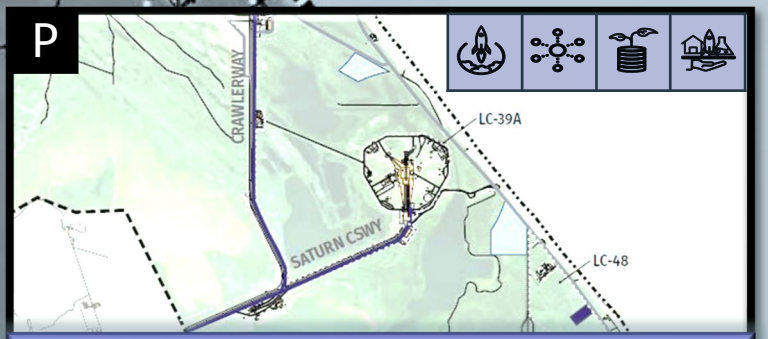
LC49 – The only remaining site on KSC that could accommodate an additional medium/heavy class launch vehicle. This plan preserves this pristine property to ensure it's only utilized for a critical, future NASA need.

Enable LNG line - A new Liquefied Natural Gas (LNG) line would connect the existing Natural Gas line to modernized launch infrastructure that requires this new propellant and expands the method delivery options for transporting LNG to the launch pads, thus reducing wear and tear on KSC road infrastructure.

Elevate Philips Parkway - This project elevates the road subgrade, base, and pavement and constructs drainage improvements to minimize damage from the rising groundwater table while also serving as additional protection to critical KSC launch infrastructure from future extreme weather events.



Replace LC-39 Area Duct Bank - This project will provide means to replace aged and deteriorated feeders by constructing 2.5 miles of electrical duct bank infrastructure between C-5 Substation and Switch Station 900.



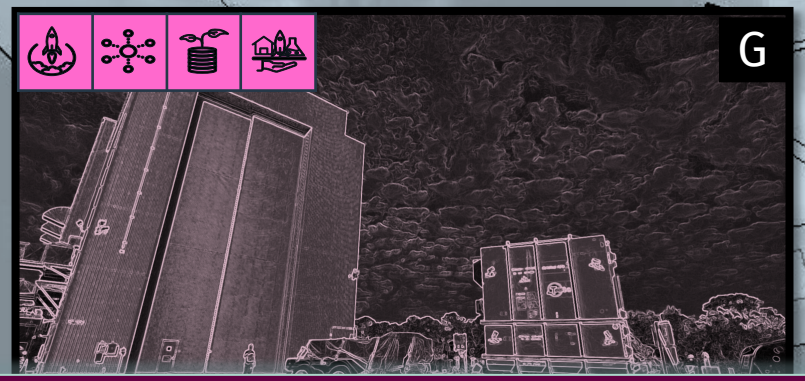
Construct new landing sites - Consistent with SLD45's "Land where you launch" policy, KSC encourages all its launch providers to land vehicles at or near its launch pad. Two additional sites are also identified for future land landing sites when/if it is not practical for a vehicle to land at or near its launch site.

VEHICLE ASSEMBLY BUILDING DISTRICT ILLUSTRATIVE PLAN

	Project	Phasing
A	Construct Liquid Oxygen (LO2)/Liquid Nitrogen (LN2) Plant	Short
B	Upgrade Converter Compressor Facility (CCF)	Short
C	Construct Payload Processing Facility	Short
D	Upgrade Saturn Causeway Utilities	Short
E	Add C-5 Substation Capacity	Short
F	Modify and Stabilize Roadways to Mitigate Climate Change Impacts	Short, Mid
G	Construct Supplemental Gaseous Nitrogen (GN2) Pumping System	Short
H	Construct New Press Site	Short
I	Renovate Launch Support Equipment	Mid
J	Mitigate Climate Change – Critical Facility Food Fortification	Mid
K	Construct Centralized Warehouse	Long
L	Construct Centralized Maintenance Complex	Long
M	Upgrade/Expand State Road 3 Payload Transportation	Long
N	Outgrant/Demo Operational Support Building (OSB 1)	Long
O	Construct Advanced Exploration Processing Facility	Capacity
P	Expand Wharf Support Facilities/Turn Basin	Capacity
Q	Connect Banna Creek and Indian River Lagoon	Capacity

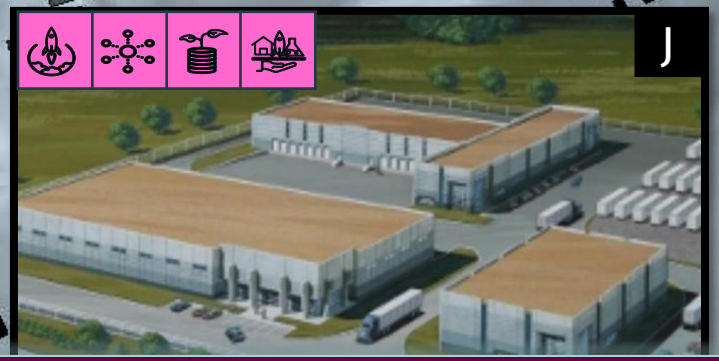
FUNDING SOURCE: NASA Multiuse Partner

VAB DISTRICT KEY PROJECTS

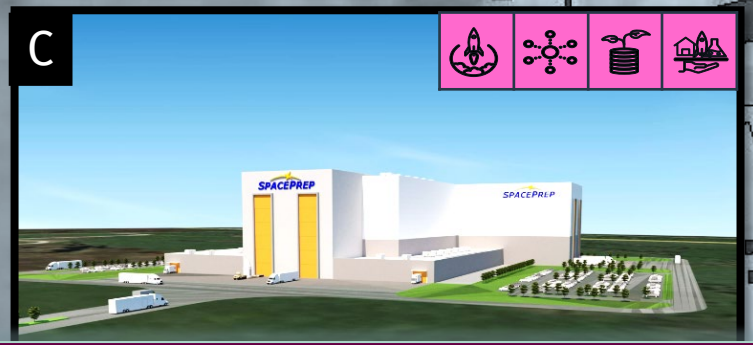


Advanced Exploration Processing Facility - A large encapsulation and processing facility may be needed to process future Nuclear Thermal Propulsion (NPT) payloads at KSC. Due to hazards associated with this technology, especially if fission systems are involved, it would need to be built on federal property near launch infrastructure.

Press Site - The existing Press Site does not provide the ability to safely perform basic media duties associated with covering launches. The visibility of a deteriorating facility showcased each time there is a launch impacts NASA's reputation and public perception; a new/upgraded Press Site would allow NASA to more effectively inspire the next generation of explorers.

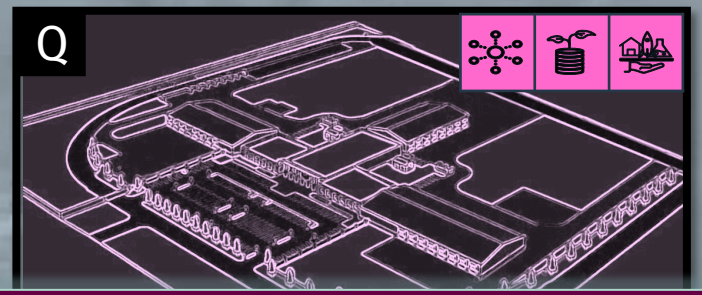


Consolidated Warehouse - Currently, warehousing functions are scattered across KSC's landholdings. Consolidating these functions would improve operational efficiency of these functions at the Center. This project will consolidate 45 other facilities of various conditions into one modern facility.



New Payload Processing Facility (PPF) – KSC is supporting development of a new commercial PPF that would provide NASA Programs and partners with additional processing capabilities

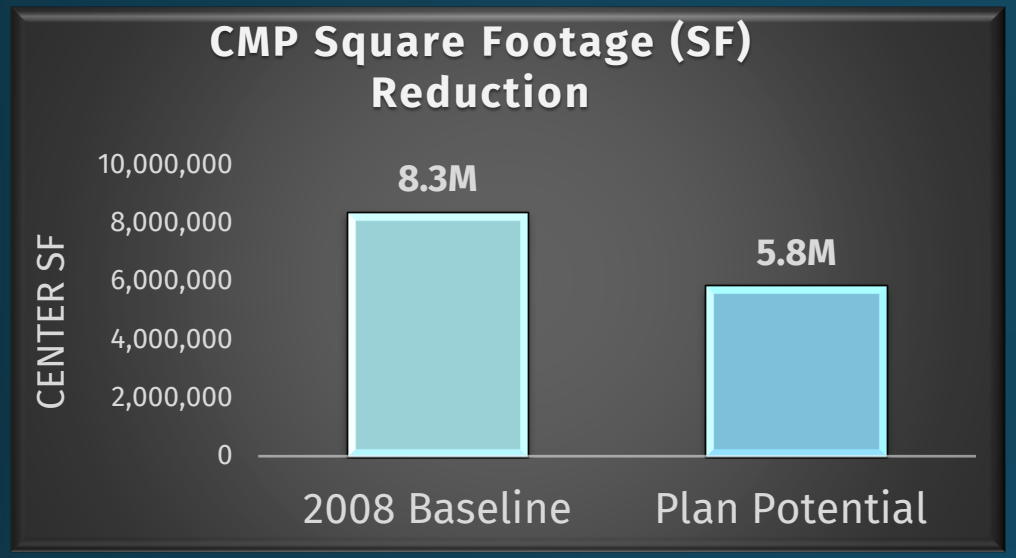
Supplemental GN2 Capability - This project involves a new system to supplement the current GN2 pumping capability at Air Liquide and be used for outages, maintenance, and multi-user high-flow events. The current system at Air Liquide was upgraded in 2022 to meet Artemis flows, but it is undersized to meet the 10-year launch forecast and is limited in meeting concurrent launch countdown flowrates.



Centralized Maintenance Complex - This project will greatly increase the efficiency of KSC's maintenance and shops by consolidating their operations under one roof in the VAB District, centrally located near the main activity nodes of the Center.

KSC REDUCTIONS AND AGENCY COST SAVINGS

The KSC CMP results in the following key metric potential as contributions to the AMP Goals.

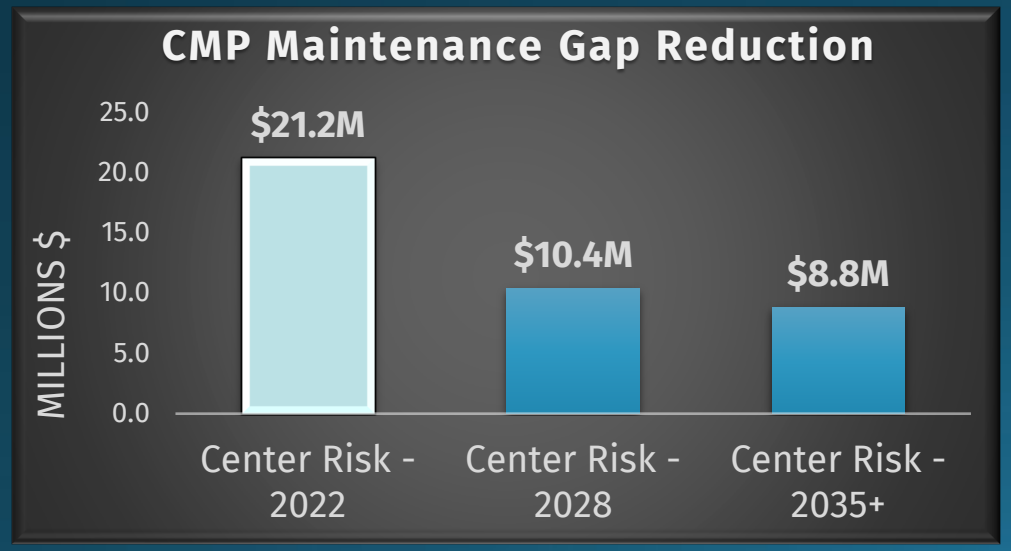


Square footage reduction: -2.5M

-30%

Total % Change

Since 2008, KSC has outgranted more than $1.1 Billion of NASA owned assets to non-NASA entities. This aggressive demolition and outgrant strategy has resulted in significant cost savings for the Agency, along with the emergence of an increasingly robust and thriving commercial space industry that **has provided NASA Programs with additional, cost-effective options for routine access to space.**



Proposed Maintenance Gap Reduction: -$12.4M

-59%

Maintenance Gap Notes:

- FY22 is AMP Baseline year for the metric.
- Center Risk represents the delta between the baseline cost model sustainment funding and average maintenance expenditures.
- Maintenance Gap Reduction is the change in risk due to divested assets and includes the risk that was attributed to the asset as well as the maintenance funding that was used for that asset that can be used to buy down risk elsewhere at the center.

