NOAA EV Workshop– April 30, 2014

ELECTRIC VEHICLES, A GSA PERSPECTIVE

TYPES OF ELECTRIC VEHICLES

- Battery Electric Vehicle (BEV) – A vehicle powered by electricity, generally provided by batteries. EVs qualify in the Zero Emission Vehicle (ZEV) category for emissions.

TYPES OF ELECTRIC VEHICLES

- Hybrid Electric Vehicle (HEV) – A vehicle powered by two or more energy sources, one of which is electricity. HEVs may combine the engine and fuel of a conventional vehicle with the batteries and electric motor of an EV in a single drive train.

TYPES OF ELECTRIC VEHICLES

- Plug-in Hybrid Electric Vehicle (PHEV) –
- A vehicle propelled by both an internal combustion engine and to a significant extent by an electric motor.
- E.O. 13423 Section 2(g)(iii) requires Federal agencies with at least 20 vehicles to ensure the use of PHEVs

BENEFITS OF BATTERY ELECTRIC VEHICLES (BEVS)

- Provides a 100% reduction in petroleum use.
- Reduces operating and maintenance costs.
- Electricity prices are typically less volatile than gasoline and diesel prices, making it easier to predict fuel costs over time.

- Driving Environment: High annual use; shorter driving distances (less than 100 miles a day)

EXAMPLES OF EV MODELS GSA OFFERS

1 Battery	2 Hybrid	3 Plug-In Hybrid
Nissan Leaf Mitsubishi i-MiEV Ford Focus Zero Truck Cargo Van	Ford Fusion Ford CMAX Honda Insight Hyundai Sonata Buick Lacrosse Eco	Chevy Volt Ford CMAX Energi Ford Fusion Energi

RANGE AND CHARGING TIMES L2

	Ford CMAX Energi PHEV	Chevy Volt PHEV	Ford Focus BEV	Mitsubishi iMiEV BEV
Electric Range	21 miles	35 miles	73 miles	98 miles
Total Range	620 miles	345 miles	73 miles	98 miles
Charge Time	2.5 hrs	4 hrs	3-4 hrs	7 hrs
Passengers	5	4	4	4

L2 = Level 2 Charging Station 240V

COST OF CHARGING - FORMULA

- General rule of thumb for calculating potential costs.
- kW output of EVSE X # of hrs to charge X Energy rate per kWh = Cost of electricity

- Ex: 2014 Chevy Volt, charged by a Level 2 EVSE (240V/30amp)
  - 6.5 kW output
  - x 4 hrs to charge
  - = 26 kWh
  - X 0.10 cents p/kWh
  - *= $2.60 in electricity costs*

ANTICIPATED SAVINGS

- GSA Fleet National EV Pilot - Phase II – 200 vehicles is anticipated to save over 92,644 gallons of fuel and offset 931 metric tons of greenhouse gas emissions.
- Pilot Phase II Vehicles:
  - 2014 Ford Focus BEV
  - 2014 Ford CMAX Energi PHEV
  - 2014 Chevy Volt PHEV
  - (Region 10 received 22 vehicles)

REGION 10 – EV PILOT AGENCIES

- 1 - North Cascade NPS- Mablemount, WA
- 1 - NOAA – MountLake, WA
- 1 - USCG, North Bend, OR
- 2 - Mt. Rainier NPS – Longmire, WA
- 2 - GSA Public Building Svc, Auburn, WA
- 2 - BLM, Portland OR
- 2 - Fed Hwy Admin, Olympia, WA and Salem, OR
- 3 - BPA, Portland, OR
- 3 - NAVY, Everett, WA
- 5 - NAVY, Bremerton, WA
- 6 - JBLM, Ft, Lewis, WA

DID YOU KNOW THIS ABOUT PLUG-INS?

- Must plug-in to recharge
- Batteries are Lithium-Ion unlike nickel-metal hydride used in many HEVs
- Batteries are designed to last the expected lifetime of the PHEV
- They help you comply with “Greening” mandates
- Off-peak times offer lower electricity rates

GSA FY 2014 AFV OFFERING

- 993 B20 Capable
- 226 E85
- 124 Hybrid Electric (HEV)
- 70 CNG
- 53 Liquid Propane
- 32 Low Green House Gas-Emitting
- 6 Pure Electric (BEV)
- 4 Liquid Nitrogen Gas
- 3 Plug-in Electric/Gas (PHEV)
- 2 Bi-Fuel CNG/Gas

