

FedEx Corporation Environmental Initiatives

August, 2005

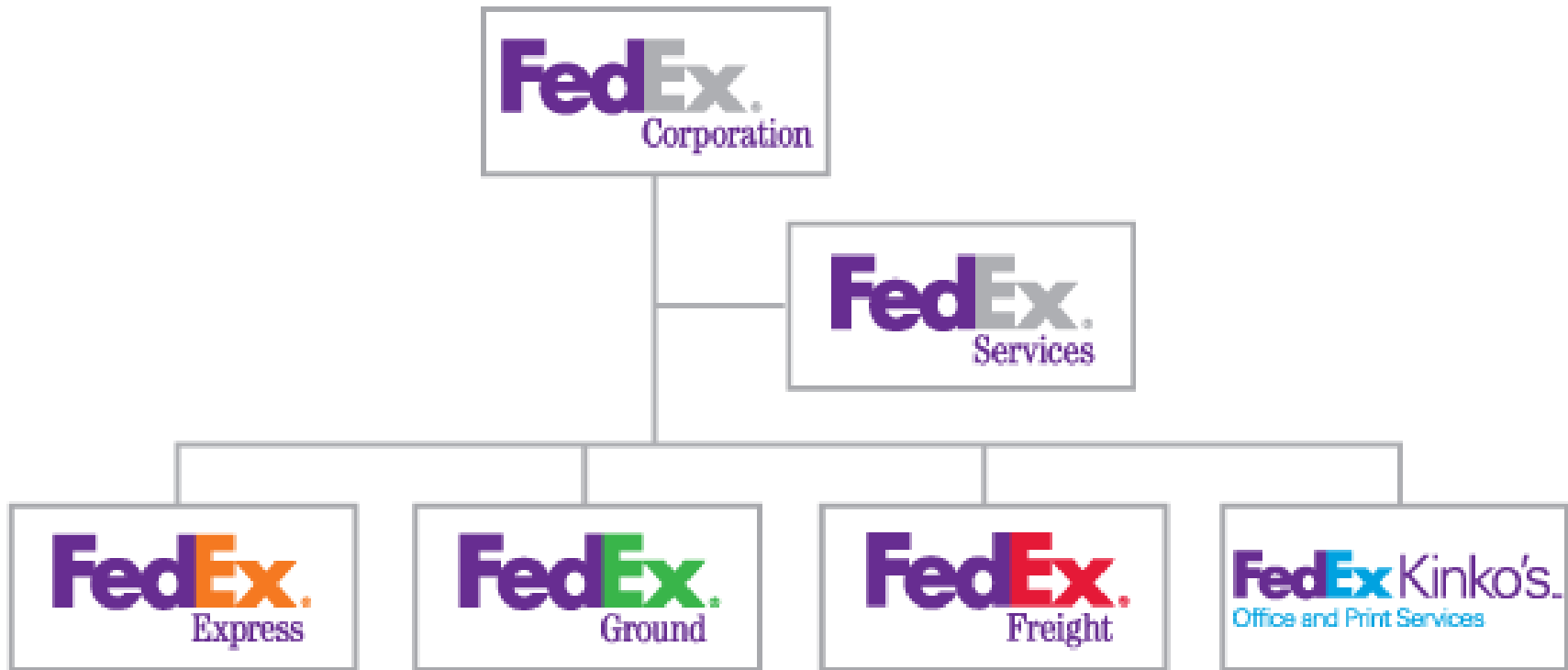
Alison Bird

Project Manager – Environment

FedEx Express



FedEx Overview



Operate Independently, Compete Collectively and Manage Collaboratively



FedEx Freight

EPA Voluntary Retrofit Program –
The first time EPA has joined with a
private company to retrofit part of a
fleet

- Particulate Filters
- Includes use of ULSD



FedEx Ground

Provides services to fluorescent bulb recyclers so that mercury does not end up in our nation's waste streams

- Efficiencies of network

Working with the Hybrid Truck User's Forum to develop hydraulic hybrid delivery vehicles



FedEx Kinko's

Purchased 6.6% of its total energy consumption in 2003 from renewable sources, such as wind and solar energy



European Alternate Fuel Vehicles

38 FedEx alternate fuel Mercedes Sprinters by the end of Oct 2004

London's Battersea station

Exempted from London's congestion charges due to its low emissions performance



FedEx / General Motors Fuel Cell Project

1 year study in real world, commercial setting using GM's HydroGen3 fuel cell vehicle in Tokyo, Japan.

