City of Satellite Beach Intro

- Situated on an barrier island between the Banana River and the Atlantic Ocean
- 15 miles south of Cape Canaveral Air Force Station and NASA
- Patrick Air Force Base is adjacent to our City
- Population is 10,300
- 3.8 square miles, with 617 acres of navigable canal system and Banana River
City began looking at Sea Level Rise in 2010, with the Sea Level Rise Adaptation Report, conducted by RW Parkinson, Inc.

This report used a “bathtub” model to “assess municipal vulnerability and to initiate the planning process to mitigate impacts.”
Where we have been...

- Satellite Beach Climate Ready Estuaries Pilot Project 2009-2010
- Florida Department of Economic Opportunity – Community Resiliency Initiative Begins Jan. 2011
- City of Satellite Beach adopts Adaptation Action Area and Sea Level Rise Policy 2013
- State Adopts Community Planning Act with Adaptation Action Area Language May 2011
- FDEP Coastal Partnership Community Resiliency Grant 2014/2015
- City adopts updated Comprehensive Plan Policies 2016
- Satellite Beach Sea Level Rise Subcommittee to CPAB 2010
- Sea Grant awarded to Stetson Univ and the City for GIS mapping of Critical Infrastructure 2016
Creating a Resilient Community Project Overview

- Florida Department of Protection Grant Program – Coastal Partnership Initiative
- Community Resiliency
- 1 Year (July 2014- June 2015)
First Public Workshop

- Held on September 23, 2014
- Notice sent to each property address in the City
- Notice sent out on City Manager Facebook page, with NPR article of the City
Day before Community Workshop
Atlantic Coast
Mean High High Water (NAVD88)
USACE Low, Intermediate and High Projection Rate Curves
Planning Horizon: 2040, 2070, 2100

Lagoon Side
Mean Annual High Water (NAVD88)
USACE Low, Intermediate and High Projection Rate Curves
Planning Horizon: 2040, 2070, 2100
Figure 2 Projected Sea Level Change Curves (Source USACE, 2012)
High USACE Projection Rate Curve 2040

- **2040:**
  - *46* inch inundation using MHHW (Atlantic),
  - *19* inch inundation using MAHW (Lagoon)
**High USACE Projection Rate Curve 2070**

- **2070:**
  - *66* inch inundation using MHHW (Atlantic),
  - *39* inch inundation using MAHW (Lagoon)
High USACE Projection Rate Curve 2100

2100:

- **93** inch inundation using MHHW (Atlantic),
- **66** inch inundation using MAHW (Lagoon)
Satellite Beach, Florida - Storm Surge Zones by Hurricane Category

*Storm Strength* | Brevard
--- | ---
Category 1 | Up to 6’
Category 2 | Up to 10’
Category 3 | Up to 16’
Category 4 | Up to 21’
Category 5 | Up to 26’

**Surge heights represent the maximum values from SLOSH MOMs**

*Note: All parcels within the City of Satellite Beach are within Evacuation Zone A.*
Flood-zones

Flooding from Hurricane Fay
http://www.sh.noaa.gov/images/mlb/surveys/fay/Fay4sb.jpg
Increased Flooding outside of FEMA maps

- FEMA Maps often differ from the actual flooding that occurs during storms. Why?
  - They fail to take into account hazard modeling and sea level rise.
  - They include a political process.
- Example: The City of Satellite Beach 67% of our PIF (policies in force) are located outside a FEMA flood zone.
Updating our Stormwater Master Plan

- Must include Sea Level Rise in the Modeling
- Combined with aging infrastructure and possible new “life” spans for pipes with saltwater intrusion
- Must include Water Quality Standards
- The City will likely be doubling our Stormwater Utility Fee this fiscal year
City Facilities at Risk for Flooding

- Public Facilities in the City are all concentrated in flood zones
- City is currently relocating Public Works and the Fire Station
- Purchased property closer to SR A1A
Addressing Development in Known Flood Areas

- Charter amendment for the November 2018 Ballot to direct densities away from areas of known flooding and replace potential density units in higher elevation areas.

- Provide incentives for redevelopment/development in non-flood zone areas.

- Adopt a policy for how access to these properties will be managed by the City/County when the flooding is too expensive to maintain.

Roadway Abandonment Ordinance

- Provide information to property owners at the time of sale and permitting.

- Create building standards that allow property owners to protect their property.
Coastal Erosion

41.2 miles of Brevard County Beaches classified as Critically Eroded

Definition: erosion and recession of the beach or dune system threatens or caused loss of upland development, recreational interests, wildlife habitat, or important cultural resources

- 2005 Emergency Dune Stabilization Project from 2004
- 2014 Mid Reach Recovery Project
- 2017 Emergency Dune Stabilization Project

Source: Critical Erosion Report; FDEP
Beach Erosion

- Working on a Statewide Policy with other environmental organizations and cities for coastal retreat in repeatedly compromised areas.
The City created a Sustainability Board in 2015.

The Board has created a Plan, with Green Achievement Targets.

The City is placing Solar on City Hall this year.

The City is transitioning our administrative fleet to electric vehicles.

