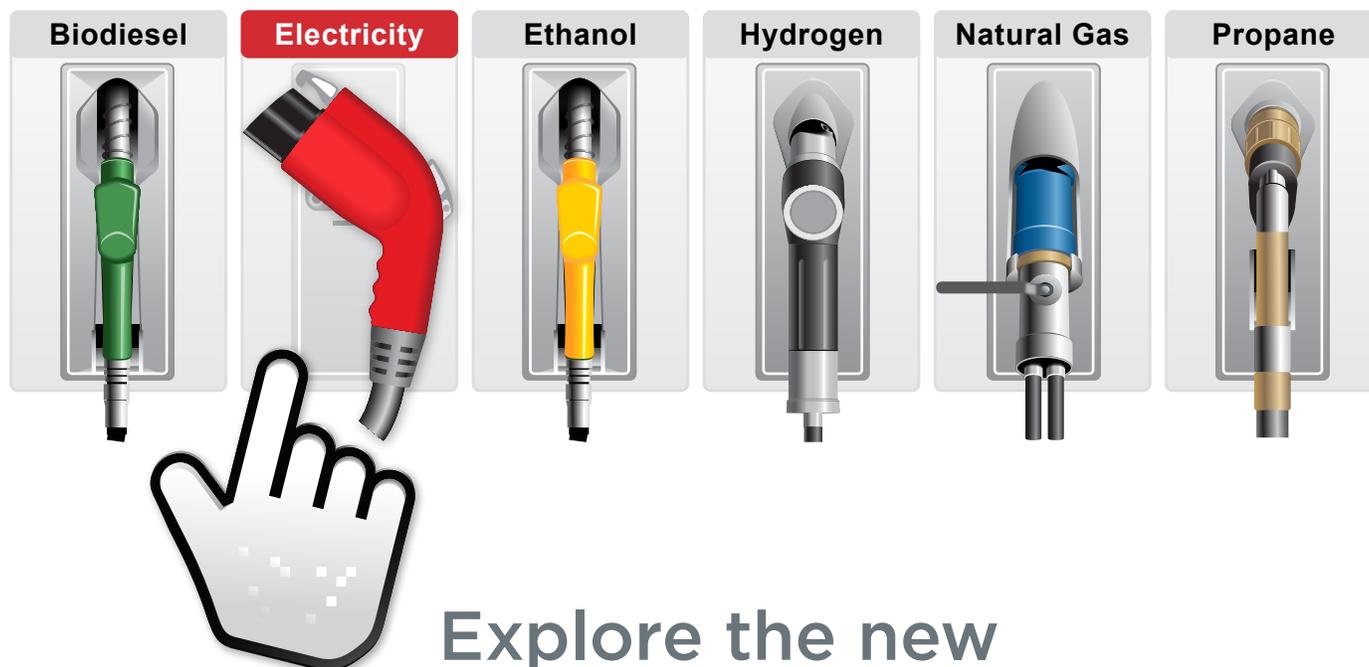


Clean Cities Now



Explore the new

Alternative Fuels Data Center

Clean Cities welcomes new coalition in North Carolina

Partnerships foster biodiesel deployment in Seattle

Tennessee schools cut vehicle idling

Calculate your petroleum-use reductions



Welcome

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

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



Dennis A. Smith

Dennis A. Smith
National Clean Cities Director



Linda Bluestein

Linda Bluestein
National Clean Cities Co-Director

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

Tool Tips

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

Petroleum Reduction Planning Tool

Things just got easier for fleet managers who are searching for the best strategies to reduce petroleum use, greenhouse gas emissions, and operating costs.

The newly redesigned Petroleum Reduction Planning Tool, available online at the Alternative Fuels Data Center (www.afdc.energy.gov/afdc), is an interactive Web application that quantifies the benefits associated with the adoption of alternative fuels, advanced vehicles, and fuel economy improvements.

"Fleets across the country are trying to reduce their petroleum use and cut emissions," said Project Manager Witt Sparks of the National Renewable Energy Laboratory (NREL). "This tool provides insights into which strategies will help them reach their targets. A fleet manager can sit down in front of a single Web page, explore multiple strategies, and know what the energy and

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Hawaii rolls out electric vehicles: p. 8



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Writers: Julie Sutor, Julia Thomas, and Ernie Tucker, NREL
Design: Dean Armstrong, NREL

environmental impacts will be before making any substantial investments.”

Users of the Petroleum Reduction Planning Tool explore options for a fleet by creating “what-if” scenarios: What if I replace 10 of my conventional sedans with plug-in hybrids? What if I start using B20 in my heavy-duty trucks? What if I convert my pickup trucks to run on natural gas or propane? Easy-to-read charts and tables display annual reductions in emissions, petroleum use, and fuel costs for each scenario. Emissions calculations are based largely on Argonne National Laboratory’s Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation (GREET) Model.

Once a user decides on a set of actions, he or she can save the plan and revisit it as needed to make adjustments or evaluate other scenarios. “This tool helps fleet managers allocate their resources in strategic ways and back up their decisions with solid data,” Sparks said.