OVERVIEW

Background

Project Needs (ADP)

You Are Here:
Where? (POA+ parcelization tool)

How? (CDP)

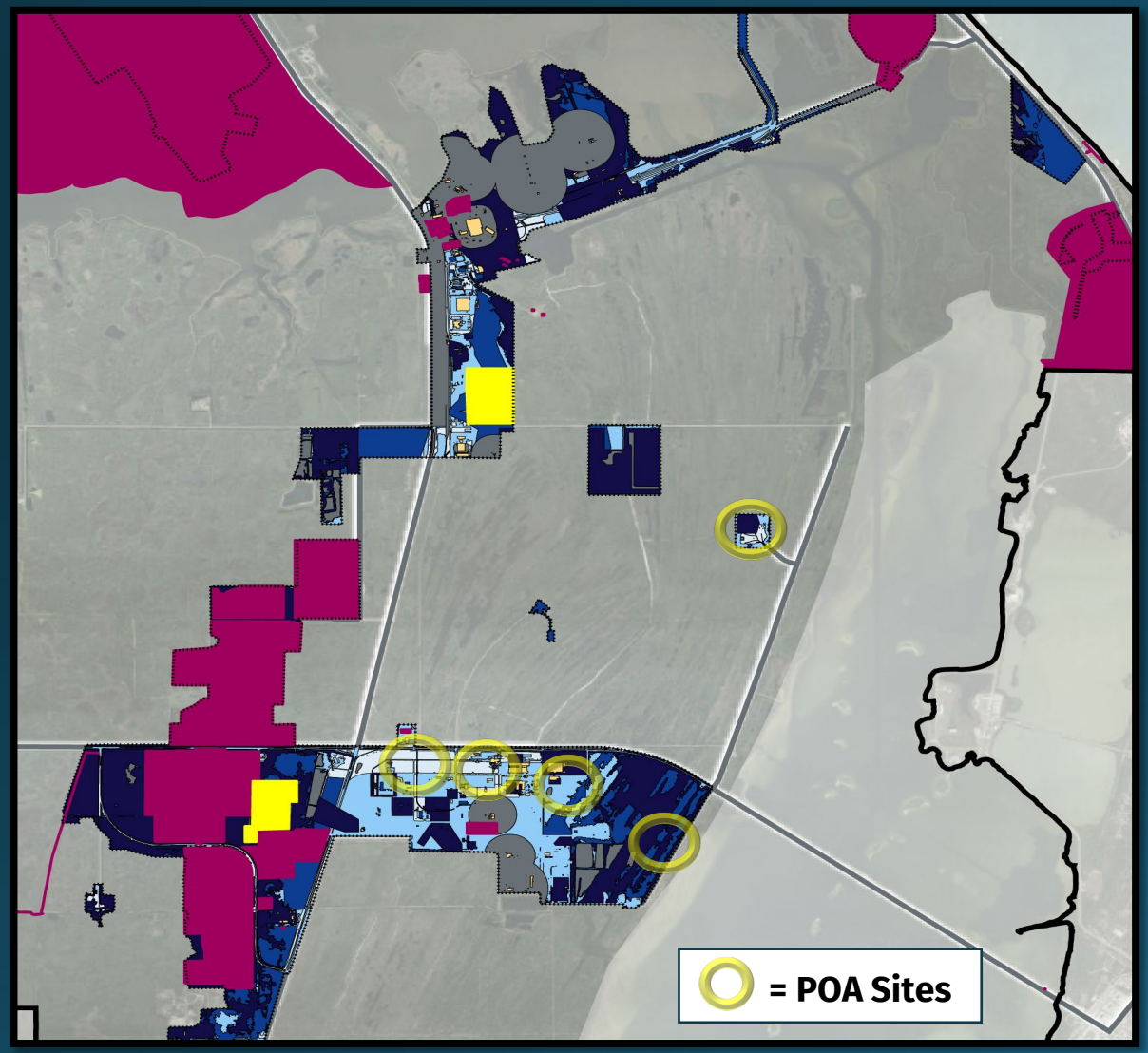
So what?

Where?:
Location Matters

- *Parcelization Plan*
- *Highest and Best Use*
- *Parcel Opportunity Analysis (POA)*

PARCEL ANALYSIS

Parcelization Map with POA Parcel Locations



Building on the analysis from the ADPs, the Master Planning team developed 3 different tools to inform the highest and best uses for KSC land, ensuring that KSC implements smart growth policies when allocating future property.

1

PARCELIZATION PLAN

- Assesses "developability" of land within the Spaceport Growth Boundaries.
- Quantifies developable, undevelopable, and leased land at KSC.

2

PARCEL OPPORTUNITIES ANALYSIS (POA)

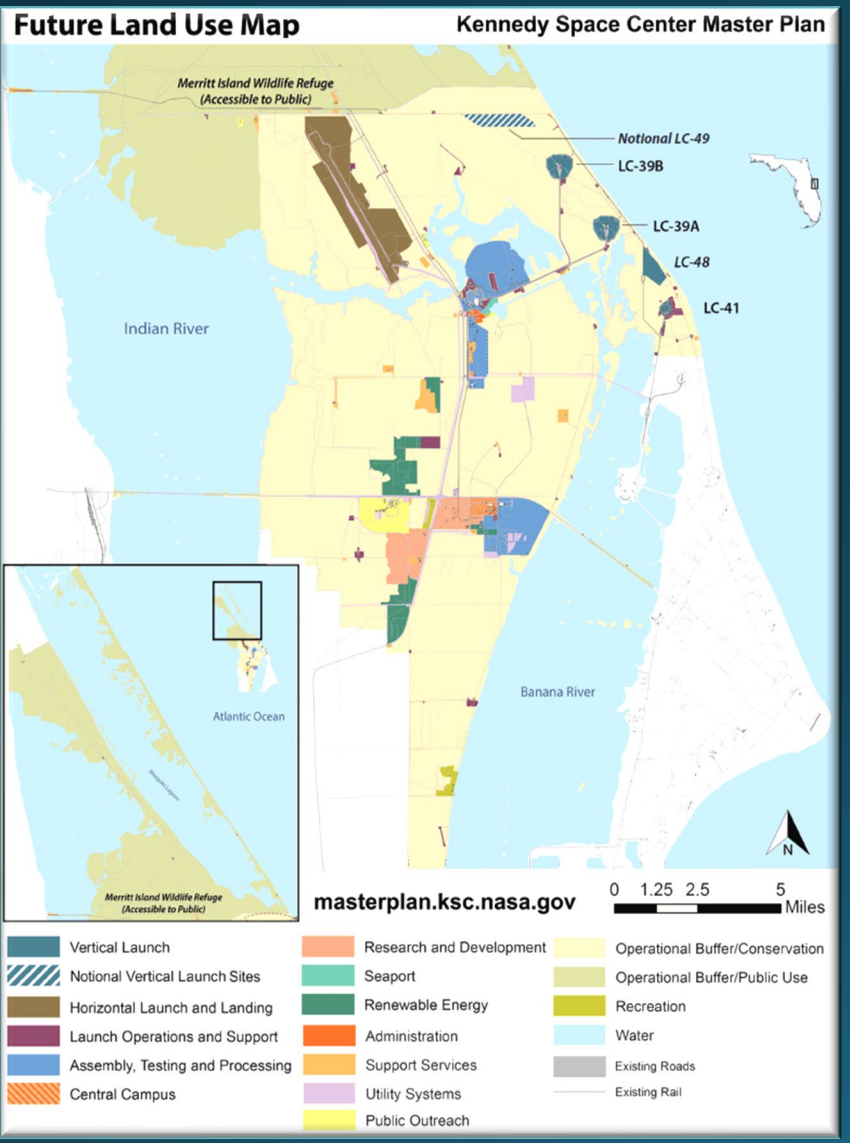
- Analyzes opportunities for the 5 highest-potential parcels.
- Develops guidelines for parcel development, including types and shapes of development.
- Illustrates potential with renderings and site plans.

3

ADVANCED SPACEPORT MANAGEMENT TECHNOLOGY

- Informs future siting decisions with a holistic mapping tool paired with the parcelization analysis.

PARCELIZATION PLAN

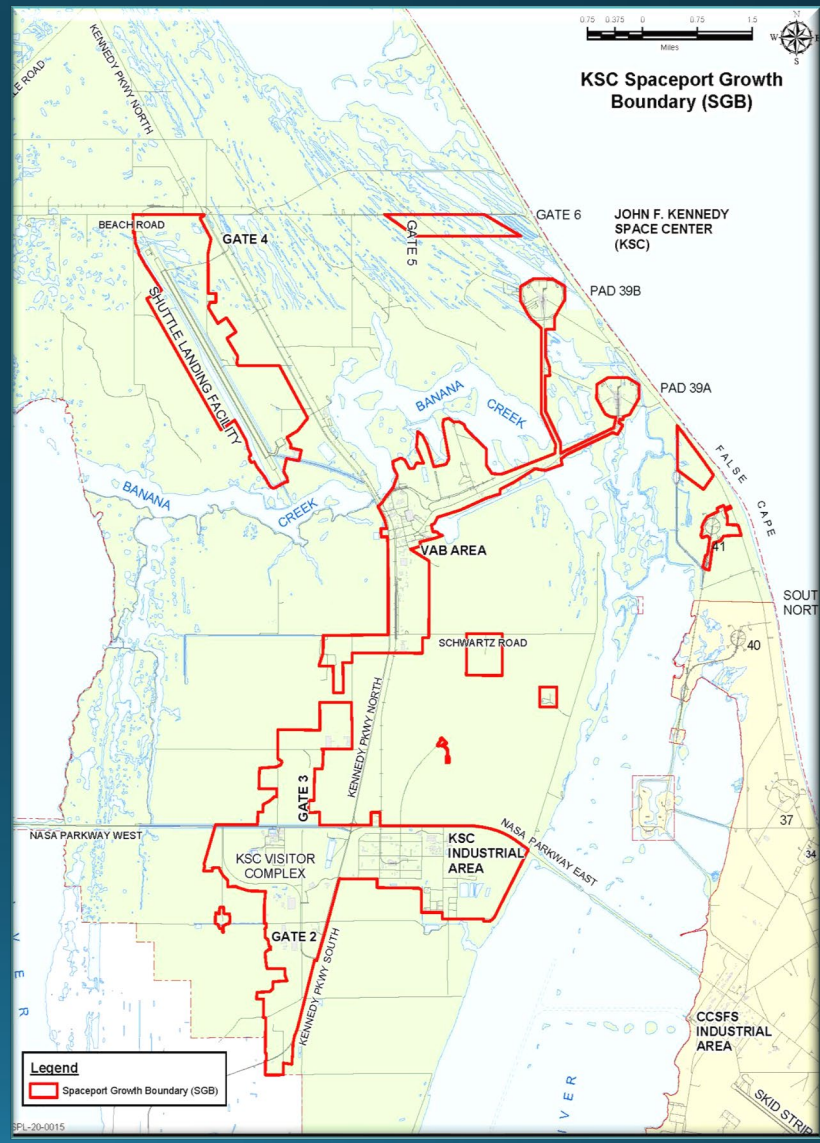


SPACEPORT GROWTH BOUNDARY (SGB)

KSC's 2014 Master Plan was based on a Future Land Use Map to guide future KSC growth. While this approach served as a successful catalyst to enable partner operations, KSC's updated Master Plan is based on an 8,800-acre Spaceport Growth Boundary. The SGB establishes a flexible regulatory framework for guiding new development while ensuring that future growth occurs in an environmentally responsible manner.

While KSC's updated Master Plan does not include specific land uses, property outside the SGB remains designated as **operational buffer land**, preserving safe separation between hazardous launch activities and the public. The Merritt Island National Wildlife Refuge plays a critical role in providing this buffer by managing undeveloped property to support safe spaceport operations.

