

Clean Cities Now

Biodiesel Scores Big with Fleets Nationwide



Inside:

Bakery Turns to Propane for Sustainable Transportation Solution

California Coordinator Educates Dealers about Plugging in to PEVs

Coalitions Step Up to Manage Air Quality Funds for Fleets

Maintaining Focus on Niche Market Fleets

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 bi-annual 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.

To strategize on how to achieve our 2020 goal of eliminating 2.5 billion gallons of petroleum per year, the program staff held a successful planning meeting this past February. During that meeting, we gathered input from 200 stakeholders and coordinators that will guide the development of the Clean Cities program’s new five-year strategic plan. See page 3 for details about the program’s plan to serve niche market fleets in the near future, and look for the full plan to be published this fall.

We appreciate hearing comments from readers. Let us know what you think at cleancities@nrel.gov.



Dennis A. Smith

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National Clean Cities Director



Linda Bluestein

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Photos (left) from DOE, NREL 17030; (right) by Trish Cozart, NREL 17004

Program Resources

- Learn which of the five most commonly used alternative fuels shows existing and potential market strength by state in the recently released report, **Geography of Existing and Potential Alternative Fuel Markets in the United States** (afdc.energy.gov/uploads/publication/geography_alt_fuel_markets.pdf).
- Visit the overhauled Alternative Fuels Data Center’s **State Information pages** (afdc.energy.gov/states/) to find state-specific fuel and vehicle data, including information about laws and incentives, fueling stations, vehicles, fuel prices, and more—all in one easily accessible place.
- See two new fact sheets, **Idling Reduction for Personal Vehicles** (afdc.energy.gov/uploads/publication/idling_personal_vehicles.pdf) and **Idling Reduction for Emergency and Other Service Vehicles** (afdc.energy.gov/uploads/publication/idling_emergency-service_vehicles.pdf) for answers about idling these vehicle types.
- Read the new report, **Stop and Restart Effects on Modern Vehicle Starting System Components—Longevity and Economic Factors** (anl.box.com/s/sfwlyouom8cllqwzqh07ecc99y5m7z), which upends a persistent belief that it’s most cost-effective to leave a vehicle’s engine running during brief stops.

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Program News

Advancing Niche Markets

Niche market fleets operate vehicles that serve specific functions and offer great potential for reducing petroleum. Clean Cities applies its local and national expertise to target niche market fleets and encourage the use of alternative fuels, advanced technology vehicles, idle reduction measures, and fuel economy improvements. The recent Clean Cities strategic planning meeting focused on ways to match specific technologies in the program's portfolio with niche market opportunities.

Fleets in niche markets share a number of characteristics including similar drive cycles, payload, and performance requirements. Because they have common needs and challenges, fleet managers in the same industry can share best practices and lessons learned. Additionally, growing market permeation in a niche market can encourage manufacturers to produce more alternative fuel options for that specific application. As a result, a decision by a large fleet within a niche market to adopt alternative fuels can have an impressive ripple effect across the industry.

Clean Cities has had great success working with niche markets. In 1992, the year before the U.S. Department of Energy launched the program, only 2% of transit buses ran on alternative fuels. Since then, the market has skyrocketed—with more than 40% of transit buses using natural gas, biodiesel blends, or hybrid electric technology,



Refuse trucks powered by natural gas are being deployed in increasing numbers by municipalities and refuse operators nationwide. *Photo from Clean Energy, NREL 16724*

according to the 2014 edition of the *American Public Transportation Association Fact Book*. The refuse sector has seen similar results, with natural gas vehicles making up more than half of all new vehicle orders, according to Natural Gas Vehicles for America. In recent years, propane has also become a promising alternative fuel for school buses and shuttles.

Through the Alternative Fuels Data Center (AFDC), Clean Cities already offers resources specific to niche markets. Users can sort success stories by application, including long-haul trucking, airport and delivery vehicles, and school transportation. With the re-designed Alternative Fuel and Advanced Vehicle Search, users can browse vehicles by application or

type, including sedans, step vans, refuse haulers, and shuttle buses.

Clean Cities is also releasing a set of comprehensive case studies combining real-world fleet data and models like the Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) Tool. So far, the program has released reports profiling refuse fleets using natural gas vehicles and school bus fleets using propane.

Moving forward, Clean Cities will introduce a variety of new resources to help fleets in niche markets. No matter the industry, Clean Cities can help you choose the right petroleum reduction solution to meet your needs. ■

Fleet Experiences

Baltimore-Based Bakery Launches Fleet of Propane-Powered Delivery Trucks

When H&S Bakery set out to green its fleet, it turned to propane as its sustainable solution of choice. The company runs a large-scale operation—along with its affiliates, it distributes bread products to supermarkets, restaurants, and fast-food chains in more than 20 states.

Late last year, the Baltimore-based company purchased 29 propane-fueled delivery trucks—20 Ford F-59 trucks and nine Isuzu NPR HD trucks—and placed an order for 16 more in 2015.

“After considerable research, we chose propane because it’s environmentally friendly and cost-effective,” said Chuck Paterakis, vice president of transportation and logistics for H&S Bakery. “We want our customers and community members to know that we are investing in them and working hard to achieve our sustainability goals. Propane is a domestically produced fuel that will lower emissions across our delivery area.”

Paterakis estimates that the propane-powered fleet will significantly reduce emissions compared to the older gasoline and diesel vehicles they are replacing.

“In addition to reducing emissions, we found that propane would reduce maintenance costs and save us money on fuel compared to diesel and gasoline,” Paterakis added. “Our price for propane is around \$1.36 per gallon, including tax, and offers a comparable



driving range to conventional fuel. Plus, state and federal grants were available, which provided further incentive.”

