

Clean Cities Now

Creating Synergy:
Coming together to solve
the deployment puzzle



Inside:

CNG Fuels Business' Profits in Indianapolis

Seattle Embraces All-Electric Commuter Vans

Vans in Kansas City Keep Rolling with Propane



U.S. Department of Energy

Welcome

We hope you enjoy this 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 highlights the successes of Clean Cities' nearly 100 coalitions as they work to reduce petroleum use in transportation.

We appreciate hearing comments from readers. 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 17030; (bottom) by Trish Cozart, NREL 17004



Photo from UPS

On March 5, 2014, UPS announced plans to purchase 1,000 propane-powered package delivery trucks (see above) and install an initial 50 propane fueling stations at UPS locations. The propane fleet will replace gasoline- and diesel-fueled vehicles used largely in rural areas of Louisiana and Oklahoma, with other states pending. The Freightliner Custom Chassis built for UPS uses a GM engine. The propane fuel system was supplied by CleanFuel USA. Development of the engine, fuel platform, and chassis was made possible through cooperation between these companies and the Propane Education & Research Council. UPS is a founding member of Clean Cities' National Clean Fleets Partnership.

In This Issue

Program News: Interns Boost Coalitions' Success . . . 3
 Fleet Experiences: Chicago Uses E85 to Cut Petroleum Use 4
 Feature: Stakeholder Forum Solves Deployment Puzzles 6
 Coordinator Profile: Wendy Lucht of Ocean State Clean Cities Coalition 8
 Coalition News 9
 Ask the Technical Response Service: Cut Fuel Use Through Driver Behavior 11
 Program Resources 12

Propane Vans Keep Rolling in KC: p. 10



CNG Use Grows in Indiana: p. 9



EV and Commuters a Match in Washington: p. 10



Idaho National Lab Introduces Dual-Fuel Buses: p. 9



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

Editors: Kathryn Ruckman, Julie Sutor, National Renewable Energy Laboratory (NREL)
 Writers: Kathryn Ruckman, Julie Sutor, Julia Thomas, Ernie Tucker, NREL
 Designer: Dean Armstrong, NREL

Cover photos (clockwise from top left): UPS; General Motors; iStock 7287248; Kwik Trip Inc, NREL 28496; Ford Motor Company; iStock 24165343. Table of contents photos (clockwise from top right) from Jessie Lin, Washington State Dept. of Transportation, NREL 29160; Idaho National Laboratory, NREL 29547; Kris Klyer, NREL 29104; Kansas City Propane Photo, NREL 29549

Award Winners

Across the country, Clean Cities is attracting attention for its success in the deployment of alternative fuels and advanced vehicles. Below is a sampling of honors and accolades received recently by Clean Cities and its coalitions.

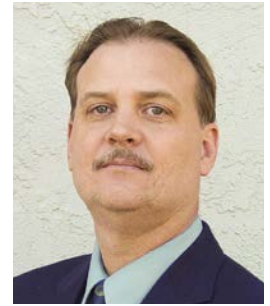
The Northeast Diesel Collaborative, an initiative to reduce diesel emissions in the eight northeastern states, honored **New Jersey Clean Cities Coalition (NJCCC)** with its Breathe Easy Leadership Award in September 2013. The collaborative recognized NJCCC for its successful projects and outreach campaigns. NJCCC's work has led to the expansion of alternative fuel infrastructure throughout New Jersey and the displacement of millions of gallons of petroleum.



Chuck Feinberg,
New Jersey Clean Cities
Coalition

The Automotive Training Managers Council recognized the National Alternative Fuels Training Consortium (naftc.wvu.edu) with a 2013 National Excellence in Training Award for the **Clean Cities Learning Program**. The program, developed under a project award from the U.S. Department of Energy (DOE), offers a state-of-the-art curriculum and training materials related to technologies that reduce petroleum use.

Government Fleet magazine named **East Bay Clean Cities Coordinator Richard Battersby** its Fleet Manager of the Year in June 2013. Battersby directs fleet services at the University of California, Davis.



Richard Battersby,
East Bay Clean Cities

See "Award Winners" on p. 12 >

Program News

University Students Make Valuable Contributions for Coalitions

The Clean Cities University Workforce Development Program (CCUWDP) connects Clean Cities coalitions across the country with college students interested in changing the future of on-road transportation. In addition to serving as a pathway to careers in energy for the students, CCUWDP has become an invaluable asset to coalitions, helping them to reach their goals and tackle new projects.