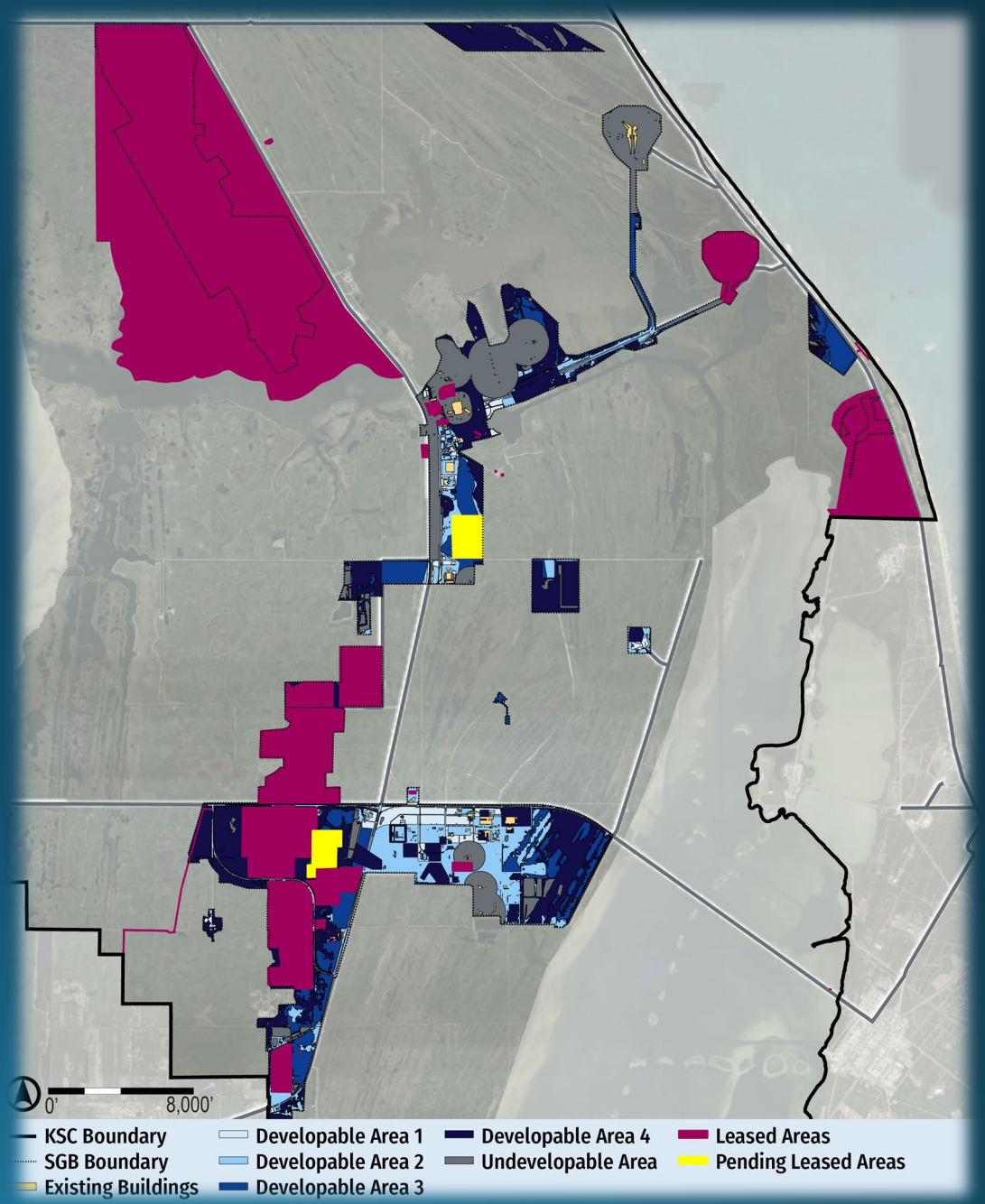
Rather than a traditional land use map, the updated plan uses its Parcelization Plan that identifies development opportunities based on the relative "ease" of development.



PARCELIZATION MAP

Area Type	Characteristics
Type 1	➢ Minimal natural and manmade constraints ➢ Free of buildings, roads, and parking ➢ Can be built on immediately
Type 2	➢ Existing horizontal infrastructure ➢ Auxiliary areas for Florida scrub-jay habitat ➢ Significant vegetation ➢ Driveways, sidewalks, hardstands ➢ Most pavement unless a road or bridge ➢ Suitable for infill development
Type 3	➢ Significant environmental or cultural mitigation ➢ Core and support Florida scrub-jay habitat ➢ 500-year floodplain
Type 4	➢ Wetlands ➢ 100-year floodplain
Undevelopable	➢ Outside SGB ➢ Railroad ➢ Protected species (i.e. eagle's nest) ➢ Archaeological sites ➢ QD arcs ➢ Water bodies

KSC's Parcelization Plan provides KSC with a valuable siting tool to inform how much developable land remains within the SGB and how "easy" this remaining land is to develop based on constraints. As available land within the SGB becomes more limited, this approach guides development toward sites with fewer environmental constraints.



Parcelization Plan

Highest and Best Use

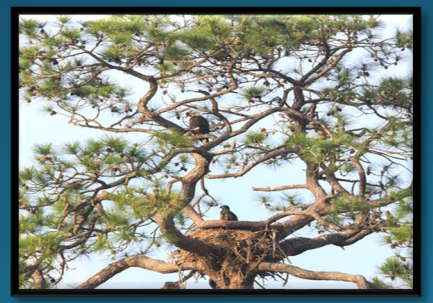
KSC's strategic divestment, repurposing, and out-granting of Shuttle-era assets has been foundational to the emergence of today's thriving commercial space industry. As a result, NASA Programs now have more cost-effective options to fulfill Mission requirements.

However, as easily developable land becomes more limited after enabling so many successful partnerships, KSC must be more strategic in determining which new partner development can be accommodated.

Quality should be emphasized over quantity, and the Parcelization Tool will inform where high-value partners can be sited.

Before larger-scale infrastructure investments are made, and to ensure KSC's property is used for its highest and best use purpose, two key questions should guide future development decisions:

1. *Does this type of use/user **need** to be in close proximity to launch infrastructure?*
2. *Does this activity support KSC's ability to meet National Security missions and advance the nation's goals for lunar exploration and beyond?*



POA PROCESS

1

What is a POA?

- Focuses on 5 specific parcels to ID development opportunities for NASA or partners
- These 5 parcels consist of the highest demand parcels based on property requests from partners, infill development opportunities on previously distributed land, and other factors based on market trends

2

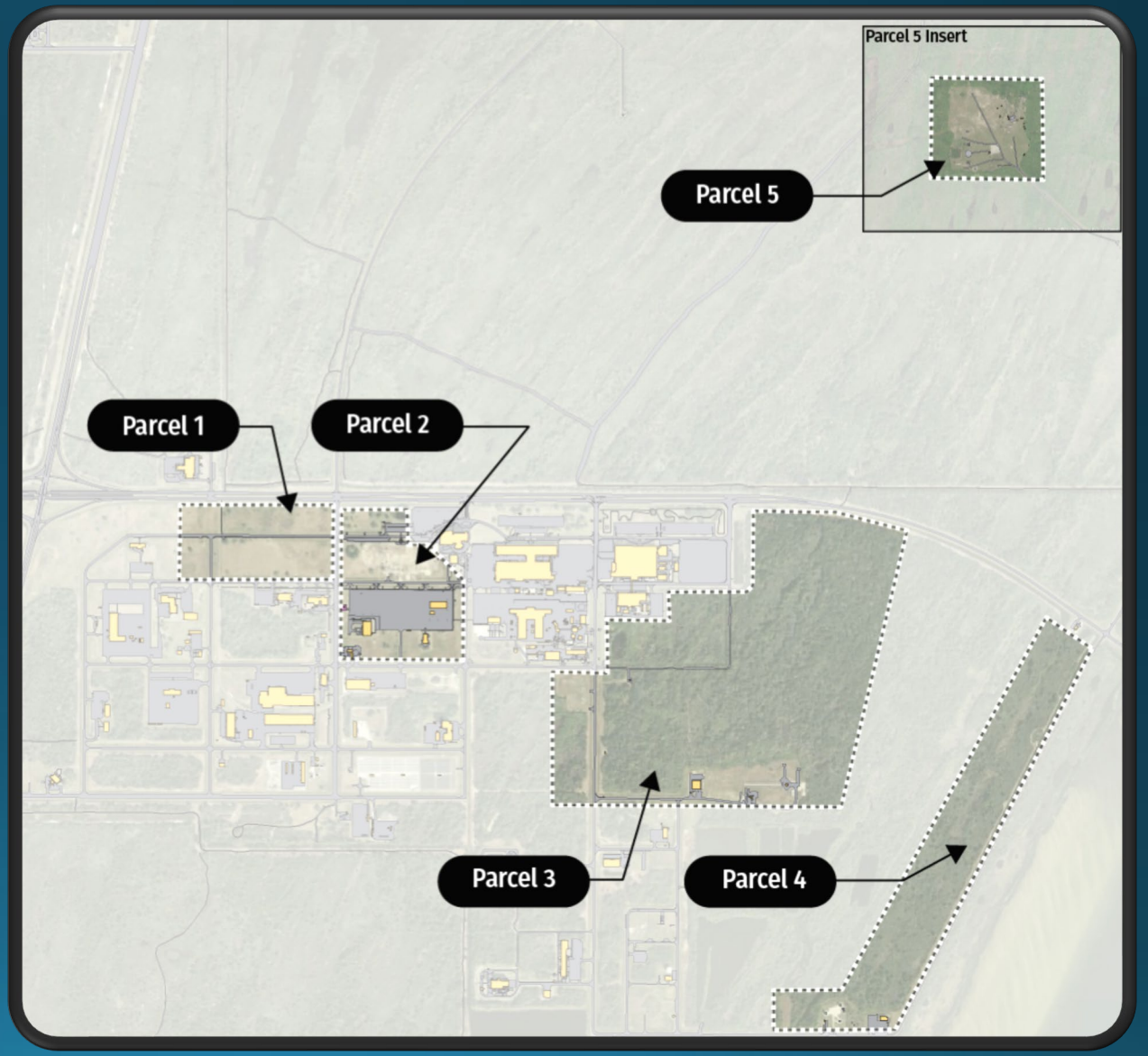
Why is a POA Needed?

- History of commercial partnerships and anticipated growing demand
- Real property footprint reduction requirements
- Need to optimize remaining developable land to accommodate partner development.

3

What to Expect?

- Considerations to guide future development
- ID highest and best use for each parcel
- Conceptual diagrams and renderings to help envision how each site could be built-out.



PARCEL 1

Permitted Building Types

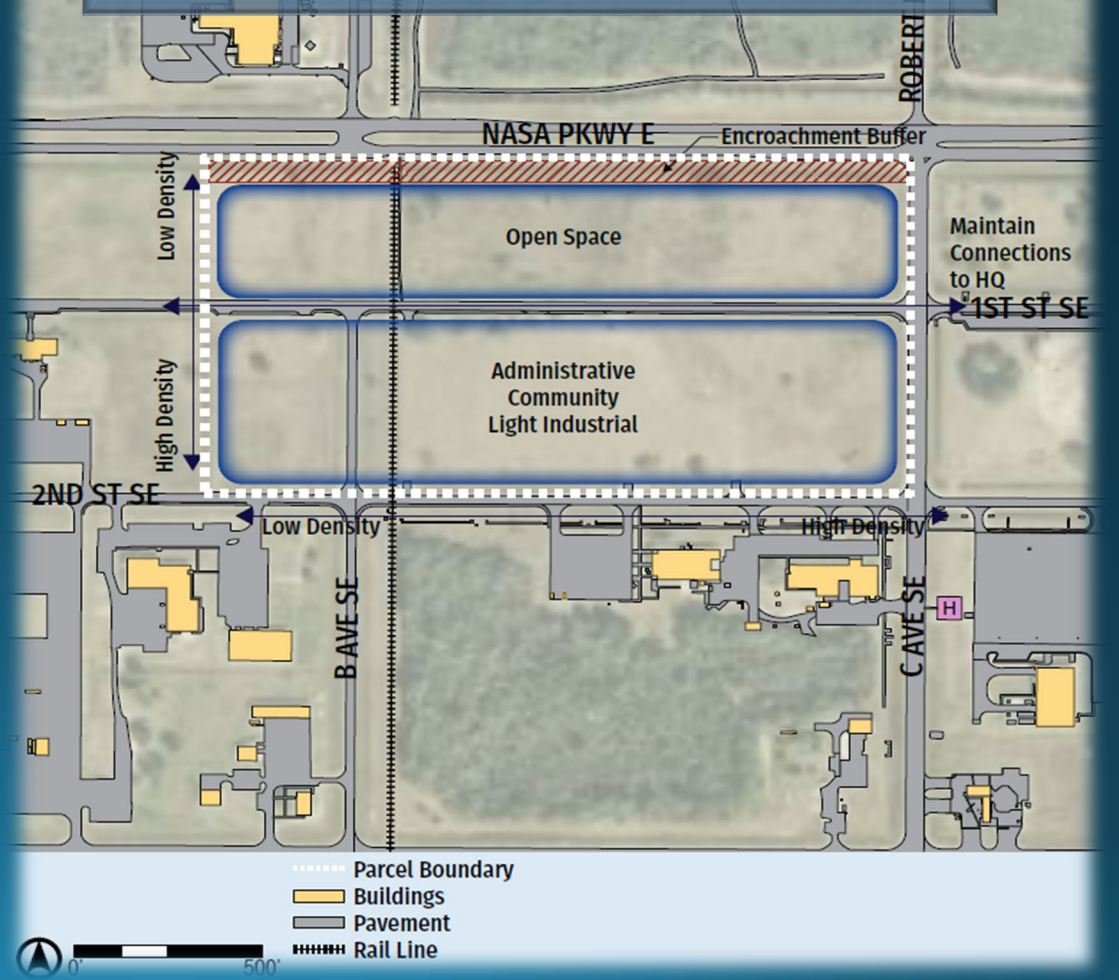
- Light Industrial
- Academia/R&D
- Administrative
- Community Support
- Open space

