

Clean Cities Now

Cutting petroleum use since 1993



Clean Cities Celebrates 20 Years



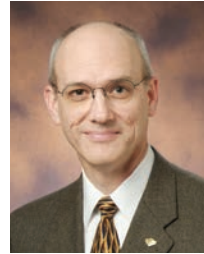
Welcome

Thank you for picking up the latest edition of Clean Cities Now, the official newsletter of the U.S. Department of Energy's Clean Cities program. We're especially excited to share this issue with you, because it not only offers everything you've come to expect from our biannual publication—transportation success stories, program news, answers to readers' technical questions—but it also celebrates the 20th anniversary of the Clean Cities program.

DOE designated its first Clean Cities coalition in Atlanta in 1993 and announced five more before the year was up. Since then, the network has expanded to include nearly 100 coalitions, each working in communities across the country to reduce our dependence on petroleum in the transportation sector. Within and across these coalitions, nearly 13,000 stakeholders from the public and private sectors serve as the backbone for this important work.

Over Clean Cities' 20-year history, the combined activities of the coalitions and their stakeholders have saved more than 4.5 billion gallons of petroleum, with the program currently on pace to meet its goal of saving 2.5 billion gallons per year by 2020.

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 17030;
(bottom) by Trish Cozart, NREL 17004

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Program News

EV Charging Infrastructure: Coming to a Workplace Near You

The U.S. Department of Energy is inviting employers to assist in the deployment of plug-in electric vehicles (PEVs) by providing charging for employees at the workplace.

In January, DOE launched the Workplace Charging Challenge, with a goal to increase the number of U.S. employers offering workplace charging by tenfold in the next five years. DOE is inviting employers across the country to join in the effort by signing the Workplace Charging Challenge Pledge. So far, 29 employers have signed onto the challenge as “Partners,” committing to develop a plan for workplace charging in at least one major operational location. Ten additional stakeholder organizations have signed on as “Ambassadors,” pledging to support and promote workplace charging across the nation.

“We envision Clean Cities serving as a key Ambassador, with the coalitions



Workplace charging is a focus of DOE's deployment efforts. *Photo by Dennis Schroeder, NREL 24540*

working together to utilize their networks and relationships with stakeholders across the country,” said Sarah Oleksak, DOE's Workplace Charging Challenge coordinator. “We recognize Clean Cities as an example of successful community-led deployment, and we want coordinators to be a real part of helping to advance workplace charging in their communities.”

The concept of the Workplace Charging Challenge arose from the EV Everywhere Grand Challenge that President Obama announced in spring 2012. The goal of the Grand Challenge is to enable the United States to be the first in the world to produce PEVs that

are as affordable and as convenient for the average American family as gasoline-powered vehicles within the next 10 years.

Responding to the president's call to action, DOE solicited feedback from a variety of stakeholders on PEV R&D technical targets as well as barriers to deployment. Workplace charging emerged as a recurring theme. It presents an opportunity to fill an infrastructure gap, and the workplace could function as a “second showroom” for PEVs.

For more information about the Workplace Charging Challenge and EV Everywhere, visit electricvehicles.energy.gov.

Oak Ridge National Laboratory's David Greene Honored for Transportation Research

Transportation researcher David Greene has been looking at the big picture of U.S. energy security and climate change for decades. His work helped lay the foundation for fuel economy standards, and he was already involved with the Clean Cities program when his team at Oak Ridge National Laboratory (ORNL) launched the FuelEconomy.gov website in 1999. This pioneer from ORNL recently became the first environmental energy researcher to win the Transportation Research Board's (TRB) Roy W. Crum Distinguished Service Award, the organization's highest honor for transportation research.

“David Greene is one of the nation's pre-eminent transportation energy analysts. He excels in connecting technical knowledge with a broader understanding of how policymaking occurs, how markets operate, and how governments behave,” said TRB Executive Director Robert E. Skinner, Jr.

Greene is clear about the collaborative nature of the work. “We have made contributions, but of course, it's not one person finding answers. A lot of people are working to try to understand the energy challenges facing our transportation system,” he said.



ORNL's David Greene. *Photo from Risdon Photography, courtesy of TRB, NREL 24376*

Greene has attempted to quantify the economic costs of the United States' dependence on petroleum and the ways in which the country can deal with climate change. He appreciates that Clean Cities coalitions have been in the vanguard of finding ways to reduce emissions and deploy low-carbon energy sources. Greene, who has been at Oak Ridge since 1977, said he looks forward to continuing his research into our country's energy challenges and their solutions.

Stakeholder Corner

In honor of Clean Cities' 20th anniversary, stakeholders reflect on their involvement with the program and its impacts on energy use in transportation.

Gary Ivey

Mayor, City of Hoover, Alabama



Photo from City of Hoover

In May 2003, the Alabama Clean Fuels Coalition (ACFC, then known as Central Alabama Clean Cities) circulated a call for alternative fuel infrastructure proposals—the first time ACFC had participated in projects using funds from the Conges- tion Mitigation and Air Quality (CMAQ) Improvement Program. In response, the City of Hoover submitted a proposal to install a 12,500-gallon E85 tank and dis- penser at the city's Public Safety Center. We proposed using E85 in all our flex-fuel vehicles (FFVs) in hopes of reduc- ing emissions and improving the region's air quality. At the time, the city had a growing population of nearly 65,000 and nine FFVs in our municipal fleet.

See "Hoover" on p. 5 >



The City of Hoover has become a model for other fleets in the deployment of alternative fuels. Photo from ACFC, NREL 25206

Samantha Mary Julian

Director, Utah Office of Energy Development



Photo from Utah OED

It's no coincidence that Utah has the highest number of compressed natural gas (CNG) stations per capita in the nation. The Utah Of- fice of Energy Development (OED) has collaborated with the Utah Clean Cities Coalition (UCC) for two decades to meet the state's trans- portation challenges head on.