More than 10,000 packages were delivered with this vehicle.



EPA Smart Way

EPA's SmartWay Transport Initiative

FedEx Express

FedEx Freight

Over 800,000 tons of CO₂ avoided by FedEx Freight, Express and Ground in 2002



Solar Power Generation



FedEx Express at Oakland Airport



Delivering Cleaner Air

The FedEx Future Vehicle Project
The Hybrid E700

FedEx Express

Develop a replacement for the current FedEx Express pick-up and delivery truck that is:

Environmentally Superior,

- Cost-Effective,

Meets All of FedEx's Operational Requirements

- Non-Proprietary



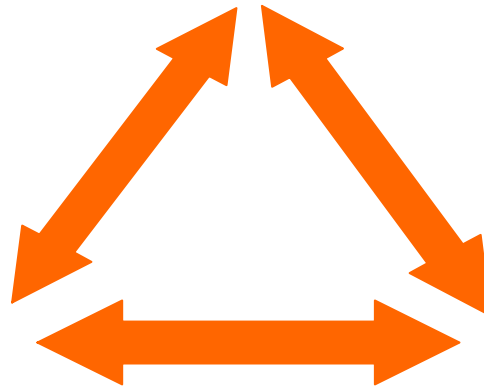
Environmental Defense

Changing the way business thinks about the environment

Achieve environmental gains

**Provide
business benefits**

**Create
industry change**



Motives: FedEx

- For a better future and a cleaner environment
- To show the value of voluntary, proactive initiatives
- To save money and fuel
- To minimize the risk of future regulations
- Approach is consistent with FedEx culture



Project Goals

To Develop a Vehicle that has:

90% Lower Emissions

50% Better Fuel Efficiency

Maintains or Enhances Functionality

Cost Competitive

Accelerate Market Introduction and Acceptance of Full Production Environmentally Friendly Vehicles.





Baseline 1999 FedEx Truck

- W700 Walk In Truck
- Cargo Capacity
700 Cubic Feet
5,720 lbs.
- 16,000 lbs. GVWR
- 5.9L I6 Cummins Diesel



Test Criteria



Emissions and Fuel Economy

- FTP Cycle was Modified by FedEx Express to Represent Typical Service of the W700 Delivery Truck

Functional and Operational

- Speed, Acceleration
- Gradability
- Braking, Range, Turning,
- Payload



Testing



Testing by Southwest Research Institute



Baseline Truck
Two Prototypes



Project Evaluation

Based on the overall test results of both prototypes the Eaton hybrid drive system was selected for additional development and in-service evaluation.



The Prize



Key Features of the E700

- Engine Downsized to a 4-cylinder
- Regenerative Braking
- Li-Ion Batteries
- Diesel Particulate Filter
- Drive Power Drawn from Engine and/or Batteries





SwRI Test of E700

Tested E700 and 2004 W700

Exceeded Fuel Economy Goal

Exceeded PM Emissions Goal

Did Not Meet NOx Emissions Goal

Trade-off Mileage vs. NOx



Test Results

Pre-Production e700 improvement over:

	<u>Baseline W 700</u>	<u>2004 W 700</u>
H C	- 100 %	- 100 %
C O	- 82 %	- 77 %
N O x	- 65 %	- 12 %
P M	- 96 %	- 96 %
C O 2	- 37 %	- 29 %
M P G	+ 57 %	+ 42 %

FedEx Express



FedEx



E700 Field Evaluation



Sacramento – 2 Trucks

New York City – 10 Trucks



Tampa – 4 Trucks

D.C. – 2 Trucks



Barriers

- Catch-22: Cost vs. Volume
- Regulatory Disincentives
 - Engine Emissions vs. "Vehicle" Emissions
 - No Federal Certification Procedure
 - No Quantification Method for Emission Benefits



Solutions

- Tax Incentives

Until Market Penetration and
Production Volumes Allow Cost
Competitiveness

- More Holistic Regulatory
Approach = Cost Effective
Emission Reduction

Local or Regional Incentives



- Income Tax Credit
- Sales Tax
- Registration Fees
- Tolls and HOV Lanes
- Parking
- Grants