

**2004 Summary Report**

**INHERENTLY LOW EMISSION AIRPORT VEHICLE  
PILOT PROGRAM**

**FEDERAL AVIATION ADMINISTRATION  
OFFICE OF AIRPORTS  
COMMUNITY AND ENVIRONMENTAL NEEDS DIVISION**

***Clean Fuel Vehicle***

**FAA ILEAV PROGRAM**

**Prepared July 2004**

## INTRODUCTION

This is the 3rd annual report on the Federal Aviation Administration (FAA) Inherently Low Emission Airport Vehicle (ILEAV) pilot program. This summary describes the current status of the pilot projects and is based on information provided by participating airport sponsors in their recent progress reports of March 2004.

Congress authorized the ILEAV Program<sup>1</sup> in April 2000 as part of the Wendell H. Ford Aviation Investment and Reform Act for the 21<sup>st</sup> Century (AIR-21). The first year of the program was devoted to the development of program guidelines and the airport application process. Implementation of the program began in September 2001 with the initiation of FAA grants to ten selected airports.

The pilot program offers participating airports the opportunity to evaluate various kinds of low emission technology and to assess how this technology performs in the airport environment. A great deal of ILEAV activity involves the conversion of gasoline and diesel-powered vehicles to new vehicles running on cleaner alternative fuels, primarily electricity and compressed natural gas (CNG).<sup>2</sup>

The ILEAV program is meeting its goal to provide reliable information about emerging low emission airport technologies. The FAA has learned much from the pilot program about the technical, environmental, and economic trade-offs of alternative fuels. This includes knowledge about the commercial availability of alternative fuel vehicles (AFVs), refueling and recharging systems, emission assessment methods, and airport grant assurances on third-party involvement.

The pilot program served as an important reference this year in developing the new *Vision 100 – Century of Aviation Reauthorization Act*, which was signed into law on December 12, 2003 (P.L. 108-176). The air quality provisions in *Vision 100* have been incorporated into a Voluntary Airport Low Emission (VALE) program,<sup>3</sup> which basically extends the incentives of the pilot program to other airports. The comparative eligibility requirements for the ILEAV program and the planned VALE program are discussed later in this report.

## PROGRAM STATUS

The ILEAV program is administered through the Airport Improvement Program (AIP) and adheres to AIP guidelines in accordance with AIR-21 provisions. ILEAV grants to selected airports are up to \$2 million each with a 50-50 cost share. The FAA encourages airports to leverage additional support from local government, airlines, equipment manufacturers, and operators.

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<sup>1</sup> Information available at [www.faa.gov/arp/environmental/ILEAV](http://www.faa.gov/arp/environmental/ILEAV).

<sup>2</sup> See Glossary of Terms on last page.

<sup>3</sup> Information available at [www.faa.gov/arp/environmental/VALE](http://www.faa.gov/arp/environmental/VALE).

**Table 1** below lists the participating airports, the Federal grant amounts, the matching amounts with additional contributions (if any), and the percentage of current reported expenditures. Of the estimated total program budget of \$35-\$40 million, approximately one-fourth or \$9.2 million has been spent by airport sponsors. These monies have been used for required planning and engineering, infrastructure development, and vehicle acquisitions. There are now 205 project vehicles in operation, representing 13 percent of total vehicles proposed (see Table 5). As many as 300 more project vehicles are planned for service this year.

**Table 1**

**ILEAV Grants and Approximate Total Expenditures by Airport**

No.	Code	Airport Name	Federal ILEAV Grant	Airport Matching Funds (>=50%)	Total in millions (min-max)	Reported Expenditures (% min. total)
1	ATL	Atlanta Hartsfield Int'l	\$1,899,200	\$1,899,200	\$3.8	0%
2	BTR	Baton Rouge Metropolitan	\$376,803	\$436,760	\$0.8	84%
3	BWI	Baltimore-Wash. Int'l	\$2,000,000	\$2,350,000	\$4.0-4.4	36%
4	DIA	Denver Int'l	\$1,013,870	\$1,128,870	\$2.1	79%
5	DFW	Dallas/Fort Worth Int'l	\$1,999,992	\$2,329,976	\$4.0-4.3	99%
6	JFK	John F. Kennedy Int'l	\$2,000,000	\$6,613,526	\$4.0-8.6	<1%
7	LGA	LaGuardia	\$2,000,000	\$2,000,000	\$4.0	<1%
8	ORD	Chicago O'Hare Int'l	\$2,000,000	\$2,000,000	\$4.0	0%
9	SFO	San Francisco Int'l	\$2,000,000	\$2,027,162	\$4.0	5%
10	SMF	Sacramento Int'l	\$1,895,049	\$1,895,049	\$3.8	32%
<b>Totals:</b>			<b>\$17,184,914</b>	<b>\$17-\$22.7M</b>	<b>\$35-\$40M</b>	<b>26%</b>

