

Clean Cities Now



Clean Cities Partners with National Parks to Cut Petroleum Use and Emissions

Overcoming obstacles to natural gas deployment

Alternative fuels in the Motor City

Calculating vehicle emissions and operating costs

Highways go electric in Oregon



U.S. Department of Energy

Welcome

Thank you for reading the latest edition of Clean Cities Now, the official newsletter of the U.S. Department of Energy's Clean Cities program. This biannual publication showcases program activities, accomplishments, and resources and celebrates the successes of Clean Cities' nearly 100 coalitions as they work to reduce petroleum use in transportation.

We hope you enjoy this issue. Let us know what you think at cleancities@nrel.gov.



Dennis A. Smith

Dennis A. Smith
National Clean Cities Director



Linda Bluestein

Linda Bluestein
National Clean Cities Co-Director

Photos (top) from DOE, NREL/PIX 17030; (bottom) by Trish Cozart, NREL/PIX 17004

Program Resources



The following resources are now available for use in education and outreach activities. Find them online at www.eere.energy.gov/cleancities/publications.html.

Clean Cities 2012 Vehicle Buyer's Guide:

The expanding availability of alternative fuels and advanced vehicles makes it easier than ever to reduce petroleum use, cut emissions, and save on fuel costs. This guide features a comprehensive list of vehicles hitting the market in model year 2012.



- Plug-In Electric Vehicle Handbook for Fleet Managers:** Successful deployment of plug-in vehicles (PEVs) and charging infrastructure requires specialized knowledge and skills. This handbook for fleet managers outlines the basics and discusses benefits, maintenance, charging-equipment installation, and fleet-specific considerations. In addition, Clean Cities recently published PEV handbooks for electrical contractors and charging-station hosts.
- Clean Cities—Building Partnerships to Reduce Petroleum Use in Transportation:** This new fact sheet provides an overview of Clean Cities, including its goals, strategies, accomplishments, coalitions, and information resources. The fact sheet contains a removable insert with contact information for coalitions and program staff.

In This Issue

Program Resources	2
Program News	3
Tool Tip	3
Fleet Experiences: National Grid.....	4
Coordinator Profile: Matt Sandstrom	5
Feature: National Parks Initiative Revs Up.....	6
Coalition News	8
Ask the Technical Response Service	11



Natural gas in the Northeast: p. 4



Alabama students go green: p. 10



Alt fuels in the Motor City: p. 5



National parks cut petroleum use: p. 6



Clean Cities Now is published biannually. View an electronic version at www.eere.energy.gov/cleancities/newsletter.html. To order print copies, go to www.eere.energy.gov/library.

Editor: Julie Sutor, National Renewable Energy Laboratory (NREL)
 Writers: Julie Sutor, Julia Thomas, and Ernie Tucker, NREL
 Design: Dean Armstrong, NREL

Cover photo from NPS

Program News

NGVTF Fosters Natural Gas RD&D

The Natural Gas Vehicle Technology Forum (NGVTF) — a collaboration between the California Energy Commission and the U.S. Department of Energy — supports the research, development, and deployment (RD&D) of commercially competitive natural gas engines, vehicles, and infrastructure. The program brings together a variety of stakeholders in the arena of natural gas vehicles.

More than 80 industry representatives, manufacturers, government officials, researchers, and other partners gathered in San Francisco for NGVTF's annual meeting in October 2011. The event gave attendees the opportunity to discuss and learn about recent develop-



ments in the industry, including the use of renewable natural gas from landfills, development of liquefied natural gas (LNG) fueling corridors, the impact of hydraulic fracturing on the marketplace, and the development of the ISX12 G natural gas engine from Cummins Westport, an 11.1-liter engine from Doosan Infracore, and a 13-liter engine from Emission Solutions Inc.

“NGVTF represents a unique space within the industry,” said John Gonzales of the National Renewable Energy

Laboratory. “People can throw out ideas, grapple with challenges, and brainstorm solutions for RD&D in an environment where those ideas can really gain traction. All the right folks are in the room.”

NGVTF will next meet in San Diego in mid-October. Agenda highlights include presentations and discussions about the operating constraints of LNG, end-of-life issues for compressed natural gas storage cylinders, and development of a low-pressure natural gas adsorption cylinder.

For more information, visit www.eere.energy.gov/cleancities/natural_gas_forum.html.



Tool Tip

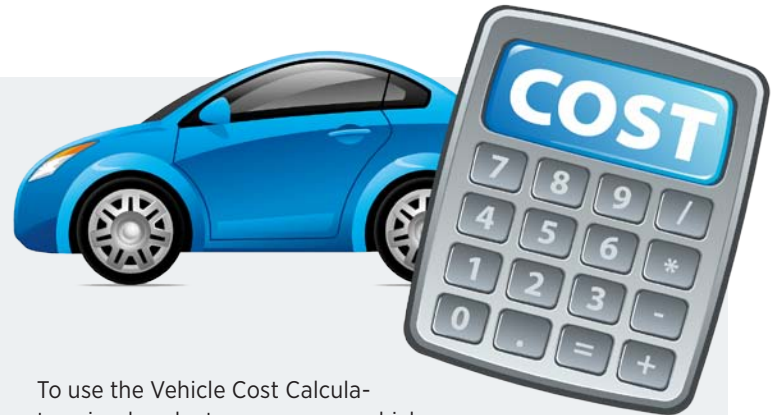
Clean Cities develops a wide variety of Web-based tools to help fleets, fuel providers, and consumers find ways to employ alternative fuels, advanced vehicles, and fuel economy improvements.

