
Live Lab for Sustainable Transportation

FFCA East Coast
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Live Lab:

Sustainable Transportation Concepts Proven in the Real World

Goal: Define “best practices” in sustainable transportation using *real technologies* and *real-world* data.

- “Live” – Ongoing remote data acquisition and in-use emissions testing
- “Lab” – Multi-modal freight/logistics providers in New York City metropolitan area

****Validate approach through peer-reviewed, statistically-significant data****

Underlying Motivations/Trends

- Attacking “Triple” Bottom Line
- Global Regulatory Requirements
- Managing Downstream Carbon Risk
- Image/PR/Marketing
- Corporate Sustainability Initiatives
- Economic Factors: escalating costs

Live Lab =

- A way to measure Green ROI
- Cost analysis tool for up-front, capittally intensive sustainability initiatives
- Bottom up approach to carbon labeling, score-carding & reporting
- Integration of alternative fuel and zero emission vehicle data, carbon measurement and BPM/SCM software over multiple fleets
- Scientific and engineering validation of today's on-the-street technologies

Components

- Developing 3 year EPA SmartWay Transport Partnership action plans
- Building sustainable transportation program around emissions, energy and carbon efficiency
- Installing diesel after treatment technologies
- Introducing alternative fuel (CNG/LNG) and zero-emissions vehicles (ZEV) to the legacy fleet
- Establishing carbon measurement, tracking and reporting systems
- Collaborative undertaking w/private industry, government and academia

Vehicles & Technologies

- Zero emissions, all-electric Class 7 delivery vehicles for NYC Metro service.
- NG terminal tractors for port operations; Class 8 drayage and short haul
- Clean, efficient diesels
 - New trucks
 - Aftertreatment technologies
- CV2G (Commercial Vehicle to Grid) project, using roof-top solar photo-voltaic cells to:
 - Supply renewable energy
 - Recharge electric vehicles

ZEV Strategy

All - Electric Class 7 delivery vehicles

- Zero emissions
- Electric fuel source
- 120 – 150 mile range
- Powertrain = 4 moving parts
- Low maintenance
- Carbon Tax exempt