Participating airports that are making substantial progress on their projects are DFW, BTR, DIA, BWI, and SMF. Two other airports, LGA and SFO, expect to show strong progress this year. Three airports, ORD, ATL, and JFK, are in the process of redesigning their projects with new commitments and acquisitions beginning in 2005.

The major airlines participating in the program are Delta, United, Southwest, American, and SkyWest. The events of September 11, 2001 and the resulting effects on the aviation sector caused some airlines to withdraw or defer their original commitments at certain airports. Airport sponsors have addressed this problem in part by recruiting new airlines and other participants that wish to take advantage of the funding incentives. **Table 2** shows the major airlines that are participating in the program as well as other airlines that are interested in participating.

**Table 2**  
**Airline Participants in ILEAV Projects**

Airport	Participating Airlines					Other Interested Airlines
	Delta	United	Southwest	American	SkyWest	
ATL	✓					
BTR						
BWI						Southwest
DIA						
DFW	✓			✓		
JFK	✓			✓		JetBlue United
LGA	✓					
ORD						
SFO	✓	✓			✓	Swissport Continental
SMF		✓	✓			America West

## RELATIONSHIP TO THE VOLUNTARY AIRPORT LOW EMISSION PROGRAM

Under *Vision 100*, the new VALE program will be available to commercial service airports located in air quality nonattainment and maintenance areas. The VALE program will allow eligible airports to use Airport Improvement Program (AIP) grants and Passenger Facility Charges (PFCs) to finance low emission ground transportation vehicles, refueling and recharging stations, gate electrification, and other airport air quality improvements. The voluntary VALE program is scheduled to begin this October with the new fiscal year.

*Vision 100* also directs the Administrator of the Environmental Protection Agency (EPA), in consultation with the FAA, to issue guidance on airport emission reduction credits (AERCs). Assurances from EPA and State air quality agencies that airport AERCs will be granted are a prerequisite for FAA funding approvals of VALE projects.

**The EPA recognizes the need to offer AERCs and agreement guarantees as part of the VALE program, ILEAV program, and the national EPA/FAA Stakeholders Process for airlines and States. Several steps have been taken or proposed:**

- Airlines received a joint EPA/FAA letter of assurance on August 15, 2003 that “airline investments in ILEAV will be recognized in the Stakeholders Process and that their (airline) actual emission savings through ILEAV will be counted in meeting the future national goal that is currently being negotiated for GSE emission reductions.”
- Likewise, airport emission reductions achieved in the VALE program will be recognized under the voluntary Stakeholders agreement. Airport sponsors will receive AERCs if VALE program funding is used to support any part of an airline’s conversion to cleaner GSE at an airport under the Stakeholders agreement, including refueling infrastructure.
- Vision 100 assures (Section 158, Previously Approved Projects) that past and current project activities under the ILEAV pilot program (Section 47136) are eligible for AERCs. In effect, ILEAV airports have been granted the unique ability to apply for and receive AERCs retroactively within the VALE framework.

Airport sponsors participating in the ILEAV program are required to fulfill their ILEAV project commitments before they may apply for VALE program funding. This question has come up because the terms of eligibility and funding for the VALE program are somewhat broader than the ILEAV pilot program (see **Table 3**).