Securing Funding for Alternative Fuel Vehicles

H&S Bakery tapped into funding from the Maryland Freedom Fleet Voucher Program with help from Chris Rice,

Above: H&S Bakery’s new propane-powered delivery trucks are reducing the company’s carbon footprint and supporting its overall sustainability efforts. *Photo from H&S Bakery, NREL 33059*

Left: A decal on H&S Bakery’s new delivery trucks shows how the company is supporting its overall sustainability efforts. *Photo from H&S Bakery, NREL 33058*

coordinator of the State of Maryland Clean Cities coalition and manager of transportation programs at the Maryland Energy Administration. Rice works with fleets, fuel distributors, engine manufacturers, and fuel producers to increase the use of alternative fuels in the state.

“Launched in 2013, the voucher program provides financial assistance for the purchase of new and converted alternative fuel vehicles registered in

CHOOSING PROPANE

The availability of new light- and medium-duty propane vehicles has surged in recent years, especially for fleet use. Engines and fueling systems are also available for heavy-duty vehicles. See the AFDC's Alternative Fuel and Advanced Vehicle Search (afdc.energy.gov/vehicles/search) to find the latest light-, medium-, and heavy-duty manufacturer offerings. Clean Cities coalitions have been instrumental in helping many types of fleets transition to propane. To find fleet success stories, see the AFDC Case Study database (afdc.energy.gov/case).



Above: Baltimore Mayor Stephanie Rawlings-Blake fills up one of H&S Bakery's new propane vehicles before taking it for a drive. Photo from H&S Bakery, NREL 33057

Top Right: Photo from Gabe DeWitt/KeyLogic Systems, Inc., NREL 30341

Maryland," Rice said. In this case, the bakery received funding to cover part of the trucks' incremental cost—the added expense of buying an alternative fuel vehicle versus a similar conventional vehicle.

"H&S Bakery provides an excellent example for other commercial fleets

interested in exploring their alternative fuel options," he added.

Leading the Pack in Sustainability Efforts

H&S Bakery knew that wasting time, money, and fuel was not in the company's best interest. That's why their vehicles fill up at the company's new propane fueling station, which features an 18,000-gallon underground propane tank.

The station is adjacent to the company's new eco-friendly distribution depot, which earned two "green stars" from Baltimore's Green Building Standards Program. The depot, located in east Baltimore, is one of seven that the company operates in the Mid-Atlantic region.

H&S Bakery, along with vehicle fuel system manufacturer ROUSH Clean-Tech and propane provider AmeriGas celebrated the clean fleet deployment at its facility last December with a fueling demonstration. Baltimore Mayor Stephanie Rawlings-Blake was also on-hand to laud the company's innovative greening efforts.

"We believe business leaders should be environmental leaders, too," said

"In addition to reducing emissions, we found that propane would reduce maintenance costs and save us money on fuel."

*Chuck Paterakis,
H&S Bakery*

Paterakis, whose grandfather founded the company in 1943. "That's why H&S Bakery adopted a social responsibility and environmental policy that has led to some dramatic changes in the way we work and use the earth's resources."

Over the next two years, the company aims to operate about 20% of its 600-vehicle fleet on propane. However, that's just part of the overall plan. In addition to reducing emissions and improving air quality, the company's green initiatives focus on reducing waste and conserving electricity, water, and gas. ■

Feature



Move Over, Petroleum Diesel: Biodiesel Offers an Easy Alternative for Fleets

Fleets from every corner of the country are busting commonly held myths about biodiesel. They're discovering first-hand that the fuel is an easy-to-implement, renewable, and economically viable alternative to conventional diesel that can yield almost immediate results.

Biodiesel is produced from soybean oil, animal fats, or recycled restaurant grease. The fuel can offer significant emissions reductions and is helping the United States achieve its energy independence goals. Perhaps the most attractive advantage for fleets, however, is the scalability of biodiesel blend levels and low barriers to adoption.

With assistance from their local Clean Cities coalitions, fleets like American University in Washington, DC, and the Metropolitan Sewerage District (MSD) of Buncombe County in Asheville, North Carolina, are seeing the benefits of biodiesel in a variety of applications.

American University Shuttles with Biodiesel

When American University made the decision to incorporate an alternative fuel into its shuttle bus fleet in 2011, it was looking for a fuel that would reduce emissions, but also allow for an easy transition. Driven by the

university wide goal to become carbon neutral, the Facilities Management Office's Operation and Maintenance Department evaluated various fuel and technology options, but quickly settled on a B20 blend.

Fast-forward to today, and the fleet's 10 large transit-style shuttle buses are using approximately 50,000 gallons of biodiesel a year, resulting in substantial petroleum reductions and cost savings. The University has also purchased a mobile fueling station, which ensured the availability of affordable, high-quality biodiesel without the inconvenience of fueling the vehicles off-site.

"Biodiesel has made great contributions to the overall sustainability program of our university," said Alef Worku, Shuttle Operations & Maintenance Manager. "We are excited to share our experience with others."

According to Worku, gaining support from the university administration, management, vehicle maintenance staff,

drivers, and students has been critical to ensuring a smooth transition to the new fuel. The fleet also worked closely with permitting authorities, the Greater Washington Region Clean Cities Coalition (GWRCCC), and a local fuel provider to guarantee success.

As a stakeholder with GWRCCC since 2010, American University included the coalition from the beginning. The coalition helped connect the fleet with relevant stakeholders and information, which made the implementation easier.

"Ron Flowers [Clean Cities Coordinator at GWRCCC] has been instrumental in our success. He worked to bring us together with other fleets in the area, including universities and municipalities. The networking and information sharing have been invaluable," Worku said.

Worku maintained that early collaboration with local regulatory agencies and authorities was also important, particularly because



the university chose to implement a relatively unique mobile trailer to fuel their shuttle buses.

“Making the switch to biodiesel was much easier than we thought it would be, and there was ample informational assistance available,” he said. “By pursuing the idea and bringing the right people to the table, including the community, we achieved what we originally thought was impossible.”

