Electric vehicles

2016 WV Construction & Design Exposition

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Kelly A. Bragg
Tiffany Bailey
kelly.a.bragg@wv.gov
tiffany.j.bailey@wv.gov

Clean Cities Mission

To advance the energy, economic, and environmental security of the U.S. by supporting local decisions to reduce petroleum use in transportation.

- Energy Policy Act of 1992 (EPAct)
- Provides a framework for businesses and government agencies to work together
- Clean Cities activities are implemented by a national network of nearly 100 Clean Cities coalitions.
- Major milestone: In 2013, coalitions and stakeholders reduced U.S. petroleum consumption by 1 billion gallons in a single year
- Ahead of schedule on goal: Reduce U.S. petroleum use by 2.5 billion gallons per year

W.Va. Clean State Program

www.energywv.org/cleanstateprogram

Description of Area: State of West Virginia

When was coalition formed? Oct. 19, 1994; re-designated in 1999, 2005, 2012 and 2016

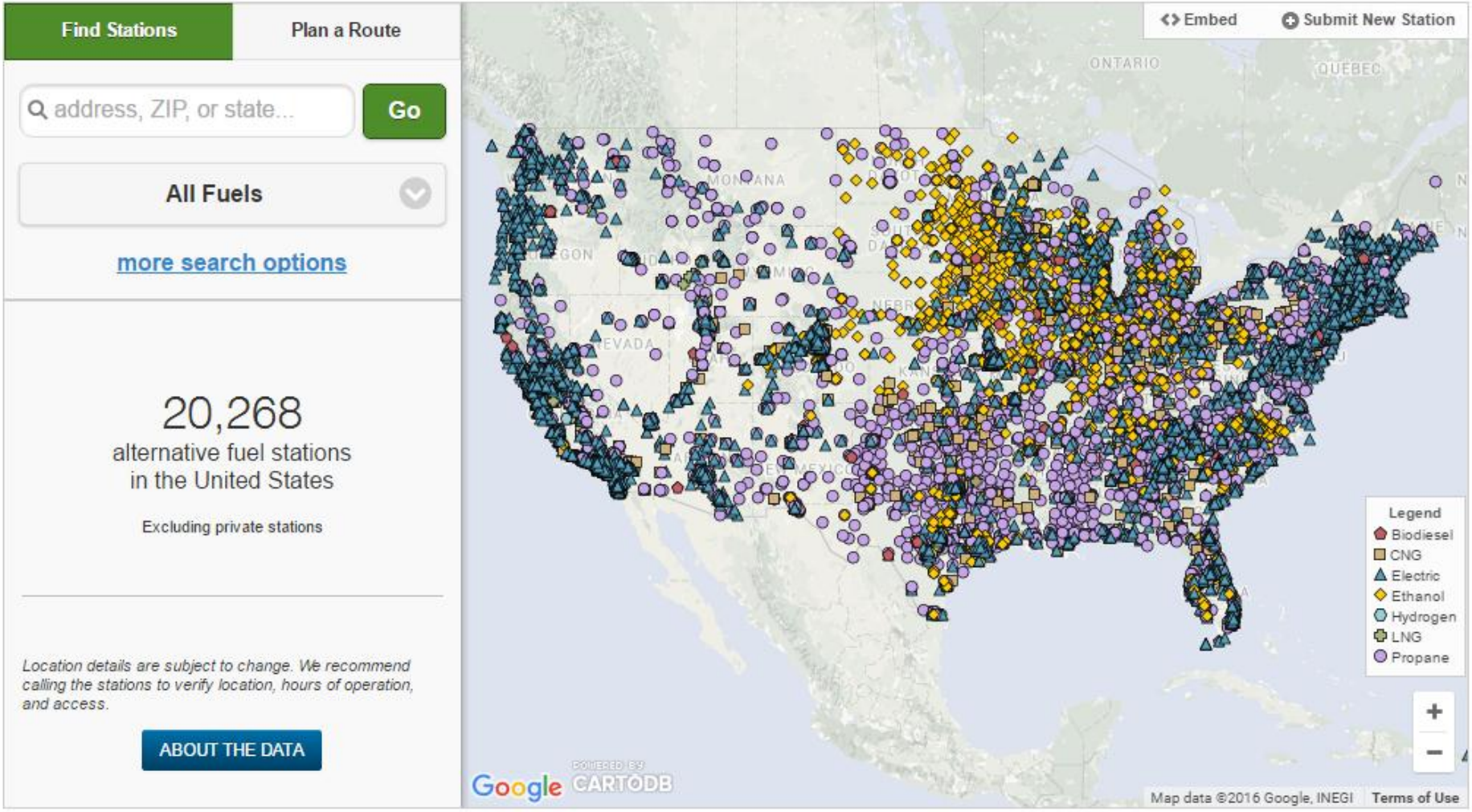
Coalition Structure

- Host agency is W.Va. Division of Energy, the state energy office
- Activities set by WVDOE director
- 60 stakeholders
- Coalition funded through U.S. Department of Energy
- In 2015, stakeholders reduced 536,827 gasoline gallon equivalents through electric vehicle use, reducing idling, and the use of alternative fuels (biodiesel, CNG and propane)

20,268 public alternative fuel stations in U.S.