**Table 3**

**Comparison of Eligibility for Airport Low Emission Projects  
under the Vision-100 Reauthorization and the ILEAV Pilot Program**

Eligibility Area	ILEAV	Vision-100/VALE
<b>Airport</b>	10 public use airports located in nonattainment areas	All commercial service airports in the National Plan of Integrated Airport Systems (NPIAS) located in nonattainment or maintenance areas
<b>Funding</b>	Airport Improvement Program (AIP) grants at a 50-50% Federal-local cost share	AIP grants at a Federal-local cost share of 75% for large and medium hubs and 95% for smaller airports Passenger Facility Charges (PFC)
	Incremental vehicle costs, no base costs	Same, except for AIP-eligible vehicles (e.g. snow removal, fire fighting)
<b>Ownership and Use of Vehicles and Equipment</b>	Airport and non-airport owned	Airport-owned for AIP grants Airport- and non-airport owned for PFCs Airport-owned preference for AIP GSE retrofit pilot
	Project vehicles may not be transferred or relocated to other airports	Same
	Airport-dedicated use	Same
<b>Vehicle Types</b>	Ground support equipment (GSE) and ground access vehicles (GAV)	Same
	New and retrofit	New vehicles for AIP New or retrofit vehicles for PFC
<b>Vehicle Low Emission Standard</b>	ILEV	“Best achievable” standards established in consultation with the U.S. Environmental Protection Agency
<b>Fuel Types</b>	Six alternative fuels defined in AIR-21	ILEAV eligible fuels and other alternative fuels defined by the U.S. Department of Energy (EPAAct)
	No conventional fuels	Cleaner conventional fuel technology is PFC eligible only Supplemental AIP \$5M pilot program for 10 airports to test GSE retrofits using cleaner conventional fuels
	No hybrid vehicles	Hybrid vehicles allowed
<b>Other Factors</b>	Emphasis on vehicle deployment and cost-effectiveness rather than R&D	Same
	FAA HQ evaluation of cost-effectiveness and economic sustainability	Part of normal AIP management by FAA regional offices and evaluation of project cost-effectiveness
	No original provision for AERCs but “grandfathered” under <i>Vision100</i>	All AIP or PFC funding is contingent on EPA/State assurances that airport sponsors will receive AERCs that can be applied to general conformity or new source review requirements.

The FAA believes that continued monitoring of the ILEAV program is important for several reasons:

- The pilot projects continue to yield valuable technical and programmatic information that can be useful to other airports considering a low emissions program.
- Quantification of emission reductions is required in order for ILEAV airports to receive AERCs.
- ILEAV project results serve as an effective basis for developing VALE program guidance. For example, vehicle useful life estimates from the ILEAV program will be used for VALE cost-effectiveness assessments.

### **SUMMARY OF PROGRAM EMISSION REDUCTIONS**

The main purpose of the ILEAV program is to reduce emissions for the criteria pollutants that are causing a particular region's nonattainment status and violation of National Ambient Air Quality Standards. **Table 4** below provides updated emission reduction estimates for each project in the context of each airport's area nonattainment or maintenance status.

Ozone is the pollutant of greatest concern at ILEAV airports as it is for most of the nation. Nine ILEAV airports are located in ozone nonattainment areas with the tenth airport (DIA) in a recently redesignated ozone maintenance area. There are two precursors or catalysts to ground-level ozone: hydrocarbons (HC) and nitrogen oxides (NO<sub>x</sub>). Over their lifetime, ILEAV projects are expected to reduce NO<sub>x</sub> and HC emissions by over 6,000 tons each.

Four airports are in carbon monoxide (CO) maintenance areas: DIA, JFK, LGA, and SMF. For particulates (PM<sub>10</sub>), one airport, SMF, is in a nonattainment area while another airport, DIA, is in a maintenance area. SO<sub>2</sub> is not an issue for ILEAV airports or for airports generally.

### **SUMMARY OF PROGRAM VEHICLE DEPLOYMENTS**

Emission savings are derived through AFV displacement of conventional gasoline and diesel powered vehicles. Participating airports plan to purchase approximately 1,575 low emission airport vehicles. Of this total, about two-thirds of the vehicles will be GSE and the other third will be GAV.

**Table 5** describes the number and types of vehicles by airport. The planned GSE are roughly two-thirds baggage tugs and one-third belt loaders. A small percentage of pushback tractors, cargo loaders, forklifts, and lavatory trucks are planned. The GAV are primarily light-duty cars, vans, and pickup trucks, although some 35 percent of the GAV are heavy-duty buses and shuttles.

Vehicle fuel type is roughly two-thirds electric and one-third CNG. Electricity is the fuel choice for most of the light-duty GSE. CNG is the fuel of choice for almost all of the GAV, including all of the heavy-duty buses and shuttles.