The project was entirely funded by the University, and quick return on investment was key. The mobile fueling station was the only upfront cost, but Worku says the resulting time efficiencies and cost savings are helping pay back this investment. Before the mobile fueling station, the University found that fueling the shuttles at local stations resulted in 25 to 30 minutes of lost productivity per vehicle, three times per week. Now, the mobile unit allows for fueling right on campus. American University also contracted with another GWRCC stakeholder, Tri-Gas Oil, which allows them to buy biodiesel in bulk, versus retail petroleum diesel. This has translated into an overall price-per-gallon savings—allowing the fleet to save more than \$14,000 annually in productivity gains and fuel costs.

“We decided to switch to biodiesel because it is good for the environment and relatively easy to implement, but the productivity and cost savings have been icing on the cake,” Worku said.

American University capitalized on lessons learned in their fleet and from others in their area to ensure success. Although there are many examples of fleets successfully using B20 in cold climates, the fleet opted to reduce its biodiesel blend to B5 from November to April. Tri-Gas Oil’s involvement with the BQ-9000 program (see box on page 8) was also key, as other local fleets had advised the University to emphasize fuel quality. As a result, after testing the biodiesel on their own vehicles, Worku and his team began changing fuel filters (on both vehicles and fueling dispensers) more frequently. By taking advantage of these lessons learned, the fleet has had no recent issues with vehicle performance.

“The great thing about converting to biodiesel is that we didn’t have



to modify the bus engines, and the ongoing maintenance has been hassle-free,” he said.

Metropolitan Sewerage District Demonstrates Long-Term Success

American University is not the only fleet sharing its successes with biodiesel. After more than a decade of biodiesel use, Metropolitan Sewerage District (MSD) has become a valuable resource to Land of Sky Clean Vehicles Coalition (LSVC) and area fleets interested in using the fuel. While MSD originally switched its fleet to biodiesel in 2003 for the environmental advantages, the District has since benefited from low costs, both up front and through fuel price savings in some years. The wastewater treatment agency—a non-profit, publicly owned utility serving 52,000 customers—runs all of its 81 diesel vehicles on B20. This includes 70 pick-up, dump, and sewer vacuum trucks, as well as 11 pieces of off-road equipment. MSD currently uses more than 70,000 gallons of biodiesel per year, reducing its greenhouse gas emissions by more than 700 tons from 2010 through 2013 alone.

“This was the perfect opportunity to move to something cleaner for the environment, and the results have exceeded

See Biodiesel on p.9 >

Photo left page (top): American University started transitioning its shuttle bus fleet to biodiesel in 2011 and today uses 10 large transit-style buses. *Photo from American University, NREL 33388*

Photos right page (above from left): The fleet bay for Metropolitan Sewerage District’s biodiesel-fueled trucks in Asheville, North Carolina. *Photo from Metropolitan Sewerage District, NREL 33396*; Biodiesel can be found at more than 250 fueling stations throughout the country. *Photo from MotorWeek/Maryland Public TV, NREL 17183*

Manufacturer, Fuel Quality, and Specification Changes Clear New Paths for Biodiesel Implementation

Nearly 14 million vehicles on the road in the United States today are capable of using some blend of biodiesel. Currently, all major original equipment manufacturers (OEMs) support the use of at least B5 under their warranties, while nearly 80% of OEMs have approved the use of B20 or higher blends in at least some of their vehicles.

For more information about biodiesel, visit the AFDC (afdc.energy.gov/fuels/biodiesel.html) or the NBB website (biodiesel.org/).

Every year, more OEMs approve B20 for use in their vehicles. Many OEMs have been long-time participants in the light-duty diesel vehicle market, and continue to produce diesel vehicles that are approved for B5 everywhere. A few companies even approve the use of B20 in some states. For example, the 2014 Ram 1500 was the first half-ton pickup truck introduced with a diesel option. Approved for B20 use, it won the “Best Pickup” award in Consumer Reports magazine. Also in 2014, General Motors (GM) introduced the diesel Chevrolet Cruze, the first diesel passenger car approved for B20 use nationwide.

New 2015 diesel models that are also OEM-approved for B20 include the Ram ProMaster cargo van, Ford Transit van, and Jeep Grand Cherokee. In 2016, GM’s Chevrolet Colorado and GMC Canyon will be joining the half-ton diesel pickup truck market, and both are B20-approved. For a complete listing of OEM position statements on biodiesel, as well as the current U.S. Diesel Vehicles List, visit the National Biodiesel Board (NBB) website (biodiesel.org/using-biodiesel/oem-information).

In addition to advocating for the use of higher biodiesel blends, NBB has also

continued its focus on maintaining fuel quality. NBB’s BQ-9000 program is a voluntary national accreditation program that assists companies that produce, test, and supply biodiesel fuel. The program combines the industry standard for biodiesel, American Society for Testing Materials (ASTM) D6751, with a rigorous quality program that includes storage, sampling, testing, blending, shipping, distribution, and fuel management practices.



At the end of 2014, 92% of the biodiesel produced in the United States came from BQ-9000 certified producers. Historically, BQ-9000 certification applies to any biodiesel manufacturer, marketer, or distributor that is willing to meet the program requirements.

At a conference in February of this year, NBB launched the final stage of the BQ-9000 program, a retailer



Photo (left) from Chrysler Group LLC; Photos (top and above) from Ford Motor Company: 2014 Transit Connect, 2015 Transit Chassis Cab

certification. Currently, biodiesel blends of B20 or above are available at an estimated 300 retail locations nationwide, many of which will be able to benefit from this expanded program. BQ-9000 retail locations will be more appealing to customers looking for assurance that they are purchasing high-quality fuel.

“The BQ-9000 Retailer Program will now help to ensure fuel quality throughout the entire supply chain, down to the final consumer,” said NBB’s Scott Fenwick.

