Ground Support Equipment Electrification

Replace diesel ground support equipment (GSE) with electric GSE (eGSE), which have zero tailpipe emissions, at airports in the region.

Path Forward Priority: Now (2019-2022)

Status: Partially Complete

Accomplishments to Date

- 2008 – 2021: Piedmont Airlines and US Airways have replaced 101 pieces of older, dirtier diesel GSE with newer, cleaner electric GSE (pictured right). These conversions were made possible by funding from Mecklenburg County Air Quality’s Grants to Replace Aging Diesel Engines (GRADE) program.
- 2019: the U.S. Environmental Protection Agency (EPA) awarded $1.2 million to help replace up to 120 pieces of diesel GSE with electric-GSE through MCAQ’s AeroGRADE program.
- 2021: Piedmont Airlines applied to GRADE to replace 10 additional diesel-powered baggage tractors with fully-electric models. These conversions should be completed in 2022.

Next Steps:

- Advocate for CLT Airport and airlines to install the charging infrastructure required for eGSE.
- Work with airlines to create a GSE replacement schedule that prioritizes the highest emission GSE for replacement first as operations return to normal post-pandemic.
- Continue to push for investments in electrification projects at CLT, which is surrounded by communities with environmental justice concerns.
- Assist stakeholders with grant applications.

Stakeholders: Piedmont Airlines, American Airlines, other local carriers, CLT Airport, EPA, Federal Aviation Administration (FAA)

Funding Opportunity: EPA - Diesel Emission Reduction Act, FAA – Voluntary Airport Low Emission

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January 2022
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Next Steps:

- Work with airlines to create a GSE replacement schedule that prioritizes the highest emission GSE for replacement first as operations return to normal post-pandemic.
- Advocate for CLT Airport and airlines to install the charging infrastructure required for eGSE.
- Assist stakeholders with VALE and other grant applications.
- Evaluate racial equity impacts of the strategy

Stakeholders: Piedmont Airlines, American Airlines, other local carriers, CLT Airport, EPA, Federal Aviation Administration (FAA)

Funding Opportunity: EPA - Diesel Emission Reduction Act, FAA – Voluntary Airport Low Emission (VALE)

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June 2021
Implementation Plan

Ground Support Equipment Electrification

Existing Efforts:

- Since 2008, Piedmont Airlines and US Airways have replaced 101 pieces of older, dirtier diesel ground-support equipment (GSE) with newer, cleaner electric GSE. These conversions were made possible by funding from Mecklenburg County Air Quality’s (MCAQ) Grants to Replace Aging Diesel Engines (GRADE) program.
- In 2019, the U.S. Environmental Protection Agency (EPA) awarded $1.2 million to help replace up to 120 pieces of GSE with electric-GSE through AeroGRADE.

Stakeholders: Piedmont Airlines, American Airlines, other local carriers, CLT Airport, EPA, Federal Aviation Administration (FAA)

Funding Opportunity: EPA - Diesel Emission Reduction Act, FAA – Voluntary Airport Low Emission (VALE)

Next Steps:

- Identify diesel to electric GSE conversion projects for AeroGRADE funding
- Advocate for CLT Airport and airlines to install the charging infrastructure required for eGSE fueling.
- Assist stakeholders with VALE and other grant applications.

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The Idea: Ground Support Equipment Electrification

- Replace diesel ground support equipment (GSE) with electric GSE (eGSE) at airports in the region.
- Charlotte Douglas International Airport has approximately 330 pieces of diesel GSE. ¹

The Action:

- Identify new funding for AeroGRADE, Mecklenburg County Air Quality’s “Grants to Replace Aging Diesel Engines” program targeting airport equipment.
- Work with local airports to fund the installation of required charging infrastructure for electric GSE.

The Pollution Source: 0.4% of NOx comes from airport support equipment²

The Cost Effectiveness: $29.78/lb NOx

The Factors:

- GSE are being operated almost 24 hours per day, 365 days per year; emission decreases are compounded through high usage.
- Past eGSE projects have significantly reduced emissions.
- This equipment is concentrated in Mecklenburg County.
- Particulate Matter – Medium co-benefits
- Greenhouse Gases – Medium co-benefits

¹ There are already 101 pieces of electric GSE at CDIA.
² 0.33 tons/day of NOx. Source: Revised Maintenance Plan For The Charlotte-Gastonia-Salisbury, North Carolina 2008 8-Hour Ozone Marginal Nonattainment Area (July 2018)