**Table 4**

**Projected Lifetime Emission Reductions by Pollutant (tons)  
(shading denotes nonattainment or maintenance status)**

<b>Airport</b>	<b>Ozone Nitrogen Oxides (NOx)</b>	<b>Ozone Hydrocarbons (HC)</b>	<b>Carbon Monoxide (CO)</b>	<b>Particulates (PM<sub>10</sub>)</b>	<b>Sulfur Dioxide (SO<sub>2</sub>)</b>
<b>ATL</b>	820	275	4,543	96	72
<b>BTR</b>	17	2	39	0	3
<b>BWI</b>	783	-112	-356	9	45
<b>DIA</b>	238	1	707	0	9
<b>DFW</b>	1,427	3,135	66,275	21	90
<b>JFK</b>	1,183	1,725	73,532	37	97
<b>LGA</b>	791	312	10,942	46	-57
<b>ORD</b>	205	170	3,462	11	11
<b>SFO</b>	1,058	181	2,381	131	28
<b>SMF</b>	310	516	10,893	7	1
<b>Totals:</b>	<b>6,832</b>	<b>6,205</b>	<b>172,418</b>	<b>358</b>	<b>299</b>

**Table 5**

**Estimated and Operational Project Vehicles by Vehicle and Fuel Type**

<b>Airport</b>	<b>Estimated GSE</b>	<b>Estimated GAV</b>	<b>Estimated Total GSE and GAV</b>	<b>Currently Operational GSE</b>	<b>Currently Operational GAV</b>	<b>Estimated Operational by end of CY 2004 GSE</b>	<b>Estimated Operational by end of CY 2004 GAV</b>
<b>ATL</b>	111 Elec.		111				
<b>BTR</b>		20 CNG	20		4 pickups		3 cars
<b>BWI</b>		89 CNG	89		39 (14 22' shuttles, 25 40' buses)		
<b>DIA</b>	? CNG	63+ CNG	100		63 (27 40' buses, 24 trucks, 10 vans, 2 cars)		
<b>DFW</b>	156 Elec.		156	40 bag tugs		60-90 bag tugs & belt loaders	
<b>JFK</b>	244 Elec. 171 CNG	133 CNG 11 Elec.	559		3 CNG (1 truck 2 vans)	30	
<b>LGA</b>	59 Elec.	? CNG	100		1 CNG van	14 bag tugs/ belt loaders	
<b>ORD</b>	61 Elec.	23 CNG	84				
<b>SFO</b>	199 Elec.	96 CNG	295	37 (31 bag tugs, 4 belt loaders, 2 pushback tractors)	4 40' buses	109 (79 bag tugs 28 belt loaders 2 pushback tractors)	46 airport vehicles
<b>SMF</b>	38 Elec.	20 CNG 3 Elec.	61		14 30-35' CNG buses	20 (16 belt loaders, 4 bag tugs)	6 30-35' buses 3 Elec. cars
<b>Totals:</b>	<b>~1,064</b>	<b>~511</b>	<b>1,575</b>	<b>77</b>	<b>128</b>	<b>233-263</b>	<b>58</b>

## **GRANT SUMMARY AND ACTIVITY ASSURANCES**

The interim results of the program appear to confirm the reliability and cost-effectiveness of AFVs and their value as a short-term strategy for controlling emissions at airports. However, the pilot results are preliminary and subject to an uneven level of project implementation presently. Indeed, only about 13 percent of the total vehicles planned for the program are operational.

While most ILEAV projects are demonstrating success, a few ILEAV airports are trying to re-establish momentum. These airports are in the process of restructuring their original plans, enlisting new partners, and revising their financial commitments. The FAA allows pilot project modifications on two conditions: 1) they do not violate AIP grant assurances; and 2) they provide an equivalent number of vehicles and emission reductions as originally proposed. In the event that airport sponsors do not demonstrate reasonable progress, the FAA Airports Office may de-obligate ILEAV funds and redirect them to other AIP requirements.

## **INDIVIDUAL PROJECT STATUS**

The following individual project descriptions are based on the most recent airport Progress Reports submitted by participating airports to the FAA in March 2004 and subsequent data available to the FAA prior to publication of this report. Occasional references may be made to earlier airport Progress Reports filed in September 2003.

