



Plan, permit, and design a smart microgrid system at Cape Cod Gateway Airport (HYA)

MassDOT Aeronautics Division

PROJECT PARTNERS

National Renewable Energy Lab (NREL)
Massachusetts Institute of Technology
Cape Cod Gateway Airport
Cape Cod Regional Transit Authority (CCRTA)
Town of Barnstable
Village of Hyannis

Arup, USA
Pristine Engineers, Inc.
Epsilon Associates
City Point Partners, LLC (an HDR company)
Cape Cod Commission
MassAutonomy



PROJECT CHALLENGE

The MassDOT Aeronautics Division project at the Cape Cod Gateway Airport in partnership with the Cape Cod Regional Transit Authority. This project will plan, permit, and complete the preliminary design of a smart microgrid that will supply reliable sources of clean, green energy. This will provide lower carbon levels and energy resiliency to the environmental justice community surrounding the airport, as well as the greater Cape Cod region. The smart microgrid will also help to balance the power needs for critical and non-critical operations. The project advances the goals of the Biden and Healey Administrations to meet sustainability targets and reduce greenhouse gas emissions.

IMPACT

The MassDOT Aeronautics Division project is to plan, permit, and complete a preliminary design of a smart microgrid project at the Cape Cod Gateway Airport. The project will have direct and tangible impacts on the Airport, Cape Cod Regional Transit Authority, the environmental justice community of Hyannis, and the greater Cape Cod Region. The project will provide the Airport with resilient power for critical operations, the Cape Cod Regional Transit Authority with electric bus charging stations, the EJ community with more cost-effective and reliable transportation options, and greater Cape Cod Region with an increased resiliency on an already taxed electrical grid.

CURRENT STATE OF THE ISSUE

The MassDOT Aeronautics Division is looking to solve the energy issue that is facing all governmental organizations including our airports. We see our airports as the centers for advanced air mobility in the communities surrounding our airports. We will utilize the existing airport infrastructure as the backbone for the planning and implementation of the concept of our airports as energy hubs.

POLICY QUESTIONS

1. How should regulations adapt to accommodate the integration of smart microgrids within the existing grid infrastructure and can regulations provide incentives for microgrid investment? 2. How can policies promote equity and produce tangible access and benefits for smart microgrids, especially for environmental justice communities? 3. How can policies be adapted to promote renewable energy sources for power generation, and should environmental regulations provide flexibility with respect to carbon emissions stemming from backup power generation?

STAGE 1 OUTCOMES

Since our project is to plan, permit, and complete a preliminary design of a smart microgrid project, MassDOT Aeronautics Division has three main objectives for a successful project: 1. Determine short, medium, and long-term power requirements to support landside, airside, and RTA activities. 2. Build a smart microgrid that meets the needs of the near future but is expandable and scalable to meet the long-term needs and adapt to changes in technology. 3. Determine multiple sources for clean, green power generation.

STAGE 2 VISION

Our vision for Stage 2 is to advance the preliminary design to final design, which will include the build-out of the smart microgrid for the airport and the RTA with some clean, green power generation. The Stage 2 project will have an impact on the electrical grid resiliency of the community surrounding the airport. Additionally, in Stage 2, we will work in partnership with MassAutonomy on workforce development, a nonprofit organization supporting Massachusetts' workforce development initiatives, including local high school occupational programs, technical school training, and community college certificate and credit bearing courses