

AGENDA

Natural Gas for Transportation Roundtable Kickoff

Registration and Breakfast	8:00 am to 9:15 am
Welcome and Opening Remarks	9:15 am
Background and Introduction	9:30 am
Natural Gas Fuel Taxation	10:00 am
WI Natural Gas Suppliers and Regulation	10:15 am
Breakout Listening Sessions	10:30 am
Break	
General Question and Answer	11:30 am
Next Steps	11:45 am

Space Available Until 3 pm for Meeting and Networking

Welcome and Introductions

Wisconsin State Energy Office

Wisconsin Clean Cities

Representatives of Wisconsin State Agencies

Advisory Group:

- Andy Grimmer, President, ANGI Energy Systems, CNG fueling system manufacturer
- Bryan Nudelbacher, Business Analyst, U.S. Oil, Petroleum supplier with CNG fueling stations
- Dennis Petzke, Vice President, Wisconsin Kenworth, Truck supplier offering CNG vehicles
- Jeff Shefchik, President, Paper Transport Inc., Fleet Owner with CNG trucks
- Kathy Heady, Sector Development Manager, Wisconsin Economic Development Corporation
- Mark Radtke, Executive Vice President, Integrys Energy Group, Energy service business providing CNG fueling solutions
- Mark Torresani, Senior Project Manager, Cornerstone Environmental Group, LLC, Engineering and consulting business with biogas to CNG fueling solutions
- Ruanna Hayes, Director of Alternative Fuels, Kwik Trip, Petroleum marketer with CNG fueling stations
- Venu Gupta, Superintendent, Buildings and Fleet, City of Milwaukee

Wisconsin State Energy Office (SEO)

The SEO's Mission is to invest in Wisconsin by:

- Increasing energy efficiency
- Developing renewable and alternative energy sources
- Promoting energy-related economic development and jobs, and
- Reducing reliance on imported oil.

The SEO manages over \$85 million in federal energy related grants and loans, including:

- 7 awards for 9 CNG fueling stations in 2012
- 2 Biogas to CNG fueling stations

www.energyindependence.wi.gov



Dane County Landfill Bio-CNG Station (top), Menomonie, WI CNG Station for Fleets and Private Vehicles (bottom)

WI Natural Gas for Transportation Roundtable

Stakeholder initiative organized by the SEO and WI Clean Cities to promote the use of the following natural gas vehicle fuels in WI:

- Compressed Natural Gas (CNG)
- Liquefied Natural Gas (LNG)
- Biogas-derived CNG and LNG

Main Objective: A neutral forum to

- Expand Natural Gas Vehicle Infrastructure
- Expand Natural Gas Vehicle Availability
- Identify Problem Areas and Policy Needs
- Provide Education and Outreach
- Coordinate natural gas regulatory efforts among state agencies



WI Natural Gas for Transportation Roundtable

Today's Objectives:

1. Inform and introduce stakeholders
2. Share information and critical issues identified by the advisory group
3. Receive feedback and identify near/medium/long-term goals for the following topics:
 - **Natural Gas Infrastructure** (public versus private fueling stations, fast or slow fill, corridor projects, utility or interstate pipeline, natural gas pricing and hedging)
 - **Fleet and Vehicle Owner Information** (vehicle capabilities in CNG, LNG, bi-fuel, conversions, safety, certification, maintenance, range, training)
 - **Regulatory and Policy** (building and fire codes, taxation, emission profiles, pricing at utility/municipal/privately-owned stations)

Wisconsin Natural Gas for Transportation Roundtable Kickoff Background and Introduction

Maria Redmond and Peter Taglia, Wisconsin State Energy Office (SEO)
and Lorrie Lisek, Wisconsin Clean Cities



April 24th, 2012

Exposition Hall at the Alliant Energy Center – Madison, WI

Natural Gas Transportation Basics

- Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) Fuel Characteristics
- Natural Gas Vehicles
- Natural Gas Fueling Systems
- Fleet Applications

Wisconsin Clean Cities Southeast Area

“Driving Wisconsin Forward”



- Non-profit organization established in 1994 through the U.S. Department of Energy
- WCC partners with public and private stakeholders to:
 - Reduce emissions
 - Encourage use of alternative fuels and alternative fuel vehicles
 - Develop refueling infrastructure necessary to sustain the industry
 - Educate fleets, elected officials, and the general public
 - To develop projects and pursue funding opportunities