The FAA encourages communications and information sharing between airports participating in the program. ILEAV airports are likely to receive new requests for information this year by airport sponsors that are interested in the VALE program. ILEAV airports should be contacted directly for more information about their projects or a copy of their semi-annual Progress Report. The name of the contact persons, phone numbers, and email addresses are listed on the project summaries below.

## *Dallas/Fort Worth International Airport (DFW)*

**Airport Contact:** Tammy Huddleston, phone (972) 574-1319, therring@dfwairport.com

**Nonattainment Status:** ozone (serious)

**Project description:** All-electric GSE

DFW continues to make progress in deploying vehicles for the project, which supports an airline agreement with the State Commission on Environmental Quality to reduce airport-related NOx by 75 percent through GSE conversions to alternative fuels. The airport plans to deploy 156 GSE vehicles, consisting of 146 airline baggage tugs and 10 belt loaders. Infrastructure support includes 18 fast-charging stations, each of which can recharge 10 vehicles simultaneously.

Delta Air Lines has met its project commitments for 36 baggage tugs and 4 fast chargers, bringing its equipment into operation in 2003. American Airlines is operating 4 baggage tugs and 1 fast charger and plans to deploy 60-90 more vehicles and 6-9 more fast chargers by this September. Implementation by American Airlines has been slowed this year by the need to re-design the installation layout for the chargers.



*Layout of installed fast-charging systems to support Delta Air Lines operations in the ILEAV project at DFW International Airport. Background: David Patton of AeroVironment explains to Jim Dunning of Electricore, Inc., AeroVironment's state-of-the-art battery management system installed in Delta's electric GSE. DFW, with Electricore technical support, has successfully installed 5 fast-charging systems as part of ILEAV. An additional 6-9 systems will be installed for American Airlines.*

## *Denver International Airport (DIA)*

**Airport Contact:** Pam Armstead, phone (303) 342-2887, pam.armstead@diadenver.net

**Nonattainment Status:** None. Redesignated maintenance area for ozone (O<sub>3</sub>), CO, and PM<sub>10</sub>

**Project description:** All-CNG

The airport has purchased 63 GAV project vehicles and placed them into service. The CNG vehicles include 27 large 40 ft. buses, 24 pickup trucks, 10 passenger vans, and 2 cars. In addition, a CNG facility upgrade and expansion was completed in 2002 at Concourse B.

DIA is using actual mileage data and engine hour readings for the heavy and light-duty vehicles to more accurately assess annual and lifetime project emission savings. Also, the airport sponsor has placed ILEAV labels on its project vehicles, taken initial steps to create public information materials, and implemented maintenance and training for the CNG vehicles acquired under the project.



*One of the 27 40-foot CNG buses in the project being used for passenger service at the airport.*

## ***Baltimore-Washington International Airport (BWI)***

***Airport Contact:*** Richard Keen, phone (410) 859-7662, rkeen@mdot.state.md.us

***Nonattainment Status:*** ozone (severe)

***Project description:*** Mixed fuel and vehicle type

The ILEAV alternative fuel activities at BWI are well underway. In 2002, the first 14 project vehicles were purchased. These low-floor 22 ft. CNG shuttles were deployed for parking lot trips and have performed extremely well according to the airport sponsor. In 2003, 25 large 40 ft. buses powered by CNG were placed into service for consolidated rental car operations. Outside of the ILEAV grant, the BWI CNG station has undergone several upgrades to support the airport's growing CNG fleet.

When complete, the project is expected to reduce emissions from numerous daily round-trip bus trips with CNG buses instead of diesel buses. These emission savings will make a difference to a region that is an ozone nonattainment area, which the EPA reclassified last year from "serious" to "severe."



