



Arkansas Clean Cities News



Inside this issue:

Central Arkansas Transit Authority Renamed Rock Region Metro 1

A Glimpse Into The Global NGV Refueling Market 2

Summary of Alternative Fuel Excise Tax Changes in Public Law 114-41 3

North American Natural Gas Vehicle Conference and Expo 3

Clean Cities Question of the Month 4

This newsletter is a monthly feature of the Arkansas Clean Cities Coalition (ACCC), which features alternative fuels and vehicles, advanced technology and efficient vehicles and greater use of mass transit systems, trip elimination measures and other congestion mitigation approaches.

The ACCC is a program of the Arkansas Energy Office, a division of the Arkansas Economic Development Commission.

August 2015

Central Arkansas Transit Authority Renamed Rock Region Metro

On August 11, 2015, the Central Arkansas Transit Authority (CATA) became the Rock Region Metro (RRM). This rebranding effort includes new patron services, additional routes and 15 new buses powered by compressed natural gas (CNG).

The new buses went into service on August 12th. They are equipped with Wi-Fi and automatic passenger counters.



“We want to be the system that takes people where they want to go,” Board Chairman Allie Freeman said. “We want to improve the passenger experience.”

CNG fuel is more cost effective and burns cleaner than diesel. Recently, the transit system installed their own CNG refueling station to provide fuel for the natural gas-powered buses.

According to Jarod Varner, executive director, the new CNG buses are part of an ongoing effort to be what he described as “good stewards of public funds.” He pointed out, “There are clearly some significant cost benefits because natural gas is quite a bit less expensive than diesel.”



According to Varner, part of the reason for lower cost of natural gas is its availability in the area.

“As we well know, natural gas has become a fuel source that has become

more prominent within the state of Arkansas. We have some major natural gas providers.”

Over the next 10 years, Rock Region Metro will phase out the existing diesel buses and replace them with the CNG-powered vehicles, according to Beeca Green, Rock Region Metro’s director of public engagement.



Pictures courtesy of Rock Region Metro

Left column: A line of new Rock Region Metro CNG buses enters Little Rock via the Main Street bridge from North Little Rock.

Top Right: Rock Region Metro Executive Director Jarod Varner

Bottom Right: Side view of new Rock Region Metro CNG bus

A Glimpse into the Global NGV Refueling Market

The total number of natural gas vehicle (NGV) refueling stations globally will grow from 23,001 in 2015 to 38,890 in 2025, with a compound annual growth rate (CAGR) of 5.4%, according to a new report from Navigant Research.

In order for any alternative to gasoline or diesel to be viable as a transportation fuel, readily available refueling infrastructure is a necessary component of the ecosystem. However, the report does say natural gas (NG) has proven to be one of the most popular alternatives to traditional liquid fuels in many global markets, with compressed natural gas (CNG) being far more common than liquefied natural gas (LNG).

Interestingly, the report says more than 80% of new NG refueling stations are expected to be CNG facilities in order to support light-duty NGVs, which are projected to account for 90% of the global fleet at the end of the forecast period.

According to the report, NG has a number of distinct advantages over many of the other options, particularly for larger vehicles. NG deposits and production are widely distributed around the globe, and with newer extraction techniques, such as horizontal drilling and hydraulic fracturing, usable supplies have risen significantly in the past decade. Meanwhile, the report notes, NG prices have fallen to less than half of the peak prices reached in 2005 and 2008.

As fuels, CNG and LNG are typically fast and convenient to use where refueling infrastructure is available. Fast-fill CNG pumps and LNG can each be used to refuel a vehicle at speeds comparable to traditional fuels, while slow-fill (low-pressure) systems provide the convenience of filling lower duty cycle vehicles wherever there is a connection to an NG distribution main.

Compared to batteries, NG has significantly higher energy density and longer potential range for larger, heavier vehicles, the report adds. NG-fueled engines also have reduced emissions of CO₂ and other pollutants compared to gasoline- or diesel-fueled internal combustion engines.

Nonetheless, the report emphasizes that the density of NG refueling infrastructure varies widely and is frequently tied to government incentive programs. Like other alternative fuels, NG is subject to the so-called “chicken and egg” scenario: Without a critical mass of vehicles in need of fuel, station operators are unwilling to invest in equipment—and without ready access to stations, retail customer do not buy NGVs.



