



U.S. General Services Administration

# Federal Acquisition Service

## Procuring Electric Vehicles

### Metropolitan Washington Council of Governments

Office of Motor Vehicle Management July, 31, 2013

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## Overview

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Alternative Fuel Types Overview

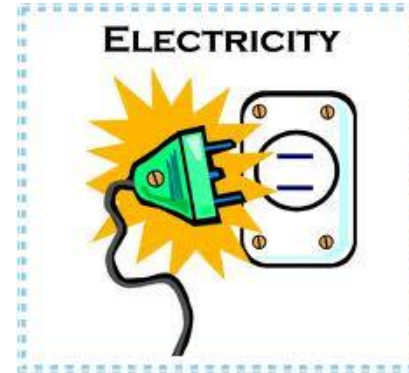
EVs: A Deeper Dive

GSA EV Example: Pilot Program

Procurement Considerations

# Federal Acquisition Service

## Alternative Fuel Types Overview



### Alternative Fuel Types

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Fuel Type	Fuel Source	Advantages	Disadvantages
Electricity	Burning of high-sulfur coal to solar cells	Regenerative braking, low maintenance, low cost, flexible fueling, zero tailpipe emissions	Current high \$ (real), Range (perceived)
Hydrogen	“re-forming” fossil fuel, electrolyzing water	Zero tailpipe emissions, traveling long distances	Expensive, difficult to store & transport, lack of fuel cell infrastructure
Biodiesel (B20)	Made from biomass, 20% biodiesel & 80% petroleum diesel	Contains 3.2x amount of energy it takes to produce it	Contains 8% less energy per gallon than petroleum diesel
Ethanol (E85)	Fermenting biomass, 85% ethanol, 15% unleaded gas	Blend with any amount of gas, creates jobs in rural areas	Only in flex-fuel vehicle, somewhat corrosive, Contains less energy than gasoline

## Alternative Fuel Types Continued

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Fuel Type	Fuel Source	Advantages	Disadvantages
Compressed Natural Gas (CNG)	Natural gas imported through pipelines	Wide variety of new, heavy-duty vehicles available in U.S, convert vehicles, low fuel cost	Convert vehicles, retrain mechanics, large CNG tanks, limited fueling infrastructure
Liquefied Natural Gas (LNG)	Cooled natural gas-liquefies	Low emissions	Complex & expensive fuel tanks
Propane (LPG)	Byproduct of petroleum refining	Costs less than gasoline, majority is produced domestically	Lower BTU rating than gasoline (lower fuel economy)