*One of BWI's new fleet of 14 low-floor 25-foot CNG mini-buses that are now in service shuttling the public and employees from airport parking lots to the terminals.*



*Current BWI CNG refueling station and two 40 ft. buses used for passenger service to parking lots.*



## *Sacramento International Airport (SMF)*

**Airport Contact:** Greg Rowe, phone (916) 874-0698, roweg@saccounty.net

**Nonattainment Status:** ozone (severe) and PM10 (moderate). CO maintenance area.

**Project description:** Mixed fuel and vehicle type

The restructured SMF program includes 61 AFVs, including 20 CNG shuttle buses, 38 electric GSE (14 bag tugs, 8 new belt loaders, and 16 converted belt loaders), and 3 airport-owned electric vehicles (EVs). The airport is now operating 14 of twenty planned 30-35 ft. buses. Project plans also call for expansion of the CNG refueling station, new fast-chargers, and conventional chargers for the airport-owned EVs. In the next few months, the airport sponsor expects to complete construction of the CNG station and to fully deploy the EVs, six remaining buses, and Southwest Airlines GSE: 16 converted belt loaders and 4 bag tugs.

Airline participation has changed at the airport. Delta Air Lines withdrew and has been replaced by America West, which is interested in 10 GSE vehicles. Southwest and United Airlines remain committed to their original project plans. Southwest Airlines accounts for about half of the more than 150 scheduled daily departures at SMF. Apart from the ILEAV project, the airport sponsor is providing significant upgrades to the power supply for Terminal A (SWA) and B (UAL). These upgrades will enable the use of additional fast chargers.



*Refueling of one of the project's 14 operating 40 ft. CNG buses.*



*Rick Waugh, Southwest Airlines' Western Region Manager, Ground Support explains operation of a new SWA electric belt loader to Mustapha Janneh of International Group Technologies and the ILEAV consultant to SMF. Below, Rick shows battery location.*



### ***Baton Rouge Metropolitan Airport (BTR)***

***Airport Contact:*** Ralph Hennessy, phone (225) 355-0333, rhennessy@ci.baton-rouge.la.us

***Nonattainment Status:*** ozone (severe)

***Project description:*** All-CNG GAV

BTR reports that construction of the CNG refueling station was completed in 2003 and is being managed under lease with Texaco as a component of Texaco's existing fuel station. Of the 20 airport-owned CNG vehicles planned, four new Ford F-150 CNG pickup trucks are in service with three new cars expected in operation soon. The CNG station is expected to serve 300 public fleet vehicles in the future, thereby generating additional regional air quality benefits.

This project has broad community and industry support, including a \$15,000 grant from Ford Motor Company. Other industry participants include Entergy, the local utility, and Fuelman, Inc., which is providing a card-reader system to track vehicle fuel consumption. Also, the Louisiana Technical College, certified as an Alternate Fuel Regional Training Facility, will provide emissions and performance monitoring of project vehicles. The Greater Baton Rouge Clean Cities program is assisting the airport sponsor by collecting cost and technical data from vehicle manufacturers.

### ***LaGuardia Airport (LGA)***

***Airport Contact:*** Ed Knoessel, phone (212) 435-3747, eknoesel@panynj.gov

***Nonattainment Status:*** ozone (severe). CO maintenance area

***Project description:*** Primarily electric GSE

This reconstructed project is centered upon a new commitment by Delta Air Lines to replace 59 existing gasoline and diesel baggage handling vehicles with new electric-powered vehicles (39 bag tugs and 20 belt loaders). The project involves power supply upgrades and the installation of fast chargers at two Delta locations at the airport: the Marine Air Terminal (completion 2004) where Delta operates shuttles to Boston and Washington, and Delta's Main and Commuter Terminals (completion spring 2005).

The proposed work with Delta represents about three-fourths of the ILEAV grant. No information is available yet on the Port Authority of New York and New Jersey's (PANYNJ) intended use of remaining funds except for the deployment of one airport CNG van.

LGA is located in a densely populated urban area in the Borough of Queens. The emission reductions from this program are expected to benefit the local region: northwest Queens and the South Bronx.

## *San Francisco International Airport (SFO)*

**Airport Contact:** Roger Hooson, phone (650) 821-6511, roger.hooson@flysfo.com

**Nonattainment Status:** ozone (moderate)

**Project description:** Mixed fuel and vehicle type

In 2003, the airport began operating four 40 ft. CNG buses for passenger service to parking lots. With this start, progress on the SFO project began to accelerate in 2004. As part of the total 199 electric and CNG vehicles planned, SkyWest has deployed 14 electric GSE vehicles (8 bag tugs, 4 belt loaders, and 2 pushback tractors) with four fast chargers. In addition, United Airlines recently brought 23 bag tugs into service.