The City no longer uses synthetic fertilizers or pesticides.
How do land use policies have an impact on climate emissions?
Title: Spatial Distribution of the U.S. Household Carbon Footprints Reveals Suburbanization Undermines Greenhouse Gas Benefits of Urban Population Development

Abstract: Which municipalities and locations within the United States contribute the most to household greenhouse gas emissions, and what is the effect of population density and suburbanization on emissions? Using national household surveys, we developed econometric models of demand for energy, transportation, food, goods, and services that were used to derive average household carbon footprints (HCF) for U.S. zip codes, cities, counties, and metropolitan areas. We find consistently lower HCF in urban core cities (∼40 tCO₂e) and higher carbon footprints in outlying suburbs (∼50 tCO₂e), with a range from ∼25 to >80 tCO₂e in the 50 largest metropolitan areas. Population density exhibits a weak but positive correlation with HCF until a density threshold is met, after which range, mean, and standard deviation of HCF decline. While population density contributes to relatively low HCF in the central cities of large metropolitan areas, the more extensive suburbanization in these regions contributes to an overall net increase in HCF compared to smaller metropolitan areas. Suburbs alone account for ∼50% of total U.S. HCF. Differences in the size, composition, and location of household carbon footprints suggest the need for tailoring of greenhouse gas mitigation efforts to different populations.
Atlanta, GA

Zipcode: 30310
Atlanta, Fulton County, GA

40.3 metric tons CO₂ equivalent
Houston, TX

Zipcode: 77009
Houston, Harris County, TX

44.4
metric tons CO₂ equivalent
Florida, Satellite Beach Data

Zipcode: 32937
Satellite Beach, Brevard County, FL

45 metric tons CO₂ equivalent
So can we do?

- Development patterns (urban form) and transportation have a profound effect on climate emissions.
- Be mindful of those development patterns!
- Less density is not necessarily better.
- Mixed-use development patterns and denser communities are more walkable and lend themselves to better transit use.
The “Take Away”....

- We need to address the lack of public transportation across the State.
- Stop developing non-urban wetlands.
- Balance the long range costs to the taxpayers of developing in known hazard areas (high erosion areas, wetlands, etc.) with property rights.
- Promote mixed use urban centers.
- Continue to revitalize our downtowns.
- We must advocate for state and federal resources to help communities plan and prepare.
- Complete the necessary plans for our infrastructure and fund the improvements.
- Do the Assessment for your own community!
THANK YOU!

Courtney H. Barker, AICP
City of Satellite Beach
City Manager

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Satellite Beach, Fl. 32937
(321) 773-4407
cbarker@satellitebeach.org
Southeast Ranges
We’re all Connected
Southeast Ranges

• Florida is the anchor for ALL Southeast Ranges
• Due to Florida’s unique panhandle and peninsular geography with a long coastline, the state offers multiple access lanes into vast air and sea spaces.
• A majority of Florida’s bases are located here because of the good flying weather, gulf & deep water access, and proximity to test and training ranges.
Gulf Range Complex

• Size Matters – The Gulf Range Complex is a unique national resource. The range is larger than all other training ranges inside the continental US combined.

• Test activities are considerably dependent on unconstrained access to the eastern Gulf of Mexico airspace and sea space.

• “The evaluation of future armament will require a vast area containing airspace restricted to military operations and low commercial air traffic.” 2003 Joint Gulf Range Strategic Plan
Gulf Range Enhancement

• Task Force seed money has primed the pump to enhance Gulf Range tracking capability for modern test and training activities.
  – Carrabelle Site Engineering Plan will help inform other sites
  – CM Dunn and Gaetz secured ~ $30M to support Phase 1 of the enhancement

• With MQ-9 at Tyndall, better tracking capability needed for Drone Control Ops
GRE Overview
Future Open Air Test/Training

5TH & 6TH Gen Wpns
5TH & 6TH Gen Aircraft
Hypersonic
Directed Energy
Theater Defense Ballistic Missile
~ Military Mission Line
Why GRE?

Control Airspace
Commercial Corridor Rerouted with 24 hour notice

Expertise in Fixed and Mobile T&E Systems

Enhance W470 to Support ACC Mission Alleviate W151 Congestion

Nominal Weapon Large Safety Profile

Operationally Realistic, Long Range, Large Footprint Weapon Testing

Nominal Weapon Long Range Safety Profile

Customer Requirements
- JASSM ER
- LRSOW
- JDAM
- SDB II
- UAV
- LCCM
- HTW Ballistic
- HTW Boost Glide
- F-22
- F-35
- Next-Gen Bomber
- F-X

Littoral Sites Available

Eastern Test Range Integrated Exercises
Summary

• GRE provides one-of-a-kind, National Test Asset
  – MRTFB range capacity designed for large footprint weapons and 5\textsuperscript{th} and 6\textsuperscript{th} Gen Weapon Systems mission engagement scenarios

• Instrumenting W-470 represents a 30% increase in total instrumented over-water test area
  – Greater flexibility in scheduling...immediate payoff for F-35 and all 96TW missions

• Potential partnering with NAWCAD, Atlantic Test Ranges, PAX, and Key West to support next generation weapon system
  – Initial discussions held to enable joint integration and interoperability from Eglin to PAX

