U.S. Department of Energy: State of Clean Cities Program
Vehicle Technology Deployment Efforts

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National Energy Technology Laboratory
Clean Cities Team Leader

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Goal: Petroleum Reduction

*How to Achieve the Goal ...*

- Reduce
- Replace
- Eliminate
Clean Cities

* A voluntary, locally-based government/industry partnership

**Mission:** To advance the energy, economic, and environmental security of the U.S. by supporting local decisions to adopt practices that contribute to the reduction of petroleum consumption in the transportation sector.

- Companion program to the EPACT mandates requiring certain fleets to acquire AFVs (Federal, State, and Fuel provider fleets)
Clean Cities Today: 85+ Active Coalitions in 45 States
Northwest

North Central

Northeast

West

Southeast

South Central

- Mike Scarpino
- Kay Milewski
- Steve Richardson
- Neil Kirschner
- Mike Bednarz
- Ernie Oakes

Northeast -
Puerto Rico
Guam
American Samoa
Northern Mariana Is.

West -
Virgin Is.
Hawaiian Is.

Northwest -
Alaska
National Laboratory Support

**National Renewable Energy Lab** (NREL – Colorado) – Clean Cities Core program technical support, AFDC, technical communications, publications, Clean Cities Web sites, Hotline Response Service


**Brookhaven National Lab** (BNL – New York) - BioMethane and Land fill gas recovery

**Argonne National Lab** (ANL – Illinois) - Emissions Modeling (GREET and AIRCRED) and Idle Reduction analysis

**National Energy Technology Lab** (NETL – Project Management and Regional coordination of key Clean Cities activities)
Clean Cities Program Structure
VT Deployment Focus Areas


2. **Technology Deployment & Demonstrations**- Niche Market Fleet, Adv Vehicle Demos (PHEVs, HD HEVs, FCVs, Clean diesel)

3. **Consumer Information & Education**- Fuel Economy.Gov (General outreach activities for consumers to make educated choices for new vehicle purchases)

4. **Strengthening Coalitions**- RDS contract, specialized training & workshops

5. **Expanded National Partnerships**- Work w/ Verizon, Enterprise, Kroger, etc.

6. **Addressing Technical Barriers & Technical Assistance for Early Adopters**- Coordinate specialized training and outreach to public safety officials, first responders, fleet maintenance personnel, etc. Distribute incident response procedures and guidelines. UL certifications. CNG Cylinder Program.
Clean Cities Technology Portfolio
(Fuel/Technology Neutral Approach)

Alternative Fuels
Increase vehicle & infrastructure
- Electricity
- Ethanol
- Propane
- Natural Gas
- Hydrogen
- Biodiesel (B100)

Blended Fuels
Increase Use of Blends
Low levels of alternative fuels with conventional fuels (B2, B5 and B20)

Hybrids
Expanding Market for vehicles
Light- and heavy-duty hybrids

Idle Reduction
Increase Technology Use/Practices
- Heavy-duty trucks
- Transit/School Buses
- Adoption of Idle Reduction policies and practices

Fuel Economy
Increase fuel efficient technologies and practices
More Fuel-efficient vehicles, light weight materials, behavioral changes, vehicle maintenance initiatives, etc.
VT (Clean Cities) Deployment Budget

$ Millions

<table>
<thead>
<tr>
<th>Year</th>
<th>Appropriated</th>
<th>Request</th>
</tr>
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<tbody>
<tr>
<td>FY-00</td>
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<td>FY-01</td>
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<td>FY-09</td>
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2006 Portfolio Performance

• 2006 is the third year of the expanded Clean Cities portfolio and the online data reporting system
• Note: In 2005 the Clean Cities’ annual fuel displacement potential was estimated to be roughly 2.5 billion GGE per year in 2020
• 2006 survey results exceeded goal for the year
  – Goal for 2006 was 292 million GGE displaced
  – Actually achieved 360 million GGE displaced through coalition and ORNL fuel economy efforts
• 83 coalitions submitted reports with an average of 3.5 million GGE displaced per coalition
2006 Petroleum Reduction Breakdown
(in millions of GGEs)

<table>
<thead>
<tr>
<th>Technology</th>
<th>GGEs</th>
<th>Percentage of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFVs</td>
<td>253</td>
<td>70%</td>
</tr>
<tr>
<td>HEVs</td>
<td>9</td>
<td>2%</td>
</tr>
<tr>
<td>Blends</td>
<td>10</td>
<td>3%</td>
</tr>
<tr>
<td>Fuel Economy</td>
<td>80</td>
<td>22%</td>
</tr>
<tr>
<td>Truck Electrification</td>
<td>8</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>360</td>
<td>100%</td>
</tr>
</tbody>
</table>

• AFVs continue to account for lion’s share of the displacement
• Fuel Economy is next, with significant potential for growth

*Data as of 9-19-07

In 2004, Clean Cities Celebrated Beyond A Billion. The program should surpass 2 Billion in 2008
Clean Cities and Alternative Fuels

- During 2006, Clean Cities efforts led to the displacement of 360 million gallons of petroleum
  - 50% increase from 2005
- Alternative fuels and AFVs represent 70% of displacement
  - Number of refueling stations offering E-85 doubled in 2006, and continues to increase
  - CNG contribution mainly from HD trucks and transit buses
AFV Petroleum Displacement Trends