Petroleum Reduction Planning Tool

This planning tool helps your vehicle fleet reduce petroleum consumption and greenhouse gas (GHG) emissions. Create a comprehensive plan for your fleet by using several savings methods. If your fleet includes multiple vehicle types, add more vehicles to each method.

My Current Plan

SET GOAL CLEAR PLAN

Savings Methods	Petroleum Reduction gall/yr	GHG Reduction tons CO ₂ /yr	Fuel Cost Savings \$/yr	Impact on Plan percent
Replace Vehicles	4,787	28	\$12,759	65%
Replace 10 midsize gas cars with 8 compact cars using Electric	4,787	28	\$12,759	65%
Use Alternative Fuel in Existing Vehicles	1,393	14	\$-917	19%
Use B20 in 8 large diesel vans	1,393	14	\$-917	19%
Reduce Idling	229	3	\$765	3%
Reduce idling in 8 large diesel vans from 2 hours per day to 0.50 hours per day	229	3	\$765	3%
Reduce Mileage	0.00	0.00	\$0.00	0%
Drive Efficiently	968	12	\$3,230	13%
Improve efficiency in 8 large diesel vans by 15%	968	12	\$3,230	13%
Total savings from plan per year	7,377 gallons	57 tons of CO ₂	\$15,837	100%

Annual Petroleum Reduction: 20,000 gallons (with goal marker at 7,377)

Annual Greenhouse Gas Reduction: 60 tons of CO₂ (with goal marker at 57)

Program News

Clean Cities Welcomes Land of Sky Coalition from Western North Carolina

The U.S. Department of Energy (DOE) recently welcomed a new coalition to the Clean Cities network. Land of Sky Clean Vehicles Coalition, headquartered in Asheville, North Carolina, received its designation from DOE in late July.

“We’re so pleased to officially add Land of Sky to the list of designated Clean Cities coalitions,” National Clean Cities Director Dennis Smith said. “The coalition’s leadership and its stakeholders have already demonstrated an impressive commitment to reducing petroleum use in western North Carolina, and we look forward

to seeing even more great things from them in the future.”

Housed within the Land of Sky Regional Council, Clean Cities’ newest addition traces its roots back to intensifying concerns over air quality during the mid-1990s.

“When we had the opportunity to pursue Clean Cities designation, we jumped at the chance,” Coordinator Bill Eaker said. “We saw it as an effective means to not only improve our air quality, but also support national energy security.”

In 2011, Land of Sky Clean Vehicles Coalition saved more than 500,000 gallons of petroleum, and it claims nearly 100 active stakeholders, including the City of Asheville, Public Service of North



Land of Sky Clean Vehicles Coalition Coordinator Bill Eaker

Carolina, Henderson County, and Great Smoky Mountains National Park.

“I’ve been working in the environmental field for 30 years, and I’ve never come across a program like Clean Cities, with such strong partnerships at the federal, state, and local levels, and in both the public and private sectors. We’re excited to be a part of it,” Eaker said.

Fleet Experiences

Partnerships Spark Biodiesel Success for Essential Baking Co.

The Essential Baking Company's commitment to sustainability is apparent in all aspects of its operations, from baking to distribution. For nearly five years, the company has delivered its certified organic baked goods to grocers, cafés, restaurants, schools, and hospitals in the Seattle area with a fleet of cargo vans that run on biodiesel. Through close partnerships and agreements with its fuel provider and leasing company, Essential Baking has overcome technical obstacles and successfully reduced its greenhouse gas (GHG) emissions.

Bringing the Key Players to the Table

Several years ago, Essential Baking owned the fleet of delivery vehicles it used to transport baked goods throughout the Seattle area. In 2006, the company began leasing its vehicles in order to reduce vehicle maintenance costs and other fleet-related expenses. During this time of transition, Essential Baking considered several options for alternative fuels, with the goal of reducing emissions and extending the commitment to sustainability into fleet operations. Biodiesel emerged as the best option because it is a locally produced renewable fuel. In addition, the company found it could use a blend of 99% biodiesel and 1% petroleum diesel (B99) in most of its leased diesel vans without compromising the warranties or modifying the vehicles. Furthermore, if the cost of biodiesel became prohibitive, the vans could easily switch back to using conventional diesel or a lower biodiesel blend until the price came down. Upon further investigation, Essential Baking discovered that biodiesel was already used widely in the Seattle area, so fueling infrastructure and service technicians familiar with the fuel were readily available.

The fleet initially worked with a local biodiesel supplier to fuel its vehicles.



An Essential Baking cargo van fills up at a Propel Fuels biodiesel station in Seattle, Washington. Photo from Propel Fuels, NREL/PIX 21775

“The Essential Baking Company’s success with biodiesel is the result of close collaboration among the fleet, leasing company, and fuel provider. This highlights the benefit of a ‘coalition’ approach to alternative fuel adoption. All three entities are key ingredients in the ongoing success of the project.”