A Blend for All Seasons

Even in cold weather and high altitudes, biodiesel blends can be a viable alternative. The blend level can be altered seasonally to ensure the best performance year-round. In winter, biodiesel blends of up to B20 can be treated the way No. 2 diesel is—by using some No. 1 diesel in the blend to prevent gelling.

“Biodiesel that meets ASTM standards continues to perform well in very cold temperatures in blends up to 20%,” said Fenwick. “This winter, we did not see any more cold weather operability issues with biodiesel than we did with diesel alone—in fact, we saw fewer.”

“That said, fleets should work with their fuel supplier to be sure the gel point, blend level, and additives are appropriate for the conditions.”

Biodiesel is also making inroads in other industries, and the evolution of ASTM standards is facilitating this growth. For example, ASTM voted to approve performance specifications (D396) for blends of 6% to 20% biodiesel with traditional heating oil. Also, the industry is overcoming a major barrier in the distribution of biodiesel blends via pipeline, thanks to revisions to ASTM D1655, an aviation turbine fuel standard. Increasing the trace amount of biodiesel that can be safely allowed in jet fuel, which is commonly transported by pipeline, opens the door to shipping biodiesel blends via the same U.S. pipelines that carry jet fuel. This will streamline the distribution process.

> Biodiesel, from p. 7

our expectations,” said Neil Hall, MSD’s Fleet Manager. “The fuel is clean and produced locally, the vehicles continue to perform well after the transition, and we are able to give back by sharing our experiences with others.”

Among the chief reasons MSD chose B20 was for its versatility, but especially because the blend can be used in most vehicles (see box beginning on p.8). Like American University, the fleet transitions to a lower blend (B10) during the colder months of November through February. MSD is also working with a BQ-9000 producer, Blue Ridge Biofuel, which uses recycled cooking oil as a feedstock for its fuel. According to LSVC, in some years biodiesel has been sold in bulk to fleets in the region at an average \$0.05 per gallon discount over diesel fuel. In 2012 alone, this translated to more than \$3,500 in savings for MSD.

Biodiesel implementation has been a bottom-up effort at MSD; the staff made the case to upper management, and the Board of Directors approved the decision in 2003. The general manager keeps the Board up to date on the fuel’s use, and the fleet manager ensures that mechanics are familiar with biodiesel maintenance procedures.

For instance, MSD found that when an older vehicle first transitions from diesel to B20, the fuel filters need to

be changed within the first six months until the biodiesel cleans out the vehicle’s fuel system. Some newer vehicles, however, require no additional filter changes. Otherwise, maintenance staff and drivers have not seen a noticeable change in performance. The fleet’s on-site fuel tanks required an initial inspection but, because they were less than four years old, did not require cleaning before biodiesel was introduced.

“Everyone is always looking for a shoe to drop, but it has been a mostly pain-free experience,” said Peter Weed, Director of Wastewater Treatment & Maintenance.

Weed added that MSD is committed to sharing its success with others. In the most simple way, MSD communicated this by donning all its biodiesel vehicles with a sticker that states, “This vehicle runs on biodiesel.” Also, as a charter stakeholder, fleet representatives often speak at LSVC events and are on-hand to answer questions from fleets interested in switching to biodiesel.

For example, MSD assisted the City of Asheville in its decision to fuel vehicles with B5 in 2007, and eventually B20 in 2014, providing valuable advice about how to ensure fuel quality.

“MSD has always been very helpful,” said Chris Dobbins, Fleet Services Consultant with LSVC. “They have consistently been a great resource.”

The feeling is mutual: “The Land of Sky Clean Vehicles Coalition team is excellent,” Weed said. “They are always available to us and supportive of our work.” ■



Above: American University now owns its own mobile biodiesel fueling station, which has saved time and money for the fleet. *Photo from Greater Washington Region Clean Cities Coalition, NREL 33389*

Financial Opportunities

Coalitions Key in Managing and Obtaining CMAQ Funding for Fleets

Alternative fuel vehicles play a major role both in reducing our nation's petroleum consumption and helping metropolitan planning organizations (MPOs) reach their air quality improvement goals. Many Clean Cities coalitions collaborate with their local MPOs and state departments of transportation (DOTs) on projects to reduce criteria emissions (like NOx and particulate matter) by funding alternative fuel vehicles and infrastructure.

One of the primary sources of funding for air quality projects is the U.S. Department of Transportation's Congestion Mitigation and Air Quality Improvement Program (CMAQ). State and local agencies work together to distribute federal funding and choose projects based on each community's needs.

Clean Cities coalitions can be great allies when state and local governments are looking for effective ways to use CMAQ funding. Coalitions do this by playing a pivotal role in bringing together diverse stakeholders, including interested fleets, vehicle manufacturers, fuel providers, and infrastructure developers. In addition to identifying worthy projects, coalitions may be able to manage CMAQ projects because they are familiar with deploying alternative fuels and advanced vehicles. Coalitions in New York, Illinois, and Colorado, for example, have already begun paving the way for a more sustainable future through CMAQ projects.

In New York state, coalitions are using CMAQ funds to promote the Clean Cities mission through a variety of partnerships with the New York State Energy Research and Development Authority (NYSERDA). Greater Long Island Clean Cities has helped the New York Metropolitan Transportation Council manage more than \$10 million



in CMAQ funds on projects to deploy E85 stations and compressed natural gas (CNG) stations, school buses, taxis, trucks, and vans. Empire Clean Cities also provides local program support to NYSERDA's New York City (NYC) Private Fleet Program. This NYC program uses CMAQ funding to reduce the incremental cost of hybrid, natural gas, and electric trucks and buses. Further, Genesee Region Clean Communities partnered with NYSERDA to manage a \$2 million CMAQ program in Rochester supporting the purchase of CNG and propane vehicles. "It's a common-sense approach to partner with Clean Cities coalitions," said Rich Perrin, Genesee Transportation Council's executive director. "They have the experience, contacts, and passion to ensure this program is effective and advances our mutual goals. I would recommend other MPOs work closely with their local Clean Cities." Through all these partnerships, alternative fuel vehicles are reducing harmful emissions and helping New York State reach its air quality goals.