However, because NG is well suited for larger vehicles, such as refuse trucks and buses, the report says fleet operators frequently take advantage of the low fuel cost by installing private stations in vehicle depots.

The report also looks at technical issues regarding CNG and LNG.

As the study explains, CNG is primarily used for vehicles that operate within a limited geographic region, while LNG is more commonly used for long-haul trucking applications. CNG is stored in high-pressure tanks at 3,000 psi to 3,600 psi and can be stored for extended periods of time. LNG, meanwhile, is stored in low-pressure, cryogenic tanks at -259° F.

Although LNG tanks are heavily insulated in order to preserve the NG in its liquid state, it will eventually boil, the report says. LNG storage is designed for pressure of less than 250 psi and cannot contain any significant quantity of gaseous NG. As the NG boils, the report continues, it must be vented to the atmosphere or captured for re-liquefaction to avoid excess pressure.

The contents of an LNG tank will typically boil off within seven to 10 days. As a result, LNG is best suited for vehicles with a high utilization rate and mileage accumulation in order to minimize wasted fuel, the report concludes.

Furthermore, the report examines key players in the global NGV station market.

According to the report, there are a wide range of companies involved in the entire supply chain for NGV refueling infrastructure, including equipment manufacturers, gas suppliers, station operators, and consultants that support planning and construction of stations. Many of the key components involved in the refueling infrastructure are also used elsewhere in the production, transmission and consumption of NG for energy production, industrial use and residential use. As a result, the report says, many of the key players are not entirely dependent on the growth of NG as a transportation fuel, which should help the companies through any fluctuations in demand, should they arise.

This article was adapted from the executive summary of Navigant Research's "Natural Gas Vehicle Refueling Infrastructure" report. More information and the full report are available [here](#).

Article courtesy of [NGT News](#).

Summary of Alternative Fuel Excise Tax Changes in Public Law 114-41

As you may see in the press, the U.S. Congress passed, and President Obama signed, legislation that adjusts the federal excise tax on liquefied natural gas (LNG) and propane used in vehicles. These changes are effective January 1, 2016. For the full text of Public Law 114-41, enacted July 31, 2015, see Congress.gov (<https://www.congress.gov/bill/114th-congress/house-bill/3236/text>).

The following summary highlights the key aspects of the legislation that relate to alternative fuel excise tax changes to help you understand the implications of this legislation. The Alternative Fuels Data Center Laws & Incentives website have also been updated to reflect the changes; see <http://www.afdc.energy.gov/laws/11220>.

H.R. 3236, Surface Transportation and Veterans Health Care Choice Improvement Act of 2015

- Enacted date: July 31, 2015; Public Law 114-41
- Relevant provision: Section 2008
- Notable changes:
 - * Adjusts the federal excise tax rates for propane and LNG used in vehicles so that, like compressed natural gas (CNG), the fuels are taxed on energy equivalent basis rather than a volumetric basis.
 - * Establishes clear energy equivalencies for each fuel, as follows:
 - ~ One diesel gallon equivalent (DGE) is equal to 6.06 pounds of LNG
 - ~ One gasoline gallon equivalent (GGE) is equal to 5.75 pounds of propane and 5.66 pounds of CNG

- Effective date: January 1, 2016 (i.e., the amendments apply to any sale or use of these fuel types after December 31, 2015)

Summary of Current and Adjust Excise Tax Rates			
Fuel Type	Current Excise Tax Rate (through 12-31-15)	New Excise Tax Rate (effective 1-1-16)	Impact of Amendment
Propane	\$0.183 per liquid gallon	\$0.183 per GGE	Propane is taxed on an energy content basis that is equal to gasoline, rather than a volumetric gallon
LNG	\$0.243 per liquid gallon	\$0.243 per DGE	LNG is taxed on an energy content basis that is equal to diesel, rather than a volumetric gallon
CNG	\$0.183 per GGE	\$0.183 per GGE	No change from current tax rates

North American Natural Gas Vehicle Conference & Expo



The North American Natural Gas Vehicle Conference & Expo will be held September 15-17, 2015 in Denver, Colorado.

For more information, visit <http://www.ngvshow.com>.



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Clean Cities Technical Response Service Question of the Month

Question of the Month: What are the alternatives to traditional state fuel taxes?