"A lot of our success and growth has been due to our interns' reaching out to stakeholders," said Carl Lisek, coordinator for South Shore Clean Cities. "They've helped us achieve significant decreases in petroleum use in our region."

Since the program's inception in 2010, CCUWDP has coordinated more than 350 internships. Several recent successes demonstrate the value of the program. Here are two examples:

- In October, Northern Colorado Clean Cities intern Robert Morrison was awarded the 2013 Colorado Mountain College Clean Energy Innovation Student Award. Morrison said his participation in CCUWDP helped him understand the importance of public-private partnerships in sustainability work.
- In 2011, Cornell University student Michelle McCutcheon-Schour interned for the Vermont Clean Cities Coalition. She worked on a variety of projects, including a video on bio-

Students in the Clean Cities University Workforce Development Program (CCUWDP), such as Courtney Blankenheim with the Twin Cities Clean Cities Coalition, have been instrumental in the success of public education and outreach events. *Photo from Amanda McAlpin, Clean Cities University Workforce Development Program, NREL 29763*



diesel production and fleet manager meetings throughout the state. After graduating, McCutcheon-Schour stayed with the coalition and took the helm as coordinator in 2013. She now leads vehicle electrification projects and serves as a mentor to new interns.

To date, more than a dozen student interns have gone on to work full time at Clean Cities coalitions after graduating. Many others have taken related jobs in the auto industry and now serve as valuable private-sector partners.

The program's spring 2014 term is in full swing, and CCUWDP students are organizing events, developing website content, managing social media accounts, analyzing data, and assisting with campaigns and educational workshops. Coalitions are already looking ahead to the summer term of CCUWDP, which will employ students beginning in late May.

For more information on CCUWDP, visit eere.energy.gov/cleancities/toolbox/internship_program.html or contact CCUWDP Coordinator Amanda McAlpin at amcalpin@anl.gov.

Fleet Experiences



The City of Chicago's police fleet includes several hundred E85-capable FFVs, such as this Chevrolet Tahoe. *Photo from Walter S. Mitchell, courtesy of the City of Chicago, NREL 29548*

City of Chicago Program Encourages Petroleum Displacement and Collaboration Between Departments

Successfully transitioning a fleet to alternative fuels requires investment in fueling infrastructure and a strong commitment to modifying driver behavior. Motivated by energy security, economics, and emissions reduction goals, the City of Chicago fleet began its journey by acquiring E85 flexible fuel vehicles (FFVs) in 1995. Today, it has more than 1,860 light-duty FFVs in law enforcement and municipal applications. The fleet displaces about 1.2 million gallons of gasoline per year through the use of E85, making the City of Chicago the largest user of E85 in the Chicago metropolitan area.

Planning for Infrastructure Expansion

Fleet drivers expressed a genuine interest in E85 after the initial FFV roll-out. But with only six E85 fueling stations available to support more than 1,000 FFVs, the city quickly realized the need for E85 infrastructure expansion. Initially, the city lacked the funds to support such a project, but officials worked with the Chicago Area Clean Cities (CACC) to develop project goals, cost estimates, and timelines. Being prepared with these plans allowed the

city to take advantage of a funding opportunity when it arose.

In 2009, CACC submitted a proposal for American Recovery and Reinvestment Act (ARRA) funding, including the city in the larger Chicago Area Alternative Fuels Deployment Program. The E85 infrastructure project secured approximately \$700,000, half funded by ARRA through DOE and the remainder matched by the city. By expanding the city's private E85 fueling infrastructure to a total of 11 stations, the Chicago Department of Fleet and

Facility Management and the Chicago Department of Environment determined the city could achieve an 11-fold increase in E85 use by 2011.

Ensuring Success through Innovative Policy

With funding secured and planning complete, the city broke ground at five new E85 fueling sites in January 2010 and completed all work by March 2012. During this time, the city expanded the number of FFVs in its fleet to more than 1,500 vehicles.



To maximize petroleum displacement, the city developed a “lockout” policy for its FFVs: Using the existing fuel management system, the fleet requires all city FFVs to fuel with E85 when at city fueling stations. Drivers enter vehicle identification numbers at the city’s fueling kiosks, and the fuel management system directs FFV drivers to proceed to E85 dispensers.

tough part is the infrastructure. After that, the key is to keep an eye on the price and make sure it continues to be economically practical,” said Samantha Bingham, CACC coordinator and environmental policy analyst at the Chicago Department of Transportation. The city had to find the right balance between environmental and financial sustainability. So it enacted

Feedback from fleet drivers prompted the city to seek ways to expand its E85 fueling options.