UCC is an on-the-ground effort to increase energy independence in Utah's transportation sector.

Through active coordination and strong partnerships, we are able to make positive changes that benefit everyone.

OED is a proud Platinum Partner of the coalition and we have helped further its important work. For example, our office has co-sponsored coalition activities such as the Idle Free Utah initiative. This outreach program encourages fleet manag- ers throughout the state to adopt programs and policies that eliminate the unnecessary waste and pollution associated with

vehicle idling. The initiative has been very successful in school bus fleets across the Salt Lake Valley, where fuel savings total an estimated 92,000 gallons annually. OED and UCC also cooperat- ed on Utah Gov. Gary R. Herbert's signing of a memorandum of understanding entered into by 15 governors seeking to increase the use of natural gas vehicles in their state government fleets.

When the U.S. Department of Energy launched Clean Cities, Utah's OED was quick to recognize the value of such a program. Approaching government and commercial entities that employed fleet vehicles, our office began recruiting partners for the newly formed coalition. Today, UCC is a diverse group that includes utili- ties, schools, private industry, public services, and transit leaders.

"The real strength of our coalition comes from the collective work of the participants, which is much greater than the sum of its individual parts," UCC Executive Director Robin Erickson said.

The coalition is an important partner for OED and an effective advocate for reducing Utah's consumption of imported petro- leum. As such, UCC continues to be a needed driving force that brings stakeholders together with new ideas and strategies to advance our great state.

> Hoover, from p. 4

Hoover's E85 infrastructure became operational in May 2004. By then, our FFV fleet had grown to 14, and we anticipated having 137 FFVs by 2007. That was just the beginning. Hoover now has 212 FFVs, and since the project began, these city vehicles have traveled more than 20 million miles, using over 1.5 million gallons of E85. We have also adopted other alternative fuels, including B20 biodiesel, B100 biodiesel, and electricity. In all, 88% of the city's vehicles, serving the city's current population of more than 81,600, run on alternative fuels.

In 2006, our use of alternative fuels earned a visit from the president of the United States. Over the years, more than 100 representatives of local governments, fleets, and other

organizations have come to Hoover to see how a progressive Southern city successfully uses alternative fuels. In 2012, MotorWeek featured Hoover in a television segment that has run numerous times on the Speed channel and is available on the Clean Cities YouTube Channel. Officials from ACFC and Hoover have become go-to sources of alternative fuel information, and we have participated in many speaking and educational events highlighting the benefits of alternative fuels and advanced vehicles. Hoover and ACFC continue to work together today; Hoover is a member of ACFC, and a city representative sits on ACFC's board of directors. As the city's mayor, I am very pleased that this public-private relationship continues to be a win-win, with dividends for all.

Steve Saltzgeber

Vice President, Fleet Operations, Coca-Cola Refreshments USA Inc.



Photo from CCR

As someone who has been in the fleet management business for more than 30 years, I'm all too familiar with the costs of our country's dependence on petroleum. Just about the time Clean Cities was first established two decades ago, I took on the position of fleet director for the State of Utah. I have since directed fleet operations at the City of Stamford, Connecticut, the State of Georgia, and most recently here at

Coca-Cola Refreshments USA (CCR), where a commitment to sustainable operations is at the heart of our values.

In all these positions, the environmental impacts and financial uncertainties associated with using petroleum-based fuels have been ever-present challenges. But at each step of the way, Clean Cities has been there to educate fleet teams about the alternatives and to provide assistance in the deployment of technologies and fuels that mitigate those challenges.

CCR is proud of its long-standing relationships both with the national Clean Cities program and its local coalitions. Clean Cities assisted us in jumpstarting the use of new technologies that reduce petroleum use in our operations.

Most recently, with help from the U.S. Department of Energy, we added nearly 800 hybrid electric delivery trucks that are



U.S. Department of Energy

cutting emissions in communities across the country. And our participation in Clean Cities has opened doors to work with national institutions, where we have collaborated with researchers to collect and track performance data on hybrid vehicle technologies.

Projects like these result in tangible progress, but the true value of Clean Cities extends far beyond these discrete successes. We also share our knowledge and lessons learned with other fleets, participate in local events, and network with other transportation decision makers who share our commitment to sustainability. I serve as the secretary of the board of directors for Clean Cities–Atlanta, where I sit shoulder-to-shoulder with people like Mike Britt, the director of alternative fuel vehicle engineering for UPS. We're able to exchange ideas, explore possible synergies, and dialogue about new vehicles coming into the market.

Sustainability is one of the core pillars at Coca-Cola, and we put a lot of emphasis on it. Clean Cities has been an integral partner in helping CCR shape its fleet sustainability program.



With help from DOE, Coca-Cola Refreshments recently added nearly 800 hybrid delivery trucks. The company joined Clean Cities' National Clean Fleets Partnership in 2011. Photo from CCR, NREL 25210

Fleet Experiences



Liquefied Natural Gas Allows for Cleaner Refuse Collection in Sacramento

The prospect of transitioning a vehicle fleet to a new fuel can be daunting. But the City of Sacramento has proven that dedication, collaboration, patience, and a willingness to implement new ideas go a long way. Over the last decade, the city has successfully transitioned its entire diesel refuse-hauler fleet to clean-burning liquefied natural gas (LNG). The fleet worked with Sacramento Clean Cities, the local air district, and other fleets in the area to systematically roll out 113 side- and rear-loader LNG refuse trucks, as well as the fueling stations and maintenance facilities to support them. This effort has contributed to millions of dollars saved and more than 1,900 tons of annual greenhouse gas (GHG) emissions averted.

