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United States Department of Transportation

Federal Aviation Administration

Airport Carbon Emissions Reduction

1. What are Airport Carbon and Greenhouse Gas (GHG) Emissions?

Carbon dioxide (CO_2) and other GHGs are released into the air when fossil fuels are used to generate electricity, in furnaces, and to power vehicles. CO_2 makes up the majority of GHG emissions, with lesser contributions from nitrous oxide (N_2O), methane (CH_4), refrigerants, and other compounds.

2. What Causes Ground-Based GHG Emissions at Airports?

Ground-based airport GHG emissions are caused by gasoline and diesel fuel for airport vehicles and ground support equipment (GSE), fossil fuel for electricity and heating, jet fuel for auxiliary power units (APUs) that power aircraft at airport gates, and other sources.

3. Why Reduce Airport GHG Emissions?

Reducing or eliminating GHGs can lower airport energy bills and operating costs. Federal, state, and local governments are also setting GHG reduction goals to reduce their local contributions to global GHG levels.

4. What First Step Can Airports Take to Reduce GHG Emissions?

Airports can begin by estimating (or inventorying) the amount of GHGs from airport sources.

GHG inventories typically divide airport emissions into three categories. These categories, or "scopes," are based on the amount of control an airport has in reducing the emissions.

GHG Emissions Inventory Categories

Category	Type of Emissions
Scope 1	Emissions from airport-owned or controlled sources. Examples include airport-owned power plants that burn fossil fuel, conventional vehicles that use gasoline, or conventional GSE that use diesel fuel.
Scope 2	Indirect emissions from the consumption of purchased energy (electricity, heat, etc.)
Scope 3	Indirect emissions that the airport does not control but can influence. Examples include tenant emissions, on-airport aircraft emissions (typically, after an aircraft is parked on the apron), emissions from passenger vehicles arriving or departing the airport, and emissions from waste disposal and processing.

There are several easy-to-use GHG emission inventory tools. One example is Airport Council International's Airport Carbon and Emissions Reporting Tool (ACERT). Other examples are included in research by the Airport Cooperative Research Program (ACRP) (see Resources below).

Provide Your Feedback

After identifying GHG sources, airports can develop a plan for reducing or eliminating their emissions.

5. How Can Airports Reduce **or Eliminate** Airport-Related GHGs?

Airports can pursue low-cost energy efficiency measures like improving building insulation. These kinds of measures simultaneously reduce GHG emissions and operating costs. Airports can also purchase renewable energy, install airport renewable energy systems (provided they are compatible with airport operations), reduce energy consumption, monitor the efficiency of heating, ventilation, and cooling systems, and purchase low or zero-emission vehicles and GSE. These are just a few examples.

6. Why Aren't Airport Tenant or Passenger GHG Emissions Typically Included in Airport GHG Inventories?

Since airports do not control tenant activities or passenger vehicle trips to and from an airport, most airports exclude these emissions from their initial inventories.

However, airports can influence tenant and passenger GHG emissions. Airports can work with tenants on energy efficiency measures; expand airport recycling programs; work with taxi, shuttle, and limousine companies to promote fuel-efficient or alternatively-fueled vehicles; and work with municipalities on improving public transportation for airport passengers.

7. How Can Airports Finance These Initiatives?

There are state and Federal incentives for certain energy efficiency measures. Tax exempt leases, renewable energy cooperatives, power purchase agreements, and other arrangements are low-risk, low-cost options to simultaneously reduce GHG emissions and energy costs. FAA also provides grant funding for certain airport emissions reduction projects (see "FAA Programs," below).

8. Which Airports Have Reduced GHGs So Far?

Several U.S. airports have significantly reduced GHG emissions, including —

- San Francisco International Airport,
- Barnstable Municipal Airport (PDF),
- Austin-Bergstrom International Airport,
- Hartsfield-Jackson Atlanta International Airport,
- Seattle-Tacoma International (SeaTac),
- Denver International Airport, and
- Dallas-Fort Worth Airport.

Several airports are also striving to become "carbon neutral." Carbon neutral airports have zero net carbon emissions. This can be accomplished through a combination of emissions reduction and purchasing carbon offsets. Dallas Fort Worth and San Diego International have achieved this goal.

FAA Programs

The FAA's Airport Sustainability Planning Program provides Airport Improvement Program (AIP) grants to certain airports for Sustainability Master Plans or Airport Sustainability Plans. Many of these plans include GHG inventories and emission reduction initiatives.

The FAA's Voluntary Airport Low Emissions (VALE) and Zero Emissions Vehicle and Infrastructure Pilot (ZEV) Programs are also available to certain airports. These programs provide AIP grants for eligible and justified air quality projects.

Resources

- Airport Cooperative Research Program (ACRP) Report 11, Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories
- ACRP Synthesis 21, Airport Energy Efficiency and Cost Reduction, A Synthesis of Airport Practice

Provide Your Feedback

- ACRP Report 141, Renewable Energy as an Airport Revenue Source
- ACRP Report 151, Developing a Business Case for Renewable Energy at Airports
- ACI Airport Carbon Accreditation Program
- Airport Carbon Emissions Reporting Tool (ACERT)

Contact Us

- Ask a question about Airport Carbon Emissions Reduction

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U.S. DEPARTMENT OF TRANSPORTATION

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