Balancing Environmental and Financial Goals

E85 consumption skyrocketed after the lockout policy was implemented, hitting approximately 600,000 gasoline gallon equivalents (GGEs) in the second quarter of 2012. The city was pleased with the policy’s effectiveness, but challenges began to arise when E85 became significantly more expensive than gasoline on a GGE basis. “It’s easy to get the vehicles. The

a strategic plan to remove the blanket lockout policy and instead base its E85 fueling requirements on daily price differentials between gasoline and E85.

Under the new plan, the Chicago Department of Fleet and Facility Management re-institutes the lockout policy when E85 prices are equal to or less than gasoline prices. It places the fueling decision in the hands of individual drivers during the “policy-free” periods. Even with the policy

The city has been adding compressed natural gas vehicles to its fleet since 2000. *Photo courtesy of the City of Chicago*

modification, the fleet’s E85 use is consistently higher than it was before the E85 infrastructure expansion. The city is also committed to working with fuel suppliers to find ways to keep the price of E85 below that of gasoline, and it is considering options to decouple the alternative fuel and conventional fuel contracts.

Managing a Diverse Portfolio

E85 is not the only alternative fuel the city is committed to implementing. Beginning in 2000, the fleet procured its first six compressed natural gas (CNG) vehicles and has added to its CNG fleet significantly since then. A portion of the city’s ARRA funding was allocated to the expansion of CNG infrastructure. The city also has hybrid and all-electric vehicles in its fleet. It is planning to introduce an all-electric refuse truck later in 2014, a much-anticipated procurement because of the truck’s quiet operation.

Goals for the Future and the Important Role of Partners

With CACC’s assistance, the city has been able to achieve several key goals outlined in its Sustainable Chicago 2015 Action Agenda (cityofchicago.org/content/dam/city/progs/env/SustainableChicago2015.pdf). These include expanding infrastructure in Chicago and reducing 2012 baseline fossil fuel consumption levels by 10% through the use of alternative fuels and advanced technologies. The coalition also assists the city in quantifying its emissions reductions through tools such as the GREET Fleet Footprint Calculator (afd.energy.gov/tools).

Looking ahead, the city plans to continue to increase the number of alternative fuel and advanced vehicles in the fleet by 10% per year, and CACC will ensure that the city stays aware of funding and networking opportunities. ■

Feature

Forum Helps Solve Deployment Puzzles for Natural Gas

Stakeholders bring their unique perspectives on industry priorities and the marketplace.

The Natural Gas Vehicle Technology Forum (NGVTF) is an annual meeting of fleet representatives, industry experts, consultants, and original equipment manufacturers that allows open and collaborative discussions among attendees. During the two-day session, participants discuss ideas, progress, needs, and barriers in the natural gas vehicle industry. Together, they identify gaps and priorities, piecing together the puzzle of widespread natural gas deployment.

“Each stakeholder provides a unique perspective on what the industry priorities should be and what the most pressing barriers are,” said Margo Melendez of the National Renewable Energy Laboratory (NREL). “The

forum is an opportunity for attendees to express their ideas. Through discussion, we can dig into the issues they’ve identified.”

More than 100 participants gathered on January 14 at Brookhaven National Laboratory in New York to explore topics ranging from maintenance-technician training to end-of-life issues for CNG fuel tanks. Participants also tackled codes and standards issues affecting the marketplace.

“The forum is about the big picture of industry needs and building consensus around them.”

The event, hosted by NREL in partnership with the U.S. Department of Energy (DOE) and the California Energy Commission (CEC), has been held annually since 2002. “Five or six years ago, the focus was how natural gas vehicles can stay relevant in the marketplace. Recently it has become much more forward-thinking: What do we need to do to move the market even further toward maturity?” Melendez said.

“This is about technical barriers and opportunities in the marketplace,” said John Gonzales of NREL. “NGVTF represents a unique space within the industry.” Representatives from Chrysler, Ford, and General Motors led a roundtable at this year’s meeting, discussing NGV technologies, maintenance, and training. “It’s about the big picture of industry needs and building consensus around them,” he said.

Through the years, demand for NGVs has fluctuated, new technologies have emerged, and natural gas prices have risen and fallen. All along, NGVTF has helped DOE, CEC, and policymakers understand where NGVs best fit into the marketplace. The forum has also helped them determine where engineers, researchers, and policymakers have the greatest impacts.



Photos this page, from top: General Motors; iStock 7287248; iStock 24165343; Ford Motor Company



“NGVTF represents a unique space within the industry.”