Optimizes use of the Gulf of Mexico to meet 5\textsuperscript{th} and 6\textsuperscript{th} Gen Weapon Systems Test & Training requirements
Why the Moratorium Matters

• “Offshore drilling is ‘incompatible’ with military training and weapons testing in the Gulf of Mexico off Florida’s shores” -- Secretary of Defense Donald Rumsfeld (2005)

• “The Department of Defense (DOD) cannot overstate the vital importance of maintaining the moratorium” – Under SecDef Kurta (2017)

• “The moratorium is essential for developing and sustaining the Air Force’s future combat capabilities...Emerging technologies such as hypersonics, 5th generation fighters, and advanced sub-surface systems will require enlarged testing and training footprints, and increased Air Force reliance on the moratorium far beyond 2022.” -- Gen Goldfein (2017)

• Florida Senate and House Resolutions adopted support an indefinite extension of the GOMESA moratorium. (2018)
Why the Moratorium Matters

• Oil exploration and/or platforms placed in the eastern Gulf could jeopardize military missions and severely reduce Florida’s appeal to keep military installations in the sunshine state; regardless of BRAC.

• IMPACT
  – Military and defense is the state’s fourth largest industry accounting for more than 801,000 jobs and $85 Billion in economic impact including 65% of regional economy of NW Florida.
Gulf of Mexico Range Complex

Value/Potential for Autonomous/Unmanned/Manned Underwater Testing and Training
Hydrographic Overview of the GOMEX Range Complex with MML
Airborne and Autonomous Mine Countermeasures Happening Now in the Gulf of Mexico
Underwater/Surface Unmanned Systems
598th Range Squadron
Overview

- Avon Park AFR
- Connectivity
- Future
  - Integration
  - APAFR efforts
  - ACC ERP
Avon Park Range

- Train like you fight! 2x tactical impact areas
- Large enough for simultaneous operating areas
- Drop zones enable assault on runway/tactical areas
- Isolated range: large target areas with 360° run-ins
- Training and inert full-scale weapons authorized
Installation Outreach

- Heavy Involvement with the State, Counties, and Towns
  - Joint Land Use Study
  - ICEMAP
  - Sentinel Landscape
  - Florida Base Commanders Meetings
  - FDA/FDSTF
  - Rotary
  - Facebook
  - Military Sea Service Museum
  - JROTC and Civil Air Patrol
  - Highlands Youth Academy
The Avon Park World

- GSU from Moody
- BSA with MacDill
- Also answer to / coord with ACC/A3AR
- MOU/MOA with Patrick and MacDill
- Primary range customers
  - Air = Homestead, Patrick, Moody
  - Ground = STS at Hurlburt/Pope, BDG
# Exercise Schedule

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Beyond Avon Park
Conservation Connectivity

- Wildland Fire
- Threatened and Endangered Species
- Cultural Resources
- Environmental Compliance
- Outdoor Recreation
- Biodiversity/Wetlands
- Forestry Management
- Invasive Species Management
- NEPA
- Regional Conservation
- Cattle Leases
- Conservation Law Enforcement
- Environmental Restoration
Future

- Integrate available Air and Ground Spaces
  - GRE
  - South East Range Concept
  - ACC Enterprise Range Plan (ERP)
FAA Coordination

Existing ATCCA and could be expanded to include the Sarasota Shelf

Sarasota Shelf: 40K and up

Avon Park

Okeechobee Shelf: FL18-40K
Enterprise Range Plan

• Develop an enterprise approach to range investment that:

  • Supports 5th Gen and beyond Training
  • Integrates Live with Virtual and Constructive entities
  • Improves Contested, Degraded, Operationally Limited (CDO) Training - increased realism and threat density
  • Integrates Live Training with Space, Cyber Space
  • Supports Special Ops range training requirements
  • Provides stable, ten year, investment and planning horizon
Concepts

• Regionalize Ranges and Airspace
  • *Training systems allocated to meet broader regional requirements*

• Integrate Virtual & Constructive entities to improve Live
  • *Exploit interdependency between Live and Virtual Training*

• Capitalize on the link between Training and Test investments

• Build on Joint Training Capabilities and Partnerships
6 CONUS, 2 OCONUS Regions
South East Region
Questions?
Florida Defense Support Task Force

Update to Florida Defense Alliance
March 21, 2018
TF Member Update

- Senator Doug Broxson – Chair – Senate
- Tom Neubauer – Vice Chair – Senate
- Maj Gen (ret) Richard Haddad – Senate
- Lt Col (ret) Bill Dudley – Senate
- Representative Clay Ingram – House (Nov 6, 2018)
- Representative Jay Trumbull – House (Nov 6, 2018)
- Brig Gen (ret) Chip Diehl – House
- Vacant – House (CW5 Fritts Resigned – 10 Mar)
- Admiral (ret) Mark Fitzgerald – Governor
- Representative Holly Raschein – Governor (Nov 6, 2018)
- Commissioner Barbara Stewart – Governor
- Amy Gowder – Governor
- MG Michael Calhoun – Governor’s Personal Rep.

