Puget Sound Clean Cities
Petroleum Reduction Project
(DE-EE0002020)

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Puget Sound Clean Air Agency
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Project I.D. #: ARRAVT042

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<table>
<thead>
<tr>
<th>Overview</th>
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<tbody>
<tr>
<td><strong>Timeline</strong></td>
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<tr>
<td>• Start date Dec 3, 2009</td>
</tr>
<tr>
<td>• End date Dec 2, 2013</td>
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<tr>
<td>• Percent complete: 60% (budget); 85% (projects)</td>
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<tr>
<td><strong>Barriers/Risks</strong></td>
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<tr>
<td>• Complexity of airport project &amp; participating airlines</td>
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<tr>
<td>• Lower than expected fuel sales at Lynden, WA station</td>
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<tr>
<td><strong>Budget</strong></td>
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<tr>
<td>• DOE share $15 M</td>
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<td>• Recipient share $22 M</td>
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<tr>
<td>• Total project $37 M</td>
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<tr>
<td><strong>Partners</strong></td>
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<tr>
<td>• Lead: Puget Sound Clean Air Agency</td>
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<tr>
<td>• Partners: 14 municipalities, 3 universities, 9 private businesses</td>
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Puget Sound Clean Cities Coalition
Petroleum Reduction Project - DE-EE0002020

Project Objectives:

- Reduce petroleum use in the Seattle-Puget Sound region through targeted deployment of alternative fuel vehicles and infrastructure
- Create a regional sustainable market for renewable alternative fuels with low lifecycle emissions
- Preserve and create 350 jobs nation-wide, and enhance our local economy
- Elevate public awareness of the Clean Cities program through an innovative outreach campaign designed to reach an audience of 30 million people per year.
Approach

**Education & Outreach**  
$450K
- Eco-Driver Training
- Innovative marketing project with Sea-Tac airport
- Biomethane & EV education and outreach

**Infrastructure**  
$4.4M
- 137 Level 2 EVSE (charging stations)
- One biodiesel and one ethanol fueling station
- One RNG/CNG fueling facility at dairy digester

**Vehicles**  
$9.2M
- 252 CNG & propane for taxi-shuttle fleet
- 223 OEM hybrids for universities and municipal fleets
- 500 EV ground support equipment for airline fleets
## Approach - Milestones

<table>
<thead>
<tr>
<th>Completed</th>
<th>Milestone</th>
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<tbody>
<tr>
<td>March 2010</td>
<td>100% NEPA Documentation for Vehicles Approved</td>
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<tr>
<td>September 2011</td>
<td>100% of Vehicles Ordered</td>
</tr>
<tr>
<td>May 2012</td>
<td>100% of Vehicles Deployed</td>
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<tr>
<td>May 2010</td>
<td>100% of Sub-Recipient Agreements Finalized</td>
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<tr>
<td>April 2011</td>
<td>100% of Cost-Share Partner Agreements Finalized</td>
</tr>
<tr>
<td>March 2011</td>
<td>100% of NEPA Documentation for Fueling Infrastructure Approved</td>
</tr>
<tr>
<td>October 2011</td>
<td>100% of NEPA Documentation for EV Infrastructure Approved</td>
</tr>
<tr>
<td>December 2011</td>
<td>100% of Fueling Infrastructure Complete and Dispensing</td>
</tr>
<tr>
<td>March 2012</td>
<td>100% of EV Charging Infrastructure Installed</td>
</tr>
<tr>
<td>May 2011</td>
<td>50% of Marketing/Outreach Conducted</td>
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<tr>
<td>April 2012</td>
<td>100% of Training/Workshops Completed</td>
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<tr>
<td><strong>Planned Completion</strong></td>
<td><strong>Milestone</strong></td>
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<tr>
<td>July 2012</td>
<td>100% of Marketing/Outreach Conducted</td>
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<tr>
<td>December 2012</td>
<td>100% of Airport eGSEs Ordered</td>
</tr>
<tr>
<td>December 2013</td>
<td>100% of Airport eGSEs Deployed</td>
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Approach – Address Barriers