### 2005
- **CNG**: 34.9%
- **B20**: 21.1%
- **LPG**: 20.1%
- **E85**: 15.6%
- **LNG**: 5.2%
- **Electric**: 2.0%
- **B100**: 1.1%

### 2006
- **CNG**: 29.7%
- **E85**: 24.2%
- **B20**: 16.5%
- **LPG**: 15.1%
- **B100**: 6.5%
- **LNG**: 5.9%
- **Electric**: 2.1%
## Top Performers in 2006

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>COALITION</th>
<th>AMOUNT</th>
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<tbody>
<tr>
<td>Total - GGEs Displaced</td>
<td>St. Paul, MN</td>
<td>29,103,591 GGEs</td>
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<tr>
<td>AFVs - GGEs Displaced</td>
<td>St. Paul, MN</td>
<td>21,977,490 GGEs</td>
</tr>
<tr>
<td>HEVs - GGEs Displaced</td>
<td>St. Louis, MO</td>
<td>1,059,637 GGEs</td>
</tr>
<tr>
<td>Blends – GGEs Displaced</td>
<td>St. Paul, MN</td>
<td>7,122,691 GGEs</td>
</tr>
<tr>
<td>Fuel Economy – GGEs</td>
<td>Iowa</td>
<td>2,833,692 GGEs</td>
</tr>
<tr>
<td>Idle Reduction – GGEs</td>
<td>Los Angeles, CA</td>
<td>5,145,960 GGEs</td>
</tr>
<tr>
<td>Grants – Funding and Leveraged Funds</td>
<td>New Haven, CT</td>
<td>$20,530,000</td>
</tr>
<tr>
<td>Leveraged Funds</td>
<td>New Haven, CT</td>
<td>$7,430,000</td>
</tr>
<tr>
<td>Outreach – Most Persons Reached</td>
<td>Kansas City, KS</td>
<td>11,056,260</td>
</tr>
<tr>
<td>Outreach – Most Activities</td>
<td>Dallas-Fort Worth, TX</td>
<td>48</td>
</tr>
<tr>
<td>Total Stakeholders</td>
<td>Portland, OR</td>
<td>320</td>
</tr>
<tr>
<td>New Stakeholders</td>
<td>Winnipeg, CA</td>
<td>55</td>
</tr>
</tbody>
</table>
Technology Demonstrations:

DOE is investing $8.6 million (from 2006-2008) in cooperative agreements with Clean Cities Partners:

- E85 refueling projects in CA, OR, CO, IA, IN, KY, TN, AL, VA, MD, DC, NC, SC, GA and NY
- Ethanol, biodiesel, natural gas and propane infrastructure and vehicle acquisition.
- Partners are investing >$16 million in these projects for a total of more than $25 million
Consumer Information and Education (tools & services)
Clean Cities Website Tools

Clean Cities

AFDC

Fuel Economy – in partnership with EPA
Alternative Fuels Hotline

• 1-877-337-3463
• Available 9:00 a.m. – 6:00 p.m. EST
• hotline@afdc.nrel.gov
New Features

• Energy Impact Score

• Carbon Footprint

(created to help emphasize the benefits of alternative fuels and petroleum reduction)
Fuel economy goes mobile at fueleconomy.gov/m

- New mobile site designed for access via PDA, cell phones, and other mobile devices
- Access fuel economy and related information at your convenience anywhere, anytime
- View
  - EPA mileage ratings for all cars and light trucks sold in the U.S. back to model year 1985
  - Annual fuel cost estimates
  - Annual petroleum use (barrels of domestic & imported petroleum)
  - Carbon footprint (tons of carbon dioxide emitted annually)
### FuelEconomy.gov/m at a glance

#### 2008 Ford F150 Pickup FFV 2WD
- **MPG**
  - City: 13/10
  - Highway: 18/13
  - Combined: 15/11
- **Annual Fuel Cost**
  - Gas: $3,072
  - E85: $3,272
- **Annual Petroleum Use**
  - Gas: 22.8 barrels
  - E85: 7.3 barrels
- **Carbon Footprint**
  - Gas: 12.2 tons CO2/year
  - E85: 10.1 tons CO2/year

#### 2008 Chevrolet Impala
- **MPG**
  - City: 18/13
  - Highway: 26/20
  - Combined: 21/16
- **Annual Fuel Cost**
  - Gas: $2,192
  - E85: $2,250
- **Annual Petroleum Use**
  - Gas: 16.3 barrels
  - E85: 5.0 barrels
- **Carbon Footprint**
  - Gas: 8.7 tons CO2/year
  - E85: 6.9 tons CO2/year

www.fueleconomy.gov
DOE Relationship with PBS since 2001
(airs weekly on PBS, SPEED, AF Network)

Past Show Topics:
(over 50 show topics featuring DOE focus areas)

- BioTown USA
- Ethanol Goes Racing!
- Vehicle Road Tests with new emphasis on Fuel Economy and Energy Security
- Alternative Fuels Motor News
Energy Impact Score: MW incorporates a barrels-per-year “score” within the body of every new Road Test they produce, have refined how they incorporate this information, and added comparisons between E85 and gasoline when available.
QUESTIONS & DISCUSSION
Contact Information:

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