Meanwhile, Chicago Area Clean Cities (CACC) is using \$35 million of CMAQ funding to administer Drive Clean Chicago, a program that provides vouchers for all-electric and hybrid trucks and buses. It also offers funding for CNG fueling stations, DC Fast Charging plug-in electric vehicle stations, and alternative fuel taxis. According to CACC's Samantha Bingham, "We hope early investment in all-electric and hybrid trucks and buses will accelerate the development of this technology and lead to lower vehicle prices in the future." A long-time coalition stakeholder, the Illinois Environmental Protection Agency is using \$3 million of CMAQ funding to launch

> Article continued on page 15

Top: Alternative fuel municipal and fleet vehicles, such as this refuse truck, were funded through the Genesee Region Clean Communities coalition with CMAQ funding. *Photo from Genesee Region Clean Communities coalition, NREL 32289*

Above (right): The Village of Niles Zenith Public Works electric van was the first vehicle deployed through Drive Clean Chicago, which provides vouchers and grants to fund the purchase and conversion of qualified fleet vehicles and fueling infrastructure. Chicago Area Clean Cities spearheaded the application process for this funding. *Photo by Samantha Bingham, Chicago Area Clean Cities coalition, NREL 33969*

Coordinator Profile

Coordinator Helps San Diego Dealers Plug-In to Electric Vehicle Progress

As an urban planner by trade, Coordinator Kevin Wood is skilled at finding ways to turn grand visions into reality. Wood, who has helmed the San Diego Regional Clean Cities coalition (SDRCC) since 2012, is now playing a role in shaping the electric vehicle (EV) revolution that has been sweeping his home state as well as the nation.

“We’ve been able to make a lot of progress in California,” Wood said. “So far, we’ve been able to deploy more than 100,000 EVs statewide, and there have been thousands of new charging stations installed. The state has also invested hundreds of millions of dollars in incentive funding for vehicles, infrastructure, and planning activities—we’ve been very fortunate.”

Closer to home, SDRCC and its parent organization, the Center for Sustainable Energy (CSE), have taken a unique approach to igniting interest in plug-in electric vehicles (PEVs). In late 2013, Wood helped spearhead the PEV Dealership Outreach & Education Program, which provides dealers in the San Diego area with training and informational materials to reference and hand out to consumers. The program grew out of a larger statewide effort administered by the CSE, called the Clean Vehicle Rebate Project, which offers EV rebates for the purchase or lease of new, eligible zero-emission and plug-in hybrid electric light-duty vehicles.

“When we reached out to dealers about the rebate program, we found many were more likely to talk someone *out* of buying a PEV instead of talking people *into* buying one,” Wood said. “Because PEVs are still a relatively new technology, many salespeople weren’t confident about selling these vehicles.

“We realized we needed to get the dealers really excited and invested in selling



San Diego Regional Clean Cities Coordinator, Kevin Wood, leads a dealer outreach session. Wood has spearheaded the Dealership Outreach & Education Program, which provides dealers in the San Diego area with training and informational materials. *Photo from Kevin Wood, NREL 33398*

EVs in general if we want to see this market continue to grow and move beyond the early adopters.”

Enter the dealer outreach program. Now more than a year and a half in operation, Wood said the program has successfully connected with more than 50 local dealers and their salespeople and supplied them with thousands of the SDRCC’s educational brochures. The brochure outlines everything from the basics of PEVs to what rebates and incentives are available for buyers and information about how utility rates are determined.

“While we learned that it takes a lot of effort to work with dealers, in the end it’s worth it,” Wood said. “Dealers are the ones interacting with consumers every day, so it’s extremely important that they are armed with the best and most accurate information. We’ve heard from numerous dealers that the information has been very useful and has even helped them sell more of these vehicles.”

Yet the EV push won’t stop there. In the coming year, Wood plans to



Kevin Wood, SDRCC

expand his coalition’s efforts with funding from a recent \$300,000 California Energy Commission grant to continue dealer education. The grant will also boost outreach to more municipalities in regards to zoning changes and planning for future EV infrastructure. Add

to that his initiative to compile EV lessons learned and resources for fellow coalitions (as part of his role on the Clean Cities Coordinator Council), and Wood will have his plate full for the next few years at least.

It’s all in a day’s work for the energized coordinator.

“The most rewarding part of my job comes when I walk away from a conversation knowing I’ve not only provided someone with good information, but maybe influenced their decision to purchase an alternative fuel vehicle,” Wood said. “Then when I actually see those vehicles on the road, I feel proud knowing I may have played some part in putting them there.” ■

Coalition News



CALIFORNIA

Patricia Tind

Silicon Valley Clean Cities Coalition

svcleancities.org

Silicon Valley-based Electric Vehicle Parade Brakes Guinness World Record

Who created the world's largest commercially available hot dog? Who is the world's oldest gymnast? Since 1955, people have turned to Guinness World Records to learn about the record-breaking feats of seemingly ordinary people, places, and things. Last September, the record-tracking organization declared Cupertino, California, the location of the world's largest parade of EVs.

The record-breaking parade and EV rally were held at De Anza College in conjunction with National Drive Electric Week, a nationwide celebration to heighten awareness about the widespread availability and benefits of EVs. In partnership with the Electric Auto Association of Silicon Valley and software company SAP, Silicon Valley Clean Cities (SVCC) helped recruit regional EV owners to participate in the event, and they turned out in electric-powered droves.



Participants gather for the EV parade and rally. *Photo from Silicon Valley Clean Cities Coalition, NREL 33033*

“We reached out to nearly 400 stakeholders as well as employees at a variety of local corporations—Cisco employees alone accounted for 40 participants,” said Patricia Tind, SVCC coordinator and director of environmental programs at Breathe California. “With 507 EVs on site, we were thrilled to have succeeded in breaking the previous world record of 481 EVs, set in Stuttgart, Germany, earlier in the year.”