Overarching Considerations

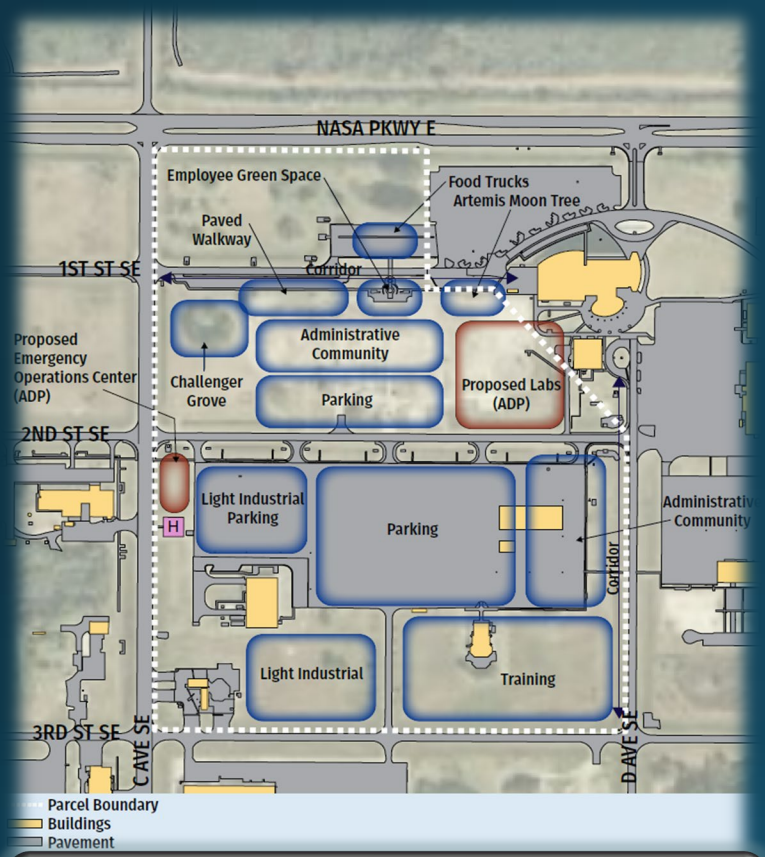
- Proximity to NASA parkway and entrance gate
- Aesthetic compatibility with existing KSC HQ
- Buffer along NASA parkway for sight lines and hazardous material transportation
- LOS on west side of parcel restricts building height
- Higher density development closer to existing headquarters

Developable Type	Acres
Type 1	35.4
Type 2	1.8
Type 3	0
Type 4	0
Undevelopable	0.4
Total Parcel:	37.6

This parcel could accommodate a range of partner operations that are consistent with the area's uses once ML-2 construction is complete. Commercializing this parcel would serve as catalyst for enabling KSC's strategy of vacating the west Industrial Area.



PARCEL 2



Permitted Building Types

- Light Industrial
- Administrative
- Community Support
- Open space

Overarching Considerations

- Compatible aesthetics with existing facilities and District
- Buffer along NASA Parkway for sight lines and hazardous material transportation
- Establishing higher-density development closer to existing HQ
- Primarily NASA/government use
- Connections/corridors (traffic & pedestrian)
- Walkability, shade, contemplative spaces
- Building development around existing parking lots, keeping parking to the interior
- Integration of new proposed NASA facilities

Developable Type	Acres
Type 1	32.4
Type 2	17.3
Type 3	0
Type 4	0.2
Undevelopable	0.8
Total Parcel:	50.7

PARCEL 3

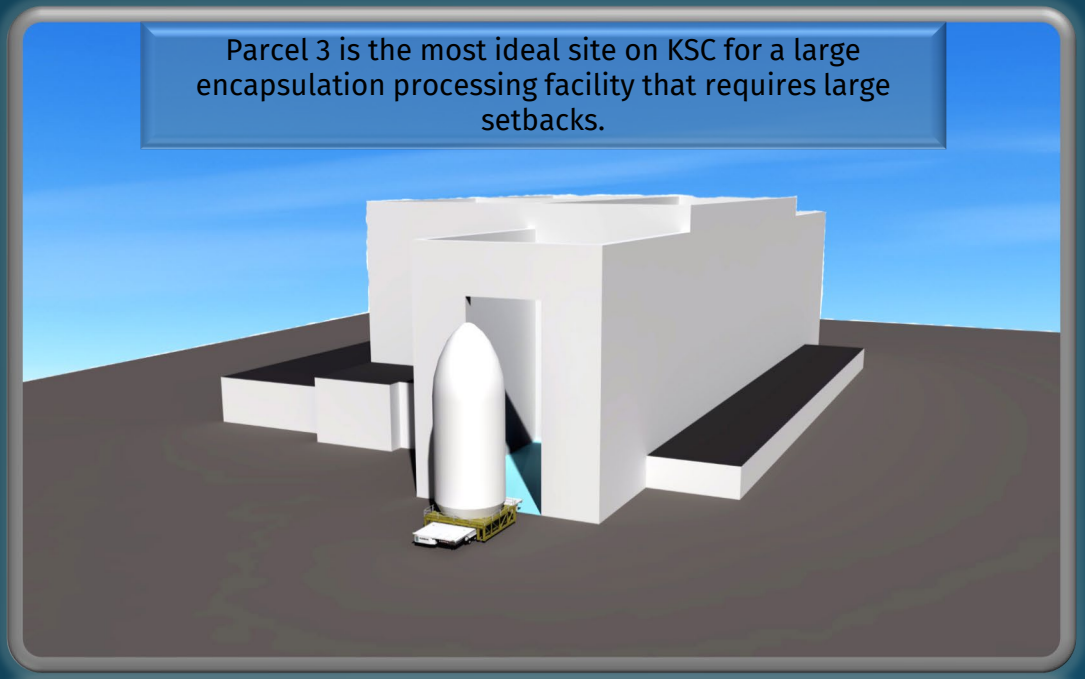
Permitted Building Types

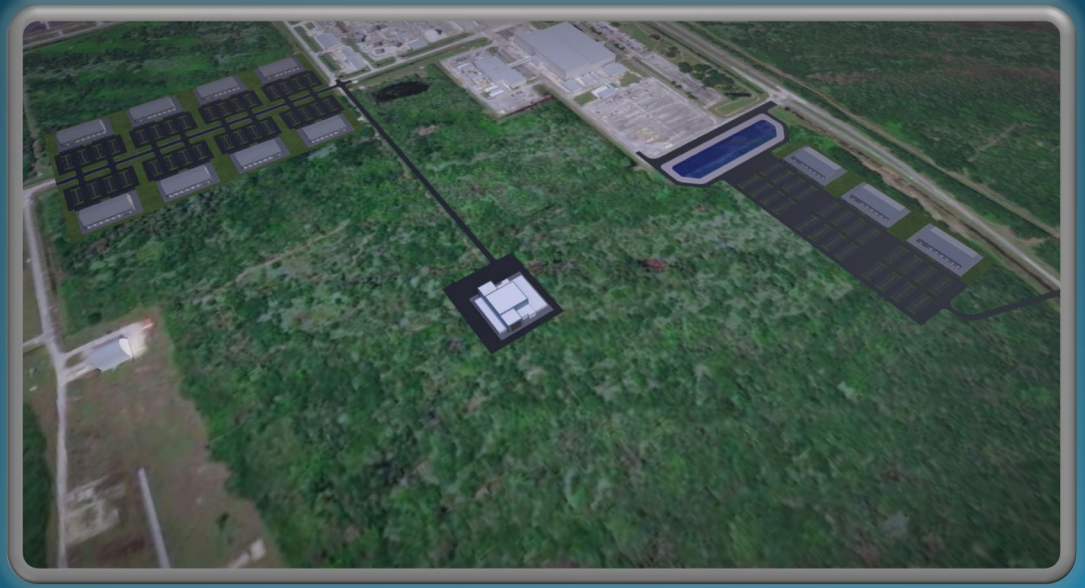
- Hazardous Activities
- Heavy Industrial
- Light Industrial
- Administrative
- Community Support
- Open Space

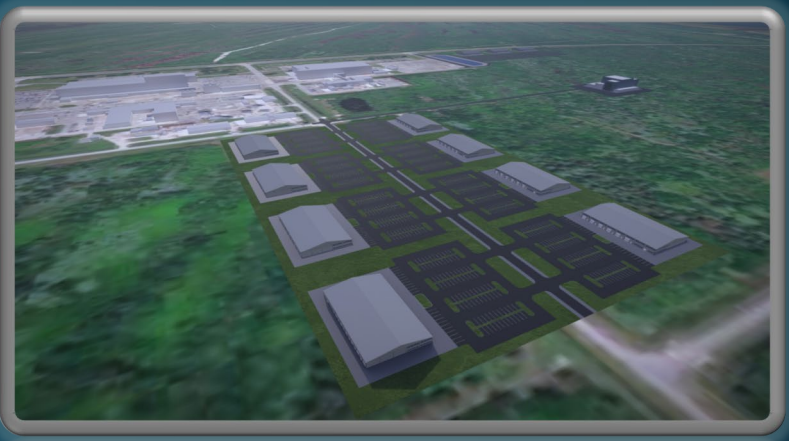
Overarching Considerations

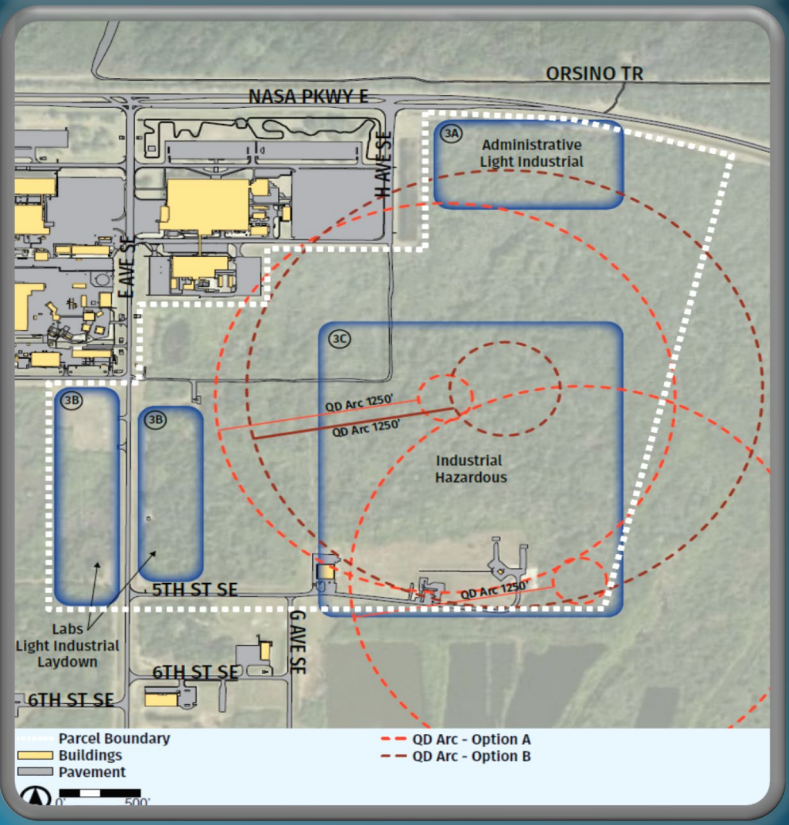
- Ensure consistency of character along NASA Parkway
- Prime real estate for more industrial functions
- Expensive to relocate Florida scrub-jays
- QD arc impact
- Line of sight limiting building heights
- Limitations of smoke/dust with SSPF