*Scott DeWees,
Western Washington Clean Cities*

Unfortunately, it quickly had to discontinue biodiesel use because of fuel quality issues that resulted in increased vehicle maintenance. So Steve Kavanaugh, the distribution manager responsible for fleet operations at the time, began exploring other options and looking for ways to ensure fuel quality and vehicle performance. He brought to the table Propel Fuels, a California-based fuel provider with a strong network in Washington, and International Leasing, the bakery's vehicle leasing company, to discuss challenges and brainstorm solutions. Propel demonstrated its commitment

to fuel quality through regular fuel monitoring and educated International Leasing on the benefits of biodiesel. As a result of these discussions, Essential Baking and Propel signed a contract stating that Propel would guarantee the quality of its fuel, and in turn, Essential Baking would only use Propel biodiesel in its vehicles. The agreement formed the foundation of a strong relationship among the three companies, allowing them to address issues and solve problems collaboratively over the past several years.

A Long-Term Commitment to Biodiesel

Justin Christianson, who took over as distribution manager in July 2011, has continued the biodiesel program at Essential Baking. As of June 2012, the company ran 11 long-term lease cargo vans — nine 2005 Dodge Sprinters and two 2008 Sprinters — on various biodiesel blends. All of the 2005 models fuel with B99, except between December and March, when Propel prepares a B75 blend to avoid fuel gelling in cold temperatures. Essential Baking temporarily transitions to B20 in these vehicles during times when the price difference between diesel fuel and

biodiesel is too significant to justify a high-level blend. The two remaining vans have advanced exhaust control systems, so they operate on B20 at all times to avoid warranty issues. (The potential impacts of higher-level blends on these systems has yet to be fully studied.)

The vans refuel at Propel's public fueling stations, three of which are just a short drive from the Essential Baking fleet facility. The company takes advantage of fuel discounts through Propel's Volume Rebate program and is able to track its biodiesel use at the pump through the fuel provider's CleanDrive program. As a result, Essential Baking has easy access to online reports that detail the GHG reduc-

tions and petroleum displacement that result from its biodiesel use. As of June 2012, Essential Baking had displaced nearly 400 barrels of oil and reduced its GHG emissions by more than 320,000 pounds of CO₂ equivalent. In addition to these environmental and energy benefits, Essential Baking drivers have been particularly pleased with the reduced tailpipe emissions at the loading dock, where exhaust from diesel vehicle starts can cause an unpleasant odor and eye irritation.

The Importance of a Strong Biodiesel Network

Kavanaugh attributes the fleet's success with biodiesel to partnerships and the strong biodiesel network in the

Seattle area. "For fleets, the ability to use biodiesel invariably comes down to whether there is a good fuel supplier in the region and whether the support network exists." Western Washington Clean Cities (WWCC) has worked with biofuel suppliers, fleets, and others in the area to build and maintain this network. Essential Baking has participated in coalition events, and Propel is an active member of WWCC. Propel District Operations Manager Jake Millan explained, "WWCC has provided us with a host of opportunities, and we truly enjoy working with its staff. We look forward to seeing the coalition's continued good work to ensure there is strong support for biofuels in western Washington."

Coordinator Profile

Seventeen Years of Impact in Connecticut

Norwich, Connecticut, is roughly midway between Boston and New York. Baseball loyalties there can be split, but fresh air fans in the city of 41,000 would undoubtedly applaud Norwich Clean Cities Coordinator Pete Polubiatko, a self-described "old-timer," for his part in the game plan to reduce petroleum use. He has been with the coalition since 1995, when it received designation from the U.S. Department of Energy (DOE). That same year, the city council picked the municipally owned Norwich Public Utilities (NPU) to manage the new coalition, and the coordinator's duty landed with Polubiatko, then the utility's electric division manager.

Polubiatko's long tenure has afforded him a unique vantage point, and he's witnessed a slow-and-steady growth in alternative fuel use and interest by government agencies and the general public. "Over the last several years, there's been a growing awareness of the need for reducing petroleum consumption," Polubiatko said. "Back in the mid-90s, there was much less concern and less knowledge in the public." But he deflects any personal credit for the progress. "I think Clean Cities in general gets the kudos," he said, citing excellent DOE support for coordinators in the field. "Nationwide, we've touched a lot of people."

Polubiatko has witnessed firsthand, both nationally and locally, the role Clean Cities plays in successful deployment initiatives. "I've seen Clean Cities grow nationwide, with wonderfully talented young people joining the program," he said. "And there's the impact on our little municipality: We have one of the largest compressed natural gas (CNG) light- and heavy-duty fleets in the region."

Norwich has eight heavy-duty CNG vehicles, including utility bucket trucks, dump trucks, and a wastewater vacuum truck, as well as a variety of smaller CNG sedans, vans, and pick-up trucks; the fleet also owns two plug-in vehicles and uses biodiesel from its own fueling station. The city currently saves an estimated 41,000 gallons of petroleum annually. Norwich also has a publicly accessible CNG fueling station. "We're seeing more and more use, with some fleet owners coming in," Polubiatko said. "I'm thrilled. I love to see the vehicles come in."