Note: Chair rotates on July 1st annually between Senate and House
Task Force Items of Interest

- Oil Drilling / Military Mission Line (MML)
  - Continue to push for extending MML moratorium
  - FL Senate and House Resolutions Passed
  - BOEM Process Ongoing
- New Economic Impact Study – Defense Factbook
- 2018 Strategic Plan – thanks for your inputs, should be approved at tomorrow’s Task Force Meeting
FY 17 - 18 Task Force Grants

Awarded

- Tampa Bay Defense Alliance $135,000
- Gulf Coast State College $30,000
- InDyne – Gulf Range Instrumentation $235,000

Total $400,000

Possible additional Grant Awards

- South Florida Defense Alliance $152,500
- Greater Pensacola Chamber $73,000

- FY18-19 Awards to be Considered in May
FY 18 - 19 Task Force Grants

- Eleven applications received for FY18-19 cycle worth ~ $3.5 Million (two being considered for FY18 funding tomorrow – others to be evaluated in May by invite)

- Expecting to have about $850K available for next years’ Grant Program
Florida Defense Support Task Force

Questions ?
Headquarters U.S. Air Force

Energy Assurance for Air Force Installations

14 NOV 2018
Mr. Robert Hughes
Energy Threats Compromise Missions

A well-orchestrated attack (physical or cyber) on the grid could cripple the electric system, cause tremendous economic damage, put the country’s vulnerable populations at risk, and compromise the Air Force’s ability to conduct its mission.
Mission Assurance through Energy Assurance

Strategic Energy Goals

- Improve Resiliency
- Optimize Demand
- Assure Supply

 ENERGY ASSURANCE involves activities across the operational and installation spectrums designed to ensure the Air Force has the energy when and where it is needed to ensure it can accomplish its mission.
Air Force Office of Energy Assurance (OEA)

MISSION

Deliver creative installation energy resiliency solutions to meet 21st century threats

VISION

The recognized leader for implementing innovative energy assurance solutions that provide the Air Force with mission-ready installations

OBJECTIVE

Oversee Air Force facilities energy program by consolidating requirements, leveraging partnerships & monitoring execution of facilities energy projects
**GOALS**

- Serve as single point of entry for all facilities energy requirements
- Act as facilitator / integrator to maximize energy assurance and track execution with appropriate Air Force organizations
- Integrate energy assurance into Air Force facilities energy project portfolio by leveraging public, private & community partnerships

**APPROACH**

- Develop partnerships with leading innovators to leverage resources & enable best resilient technologies
- Standardize intake & execution of Air Force energy projects
- Increase momentum of projects outside the standard government schedule
OEA Partnerships

Installation
Community
Industry

Apply lessons learned & best practices
Gain better understanding of current business environment
Build mutually beneficial relationships
Accomplish more, faster

Mission Assurance through Energy Assurance
Mission Assurance through Energy Assurance

Air Force Energy Toolbox

Third Party Agreements
- Land Outgrants
- Power Purchase Agreement
- ESPCs / UESCs
- Leveraging Utility Privatization
- Utility Service Contract

Partnerships
- Communities
- Installation tenants
- State & local gov't
- Federal

Programmed Funding
- Research & Development
- MILCON / SRM Funds
- Energy Resilience & Conservation Investment Program
OEA Project Concepts and Opportunities

Map is current as of June 2018. Project concepts and opportunities may change during the project lifecycle.

KEY

- **Current project concepts**
- **Project concept & MERC sites**
- **EaaS pilot sites**
- **Engaged sites**
- **Engaged MERC sites**

- **Battery**
- **Natural Gas**
- **Combined Heat and Power**
- **Solar**

- Beale AFB
- Creech AFB
- Hill AFB
- Offut AFB
- McConnell AFB
- Tinker AFB
- Altus AFB
- Little Rock AFB
- Barksdale AFB
- Whiteman AFB
- Dobbins AFB
- Joint Base Andrews
- Joint Base McGuire-Dix-Lakehurst
- Joint Base Langley-Eustis
- MacDill AFB
- Hanscom AFB
- Barnes AFB
- Maxwell AFB-Gunter Annex
- Little Rock AFB

Mission Assurance through Energy Assurance
OEA Engagement at Joint Base McGuire-Dix-Lakehurst

Resilience Need: Only DoD base home to Air Force, Army and Navy missions

**PROJECT BENEFITS**

- Support critical missions with uninterrupted power during grid outage
- Resilient investment opportunities
- Regional power stability

**ENHANCED USE LEASE PROJECT DETAILS**

- New on-site asset: Natural Gas Power Plant
- In-kind / cash consideration for resilience investments on Dix portion of base
- Completed RFI and Industry Exchange in March 2018

**POWER PURCHASE AGREEMENT PROJECT DETAILS**

- Technology agnostic asset: 16,000,000+ kWh of locally-generated power
- Non-interruptible primary power & 6-12 MW islanding capability during grid outage
- Completed RFI in June 2018
Contact OEA

Mr. Robert Hughes
Director
Air Force Office of Energy Assurance
2530 Crystal Drive, 8th Floor
Arlington, VA 22202

Stay Connected!