Developable Type	Acres
Type 1	0
Type 2	186.4
Type 3	0.3
Type 4	50
Undevelopable	1.1
Total Parcel:	237.8

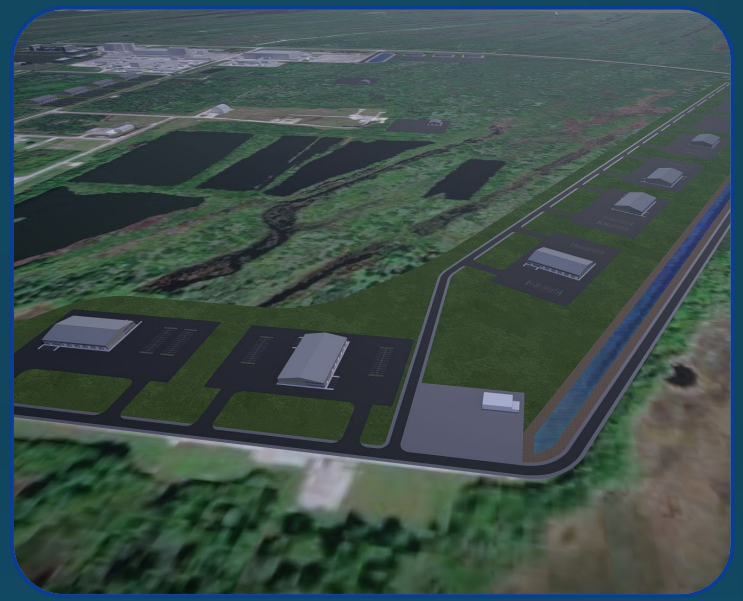


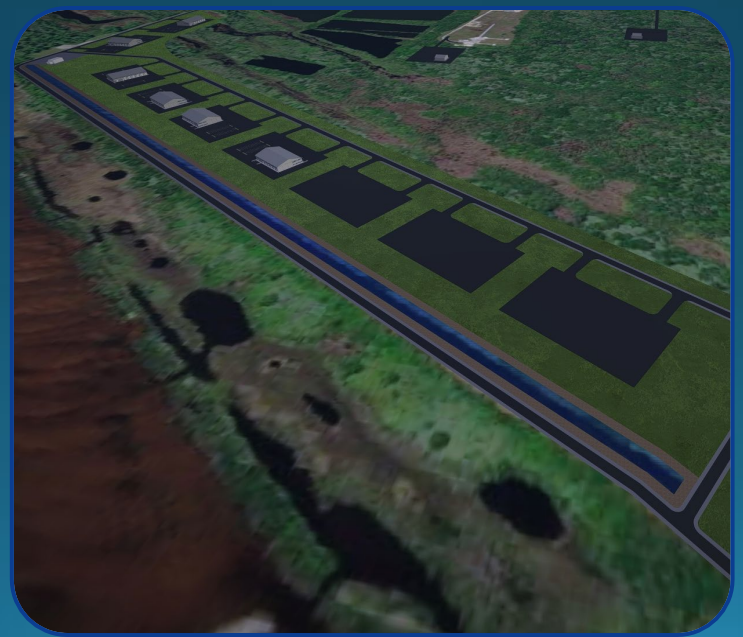






PARCEL 4





Permitted Building Types

- Hazardous Activities
- Heavy Industrial
- Light Industrial
- Administrative
- Open Space

Overarching Considerations

- Climate change and sea level rise impacts
- LOS building constraints on north end
- Low-profile laydown and storage areas on north end
- Expand transportation access and utilities

Developable Type	Acres
Type 1	0
Type 2	35.4
Type 3	0
Type 4	30.3
Undevelopable	0
Total Parcel:	65.7

PARCEL 5

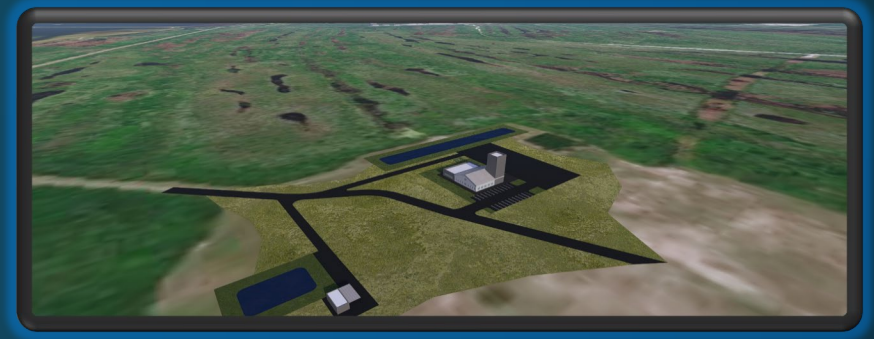
Permitted Building Types

- Hazardous Activities
- Heavy Industrial
- Open Space

Overarching Considerations

- PFAS and LUCs constrain but do not preclude development
- Potential stormwater improvements could alleviate PFAS concerns and steer away from Indian River Lagoon
- End of utility lines; no wastewater
- Access road needs expansion
- Remoteness is beneficial for industrial/hazardous functions
- If hazardous/flammable functions are sited, such as engine testing, at least a 100-foot vegetation standoff is required.

Developable Type	Acres
Type 1	9.5
Type 2	15.5
Type 3	0.24
Type 4	14
Undevelopable	0.23
Total Parcel:	39.5



The Fire Training Area is the only site within the SGB with enough isolation to accommodate hazardous operations with a QD larger than 1250

REGULATING PLAN SUMMARIES

	Allowable Building Heights	Permitted Building Types
Parcel 1: Former CIF Lot	• 1 story or equivalent minimum height for light industrial uses • 2 stories or equivalent minimum height for administrative uses • 2 stories or equivalent minimum height for administrative or community support uses • 5 stories or equivalent maximum height for all uses	• Light Industrial • Academia/R&D • Administrative • Community Support • Open space
Parcel 2: Former HQ Lot	• 1 story or equivalent minimum height for light industrial uses • 2 stories or equivalent minimum height for administrative or community support uses • 5 stories or equivalent maximum height for all uses	• Light Industrial • Administrative • Community Support • Open space
Parcel 3: SSPF East/ Boresight Area	• 1 story or equivalent minimum height for light industrial, heavy industrial, and hazardous activities • 2 stories or equivalent minimum height for administrative or community support uses • 5 stories or equivalent maximum height for all uses	• Hazardous Activities • Heavy Industrial • Light Industrial • Administrative • Community Support • Open Space
Parcel 4: Processing Row	• 1 story or equivalent minimum height for light industrial, heavy industrial, and hazardous activities • 2 stories or equivalent minimum height for administrative uses • 5 stories or equivalent maximum height for all uses	• Hazardous Activities • Heavy Industrial • Light Industrial • Administrative • Open Space
Parcel 5: Fire Training Area	• 1 story or equivalent minimum height for heavy industrial and hazardous activities • 5 stories or equivalent maximum height for all uses	• Hazardous Activities • Heavy Industrial • Open Space

OVERVIEW

Background

Project Needs (ADP)

Where (POA+ parcelization tool)

You Are Here:
How (CDP)

So what?

How (CDP)

Implementation Strategies

- *Future Scenarios*
- *Networks and Land Use*
- *Policy Challenges*

CENTER DEVELOPMENT PLAN

Building on the ADP and POA processes, the master planning team took a comprehensive look at the Center as a whole, identifying future scenarios that could shape the Center's development, considering infrastructure and utilities networks that will link district and parcel projects, and exploring larger policy and operational factors that will continue to drive the Center planning into the future. The CDP provides a concrete path forward for phased investments needed to sustain KSC missions over the 20-year timeframe.

1

Future Scenarios

- The CDP workshop encouraged participants to consider futures involving a range of launch tempos and partnership activities to identify durable center-wide requirements. This helped identify KSC and partner strategic needs across the center.

2

Networks and Land Use

- The team identified key utility and infrastructure network improvements – projects that will be necessary to enable development identified in the ADPs and POA.
- The CDP combines the regulating plans for each district, providing guidance on the type and form of development across KSC.

3

Policy Challenges

- The workshop participants had a productive dialogue about policy challenges, including the future operating model of the Spaceport and environmental mitigation practices.

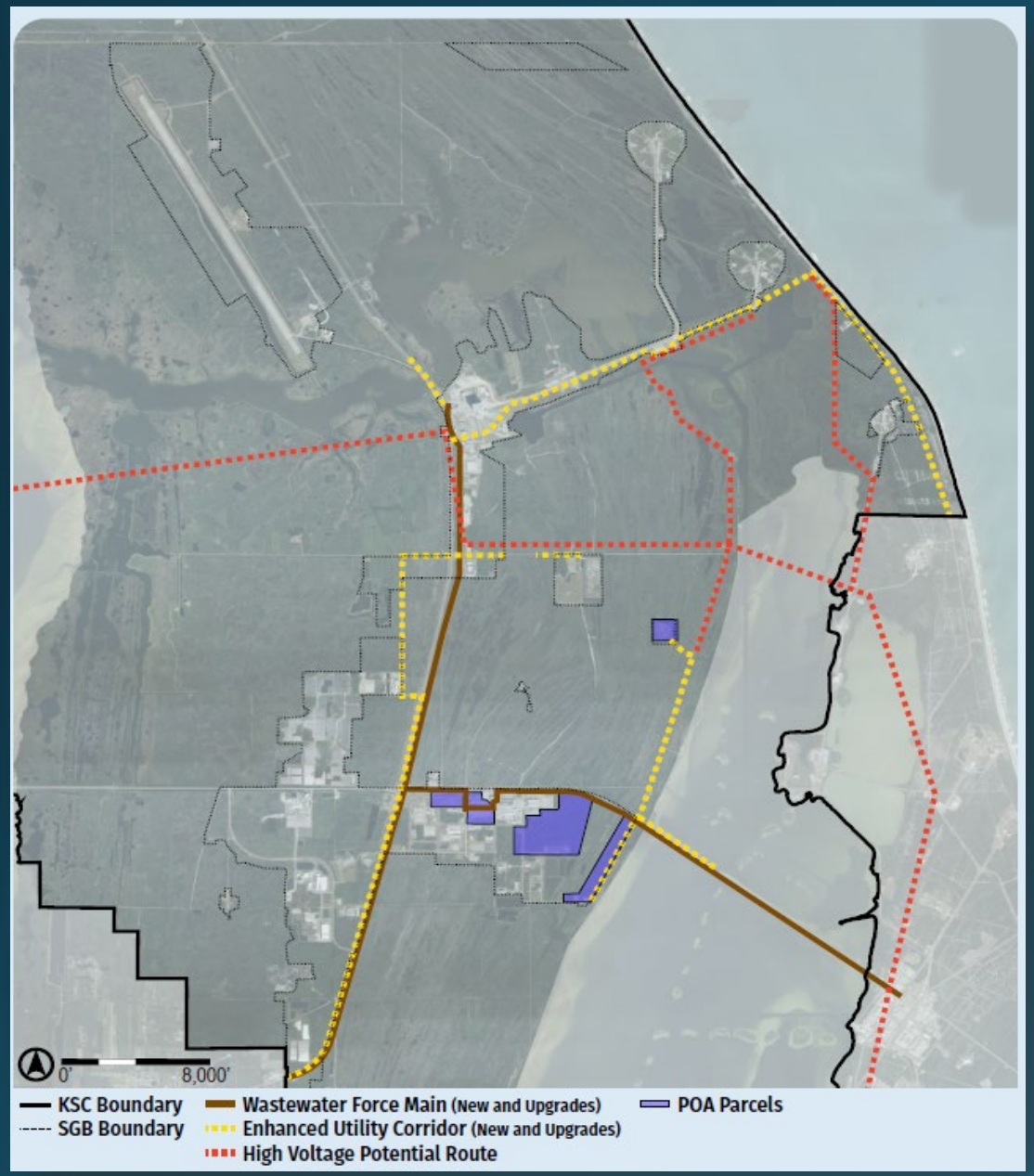
CENTER PLANNING SCENARIOS

During the Center Development Plan (CDP) workshop, stakeholders evaluated four potential future scenarios representing different levels of launch activity and commercial presence at KSC. The goal of the exercise was to identify trends in how each scenario could affect real property needs across the Center.