Polubiatko is quick to point out that the Norwich coalition doesn't operate alone. It works closely with the three other Connecticut coalitions: New Haven Clean Cities, Connecticut Southwestern Area, and Capitol Clean Cities of Connecticut. The four coalitions are collaborating with dozens of other partners throughout the state on the Connecticut Clean Cities Future Fuels Project, a Recovery Act project that is deploying alternative fueling infrastructure and advanced vehicles across the state. The project has allowed Norwich to upgrade its CNG and biodiesel fueling infrastructure and to install publicly accessible electric vehicle charging equipment in several locations. The Connecticut coalitions also have worked together to host an annual clean vehicle expo for the past six years, providing educational presentations and large vehicle displays.

It all adds up to a feeling of accomplishment. "It makes you feel the message has been heard loud and clear, accepted, and agreed to," Polubiatko said.



Pete Polubiatko,
Norwich Clean Cities

Feature

EERE Home | Programs & Offices | Consumer Information

A Brand New Alternative Fuels Data Center

FUELS & VEHICLES CONSERVE FUEL LOCATE STATIONS LAWS & INCENTIVES Maps & Data Case Studies Publications Tools About Home

The newly redesigned Alternative Fuels Data Center has all the information, data, and tools that transportation decision makers have come to rely on for more than two decades. But after a major overhaul, the site now delivers like never before.

The Alternative Fuels Data Center (AFDC) is making it easier than ever to cut petroleum use, vehicle emissions, and operating costs. The U.S. Department of Energy’s online transportation clearinghouse underwent a substantial redesign that debuted in July, providing an enhanced online experience for those involved in the deployment of alternative fuels, advanced vehicles, and fuel economy improvements.

Originally developed in response to the Alternative Motor Fuels Act of 1988, the National Renewable Energy Laboratory (NREL) launched the AFDC in 1991 as a repository for alternative fuel vehicle performance data. Since that time, the site has evolved to become an indispensable resource for fleets, fuel providers, policymakers, Clean Cities coalitions, and others working to reduce petroleum use in transportation.

The site receives more than 1.3 million visits per year. Even the most trusted institutions must move with the times, though, and the AFDC is no exception.

“This site makes it so simple for me to find exactly what I need. I can easily pull up fuel use statistics and pricing, look at vehicle deployment trends, and download charts into my presentations.”

Kellie Walsh, Coordinator,
Greater Indiana Clean Cities Coalition

“We wanted to take everything that people find so useful about the AFDC and deliver it in new ways that take advantage of all the capabilities and technological innovations the Web has to offer today,” said AFDC manager Trish Cozart of NREL.

The redesign process began with extensive research into the needs of fleet managers, who serve on the front lines of alternative fuels deployment. Through focus groups, usability tests, and interviews, Cozart and her colleagues developed an architecture for the site that would allow users to find

Related Content: As users navigate through the site, they’ll see that many pages feature related content on the right-hand side, with suggested maps, data, publications, case studies, and tools.



A brand new feature on the AFDC is a large collection of case studies in alternative transportation deployment, in both written and video formats (www.afdc.energy.gov/case).

“These stories serve as road maps for fleets and drivers, so they can learn how others overcame barriers and found success,” Cozart said. “Users can find real-life examples of fleets that run on biodiesel, cities that have developed electric vehicle charging infrastructure, and school districts that power their buses with propane.”

Photos, top: from iStock/5565661; bottom: from Paper Transport, Inc., NREL/PIX 22257

- [+ Maps & Data](#)
- [+ Case Studies](#)
- [- Publications](#)
-  [The Future of Natural Gas](#)
-  [Business Case for Compressed Natural Gas in Municipal Fleets](#)
-  [Natural Gas Basics](#)
- [More Natural Gas Publications](#) | [All Publications](#)
- [+ Tools](#)

10 Ways to Get Started

This homepage feature introduces new users to the strategies, fuels, and technologies they can use to reduce petroleum use. It also points to key tools and information throughout the AFDC. Check it out at www.afdc.energy.gov/feature_ten.html.



Photo from iStock/12522145

the information they need most quickly and easily. Researchers and deployment experts conducted thorough updates to the site's existing technical content, and software developers revamped existing tools and developed new ones.

“The new AFDC represents a year’s worth of thoughtful planning, creativity, and innovation by dozens of members of the Clean Cities and AFDC teams, and I am confident it will prove to be an even more valuable resource to the thousands of transportation decision makers who turn to it for assistance in their efforts to reduce petroleum use,” National Clean Cities Director Dennis Smith said.