Vehicle Cost Calculator

Can a driver save money in the long run by purchasing a hybrid electric or natural gas vehicle? What are the life cycle emissions benefits of plug-in vehicles? What's the true cost of ownership for a flex-fuel vehicle?

The Alternative Fuels and Advanced Vehicles Data Center (AFDC) answers these questions and more with the Vehicle Cost Calculator, online at www.afdc.energy.gov/calculator. The calculator compares emissions and lifetime ownership costs of vehicles that run on conventional fuels, alternative fuels, and electricity. The easy-to-use site puts data at drivers' and fleet managers' fingertips, giving them a true picture of the long-term costs and benefits of the thousands of vehicle models now on the road.

“A vehicle's price tag is only part of its true ownership cost,” said the National Renewable Energy Laboratory's Witt Sparks. “The Vehicle Cost Calculator takes into account fuel costs, individual driving patterns, maintenance costs, the price of electricity, and other factors that determine how much you spend on a vehicle after it leaves the lot.”



To use the Vehicle Cost Calculator, simply select one or more vehicle models and enter a home ZIP code, commuting distance, and percentage of highway driving time. The tool then presents a side-by-side comparison of the selected models, displaying lifetime ownership costs, annual greenhouse gas (GHG) emissions, cost per mile, and other helpful data.

For all-electric vehicles and plug-in hybrids, the Vehicle Cost Calculator accounts for the fuels used to generate electricity in a given location to accurately predict GHG emissions. It also uses location-specific electricity prices to capture the differences in costs from one area to the next. The tool even allows users to include state and federal tax incentives and fleet discounts in the cost calculations.

“Whether you're trying to find the greenest ride or save the most money, the Vehicle Cost Calculator provides the necessary information at a level of detail never before available,” Sparks said. “The ability to customize data right down to a ZIP code and individual driving habits makes this tool really useful for fleet managers and drivers.”

Fleet Experiences



Leadership and Collaboration Drive Alternative Fuel Success at National Grid

Photo from National Grid, NREL/PIX 20256

National Grid established itself as a leader in the energy sector by delivering electricity and natural gas to more than 3 million customers in Massachusetts, New Hampshire, New York, and Rhode Island. But this utility company is also proving to be a leader in the alternative fuels arena through its investment in natural gas vehicles (NGVs).

National Grid's predecessor companies began using NGVs in their fleets in the 1970s, motivated by energy security, emissions reductions, cost savings, and other considerations. Since then, under the direction of Michael Randazzo, lead fleet engineer and alternative fuels lead, and Bill Hilbrunner, fleet director, the company's inventory of NGVs has grown to approximately 425 as of early 2012.

Currently, the company's fleet includes propane forklifts, hybrid electric vehicles, and all-electric vehicles (EVs) in addition to natural gas vans, sedans, dump trucks, and crew trucks.

National Grid's commitment to alternative fuels doesn't stop at the corporate level. The company also enables customers to adopt beneficial transportation alternatives by developing infrastructure for public use. Because National Grid sees fueling

infrastructure availability as a major barrier to alternative fuel vehicle (AFV) deployment, it has increased its focus on building public fueling sites throughout its service area. As of February 2012, National Grid operates 15 public-access compressed natural gas (CNG) fueling stations – three in Massachusetts, 10 in New York, and two in Rhode Island – and is also installing EV charging stations for public use across its service area.

Partnering for Success

Recognizing the importance of collaboration, National Grid established strategic partnerships to help carry out its NGV deployment and infrastructure development efforts. For example, the New York State Energy Research and Development Authority (NYSERDA) provided funding support through grants — including an American Recovery and Reinvestment Act award — to help build two CNG stations and purchase about 30 new AFVs. National Grid also has a strong working relationship with Clean Communities of Central New York (CCCNY) and most of the Clean Cities coalitions in its service area. These coalitions provide National Grid with technical and regulatory knowledge and experience, which helps when deploying AFVs and supporting infrastructure.

“Clean Cities has been instrumental in the successful development of many of National Grid's alternative transportation projects,” said John Gilbrook, National Grid's transportation project manager. “Coalitions act as catalysts when we attempt to get alternative fuel projects off the ground.”