• Negotiate eGSE contracts directly with airlines and re-negotiate go/no-go phased contract for charging infrastructure with Seattle-Tacoma International Airport
• Continue baggage claim video outreach work independently
• Focus CNG-RNG fueling station efforts on user fleet satisfaction and limit grant project scope to pipeline CNG fueling infrastructure
Technical Accomplishments

Vehicles Deployed
- 237 CNG vehicles retro-fitted and deployed
- 35 propane autogas vehicles deployed
- 146 light duty OEM HEVs deployed
- 51 medium/heavy-duty diesel hybrid vehicles deployed
- Vehicles displacing over 50,000 gallons of traditional petroleum per month

Fleet Experience
- Hybrid bucket trucks offer improved economy, operator safety, and neighborhood acceptance
- Residents enjoy the reduced pollution and noise from CNG refuse trucks
- Visibility of 200 taxis with Clean Cities logo raising awareness of program
**Technical Accomplishments (2)**

**Fueling Infrastructure**
- Biomethane-capable station operational
- 137 EV charging stations installed
- Biodiesel infrastructure operational
- E85 station operational
- 21,000+ GGE fuel dispensed (to Dec 2011)

**Experience**
- Close collaboration with EV Project & other grants led to successful infrastructure deployment approach
- Biomethane fueling station became CNG-RNG station to accommodate project delays
- Biodiesel fuel sourced from unique local economic development project

*Image: CNG fueling infrastructure at VanderHaak Dairy*
Economic Benefits

- $1,100,000 estimated fuel savings to date. Expected to grow significantly higher in 2012
- Over 50 direct contractors, vendors, & manufacturers used
- Sustained 8 direct jobs in 2011
- 2,500 hours of contract labor funded in 2011 (or 312 contractor days)
- New minority-owned company created as a result of the grant
- Local vehicle conversion company (WorldCNG) grew from 3 employees to 19
Marketing, Media & Outreach

Seattle-Tacoma International Airport:

- Educational video to play at baggage terminals and news screens throughout airport promoting the electrified ground support equipment project
- Clean Taxi way-finding & educational signage at airport
Outreach & Education

Electric Vehicles
- General consumer guide to dispel myths and promote electric vehicles
- Guide encourages use of our public access charging stations
- QR code at all public stations linked to website

Biomethane
- Washington State biomethane for transportation opportunity analysis
- Webinars and presentations to raise awareness

Driver Training
- 100 drivers enrolled in web-based green driver training
Project Partners

Sub-Recipients:
• City of Seattle
• Port of Seattle
• WorldCNG
• Western Washington University
• Snohomish County
• Washington State University

Vehicle Purchase & EVSE Cost-Share Partners:
• Cities of Bellevue, Everett, Issaquah, Kirkland, Mercer Island, Olympia, Renton, Sammamish, Seattle, Tacoma,
• University of Washington
• King County, Pierce County, and Snohomish County
• Bellair Airporter Shuttle, BYG Yellow Cab, MasterPark, MVP Parking, Shuttle Express, CNG for Hire, Eastside for Hire, Waste Management, CleanScapes
• Alaska Airlines
Project Partners
Future Work

- Deploy electric ground support equipment and supporting infrastructure at Sea-Tac Airport
- Report on annual fuel displacement for charging stations, fueling stations, vehicles and ground support equipment
- Complete marketing for clean taxi program, airport baggage claim video, and other grant project promotion
Project Summary

- Encourages adoption of alternative fuel and advanced technology vehicles in the Puget Sound region through the purchase of over 1000 pieces of equipment
- Offers millions of gallons of fuel displacement per year, with more expected via airport project
- Regional economic benefits will continue via fuel savings and new market development
- Created direct jobs such as CNG mechanics, and has maintained regional administrative, engineering, and trade jobs
- Gives unprecedented exposure to the US DOE Clean Cities program through targeted marketing at Sea-Tac Airport