See “AFDC” on p. 12 >

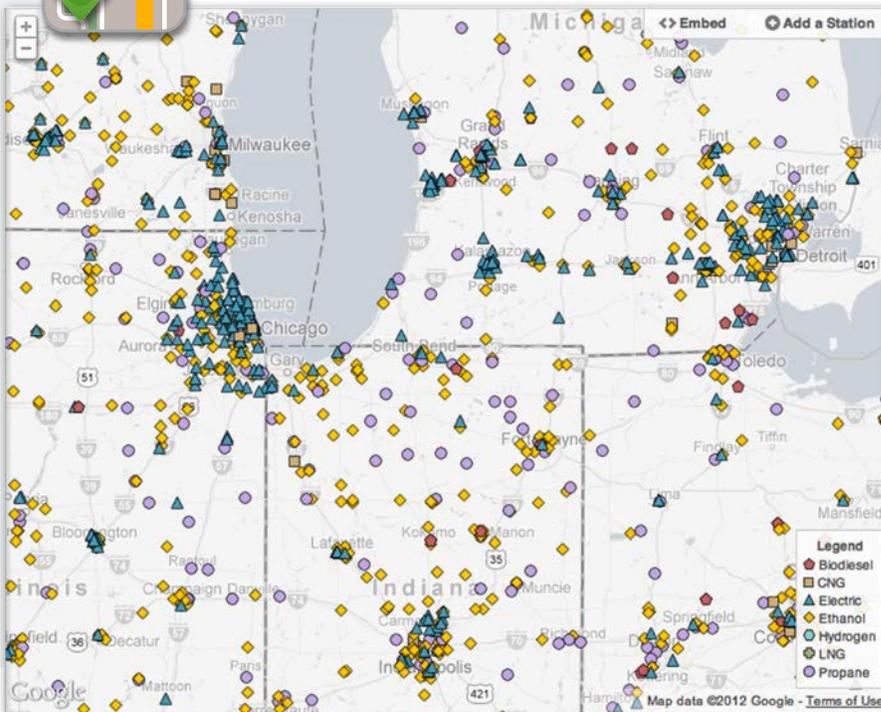


Responsive Web Design: The new AFDC is viewable not only from a personal computer, but also on all manner of devices and browsers, including tablets, e-readers, and smart phones. The site automatically adjusts to the device you’re using.

The Alternative Fueling Station Locator

(www.afdc.energy.gov/stations) has always been one of the AFDC’s most popular tools. Now even easier to use, this application allows drivers and fleet managers to find stations that offer electric vehicle charging, E85, biodiesel, natural gas, propane, and hydrogen. Users can sort by fuel, find all stations near a given location, and map routes with stations identified along the way. The tool also provides station counts for individual states and the nation as a whole.

“The Station Locator makes it a breeze for EV drivers who are looking for charging stations, or for fleet drivers who need to fill up with an alternative fuel like natural gas,” said software engineer Witt Sparks of NREL. “This tool, and the AFDC as whole, functions as a massive information hub, enabling thousands of players and parts of the transportation system to interact with one another.”



Coalition News



TENNESSEE

Jonathan Overly
East Tennessee
Clean Fuels
Coalition

Idle Free in Tennessee

After the East Tennessee Clean Fuels Coalition (ETCF) launched its Idle-Free Tennessee program at four elementary schools in the 2010-2011 school year, the coalition got a simple lesson in addition. Seven more Knox County schools—including a high school and two preschools—eagerly sought to join the program, which is

East Tennessee Clean Fuels Coalition is helping schools reduce unnecessary vehicle idling. Signs like these help spread the word to drivers.

Photo from Kristy Keel-Blackmon at East Tennessee Clean Fuels Coalition, NREL/PIX 21196

designed to reduce unnecessary vehicle idling at schools.

“We had a really great response. After the first schools got started, the rest independently came to me and said ‘We want

See “Tennessee” on p. 9 >



HAWAII

Margaret Larson,
Honolulu Clean Cities

Plug-In Vehicles to Harness Renewable Energy in Hawaii

Hawaii is saying “Aloha” to electric vehicles as part of an effort to shed the dubious distinction of being the most petroleum-dependent state in the country. By the end of this year, the state and its clean-energy partners expect to have more than 1,000 plug-in vehicles on the road and 200 public charging units at more than 80 locations.

Imported oil currently supplies about 90% of Hawaii’s energy, and gasoline prices range from \$4 to \$5 per gallon. The state has partnered with the U.S. Department of Energy through the Hawaii Clean Energy Initiative to reach a goal of 70% clean energy by 2030. Deployment of plug-in vehicles represents a major strategy toward meeting the goal, since these vehicles are especially well suited to take advantage of renewable sources of electricity like wind and solar, which have higher variability than the fossil fuels they’re replacing.

“We are really a test bed for EVs and renewable electricity,” said Margaret Larson, Vehicle Specialist for the Hawaii State Energy Office and Co-Coordinator for Honolulu Clean Cities (HCC).

HCC is playing an important role in Hawaii’s plug-in deployment, as Larson taps into Clean Cities’ national network of coordina-

HCC supports the Hawaii Clean Energy Initiative, a partnership between DOE and the State of Hawaii to achieve 70% clean energy by 2030.

Photo from Better Place, NREL PIX/22255



tors to help find solutions to local challenges. She has also made great use of the Clean Cities Technical Response Service when searching for ways to overcome deployment barriers. “Being able to turn to the Clean Cities program has been so valuable. The Technical Response Service is my best friend,” Larson said.

High on Larson’s long list of deployment activities is participation in a Clean Cities Electric Vehicle Community Readiness Project on Maui. Through the project, the University of Hawaii Maui College is developing a plan for the island’s implementation of electric vehicles. HCC is interviewing the first wave of charging station hosts at commercial properties to glean early lessons learned. Once complete, the Maui plan will be replicated and adapted for the other islands.

One of Clean Cities’ National Clean Fleets Partners has gotten in on the action as well: Enterprise Rent-A-Car has 30 electric vehicles in its Hawaii rental fleet. “It’s been great that they’ve led by example. Tourism is our No. 1 industry, so having rental agencies purchase electric vehicles is key to their adoption,” Larson said.