Visit the OEA Website: [WWW.SAFIE.HQ.AF.MIL/PROGRAMS/ENERGY/OEA](WWW.SAFIE.HQ.AF.MIL/PROGRAMS/ENERGY/OEA)

Reply to the RFI: [http://go.usa.gov/xUebU](http://go.usa.gov/xUebU), solicitation # W912DY-18-U-OEA1

Subscribe to OEA Updates:

Continue the conversation on Social Media: [Air Force Energy Program](https://www.facebook.com/AirForceEnergy)  [@AFEnergy](https://twitter.com/AFEnergy)
Space Florida Structure & Role

Public Corporation & Independent Special District

• Spaceport Authority
  - Develop Infrastructure
  - Build, Own, Lease, Bond & Operate
  - SLC-46 Exploration Park Launch & Landing Facility

• Economic Development Role
  - Unique Financial & Infrastructure Tools
  - Conduit Lease Financing
  - Access to Capital Markets
  - Tax Efficiencies
  - Move-in Ready Facilities

Mission … …
“Build a World Leading Aerospace / Space Industry”
Future of Space & Innovation

Highly Integrated – Interdependent – Enabling Technology Advances
Affecting every aspect of everyday life!
Florida’s Aerospace Industry Ecosystem

- Business Permitting & Regulatory Environment
- State & Local Tax Environment
- Universities & State Education System
- Communities & Quality of Life
- Innovation & Research Community
- Aerospace Workforce
- Transportation & Logistics Infrastructure
- Aerospace Supply Chain

Florida’s Aerospace Industry Ecosystem

- Reduced cost financing
- Facility construction
- Machinery & equipment acquisition

- Quick Response Training
- Incumbent Worker Training
- Recruiting assistance

- Local Economic Development Agency (County or City)

- Project coordination
- Tax refunds & credits
- Site/building database

- Site/building tours
- Permitting assistance
- Property tax abatements
<table>
<thead>
<tr>
<th>CONDUIT FINANCING</th>
<th>SYNTHETIC LEASING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique financing allows business to access assets quickly and cost effectively</td>
<td>New contracts can effectively shift liabilities to expenses</td>
</tr>
<tr>
<td>Flexible terms create opportunities to leverage existing capital strategically</td>
<td>Variable options can improve cash flow by deferring large capital expenditures</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECURING PROPERTY</th>
<th>BUSINESS INFRASTRUCTURE AND FACILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovative programs simplify property acquisition from government sources</td>
<td>Nearly $2 billion in aerospace assets funded</td>
</tr>
<tr>
<td>Impressive “commercial islands” synergize business activities on government land</td>
<td>Streamline communication with NASA and the U.S. Air Force</td>
</tr>
<tr>
<td></td>
<td>Provide step-by-step support throughout project and beyond</td>
</tr>
</tbody>
</table>
Florida’s Growing Aerospace Industry
… … Aviation, Space and Aerospace Manufacturing
1. Spaceport Authority
National Space Council … Changing the Policy Dialogue

Department of Commerce … Policy Initiatives
   • Policy Evolution for Future Space Commerce and Airspace Traffic Management

FAA Aviation Rulemaking Committees (ARC’s)
   • Spaceport Categorization
   • Streamlined Launch & Reentry Licensing Requirements
   • Airspace Access

FAA Spaceport / Spaceflight Standards Development

Federal Asset Management and Disposition Issues
Cape Canaveral Spaceport Epic Growth

Spaceport: 2016

Complex 41: ULA Atlas V
Complex 40: SpaceX Falcon 9
Complex 37: ULA Delta IV, Delta IV Heavy
Complex 13: SpaceX Landing

Spaceport: 2016-2021

Complex 39B: NASA SLS; Orbital ATK NGL
Complex 39A: SpaceX Falcon 9, Falcon Heavy (Dragon 2)
Complex 41: ULA Atlas V (CST-100, Dream Chaser)
Complex 41: ULA Vulcan (CST-100, Dream Chaser)
Complex 40: SpaceX Falcon 9
Complex 46 or 39C: Firefly, Rocket Lab, Vector Space
Complex 16 or 20: DARPA XS-1
Skid Strip: MDA MREM Captive Carry
Skid Strip: Orbital Pegasus
Complex 37: ULA Delta IV, Delta IV Heavy
Complex 13: SpaceX/Blue Origin Landing
Complex 36: Blue Origin – New Glenn
Complex 17/18: Moon Express
Complex 46: Space Florida – Minotaur IV; ATB