Alternative Fueling Station Locator

Find alternative fueling stations near an address or ZIP code or along a route in the United States. Enter a state to see a station count.



49 alternative fuel stations in WV

- 3 CNG
- 7 E85
- 23 Electric
- 16 Propane

Three types of electric vehicles

Thinking of Going Electric?

Below are the types of electric-drive vehicles at a glance:

HEVs: HEVs are powered by an internal combustion engine (ICE) and by an electric motor that uses energy stored in a battery. The battery is charged by the ICE and through regenerative braking, which recaptures some of the energy that is normally lost when braking. The vehicle cannot be plugged in to charge. The extra power provided by the electric motor allows for a smaller engine, resulting in better fuel economy without sacrificing performance.

Acura RLX. *Photo from American Honda*

PHEVs: PHEVs are powered by an ICE and by an electric motor that uses energy stored in a battery (larger than the battery in an HEV). The battery can be charged by plugging in to an electric power source, through regenerative braking, and by the ICE. The larger battery allows a PHEV to travel on battery power alone.

Porsche Cayenne S e-Hybrid. *Photo courtesy of Porsche*

Unlike all-electric vehicles (EVs), PHEVs don't have to be plugged in before driving. They can be fueled solely with gasoline, like a conventional HEV. However, they will not achieve maximum fuel economy or take full advantage of their all-electric capabilities without plugging in. Some PHEVs are considered "extended-range electric vehicles" because the ICE only charges the battery and does not directly propel the vehicle.

EVs: EVs run on electricity alone. They are powered by an electric motor that uses energy stored in a battery (larger than the batteries in an HEV or PHEV). EV batteries are charged by plugging the vehicle in to an electric power source and (to a lesser degree) through regenerative braking.

Ford Focus. *Photo from Ford Motor Company*

Hybrid electric vehicles: Internal combustion engine and electric motor that cannot be charged by plugging in

Plug-in hybrid electric vehicles: Internal combustion engine and electric motor that can be charged by plugging in

Electric vehicles: Electric motor charged by plugging in

Electric Vehicle Model	Electric Motor/ Battery Size	Energy Impact Score* (barrels petroleum/ year)	Driving Range *(miles)*	GHG Score**	Fuel Economy (mpge) *Combined/City/Hwy*	Starting MSRP
BMW i3	125 kW/21 kWh	0.2	81	10	124/137/111	$42,400
Chevrolet Spark	104 kW/20 kWh	0.2	82	10	119/128/108	-
Fiat 500e	83kW/24 kWh	0.2	87	10	116/122/108	-
Ford Focus	107 kW/23 kWh	0.2	76	10	105/110/99	$29,170
Kia Soul	50 kW/16.4 kWh	0.2	93	10	105/120/92	$31,950
Mercedes-Benz B250e	132 kW/28 kWh	0.2	87	10	84/85/82	-
Mitsubishi i-MiEV	49 kW/16 kWh	0.2	62	10	112/126/99	$22,995
Nissan Leaf	80 kW/24 kWh	0.2	84	10	114/126/101	-
smart fortwo	55 kW/17.6 kWh	0.2	68	10	107/122/93	-
Tesla Model S	285 kW/70 kWh	0.2	265	10	89/88/90	-

** Assuming 15,000 miles driven per year. ** 10 = Best.*

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EV work in WV

- State parks
  - Shepherd University

August 6, 2013 – University of Rhode Island Professor Gary Stoner plugs in his Chevy Volt at a URI charging station. Ocean State Clean Cities Coalition collaborated with the Rhode Island Office of Energy Resources, the University of Rhode Island, and other partners on a Recovery Act project to install 50 electric vehicle charging stations across the state. The project effectively provided access to free public charging for all 1 million Rhode Islanders. (Photo from University of Rhode Island)

No AFV? Drive smarter!

Thank you

Kelly A. Bragg

Tiffany Bailey

(304) 957-2004 kelly.a.bragg@wv.gov

(304) 957-2050 tiffany.j.bailey@wv.gov