The analysis identified potential risks associated with each scenario and highlighted infrastructure and facility projects that could help mitigate those risks.

This scenario-based approach provides the flexibility for KSC to support future mission requirements as Agency and partner needs evolve.

UTILITY CORRIDOR PLAN



KSC's Utility Corridor Plan outlines optimal utility placement to maximize land efficiency, safety, reliability, maintenance, and resilience.

Designated utility corridors allow KSC to accommodate future utilities while protecting NASA’s long-term interests and preserving underground real estate.

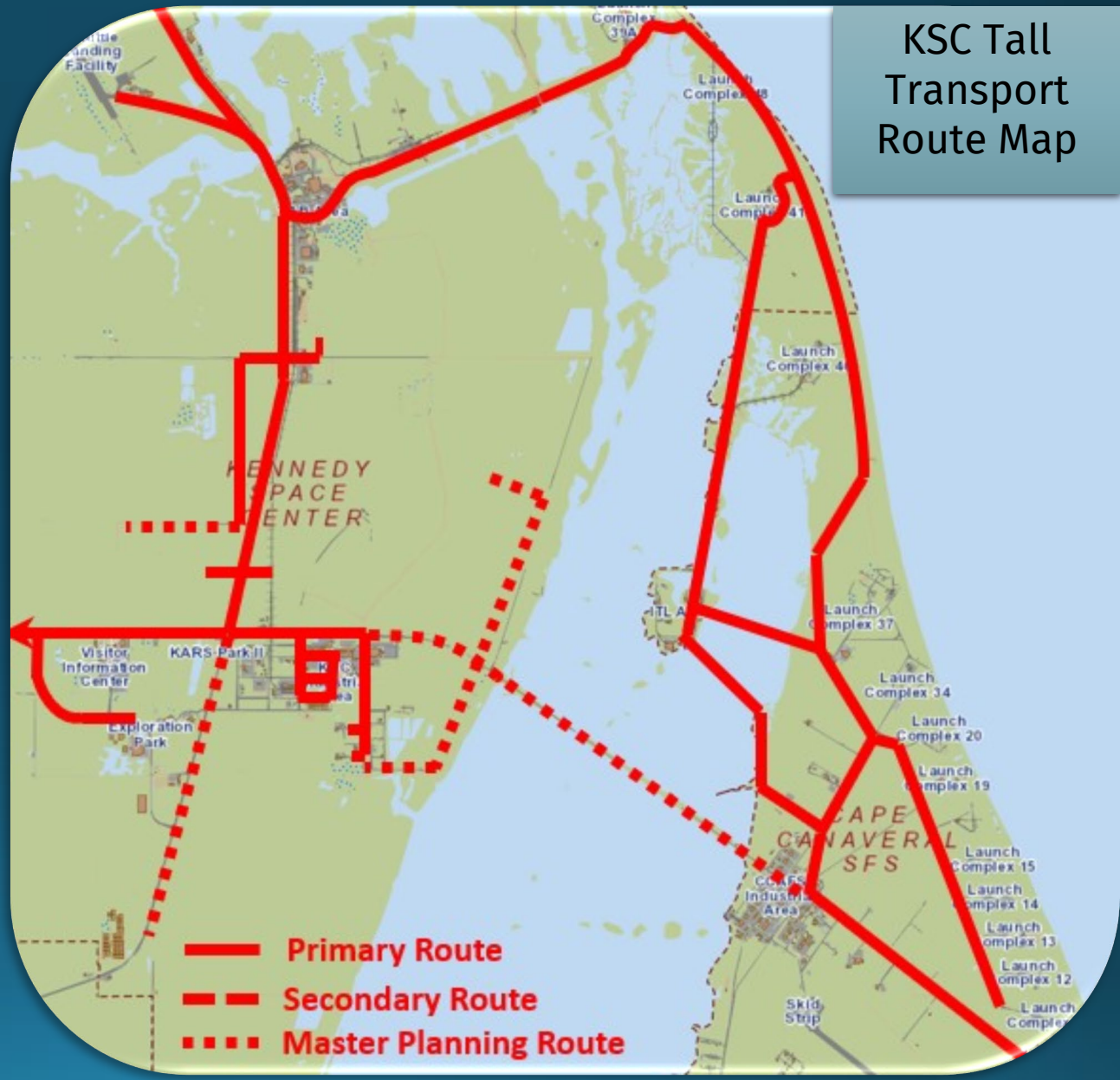
To support long-term planning, new development should no longer occur on a purely first-come, first-served basis. While routing utilities through designated corridors may increase near-term costs, it ensures infrastructure is placed where it best supports the Center’s long-term spatial strategy.

Service requests for new utilities should be made between the partner and utility company. However, it is still NASA's responsibility to ensure that new utilities:

- Comply with KSC's Utility Corridor Plan
- Do not disrupt existing infrastructure or operations
- Can be supported by the system's larger-scale, upstream capacity supply.

UTILITY INSTALLATION GUIDE

- Minimum distance of first utility off the edge of the road is 8 feet.
  - If another road lane is likely, the first utility should be 17 feet from the road edge.
- Pneumatic (GN2 and gaseous helium) and natural gas utility lines planned adjacent to each other.
- Power and communications duct banks should be separated.
- Power: a) Any critical facilities should be provided two separate medium voltage power feeders and b) All new electrical lines shall be buried.
- Communications: a) For Low Surface Traffic, Low Utilization roadways: four 1.25-inch smooth wall innerducts buried at 3 feet, pressure fittings and pull boxes every 6,000 feet; install 423-count fiber optic cable with one inner duct supporting the fiber; provide three spare innerducts, and b) High Surface Traffic, High Utilization roadways: four 4-inch PVC conduits, three 1.25-inch smooth wall innerducts for each PVC duct, AASHTO HS-20 rated manhole every 6,000 feet, one 4-inch PVC conduit. 2 spare innerducts, 3 spare 4-inch PVC conduits
- Flood Zone: NASA facilities and critical infrastructure to be sited outside the 500-year flood hazard zone or submersible rated. Commercial facilities should be sited outside the 100-year flood hazard zone.
- Handholes and power manholes more than 8 feet from the edge of the road should be ASSHTO HS-10-rated.
- Directional boring should be the preferred method for installation of new utilities on environmentally sensitive property.
- Tall transportation corridors should have medium and high voltage transmission wires routed under the tall transport roadway and transport corridor traffic lights shall either be out of the path of travel or mast arms shall be hinged to facilitate quick relocation and restoration.



CENTRAL CAMPUS/PROCESSING DISTRICT REGULATING PLAN

Parcel	Minimum Level (Floors)*	Maximum Level (Floors)**	Launch	Landing	Hazardous Activities	Heavy Industrial	Light Industrial	Administrative	Community	Open Space	Partnership Overlay	Notes
1	1	3	■	■	■	■	■	■	■	■	■	
2	2	5	■	■	■	■	■	■	■	■	■	
3	2	5	■	■	■	■	■	■	■	■	■	
4	2	5	■	■	■	■	■	■	■	■	■	
5	2	5	■	■	■	■	■	■	■	■	■	
6	2	5	■	■	■	■	■	■	■	■	■	
7	0	0	■	■	■	■	■	■	■	■	■	
8	1	5	■	■	■	■	■	■	■	■	■	
9	1	5	■	■	■	■	■	■	■	■	■	
10	1	5	■	■	■	■	■	■	■	■	■	
11	1	5	■	■	■	■	■	■	■	■	■	
12	1	5	■	■	■	■	■	■	■	■	■	
13	0	0	■	■	■	■	■	■	■	■	■	
14	1	5	■	■	■	■	■	■	■	■	■	
15	1	5	■	■	■	■	■	■	■	■	■	
16	1	5	■	■	■	■	■	■	■	■	■	
17	1	5	■	■	■	■	■	■	■	■	■	
18	7	7	■	■	■	■	■	■	■	■	■	
19	0	0	■	■	■	■	■	■	■	■	■	
20	1	5	■	■	■	■	■	■	■	■	■	
21	1	5	■	■	■	■	■	■	■	■	■	
22	1	5	■	■	■	■	■	■	■	■	■	
23	1	5	■	■	■	■	■	■	■	■	■	
24	0	0	■	■	■	■	■	■	■	■	■	
25	1	5	■	■	■	■	■	■	■	■	■	
26	1	5	■	■	■	■	■	■	■	■	■	
27	1	5	■	■	■	■	■	■	■	■	■	
28	1	5	■	■	■	■	■	■	■	■	■	
29	1	5	■	■	■	■	■	■	■	■	■	
30	1	5	■	■	■	■	■	■	■	■	■	
31	1	5	■	■	■	■	■	■	■	■	■	

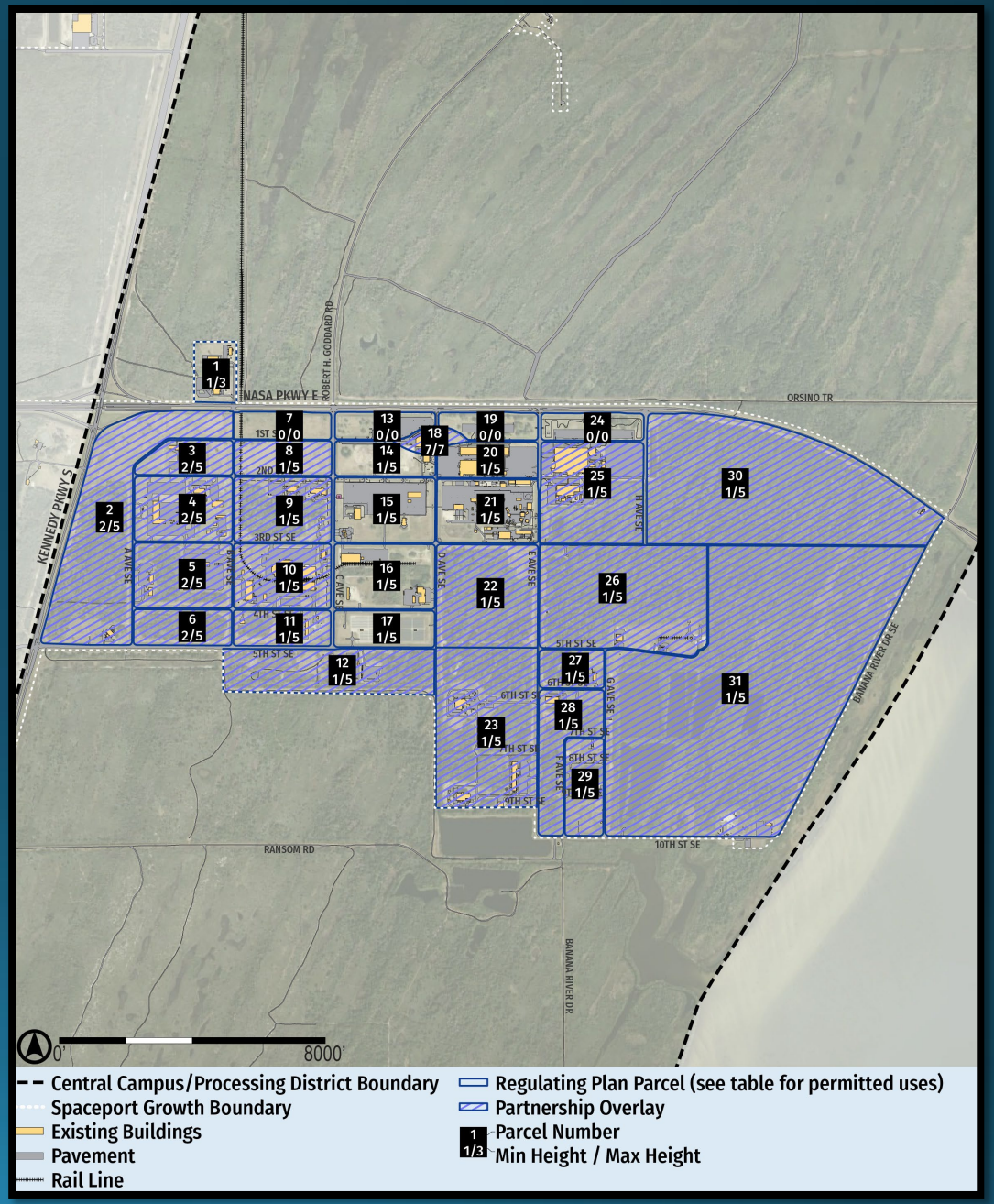
*Minimum level for Launch, Hazardous Activities, Heavy Industrial, and Light Industrial is one floor in allowable parcels.