National Grid also partners directly with customers to successfully deploy alternative fuel and advanced vehicles. For example, Onondaga County supported National Grid's investments in natural gas fueling and EV charging infrastructure by committing to purchase NGVs and EVs for its fleet and to use National Grid's fueling infrastructure. Central New York Regional Transportation Authority (Centro), another key partner, has also made a substantial commitment to CNG by investing in natural gas buses and using National Grid fueling infrastructure.

Overcoming Challenges

As it worked to expand its alternative fuels program, National Grid encountered several key challenges, including fueling infrastructure availability, vehicle incremental costs, and driver acceptance. National Grid overcame these challenges by building its own stations and seeking out government funding opportunities to assist with

the incremental costs of vehicles. To address resistance from vehicle operators, National Grid focused on training, promotion, and education for employees. Recognizing that driver acceptance is a community-wide issue, National Grid also increased its education efforts throughout the service area. In New York, for example, National Grid is working with CCCNY to give presentations touting the availability and benefits of NGVs and fueling infrastructure to the company's major commercial gas accounts.

Spreading the Word

National Grid is also using fueling station openings as opportunities to raise awareness and educate the community about alternative fuels. For example, National Grid used publicity for the fall 2011 opening of its Cicero, New York, CNG station — including emails, press releases, and billboards — to make drivers aware of the cost savings and environmental benefits of operating NGVs. At the station opening, BAF Technologies, Centro Bus Service, and Honda all displayed vehicles for stakeholders and guests to see.

“This collaboration between NYSER-DA, Clean Cities, and National Grid is a model of a public-private partnership working for New York State and the environment,” said Ed White, vice president of customer and business strategy at National Grid. “Projects such as this are exactly what National Grid is here to help make happen in Central New York and across New York State.”

Through many years of leadership, collaboration, learning, and commitment, National Grid's alternative fuels program has resulted in benefits that include emissions reductions, cost savings, and strategic partnerships. National Grid plans to continue adding both CNG and liquefied natural gas vehicles to its fleet. National Grid also continues to look into potential customer offerings that could lead to more natural gas fueling station construction in the future.

Coordinator Profile

Accelerating Deployment in the Motor City

As the nerve center of the American automotive industry, the Detroit area presents a unique set of opportunities and challenges when it comes to reducing petroleum use in transportation, according to Detroit Clean Cities Coordinator Matt Sandstrom. Challenges aside, there's no other place Sandstrom would rather be.



Matt Sandstrom, Detroit Clean Cities

“When I was being hired for this job, I remember thinking, ‘I would do this for free if you weren't going to pay me,’” Sandstrom said.

Sandstrom became acquainted with the transportation sector right out of college, working for Ford Motor Company as a fleet zone manager. He supported dozens of fleets and helped them troubleshoot all manner of operational issues, including in the deployment of alternative fuels. While assisting one fleet with its transition to electric vehicles, Sandstrom found himself wishing he could spend all his time on such projects.

Sandstrom obtained a master's degree in transportation management, and in 2010, he joined Clean Energy Coalition (CEC), the Michigan-based nonprofit that houses the Detroit Clean Cities program. “I wanted to find a way to leverage my automotive experience in the arena of economic development. CEC is a really exciting place for me, because it's right at the intersection of community improvement, vehicle technologies, and transportation policy,” Sandstrom said.

As the Division Manager of CEC's Mobility Team, Sandstrom and five other staff members are managing close to 10 projects that cover the full gamut of Clean Cities fuels and technologies. Among them is a project that has led to the installation of five E85 stations and nine dispensers throughout Michigan. The new fueling infrastructure will displace an estimated 800,000 gallons of gasoline annually. Sandstrom's team helped identify “sweet spots” with high densities of flex-fuel vehicles, convenient fueling locations, and proximity to feedstocks and biorefineries.

“Michigan has been hit pretty hard by the tough economy, so we had to find very engaged, professional station owners who were willing to take a risk. I ended up establishing a good relationship with the former chair of the state's petroleum marketing association, who is not only taking on a few stations, but is also helping to spread the word through his own channels,” Sandstrom said.

Electric vehicle deployment is also high on CEC's agenda. In the fall of 2011, DOE selected the organization to work with a coalition of more than 40 regional partners to create a community-based readiness plan for charging infrastructure. Through the project, dubbed Plug-In Ready Michigan, stakeholders are developing a prioritized list of community infrastructure planning steps, defining site-selection criteria, and identifying economic and workforce development opportunities.

“We're doing something really special here, in the backyard of the automakers. Both the communities and the manufacturers have a vested interest in making sure this technology rolls out smoothly,” Sandstrom said.

Sandstrom's expertise and dedication play a big part in the coalition's achievements, but he's quick to credit those who join him in the trenches. “It's a real team effort here,” Sandstrom said. “Our staff and stakeholders are very collaborative, there are a lot of us working toward the same goals, and I'm proud to be part of it.”

Feature

National Parks Initiative Revs Up

Teddy Roosevelt, a national parks visionary with notoriously poor eyesight, knew that protecting America's pristine wonders for future generations was vital. However, the old Rough Rider couldn't have foreseen the popularity of this legacy—or how many drivers these treasures would draw.