Collaboration with Industry Partners and Fellow Fleets

The City of Sacramento's fleet managers began researching feasible alternatives to conventional vehicles in 1997, in response to long-standing issues with their diesel refuse trucks and the rising cost of diesel fuel. They considered several factors, including payload and range requirements. After careful deliberation, the fleet settled



on natural gas because of its financial and environmental benefits. It opted for LNG over compressed natural gas (CNG) because the LNG vehicles provided a longer range than their CNG counterparts. To help with the initial migration from diesel trucks to LNG trucks equipped with Cummins Westport engines, the fleet sought financial support from the Sacramento Metropolitan Air Quality Management District (SMAQMD). It also tapped Cummins Westport and vehicle manufacturers for driver and technician training and technical assistance.

Above: The City of Sacramento runs its entire fleet of 113 refuse haulers on LNG. Photo by Randall Benton, courtesy of Zonar Systems

Left: City of Sacramento Fleet Manager and Clean Cities Coordinator Keith Leech says his LNG refuse trucks are helping to cut emissions and operating costs. Photo by Randall Benton, courtesy of Zonar Systems

The fleet started small, addressed questions and technical issues as they arose, and kept city decision makers informed of the project's progress. Before long, the city began realizing significant economic and emissions benefits from LNG use. Taking over as fleet manager in 2006, Keith Leech, who also serves as the Sacramento Clean Cities coordinator, was charged with building upon the initial success. During Leech's tenure, the fleet has replaced all its remaining diesel refuse trucks with LNG vehicles; the transition included the acquisition of

53 LNG refuse trucks in 2011 and 2012 and another 14 trucks in 2013.

As with any switch to a new fuel, implementing LNG in the City of Sacramento refuse fleet took extensive research and collaboration, particularly because it was one of the first fleets of its kind to consider LNG vehicles. Sacramento Clean Cities facilitated connections with other fleets in the area that had already tried or were interested in natural gas vehicles, including the County of Sacramento, which also uses LNG refuse trucks. “Sacramento Clean Cities brought together members of the community who had experience operating LNG trucks. By sharing experiences, we avoided mistakes and had a successful transition to alternative fuels. As we continue to add LNG vehicles to the fleet, this ongoing dialogue with other fleets has been invaluable,” Leech said.

Identifying Funding Sources and Surmounting Challenges

The incremental cost of the LNG trucks is significant, but the fleet found that up-front investments could be off-

“It has never been easier to migrate to natural gas vehicles. The network of natural gas fueling stations and the natural gas engine offerings are currently experiencing tremendous growth. Fleets should reach out to their Clean Cities coordinators to learn about incentives and potential partnerships that will help you make it happen sooner than you might think.”

*Keith Leech, Fleet Manager,
City of Sacramento*

set with local funding. “Even in times of budget cuts, there can be a business case for alternative fuels,” Leech said. The City of Sacramento refuse fleet obtained funding from SMAQMD’s Emergency Clean Air Transportation (SECAT) grant program, which helped to pay for the initial truck replacement. In 2008, the fleet financed the replacement of the remaining diesel refuse haulers. “We projected that the sav-

ings from reduced operating costs of the new LNG refuse trucks more than cover the annual finance payments on a five-year loan,” Leech said. In addition, Leech implemented a tiered vehicle replacement plan to help manage the cost of vehicles.

The city also procured funding from SMAQMD to build an LNG station to fuel the vehicles. The refuse fleet currently uses nearly 1 million gallons of fuel per year from its own LNG fueling site and a County of Sacramento site in nearby North Highlands. The California Energy Commission recently awarded the city a \$600,000 grant to upgrade and expand its existing LNG fueling infrastructure.

One essential step in the transition to LNG was to ensure that the fleet’s facilities were equipped to handle the operation and maintenance of the vehicles. The city constructed a new LNG maintenance facility and then recently retrofitted an existing maintenance facility with the necessary methane detectors, alarms, and heating and ventilation equipment to keep up with the growing number of LNG vehicles.

Cleaner Fuel Brings Benefits to Community

The transition from conventional diesel to LNG refuse haulers has tangible advantages for the city in terms of cost and reduced maintenance, but the benefits don’t stop there. According to Argonne National Laboratory’s GHG, Regulated Emissions, and Energy Use in Transportation (GREET) Model, the use of LNG in place of diesel fuel reduces GHG emissions by approximately 11%. Always striving to reduce its GHG footprint, the fleet plans to transition to a minimum of 30% renewable LNG by the end of 2013, which will result in an additional 25% well-to-wheels emissions reduction.

The city’s LNG trucks are significantly quieter than their diesel predecessors, reducing the noise pollution during trash pick-up times. “This project is a great example for local government stewardship. Cleaner and quieter refuse haulers are operating in Sacramento neighborhoods, and this project saves taxpayers and ratepayers money,” Leech said.

The City of Sacramento’s success has been widely recognized. Due in part to its commitment to natural gas and other alternative fuels, including E85 and propane, the fleet was named one of the “100 Best” government fleets in North America by Government Fleet Magazine in 2009, 2010, and 2011. In 2012, the



The City of Sacramento plans to use renewable LNG to further reduce its trucks’ greenhouse gas emissions. Photo by Randall Benton, courtesy of Zonar Systems

City of Sacramento fleet was ranked as the No. 2 Government Green Fleet and the No. 8 Government Fleet overall out of the “100 Best” fleets in North America. Never content to rest on its laurels, the city continues to assess the potential for new opportunities to cut petroleum use and emissions, with hydraulic hybrid technology next on the list.

Cutting Petroleum Use in Transportation for 20 Years

Clean Cities celebrates two decades of success in the deployment of alternative and renewable fuels, advanced vehicles, fuel economy improvements, and idle reduction.

