Overview

Timeline

Started Dec 21, 2009
Ends Dec 21, 2013
Progress 75%

Barriers

• Lack of infrastructure
• Limited availability of vehicles/kits
• Increased cost of alt. fuel vehicles
• Significantly reduced capital budgets

Budget

Total $ 41,323,456
DOE $ 14,910,487
Contractor $ 26,412,969

Partners

• Michigan Economic Development Corporation
• Greater Lansing Area Clean Cities Coalition
Project

• Displace petroleum imports with cleaner, domestic fuel sources
• Increase deployment of alt. fuel vehicles and advanced vehicle technologies
• Build the infrastructure necessary to support these vehicles
• Create sustainable local and regional markets
• Create/sustain local jobs
• Reduce the burden of rising fuel costs on capital budgets

Current year

• Provide training and support to key parties
• Collect and analyze project data
Approach

Target fleets for full or partial conversion to:

- Increase market penetration of alt. fuel vehicles
- Provide greater visibility for the vehicles and technologies
- Leverage economies of scale
- Maximize displacement and emissions metrics
- Provide significant relief for capital and operating budgets

Remain fuel neutral

- Use the right fuel and technology for the application
Collect detailed data from project partners to:

- Develop technology- and application-specific case studies
  - Partners are provided with a summary report at full deployment
- Provide ongoing consulting to help partners maximize gains/savings
- Develop impartial, “real world” benchmarks of different technology and fuel types
- Data examples: fuel used/dispensed, vehicle use and VMT, MPG

Sample slides from a summary report for Schwan’s, a Clean Cities national partner
Safety and environmental considerations

• All vehicles and technology have EPA or relevant certifications, as required
• Provide training to first responders on:
  – Gaseous fuel (CNG and propane) infrastructure
  – Gaseous fuel and electric vehicle accidents
  – All NEPA CXs have been granted, none outstanding

Selection process and go/no-go decisions

• Prioritize petroleum displacement potential and project readiness
• Ensure that all vehicles, technology and infrastructure are:
  – Commercially (and readily) available
  – Eligible for funding
  – Procured locally or regionally, if possible
### Remaining Project Milestones

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Date</th>
<th>Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>75% of vehicles deployed</td>
<td>31 March 2012</td>
<td>80% deployed</td>
</tr>
<tr>
<td>100% of vehicles deployed</td>
<td>30 June 2012</td>
<td>On target</td>
</tr>
<tr>
<td>100% of stations operational</td>
<td>30 June 2012</td>
<td>60% operational</td>
</tr>
<tr>
<td>Training completed</td>
<td>30 June 2012</td>
<td>Anticipated in May</td>
</tr>
<tr>
<td>Offer consulting to project partners</td>
<td>1 Jan 2012 – 31 Dec 2013</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
Deployment and installation

• Deployed **159** vehicles:
  – Displacing **5,829** bbl of petroleum per year
  – Reducing GHG emissions (CO2e) by **615** US tons per year
• Installed **1** CNG station

Jobs

• Created **2** jobs per quarter, on average

Outreach and awareness

• Featured in TIME, Reuters and others
Accomplishments

Vehicle Deployments

Vehicle Deployments by Type: Previous and Current Year

- **H2**: Previous: 4, Current: 0
- **HEV**: Previous: 1, Current: 36
- **EV**: Previous: 0, Current: 5
- **CNG**: Previous: 95, Current: 98
- **LPG**: Previous: 59, Current: 133

Vehicle Technology

- **Previous**
- **Current**
Accomplishments
Station Installations

Station Installations: Previous, Current and Planned

Previous Year | Current Year | Remaining
---|---|---
0 | 15 | 18
1 | 16 | 3
2 | 5 | 2
3 | 18 |
## Annual Displacement and Emission Reductions: Previous and Current Year

<table>
<thead>
<tr>
<th></th>
<th>Previous Year</th>
<th>Current Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional</td>
<td>5.83 Petroleum</td>
<td>12.44 Petroleum</td>
</tr>
<tr>
<td>Converted</td>
<td>3.18 CO2e, US tons</td>
<td>6.76 CO2e, US tons</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Previous Year</th>
<th>Current Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional</td>
<td>1.60 Petroleum</td>
<td>2.66 Petroleum</td>
</tr>
<tr>
<td>Converted</td>
<td>2.56 CO2e, US tons</td>
<td>5.80 CO2e, US tons</td>
</tr>
</tbody>
</table>
Accomplishments
Displacement and emissions

Annual Displacement and Emission Reductions: Current and Full Deployment

<table>
<thead>
<tr>
<th></th>
<th>Current Year</th>
<th>Full Deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional Petroleum, bbl</td>
<td>12.44</td>
<td>19.08</td>
</tr>
<tr>
<td>Conventional CO2e, US tons</td>
<td>6.76</td>
<td>10.40</td>
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<tr>
<td>Converted Petroleum, bbl</td>
<td>2.66</td>
<td>5.05</td>
</tr>
<tr>
<td>Converted CO2e, US tons</td>
<td>5.80</td>
<td>8.68</td>
</tr>
</tbody>
</table>
Accomplishments

Spending

Subrecipient Direct Spending

<table>
<thead>
<tr>
<th></th>
<th>Match</th>
<th>Grant</th>
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</thead>
<tbody>
<tr>
<td>Previous Year</td>
<td>$13.1 M</td>
<td>$6.7 M</td>
</tr>
<tr>
<td>Current Year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9

Millions

$0 $2 $4 $6 $8 $10 $12 $14 $16 $18 $20

Previous Year

Current Year

Match

Grant

bridging needs, advancing change.
Accomplishments

Jobs

Spending Notes
- **75 cents** of every **grant-funded dollar** spent in-state
- Figure is **higher** for **match dollars**
- **20** of **31** vendors were in-state
- Subrecipient match has exceeded original estimates

Job Notes
- All jobs were in-state
- Figure only reflects on-site work related to station installations
- Vehicle conversions are exempt from DBRA reporting requirements
Collaboration

Subrecipients

• Government
  – Ann Arbor Downtown Dev. Authority
  – City of Ann Arbor
  – City of Detroit

• Industry
  – DTE Energy/MichCon
  – FedEx Ground
  – Frito Lay
  – Great Lakes Transportation, LLC
  – Schwan’s Home Service
  – UBCR, LLC
  – Wright & Filippis

• Higher Education
  – University of Michigan
  – Western Michigan University

Implementation Partners

• Greater Lansing Clean Cities Coalition
  – Education and training partner

• Michigan Economic Development Corporation, Michigan Energy Office
  – Encourage regional collaboration
Future Work

Site work

• Deploy remaining 106 vehicles
  – All have been ordered or received
• Install remaining 23 stations
  – Work is under way at all sites

Education and analysis

• Provide safety training to first responders
• Continue collecting vehicle and fuel use data for analysis

For our project partners

• Develop a case study for each, detailing displacement, emissions, and cost savings
• Provide ongoing consultation and support
  – Identify opportunities for further gains/savings
• Promote their successes with press releases and events
Summary

• Displace petroleum imports with cleaner, domestic fuel sources
  – 74% reduction in petroleum use
  – 16% reduction in CO2e

• Increase deployment of alt. fuel vehicles and infrastructure
  – Our work is the largest effort to date

• Create jobs and sustainable local and regional markets
  – 75% of every grant dollar spent in-state
  – All direct jobs are in-state

• Reduce the burden of rising fuel costs on capital budgets
  – Expected fuel savings of several million dollars per year for project partners