SFO expects more deployments relatively soon. SkyWest expects to bring 8 more GSE vehicles and a fast charger into service this year. Delta indicates that it will add 27 GSE vehicles and 3 fast chargers within nine months. This follows an electrical capacity survey of the Delta pier at Terminal 1 that has been approved by the airport. Also, Swissport, the largest ground handling provider for foreign flag carriers at SFO, is still considering the purchase of 18 electric baggage tugs, 7 belt loaders, and one multi-port charger.

SFO is in the process of revising its annual and lifetime emission reduction estimates for the project based on the introduction of new GSE equipment.



*One of the SFO project's four operating 40-ft. CNG buses for passenger service.*



*SFO ETEC recharging stations for SkyWest electric GSE vehicles.*

### ***Atlanta International Airport (ATL)***

***Airport Contact:*** Ken Martin, phone (404) 209-3175 ext. 127, Ken.Martin@atlanta-airport.com

***Nonattainment Status:*** ozone (severe)

***Project description:*** Electric GSE

The main participant in the ATL ILEAV project is Delta Air Lines. The reconstituted project involves 111 GSE vehicles for Delta: 46 bag tugs, 34 belt loaders, and 31 converted container loaders, all of which will be supported by power upgrades and 18 fast chargers. Deployments are expected to begin in 2005.

Under the ILEAV program, the airport produced a technical report on their experience in building and operating alternative fuel systems. The title of the report is “Electric Ground Service Equipment and Compressed National Gas Fueling Stations,” City of Atlanta, Department of Aviation, Prepared by ESA, 25 pp. Mar. 2002. The report is available from the airport on CD.

### ***John F. Kennedy International (JFK)***

***Airport Contact:*** Ed Knoessel, phone (212) 435-3747, eknoesel@panynj.gov

***Nonattainment Status:*** ozone (severe). CO maintenance area.

***Project description:*** Mixed fuel and vehicle type

This project is being reconstituted by the Port Authority (PANYNJ), which is working closely with original project partners and other airlines (JetBlue and United) to reenergize the ILEAV project. PANYNJ is preparing to begin a study with the Northeast Advanced Vehicle Consortium (NAVC) to analyze the cost/benefits of implementing clean technology for PANYNJ airport buses and vehicles, including the available options for new vehicles, retrofits, and fueling infrastructure.

This report relies on the original project cost and vehicle estimates in advance of new information on proposed project changes. The FAA expects the scope of the revised project to trend downward from the original \$8.6 million projection.

### ***Chicago O'Hare International (ORD)***

***Airport Contact:*** Jim Szczesniak, phone (773) 686-3531, jszczesniak@cityofchicago.org

***Nonattainment Status:*** ozone (severe)

***Project description:*** All-electric GSE project

The airport sponsor (City of Chicago) is currently attempting to redesign the ILEAV project in line with new airport modernization plans. Without the original commitments of American, United, and Delta Air Lines, the recent initiative to restructure the project is focusing more on airport-owned equipment. This summary report contains current information in advance of new information on proposed project changes.

## **FURTHER INFORMATION**

Further information about the program is available on the FAA ILEAV web site: [www.faa.gov/arp/environmental/ileav](http://www.faa.gov/arp/environmental/ileav) or by contacting Jake Plante, Environmental and Community Needs Division (APP-600), Airports Office, FAA, 800 Independence Ave. SW, Washington DC 20591. Numbers and email address are: (202)493-4875, fax (202)267-8821, [jake.plante@faa.gov](mailto:jake.plante@faa.gov).

## **GLOSSARY OF TERMS**

AFV – alternative fuel vehicle  
AIP – FAA Airport Improvement Program  
CNG – compressed natural gas  
CO – carbon monoxide  
DOE – U.S. Department of Energy  
EPA – U.S. Environmental Protection Agency  
EV – electric vehicle  
FAA – Federal Aviation Administration  
GAV – ground access vehicle  
GSE – ground support equipment  
HC – hydrocarbons  
ILEAV – Inherently Low Emission Airport Vehicle pilot program  
LPG – liquid petroleum gas  
NOx – oxides of nitrogen  
NPIAS – National Plan of Integrated Airport Systems  
PFC – FAA Passenger Facility Charge program  
PM – particulates  
SO2 – sulfur dioxide  
VALE – Voluntary Airport Low Emission program