In 1992, the Energy Policy Act directed the U.S. Department of Energy to establish a program to coordinate government and industry efforts to use alternative fuels in transportation. The following year, DOE launched Clean Cities and officially designated its first six coalitions, located in Atlanta, Denver, Philadelphia, Delaware, Las Vegas, and Washington, D.C. These pioneers, and the dozens more that followed on their heels, began

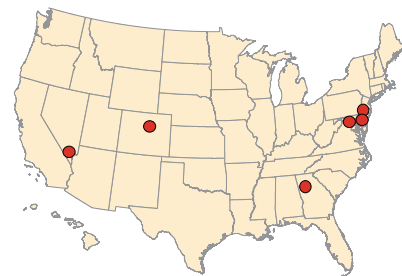
reaching out to local stakeholders on a mission to reduce petroleum use and to strengthen the nation's economic, environmental, and energy security.

"From the very beginning, I knew Clean Cities would be successful," said National Clean Cities Co-Director Linda Bluestein, who helped run an alternative fuels information hotline in the program's early days. "The coordinators were so committed to making this work



in their local communities, and they were so excited about the possibilities offered by new vehicle technologies—I just knew this had to work."

Two decades later, Clean Cities boasts nearly 100 coalitions, covering 74% of the country's population. The number of public- and private-sector stakeholders involved in the local coalitions and the national program as a whole has



1993: Six Coalitions

DOE establishes AFDC
Cummins produces its first heavy-duty natural gas engine

DOE launches Clean Cities
DOE designates 6 coalitions

First national Clean Cities conference takes place in St. Louis

DOE launches AFDC website
DOE designates 6 coalitions



istock 12539297

DOE designates 6 coalitions



NREL 06553

DOE and EPA launch FuelEconomy.gov

DOE designates 9 coalitions

DOE designates 3 coalitions



NREL 12494

Clean Cities celebrates 10th anniversary

DOE designates 3 coalitions



NREL 13531

Congress passes EAct 2005, introducing tax credits for alternative fuels, vehicles, and infrastructure

DOE designates 1 coalition

Congress passes EISA 2007, which introduces the federal Renewable Fuels Standard

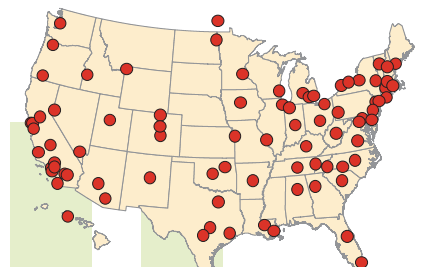
Clean Cities cumulative petroleum savings totals 2 billion gallons
NREL publishes first Clean Cities Annual Metrics Report



NREL 23857

Recovery Act passes, providing \$300 million in funding for Clean Cities projects

Clean Cities cumulative petroleum savings tops 3 billion gallons
DOE designates 1 coalition



Continued >

2013: 85 Coalitions

Clean Cities cumulative petroleum savings tops 4 billion gallons
President Obama launches National Clean Fleets Partnership
Clean Cities celebrates 20th anniversary



Congress passes EAct 1992
National stakeholder meeting held to formulate what will become Clean Cities



NREL 04231

DOE designates 24 coalitions
Clean Cities begins to collect petroleum-savings data from coalitions

DOE designates 9 coalitions
Clean Cities website launches
More than 600 NGVs and EVs support Atlanta Summer Olympics
Commercial bio-diesel production begins in U.S.
GM offers EV1

DOE designates 5 coalitions
Clean Cities celebrates fifth anniversary
Honda offers natural gas Civic



NREL 06698

DOE designates 2 coalitions
DOE designates 3 coalitions



NREL 06550

DOE designates 6 coalitions
Clean Cities cumulative petroleum savings totals 1 billion gallons
Clean Cities expands portfolio to include fuel economy, hybrids, and idle reduction



Weirck Media Services

DOE designates 1 coalition
Clean Cities celebrates 15th anniversary

First Nissan Leaf and Chevy Volt plug-in vehicles delivered to customers

DOE designates 1 coalition
AFDC Station Locator tops 10,000 stations



Meanwhile, DOE's national laboratories fortified the coalitions' work by providing technical expertise and information resources on the technologies in the Clean Cities portfolio. The labs' researchers, engineers, analysts, and communications staff translated technical information to be relevant in the fleet context, collected and published transportation data, and helped individual coalitions overcome deployment barriers.

The Clean Cities model of locally based coalitions operating within a common national framework quickly proved effective. In its first full year, Clean Cities saved 15 million gallons of petroleum, and by its fifth anniversary in 1998, it had saved a cumulative 196 million gallons. The program's information resources grew too, with the Alternative Fuels Data Center evolving to become a robust online clearinghouse of tools, information, and data on alternative fuels and advanced vehicles. The Clean Cities website launched in 1996, followed in 1999 by FuelEconomy.gov, the official U.S. government source for fuel economy information.

"At the national level, we set the mission and the parameters, work with industry to identify the best strategic directions, and develop the information resources and tools people need on the front lines," Scarpino said. "At the local level, the coalitions and their stakeholders get to pick and choose what works for them. In the mid-2000s, when biofuels became a major program emphasis, we didn't insist on ethanol for fleets in the Northeast; they worked on biodiesel, CNG, and other fuels and technologies. In the Midwest, ethanol made perfect sense. The flexibility of the program is a major factor in its success."

In its first decade, Clean Cities centered its activities on the deployment of alternative fuels, including ethanol, electricity, biodiesel, natural gas, and propane. In 2004, the program expanded to take advantage of additional strategies to reduce petroleum use, including idle reduction, hybrid electric vehicles, and fuel economy



President Obama launched the National Clean Fleets Partnership in 2011 to help the country's largest fleets reduce petroleum use. Frito-Lay was among the first companies to join. *Photo from Smith Electric Vehicles, NREL 22851*

improvements. In 2011, the number of hybrid electric vehicles on the road as a result of Clean Cities efforts surpassed 50,000, saving 33 million gallons of petroleum that year.