Today, some 275 million visitors make pilgrimages to nearly 400 national parks each year. In Yellowstone Park alone, 1 million cars bring 3.6 million geyser-spotters and wildlife-watchers during the original national park's six-month season. Such volume impacts the air quality and overall experience, acting like smudges on Teddy's spectacles. But the recently launched U.S. Department of Energy (DOE) Clean Cities National Parks Initiative is helping to refresh Roosevelt's open-spaces concept.

Building on previous Clean Cities and National Park Service (NPS) collaborations, DOE and the U.S. Department of the Interior's NPS signed a five-year interagency agreement in 2010 to create the initiative. The initiative complements the NPS Climate Friendly Parks program, and enables the partnership to support transportation-related projects that use renewable and alternative fuels, electric-drive and advanced vehicles, and other fuel-saving measures. The agreement allows up to \$5 million each year to be used for demonstration

projects that educate park visitors on the benefits of reducing dependence on petroleum, cutting greenhouse gases, and helping NPS ease traffic congestion.

In a move that would have elicited a loud "bully!" from Roosevelt, the Clean Cities National Parks Initiative selected Mammoth Cave, Grand Teton, and Yellowstone national parks as pilots in 2010. "With our high visitation, Mammoth Cave is a perfect place for a demonstration project like this," said Park Superintendent Patrick Reed of his Kentucky site.

Each site provided a unique opportunity. Mammoth Cave already had a strong alternative fuel vehicle fleet, running on propane, ethanol, electricity, and biodiesel, as well as a destination site served by buses. Yellowstone, once home to the nation's second-largest bus fleet on its 480 miles of road, is emblematic of the nation's diverse natural heritage. Now the iconic destination has to manage a surge of visitors whose sheer numbers can intensify wildlife traffic jams caused by elk, bison, and bear sightings. And Grand Teton, blessed with irresistibly rugged scenery, shares an ecosystem and congestion with its neighbor.

The pilot projects, now under way, employ a variety of strategies:

- Mammoth is replacing four aging propane buses (three 1990 models and a 1977 vintage survivor) with

Yellowstone National Park draws more than 3 million visitors each year (top).

Photo from NPS

Mammoth Cave National Park recently received four new propane buses. Each year, about 175,000 visitors ride park buses as part of their cave tours (left). *Photo from Mammoth Cave National Park*



new ones, two bi-fuel pickup trucks with two dedicated propane pickups, and one gasoline-powered golf cart with a new electric GEM vehicle.

- Grand Teton, using its portion of the Greater Yellowstone Area (GYA) award, is supplanting five older, less-efficient vehicles used by the park's Wildlife Brigade with new 2011 Ford Escape hybrids.
- Yellowstone, applying its share of the GYA funds, is deploying three hybrid electric vehicles, and four low-speed electric utility vehicles with capacity to plug into a photovoltaic system. One hybrid is a 36-passenger B20 biodiesel bus that will conduct VIP tours and shuttle employees.
- Yellowstone and Grand Teton are implementing idle-reduction efforts. Both parks will install idle-reduction units on law enforcement vehicles and will educate the public by distributing outreach materials and posting signage that discourages idling.

Additionally, rangers and interpreters are being trained to educate visitors about all these efforts, and interpretive displays will reinforce their message.

"If you arrive in a hybrid, it's a unique outreach opportunity. And when the grizzly walks away, you can start answering questions about the car," said Yellowstone-Teton Clean Energy Coalition Executive Director Phillip Cameron. "Generally speaking, people think it's a great idea."

Mammoth provides a different kind of showcase because of its massive cave. Each year, about 175,000 visitors ride a bus as part of their cave tour, arriving at one location and walking three to four miles underground before exiting at another spot. On a busy summer day, each bus travels more than 400 miles within the park. Using propane buses reduces emissions and the park's petroleum use, and it gives interpreters time to discuss the alternative fuel efforts during the 15-minute trip.

See "Parks" on p. 12 >

Yellowstone Pioneer Builds on Clean Cities Foundation

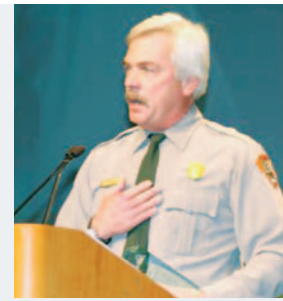
Jim Evanoff, Yellowstone's Environmental Specialist, has seen a change among park visitors during the course of his 23 years at the national park.

"There's been a huge, huge shift in the public awareness of sustainability opportunities," he said. "Back in the 1990s, people didn't care about alternative fuels, renewables, or recycling." Now, park guests "ask pointed questions about it every day—and about what we're doing," he said, which is key because "the national parks are barometers of how the country feels about sustainability."

The 32-year NPS veteran isn't inclined to brag, but it's clear his efforts have had an impact. Evanoff became concerned about air quality in the Yellowstone-Grand Teton area years ago. And the concept of using alternative fuels like biodiesel and ethanol in park vehicles intrigued him. He took part in some early experiments with those options, as well as exploration of technologies such as fuel cells.