GSA REGION 10 – HAS 8634 AFVS

- 7704 - E85
- 790 - Hybrid Electric/Gas
- 91 – Biodiesel capable
- 26 – Plug-In Electric/Gas
- 8 - CNG/Gas
- 15 – BEV

GSA NATIONWIDE – 114,282 AFVS

- 101,638 - E85
- 11,524 - Hybrid Electric
- 543 - Plug-in Hybrid Electric/Gas
- 458 - BioDiesel
- 362 - Battery Electric
- 115 - Dedicated CNG
- 64 - CNG/GAS
- 23 - Diesel/CNG
- 9 - Hybrid Diesel Electric
- 3 - Plug-in Hybrid Electric/E85
- 1 - Propane/Gas

Battery Electric and Plug-In Hybrid Electric

CHARGING STATIONS

POLICIES ON POV CHARGING

- GAO Ruling, September 15, 2010. "*…no law which specifically authorizes the use of appropriated funds for installing essential infrastructure for recharging stations for private vehicles of employees…*"
- *"The use of public's funds for this purpose is a matter for Congress to address through legislation."*

POLICIES ON POV CHARGING

- DOE decision – October 18, 2010. *"To support the use of personally-owned electric vehicles, the Department is making available to Federal employees two electrical charging stations at Forrestal and Germantown…"*
  - First-come, first-served basis
  - Priority to electric GOVs
  - Flat fee of $2.00

POLICIES ON POV CHARGING

- DOE recommended guidance to other Federal agencies: *"…each agency's general counsel must determine appropriate and legal use of agency electric vehicle charging stations."*

- https://federalfleets.energy.gov/federal_requirements/guidance

Battery Electric and Plug-In Hybrid Electric

INTEGRATING PEVS INTO YOUR FLEET

STRATEGY FOR INTEGRATING EVS INTO FLEETS

- Identify low GHG-emitting vehicles available for each type of vehicle required to accomplish your fleet's mission at each fleet location.
- Identify the most fuel-efficient vehicle to accomplish your mission, including BEVs, HEV, and PHEV.
- Consider which existing vehicle can be replaced with some form of Electric Vehicle.
  - Consider daily use, route and miles driven per day
  - Consider where charging stations will be located

EXAMPLE OF INSTALLATION COSTS

- Western WA Clean Cities tracked 138 L2 public/private charging station installations at City/County facilities around the Puget Sound area in 2013
  - Average cost $10,261
  - Low of $2,669.00
  - High of $25,326.00
  - Total cost of project: $1,416,084.00

TYPICAL STEPS REQUIRED FOR GSA LEASING

- For Federal Agencies only as well as some non-federal agencies as approved by congress. For the full listing please see the Fleet page at www.gsa.gov/fleetleasing.
  - Identify your need
  - Contact your agency fleet manager and follow your agency guidance.
  - For any questions contact your nearest GSA Fleet Manager
  - GSA is not a mandatory source for leasing only for purchasing. Purchasing details may be viewed at: www.gsa.gov/automotive

FEDERAL SUSTAINABILITY MANDATES:

- EPAct 92/05 – Acquire 75% of light-duty vehicles as AFVs in metropolitan statistical areas. Use alternative fuel when available and reasonably priced. Exemptions are allowed for vehicles greater than 8,500 lbs, law enforcement, emergency vehicles and military tactical vehicles. Other exemptions include when alternate fuel is not available within five miles or 15 minutes from the vehicle's garage zip code or if the cost of alternative fuel is more expensive than gasoline. Exemptions must be filed with DOE FAST system using the section 701 waiver.