Over the years, Clean Cities has leveraged information resources, technical expertise, and financial assistance to jumpstart transportation projects in communities across the country. Through the American Recovery and Reinvestment Act of 2009, Clean Cities supported 25 projects with \$300 million in federal funding. Project partners from the public and private sectors more than matched the DOE support, investing upwards of \$500 million of their own funds into adoption of alternative fuels and advanced vehicles.

Building on its foundation of local partnerships, Clean Cities recently took its place on the national stage. In April 2011, President Obama announced the launch of the National Clean Fleets Partnership, an initiative to help the country's largest private-sector fleets incorporate alternative fuels, advanced vehicles, and efficiency measures into their operations. Through the partnership, companies like UPS, Coca-Cola, and Verizon are accelerating their efforts to reduce petroleum use, while also serving as examples for other fleets.

Partnerships: The Key to Transforming Transportation

Successful deployment of alternative fuels and advanced vehicles requires coordination by multiple entities in the public and private sectors: fleets, fuel providers, vehicle manufacturers and dealerships, technicians, first responders, businesses, permitting authorities, and local and regional government agencies, just to name a few. At both the local and national levels, Clean Cities helps these stakeholders make the necessary connections to overcome financial and technical barriers to successful transportation projects.

"The key to Clean Cities' enduring success over two decades is its proven ability to build relationships," National Clean Cities Director Dennis Smith said. "Through the coalitions, stakeholders learn from one another's experiences, replicate past successes, and work together on projects and events. This kind of collaboration creates economies of scale for alternative fuels and tipping points of demand for AFVs, so petroleum is no longer the only game in town."

That's something Steve McCracken, president of AMERIGreen Energy, can relate to first hand. AMERIGreen is a

wholesale fuel marketer and Greater Philadelphia Clean Cities (GPCC) stakeholder. GPCC Director Tony Bandiero has helped the company secure funding assistance for biofuels infrastructure projects and initiate relationships with industry partners. “Tony plays an active part in helping us grow,” McCracken said. “He connects us with folks throughout the supply chain. At one time, we were bringing in biodiesel by truck, and he introduced us to a rail company that could transport the fuel by rail cars, which ended up being much more cost effective.”

Collaboration and networking doesn't just take place within coalitions. Co-

ordinators, stakeholders, and industry groups exchange strategies, information, and technical solutions with one another across coalition boundaries. “There's a tremendous cross-pollination of ideas and best practices both regionally and nationally,” Scarpino said. “A coordinator in Maine would not hesitate to pick up the phone and call a coordinator in Michigan to find answers to a stakeholder's questions. Working together, they're so much stronger than if they were going it alone.”

Clean Cities coalitions in the Midwest and beyond are working with NTEA, the association for the work truck industry, to accelerate the adoption

of heavy-duty trucks and equipment that run on alternative fuels and take advantage of fuel-saving technologies like hybrid propulsion systems. In 2007, NTEA launched the Green Truck Summit in conjunction with its annual Work Truck Show to showcase such technologies on the national stage. Clean Cities coordinators have contributed to the growth of the Summit by encouraging their stakeholders to attend and participate in educational sessions. At each of the two most recent shows, held in Indianapolis, about 20 Clean Cities coordinators from across the country

See “20 Years” on p. 16 >



Photo from Republic Services, NREL 25214

Republic Services: The Clean Cities Model in Action

Republic Services is one of the largest waste and recycling companies in the country, hauling more than 100 million tons of refuse annually for 13 million customers. Since the company's founding in 1998, heavy-duty diesel trucks performed the lion's share of the work. But in 2009, that began to change, when Treasure Valley Clean Cities Coordinator Beth Baird knocked on the door of Republic Services' Boise, Idaho, division.

Baird alerted the company to a funding opportunity available through the American Recovery and Reinvestment Act (ARRA) that could catalyze the Boise fleet's transition from diesel fuel to compressed natural gas (CNG). She helped Republic Services develop a proposal for a project that would include the acquisition of 28 CNG refuse and recycling trucks and the development of CNG fueling stations and vehicle maintenance facilities.

Baird and Republic Services teamed up to research and select vehicle manufacturers and fuel providers. Baird helped facilitate the legal legwork that led to the Idaho Public Utilities Commission's issuance of a rule allowing the sale of natural gas as a vehicle fuel. She also helped arrange training for vehicle maintenance technicians and formed a team to develop a campaign to educate community members and other fleets about the benefits of CNG. “We wouldn't have known about the funding, and we may have gone down this road much more slowly if we hadn't had a local person here as an advocate,” said Republic Services Business Development Manager Rachele Klein.

The company's time-fill CNG station in Boise was completed in June 2009, and its first CNG trucks started rolling several months later. Three additional stations opened in 2011, including two with public access. The project effectively created a ripple effect of CNG deployment in Idaho and beyond. “We started with 12 CNG trucks, and now we have 87, including four CNG supervisor pickups. We plan to have our entire Idaho fleet operating on CNG within the next five years,” Klein said. “The model that stemmed from this partnership was so successful—from a business perspective and an environmental perspective—that we flipped to CNG in Las Vegas; Santa Barbara, California; and Bellevue, Washington.”

In the Boise area, about a dozen other fleets are now using the CNG stations developed as part of the Republic Services project. One of those is Valley Regional Transit. VRT was on the verge of eliminating a commuter route between Canyon County and Ada County due to rising diesel fuel prices, but the availability of new CNG fueling infrastructure allowed the agency to cost-effectively continue the service using CNG buses. The VRT board plans to have its entire ValleyRide bus fleet operating on CNG by 2016.

“Republic Services' shift to CNG was a huge step in advancing the use of natural gas as a vehicle fuel in Idaho,” Baird said. “It has been a great partner in this effort and strong advocate for the fuel, both in our region and across the country.”