Tind is a member of the “Green Team,” a consortium of Breathe California, SVCC, and the Electronic Transportation Development Center, which was a gold sponsor of the event.

“We hosted a Hospitality and Education Center with educational information and vehicle displays,” Tind added. “Many people were especially interested in a full-size conventional school bus converted to run on electricity generated by solar panels (which was part of SVCC’s Zero Emissions Squared Electric School Bus Project).”

Also on display was a two-seater THINK electric vehicle, which features a top speed of 70 miles per hour and a 100-mile range. In addition to creating a THINK Owners’ Club to foster a cooperative network of enthusiasts, SVCC worked closely with THINK North America to place nearly 60 vehicles in the area over the last three years.



MINNEAPOLIS

Lisa Thurstin

Twin Cities Clean Cities Coalition

cleanairchoice.org/cities/tc.cfm

Minneapolis Makes EV-Charging History Record

To raise awareness about the expansion of fast chargers in their metro area, Twin Cities Clean Cities Coalition (TC4) also opted for setting a Guinness World Record instead of a holding a simple event. The coalition and their partners and stakeholders organized the 24 Hour Electric Vehicle Charging Challenge, hosted by 36 Lyn Refuel Station in South Minneapolis. They invited local EV owners to help set the record by charging their vehicles between 2 p.m. on April 12 and 2 p.m. on April 13. Prize drawings and free food from local vendors were added incentives. A video camera recorded the charging sessions over the 24-hour period, and plans are to make a YouTube video from the footage. The event was coordinated by ZEF Energy, PlugInConnect, and Minnesota Pollution Control Agency with assistance from TC4.

The final count was 85 charging sessions, during which 440 kWh of electricity were dispensed. They expected to dispense more electricity, but the charge rate was limited due to a number of participants arriving with nearly full batteries. Nevertheless, a record was set in this new category, and the figures are being submitted to Guinness World Records. The verification process takes approximately 2-3 months.

“We not only established a record,” TC4 Coordinator Lisa Thurstin said, “through local media we spread the word to hundreds of thousands of people about the ease of EV ownership and range capability in the Twin Cities.”



Participants line up to plug in and charge during the 24-Hour Electric Vehicle Charging Challenge, sponsored by the Twin Cities Clean Cities Coalition in Minneapolis, Minnesota. The Coalition held the event in April 2015. *Photo from Twin Cities Clean Cities Coalition, NREL 33392*



NORTH CAROLINA

Lacey Jane Wolfe

Triangle Clean Cities Coalition

trianglecleancities.org

Triangle Clean Cities Resource Gives CNG Installation a Boost

When the Triangle Clean Cities Coalition (TCCC) set out to promote compressed natural gas (CNG) fueling stations in North Carolina, its first step was to identify the issues people faced during CNG installation, and then

overcome them by providing helpful guidance. This resulted in the coalition's online publication, *Planning and Installation Guide: North Carolina Compressed Natural Gas Fueling Stations*.

To identify the most useful information for the guide, TCCC—which covers the Raleigh, Durham, and Chapel Hill area—relied on interested parties from across the state. Input for the guide came from fleet managers, fueling equipment manufacturers, vehicle manufacturers, and natural gas utilities. End users identified the installation process as one of the biggest CNG barriers they face. More specifically, the participants wanted advice about process schedule, funding mechanisms, and the necessary

components of putting together a request for proposal (RFP).

Armed with this information, TCCC worked with North Carolina's major natural gas utilities, PSNC Energy and Piedmont Natural Gas, to develop a station installation guide. The guide provides details about existing CNG infrastructure in the state, working with utilities, what to expect during the permitting and inspections process, and other information specific to North Carolina.

Another challenge was the experience that fleets had installing natural gas stations varied widely, according to

See North Carolina on p. 14 >



KANSAS

Kelly Gilbert

Kansas City Regional Clean Cities Coalition

metroenergy.org/index.php/clean-transportation/

Kansas City Home to Nation's Largest Network of EV Charging Stations

Kansas City Power & Light (KCP&L) is a long-standing stakeholder in the Kansas City Regional Clean Cities coalition (KCRCC). Last year, KCP&L launched its Clean Charge Network, the nation's first large-scale utility-owned network of electric vehicle charging stations. When finalized this summer, the network will feature more than 1,000 Level 2 charging stations and 16 DC fast-charge stations across Kansas City and outlying communities.

Placed in areas where clusters of EV owners live and work, the charging stations will be free to users for the first two years. This is thanks to partnerships with companies at host locations as well as with Nissan Motor Company.

Workplace charging has also been crucial to bolstering the Clean Charge Network, and the KCRCC has played a key role in the effort. The coalition has recruited interested employers through educational EV ride-and-drive events and regularly promotes the Workplace Charging Challenge, a nationwide U.S. Department of Energy initiative encouraging employers to provide EV charging at their worksites.

"In 2011, we worked with KCP&L to bring the first 10 charging stations to the metro area," said Kelly Gilbert, transportation director for the Metropolitan Energy Center and co-coordinator

of KCRCC. "Then the utility deployed additional stations through its SmartGrid Demonstration Project. These pilot deployments provided the opportunity to test technologies and behaviors while monitoring usage and laying the foundation for the Clean Charge Network."

Gilbert added that a key factor in building such a sizeable network—capable of supporting more than 10,000 EV owners—is KCP&L's strong belief in energy efficiency and sustainability.

"The installations will help KCP&L learn how EVs can enable additional customer programs for energy efficiency, demand response, distributed generation, and renewables," she said. "With so many stations located throughout the region, KCP&L will virtually eliminate so-called range anxiety, which prevents many folks from purchasing EVs."