> Tennessee, from p. 8

this for our school,” ETCF Project Facilitator Kristy Keel said.

The program launched with a \$1,650 grant from the East Tennessee Children’s Hospital to cover three signs and posts at each site. School bus drivers and parents soon joined the cause.

“There are many benefits to this project. Most significantly, this is a chance for families to establish a habit that directly benefits the health of children, as well as adults. In addition, this will help to improve our local air quality and reduce oil consumption,” Keel said.

But the impact is being felt inside the classroom too. Drawing upon research from the American Lung Association, the U.S. Environmental Protection Agency, and others, Keel has developed a Q&A on the coalition website, along with curriculum materials to help teachers explain the issues surrounding cleaner air. She has also spread the word at parents’ nights.

The program is drawing interest, in part because the area has air quality challenges. “We’re in a valley beside the Appalachian Mountains, which essentially means that pollutants get trapped here. So, geographically, we’re at a disadvantage. We also have a lot of vehicles on the road and a lot of man-made pollution, which makes the situation worse,” Keel said.

Knoxville’s City Sustainability Coordinator Jake Tisinger said that Knoxville has made great strides in improving its air quality, and the Idle-Free Tennessee project continues that progress.

Now Keel is hoping to renew the grant, and she is optimistic about adding more schools this school year. “We see idle reduction as a very important part of the overall Clean Cities mission,” Keel said. “It may not add up to the equivalent of a huge diesel fleet switching to biodiesel, but this is very important for public health and education, and we’re really proud of this program.”



MAINE

Steve Linnell, Maine Clean Communities

Maine Fleets Make Progress with Propane

Several Maine Clean Communities stakeholders are running on propane to help safeguard the state’s natural wonders. In 2011, the coalition displaced more than 180,000 gallons of petroleum through the use of propane vehicles.

“We were trying to find something better for the environment and do our part to clean things up,” said Mechanics Foreman Doug Havu of Maine School Administrative District No. 6 (MSAD 6), the state’s third-largest school system. MSAD 6, located just outside Portland, operates 10 school buses that run on GM 8.1L propane engines. With funding assistance from the Maine Department of Environmental Protection, MSAD 6 acquired its first six propane buses in 2010 and added another four in 2011. During the same period, the department also provided grant funding to the Town of Scarborough to help with the purchase of four propane buses.

The MSAD 6 buses fill up at a propane station owned and operated by the district, located at its bus garage. MSAD 6’s propane buses have a shorter range than their diesel counterparts, but a full tank is more than adequate for their regular routes, according to Havu. “They’re very quiet, and the drivers who operate them think they’re very nice to drive,” he said. MSAD 6 is further limiting its vehicle emissions through a strict anti-idling policy. “We don’t want buses idling, especially while children are out in the yard,” Havu added.

About 160 miles up Maine’s famously rugged coastline, visitors to Acadia National Park make their way among towns, campgrounds, beaches, and other park destinations via Island Explorer, a free public transit service. All of its 36 shuttles run on propane, and it has given a lift to more than 4 million passengers. The national park just joined Maine Clean Communities in the summer of 2012 with the goal of furthering its commitment to sustainable transportation.

Looking ahead, Main Clean Communities Coordinator Steve Linnell sees potential for more fleets in Maine to use propane in place of petroleum. “Maine’s a very rural state, so we have some limitations in terms of infrastructure,” Linnell said. “But propane is what some people use to heat their homes, and for other uses like barbecues and RVs, so it’s ubiquitous.”



Driver Sandy Fecteau fuels one of MSAD 6’s 10 propane school buses. *Photo from Maine School Administrative District No. 6, NREL/PIX 21778*



ARKANSAS

Kelly Volin,
Arkansas Clean Cities Coalition

CNG Powers Law Enforcement in Arkansas

As part of a larger commitment to alternative fuels, the City of North Little Rock, Arkansas, recently added 13 compressed natural gas (CNG) vehicles to its fleet, including nine Chevrolet Tahoe police vehicles. The patrol vehicles were converted to CNG operation with help from the CNG Conversion Rebate Program, run by the Arkansas Clean Cities (ACC) coalition, housed in the Arkansas Energy Office.



The City of North Little Rock has nine Chevy Tahoe police vehicles that run on compressed natural gas. *Photo from North Little Rock Police Department, NREL/PIX 22256*

The vehicle conversions each cost about \$12,000, and North Little Rock received \$77,048 in State Energy Program Recovery Act funds to help foot the bill. “We would not have been able to afford conversion costs without the rebates,” said Nathan Hamilton, the city’s director of special projects. The police have been pleased so far with the Tahoes’ responsiveness, and the city is happy because CNG saves it about \$2 per gasoline gallon equivalent (GGE) in fuel costs.

“North Little Rock has been a community leader for alternative fuels in general,” ACC Coordinator Kelly Volin said. And by switching about 5% of its police fleet to CNG, the city has taken another important step in reducing petroleum use.

