



The Parker Ranch installation in Hawaii

Federal Energy Reporting Requirements

Motor Vehicle Roundtable—Federal Fleet Electrification
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- **EV-related Mandates and Reporting**
- **Reporting Facilities and Fleets Interface**
- **Measuring EV Electricity Consumption**
- **Definitions – AFV and AF**

Electric Vehicles and Federal Fleet Requirements

	<i>EPAct (92&05)</i>	<i>EO 13423</i>	<i>EISA 07</i>	<i>E.O. 13514</i>
GHG Emissions Reduction			Acquisition of low-GHG vehicles	Sets % reduction targets for Agency GHG emissions
Petroleum Reduction		2% annual reduction in petroleum use FY05 - FY15	EO 13423 requirement becomes law	2% reduction in annual petroleum use FY05 - FY20
Fleet Planning			Agency plan to meet petroleum and AF goals	Agency plan to meet E.O. 13514 sustainability goals
Alternative Fuel Use	AFVs only use AF unless waived	Increase AF use 10% from previous year	Install renewable pumps at all fueling centers	
AFV Acquisition	AFVs 75% of light-duty acquisitions	Use PHEVs when commercially available		

 Primary impact  Secondary impact

Facility Energy Intensity Reduction

EISA 07 ratifies energy reduction goals for Federal facilities relative to a FY03 baseline

Electric Vehicle Impact

EV electricity use is currently included in reporting goal subject buildings energy intensity

Renewable Energy Use

EPA Act 05 requires the percent of federal electricity consumption that is renewable to meet or exceed 5% in fiscal years 2010-2012 and 7.5% in 2013

Electric Vehicle Impact

To be determined

GHG Emission Reductions

EO 13514 requires each Federal agency to establish a goal to reduce GHG emissions relative to a FY08 baseline

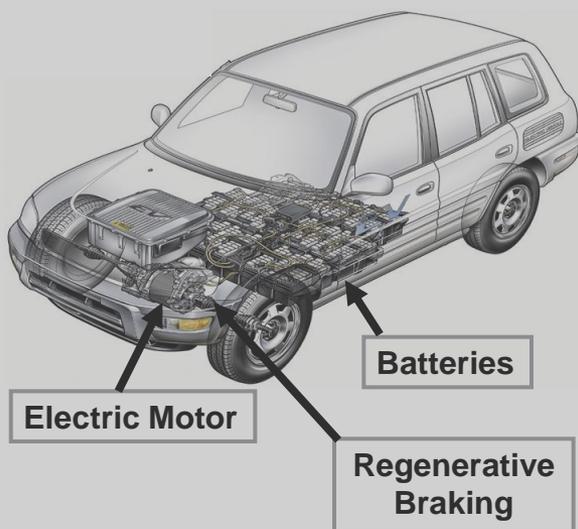
Electric Vehicle Impact

To be determined

Reporting Requirements Differ Based on Type of Electric Vehicle

Battery Electric Vehicles (BEVs)

- **Electric motor** only power source
- Batteries charged from electric grid and regenerative braking



Source: AMPLE Motion Corporation Of America

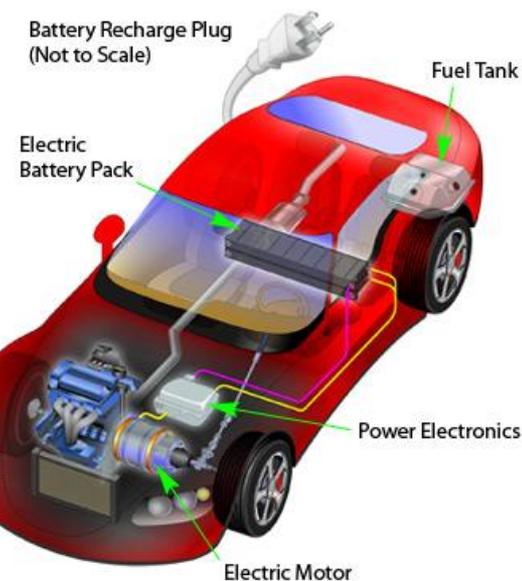
Low Speed Electric Vehicles (LSEVs)

- LSEVs are **pure electric low-speed vehicles (LSVs)**
 - 4-wheeled motor vehicles weighing <3,000 pounds
 - Top speeds of 20 to 25 MPH
- Also known as **neighborhood electric vehicles (NEVs)**
- **Federal fleet - not considered vehicles**



Plug-in Hybrid Electric Vehicles (PHEVs)

- Operates like a **hybrid electric vehicle**
- Can be charged with electricity like a **pure electric vehicle**



Requirement

Increase alternative fuel use by **10% from previous year** starting from FY05 baseline (**161% increase by FY15**)

Includes alternative fuel use in **exempt vehicles and LSEVs**

Reported in FAST (December)