**Minimum level for Administrative and Community is two floors in all allowable parcels

***All future development and associated height with future facilities is contingent on line of sight analysis.

■ Permitted

■ Not Permitted



VEHICLE ASSEMBLY BUILDING DISTRICT REGULATING PLAN

Parcel	Minimum Level (Floors)*	Maximum Level (Floors)**	Launch	Landing	Hazardous Activities	Heavy Industrial	Light Industrial	Administrative	Community	Open Space	Partnership Overlay	Notes
1	1	4										
2	1	4										
3	1	4										
4	1	4										
5	1	4										
6	1	4										
7	1	4										
8	1	4										
9	1	4										
10	1	4										
11	1	4										
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16	1	4										
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19	1	4										
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22	1	3										
23	1	3										
24	1	3										
25	1	2										
26	1	4										
27	1	3										
28	1	3										
29	1	3										
30	1	3										

*Minimum level for Launch, Hazardous Activities, Heavy Industrial, and Light Industrial is one floor in allowable parcels.

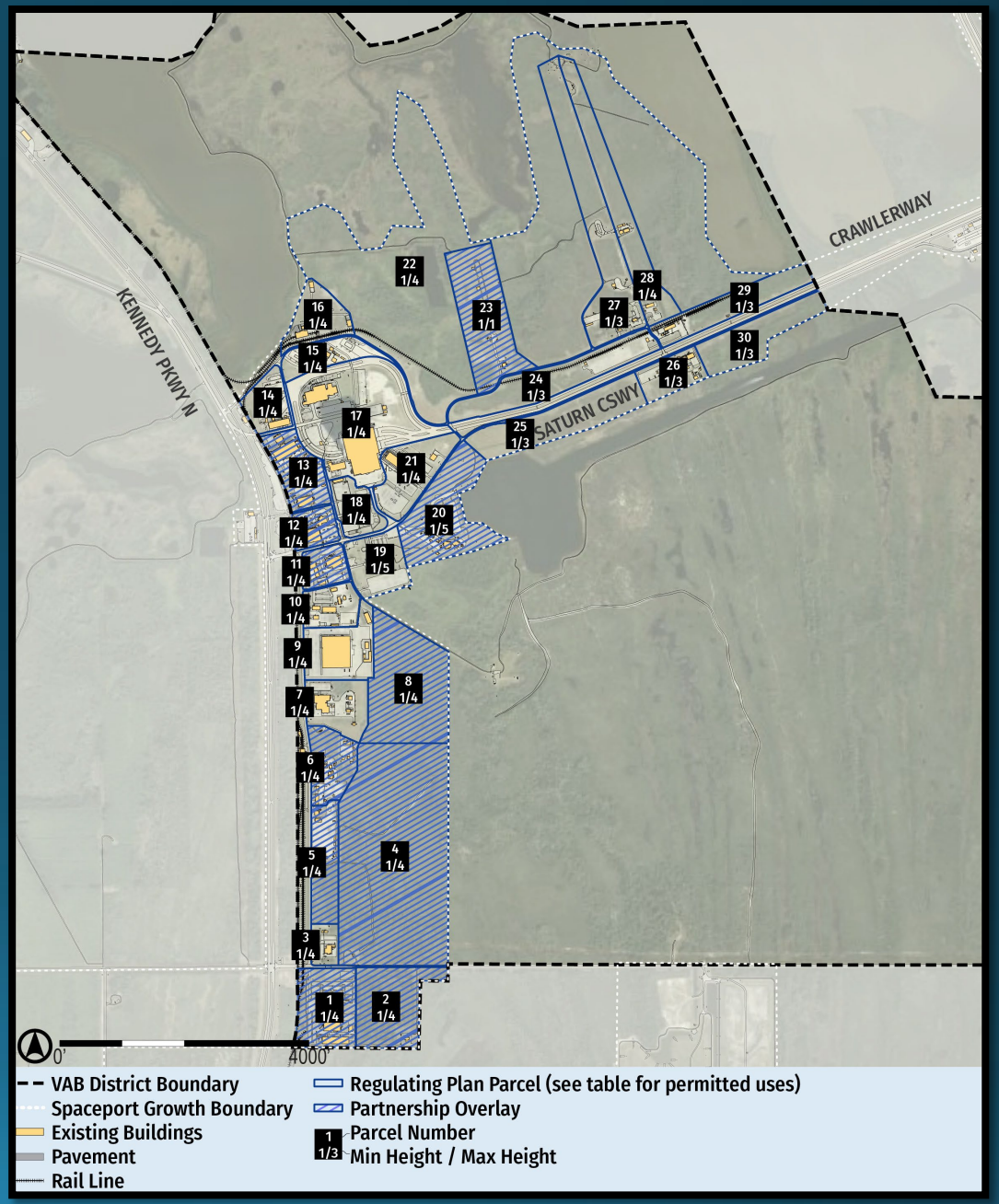
**Minimum level for Administrative and Community is two floors in all allowable parcels

***All future development and associated height with future facilities is contingent on line of sight analysis.

Key:

Permitted

Not Permitted



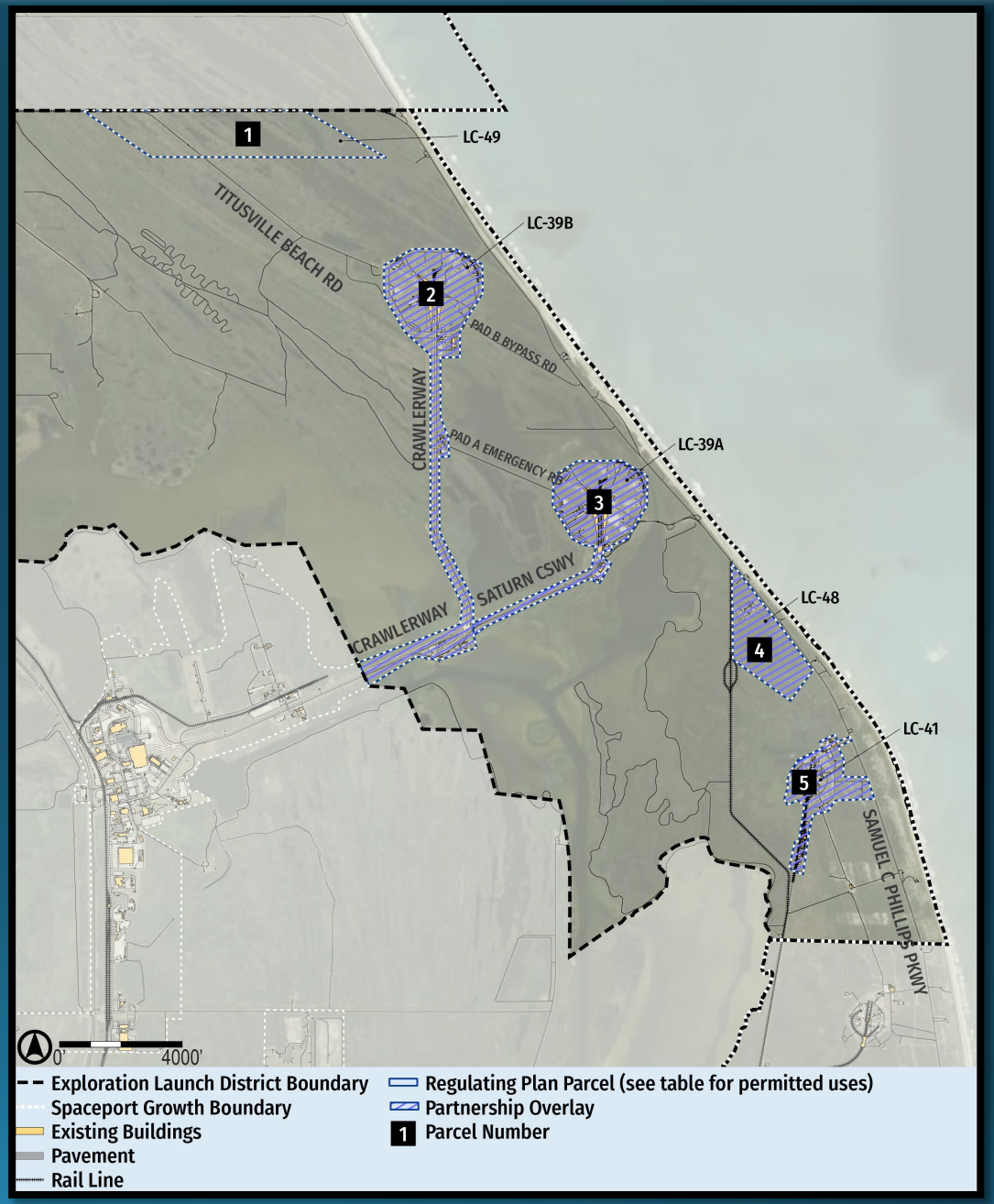
EXPLORATION LAUNCH DISTRICT REGULATING PLAN

Parcel	Minimum Level (Floors)*	Maximum Level (Floors)**	Launch	Landing	Hazardous Activities	Heavy Industrial	Light Industrial	Administrative	Community	Open Space	Partnership Overlay
1	1	3									
2	2	5									
3	2	5									
4	2	5									
5	2	5									

Key:

- Permitted
- Not Permitted

*Due to the Exploration Launch District being dedicated to launching, there are no minimum or maximum facility heights.
**All future development and associated height with future facilities is contingent on the line-of-sight analysis.



Rethinking Throughput and the Transportation Network for a Growing Spaceport

Increased Port Activity = Increased Pressure

- ❖ As operations expand, the existing transportation infrastructure faces mounting challenges.
- ❖ Current Network Limitations impact payload throughput and operational efficiency.

Proposed Solutions

1) **Truck-only corridors needed to separate freight from other traffic and streamline payload movements**.
   - *Conversion of St Rd 3 and/or NASA Pkwy median to a payload only route would help alleviate future congestion.*

2) **Infrastructure upgrades are essential: road widening, improved intermodal connections, and access routes.**
   - *Due to the slope and condition of Bridges Bridge, only one feasible transportation route for large payloads exists between KSC and CCSFS.*

3) **Traffic Management solutions like signal optimization, intelligent transportation systems (ITS) and coordinated scheduling**.
   - Advanced Spaceport Management Technology will assist with identifying and addressing bottlenecks proactively.

Strategic Consideration

You cannot build your way out of congestion. KSC must adopt creative solutions such as traffic management, off-peak operations, and tech-based logistics improvements. A resilient, integrated transportation network is vital to sustaining spaceport growth and ensuring seamless flow.

CHALLENGES – MITIGATION POTENTIAL

Environmental, Wetlands, and Sea Level Rise

- Due to the ecologically sensitive land, mitigation activities that require coordination between several partners must occur any time there is construction.
- There is a balance between the location of development and potential impacts to wetlands and threatened and endangered species habitat.

Sources to Support Development at KSC

- Mitigation Banks (MB) (off-Center, available to commercial tenants): mitigation is performed by a private entity and credits may be sold to developers.
- KSC Umbrella Mitigation Bank (UMB) (on-Center, primarily available for NASA use): KSC is permitted a federal UMB and state ROMA for CM credits.
- Permittee-Responsible Mitigation (PRM) (on- and off-Center, NASA and commercial tenants): PRM provides CM for which the permittee retains full responsibility.

Strategies

- Preservation of Potential Mitigation Areas – areas where CM credit could be derived must be identified and preserved.
- CM Project Development – detailed design work is required to convert notional projects into credits utilized for future development.
- Strategic Allocation of PRM/MB Credits to Spaceport Users – PRM/MB credits should be held in reserve by NASA to support development.

Future Development Considerations

- MB credits are preferable to PRM, NASA does not control the rate at which MB credits are generated, and NASA must compete with off-center developers for MB credits.
- The availability of CM on KSC property is a finite resource.

Adaption Action Strategy

1. Protection – defensive measures
2. Accommodation – remain in place with modification
3. Managed Relocation – gradual relocation away from AAAs
4. Avoidance – new development away from AAAs

ADAPTATION ACTION STRATEGY

KSC's Adaptation Action Areas (AAAs) include property most vulnerable to future severe storm and weather events. These AAAs provide a geographic foundation to guide future development and reinforce the implementation of four sequential adaptation planning strategies.