The market for natural gas and NGVs is now very active, as the economics become increasingly favorable. “It used to be that there were a few niche applications where fleets could save money, but fleets were mostly using natural gas for other reasons,” Melendez said. “With today’s natural gas prices, though, more fleets are taking advantage of expanded product offerings and achieving faster returns on investment.”

This year’s meeting was held in New York because of the state’s history of innovation and support for natural gas. The East Coast venue also allowed

local Clean Cities coordinators to include their stakeholders. Lee Grannis of Greater New Haven Clean Cities and Rita Ebert of the Greater Long Island Clean Cities Coalition were among the attendees. “NGVTF is a great way to educate users about how successful fleets have been switching to natural gas,” Ebert said.

“The forum makes it especially clear that natural gas fleets are no longer demonstration projects, but are mainstream,” said Grannis, a veteran who started his coalition in 1995 and has seen much progress over the years.

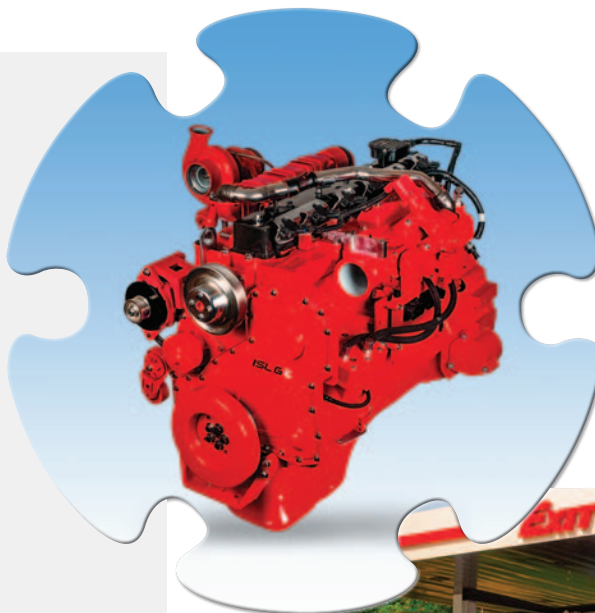
“NGVTF provided a diverse look at new and ongoing technology subjects and issues.”

When ideas are being shared and developed in this collaborative environment, they can gain traction in the industry. Some of the topics raised at NGVTF have already taken hold. Melendez noted that the Clean Cities program is already working on best practices with national fleets on end-of-life issues for CNG fuel tanks. She added that CEC, DOE, and others continually look to NGVTF to help identify and prioritize the critical work that needs to be done. ■

A Forum Looking to the Future

Among the topics discussed in the two-day sessions were:

- End-of-life best practices for compressed natural gas fuel tanks
- Expansion of NGV offerings
- Direct-injection natural gas engine technology
- Maintenance-technician training needs
- Solutions for development gaps communicated by fleets.



For more information on NGVTF, visit eere.energy.gov/cleancities/natural_gas_forum.html. For information on natural gas vehicles, visit the Alternative Fuels Data Center (AFDC) at afd.energy.gov/vehicles/natural_gas.html.

Photos this page, from top: General Motors; Cummins Westport; Kwik Trip Inc, NREL 28496



Coordinator Profile

Smallest State Has Big Plans for Alternative Fuels

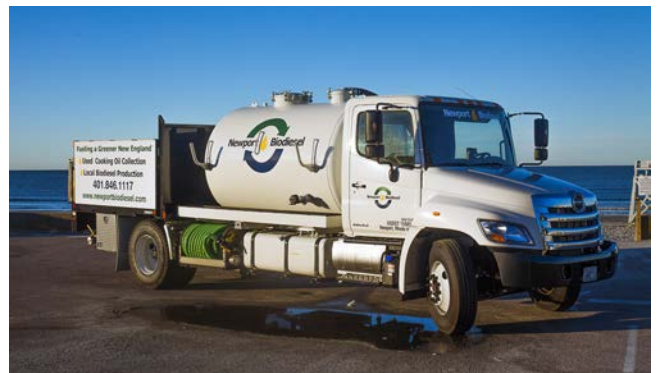
Tucked into the southeastern corner of New England, the state of Rhode Island occupies less square miles than some of our country's national parks. But its small size offers some distinct advantages when it comes to the deployment of alternative fuels, according to Ocean State Clean Cities Coalition (OSCCC) Coordinator Wendy Lucht.

"We have more than 1,000 contacts in our network, and we're displacing more petroleum than ever," said Lucht, who has led the coalition since 2008 from its headquarters at the University of Rhode Island. "We may be small, but we have the second-highest population density in the country, so fueling infrastructure projects can have substantial impacts in the local market."