# Federal Acquisition Service

## Alternative Fuel Finder (www.afdc.energy.gov)

### Alternative Fuels Data Center

Alternative Fuels Data Center

SEARCH

Search Help ▾

FUELS & VEHICLES CONSERVE FUEL **LOCATE STATIONS** LAWS & INCENTIVES

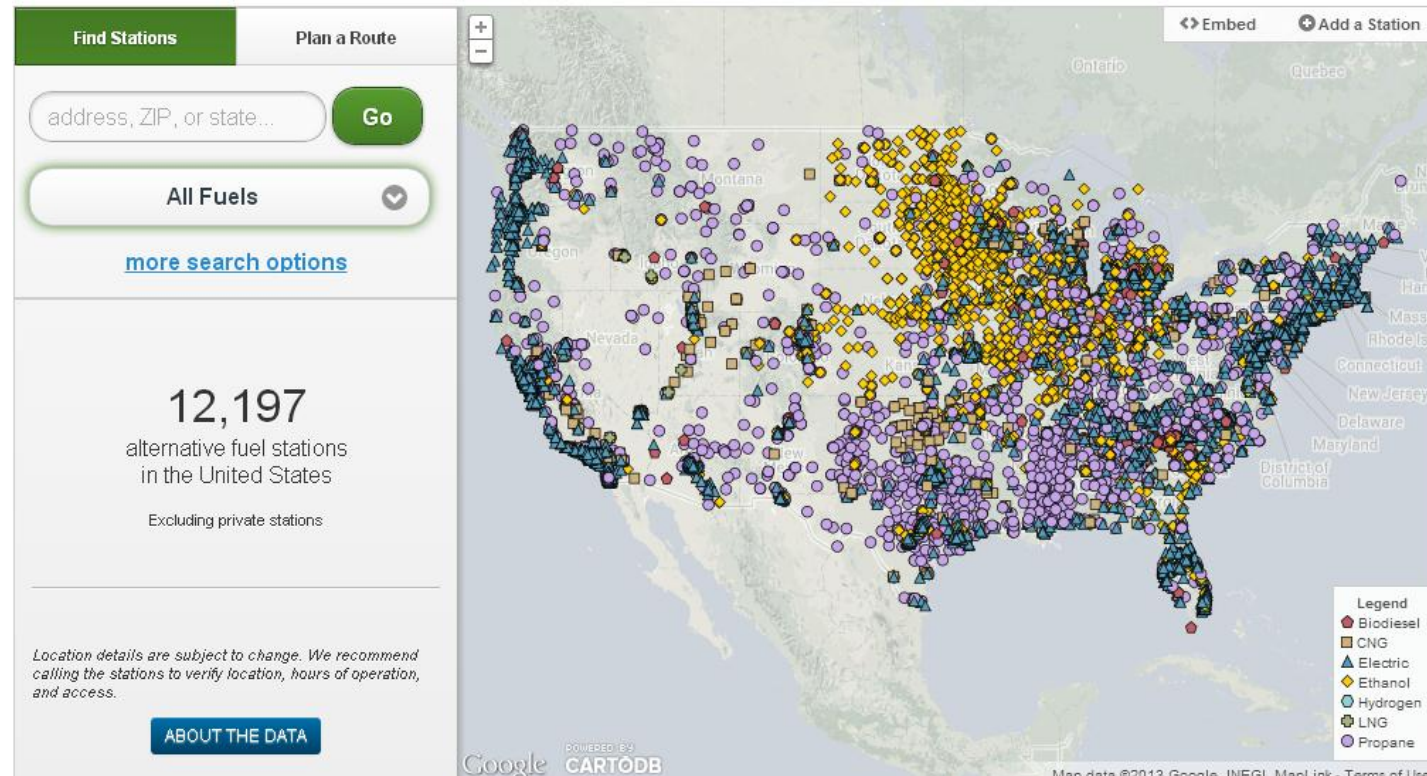
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EERE » AFDC » Locate Stations

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### 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.



### Public Stations by Fuel Type

- Electric: 6,268
- LNG: 2,609
- E85: 2,347
- CNG: 596
- Biodiesel: 335
- LNG: 32
- Hydrogen: 10

## Electric Vehicles: A Deeper Dive



Battery Electric Vehicle  
(BEV)



Hybrid Electric Vehicle  
(HEV)



Plug-in Hybrid Electric Vehicle  
(PHEV)

### ADVANTAGES

- Energy Efficient
- Environmentally Friendly
- Performance Benefits
- Reduce Energy Dependence & Costs

### CHALLENGES

- Driving Range
- Recharge Time
- Battery Cost
- Battery Pack Bulk & Weight

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# GSA's Electric Vehicles on Contract