Coordinator Profiles

Lee Grannis and Richard Battersby Inducted into Clean Cities Hall of Fame



Lee Grannis

A lot has changed since Lee Grannis helped launch the Greater New Haven Clean Cities Coalition in 1995. “We learned by feel back then,” he said. The retired U.S. Army lieutenant colonel took over as the New Haven coalition coordinator in 1997, drawing on his 23 years of experience with military transportation logistics to find solutions to deployment chal-

lenges. It also helped that he had previously worked as an alternative fuel vehicle salesman. “I really enjoy working with new technologies and solving problems that nobody has tackled before.”

Grannis’ pioneering spirit has helped lead to the deployment of alternative fuels and advanced vehicles in Connecticut, throughout the Northeast, and nationally. In 2011 alone, the New Haven coalition saved more than 2.2 million gallons of petroleum and averted more than 20,000 tons of greenhouse gas emissions. In recognition of his accomplishments, the U.S. Department of Energy inducted Grannis into the Clean Cities Hall of Fame in September 2012.

“Lee Grannis combines unwavering dedication and keen technical knowledge to the deployment of alternative fuels and advanced vehicles,” said National Clean Cities Director Dennis Smith. “Thanks to his ingenuity, persistence, and willingness to help others, the Constitution State and surrounding region are realizing tangible energy security and environmental benefits.”

Under Grannis’ leadership, the Greater New Haven Clean Cities Coalition helped deploy electric trolleys in New Haven’s public transit system during the 2000s. The organization also catalyzed the development of the city’s first compressed natural gas fueling station. And Grannis has aided entrepreneurs in jumpstarting the manufacture of electric vehicle charging equipment and electric buses.

In partnership with the three other Connecticut Clean Cities coalitions, Grannis serves as the lead on the \$29 million Connecticut Future Fuels project. The project is deploying 269 alternative fuel vehicles and the supporting fueling infrastructure, including the first liquefied natural gas station and Class 8 LNG truck fleet east of the Mississippi. “I like collaborating with all the people in our area who are taking on meaningful transportation projects rather than accepting the status quo,” Grannis said.



Richard Battersby

East Bay Clean Cities Coalition Executive Director Richard Battersby relishes finding solutions to transportation challenges. “The projects we take on are like big puzzles,” he said. “The fuels, the infrastructure, the fuel providers, the vehicles, and the customers all need to fit well together in a way that meets the organizations’ needs.”

Battersby began his work with the East Bay coalition in 1998 and became the organization’s executive director in 2003. In 2011, the coalition saved more than 9 million gallons of petroleum and averted more than 52,000 tons of greenhouse gas emissions.

In recognition of Battersby’s successful leadership, DOE inducted him into the Clean Cities Hall of Fame in September 2012. “Richard Battersby has proven himself to be a true leader and mentor to others in the deployment of alternative fuels and advanced vehicles, both in California and nationally,” National Clean Cities Co-Director Linda Bluestein said.

Battersby said the honor is “one of the most significant things to happen in my career,” which spans more than 25 years of fleet management in the public and private sectors, including with Airborne Express, the State of California, the U.S. Army, and Contra Costa County. In the early 1990s, Clean Cities helped him launch Airborne Express’ use of alternative fuels. That positive experience “so impressed me that I knew Clean Cities was an organization I wanted to be associated with.”

Today, Battersby serves as the director of fleet services at the University of California at Davis, in addition to his role leading the coalition. He was instrumental in the establishment of a compressed natural gas transit service between UC Davis and UC Berkeley. He has also helped Waste Management develop fueling infrastructure to power refuse trucks with natural gas captured from the Altamont Landfill in Livermore, California. Battersby has been a key leader in the deployment of biofuels infrastructure in California and in the Bay Area’s preparations for wide-scale adoption of electric vehicles.

“Richard’s collaborative nature and hands-on experience with vehicle fleets make him an invaluable asset to the Golden State and the national Clean Cities program,” Bluestein said.

Coalition News



NEW YORK

Rita Ebert

Greater Long Island Clean Cities Coalition

CNG Fleets Aid in Superstorm Recovery

When Superstorm Sandy hit the East Coast on Oct. 29, it flooded streets, cut power, and stranded vehicles. Many drivers—including first responders—struggled to find diesel fuel or gasoline. Yet on Long Island, which suffered a direct hit, fleets of compressed natural gas (CNG) trucks and cars kept on rolling in the storm’s aftermath, helping with recovery efforts. “They

The Town of Oyster Bay’s new CNG station has three fast-fill dispensers and 50 time-fill posts. *Photo from GLICC, NREL 23853*

were working around the clock,” said Rita Ebert, coordinator of the Greater Long Island Clean Cities Coalition (GLICCC). The vehicles were able to operate in part because the CNG fueling stations were equipped with back-up biodiesel generators.

“It was nice to see towns that had invested in CNG and biodiesel continuing to be able to pick up debris,” Ebert said. Utility operators National Grid and Long Island Power Authority used their CNG cars and trucks for infrastructure repairs.

GLICCC stakeholders began deploying the first CNG fueling stations some 14 years ago. There are now 12 publicly accessible stations and nine private or



municipal stations on the island. Among the 21 are four added in 2012 in the Town of Oyster Bay and in Suffolk County, funded with help from the American Recovery and Reinvestment Act.

See “New York” on p. 15 >



ARIZONA

Colleen Crowninshield
Tucson Clean Cities

Rolling Down the Arizona EV Highway

Widespread deployment of plug-in electric vehicles requires community readiness efforts in a number of critical areas, not the least of

which is the development of charging infrastructure. And on the open highway, charging must be convenient and quick. This was the motivation behind Arizona’s “EV Highway,” which took a major step forward with the recent installation of a DC fast-charge station in Picacho Peak, Arizona, about midway between Phoenix and Tucson. DC fast chargers provide 60 to 80 miles of range in about 20 minutes of charging.