Compressed Natural Gas (CNG)

- Stored in onboard tanks under high pressure
- Fuel economy similar to gasoline
- 1 GGE = 5.7 lb CNG

Liquefied Natural Gas (LNG)

- Kept at cold temperatures
- Stored in double-wall, vacuum-insulated pressure vessels
- Heavy-duty vehicles
- 1 GGE = 1.5 gal LNG



Dedicated Natural Gas Vehicles (NGV)

- Run only on natural gas
- Better performance
- Lower emissions
- Increased cargo capacity

Bi-fuel NGVs

- Two fueling systems
 - Natural gas
 - Gasoline
- Fueling flexibility

Dual-fuel NGVs

- Run on diesel and natural gas
- Heavy-duty vehicles only



Offsite, Public Access

- Utilize an existing public station
- Operated by retailer, utility, or fleet
- Anchor fleet or pool of multiple fleets

Onsite, Private Access

- Exclusive use by fleets
- Time-fill stations always private access

Onsite, Public Access

- Often located outside of restricted areas
- Benefit from economy of scale
- Promotes public use of NGVs
- Must have fast-fill capabilities for public



Light-Duty NGVs

- Suitable for light-duty needs in private and government fleets
- Honda Civic GX

Medium-Duty NGVs

- Vans and shuttles
- Airports and taxi fleets

Heavy-Duty NGVs

- Refuse haulers
- Transit buses
- School buses
- Long-haul trucks
- Street sweepers
- Snowplows
- Short-haul delivery trucks



Natural Gas Vehicles for America
www.ngvameric.org

Why Natural Gas Vehicle Fuel?

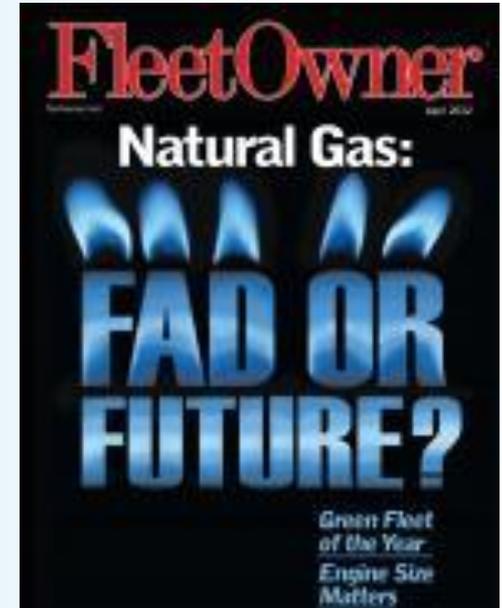
Three main reasons:

- Economics
- Energy Security
- Environment

But lots of questions....

- How long will it take to pay back the higher upfront costs of natural gas vehicles?
- What is the long-term outlook for natural gas and petroleum prices?
- Where is natural gas fuel sold today? Tomorrow?
- What are the options to finance natural gas vehicles and fueling stations?

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<http://fleetowner.com/running-green/natural-gas-fad-or-future>