The coalition harnessed that potential through an ARRA-funded electric vehicle charging infrastructure project. OSCCC collaborated with the Rhode Island Office of Energy Resources, ChargePoint, and other stakeholders to install 50 charging stations across the state and give all 1 million Rhode Islanders access to free charging.

Electricity provider National Grid owns and maintains the stations, leasing the sites from host organizations that pay for the electricity. Lucht helped identify the hosts, a mix of public- and private-sector partners. "The project is intended to spur deployment by encouraging people to buy electric vehicles, and having 50 stations where you can charge for free is a great incentive," Lucht said.

The state fleet has ambitious goals to move away from petroleum. OSCCC is part of the working group that's guiding the effort, convened by the Rhode Island Office of Energy Resources. Members of the workgroup are exploring ways to implement a new initiative



(Left) Wendy Lucht, Ocean State Clean Cities Coalition. (Above) Newport Biodiesel produces fuel from waste vegetable oil collected from more than 1,700 restaurants in the New England area. *Photo from Newport Biodiesel, NREL 28971*



Professor Gary Stoner plugs in his Chevy Volt at a University of Rhode Island charging station. *Photo from URI, NREL 28973*

launched by Gov. Lincoln Chafee to "lead by example" through the use of alternative fuels in the state fleet. The workgroup is also identifying ways to reduce vehicle miles traveled by state employees.

The state is demonstrating leadership with biodiesel as well. Earlier this year, the state issued a request for proposals (RFP) for a master price contract for B20 biodiesel. The contract will lock in biodiesel prices for fueling state vehicles and for fleets operated by municipalities and quasi-state agencies, including the Rhode Island Public Transit Authority and T. F. Green Airport.

Biodiesel has also proven popular among many small businesses in Rhode Island, as they seek cost-effective ways to reduce greenhouse gas emissions. In July 2013, Lucht helped connect Crystal Spring Water Company of Middletown, Rhode Island, with

waste-grease recycler Newport Biodiesel. Crystal Spring has been running its six delivery trucks on B20 ever since, using about 300

gallons per week. "This was a seamless transition," company President Ian Scott said. "It's easy, and the trucks are running great."

Newport Biodiesel collects used cooking oil from more than 1,700 restaurants in the New England area. In 2013, it produced 1.2 million gallons of biodiesel, 573,000 gallons of which it sold as vehicle fuel.

Looking ahead, Lucht expects alternative fuels' momentum to continue building in Rhode Island. Through participation in a five-state regional Clean Cities project, Advancing Alternative Fuel Markets in New England, OSCCC is working with the state to provide training and education to vehicle technicians and first responders.

"We're working to ensure that they're adequately trained about fuels recently adopted by the fleets," Lucht said. ■

Coalition News



IDAHO

Phil Cameron

Yellowstone-Teton
Clean Energy
Coalition

yellowstoneteton
cleanenergy.org

Dual-Fuel Buses Reduce Operating Costs and Emissions

As the geographically largest of the U.S. Department of Energy's (DOE) national laboratories, Idaho National Laboratory (INL) operates DOE's largest bus fleet—80 biodiesel commuter buses. Seeking options to improve the fleet's environmental performance, INL last year converted three of the

INL has begun converting its fleet of 80 biodiesel buses to operate on both biodiesel and natural gas.

Photo from Idaho National Laboratory, NREL 29547

buses to run on both biodiesel (B20) and liquefied natural gas (LNG). Data collected from the buses will inform decisions about continued fleet conversion.

INL's commuter buses drive approximately 2.75 million miles per year, transporting more than 3,000 employees to and from work at the 890-square-mile site. The fleet reduces the number of passenger vehicle miles, and their carbon emissions, and increases passenger safety during bad weather. The dual-fuel approach is being analyzed

See "Idaho" on p. 12 >



INDIANA

Kellie Walsh

Greater Indiana Clean Cities Coalition
greaterindiana.com

CNG Fueling Station Attracts Local Fleets, Turns into Profit Center

When Indianapolis business owner and entrepreneur Kris Klyer attended his first Clean Cities workshop in 2005, he was expecting to pick up a few tips on reducing heating and cooling costs for a new building. Instead, the multiple-business owner learned how to slash the growing fuel costs for his 50-vehicle fleet—by converting his trucks to run on compressed natural gas (CNG)—and how to fund the construction of a CNG fueling station.

