

## **1.0 Executive Summary**

**Title:** Green Gates: Locally Powered Gate Electrification System

**Team:** Four undergraduates from the Engineering Management Department, School of Systems and Enterprises

**University:** Stevens Institute of Technology

Ground handling services, specifically gate electrification, are an aspect of airport operations that can affect the operator in starkly different ways. They have the ability to be an expensive detriment or a sustainable and profitable advantage in solving problems faced by the aviation industry. It is widely understood by the Federal Aviation Administration, and general public, that unmitigated aircraft emissions from airports are damaging to the environment and health of local residents. The FAA recognizes its responsibility to work with airspace users to reduce the environmental impact of the National Airspace System.

The following proposal describes an alternative approach, consisting of natural-gas generators, air-conditioning, and power systems, to gate electrification, whereby environmental friendliness and cost efficiency compared with a current practice is improved. It considers a scenario where the electrical capacity requirements are insufficient to support a conventional implementation or where grid independence is favored. Rather than relying on archetypal methods, the proposed system calls for airports to utilize out-of-the-box technologies and leverage readily available energy sources to manage environmental impact. The alternative methodology to meeting operational needs offers a more sustainable way for airport operators to meet their respective stakeholder requirements.