



***AMERICAN AIRLINES  
GROUND SUPPORT EQUIPMENT  
EMISSIONS REDUCTIONS PROGRAM***

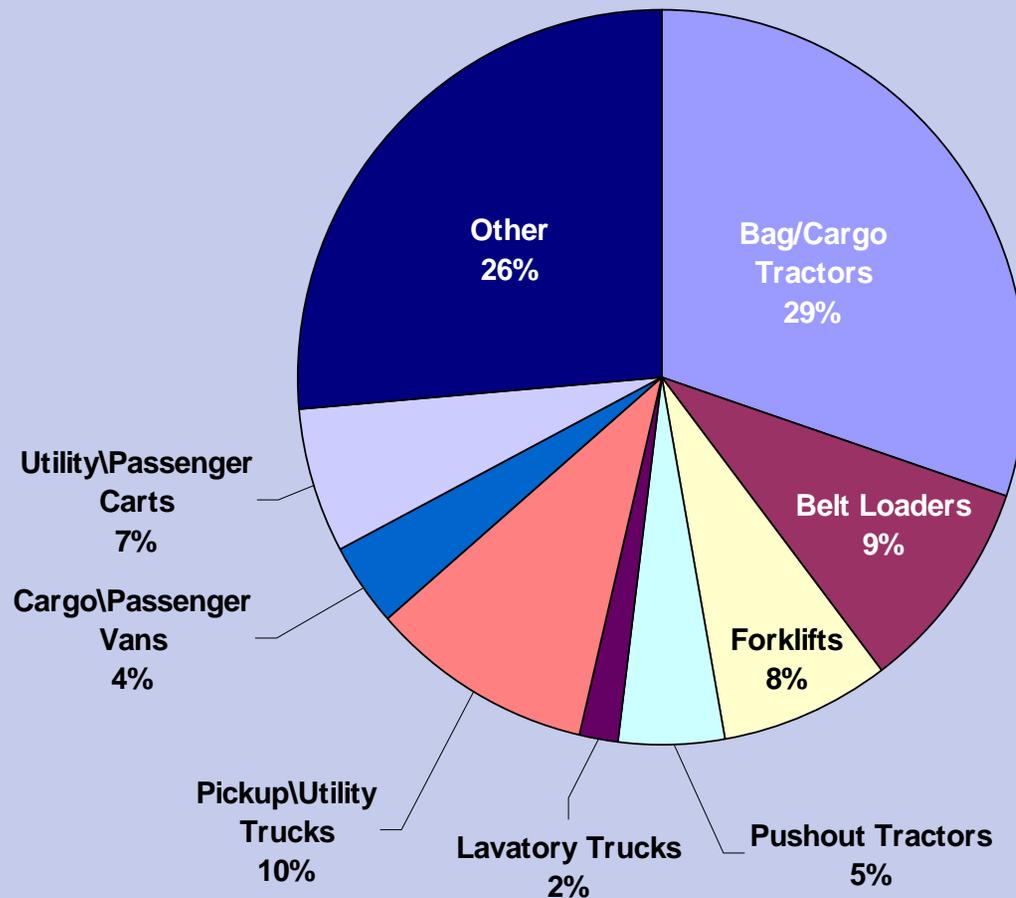
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Manger Ground Support Equipment  
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# Ground Support Equipment (GSE) Profile

American operates approximately 2,500 daily flights out of 170 cities world-wide

In support of AA's operation, the GSE organization manages over 33,000 pieces of ground equipment



## Powered Equipment Breakdown

American has approximately 9500 pieces of powered equipment.



## ***Ground Support Equipment (GSE) Profile***

✦ This process involves:

- Equipment Specifications
- Safety Initiatives
- Life Cycle Decisions
- Parts Procurement
- Preventive Maintenance
- New Technologies Driven by:
  - **Business Initiatives**
  - **Changes in Operations**
  - **Environmental Initiatives**



## ***Environmental Initiatives***

### *✦ California Memorandum Of Understanding (MOU)*

- A proposed voluntary plan by airlines negotiated by ATA and South Coast Air Quality Management District to reduce emissions created by airline ground equipment. The action would represent an 82% reduction in emissions by 2010 based on 1997 air quality levels.
- Beginning in 1996, AA began replacing gasoline/diesel GSE with electric belt loaders, bag tractors and forklifts. To date, AA has invested over \$35 million on electric powered ground equipment.



## ***Environmental Initiatives***

- ✧ North Texas State Implementation Plan (SIP)
  - In 2000, the SIP proposed a 90% reduction in GSE NOx emissions at DFW, AFW and DAL
  - In lieu of the mandate, AA/AE, Delta, and Southwest entered into voluntary agreements to reduce GSE NOx emissions by 70-75%
- ✧ Only approved method of emission reduction in Texas is electrification
- ✧ American expects to invest an additional \$15.7 million in 2001 for the purchase of 230 electric bag tractors, 70 electric belt loaders and 300 Fast Charging systems. This is part of AA's continuing effort to reduce emissions and alleviate the "non-attainment" status at our most environmentally sensitive airports