"Gasoline prices were rising, so I jumped at the chance to cut my fuel costs in half," Klyer said. "Plus, the State Energy Office and the Greater Indiana Clean Cities Coalition were offering fueling infrastructure grants, so the timing was right."

The only catch, Klyer said, was that in order to qualify for the funding, he would have to open the station to the public. Although hesitant at first, he admits now that making the station publicly accessible turned out to be a lucrative endeavor. In fact, he is looking for opportunities to build additional CNG stations in the five-state area.

"Business at the Lafayette Boulevard station is booming," he said. "In addition to fueling our own vehicles there, CNG fleet vehicles from AT&T and the Indiana Department of Transporta-

Fleet vehicles fill up at the CNG fueling station on Lafayette Blvd. in Indianapolis, Indiana. *Photo from Kris Klyer, NREL 29104*



tion use it on a regular basis. We're looking into adding another fueling island to meet increasing demand."

Based on the station's success, privately owned CNG Fuel Inc. contracted with Klyer to oversee the construction of multiple new retail stations spread out along the Indiana-Ohio border.

According to Kellie Walsh, executive director of the Greater Indiana Clean Cities Coalition, the trucking industry is becoming more and more interested in transitioning to natural gas.

"Class 8 tractor trailers are the biggest fuel consumers on the road, so running these vehicles on natural gas could result in significant savings," she said. "And with the new Indiana income tax credit for commercial natural gas vehicles weighing more than 33,000 pounds, interest in the state is high."

Refer to the AFDC at afd.energy.gov/fuels/natural_gas_infrastructure.html to learn more about natural gas fueling infrastructure development, including modeling tools that help fleet managers assess the payback period for natural gas vehicles and fueling infrastructure.



WASHINGTON

Stephanie Meyn, Western Washington Clean Cities

www.cleancities.org

Rideshare Fleet Adds EVs, Enjoys Success

Since 1979, Seattle-based King County Metro Rideshare Operations has managed the largest publicly owned and operated commuter van program in the nation. The organization introduced its first all-electric vehicles—20 Nissan Leafs—into its 1,300-vehicle revenue fleet in 2011. Because of the vehicles' high customer satisfaction, positive return on investment, and increasing demand, Rideshare Operations purchased an additional five electric vehicles (EVs) last year.

Metropool is Rideshare Operations' EV rideshare program, and it's one of the nation's first. The Rideshare Operations team, led by Supervisor Syd Pawlowski, was involved in concept development, policy review, and placement of charging stations. The team garnered support from Western Washington Clean Cities and major employers in the region to help spread the word. Together, they reached out to commuters, introducing Metropool as a cost-effective transportation choice.

The coalition was engaged in the project from its inception, working with stakeholders ChargeNW, Ecotality, and Puget Sound Regional Council to study EV deployment and associated infrastructure. "As a result of our thorough analysis, we allocated infrastructure intelligently and in a way that supported Metropool," said Coalition Coordinator Stephanie Meyn. The coalition also assisted Metro Rideshare Operations with calculating EV life cycle emissions.

King County's capital budget funded the procurement of the first 20 EVs. The coalition provided funding from a competitive Clean Cities ARRA award to install three EV charging stations that were deployed at the King County Van Distribution Center.

An assessment of the EV program conducted in 2013 showed very positive results, including the following:

- During the course of their seven-year life in the commuter van program, the EVs will collectively reduce petroleum use by an estimated 218,000 gallons over prior modes of transportation.
- The rates Metropool participants paid were reduced by 5%, based on the measured cost savings.
- Fleet greenhouse gas emissions are estimated to be reduced by 24 metric tons per month in 2014 compared with emissions prior to the EV program.

"The project successfully demonstrated that EVs can compete head-to-head with conventional gasoline vehicles in the rideshare duty cycle," said Pawlowski. "EVs generated cost savings and big environmental wins."

Note: Just prior to publication, Stephanie Meyn accepted a new position with SEA-TAC, the Seattle/Tacoma-area airport. Clean Cities would like to thank Stephanie for her valuable service, and we look forward to continuing to work with her in her new role.



EV driver Tonia Buell charges up a Metropool Leaf at the Seattle Seahawks' stadium. *Photo from Jessie Lin, Washington State Dept. of Transportation, NREL 29160*



MISSOURI

Kelly Gilbert

Kansas City
Regional
Clean Cities

metroenergy.org

Propane Vans Keep KC Transportation Company Rolling

Understanding cost-effective transportation comes naturally to Renzenberger, Inc., in Kansas City, Missouri. The company provides vans for railroad crews who help keep freight trains rolling. So when fuel prices spiked in 2008, Renzenberger started looking at alternatives to gasoline. The company's goal was to reduce costs and avoid ever-changing gasoline prices.