Evanoff learned of DOE's Clean Cities program, with its target of reducing petroleum use. The only hitch was the "cities" concept, which sounded out of place in the wilderness. "Otherwise, we fit all their criteria," he said. Yet with around 1 million cars rolling into the park yearly, even a majestic expanse can have an urban feel, especially during a "wildlife jam" as gawkers pull over to witness critters.

In 1997, Evanoff began a series of meetings with Clean Cities officials and stakeholders



Yellowstone Environmental Specialist Jim Evanoff. *Photo from NPS*

from the surrounding 14-million-acre area. His vision paid off in 2002, when more than 90 stakeholders signed on as part of a Yellowstone-based Clean Cities coalition—the first national park to take such a step.

Through the years, he continued to further the cause, and in the process, drove the talk — logging more than 100,000 miles in his pickup truck using B100. Evanoff also encouraged education and outreach, enabling the park's nature interpreters to talk about their hybrid vehicles or idle reduction as ways to cut petroleum use and greenhouse gas emissions. In 2009, he helped revive Clean Cities work in Yellowstone as part of the Yellowstone-Teton Clean Energy Coalition. Through that group, the park became involved in the Clean Cities National Parks Initiative.

"Our mission is to protect the parks. This advances environmental stewardship," he said, adding that it could also encourage other parks to participate with DOE. Evanoff expects to retire in May, but he won't stop working. Just as he believes his beloved 139-year-old Yellowstone will prosper in the face of increased demands, the environmental pioneer wants to ensure that other parks fulfill their missions of inspiring and educating visitors for generations to come. "I'll stay active," he said.



Hybrids in Grand Teton's Wildlife Brigade spark conversations about emissions and fuel efficiency.

Photo from NPS, NREL/PIX 20653

Coalition News



WEST REGION

Richard Steinhaus,
Long Beach
Clean Cities

LNG Drayage Trucks Help Clear the Air in Southern California

When the South Coast Air Quality Management District (SCAQMD) wanted to improve air quality around the ports of Los Angeles and Long Beach, it looked to Clean Cities for help. In partnership with a variety of Clean Cities coalitions in Southern California, SCAQMD secured \$9.4 mil-

lion in Recovery Act funding to cover the incremental costs associated with replacing 180 diesel drayage trucks with new liquefied natural gas (LNG) trucks and to perform related outreach and education activities. Drayage trucks are used for hauling goods from the two heavily trafficked ports to regional distribution centers across Southern California.

“This was truly an example of Clean Cities coalitions working together to make a difference. From email blasts and social media postings to educational kiosks and outreach events, we worked in unison to educate folks in the goods-movement industry about the benefits of alternative fuel vehicles,”

continued on p. 9 >



LNG drayage trucks at the ports of Los Angeles and Long Beach are expected to save about 1.5 million gallons of petroleum per year. Photo from Long Beach Clean Cities



NORTHEAST REGION

David Keefe, Genesee Region Clean Communities

Monroe County Vehicles Get Their Fill of Alternative Fuels

Business is always booming at the Green Alternative Fueling Station on Scottsville Road in Rochester, New York. Monroe County's entire 1,100-vehicle fleet fills up

there, as do vehicles in other public fleets. Business is so good, in fact, that the county is adding a second station near Lake Ontario, and the city is building its first station.

Opened in 2008, the station on Scottsville Road dispenses a variety of fuels—B20, E20, E85, compressed natural gas, propane, and hydrogen—for vehicles used by the sheriff's department, public works, the airport, and others.

“County leaders dedicated to environmental stewardship created an ambitious vision for greening the fleet, and then they developed effective strategies for implementing it,” said David Keefe, coordinator of Genesee Region Clean Communities (GRCC). “Now we are all enjoying the benefits—improved air quality, reduced use of imported oil, and great PR.”

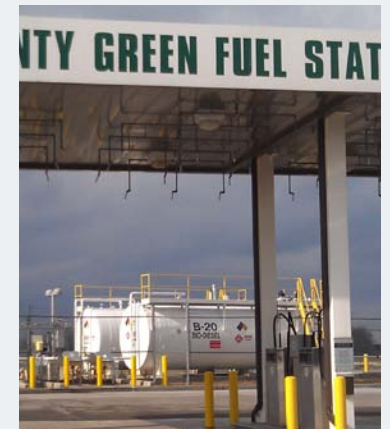
The county and city leveraged a variety of funding sources to launch these stations and to fund various upgrades. Major funding was awarded from the Recovery Act, the Voluntary Airport Low Emissions Program, the Congestion Mitigation and Air Quality Improvement Program, and the New York State Research and Development Authority. Key partner organizations include the Rochester Institute of Technology, the General Motors Fuel Cell

Research and Development Center, and GRCC.