Electric Vehicles

- **BEVs and LSEVs.** All electricity used to charge BEVs and LSEVs, will be counted towards agencies' alternative fuel use requirements
- **PHEVs.** All electricity used to charge PHEVs will be counted towards agencies' alternative fuel use requirements.
 - *Does not include the electricity generated by the internal combustion engine or regenerative braking system*

Charging Infrastructure

**On-site separate infrastructure
*with metering capability***

**On-site separate infrastructure,
*no metering capability***

Electricity Use Data

Collect and report **sub-metered electric vehicle consumption data** (provides the most accurate information on electricity use)

Follow the **protocols** established through the **measurement and verification standards** used for buildings

Use of **informally-metered data** (e.g., Kill A Watt TM device)

Use of **vehicle mileage** in conjunction with a **calibrated vendor-provided vehicle efficiency factor** to calculate consumption

FEMP M&V protocols: *generic M&V options for EVs*

Available at: http://www1.eere.energy.gov/femp/pdfs/mv_guidelines.pdf

Option A—Retrofit Isolation with Key Parameter Measurement

- **Variations** in factors are **not expected**
- **Spot or short-term** measurements
- Measure **key performance parameter(s)**
- Estimated other factors using historical or manufacturer's data.

Option B—Retrofit Isolation with All Parameter Measurement

- **Variations** in factors **are expected**
- **Periodic or continuous** measurements
- **Energy** (or proxies) **measured continuously**
- Periodic spot or short-term measurements when variations in factors not expected

Charging Infrastructure

Off-site charging infrastructure
with reported electricity consumption

Off-site separate infrastructure,
without reported electricity consumption

Electricity Use Data

Collect and report **electricity consumption** on transaction receipt

Use of **vehicle mileage** in conjunction with a **calibrated vendor-provided vehicle efficiency factor** to calculate fuel consumption

Use charging time and kW

Requirement

75% of “covered” Light-Duty Vehicle acquisitions must be AFVs

Agencies must accumulate **75 AFV credits per 100 covered vehicles** acquired within each fiscal year

Reported in FAST (December)

Electric Vehicles

- **BEVs are dedicated AFVs**
 - **Light-duty BEV: 2 credits**
 - **Medium-duty BEV: 3 credits**
 - **Heavy-duty BEV: 4 credits**
- **PHEVs are also AFVs (NDAA 08)**
 - **All PHEVs: 1 credit**
- **LSEVs are not considered vehicles under EPA Act**
 - **LSEVs: 0 credits**

Requirement

Agencies must **install a renewable fuel pump at each Federal fueling center** in the U.S. by January 1, 2010

Applicability:

- >100,000 gallons of annual use
- MSAs with 20 or more vehicles
- No renewable fuel available locally

Renewable fuels include E85, B20, and **renewable electricity**

Reported in FAST (June)

Electric Vehicles

- Electric charging infrastructure **satisfies EISA §246** requirement if:
 - **Renewable source of energy** (e.g., wind or solar)
 - **Non-renewably generated electricity** (*only if **RECs** equal to or greater than the electricity used are purchased*)

Requirement

Agencies must acquire PHEVs when commercially available *at a cost reasonably comparable, on the basis of life-cycle cost, to non-PHEVs*

Reporting requirements may be implemented when PHEVs are cost-comparable

Electric Vehicles

- **GSA will issue a fleet order for PHEVs in all vehicle categories when PHEVs become commercially available at a cost reasonably comparable, on the basis of life-cycle cost, to non-PHEVs**