Collaborating with industry partners, Tucson Clean Cities Coordinator Colleen Crowninshield put together a local working group, inviting representatives from all city and county governments in the Phoenix-Tucson area. Valley of the Sun Clean Cities Coordinator Bill Sheaffer was also among the group’s participants. With Crowninshield and Sheaffer’s help, the group identified charging station locations and the types of charging equipment needed. Soon, several Level 2 stations began popping up in both the Phoenix and Tucson areas. The group also identified the need for a DC fast-charge station along the Interstate 10 corridor.

“Nissan and other EV manufacturers were counting on having the corridor done so that prospective EV drivers could feel confident that they would be able to make the trip up I-10 and have quick charging along the route,” Crowninshield said.

Crowninshield and Sheaffer worked with charging network developer GoE3 on the Picacho Peak project. In December 2012, Arizona Secretary of State Ken Bennet was on hand to help open the station. Crowninshield said Secretary Bennet’s support was key to the project’s realization, as was support from the Pima Association of Governments, which houses Tucson Clean Cities.

Since the station’s opening, interest in the project has continued to grow; plans are now under way to expand the Arizona EV Highway all the way to Nogales, Mexico, via Interstate 19.



Arizona Secretary of State Ken Bennett speaks at the grand opening of the Picacho Peak charging station.

Photo from Pima Association of Governments, NREL 24344



ILLINOIS

Samantha Bingham
Chicago Area
Clean Cities

Home Improvement Retailer Offers Propane Fueling

Propane vehicle drivers will now be able to refuel at 32 new locations throughout Illinois and Wisconsin, thanks to a collaboration among CleanFUEL USA, Ferrellgas, and Menards home improvement stores. The project was funded in part by a U.S. Department of Energy American Recovery and Reinvestment Act (ARRA) award to Texas State Technical College. Through the project, CleanFUEL USA and its partners

establish fueling stations and convert vehicle fleets to propane operation. Under the partnership, CleanFUEL USA provided the dispensers; Ferrellgas provided 1,000-gallon tanks, installation services, training, and propane for each location; and Menards hosts the stations at its stores.

“Menards saw an opportunity not only to improve the environmental impact of its own operations but also to further enhance the communities it operates in,” said Chicago Area Clean Cities Coalition (CACC) Coordinator Samantha Bingham. CACC will promote the availability of Menards’ publicly available stations to fleets across the Chicago region.

Menards hoped to offer propane both as a vehicle fuel and for customers to fill portable cylinders for gas grills



Menards store manager Kyle Krause fuels one of the company’s new propane pickup trucks. *Photo by Greg Zilberfarb, The Sales Network, NREL 24347*

See “Illinois” on p. 15 >



MISSOURI

Kevin Herdler
St. Louis Clean Cities

The Heat is on in St. Louis Buses

Midwestern winters are notoriously frigid, and that can pose challenges for the region’s school bus fleets. Students don’t

want to board chilly vehicles, and the stakes are even higher for special needs students, some of whom have conditions such as asthma that the cold can aggravate.

In 2009, St. Louis Regional Clean Cities Executive Director Kevin Herdler began working on a solution when he helped secure a Missouri Air Pollution Program clean diesel grant to the Special School District of St. Louis County (SSD). The EPA grant allowed SSD to install Espar fuel-operated heaters on 21 buses. The heaters use a small amount of diesel fuel to warm the coolant lines of the vehicles while the bus engine remains off. “It is a great option for a school district,” Herdler said.

The heaters activate automatically when temperatures drop below 60 degrees, so technicians don’t need to start and then idle the bus engines on cold mornings and afternoons. By the time drivers pick up their first students, the buses are comfortable. The heaters are programmable, so they don’t run on weekends or holidays unless needed.

In addition to reducing emissions, the heaters save at least 3 gallons of diesel fuel per bus per day. The initial success paved



Fuel-operated heaters have helped the Special School District of St. Louis County drastically reduce school bus idling. Photo from St. Louis Regional Clean Cities, NREL 23859

the way for Herdler to continue working with the state and SSD, adding more heaters in 2010 and 2011 at a cost of \$1,364 per heater. By the end of 2011, 116 buses—virtually the entire SSD fleet—had been equipped.

Other fleet managers took notice, and Herdler said this program has been repeated in about a dozen area school districts with some 600 buses. The results have been particularly positive for SSD and its students. “It has been a blessing to the school district,” Herdler said. “It really helps the kids. Taking a cold school bus is tough.”

> Illinois, from p. 14

and other such uses. So CleanFUEL USA developed a special dispenser, the CFT 2200, which can accommodate both uses.

The Menards store in Hodgkins, Illinois, hosted a grand opening in December 2012. Following the ribbon cutting, store manager Kyle Krause demonstrated filling a Menards propane Ford F-150. "After driving one of our first propane-powered pickups, I've found there is no difference in performance or drivability when compared to a gasoline-powered pickup truck," Krause said. "My wife and third-grade daughter brag to their friends that I drive a more environmentally friendly pickup."

Looking ahead, Menards has plans to convert 140 new pickups to propane operation for these stores, which will also receive propane forklifts to replace their existing diesel equipment. The home-improvement retailer plans to steadily convert more of its store operation vehicles to propane and expects to add five more propane fueling stations this year.

> New York, from p. 13

Ebert said the coalition has helped deploy between 700 and 800 alternative fuel vehicles now operating in the area. These vehicles saved 14.1 million gallons of petroleum in 2011. But there is more work to be done along Long Island's dense urban shipping corridors, which are traveled by some 28,000 fleets. CNG vehicles can drive from one end of Long Island to another with access to CNG, but according to Ebert, "we could use at least five more stations."