The county's accomplishments have not gone unnoticed. Among its mounting collection of awards are several from Government Fleet magazine, which bases its selections on fleet composition and utilization, fuel usage and emissions, future planning, and education and support programs.

“We were very proud to receive the Green Government Fleet Award in 2011; we ranked as the second-best government green fleet in North America,” said Monroe County Fleet Manager Melvin Rose. “And in 2009 and 2010, we were recognized as one of the nation's 100 best fleets.”

“We've faced a few hurdles along the way—meeting strict grant-writing deadlines was our toughest challenge—but all that hard work is paying off now,” Rose added. “We've successfully reduced our carbon footprint, and the widely fluctuating price of oil doesn't impact our bottom line.”



Monroe County's alternative fueling station dispenses biodiesel, ethanol, natural gas, propane, and hydrogen.

Photo from GRCC

said Richard Steinhaus, administrative analyst for the City of Long Beach and coordinator of the Long Beach Clean Cities coalition. “And now we’re all reaping the benefits—the drayage truck project is expected to displace about 1.5 million gallons of petroleum and reduce greenhouse gas emissions by 336,013 pounds a year.”

Long Beach Clean Cities was tasked with reaching out to and educating fleet owners, managers, drivers, and prospective new technicians. To achieve these goals, the coalition joined forces with one of its stakeholders, Long Beach City College’s Advanced Transportation Technology Center, and consultant Gladstein, Neandross, and Associates, to host an event in February for the goods-movement industry. More than 50 people attended the event, which included presentations on LNG truck equipment, maintenance, and training; LNG fueling stations; regulatory updates affecting trucks; and funding assistance. An open house featured a variety of organizations offering funding and educational resources related to LNG trucks, as well as companies in the fueling infrastructure and vehicle manufacturing business.

“Effective education and outreach is expensive,” added Steinhaus. “While the Internet offers an endless amount of information about natural gas vehicles, nothing compares to the educational experience of in-person events in terms of penetrating barriers, establishing effective relationships, and relaying the message about the benefits of alternative fuels.”

Long Beach Clean Cities also leveraged the established workforce-development processes at the local Pacific Gateway Workforce Investment Network to bolster the LNG technician pool for maintaining the new vehicles. As a result, 24 students enrolled in technician classes at the Advanced Transportation Technology Center, which offers classes in LNG truck maintenance and other alternative fuel and advanced transportation technology topics.



SOUTH CENTRAL REGION

Meredith Webber, Tulsa Clean Cities Coalition

Tulsa Tech Prepares Students for Alt-Fuel Job Opportunities

Tulsa Tech helps high school and adult students in northeastern Oklahoma acquire the knowledge and technical skills they need to succeed in the workplace. And in the automotive arena, this forward-thinking educational institution is making sure its students wind up ahead of the curve by introducing them to alternative fuels and advanced vehicles.

Tulsa Tech, a Tulsa Clean Cities Coalition (TCCC) stakeholder, began offering a program in alternative fuels technologies within its Transportation, Distribution, and Logistics career cluster in the fall of 2011. The program trains students on the full gamut of fuels and technologies, including gaseous fuels, biofuels, idle reduction, and electric-drive vehicles. Classes take place in a brand-new, state-of-the-art facility at the school’s Broken Arrow campus. The students learn to service the vehicles and to use a dynamometer to test and compare power output, emissions, torque, and performance.

“It’s been really motivating for the students,” TCCC Coordinator Meredith Webber said. “Not only can they become proficient in vehicle maintenance, but they can also gain skills and certifications in these specialties that provide an advantage out in the job market.”

Tulsa is a regional hub for the trucking industry, and companies that do business in the area are showing increasing interest in compressed natural gas (CNG) and idle reduction. Tulsa’s transit agency has 14 CNG buses, and it plans to run its entire fleet of about 90 transit vehicles on the clean-burning fuel by 2018. It all adds up to big career opportunities for alternative fuel service technicians.

“Due to the geopolitical nature of energy and the environment, the importance of alternative fuel sources has become more evident since the program’s inception and will drive its future growth,” Tulsa Tech Transportation Program Coordinator Leo Van Delft said.

So far, more than 70 students have taken classes through the program, which features 16 short-term and semester-long courses, including Hybrid Batteries and Battery Service, CNG Conversion/Installation, Liquefied Petroleum Gas Maintenance, and Regenerative Braking.

“After performing market research, we felt confident that there was a need to serve the state and local community by offering training in these emerging technologies,” Van Delft said.



Tulsa Tech is giving students the skills and knowledge to service alternative fuel vehicles, like this natural gas transit bus. *Photo from Tulsa Tech, NREL/PIX 20657*



SOUTHEAST REGION

Mark Bentley, Alabama Clean Fuels Coalition

Biodiesel Fuels Education in Alabama

Biodiesel is getting lots of mileage in Talladega, Alabama, and beyond, thanks to students at the Alabama Institute for Deaf and Blind (AIDB). Through AIDB's

Project Green, students are producing biodiesel from waste vegetable oil, and they're spreading the word about alternative fuels in the process.