AFV Strategy

LNG/CNG powered vehicles

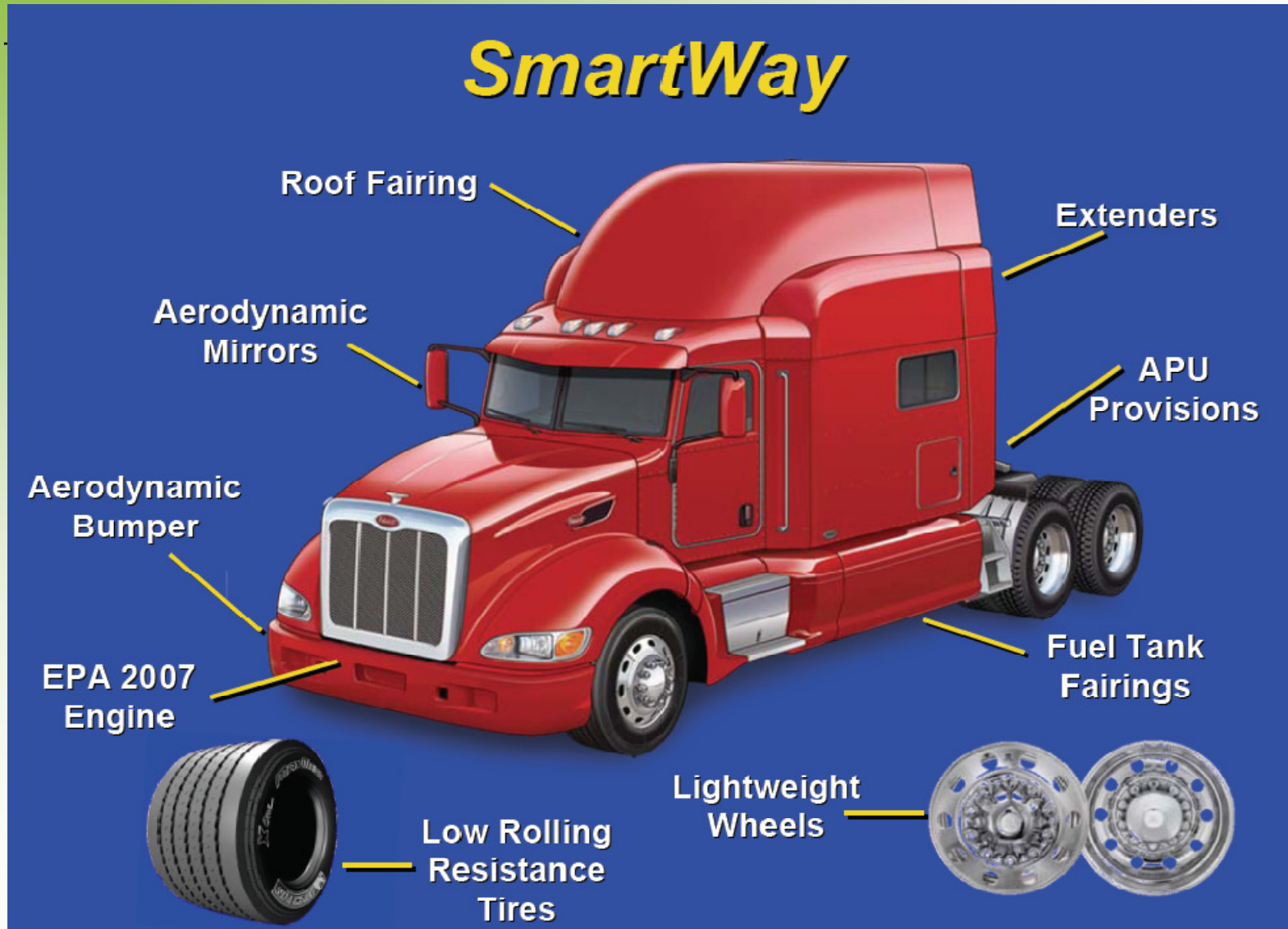
- Abundant domestic resource
- Low criteria, GHG emissions
- Favorable economics vs. petro-diesel



Regular Gasoline	452
Super Gasoline	467
Premium Gasoline	482
Ethanol	369
Diesel #2	499
Bio-Diesel	519
Natural Gas	299



EPA *SmartWay* Strategy



Diesel Retrofit Strategy

Bolt-On Aftertreatment technologies for superior tailpipe PM control

- ADPF



- FTF



Tools

- Measurement
 - Real time tracking and reporting of vehicle carbon emissions*
 - Vehicle telematics
 - Low cost carbon measurement instrumentation
 - Criteria emissions
- Analytical
 - Software / carbon algorithms / route optimization
- Behavioral
 - Idling Reduction / driving techniques / loading
- Reporting
 - CO₂e / labeling / manifests or B.O.L specific

Timeline

- Launch / Beta Testing Phase
July – December, 2008
- Testing and Assessment Phase
January – June, 2009
- Analysis, QA/QC and Reporting Phase
July – December, 2009

** Vehicle & Technology Deployment = *Ongoing*

Expected Outcomes

- Quantifying triple bottom line metrics based upon sustainable transportation technologies
- Benchmarking the carbon footprint of NYC metro trucking and logistics firms
- Defining “best practices” for sustainable transportation
- Reporting multi-enterprise level information about green performance
- Optimizing energy and carbon efficient goods movement (from the bottom up)
- Moving freight faster, cleaner and smarter!

Partners and Collaborators



- On-board emission analyzers
- Adaptive-Intelligence software / supply chain visibility
- Academic Partner, Peer Reviewer and Subject Matter Expert
- Consortium of private NYC transportation / logistics providers

Partners and Collaborators (2)



- Zero Emission Vehicles
- CNG/LNG Fueling Infrastructure
- Benchmarking and environmental performance validation
- Diesel aftertreatment

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