Economics

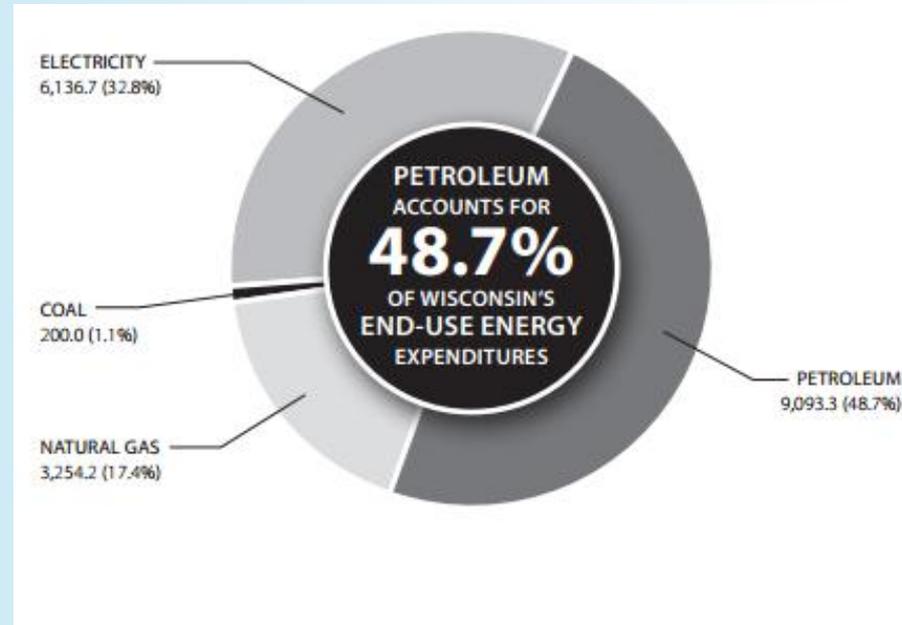
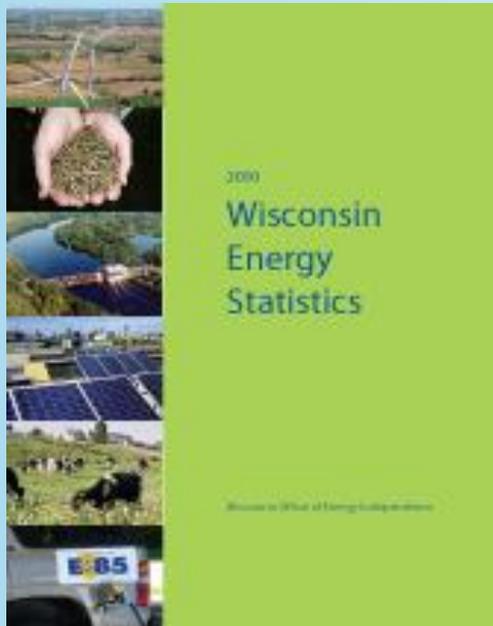
- WI Spends approx. \$10 Billion Annually for Petroleum and **RISING**
- High Gasoline and Diesel Prices and Volatility in Recent Years Damage Wisconsin Consumers and Businesses
- Current Natural Gas Prices are Dramatically Lower Than Petroleum Fuels



CNG Prices 4/22/12 Source: CNGPrices.com

Economics: WI Petroleum Use

- Wisconsin has no fossil fuel deposits
- Wisconsin has one small oil refinery
- Petroleum is Wisconsin's largest energy expenditure



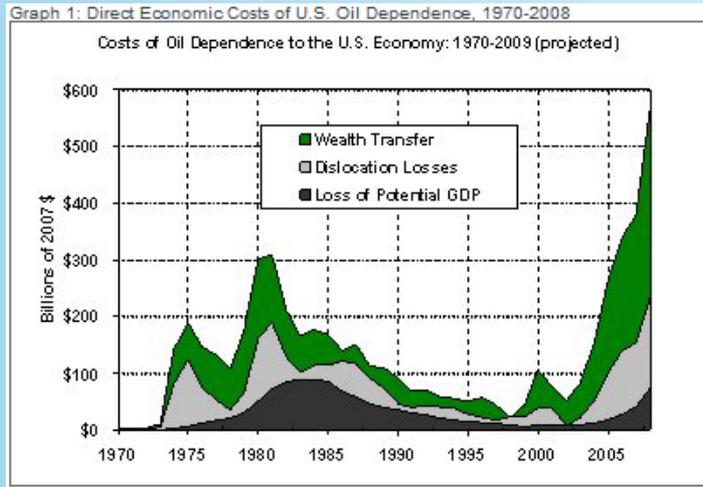
Wisconsin Energy Statistics 2010 (left) Energy Expenditure Figure on Page 131 (right)

Energy Security: Petroleum

Crude Oil is the DEFINITIVE Globally-Traded Commodity

- Global Supply
- Global Demand
- High Energy Density – Very Easy to Transport

i.e., Conflict in the Strait of Hormuz (Between Iran and Qatar) Will Increase the Price of Oil from the Middle East..... AND oil from Canada, Venezuela, Texas, etc....