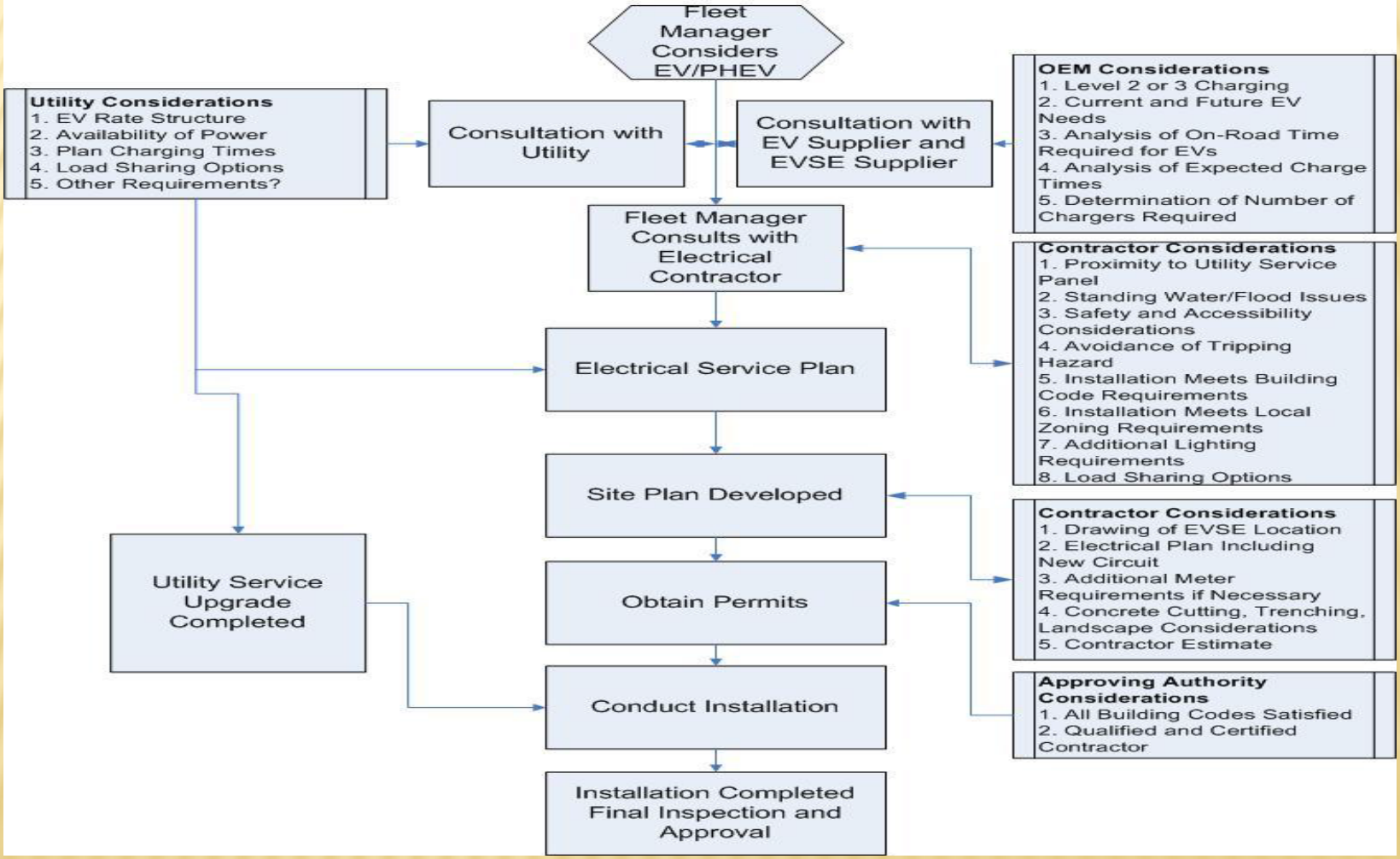
- Executive Order 13423 (2007) – Increase alternative fuel usage of 159.4% (10% annually over the previous year), from a 2005 baseline. Use plug-in vehicles when commercially available at a cost reasonably comparable to non-plug-in hybrid vehicles.

- National Defense Authorization Act of 2008 – Expands the EPAct 1992's definition of AFVs to include hybrid electric vehicles, fuel cell vehicles, advanced lean-burn technology vehicles, and any low-greenhouse gas (GHG) emitting vehicle (as defined by the U.S. Environmental Protection Agency) acquired in a location that would qualify for an EPAct 2005, Section 701 waiver.

- Executive Order 13514 (2009) – Reduce petroleum consumption by 30% (2% annually), by 2020, from a 2005 baseline.

- Energy, Independence & Security Act Section 141 2007 – Acquire only low Greenhouse Gas (GHG) emitting vehicles (with certain exceptions). This applies to all passenger vehicles, LD trucks (GVWR <8,500lbs.), and some Medium Duty Passenger Vehicles (GVWR between 8,500-10,000lbs). The Medium duty passenger vehicles included are those designed to transport less than 12 passengers, or, less than 9 passengers rearward of the driver's seat. MDPVs not included are those equipped with an open cargo area of 72 inches in interior length or more.

INSTALLATION PROCESS FOR COMMERCIAL FLEET OPERATIONS - GUIDELINES



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THANK YOU