Ford Focus BEV



Ford CMAX PHEV



Chevrolet Volt PHEV



Mitsubishi iMiEV



EVI-USA EV Truck



Central Truck ZT



## Federal Acquisition Service

### “Green” Initiatives to Date



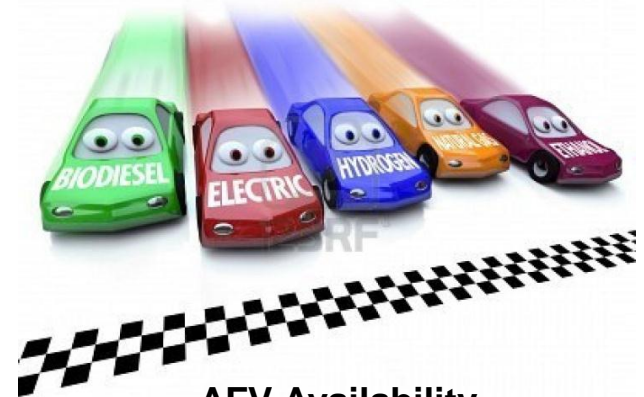
#### 2009 ARRA

\$300 million to acquire more fuel-efficient vehicles



#### Full Replacement Rate Program

AFV lease rate factors in incremental cost of replacement vehicle.



#### AFV Availability

Over 1,500 AFV configurations available



#### Plug-in Electric Vehicle Program: Phase 1

21 Agencies incorporated 116 PEVs into their fleets.

# Federal Acquisition Service

## Current “Green” Initiatives



### Cross-Agency Vehicle Sharing Program

GSA will pilot a vehicle sharing program in order to promote efficient use of the federal fleet.



### Sustainable Fleet Webinar

MVM will create a webinar outlining recent federal mandates on environmental awareness and sustainability.



### Plug-in Electric Vehicle Program: Phase 2

19 Agencies incorporating approx. 200 PEVs into their fleets.

# Performance Requirements to Consider

## Performance Requirements - Did You Consider.....

- Electric Vehicles: One of many “Fuel” types to be considered for fleets
- Utilize manufacturer’s technical specifications – Customization drives cost of acquisition significantly
- What will be the composition of the vehicle portfolio? Sedans, trucks, low speed (LSEV), motor cycles, motor scooters?
- Can I add after market equipment? Radios, Light Bars, Computers.....
- National v. regional sources of supply: Regional sources tend to limit product/service diversity



## Performance Requirements - Did You Consider.....

- Maintenance & service considerations – Outsource v. In source
- Aftermarket electric vehicle conversions are problematic
- ***Volume is Everything*** – Bundle your requirements to gain maximum price leverage
- How do I charge vehicles? What are the options? Level 1, 2, 3 – Fast charging
- How do I manage “Fueling” – Smart v. “Dumb” charging stations/systems
- Parking MGMT. – Do I have dedicated parking for EV’s ?
- Driver education is critical – training is essential

# Procurement Considerations

## Procurement Considerations

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- Market Research is critical to success
- Lease v. Purchase – There are advantages to both acquisition strategies (Life Cycle Analysis)
- Vehicle sharing (Zip Car Concept) program between jurisdictions – Will one jurisdiction procure for all?
- Technical Evaluation Team must understand the product – hire tech experts if necessary to review & recommend
- Avoid after market conversion suppliers
- Limited sources of supply for light duty passenger vehicles
- No OEM light duty trucks commercially available at this time

### **Procurement Considerations, Continued**

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- Limited sources of supply for medium duty trucks (UPS type delivery, refridge platforms, dry cargo step vans, utility trucks)
- Optional higher battery capacity available for medium duty trucks – 16KV & Up & tend to 2X in price
- Expect higher prices compared to hybrids, flex-fueled & conventional fueled vehicles
- Cooperative & pilot programs with Industry, Universities, Utilities & Gov't should be considered
- Contract type could influence purchase cost (IDIQ, DQ, requirements, schedule)



## **Procurement Considerations, Continued**

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- Limited commercial sources of supply for charging equipment – Avoid awards to re-sellers that lack in house technical support
- Consider flexible charging architecture: Infrastructure needs to be robust, able to be retrofit; so does the vehicle charging hardware
- How do you monitor & service charging stations?
- Consider “Privitizing” charging by outsourcing – Supply base provides the hardware & infrastructure & collects pay for use fees as compensation

## Conclusion

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# Discussion - Questions and Answers