45th Space Wing’s “Drive for 48” Launches
Why not 100 – 200 launches?
<table>
<thead>
<tr>
<th>FACILITY</th>
<th>FUNDING/FINANCING</th>
<th>PROGRAM/PROJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCS Roadway Improvements</td>
<td>$2,500,000 funded</td>
<td>Blue Origin Transportation Improvements</td>
</tr>
<tr>
<td>CCAFS Electrical Capacity Improvements</td>
<td>$10,000,000 funded</td>
<td>Common Use Electrical Infrastructure</td>
</tr>
<tr>
<td>SLC-17/SLC-18</td>
<td>$1,850,000 funded</td>
<td>Moon Express Facility Improvements</td>
</tr>
<tr>
<td>SLC-39A</td>
<td>$10,000,000 financed</td>
<td>SpaceX Orbital Launch Site</td>
</tr>
<tr>
<td>SLC-41</td>
<td>$294,000,000 financed</td>
<td>EELV/Atlas V</td>
</tr>
<tr>
<td>SLC-41</td>
<td>$6,150,000 funded</td>
<td>ULA Commercial</td>
</tr>
<tr>
<td>SLC-40/Hangar AO</td>
<td>$12,500,000 funded</td>
<td>COTS/SpaceX Falcon9</td>
</tr>
<tr>
<td>SLC-37 HIF</td>
<td>$24,000,000 financed</td>
<td>EELV/Delta IV</td>
</tr>
<tr>
<td>SLC-36</td>
<td>$1,200,000 funded</td>
<td>CCS Med-Large Commercialization</td>
</tr>
<tr>
<td>SLC-36 &amp; SLC-11</td>
<td>$43,000,000 funded</td>
<td>Blue Origin Orbital Launch Site</td>
</tr>
<tr>
<td>SLC-46</td>
<td>$6,800,000 funded</td>
<td>Space Florida Small-Med LV Tenants</td>
</tr>
<tr>
<td>Neil Armstrong Operations &amp; Checkout Building (O &amp; C)</td>
<td>$35,000,000 financed</td>
<td>High Bay Modifications NASA MPCV (Orion)</td>
</tr>
<tr>
<td>Space Life Sciences Lab</td>
<td>$30,000,000 funded</td>
<td>ISS Payload / Cargo Processing</td>
</tr>
<tr>
<td>Space Commerce Way</td>
<td>$5,000,000 funded</td>
<td>KSC Commercialization</td>
</tr>
<tr>
<td>RLV Hangar SLF</td>
<td>$5,500,000 funded</td>
<td>Horizontal Launch &amp; Landing Facility</td>
</tr>
<tr>
<td>C3PF Re-Purposing</td>
<td>$20,000,000 funded</td>
<td>Boeing Starliner Processing Facility</td>
</tr>
<tr>
<td>Exploration Park Phase 1</td>
<td>$7,500,000 funded</td>
<td>Site Improvements</td>
</tr>
<tr>
<td>Exploration Park Phase 1</td>
<td>$17,500,000 funded</td>
<td>Airbus/OneWeb Satellite Manufacturing Facility</td>
</tr>
<tr>
<td>Exploration Park Phase 2</td>
<td>$10,000,000 funded</td>
<td>Blue Origin LV Manufacturing Facility</td>
</tr>
<tr>
<td>Apollo/Saturn V Center Shuttle Atlantis Exhibit</td>
<td>$25,000,000 financed</td>
<td>KSC Public Visitor Program</td>
</tr>
<tr>
<td>Apollo/Saturn V Center Shuttle Atlantis Exhibit</td>
<td>$62,500,000 financed</td>
<td>KSC Public Visitor Program</td>
</tr>
<tr>
<td>OPF 1 &amp; 2</td>
<td>$9,000,000 funded</td>
<td>Boeing X-37B</td>
</tr>
<tr>
<td><strong>TOTAL CCS</strong></td>
<td><strong>$639,000,000</strong></td>
<td><strong>Commercial, USAF, NASA</strong></td>
</tr>
</tbody>
</table>
State Investment in Aerospace Infrastructure

~$2B Since 1996 in Commercial Market-Driven Aerospace Infrastructure Investment

- 41% Third Party Lenders
- 42% Private Operator Match
- 6% FDOT Participation
- 10% Other FL Infrastructure
- 1% SF Commercial Infrastructure

Over 83% of Space Florida’s Infrastructure Investment is from Private Sector Investment Sources.
Five Year Spaceport Infrastructure Work Plan

Preparation Florida's Spaceport Ecosystem for the Future

**Florida (CCS & Cecil) Launch & Landing Facilities Infrastructure**
- 30 Total Projects
- $1.2B

**Rail Bridges & Infrastructure**
- 2 Total Projects
- $38M

**Bridges, Corridors & Connector Roads**
- 17 Total Projects
- $550M

**Space Related Berthing**
- 3 Total Projects
- $63M
2. Economic Development & Financial
Florida Spaceport Improvement Program

Funds (FY12-18):

- 1,200+ Direct Jobs
- $150M+ State Investment
- $500M+ Total Investment

LC39A Commercial Heavy Lift Complex $10M
Comm. Crew & Cargo Processing Facility $20M
Orbital Processing Facility 1 $9M
Exploration Park $10M
LC41 Crew & Cargo Access Tower $6M
LC40 Launch Capacity $10M
LC36 Commercial Orbital Launch Site $43M
KSC
SLF
CCAFS
LC-46 $5M
KSC
Space Florida ... New Financing Initiatives

• **New Fund Tools and Sources for Infrastructure**
  • Fund Discussions as Pre-Committed Partners
  • Funds on Capital Call ... “by-Project”
  • New Trading - Partner Relationships

