NASA/FPL Renewable Project:
Space Coast Next Generation Solar Energy Center

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With over $9 billion already invested, FPL Group is the world leader in renewable energy.
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FPL Group’s renewable energy portfolio

- Space Coast Next Generation Solar Energy Center
- Martin Next Generation Solar Energy Center
- DeSoto Next Generation Solar Energy Center
FPL has started construction on the world’s first hybrid energy center in Martin County

Martin Next Generation Solar Energy Project

Total Facility = approx 11,300 acres
Solar Field = approx 500 acres
Solar Array = approx 180,000 mirrors
Construction is well underway at what will be the nation’s largest solar PV facility

DeSoto Next Generation Solar Energy Project

Total Facility = approx 400 acres
Solar Field = approx 180 acres
Solar Array = approx 25 mW
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Overview

- Demographics
- Why Renewables on the Space Coast
- Establishing/Executing the Way Forward
  - Enabling Legislation/MOU/EUL
- Project Specifics/Challenges
- Recap & Keys to Success
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Demographics

• Florida’s Space Coast: 160,000+ Acres of Federal Land between:
  – 45th Space Wing
    • Patrick AFB
    • Cape Canaveral AFS
  – Kennedy Space Center
• KSC Land Management: Joint effort w/NASA & Dept of Interior (FWS)
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Why Renewables on the Space Coast

- Growing Interest in Renewable Technologies
- Vast amounts of available land;
  - 700 acres of Orchard Leases
- Operational/Mission Changes: Shuttle >> Constellation
  - Manpower Reductions
  - Expand KSC Business Opportunities
- NASA has history and experience with using Renewables
- Long/Strong Project Partnership with NASA and FPL
Kennedy Space Center/Merritt Island National wildlife Refuge

Cape Canaveral Air Force Station

Patrick Air Force Base

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Why Renewables on the Space Coast

• Wind Turbines were 1st Choice
  – Cost $/kW
  – Smaller acres/kW
  – Space Coast has best, although not great wind

• Renewable proposal verbally presented to AF and NASA
  – Go forth to investigate
  – No well-defined support team or local advocates

• First challenge is siting
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Why Renewables on the Space Coast

- Operational issues pushed project from CCAFS to KSC
- FWS/Avian issues/timing muted wind project @ KSC..for now

Composite Constraints: LOS for Radar, Communication, Optics, Command, etc
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Establishing/Executing the Way Forward

- Positive Impact of Wind effort:
  - Defined core support group in NASA/KSC
  - Identified renewable project site w/minimal operational impacts
  - Identified “hot” environmental buttons
- Next 6-8 months of Negotiations
- Dec 07: NASA/FPL MOU for Renewable Energy Project Plans Involving Land Use and Facilities Development
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Establishing/Executing the Way Forward

• MOU; Dec 2007..The KEY Document
  – Defined numerous potential opportunities
    • Solar PV: 10 MW site on approx 50 acres
    • Biomass or utilizing waste streams for energy production
    • Wind demonstration project
  – Defined the NASA/FPL Partnership; assured Management Support
  – Provided team goals and attitude
    • Obstacles were challenges/opportunities; not roadblocks
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Establishing/Executing the Way Forward

- KSC and Ames identified as EUL (Enhanced Use Lease) demo centers. (PL 108-7, Sec 315);
  - “Consideration” authorized @ FMV (till Dec 08)
    • Cash, services, use by NASA or ..
    • Maintenance, construction of facilities…
- EUL/Project Goals:
  - NASA:
    • Locally Benefit from FPL Partnership (construction vs cash)
    • Does not want to operate and maintain PV system
    • No out-of-pocket costs; maximize PV output
  - FPL:
    • Meet Governors’ Private-Public Partnership goals
    • Easily tied to FPL system
    • Maximize outreach, strengthen relationship, realize synergies
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Establishing/Executing the Way Forward

- NASA/FPL agree to appraised value, lease term and siting
  - 100 acres earmarked for PV
  - Phase 1 = 60 acres @ 30 years
    - FPL-Owned 10 mW PV
    - $6.3M of 'Consideration”
    - Construct/O&M of NASA-owned PV
      - Approx. 1 mW
- EUL Signed June 2008
  - Allows for Phase II (40 acres) under existing terms/considerations
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**Project Specifics/Challenges**

- Groundbreaking 27 May
- Construction: 1 Jun 09
- NASA PV ECD: 30 Sep 09
  - 990 kW DC (900 AC)
- FPL PV ECD: March 2010
  - 10 MW
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Project Specifics/Challenges

- NASA-owned 990 kW PV Site
  - Clean, grubbed site
  - Construction: 1 Jun 09
  - ECD: 30 Sep 09
  - NEMA 4X; due to corrosive environment
    - 130 mph wind standard
- Output feeds directly into NASA-owned distribution system
- Remotely monitored output
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Project Specifics/Challenges

- FPL-Owned PV Site
- Construction Start -1 Jun 09
  - Clear/Grub Orange Grove
  - Substation Expansion
    - July 09-Feb 10
- ECD: March 2010
- 10 MW
- Feeds directly into FPL Transmission system
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Recap/Keys to Success

• #1 Focused Team; KSC Center Director – FPL VP/CDO
  – Jim Ball, KSC Spaceport Development Manager
  – Mario Busacca, KSC Environmental Manager
  – Harry Plaza, KSC Energy Manager

• #2 Lucky Coincidences
  – Massive upcoming KSC mission changes/downsizing
  – Desire to broaden business opportunities @ KSC
  – FL Public Service Commission Authorizing 110 mW of Renewable in ‘08

• #3 Focused Team:
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