In August 2011, the municipality opened a CNG fueling station, the first publicly owned CNG station in the state. Currently, the city is able to sell the fuel for \$1.44 per GGE. Statewide, there are now three public and two private CNG stations, with two more scheduled to open in the near future, including one across the river in Little Rock. “North Little Rock has jump-started the use of alternative fuels here,” Volin said.



NEW JERSEY

Chuck Feinberg
New Jersey Clean
Cities Coalition

Saving Fuel in the Garden State with Truck Stop Electrification

Long-haul truck drivers often idle their vehicles during mandated rest periods to maintain access to air conditioning, heat, and electricity. But truck stop electrification (TSE) sites allow truckers to enjoy these auxiliary systems without running their engines.

“Truck stop electrification plays an important role in reducing unnecessary idling, fuel consumption, and tailpipe emissions,” said Chuck Feinberg of the New Jersey Clean Cities Coalition (NJCCC). The Garden State alone has two major sites—one in the northern

part of the state at New Jersey Turnpike’s Vince Lombardi rest stop and another recently opened site further south in Carneys Point, New Jersey.

Since its opening in late 2011, the Carneys Point site has seen more than 12,000 billable hours of service, which represents 100 metric tons of mitigated emissions and 12,000 gallons of displaced diesel fuel. Run by Clean Cities partner IdleAir, the site hosts 27 towers, each able to provide two trucks at a time with heating and air conditioning, electricity, cable TV, and Internet for an hourly fee. The Vince Lombardi TSE site, run by CabAire, hosts 43 towers and is capable of serving 86 trucks.

NJCCC provides support and outreach to help get the word out about the sites and the benefits of TSE. “We’ve received lots of positive feedback from truckers and fleet managers alike,” Feinberg said. “Truckers can reduce their fuel consumption; comply with

new, more stringent anti-idling regulations; and enjoy the benefits that TSE offers. It’s a win-win.”

“IdleAir helps us reduce our idle costs at its New Jersey site and many of its other locations across the United States,” said Jeff Angst, fuel manager at Western Express. “IdleAir is an important part of our idle-reduction strategy, and we expect to increase our use of IdleAir as it opens more locations.”

According to Feinberg, New Jersey has one of the oldest anti-idling regulations and has been cited for its effective combination of anti-idling outreach—including the New Jersey Department of Environmental Protection’s (NJDEP) “Stop the Soot” campaign—followed by idling enforcement. Over the past year, NJDEP inspectors have been visiting truck stops, rest areas, and warehouse distribution centers to ensure compliance with regulations. Failure to comply can result in penalty assessments starting at \$250 per day.

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



Q: What is a gasoline gallon equivalent (GGE) and how can I use this metric to compare fuels and measure success?

A: You have likely heard the term “GGE” when comparing fuels or discussing petroleum-use reduction. You may have even used the term without completely understanding its meaning.

GGE is a unit used to standardize fuel use based on energy content. A standard unit is needed to make comparisons across fuels with varying amounts of energy and different units of measurement. GGEs serve that purpose by representing the quantity of fuel that contains the same amount of energy in one gallon of gasoline.

The energy content of a fuel, also referred to as the fuel’s heating value, is measured in British thermal units (Btu). For example, one gallon of E85 contains 82,294 Btu, and one gallon of gasoline has 116,090 Btu. As a result, you need more E85 to drive a vehicle the same distance as you could drive on one gallon of gasoline. To determine the gasoline gallon equivalent for E85, divide the energy content of one gallon of gasoline by the energy content of one gallon of E85:

$$\frac{116,090 \text{ Btu/gallon gasoline}}{82,294 \text{ Btu/gallon E85}} = \frac{1.4 \text{ gallon E85}}{\text{gallon gasoline}}$$

This means that approximately 1.4 gallons of E85 has the equivalent energy content of one gallon of gasoline. Notably, when comparing vehicles and fuels, it is also important to take into account how efficiently a given vehicle uses the fuel(s) in question.

GGEs can also be used to compare fuel prices. Compressed natural gas (CNG) is commonly sold based on its energy content, so CNG prices are typically expressed in “dollars per GGE,” allowing for easy comparison with gasoline prices. For example, if the price of CNG is \$2.08 per GGE, and the price of gasoline is \$3.89 per gallon, CNG costs less than gasoline on an energy-content basis.

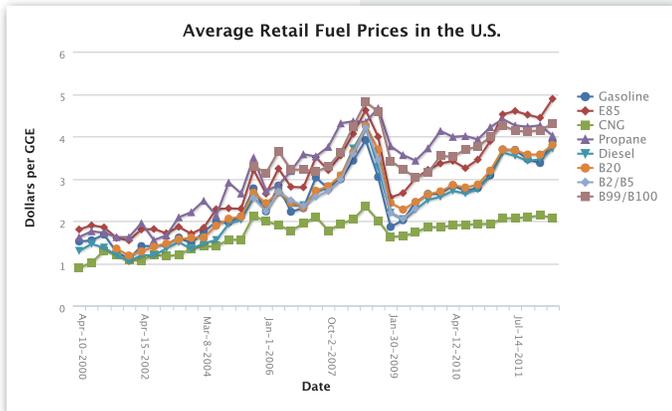
Clean Cities often measures fuel displacement in GGEs, because it allows the program to summarize its accomplishments across multiple fuel types and vehicle technologies with a single unit of measurement. You may also see the term “DGE” (diesel gallon equivalent) used to compare fuel use in heavy-duty vehicles. DGE is calculated in the same manner as GGE, but it is based on the energy content of diesel fuel, rather than gasoline.