• **New Venture Capital Sources / Fund Assessment**
  • Growth Capital Funding
  • Focus on Space Industry Technologies / Satellite Applications

• **Increased Use of Bonding Authority**

• **Public Private Partnerships for new Infrastructure**
Florida – Israel Innovation Partnership

We share many common environmental problems –
1. agriculture
2. environmental
3. clean water
4. energy and
5. nutritious food
Florida-Israel Innovation Partnership

- In October 2013, Florida and Israel created a $2 million recurring joint fund to support research, development and technology projects

- Partners include – NASA, European Space Agency & Israel Space Agency
To date, Space Florida-supported capital accelerators have attracted nearly $164+ million in funding and investments for participating companies.
FDA Legislative Discussion

November 14, 2018
Military Friendly Legislation

Limits the amount of security deposit and advance rent to the equivalent of 2 months rent rather than 3 months.

Adds public-private government housing to existing protections for service members in their ability to break private leases.

Protects state-purchased military buffering lands from future tax deed sales.

Protects state-purchased conservation easements on rural lands from incompatible development.
Military Friendly Legislation (cont.)

Adds 2 installations – NSA Orlando and USSOUTHCOM -- for Military Base Protection planning.

Protects in-state tuition rates for Florida military service members who receive orders to move out of state after their family members have been accepted (but before they are enrolled) to Florida colleges and universities.

Allows military children to be enrolled in Florida Schools based on military orders.

Adds marketing, advocacy, sponsorships outreach and military related community support events to the approved list of activities for Defense Reinvestment Grants.
Military Friendly Legislation w/ Fiscal

Provides transportation relief for service members by establishing a pilot military discount program in Miami to exempt certain service members in grades E-6 and below from tolls to and from their military duty station.

Allows unexpended funds previously provided to DEP for 3 specific non-conservation properties to be applied to other Tier 1 properties as designated by DEO and approved by the Florida Defense Support Task Force.

Provides recurring funding for Military Base Protection Program in order to acquire military buffering land/easements on non-conservation lands.
Questions/ Discussion
FDA Legislative Discussion

November 14, 2018
Florida Defense Support Task Force

Update to Florida Defense Alliance
November 14, 2018
TF Member Update

• Representative Jay Trumbull – Chair – House
• Admiral (ret) Mark Fitzgerald – Governor
• Commissioner Barbara Stewart – Governor
• Amy Gowder – Governor
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• Lt Col (ret) Bill Dudley – Senate
• Brig Gen (ret) Chip Diehl – House
• Col (ret) Jim Heald – House
• Representative Holly Raschein – Governor (Nov 6, 2018)
• Vacant – House (Rep Ingram term expired)

Note: Chair rotates on July 1st annually between Senate and House
Task Force Items of Interest

- Strategic Planning Workshop conducted in September
  - TF wants to adjust focus
  - May pursue some structural changes
- Advocacy RFP was released in October
  - Three firms answer RFQ
  - Selected firms present in January 2019
  - New contract expected in March 2019
- Task Force Approved 2019 Meeting Schedule, is posted on our website
  - Anticipate combined meetings with FDA in May (Tallahassee) and November (Tampa)
- Task Force is developing 2019 session Legislative slate
- Task Force visited Tyndall AFB – VP Pence promises a full rebuild
FY 19 - 20 Task Force Grants

- Entertaining emergency grants from Bay County due to Hurricane Michael that could support Tyndall or NSA Panama City

- Received six applications worth $1.6 million during our Aug 2018 cycle for FY 19-20 funding
  - None time critical
  - Available funding for next year is TBD
Florida Defense Support Task Force

Questions ?
Originally built in 1960’s – this is not new

Greenland
- Medium missile deployment site
- SMR powered facility
- Ice shelf movement stopped program

SMR concept went to Army warehouse where they store the StarGate- never heard from again…

History Note
Why Now

Ensure the readiness of the armed forces for their military missions by pursuing energy security and energy resilience

2019 NDAA Section 327
Requires the Secretary of Energy to develop a report to describe requirements for a pilot program for micro-reactors
“DoD installations rely almost entirely on the grid, which is highly vulnerable to prolonged outage from a variety of threats, placing critical missions at unacceptably high risk of extended disruption. Backup power is often based on diesel generator sets with limited on-site fuel storage, undersized for new Homeland defense missions, not prioritized to critical loads and inadequate in duration and reliability.” Defense Science Board Task Force
DoD and Energy

DoD is the single largest energy consumer in U.S.
Accounts for 21% of total Federal energy consumption
2016 cost about $3.7B at 201, 410 Billion Btu

Current energy make-up
Electricity 53%
Natural gas 32%
Fuel oil and coal 15%

Want resilience and security
NOTE: this is Installation energy and not Operational energy
What is a SMR

Very small nuclear reactor

Source of resilient energy

Capable of operating independently

Will operate for many years without refueling

Less than 300 MW

DoD looking at 2-10 MW
HOW DO SMRS WORK?

1. Nuclear power plants generate heat through nuclear fission. The process begins in the reactor core. Atoms are split apart—releasing energy and producing heat as they separate into smaller atoms. The process repeats again and again through a fully controlled chain reaction.