Ebert, who has been with the coalition since 2007, said the pace of progress is accelerating. As part of GLICCC's efforts to build on the momentum, the coalition is now working with the New York State Energy Research and Development Authority to identify where additional CNG stations are most needed.

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: Which vehicles qualify for the federal Qualified Plug-in Electric Drive Motor Vehicle tax credit?

user and should be eligible as long as the vehicle has not been previously titled.

A: The U.S. Internal Revenue Service (IRS) administers a tax credit for the purchase or lease of a new plug-in electric vehicle (PEV). To qualify, the vehicle must draw propulsion from a battery with at least 4 kilowatt hours (kWh) of capacity, use an external source of energy to recharge the battery, have a gross vehicle weight rating (GVWR) of less than 14,000 pounds, and meet specified emission standards. The vehicle must be manufactured for use on public streets, roads, and highways, and may not be an aftermarket conversion. The credit amount ranges from \$2,500 to \$7,500, based on the vehicle's battery capacity and GVWR. The IRS uses these criteria to determine which vehicles qualify for the credit as well as the exact credit amount and posts this information on the Qualified Vehicles Acquired After 12-31-2009 website, www.irs.gov/Businesses/Qualified-Vehicles-Acquired-after-12-31-2009.

To be eligible, a vehicle must be intended for use primarily in the United States and may not be purchased for resale. As noted above, both leased and purchased vehicles may qualify for the credit. However, in the case of a lease, only the lessor and not the lessee is entitled to the credit. The leasing company can decide whether and how it would like to pass along this cost savings to the leasing entity or individual.

The taxpayer claiming the credit must be the first user of vehicle. However, according to the IRS, if the vehicle has been used as a "demo" car by a dealership, the purchaser or leaser of the vehicle will be considered the first

Q: How do I file for the credit?

A: To file for the tax credit, an individual or business must complete IRS Form 8936 and attach it to their federal tax return (Form 1040 for individuals or Form 1120 for corporations). The credit is not available as a rebate at any time during the year. To find the most up-to-date version of the form, applicants can conduct a search at www.irs.gov/app/picklist/list/formsInstructions.html. For specific questions about eligibility and filing, consult a qualified tax professional or contact the IRS (800-829-1040) before making any tax-related decisions.

Q: Are any other PEVs eligible for a tax credit?

A: The American Taxpayer Relief Act of 2012 (Public Law 112-240) extended several federal tax credits and incentive programs related to alternative fuels and advanced vehicles. Section 403 of the act expanded the federal PEV tax credit to include new qualified two- or three-wheeled PEVs that draw propulsion from a traction battery with at least 2.5 kWh of capacity and can drive at speeds of at least 45 miles per hour. The credit is for 10% of the cost of the qualified vehicle (up to \$2,500) and applies to vehicles purchased or leased between Jan. 1, 2012, and Dec. 31, 2013. Refer to the IRS website for guidance on claiming this credit. For information about other incentives impacted by the act, as well as an overview of the federal PEV tax credit, see the Alternative Fuels Data Center's Federal Laws and Incentives page, www.afdc.energy.gov/laws/fed_summary.

> 20 Years, from p. 11

presented overviews of successful transportation projects to event attendees.

“NTEA works at the national level, helping industry pave a path to the market. The Clean Cities coalitions bring it to the local, individualized level, so we have a very complementary relationship,” said Doyle Sumrall, NTEA’s senior director of business development. “I don’t think there’s any question that Clean Cities’ presence at the event has fostered hundreds of connections between fleets and suppliers, and that those connections blossomed into the deployment of alternative fuels and technologies.”



The partnerships formed within and across coalitions are the key to Clean Cities’ enduring success. Above, DOE designation ceremonies for Sacramento Clean Cities in 1994 and Land of Sky Clean Vehicles Coalition in 2012. *Photos (from top): T.G. Powell, NREL 06555; Land of Sky, NREL 25260*

Tool Tips

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

PEV Community Readiness Scorecard

Clean Cities recently launched a new tool to help local and regional leaders assess their communities’ readiness for the arrival of plug-in electric vehicles (PEVs). The PEV Community Readiness Scorecard is a detailed, interactive online tool that collects information about a community’s PEV readiness, provides feedback on its progress, and offers guidance for improvement.



“There’s a significant amount of thought and effort involved in shepherding these new technologies into our communities, and the Energy Department saw a real need to provide some interactive blueprints,” said Mike Simpson of the National Renewable Energy Laboratory.

PEV readiness requires collaboration among dozens of stakeholders, including utilities, charging equipment manufacturers, vehicle dealerships, metropolitan planning departments, electrical contractors, and community organizations. The PEV Scorecard helps them make sense of the necessary steps and tracks their progress along the way.

Housed on the Alternative Fuels Data Center (afd.energy.gov/pev-readiness), the PEV Scorecard walks users through a variety of PEV readiness topics, including permitting and inspection processes for charging equipment installations, incentives and promotions, education and outreach, coordination with utilities, likely PEV adoption rates, and long-range infrastructure planning. Within each topic, users answer a series of questions related to their level of preparation. They receive scores for each topic, ranging from “Needs Improvement” to “Excellent.” The tool then provides customized recommendations, resources, and case studies to help communities raise their scores.

“The PEV Scorecard helps communities see the forest and the trees in terms of PEV deployment,” Simpson said. “They can get a big-picture assessment of how ready they are and then drill down to the finer points to find out how to improve.”

Once a community begins its assessment, multiple representatives can return as often as needed to make updates and track progress. Each community is encouraged to designate a central point of contact who coordinates their input.

“DOE is excited to provide this tool to help make it easier for communities to effectively move the needle on PEV deployment,” Clean Cities Co-Director Linda Bluestein said.

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