FACILITY INVESTMENT STRATEGY

PROTECTION

Protection strategies are structurally defensive measures that directly protect vulnerable structures, allowing them to be left largely unaltered

ACCOMMODATION

Accommodation strategies alter physical design of vulnerable structures to allow the structure or land use to stay in place with modification

MANAGED RELOCATION

Relocation from areas or infrastructure where protection or accommodation will not be efficient or effective

AVOIDANCE

Avoidance involves guiding new development away from areas that are subject to coastal hazards

KSC has constructed a sand dune network to protect KSC's critical launch pads from flooding during storm events. While very effective, the dunes require expensive replenishment due to erosion after each storm.

Elevating 6-miles of Phillips Parkway 6-8 feet over 3-4 phases would create a more permanent barrier with less ongoing expense to maintain.

OPERATING MODEL – ENABLING CONSIDERATIONS

NASA must modernize how spaceport services and shared infrastructure are planned, governed, and delivered at KSC. A more integrated operating framework would reduce duplication, improve coordination across government and commercial users, and ensure shared infrastructure investments are strategically aligned with Agency and national priorities. Such a framework would also enable more flexible mechanisms for cooperative investment, allowing NASA and its partners to keep pace with growing demand while avoiding augmentation or statutory compliance challenges.

Pending legislative modifications, KSC would have more flexible funding authorities to equitably charge users for costs incurred, similar to how municipalities levy development impact fees. This is a critical step towards funding larger-scale shared-use infrastructure upgrades required to support both NASA and commercial operations.

KSC must find ways to leverage additional capital to fund shared-use infrastructure. While some NASA infrastructure built to support Apollo and Shuttle-era assets has been repurposed, KSC has reached a tipping point that will require new and modernized infrastructure to support both evolving NASA and partner requirements.

Pre-2012

Shuttle Era

2013 - 2020

KSC Divesting of Underutilized Assets

Current State

Developing Partnerships on Remaining Vacant Land

Enabling Considerations

- NASA Internal Decision-Making
- Legislative, Legal, and Policy Actions
- Funding Structures
- Commercial Space Industry Growth
- Financial Commitment from Commercial Partners

Future State

Premier Spaceport with NASA Programs Integrated

OVERVIEW

Background

Project Needs (ADP)

Where (POA+ parcelization tool)

How (CDP)

You Are Here:
So What?

So What?

Insights and Outcomes

- Ongoing Planning Efforts
- Critical Needs

ESSENCE OF THE PLAN

58

The ADPs include 58 future construction and demolition projects and create a “zoning code” for the developable areas, channeling future investments from partners and NASA

13

The CDP illustrates another 13 projects, focused on the infrastructure that connects KSC to surrounding networks.

5

The POA analyzes 5 specific parcels, giving specific guidelines for what and how NASA or partners should build.

5

The 2-year planning process has brought stakeholders together from across KSC through 5 interactive, collaborative workshops.

The Plan:

- Highlights key short-term requirements.
- Provides a long-term framework for short-term decisions.
- Supports O&M reduction through continued facility divestment
- Analyzes environmental and regional factors in development.
- Explores potential impacts of different future scenarios.
- Explores operating model and policy questions that will impact smart future development.
- Sets the stage for additional planning…

ESSENCE OF THE PLAN

1. **Enables increased tempo, acknowledges uncertainty, accommodates increased partnerships.**
2. **The process itself has led to improved clarity.**
3. **Highlights key requirements.**
4. **Provides a way to channel change at KSC despite uncertainty.**
5. **Evolution vs revolution.**
6. **Balance of flexibility and consistency.**

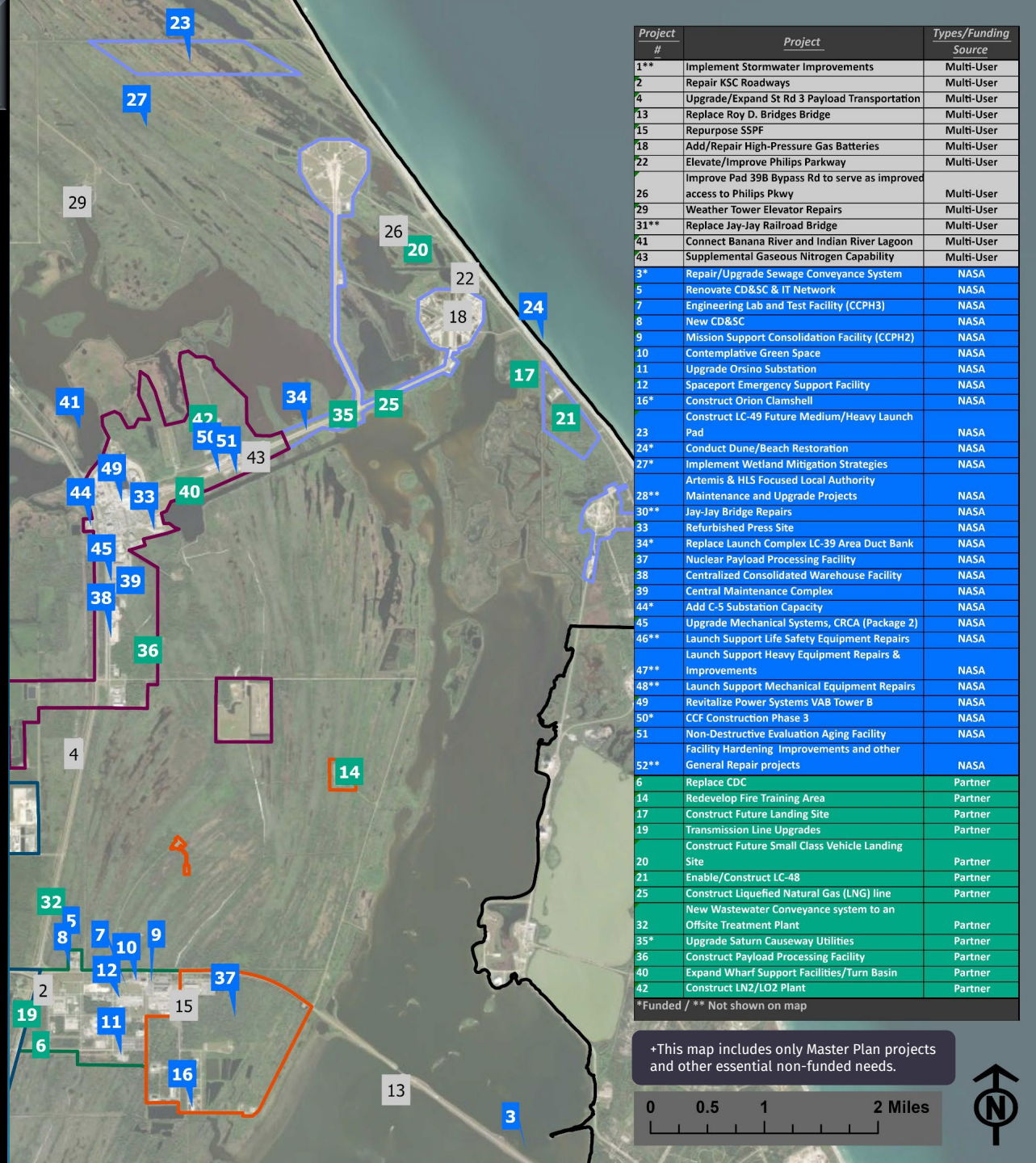
FUTURE PROJECTS

In addition to the development of the Master Planning, KSC assembled a comprehensive list of projects that could be eligible for multi-user spaceport funding.

This list was submitted to the National Space Council (NSpC) to raise awareness of the urgency and importance of shared-use infrastructure investments. In doing so, it also helped identify critical infrastructure repairs required to sustain NASA Program and Partner operations.

While some of these projects have been funded, KSC continues to maintain and refine a comprehensive portfolio of essential Spaceport Projects needed to support future operations. However, Agency funding remains insufficient to implement most of these upgrades. An Infrastructure Investment Fund (IIF) would provide NASA with a viable mechanism to fund shared-use infrastructure projects.

KSC's current list of unfunded essential spaceport upgrades exceeds $4 billion; this does not include planned or in-progress projects funded entirely by commercial partners.



Project #	Project	Types/Funding Source
1**	Implement Stormwater Improvements	Multi-User
2	Repair KSC Roadways	Multi-User
4	Upgrade/Expand St Rd 3 Payload Transportation	Multi-User
13	Replace Roy D. Bridges Bridge	Multi-User
15	Repurpose SSPF	Multi-User
18	Add/Repair High-Pressure Gas Batteries	Multi-User
22	Elevate/Improve Philips Parkway	Multi-User
26	Improve Pad 39B Bypass Rd to serve as improved access to Philips Pkwy	Multi-User
29	Weather Tower Elevator Repairs	Multi-User
31**	Replace Jay-Jay Railroad Bridge	Multi-User
41	Connect Banana River and Indian River Lagoon	Multi-User
43	Supplemental Gaseous Nitrogen Capability	Multi-User
3*	Repair/Upgrade Sewage Conveyance System	NASA
5	Renovate CD&SC & IT Network	NASA
7	Engineering Lab and Test Facility (CCPH3)	NASA
8	New CD&SC	NASA
9	Mission Support Consolidation Facility (CCPH2)	NASA
10	Contemplative Green Space	NASA
11	Upgrade Orsino Substation	NASA
12	Spaceport Emergency Support Facility	NASA
16*	Construct Orion Clamshell	NASA
23	Construct LC-49 Future Medium/Heavy Launch Pad	NASA
24*	Conduct Dune/Beach Restoration	NASA
27*	Implement Wetland Mitigation Strategies	NASA
28**	Artemis & HLS Focused Local Authority Maintenance and Upgrade Projects	NASA
30**	Jay-Jay Bridge Repairs	NASA
33	Refurbished Press Site	NASA
34*	Replace Launch Complex LC-39 Area Duct Bank	NASA
37	Nuclear Payload Processing Facility	NASA
38	Centralized Consolidated Warehouse Facility	NASA
39	Central Maintenance Complex	NASA
44*	Add C-5 Substation Capacity	NASA
45	Upgrade Mechanical Systems, CRCA (Package 2)	NASA
46**	Launch Support Life Safety Equipment Repairs	NASA
47**	Launch Support Heavy Equipment Repairs & Improvements	NASA
48**	Launch Support Mechanical Equipment Repairs	NASA
49	Revitalize Power Systems VAB Tower B	NASA
50*	CCF Construction Phase 3	NASA
51	Non-Destructive Evaluation Aging Facility	NASA
52**	Facility Hardening Improvements and other General Repair projects	NASA
6	Replace CDC	Partner
14	Redevelop Fire Training Area	Partner
17	Construct Future Landing Site	Partner
19	Transmission Line Upgrades	Partner
20	Construct Future Small Class Vehicle Landing Site	Partner
21	Enable/Construct LC-48	Partner
25	Construct Liquefied Natural Gas (LNG) line	Partner
32	New Wastewater Conveyance system to an Offsite Treatment Plant	Partner
35*	Upgrade Saturn Causeway Utilities	Partner
36	Construct Payload Processing Facility	Partner
40	Expand Wharf Support Facilities/Turn Basin	Partner
42	Construct LN2/LO2 Plant	Partner

*Funded / ** Not shown on map

+This map includes only Master Plan projects and other essential non-funded needs.

0 0.5 1 2 Miles

N

PROGRAMMATIC EA (PEA)

Scope

Prepared in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969 and NASA NEPA regulations, among other guidelines.

Addresses the most reasonably foreseeable actions in three planning districts at KSC within a 20-year planning horizon.

Is intended for long-term planning purposes only; may be followed by more site- or action-specific NEPA documents as appropriate.

Provides stakeholders, the public, and decision makers with information necessary to understand and evaluate the potential environmental consequences of the activities included under the Proposed Action.

The PEA complies with NEPA by integrating environmental considerations into the Master Plan, ensuring that potential impacts of future development are identified and addressed early in the decision-making process.

PLAN FEASIBILITY

This Plan Is Consistent

The plan continues in the direction that KSC Master Planning is already moving. It provides shape to initiatives already in motion.

This Plan Is Flexible

The regulating plan, capacity analysis, and scenario planning give flexibility to respond to a quickly changing environment.

This Plan Will Keep KSC Competitive

Smart use of land, early identification of infrastructure bottlenecks, and pre-coordination of partnership opportunities will enable KSC to be the spaceport of choice in a future with more competitors.

The vision of NASA is to reveal the unknown for the benefit of all humankind.

Victor Glover
Astronaut, Artemis II Pilot