The company began researching alternative fuels and found Clean Cities to be a good resource. Renzenberger Fleet Manager Thomas Wurdack attended a Kansas City Regional Clean Cities-sponsored propane workshop in 2009, where he met Bill Raynor, a local Ford dealer and board member of the coalition. They began discussing options for propane in Renzenberger's Kansas City fleet.

In 2011, a Renzenberger official attended the 2011 Clean Cities Stakeholder Summit in Indianapolis, Indiana. The meeting provided a forum for collaboration among the U.S. Department of Energy, Clean Cities coordinators, and national and local stakeholders. Together, they discussed short- and long-term opportunities, challenges, and strategies for wider adoption of alternative fuels, advanced vehicle technologies, and other petroleum-use reduction strategies. As a result, the company decided that propane was the best fuel to meet its specific needs.

Renzenberger deployed its first light-duty propane van in November 2011. The company's Kansas City fleet has since grown to 40 propane vans. The company also has 60 propane vans in

See "Missouri" on p. 11 >

> Missouri, from p. 10

California, with plans to expand to 110. “We are maintaining a nice price differential overall” Wurdack said.

As is the case with most transitions, there were challenges. In particular, the company had concerns about the range of vans and a lack of public fueling infrastructure. Renzenberger

initially decided to deploy bi-fuel vans in Kansas City to address this range anxiety. More recently, the company has been exploring dedicated-propane vehicles in Kansas City to ensure fuel cost savings.

Kansas City Regional Clean Cities played a role, helping the company

in its move to propane vehicles. “We provided propane workshops, including technician training to help transition Renzenberger to the new fuel,” Coordinator Kelly Gilbert said. “We’re very happy to see Renzenberger continue to deploy new propane vans that save money and reduce petroleum dependence. That is what Clean Cities is all about.” ■

Ask the Technical Response Service

Improvements in Driver Behavior Can Significantly Cut Fuel Use

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, email technicalresponse@icfi.com, or call 800-254-6735.

Q: Are there actions drivers themselves can take to help lower fuel consumption?

A: Yes, there are many simple changes fleet managers and individual drivers can adopt to improve vehicle efficiency, decrease fuel consumption, save money, and reduce emissions. Here are a few strategies drivers and fleet managers may consider.

For Drivers

- **Reducing Speeding:** Though different vehicles reach optimal fuel economy at different speeds, fuel efficiency generally decreases significantly at speeds above 50 miles per hour. This is because, at high speeds, more fuel is needed to overcome resistance from drag and tire rolling. The fuel economy benefit of reducing your speed is 7% to 14%.
- **Conservative Driving:** Gradual braking and accelerating can improve a vehicle’s fuel economy by as much as 33%. This not only helps conserve fuel and save money, it’s also a safe practice for drivers.
- **Combining Trips:** Using one trip for multiple purposes, rather than making multiple trips, can save fuel, time, and money by reducing driving distance and avoiding unnecessary cold starts. Starting a cold engine can use twice as much fuel.
- **Reducing Load:** By offloading unneeded items from the vehicle, drivers can reduce fuel consumption by up to 2% for each 100 pounds.
- **Vehicle Maintenance:** Proper and regular vehicle maintenance can improve fuel economy by 40%. This includes keeping the engine properly tuned, maintaining proper tire inflation, and using the recommended grade of oil.

For Fleet Managers

- **Train Drivers:** Driver training courses can teach drivers basic fuel conservation techniques (see “For Drivers” at left).
- **Employ Advanced Technologies:** Technologies such as telematics systems can greatly increase efficiency and fuel savings. These tools allow fleet managers to do the following.
 - **Give Feedback:** Fleet managers can use fuel-tracking devices or GPS-based telematics systems to track fuel economy, idle time, vehicle routes, and driver performance to provide feedback to drivers and thereby improve economy. Some systems even provide drivers with instantaneous alerts when they are driving inefficiently (such as speeding). Some fleets pair drivers with coaches to evaluate driver behaviors. Driver feedback may improve fuel economy by 3% to 10%.
 - **Optimize Routes:** Route optimization technologies help plan routes that can reduce mileage, stops, acceleration events, and time spent in traffic. Fleet managers can view data for individual drivers or for the entire fleet to evaluate progress and target areas of improvement.
- **Provide Incentives:** Incentives like driver recognition, special privileges, and monetary rewards encourage efficient driving.
- **Implement Policies:** Some organizations require drivers to participate in training courses, meet fuel-efficiency targets, adhere to a maximum speed limit, and set goals to reduce emissions and improve driving efficiency.
- **Use Fleet Fueling Cards:** Fleets that use fueling cards can monitor, control, track, and manage fuel and maintenance costs based on card transactions.