What Drives Crude Oil Prices? (Top)
Costs of Oil Dependence (Left)

Sources: Energy Information Agency (EIA) and Electrification Coalition

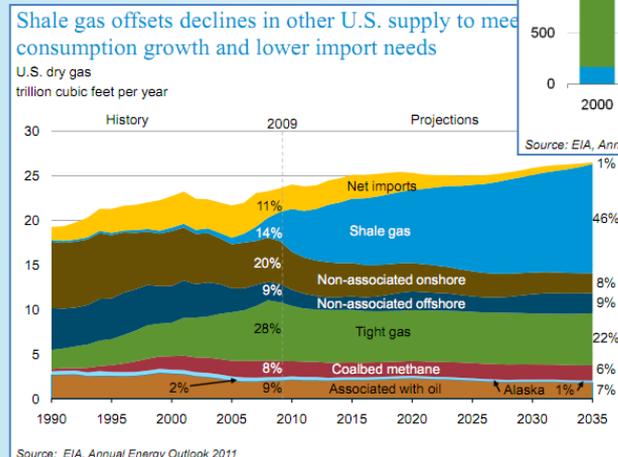
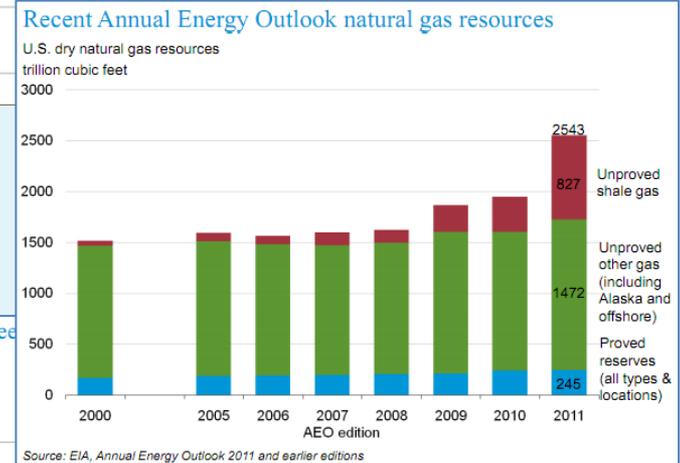
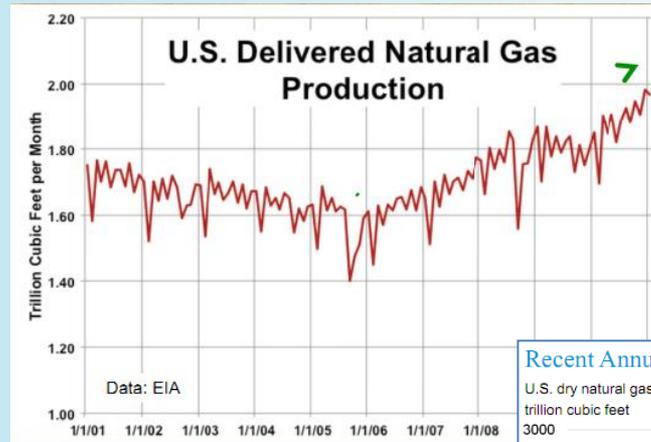
Energy Security : Natural Gas

The U.S. is the largest producer of natural gas in the world

Approx. 98% of U.S. Natural Gas is Currently Sourced in North America

New technology has unlocked natural gas from shale; production has increased dramatically

Natural gas is more difficult to ship than oil; U.S. pipeline prices are dramatically lower than global LNG prices



Environmental Benefits of Natural Gas

Natural Gas is the Cleanest Burning Fossil Fuel

- EPA Data on CNG Vehicle Emissions:
 - Reductions in carbon monoxide emissions of 90 to 97 percent
 - Reductions in nitrogen oxide emissions of 35 to 60 percent
 - Potential reductions in nonmethane hydrocarbon emissions of 50 to 75 percent
 - Fewer toxic and carcinogenic pollutants, and little to no particulate matter produced
 - No evaporative emissions in dedicated engines (such as those associated with gasoline or diesel)
 - Approximately 25% less CO2 emissions
- Natural gas engines are quiet!
 - Approx. 10 CNG Trucks = 1 Diesel Truck

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 EPA
United States Environmental Protection Agency