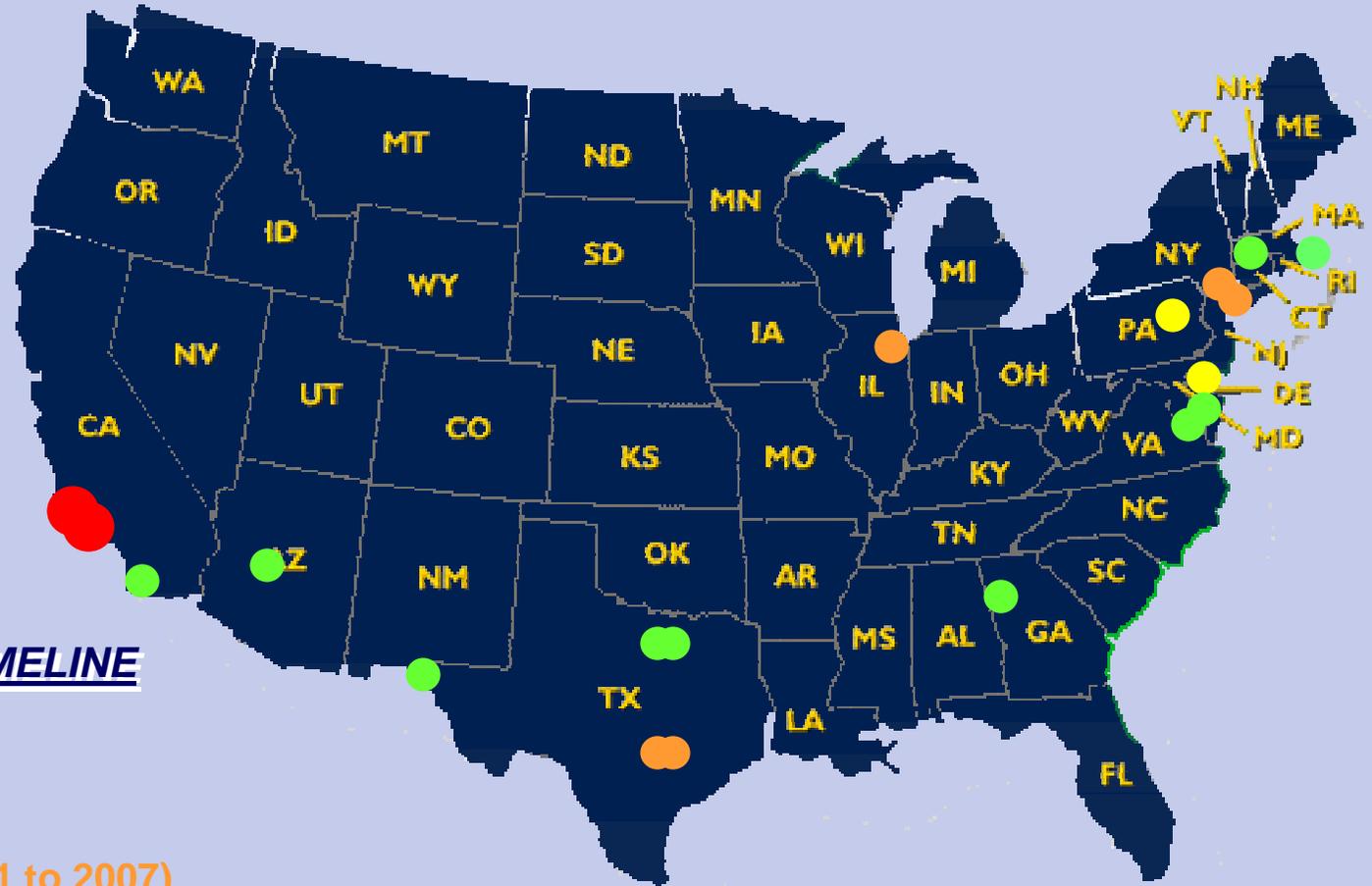


## ***National Plan***

- ✧ The airline industry (ATA) is negotiating with the FAA, EPA and state environmental regulatory authorities regarding aviation related NOx emissions.
  
- ✧ The main objective is:
  - To obtain a domestic-wide agreement for emission reduction as opposed to varying state or local reductions
  
  - Negotiations are projected to be completed by 4Q01



# Locations with Non Attainment Concerns



## TENTATIVE TIMELINE

### Extreme

(2001 to 2005)

Severe -17

(2001 to 2007)

Severe -15

(2001 to 2005)

Serious

(2001 to 2007)



## ***How Does This Impact AA?***

- ✧ In those cities/stations identified today as Non-Attainment, approximately 4,500 pieces of Ground Support Equipment are affected.
  
- ✧ Changes In Infrastructure
  - Power Availability
  - Real Estate
  - Charging Systems (Fast & Conventional)
  
- ✧ Changes In Ground Equipment Technology
  - Controller Technology
  - Integrated Power Trains
  - AC Technology
  - Fuel Cell Technology
  - New Equipment Development



## *New Technology*

### *✦* New Systems

- Fuel Cells
- AC Powered Vehicles
- Fast Charging Devices
- Electric Vehicle Cable and Interlock
- Solar Power Battery Charging System
- Radiant Energy Deicing System

### *✦* Ground Equipment

- Lavatory Trucks
- Solar Powered Refuelers
- Aircraft Pushout Tractors
- Loaders
- Maintenance and Passenger Vehicles



## Awards

- ✦ Clean Cities Coalition - Texas Clean Air Award
- ✦ DFW Electric Vehicle - Hero's Award
- ✦ American Lung Association - Breath of Life Award
- ✦ Clean Cities Coalition - National Partnership Award