Answer: Nearly all of us regularly use and access public roads, infrastructure, or transit services. As you may have read in the July Question of the Month, it's common practice for federal, state, and local governments to tax motor fuels on a per gallon basis to fund transportation infrastructure and increase revenue. Returns from gasoline and diesel taxes are on the decline due to a number of factors, including rising construction costs, general inflation, and greater vehicle efficiency, which reduces fuel use per mile. To make up for this deficit, a number of states are evaluating and implementing alternatives to traditional motor fuel tax models through the use of vehicle miles traveled (VMT) fees, annual fees for vehicles that use certain fuels, such as electricity, or adjusting or establishing fuel taxes for certain alternative fuels.

VMT Fees

VMT fees are designed to charge drivers based on the number of miles they drive, rather than the fuel they consume. The concept seeks to base taxes on use rather than fuel consumption, which provides a fuel neutral approach and offsets decreasing revenue from increased vehicle efficiency. Concerns have, however, been raised over program administration and individual privacy. Several states, including Vermont and Oregon, have studied or implemented VMT fee pilot programs. In July of 2015, Oregon began a road usage charge program for 5,000 volunteers and is encouraging participation by plug-in electric vehicle (PEV) drivers (<http://www.oregon.gov/ODOT/HWY/RUFPP/Pages/index.aspx>). The Oregon Department of Transportation (ODOT) collects \$0.015 per mile and issues gas tax refunds to participants. Vehicle miles will be monitored through a vehicle transponder.

Annual Fees

As alternative fuel use has grown, a number of states have established annual fees or decals to recover revenue that would have normally come from motor fuel taxes. These programs also provide a mechanism to collect revenue from those that charge or fuel at home and, in some cases, are used to incentivize alternative fuel vehicles (AFVs). Fees have traditionally been imposed on fuels such as natural gas and propane, but are now being considered and implemented for PEVs. Establishing the appropriate level for such fees can be tricky as different vehicle classes use very different amounts of fuel. In addition, some AFVs, such as plug-in hybrid electric vehicles and bi-fuel natural gas vehicles, may already pay motor fuel taxes for their gasoline or diesel use. Examples of fees in place include:

Colorado requires a \$50 annual fee for a PEV decal.

Georgia requires a \$200 annual fee for non-commercial PEVs and \$300 annual fee for commercial PEVs.

Louisiana requires an annual fee of \$120 or a percentage of the current special fuels tax rate for compressed natural gas (CNG) and propane vehicles.

Nebraska requires a \$75 annual fee for PEVs and other AFVs not covered under state motor fuel tax regulations.

North Carolina requires a \$100 annual fee for all-electric vehicles.

Alternative Fuel Taxes

Many states have passed regulations to either tax certain alternative fuels for the first time or to structure motor fuel taxes to account for energy content variations between alternative fuels and gasoline or diesel. For example, Arkansas, Idaho, Kentucky, New Mexico, Oklahoma, Tennessee, and Utah are among the states that have enacted legislation or regulations in 2015 to define the energy content of CNG and liquefied natural gas on a gasoline gallon equivalent or diesel gallon equivalent basis. Wyoming updated regulations related to alternative fuel excise taxes and dealer license fees for natural gas, propane, electricity, and renewable diesel. Kentucky and Utah enacted excise tax requirements for hydrogen and South Dakota increased excise taxes for certain fuels, including ethanol. Look out for the September Question of the Month for further information on efforts to equalize federal fuel taxes across fuels.

Until motor fuel tax revenue shortfalls can be adequately addressed, states risk underfunding our roads and infrastructure. While no single approach has emerged as the preferred choice, creative solutions, such as those discussed above, may help states adequately adjust for continued sales of AFVs and other fuel-efficient vehicles. With the exception of VMT fees, these approaches, however, only address a small portion of the nation's fleet and are not likely to resolve broader funding issues in the near-term.

Refer to the following for more information on alternatives to traditional state motor fuel taxes:

Alternative Fuels Data Center's (AFDC) Laws and Incentives website (<http://www.afdc.energy.gov>)

AFDC's Policy Bulletin on State Fees as Transportation Funding Alternatives (http://www.afdc.energy.gov/bulletins/technology_bulletin_2014_03_10.html)

Also watch for an upcoming paper from the National Renewable Energy Laboratory on motor fuel excise taxes.

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