

CASE STUDY

Design, Engineering and Installation of Renewable and Energy Efficiency Technologies

Architectural Wind Turbines

SITUATION

The Massachusetts Port Authority (Massport) is a world-class independent public authority which develops, promotes and manages airports such as Boston's Logan Airport, the seaport and significant transportation infrastructure. Massport officials decided to study and implement opportunities for applying one of the most plentiful renewable energy resources at Logan Airport, namely Wind power.

STRATEGY

Massport partnered with the engineers at AeroVironment and Groom Energy to engineer and install twenty architectural wind turbines at the Logan Administrative office facility. Two rows of these 1kw, six foot high turbines were mounted to the parapet on the building's roof, with fifteen units facing westward and five facing northward. Their orientation was designed to take advantage of the chimney effect of accelerating wind currents at the parapet of the building, and perform in prevailing wind patterns the engineering team had analyzed for this location.

RESULTS

With this implementation, Massport's turbine array will generate over 100,000 kilowatt hours of annual electricity with a positive environmental impact from the associated reduction of 97,500 pounds of carbon. The unique design of the AeroVironment turbines will allow this energy production at both high and low wind speeds, something not possible with more traditional wind turbine designs. The system's energy production is expected to equate to just over 2% of the building's annual electrical load. As the array proves it's viability MassPort expects additional rollouts at other facilities.