Transportation and Air Quality
Transportation and Regional
Programs Division

EPA420-F-00-033
March 2002
www.epa.gov

**Clean Alternative Fuels:
Compressed Natural Gas**

One in a series of fact sheets

 CLEAN ALTERNATIVE FUELS
CLEANER AIR

SUCCESS STORY



In 1999, the U.S. Department of Energy (DOE) conducted a study that provided direct, side-by-side cost and emissions comparisons of CNG and gasoline-fueled taxi-cab operations. The report, *Alternative Fuels Case Study: Barwood Cab Fleet Study Summary*, compared 10 CNG-fueled cabs from 1996 with 10 gasoline-fueled cabs of the same make and model to determine operating costs. The study found that the fuel economy of the CNG

Natural gas is one of the most widely used forms of energy today. It is commonly used to heat and cool homes and businesses nationwide. In addition, more than 85,000 compressed natural gas (CNG) vehicles, including one out of every five transit buses, are operating successfully today. CNG's popularity stems, in part, from its clean-burning properties. In many cases, CNG vehicles generate fewer exhaust and greenhouse gas emissions than their gasoline- or diesel-powered counterparts.

CNG is odorless, colorless, and tasteless. It consists mostly of methane and is drawn from gas wells or in conjunction with crude oil production. CNG vehicles store natural gas in high-pressure fuel cylinders at 3,000 to 3,600 pounds per

small compressors connected directly to the home's natural gas supply.

EMISSIONS CHARACTERISTICS*





Biogas Compressed Natural Gas (CNG) Vehicle Fuel

- Biogas is a renewable fuel composed of 60 to 70% methane made by bacteria consuming organic wastes
- Biogas upgraded to natural gas or near-natural gas quality can be used in CNG vehicles
- Wisconsin has significant biogas resource and manufacturing opportunities.
- Two existing bio-CNG stations in WI:
 - Dane County Landfill
 - Janesville's Wastewater Treatment Plant



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FAIR OAKS
F A R M S™



What's Black and White but Green All Over?

Though the cows are black and white, there's nothing but green when it comes to the innovation and sustainability that Indiana Governor Mitch Daniels, Fair Oaks Farms, New Frontier Holdings, and the U.S. Department of Energy are proving by delivering milk down our highways in cow-manure-powered trucks.

Fair Oaks, IN. (June 14, 2011) — What do you get when you combine a Midwest governor who is committed to finding real solutions to the nation's problems, one of the most recognized and innovative dairies in the world, the nation's top renewable energy technology providers, the support of U.S. Department of Energy, an industry leading logistics provider, and a lot of cow manure? You get the largest long-haul fleet powered by renewable energy in the country, delivering milk to processing plants in three Midwestern states.

With the unwavering support of Governor Mitch Daniels, Fair Oaks Farms has announced the development of a natural-gas-powered milk fleet that will reduce the use of diesel fuel by more than one and a half million gallons of diesel per year by using gas produced from dairy cattle waste. In a process called anaerobic digestion, microorganisms feed on cow manure and produce methane gas, which Fair Oaks Farms traps and processes with technology supplied by UTS-Residual Processing using a proven water-based technology with minimal environmental impact. This gas will be piped directly to a fueling station in Fair Oaks for compression and distribution.

Dairy biogas CNG system reduces diesel fuel by 1.5 million gallons per year in Indiana (top) Dane County's Biogas to CNG Project (left).

Sources: fofarms.com and P. Taglia



OK, Sign Me UP!

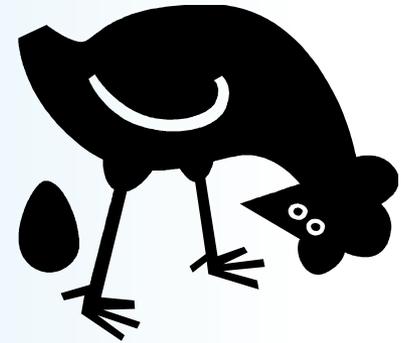
Natural Gas is an attractive energy source from an economic, energy security and environmental perspective

So why didn't everyone get here on natural gas?

- Natural gas is not as easy to use for vehicle fuel as petroleum
- Domestic natural gas supplies have only increased recently
- It will take some time to overcome the “chicken and egg” problem

Let's get some background on the current status of natural gas vehicles in Wisconsin....