To launch this ambitious project, KCP&L called on its foundational work and partnerships with Edison Electric Institute, Electric Power Research Institute, KCRCC, and its own Smart Grid project. It also relied on input and support from a broad range of stakeholders, including the regional business community, economic development groups, elected officials and agencies, environmental groups, and numerous automobile manufacturers.

Based in Kansas City, KCP&L services more than 800,000 customers in 47 northwestern Missouri and eastern Kansas counties.



Above: KCRCC stakeholder and electric utility, KCP&L, will launch a large network of charging stations this year capable of supporting more than 10,000 electric vehicle owners.

Photo from KCP&L, NREL 33070



NEW HAMPSHIRE

Dolores Rebolledo

Granite State Clean Cities Coalition

granitestatecleancities.nh.gov

New Hampshire Coalition Helps Devoted Alternative Fuel Advocate Leave Lasting Legacy

When news about a propane-related funding opportunity arrived in the inbox of Granite State Clean Cities Coordinator Dolores Rebolledo in early 2013, she forwarded it to her stakeholders across New Hampshire. Alternative fuel enthusiast Joe McCarthy of Patsy's Bus Sales was quick to respond and by December of that year, the company celebrated the grand opening of its new propane station. Located in Concord, the state-of-the-art fueling station is now open to the public 24 hours a day, seven days a week.

"Sadly, Joe McCarthy passed away last year, but not before putting Patsy's at the forefront of alternative vehicle fueling in the state," Rebolledo said. "Since that snowy December day when we celebrated the station opening, another company has installed the same type of dispenser."



Patsy's Bus Sales Owner Joe Alosa (center) cuts the ribbon at the propane fueling station opening celebration for the state-of-the-art propane fueling station. Photo from Granite State Clean Cities Coalition, NREL 33056

"Now propane accounts for nearly half of the alternative fuel use in the state."

The process of getting the station up and running was not without hurdles, however. Joe Alosa, Patsy's owner and president, shepherded it through the process with help from Rebolledo.

"State and local permitting entities lacked experience dealing with propane dispensers, so the process was somewhat challenging," Rebolledo said. "Joe Alosa diligently prepared site plans, applied for variances, requested permits, and guided officials at the site."

Although Alosa was new to the process, Rebolledo said he soon became the go-to authority on what is needed to open a propane fueling station. "He now receives several help requests each month from others wanting to install such stations," she added.

"We have always been proponents of alternative fuel vehicles, and adding this retail propane station is proof that we believe propane is a viable fleet fuel," said Alosa. "When you combine the cost savings with the reduction in emissions, you can't beat the benefits that propane offers."

The project was made possible through a partnership between Patsy's Bus Sales and CleanFUEL USA, a manufacturer of propane dispensers. An American Recovery and Reinvestment Act grant, made available through the U.S. Department of Energy, provided funds for the project, which included establishing networks of propane fueling stations.

"We were able to make this project a success thanks in no small part to Joe McCarthy's unyielding efforts to promote alternative fuels," Rebolledo added.

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TCCC Coordinator Lacey Jane Wolfe. However, this diversity was put to good use when North Carolina fleet managers were asked to provide input on the guide's content.

"Although North Carolina has 23 public natural gas fueling stations and many vehicle fleets using this fuel, we are still in the early stages of adoption," Wolfe said. "This project enabled us to incorporate many voices into the guide. It was challenging to include such a wide variety of approaches and funding mechanisms and still keep it succinct, but we ended up with a much better product than we would have otherwise."

Developing the installation guide was part of an Alternative Fuel Implementation Team project led by the North Carolina Clean Energy Technology Center. The guide is now part of the Alternative Fuel Implementation Toolkit website (nccleantech.ncsu.edu/clean-transportation/get-involved/alternative-fuel-implementation-toolkit/).

"The installation guide has received very positive reviews from stakeholders across the state," Wolfe said. "The North Carolina Department of Public Instruction has even included the publication in a report to the Joint Legislative Energy Policy Commission." ■



Workers lay the groundwork for a new CNG station in Durham, North Carolina. Photo from BuildSense, NREL 33393

Intern Profile

Lending the LEAF Leads Borrowers to Buy, Promotion for Intern

On the same day Shea Maritato graduated from Emmanuel College in May 2014, she was offered an internship with the Maine Clean Communities coalition (MCC). Maritato, who received her bachelor's degree in International Affairs and Global Studies, "had no idea" she'd find herself heading down a road that would lead to work in alternative fuels—but she feels immensely lucky that she did.

"My internship was a fantastic experience," said Maritato, noting that she "started knowing next to nothing, and finished with the confidence to educate others about ways to reduce petroleum use in the transportation sector."

During her internship, Maritato developed the coalition's social media platforms, drove traffic to their website, and assisted with event planning, outreach, and speaking opportunities.

As of late August 2014, Maritato joined the coalition full-time, filling the shoes of her internship mentor, Jennifer Puser Brennan, who was offered a position with the Greater Portland Council of Governments (GPCOG). Maritato credits Puser Brennan for making the most profound impact on her internship experience, especially because she

launched MCC's successful Electric Vehicle (EV) Lending Program at their Portland office.

The coalition's EV Lending Program was born thanks to funding from Central Maine Power's EV Grant Program, which is designed to make the purchase of EVs much easier. In fact, it was the first organization in the state to receive funding. The way the coalition's EV Lending Program works is simple: MCC lends out an EV—a 2013 Nissan LEAF—for no charge, one week at a time, to anyone who is interested in taking the vehicle for an extended test drive. In return, MCC hopes that those who borrow the LEAF will be convinced to purchase an EV for themselves.

"We've lent it out to participating members of our council of governments," explained Maritato. "So far, about 11 or so communities have taken advantage of it. Of those 11, six purchased their own EV, and many have decided to install EV charging stations."

The 2013 Nissan LEAF has roughly a 70-mile range. "These vehicles do require some extra planning," Maritato said.