Requirement

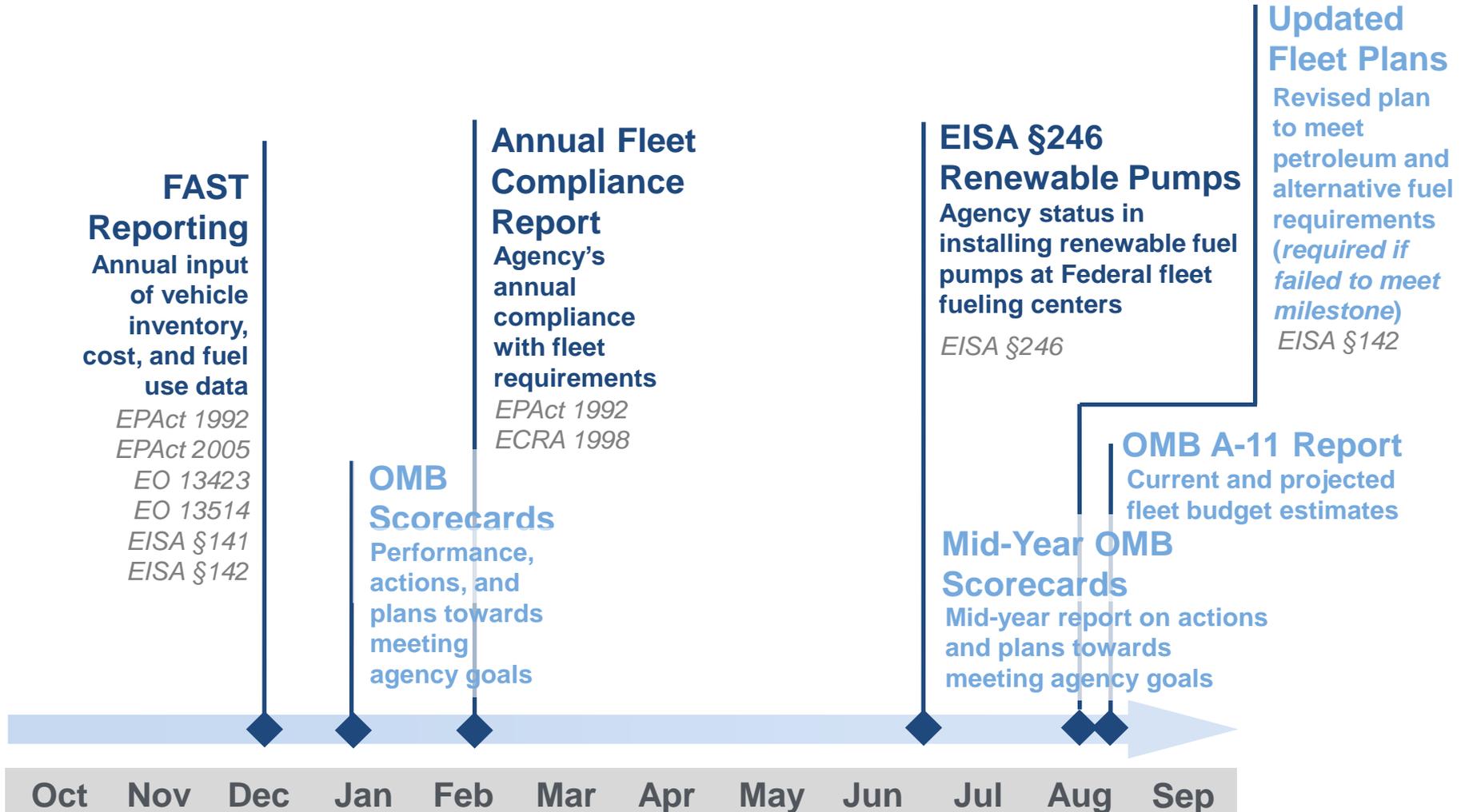
Section 141 prohibits federal agencies from acquiring light-duty motor vehicles and MDPVs that are not low GHG-emitting vehicles

EPA guidance requires **each agency to self-report**

Electric Vehicles

- EPA Green Vehicle Guide provides data to evaluate vehicle GHG emissions
- **Currently:**
 - **All BEVs** listed on EPA Green Vehicle Guide are low-GHG emitting vehicles
 - **All PHEVs** listed on EPA Green Vehicle Guide are low-GHG emitting vehicles
- **LSEVs are not considered vehicles**

Federal Fleet Reporting Timeline



		Electric Range (mi)	U.S. Target Intro. Date
Nissan	Leaf	73	2010
Ford	Transit Connect Electric	100	2010
Tesla	Roadster Sport 2.5	245	2010
Ford	Focus Electric	100	2011
Mitsubishi	iMiEV	70-100	2011
Wheego	Whip LiFe	100	2011
TH!NK	City	113	2011
Coda	Sedan	90-130	2011
Tesla	Model S	160-300	2011
BMW	ActiveE	100	2011
Toyota	iQ	TBD	2012
Toyota	RAV4 EV	TBD	2012
Honda	Fit EV	TBD	2012
Audi	R8 EV	TBD	2012

		All Electric Range (mi)	U.S. Target Intro. Date
Chevrolet	Volt	40	2010
BYD F3DM	Plug-in Hybrid	60	2011
Toyota	Prius Plug-in Hybrid	12.4-18.6	2012
Ford	Escape Plug-in Hybrid	40	2012
Fisker	Karma S Plug-in Hybrid	50	2012
Bright	IDEA Plug-in Hybrid	40	2012
Ford	C-MAX Energi	TBD	2012
BMW	Vision	TBD	2013
BMW	i8	TBD	2013
Cadillac	Converj	40	2013

Thank You

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Measuring Electricity Used in Electric Vehicles (Vehicle Mileage)

BEV (Leaf)

<i>Annual mileage:</i>	7,500 miles
<i>Vehicle efficiency factor:</i>	34 kWh/100 miles (EPA)
<i>Estimated electricity use:</i>	2,550 kWh

PHEV (Chevy Volt)

<i>Annual EV mode mileage:</i>	7,500 miles (source: onboard data system)
<i>Vehicle efficiency factor:</i>	36 kWh/100 miles (EPA)
<i>Estimated electricity use:</i>	2,700 kWh

LSEV (4 passenger GEM)

<i>Annual mileage:</i>	7,500 miles
<i>Vehicle efficiency factor:</i>	16.9 kWh/100 miles (DOE)
<i>Estimated electricity use:</i>	1,268 kWh