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Wisconsin Vehicle Fuel Consumption

- 2010 On-road diesel consumption: 744 million gallons
- 2010 On-road gasoline consumption: 2.5 billion gallons

Cost WI consumers over \$10 billion in 2011, up from less than \$9 billion in 2008

Source: WI State Energy Office Annual Energy Statistics Report

Wisconsin Alternative Motor Fuel Consumption⁴ - (Millions of Gallons)

	2006	2007	2008	2009	2010	% Change 09 to 10
LPG	3.21	2.33	2.52	2.24	2.24	0.0%
CNG	0.21	0.20	0.17	0.18	0.29	61.1%
Ethanol	130.41	161.23	216.99	229.68	254.31	10.7%

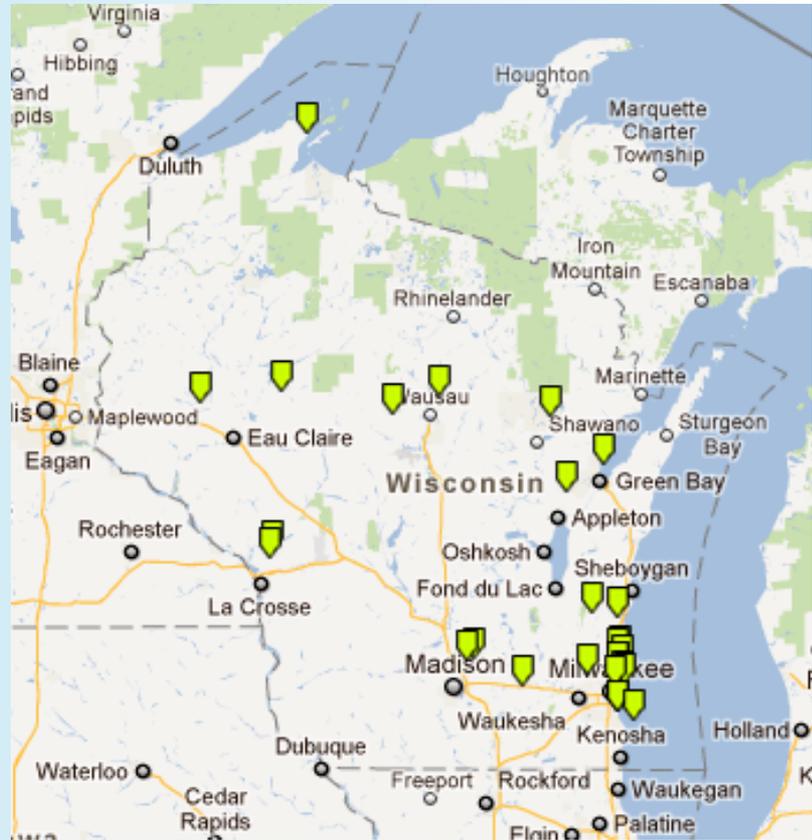
Source: WI State Energy Office Alternative Fuels and Biofuels Use Report 2011

Compressed Natural Gas (CNG) Stations in WI

Currently 21 stations throughout the state (15 public, 6 private or restricted)

Additional Stations Coming Online:

- Milwaukee (2)
- Madison (2)
- Washburn (1)
- La Crosse (1, also with LNG)
- Janesville (1)
- Wasau (1)
- Green Bay (1)



Wisconsin CNG Station Map

http://www.afdc.energy.gov/afdc/progs/ind_state.php/WI/CNG

Registered Vehicles in WI by Fuel

Fuel Type	Registered Vehicles
Unleaded	5,637,634
Diesel	324,837
Ethanol (E85) Flexible Fuel	214,538
Hybrid Electric	17,852
Propane (LPG)	212
Compressed Natural Gas	179
Electric	36

Source: Alternative Fuels and Biofuels Use Report 2011

A long way to go!

Petroleum is available everywhere across Wisconsin for the vast majority of existing and available new vehicles

- Natural gas vehicles and fueling stations are much more limited
- Substituting natural gas for vehicle fuel in Wisconsin will take time, effort and money
- One option to solve the “chicken and egg” problem: build CNG infrastructure in Wisconsin with fleet vehicles, the other vehicles will follow

The Natural Gas for Transportation Roundtable is here to help!