Project Green has received funding from a number of local, state, and federal sources, including \$300,000 from the U.S. Department of Energy, which helped with production-site renovation, acquisition of biodiesel production equipment, and training. Fuel production began at the new site in April 2011. In less than a year, AIDB students produced 1,200 gallons of biodiesel. The fuel is used in lawn equipment, maintenance trucks, and other school vehicles. Eventually, officials expect production to reach the facility's full capacity of 55 gallons per day.

"As Alabama native Helen Keller once said, 'No one has the right to consume happiness without producing it,'" AIDB President Dr. Terry Graham said. "The same can be said of energy."

Project Green has substantial educational benefits. AIDB students participate in all aspects of the project, including identifying sources of waste vegetable oil and collecting it from restaurants, schools, businesses, and community drop-off sites. The biodiesel production process reinforces classroom concepts related to chemistry and math.



AIDB student Rodriques Wilson processes waste vegetable oil into biodiesel. Wilson forged relationships with two local restaurants that provide used oil to Project Green, and he helps with the collection process. *Photo from AIDB, NREL/PIX 20656*

As part of AIDB work experience programs, students conduct facility tours to local school groups, give presentations to civic groups, and contribute to public awareness campaigns. The facility is open for tours to schools throughout Alabama. In advance of a tour by a visiting school, AIDB sends biodiesel-related instructional material aligned with the state's science and math curriculum for the appropriate grade level, and visiting students collect their own used cooking oil. At the onset of the tour, they empty their jugs into AIDB collection bins, and then observe the entire biodiesel production process from start to finish. Close to 400 students have toured the facility, and overall, the outreach components of Project Green have reached an estimated 10,000 people.

Alabama Clean Fuels Coalition helps with Project Green's outreach efforts and provides technical and research assistance.



WESTERN REGION

Rick Wallace

Columbia-Willamette Clean Cities

Oregon Celebrates 200 Miles of Electric Highways

Electric vehicle drivers in the Pacific Northwest can now feel free to travel the open road in Oregon. Stakeholders from the Columbia-Willamette Clean Cities Coalition recently completed the installation of 10 electric vehicle (EV) charging stations along more than 200 miles of Interstate 5. Each of the 10 locations offers DC fast charging and

Level 2 charging, making the stations usable by all plug-in vehicles now on the market.

The new "electric highway" stretches from Ashland, near the state's southern border, to Halsey, just 85 miles south of Portland. The project complements the concurrent deployment of EV charging infrastructure from Portland to Eugene.

"Some of the areas along this route aren't very populated, and they may not have the electric-vehicle density Portland does," Columbia-Willamette Clean Cities Coordinator Rick Wallace said. "But these stations will help create a corridor that, by the end of 2012, will enable drivers to travel from Vancouver, British Columbia, to the Oregon-California border."

The project was funded by a \$915,000 Recovery Act award to the Oregon Department of Transportation through the Oregon Department of Energy, where Wallace serves as a senior policy analyst. Project leaders are in communication with their counterparts in Washington, British Columbia, and California to learn from one another's experiences and identify opportunities for collaboration on technical matters and outreach.

"Washington State is a key partner of ours. Our equipment is from the same manufacturer, we built the logo together, and it's all going to look uniform to the driver," Wallace said.

Critical to the project's success was finding appropriate sites and taking

See "Electric Highways" on p. 12 >



MID-ATLANTIC AND GREAT LAKES REGION

Kellie Walsh
Greater Indiana
Clean Cities
Coalition

Alternative Fuels Save Money in Indy

The City of Indianapolis is using alternative fuels and advanced vehicles to save taxpayer dollars, lower emissions, and bolster energy security. The city's Department of Public Works (DPW) and Office of Sustainability recently joined with the Greater Indiana Clean Cities Coalition (GICCC) to detail a host of fleet-efficiency measures.

In December, the city received the final vehicle in a \$1.75 million project to retrofit eight DPW Ford F-150 trucks with dedicated propane systems, convert 11 sheriff's department prisoner transport vans to bi-fuel propane systems, and purchase 25 Ford Fusion hybrids. The project was made possible with \$1.43 million in city funding and \$318,000 in Recovery Act funds. The propane conversions were performed through Pearson Ford, a GICCC stakeholder.

"DPW loves the trucks, and the Sheriff's Department is realizing the positive impact of lower fuel costs on its pocketbook right now," GICCC Executive Director Kellie Walsh said.

Estimated lifetime savings from fuel costs and reduced maintenance from the propane conversions will total \$15,000 per truck. Fuel savings from the hybrids will also be substantial: The Fusions, which average 30 miles per gallon, replaced Crown Victorias, which averaged 20 miles per gallon. The city is also realizing savings from three propane mowers, funded separately from the Recovery Act project.

"The improvements we are making to the city's fleet and the savings involved illustrate our commitment to creating a more sustainable, livable community," Indianapolis Mayor Greg Ballard said.