2. Control rods made of neutron-absorbing material are inserted into the core to regulate the amount of heat generated by the chain reaction.

3. Reactor coolant water picks up heat from the reactor core. Reactor coolant pumps circulate this hot water through a steam generator, which converts water in a secondary loop into steam.

4. The steam is used to drive a turbine, which generates electricity.

5. Throughout the process, the pressurizer keeps the reactor coolant water under high pressure to prevent it from boiling.

Pressurizer
- Keeps reactor coolant water under high pressure to prevent it from boiling.

Reactor Coolant Pumps
- Circulate the reactor’s coolant.

Steam Generator
- Converts water in a secondary loop into steam to drive a turbine that generates electricity.

Control Rods
- Used to control the power of a nuclear reactor, including shutting down the reaction.

Core
- The “heat” of the reactor—where heat is generated by nuclear fission.
What Problems Can a SMR Solve

- 90% of DoD installation energy needs can be met by 40 MW SMR’s
- Small size - Most installations should initially look at using 2-10 MW SMR’s
  - Land availability
  - Timeframe for licensing and regulatory issues
- Operate as an island without tying to grid
- Clean- no carbon emissions
- Not interrupted by natural disaster
- Always available
Potential Issues

- Cost
  - New, so cost are higher at first
- Approvals, License and Regulatory
  - Years and not months for approvals by NRC and DOE
  - Requires authorized/trained employees
  - Use of High Assay Low Enriched Uranium 235 (HALEU)
    - Transportation
    - DOE is only one with access at this time
Problems Solved

- Energy availability/resilience
  - Can be on closed (island) system for installation connectivity

- Security

- No carbon footprint
  - Wind farms and Solar thermal farms require lots of land

- Minimize required land mass
Conclusion

- NDAA directed/authorized
- Need to identify an installation for first SMR
- Resilient and Secure
- Other countries working on this now: China, Russia (even a floating solution), S Korea, Australia (interesting since they do not presently allow nuclear power)
- DoD will have first SMR in 5-10 years
Air Force Civil Engineer Center

Northwest Florida Sentinel Landscape

Florida Defense Alliance Mission Sustainment Working Group

14 Nov 2018

Battle Ready...Built Right!
Sentinel Landscape Program

Significant Federal Programs involved in Sentinel Landscapes

Protect Vital Military Test and Training Missions
- DoD Readiness and Environmental Protection Integration (REPI) Program
- DoD Office of Economic Adjustment
  Joint Land Use Studies
- DoD Natural Resources Program
  Legacy Program

Protect military training routes and special use airspace
Provide noise and safety buffers
Encourage compatible land use

Conservate Habitat and Natural Resources
- USFWS
  North American Wetlands Conservation Act Grants
  Wildlife and Sport Fish Recreational Program
- NPS
  Land and Water Conservation Fund
- BLM
  National Conservation Areas
- NOAA
  Coastal Estuarine Land Conservation Program

Preserve open space and wildlands
Provide assistance for land and water resource management
Provide prime soils

Strengthen the Economies of Farms, Ranches, and Forests
- USDA Natural Resources Conservation Service
  Agricultural Conservation Easement Program
  Conservation Stewardship Program
  Environmental Quality Incentives Program
  Regional Conservation Partnership Program

- USDA Farm Service Agency
  Conservation Reserve Program

- USFS State and Private Forestry
  Forest Legacy Program
  Forest Stewardship Program
  Land and Water Conservation Fund
  Community Forest Program

SENTEL LANDSCAPES
Core Values and Programs

- Improve water quality
- Strengthen populations and create wildlife corridors
- Improve forest health
Sentinel Landscape Benefits

- Provide greater access to funding and assistance

- Provide recognition and monetary incentives to willing landowners who chose to participate

- Encourage compatible land use to protect training routes and airspace and provide noise and safety buffers

- Protect prime soils, improve forest health & water quality

- Strengthen wildlife populations and create wildlife corridors and preserve open space and wildlands
1. Eglin Air Force Base is the anchor military installation.

2. A defined landscape. Web-mapping application has been developed.

3. Coordinated and collaborative implementation strategy/plan providing incentives.
Where Are We Going?

Share the Northwest Florida Sentinel Landscape proposal with potential partners to:

• Identify partner opportunities, challenges, objectives, desired outcomes including those for existing priority and focus areas

• Leverage existing work groups, information and analysis

• Identify quantifiable goals and desired outcomes and develop a compelling case

• Identify programs, tools and resources and use tools beyond land acquisition and easements
1. Formally commit to supporting and contributing to the goals of the Northwest Florida Sentinel Landscape.

2. Introduce the NWFLSL to potential partners and supporters so we can ask for their commitment of support (See the NWFLSL factsheet).
Key Contacts for Northwest Florida Sentinel Landscape

Bill Chavez, REPI Project Manager
Air Force Civil Engineer Center
william.chavez.4@us.af.mil and 210-395-9539

Tom Tolbert, Community Planner
Eglin Air Force Base
robert.tolbert.2@us.af.mil and 850.882.6993

Kent Wimmer, Senior Representative
Defenders of Wildlife
kwimmer@defenders.org and (850) 528-5261