At the end of the summer program, all of the interns participated in a webinar, each providing one or two slides that highlighted their best accomplishments from the internship. Maritato's slide focused on the successful development of her social media campaign, in addition to a brief description about some

videos that she produced. Her videos featured members of the EV Lending Program who purchased their own EVs.

When Coalition Director Steve Linnell and Puser Brennan approached Maritato with the opportunity to work full-time, she responded yes without question.

"It felt like a natural progression for me to fill that role," she said.

Maritato began her full-time position as program associate in late fall. She reports directly to Linnell, handling various deliverables, coordinating the Maine coalition's weekly newsletter, and reaching out to stakeholders.

She looks forward to seeing how the coalition will take the EV Lending Program to the next level, too. The coalition is exploring their options for obtaining another EV, possibly a 2014 LEAF. ■



Shea Maritato, with the Maine Clean Communities coalition, helped launch the coalition's successful EV Lending Program. The program is designed to familiarize and encourage the public to purchase electric vehicles. Photo from Shea Maritato, NREL 33399

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a Green Fleet Grant Program to deploy natural gas and propane vehicles. Chicago will be cleaner and greener because of these programs.

Colorado also launched a program, focused on funding CNG vehicles and fueling infrastructure. This \$30-million program builds on the success of Clean Cities initiatives such as the Colorado Natural Gas Vehicle working group. All three Colorado Clean Cities coalitions (Denver Metro, Northern Colorado, and Southern Colorado) are supporting this program as energy coaches—helping fleets, fuel providers, dealerships,

and communities understand the advantages of converting to alternative fuels. "Our job is to sit down with fleets, analyze their petroleum consumption, and calculate the monetary savings from converting to alternative fuels," says energy coach Maria Eisemann, who is also co-coordinator of Northern Colorado Clean Cities coalition. These coaching efforts resulted in many strong CMAQ funding applications.

The Clean Cities network excels at sharing successes, lessons learned, and innovative ideas to help each other benefit from similar experiences around

the country. Clean Cities coalitions and local CMAQ administrators continue to develop strong partnerships as they learn from the successes of past alternative fuel vehicle programs in reducing harmful emissions.

Coordinators are encouraged to meet with local MPO and state DOT staff to discuss how alternative fuel vehicle programs can help meet air quality improvement goals. For more information on the Chicago and Rochester projects described here, visit the AFDC Case Study database (afdc.energy.gov/case). ■

Ask the Technical Response Service

The Renewable Fuel Standard: How it Works and What it Means to You

Q: What is the national Renewable Fuel Standard (RFS) and which entities does it affect?

A: The RFS reduces U.S. petroleum consumption by increasing the amount of renewable fuel that must be blended into transportation fuels. The Energy Policy Act of 2005 contained the first RFS requirement, and this was implemented by the U.S. Environmental Protection Agency (EPA) in 2008. The RFS was then expanded by the Energy Independence and Security Act (EISA) of 2007, and this created the RFS2 program we know today.

RFS2 specifies increasing volumes of renewable fuel that must be blended into the domestic fuel pool each year. These required volumes reach 36 billion gallons of renewable fuel annually by 2022. EISA also granted EPA the authority to reduce the required volumes in any year if certain waiver criteria are met. Each year EPA determines the annual percentage standards by dividing the annual renewable fuel requirement (in gallons) by the amount of highway and non-road gasoline and diesel fuel estimated to be supplied that year. These percentages are then applied to the regulated parties' (oil refiners and gasoline and diesel importers) actual fuel sales to determine their Renewable Volume Obligations (RVO), or the volume of renewable fuel they must ensure is blended into gasoline or diesel. EPA recently proposed new volume requirements and associated percentage standards for 2014, 2015, and 2016. In this proposal, EPA exercised its authority to reduce the statutory volumes, citing market constraints and

limited cellulosic renewable fuel availability. EPA expects to publish the final rule by November 30, 2015.

Every gallon of qualified renewable fuel that's produced is assigned a Renewable Identification Number (RIN). So, the entities comply with RFS2 by acquiring the appropriate number of RINs—either by directly blending a renewable fuel into their own products or by purchasing RINs and subsequently reporting the RIN data to the EPA.

Q: Which renewable fuels qualify under RFS2?

A: A fuel qualifies under RFS2 based on the feedstock used to produce it and the greenhouse gas (GHG) reductions it achieves. EISA includes a separate volume requirement for advanced biofuels, which include sub-categories of cellulosic biofuel and biomass-based diesel. Each category and sub-category has its own GHG reduction percentage requirements.

Q: Do any states have similar renewable fuel mandates or standards in place?

A: Yes, several states have enacted their own renewable fuel standards and mandates.

While renewable fuel standards and mandates are essentially the same, standards require a certain percentage of the total petroleum supply in a state to be renewable fuel, whereas mandates require a certain volumetric portion of each gallon sold in a state to include a percentage of renewable fuel. The following states currently have a renewable fuel standard in place (blend requirements often vary by year):

- **Hawaii** – 10% ethanol standard
- **Iowa** – 15% ethanol standard
- **Minnesota** – 10% biodiesel (April-September), 5% biodiesel (October-March), and 10% ethanol (year round) mandate
- **Missouri** – 10% ethanol mandate
- **Oregon** – 5% biodiesel and 10% ethanol mandate
- **Pennsylvania** – 2% biodiesel mandate
- **Washington** – 2% biodiesel or renewable diesel and 2% ethanol standard.

Several other states, listed below, also have renewable fuel mandates. However, these requirements are not currently in effect or enforced for a variety of reasons:

- **Louisiana** (biodiesel and ethanol mandates)
- **Massachusetts** (biodiesel mandate)
- **Montana** (ethanol mandate)
- **New Mexico** (biodiesel mandate for fuel used by state agencies)
- **Pennsylvania** (ethanol mandate).

Do you have any 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.

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