Ask the Technical Response Service

Do you have questions about alternative fuels, fuel economy measures, or advanced vehicles? The Clean Cities Technical Response Service (TRS) will help you find answers. For more information about the topics in this column or anything in the Clean Cities portfolio, e-mail technicalresponse@icfi.com, or call 800-254-6735.



Q: What is the status of federal tax credits for alternative fuels and vehicles, and where can I find more information about available incentives?

A: The end of 2011 signaled the expiration of many tax credits related to alternative fuel production and use, vehicle purchases, and alternative fuel distribution. Eligible individuals and organizations may still claim these credits until the federal tax filing deadline but only for qualified purchases, production, or installations that occurred on or before Dec. 31, 2011. Consult a tax professional for guidance.

The federal alternative fuel and vehicle tax credits that expired include those involving:

- Fueling infrastructure development for natural gas, propane, electricity, E85, and biodiesel blends of at least 20%
- Excise tax on alternative fuel and alternative fuel mixtures or blends, including biodiesel, ethanol, compressed natural gas, and propane
- Qualified ethanol and agri-biodiesel production
- Plug-in electric vehicle conversions and the purchase of low-speed electric vehicles, electric motorcycles, and three-wheeled electric vehicles.

Several federal tax credits that apply to alternative fuels and vehicles are still available, such as credits for:

- Plug-in electric vehicles
- Fuel cell motor vehicles
- Hydrogen fueling infrastructure

- Hydrogen fuel
- Cellulosic biofuel production.

For full descriptions of these tax credits, including information about qualifying purchases, sales, and uses, see the Alternative Fuels and Advanced Vehicles Data Center's (AFDC) Federal Incentives and Laws page at www.afdc.energy.gov/afdc/laws/fed_summary. Should any expired credits be reinstated or extended, the site will be updated to reflect these changes. Also see the Internal Revenue Service website at www.irs.gov for related forms, instructions, and more.

Federal tax credits aren't the only incentives out there. Grants, rebates, vouchers, loans, and exemptions are just a few options that can help defray costs related to vehicles, infrastructure, and alternative fuels. There are also incentives that don't directly translate to dollars but can help encourage alternative fuel use and vehicle purchases, such as high occupancy vehicle lane access and recognition programs. These perks are available at the state and federal levels, in addition to others that utilities, private companies, and nonprofit organizations may offer. Refer to the AFDC's State and Federal Incentives and Laws section www.afdc.energy.gov/afdc/laws/ for more information.



> **Electric Highways, from p. 10**

the time to identify enthusiastic property owners. Requirements for the sites included the ability to be open at least 17 hours per day, proximity to electrical power lines, sufficient parking space, and restroom availability. The site hosts represent a wide variety of property owners, including cities, state agencies, gas station owners, a lodging business, restaurants, and state parks.

“Getting all the host-site agreements in place has taken some time, partly because of the diversity of needs among the property owners,” said Ashley Horvat, project manager for the Oregon Department of Transportation. “But it’s been great working with all of them—they’re very excited.”



Workers install charging equipment in Grants Pass, Oregon. *Photo from ODOT Photo and Video Services, NREL/PIX 20643*



Scenic shorelines at Golden Gate National Recreation Area will serve as breathtaking backdrops for electric vehicle deployment. The park attracts about 14 million visitors per year. *Photo from NPS*

> **Parks, from p. 7**

The Clean Cities National Parks Initiative team selected five more project locations for fiscal year 2011:

- Blue Ridge Parkway will acquire four Ford Escape hybrids; four GM hybrid pick-ups will replace less-efficient vehicles dating back to model year 1989.
- Golden Gate National Recreation Area will switch from higher-emission vehicles to five new Nissan Leaf electric vehicles (EVs); install five 220-volt (V) EV chargers with data collection capability; and implement a biodiesel project for heavy-duty vehicles.
- Mesa Verde National Park will install two propane fueling stations and will eliminate inefficient vehicles that have racked up nearly 400,000 miles, replacing them with propane-powered vehicles, including a 77-passenger bus, a 15-person shuttle van, a truck, and a mower.
- San Antonio Missions National Historic Park will purchase one propane pickup truck to replace a 2001 gas

model; one EV utility truck to take the place of an outmoded 1998 truck; and two 220-V chargers with data collection.

- Shenandoah National Park will acquire a Chevy Volt PHEV; a Nissan Leaf EV; 12 propane lawn mowers to replace existing gas models; and three 220-V chargers.

“We’ve been talking about electric vehicles, so this is a big deal for our park,” said Laura Castellini, Golden Gate’s sustainability coordinator. For the massive park, which attracts some 14 million visitors a year, the incorporation of EVs into its 172-vehicle fleet will prove the park is “driving” the talk.

Likewise, Allan Loy, the NPS project manager for Mesa Verde, said the improvements will help turn the fleet “a slightly darker shade of green” on the site where the Ancestral Puebloans made their homes from A.D. 600 to 1300.

And that’s an outcome Teddy — and other park advocates — would approve of.