

# FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

April 19-20, 2018  
Nashville, TN

## Energy Resilience in FAA: Going Forward

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Hosted by:



# FAA Facility Profile

- FAA has three major organizations that own FAA buildings and implement PBCs.
- The Air Traffic Organization (ATO)
  - ATO is comprised of several hundred air traffic control facilities and tens of thousands of assets across the country.
- The Mike Monroney Aeronautical Center (MMAC), and the William J. Hughes Technical Center (WJHTC).

# FAA Electrical Energy Cost

- FAA spends \$93 million NAS-wide each year for electricity costs.
- Through performance based contract vehicles such as UESCs, FAA is able to finance upgrades to its aging infrastructure without using appropriations.
- When bundled with other mission-critical energy conservation measures (ECMs), like boilers and chillers, FAA is able to pursue alternate energy solutions, such as on-site generation.

# Existing Sites With On-Site Generation

- As of April 2017, has approx. 4.5 MW of installed PV arrays at 7 major facilities across the NAS, including:
  - Los Angeles (ZLA) Air Route Traffic Control Center (ARTCC)
  - Northern California TRACON (NCT)
  - Southern California TRACON (SCT)
  - Atlanta TRACON (A-80)
  - Oakland (OAK) Air Traffic Control Tower (ATCT)
  - Tucson (TUS) ATCT
  - Palm Springs (PSP) ATCT
- FAA also has 50+ remote assets with small-scale PV arrays.

# SCT UESC Project



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# ZLA ARTCC UESC Project



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# Palm Springs (PSP) ATCT



# Tucson (TUS) ATCT



# Atlanta TRACON (A-80)



# Self-Sustaining Outlet (SSO) Replacement Program

## Program Overview:

- For over half a decade, the Self-Sustaining Outlet (SSO) Replacement Program has been consistently advancing the cause of sustainable energy at FAA through the design, testing, and installation of renewable energy technologies at remote communications sites. These sites rely on dedicated, independent power sources to ensure critical National Airspace System operations. The remote nature of these sites and their limited power demands make them excellent candidates to pilot new renewable energy technologies and to achieve resiliency.

## Design Highlights:

- Low light solar panels, oriented to minimize snow and ice accumulation
- Wiring and batteries that optimize cold-weather performance
- Robust support structures that survive winds in excess of 120 miles per hour sustained and temperatures in excess of -40 degrees Fahrenheit

## Benefits:

- Reduces fossil fuel use
- Reduces greenhouse gas emissions
- Reduces the number of refueling trips needed through on-site generation

# Self-Sustaining Outlet (SSO) Replacement Program



# Financing

- FAA has used different types of conventional and alternative financing for its PV projects
- Regular FAA appropriations were used to fund PV arrays at the OAK ATCT, TUS ATCT, and PSP ATCT
- Performance-based Contracts (PBCs), including Energy Savings Performance Contracts (ESPCs) and Utility Energy Service Contracts (UESCs) have been used at NCT [ESPC], SCT [UESC], and ZLA ARTCC [UESC], ESA-CSA Atlanta A-80, & 21 other sites across [ESPC]

# Long Term Resiliency Challenges

- Pursue Hybrid Solutions For Significant Events Require Extensive Design Considerations
- Natural Disasters
- Utility Provisions Concerns
- Fuel Supply Concerns/Supply and Availability Means
- Battery Capacity Limitations
- Generation Capacity Limitations
- Security Challenges

# FAA Energy Program Points of Contact

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# FAA Resiliency

- Questions ?