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Guest Presentation

Natural Gas Vehicle Fuel Taxation

Christopher Roy

Wisconsin Department of Revenue

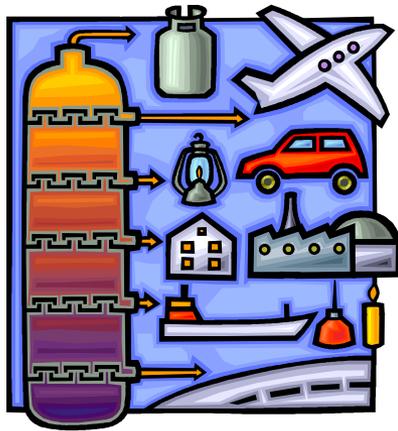
2135 Rimrock Road

Madison, WI 53713

christopher.roy@revenue.wi.gov



Alternate Fuel Taxation



What is an alternate fuel?

- ▶ Alternate fuel – means all combustible gases and liquids, other than motor vehicle fuel or aviation fuel, suitable for the generation of power to propel a motor vehicle [[sec. 78.39\(1\), Wis. Stats.](#)].
- ▶ Examples of alternate fuels are:
 - Compressed Natural Gas (CNG),
 - Liquefied Natural Gas (LNG), and
 - Liquefied Propane Gas (LPG)

When is the alternate fuel tax imposed?

- ▶ The Wisconsin alternate fuel tax is imposed on all alternate fuels placed into the supply tanks of:
 - Licensed motor vehicles,
 - Snowmobiles,
 - Recreational motorboats, or
 - All-terrain vehicles (unless the ATV is registered for private use) in Wisconsin.
- ▶ Similar to motor fuel tax, alternate fuel tax is **not** imposed upon the following [[sec. 78.40\(2\), Wis. Stats.](#)]:
 - Alternate fuel sold to the United States government or its agencies (e.g., Armed Forces, US Postal Service).
 - Alternate fuel sold to common motor carriers for the urban mass transportation of passengers

What is the tax rate on alternate fuel?

Product	Description	Tax Rate Per Gallon	Effective
CNG	Compressed natural gas	24.7 ¢	April 1, 2006
LNG	Liquefied natural gas	19.7 ¢	April 1, 2012
LPG	Liquefied propane gas	22.6 ¢	April 1, 2006
	Other	30.9 ¢	April 1, 2006

Who pays the alternate fuel tax?

- ▶ Persons who hold an alternate fuel license issued by the Department of Revenue [secs. [78.47](#) and [78.49\(2\)](#), Wis. Stats.]:
 - Fuel "users" who make bulk purchases of alternate fuel that they will place into supply tanks of **their own** licensed motor vehicles, snowmobiles, recreational motorboats, or all-terrain vehicles. Fuel users who make bulk purchases and do not want to obtain an alternate fuel license can authorize their supplier via a *Certificate of Authorization for Bulk Alternate Fuel Purchasers* ([Form MF-207](#)) to charge the user the Wisconsin alternate fuel tax.
 - Fuel "dealers" who place alternate fuel into the supply tanks of licensed motor vehicles, snowmobiles, recreational motorboats, or all-terrain vehicles (unless the ATV is registered for private use), owned by others, or owned by others as well as themselves.
- ▶ Any non-licensed person who uses nontaxed alternate fuel in a taxable manner.

How is the alternate fuel tax reported and paid?

- ▶ Alternate fuel tax is reported and paid using Form MF-007.
 - ▶ Due the last day of the month following the month covered by the report.
 - ▶ If the average tax liability is less than \$500 per quarter, the department may instruct the licensee to file and pay the alternate fuel on a quarterly basis.
- 

Where can I find more information regarding alternate fuel tax?

- ▶ Wisconsin Publication MF-106, located at www.revenue.wi.gov/pubs/mf-106.pdf.
- ▶ Department of Revenue Excise Tax Section:
 - Phone: (608) 266-7453
 - E-mail: excise@revenue.wi.gov
 - Fax: (608) 261-7049

Guest Presentation

WI Natural Gas Suppliers and Regulation

Robert Bauer

Wisconsin Public Service Commission

610 North Whitney Way

Madison, WI 53707

robert.bauer@wisconsin.gov



Breakout Listening Sessions

What do YOU want to see from the Roundtable?

