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Massachusetts Department of Transportation
Aeronautics Division

Board Report:

Aeronautics Wins Lead by Example Award, Solar Investment at Turners Falls Municipal Airport, FY20 Project Highlights & Aeronautics Core/Drone Team Coordinated Efforts

January 11, 2021

Presented to:

- **Board of Directors**

Presented by:

- **Aeronautics Division**
  - Dr. Jeff DeCarlo

Aeronautics Division Receives DOER Lead by Example Award for Sustainability Initiatives

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- Aeronautics received recognition from the Department of Energy Resources (DOER) for their sustainability initiatives
- Aeronautics environmental team sought a solution to utilize cleaner energy sources during airport mowing operations, through the utilization of battery-powered equipment
- They soon learnt that larger equipment didn't offer battery model options, and their research showed propane to be a better alternative since it burns cleaner than gasoline or diesel
- To date, Aeronautics has invested $350K in commercial grade battery equipment and $450K in larger propane equipment
- These purchases included (10) battery powered mowers with solar canopies and (7) larger propane tractors with forestry attachments
- The outlay is saving airports between $3,000-$3,500 per airport each year in gasoline costs while lowering their carbon footprint

Solar-powered Investments at Turners Falls Municipal Airport

- MassDOT Aeronautics funded the installation of the first general aviation solar carport Electric Vehicle (EV) charging station in Massachusetts
- The carport provides 25,000 watts of power to the grid and will support 100% of the Airport's EV use
- All four of the charging stations powered by the solar array have been consistently occupied
- MassDOT funded the retrofit of 62 high voltage Runway edge & end lights with energy efficient LED pilot-controlled lighting fixtures
- The $7,500 annual savings in electricity will support the local share of the annual $150K entitlement grants from FAA

Aeronautics Division Staff Above & Beyond: FY20 Project Highlights

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Annual Airport Markings and Pavement Repair Program

Aeronautics Division Engineering staff worked with 12 airports and invested $1.6M to enhance safety by improving and maintaining pavement conditions and painting new airfield markings

Northampton and North Adams Runway Improvements

Engineering staff aided in design, funding and construction of crack repair/seal, surface treatment, and remarking of runways achieving significant cost savings by extending pavement life

Southbridge Municipal Airport Fuel Tank Design and Construction

Staff worked with the airport to design, fund, and construct new aviation fueling infrastructure, providing safety and environmental enhancements to the fuel service used by pilots

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Orange Municipal Airport Rare Species Protection Planning

Aeronautics Division Environmental staff worked with MA Fish & Wildlife to develop rare species protection plans keeping the airport's runway reconstruction project on schedule by avoiding construction shutdowns

Northampton and North Adams Runway Improvements

Engineering staff aided in design, funding and construction of crack repair/seal, surface treatment, and remarking of runways achieving significant cost savings by extending pavement life

Westfield-Barnes Regional Airport Obstruction Removal

Aeronautics Division staff worked with airport management and abutting landowners on a project to remove 20+ white pine trees posing hazards to aircraft by obstructing the airspace in the Runway 02 Approach Surface

Aeronautics Core Team & MassDOT UAS/Drone Team Coordinated Efforts

- Aeronautics Core Team and MassDOT UAS/Drone Team share expertise during airport inspections to assess airfield facilities and runway approaches
- Coordinated efforts to provide photogrammetry for digital and automated distress detection for determination of Pavement Condition Index (PCI)
- Collaboration on airspace analysis brought teams together to evaluate approaches at 34 public use airports (Provincetown excluded due to Department of Interior drone restrictions)
- Provided qualified and trained visual observer command to MassDOT UAS/Drone team during Massachusetts School Board building inspections

Aeronautics Division Awarded $1M FHWA Accelerated Innovation Deployment (AID) Grant

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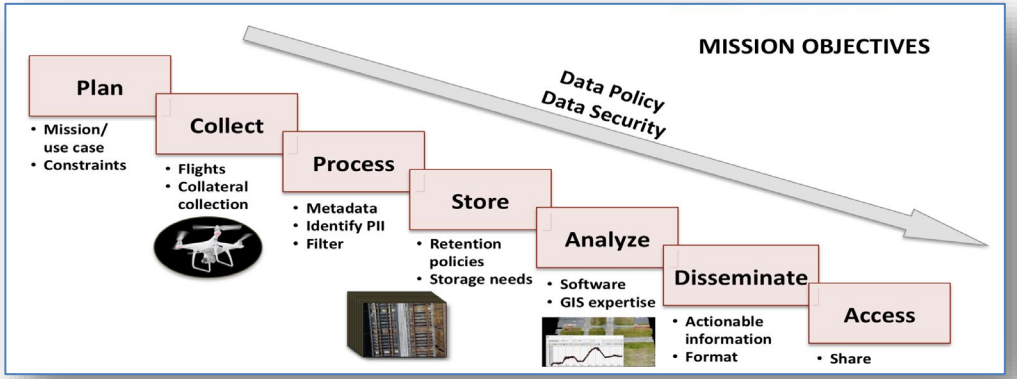
MassDOT Unmanned Aerial Systems Data Analytics & Cybersecurity Program Alpha for Surface Transportation Project*

- *Secretary Chao approved the award – Period of Performance of 24-months; kickoff in Feb 2021*
- *UAS data analytics project will augment Highway Division's design, construction, maintenance and operations of roads, bridges, and tunnels*
- *Integrated UAS operations expected to improve safety, reduce task time, improve data quality, & reduce costs*



Functionality Objectives

Management of UAS Operations	Secure Storage & Analysis of UAS Data	Secure Dissemination of UAS Products
● Digital business processes to track UAS requests, flight planning, and flight scheduling ● Asset management of UAS hardware and tracking currency status of UAS operators.	● Ingest UAS data for indexing, archiving, filtering, & analytical processing ● Retrieval of UAS data in a managed manner for satisfying data access and retention rules ● Provenance tracking of UAS sensor data from collection to processing to retrieval	● Provide the ability to discover, search and retrieve data products ● Assure data is shared to authorized users/systems ● Allow easy sharing of data products to relevant parties

** Program Alpha capability includes remotely sensed data, with non-integrated software systems*

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