The table below summarizes the energy content, as well as the GGE and DGE conversion values, for several common alternative and conventional fuels.

Fuel	Energy Content*	Quantity of Fuel in 1 GGE	Quantity of Fuel in 1 DGE
Gasoline	116,090 Btu/gallon	1.00 gallon	1.11 gallon
Diesel	128,450 Btu/gallon	0.90 gallon	1.00 gallon
Biodiesel (B100)	119,550 Btu/gallon	0.97 gallon	1.07 gallon
Compressed Natural Gas	960 Btu/ft ³	120.93 ft ³	133.80 ft ³
	20,268 Btu/lb	5.73 lb	6.34 lb
E85	82,294 Btu/gallon	1.41 gallon	1.56 gallon
Electricity	3,414 Btu/kWh	34.00 kWh	37.62 kWh
Liquefied Natural Gas	74,720 Btu/gallon	1.55 gallon	1.72 gallon
Propane	84,950 Btu/gallon	1.37 gallon	1.51 gallon

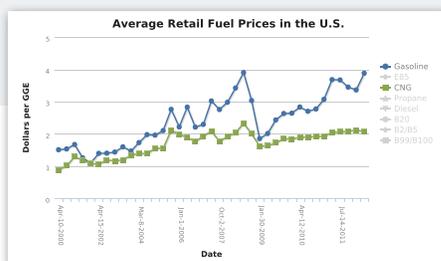
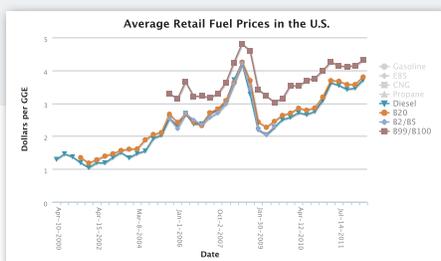
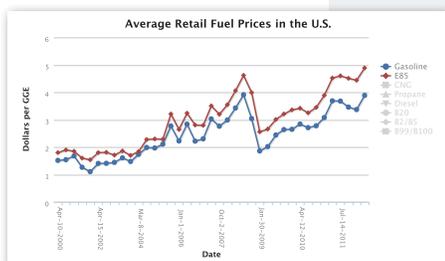
* Lower heating value. Source for CNG (Btu/ft³): *Transportation Energy Data Book, Edition 26*. Source for remaining values: *Alternative Fuels Data Center (AFDC) Fuel Properties*. Note that heating values may vary slightly by source.

> AFDC, from p. 7

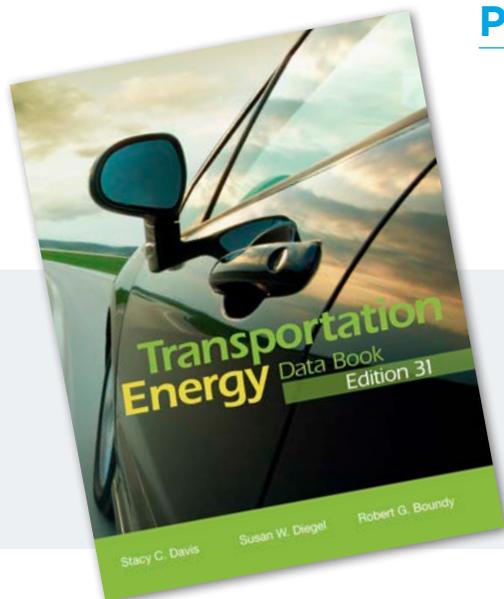


Among the features on the new AFDC is a large library of maps and data (www.afdc.energy.gov/data), which users can view and customize through interactive charts and graphics. Featured data cover a wide range of transportation topics, including alternative fuel use trends, U.S. driver habits, hybrid vehicle availability, biofuels production, transportation regulations and incentives, and vehicle greenhouse gas emissions.

“Not only will this information prove vital to many of our users, but it’s presented in a way that’s easy to access, view, and download,” Cozart said. “With the click of a mouse, they can slice and dice the data to reveal trends, conduct their own analyses, and find answers to questions about transportation in the United States and beyond.”



Program Resources



Clean Cities has a large collection of information resources available for use in education and outreach activities. Find them online at www.eere.energy.gov/cleancities/publications.html and at www.afdc.energy.gov/publications.

Transportation Energy Data Book, Edition 31:

Produced by Oak Ridge National Laboratory for the U.S. Department of Energy, the Transportation Energy Data Book is an extensive compendium of the latest available transportation data, with a focus on energy. Designed for use as a desktop reference, the book was first published in 1976. It contains hundreds of tables and charts that provide data on petroleum use, fleet vehicles, alternative fuel vehicles, greenhouse gas emissions, household vehicles, and several other transportation topics. Find the Transportation Energy Data Book online at cta.ornl.gov/data/index.shtml.

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