Please choose a breakout topic and join a moderated session with other interested parties, experts, and businesses with natural gas vehicle experience and solutions. Help us identify short/medium and long-term goals for the Roundtable:

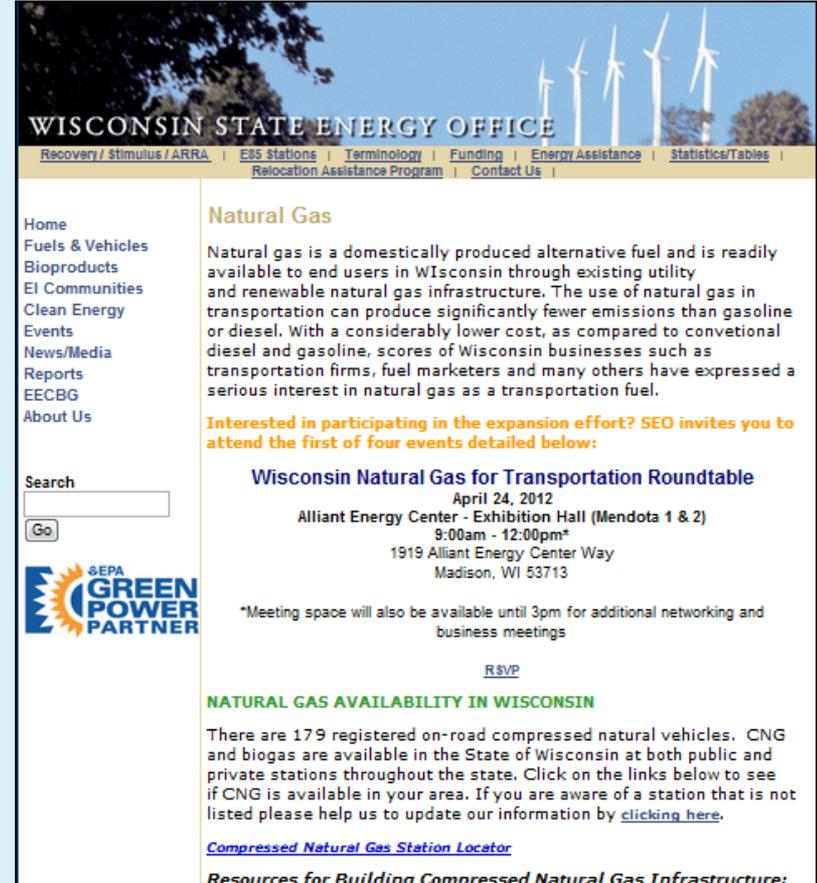
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- **Regulatory and Policy** (building and fire codes, taxation, emission profiles, pricing at utility/municipal/private-owned stations)

WI Natural Gas for Transportation Roundtable

- Don't forget to sign in to get on our email list
- Check the SEO website for more information
- Participate in roundtable events and subgroups
- Contact the SEO, Clean Cities or other stakeholders for answers to specific questions and more information about making natural gas a part of your fuel mix
- Please fill out the evaluation form

THANK YOU!

www.energyindependence.wi.gov



The screenshot shows the Wisconsin State Energy Office website. The header includes the office name and navigation links for Recovery/Stimulus/ARRA, EIS Stations, Terminology, Funding, Energy Assistance, Statistics/Tables, Relocation Assistance Program, and Contact Us. The main content area is titled "Natural Gas" and contains a paragraph about natural gas as a domestically produced alternative fuel. Below this is an orange call-to-action: "Interested in participating in the expansion effort? SEO invites you to attend the first of four events detailed below:". The event details are: "Wisconsin Natural Gas for Transportation Roundtable" on April 24, 2012, at the Alliant Energy Center - Exhibition Hall (Mendota 1 & 2) from 9:00am to 12:00pm*. The address is 1919 Alliant Energy Center Way, Madison, WI 53713. A note states that meeting space will also be available until 3pm for additional networking and business meetings. There is an "RSVP" link. Below this is a section titled "NATURAL GAS AVAILABILITY IN WISCONSIN" which states there are 179 registered on-road compressed natural vehicles and provides a link to a "Compressed Natural Gas Station Locator". At the bottom, there is a link for "Resources for Building Compressed Natural Gas Infrastructure".

SEO Website

www.energyindependence.wi.gov