More information on adjusting driver behavior to improve fuel efficiency can be found on the AFDC page, Efficient Driving Behaviors to Conserve Fuel (afdc.energy.gov/conserves/driving_behavior.html), and on FuelEconomy.gov (fuelconomy.gov/feg/drive.shtml). ■

Keith Leech,
Sacramento
Clean Cities



> Award Winners, from p. 3

In October, **Melissa Howell** of Kentucky Clean Cities Partnership and **Keith Leech** of the Sacramento Clean Cities Coalition were named Sustainability All-Stars at the 2013 Green Fleet Conference and Expo, held in Phoenix, Arizona. ■



Melissa
Howell,
Kentucky
Clean Cities
Partnership

> Idaho, from p. 9

as a way to reduce both fuel costs and emissions. In fact, the dual-fuel technology reduces diesel use of each bus by 50%.

“INL is a longstanding stakeholder and partner of ours,” said Phil Cameron of the Yellowstone-Teton Clean Energy Coalition. “It was after a coalition meeting that they connected with several regional LNG consultants that helped implement the dual-fuel process.” Cameron said the coalition often incorporates lessons learned from INL’s alternative fuels success into topics for regional workshops and seminars. The coalition partners with INL to support events and provide speakers. “INL has done a tremendous job reducing its emissions and encouraging more efficient practices,” Cameron added. “It shares its successes and challenges to help others follow in its path.”

A key step in implementing the dual-fuel technology was installing fueling station infrastructure. Blu, one of several project partners and an LNG application company, built an LNG fueling station where INL fuels its buses, south of Idaho Falls. “Once fueling infrastructure is in place, a long-term vision is for INL to convert its entire bus fleet to using strictly natural gas,” said Tad Pearson, manager of INL’s transportation and fleet management support services. Pearson serves on the coalition’s board of directors.

“If the entire bus fleet was converted to be dual fuel, it would save the annual fuel equivalent of fewer passenger vehicles on the road,” he continued. “The dual-fuel initiative is one way INL is pursuing cleaner, lower-cost, carbon-reduction alternatives for operating its bus fleets.”

Note: Phil Cameron is transitioning to a new position as the executive director of Energy Conservation Works, an energy conservation/efficiency-focused organization based in Jackson, Wyoming. Clean Cities would like to thank Phil for his valuable service. ■

Program Resources



Clean Cities offers a large collection of information resources available for use in education and outreach activities.

- A Guide to the Lessons Learned from the Clean Cities Community Electric Vehicle Readiness Projects was released in February. The Guide synthesizes individual reports from the 16 Clean Cities plug-in electric vehicle (PEV) readiness projects across the country, gathers together the most important conclusions, and highlights illustrative examples. Clean Cities also published “Ten Ways Communities Can Pave the Way for PEVs” on the Clean Cities and EERE blogs. cleancities.energy.gov/pev-readiness.
- A new version of the Vehicle and Infrastructure Cash-Flow Evaluation (VICE) Model helps fleet managers evaluate the financial soundness of investments in compressed natural gas (CNG) vehicles and/or fueling infrastructure. The new version is applicable to a wider variety of vehicles and can also accommodate an incremental fueling station build out. afdc.energy.gov/tools > CNG Vice Model 2.0.
- Argonne National Laboratory developed the Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) Tool for Clean Cities stakeholders to estimate petroleum use, greenhouse gas emissions, air pollutant emissions, and cost of ownership of light-duty and heavy-duty vehicles using simple spreadsheet inputs. The tool is available at afdc.energy.gov/tools > AFLEET Tool.
- The Light-Duty Vehicle Search is a light-duty alternative fuel vehicle database designed to allow users to find and compare alternative fuel vehicles and generate printable reports to aid in decision-making, afdc.energy.gov/tools > Light-Duty Vehicle Search. ■

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

Clean Cities Technical Response Service
800-254-6735 • technicalresponse@icfi.com

To view this and other Clean Cities publications online,
visit cleancities.energy.gov/publications.

DOE/GO-102014-4358 • April 2014

Prepared by the National Renewable Energy Laboratory (NREL), a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy; NREL is operated by the Alliance for Sustainable Energy, LLC.

Printed with a renewable-source ink on paper containing at least 50% wastepaper, including 10% post consumer waste.