SMART Grant
Smart Microgrid

Cape Cod Gateway Airport
Hyannis, MA

Owen Silbaugh, PE
Chief Engineer
MassDOT Aeronautics
Grants provided by the Office of the Secretary

59 grants awarded from 392 applications

Strengthening Mobility and Revolutionizing Transportation (SMART)

4 Grant Awards in MA (2 for Aeronautics)

Average request was $1.5M
Smart Microgrid Awarded Projects

- MassDOT Aeronautics (MA)
  - $1.95M
  - Smart Microgrid

- Metrowest Regional Transit Authority (MA)
  - $985K
  - Energy and Sustainable Storage Technology

- Biddeford-Saco-Old Orchard Beach Transit (ME)
  - $350K
  - Smart Grid Transition

- City of Fort Collins (CO)
  - $1.06M
  - Electric Vehicle Charge Management
SMART Grant Program Technology Domains

- Connected Vehicles
- Delivery/Logistics
- Sensors
- Systems Integration
- Coordinated Automation
- Innovative Aviation
- Smart Grid
- Traffic Signals
### SMART Grant Program Project Types

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Cape Cod Gateway Airport Smart Microgrid Project Overview

- Plan, permit, and design a smart microgrid at Cape Code Gateway Airport (HYA) in partnership with the Cape Cod Regional Transit Authority (CCRTA) and Eversource
- During Stage 1, the project will be completed to 30% to 50% design with some elements designed to 90% depending the timing and funding
- 15% Disadvantaged Business Enterprise Goal
Smart Microgrid Project Goals

- Goal is to provide a model for airports across the country
- Develop reliable sources of electrical power generation from solar, wind, geothermal, and potentially hydrogen
- Develop a smart microgrid to provide sustainable and more resilient energy supplies while balancing and prioritizing the needs of the airport, traveling public, and the transit authority to support electric buses, aircraft, ground support vehicles, maintenance vehicles, rental cars, and person vehicles as well as supplying the airport with excess electrical power for airfield lighting, and building needs (terminal, tower, and maintenance buildings)
Benefits to Smart Microgrids

• More efficient transmission of energy
• Quicker restoration of electricity at point of use after power disturbances
• Reduced operations and management costs for utilities
• Reduced peak demand, which help lower electricity rates and grid demand
• Increased integration of large-scale renewable energy systems
• Better integration of customer-owner power generation systems, including renewable energy systems
• Baseline and future energy planning
• Improved security
Smart Microgrid Schedule – Stage 1

- **Award Announced**: Mar. 2023
- **Consultant RFR Released**: Jul. 2023
- **Consultant Project Scoping**: Sep. 2023
- **Grant Period of Performance Starts**: Sep. 2023
- **Consultant Project Contracting**: Oct. 2023
- **Project Start**: Nov. 2023
- **Grant Period of Performance Ends**: Mar. 2025
Stage 1 High-Level Project Tasks

- Collect data for baseline Airport and RTA energy usage
- Develop models to predict short-term, medium-term, and long-term energy requirements and needs
- Create alternatives for microgrid(s) and green power generation based on needs modeling
- Analyze of the microgrid and green power generation alternatives
- Create cost estimates to assist with future capital improvement planning
- Update the Airport Layout Plan (ALP)
- Complete the environmental assessment and begin the environmental permitting process
- Secure interconnectivity agreements with Eversource
- Complete the design to 30% to 50% level
Stage 2 High-Level Project Goals and Next Steps

• Apply for next round of SMART Grant funding (up to $15M)
• If awarded, progress Stage 1 of smart microgrid to final design and bidding including:
  • Complete any remaining environmental permitting from Stage 1
  • Finalize the design from Stage 1 including a technology review
  • Generate cost estimates and identify additional funding sources
  • Secure interconnectivity and any other final agreements from end users
  • Build the smart microgrid and green power generation
  • Work force development to assist with Maintenance and Repair (M&R) of the smart systems, battery storage, and electrical buses, cars, and airplanes
Thank you!