Building the Federal Electric Vehicle Infrastructure

Stephanie Gresalfi
GSA Fleet | Alternative Fuel Vehicles Branch Chief

GSA Fleet℠

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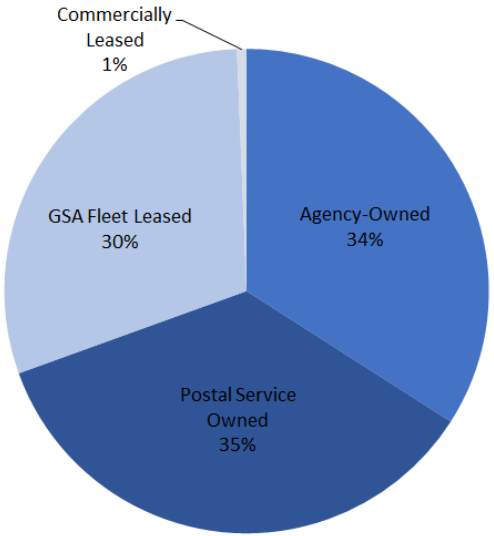
Vehicle Purchasing

Mandatory source for non-tactical vehicle purchases for DoD and federal executive agencies

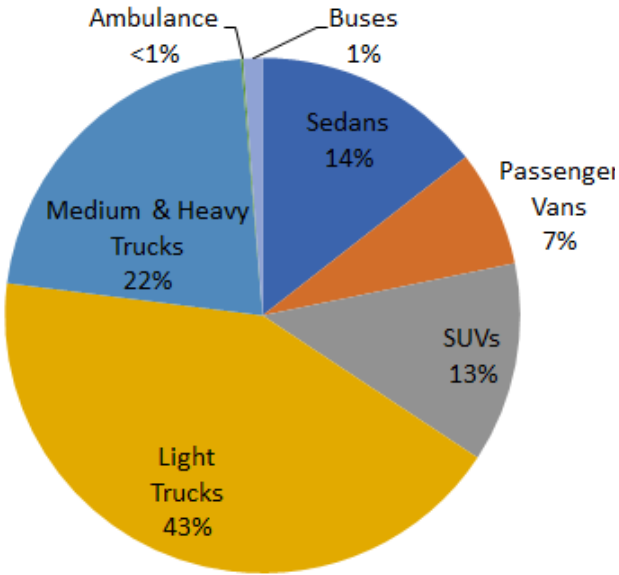
Vehicle Leasing

End-to-end fleet management services for DoD and federal executive agencies

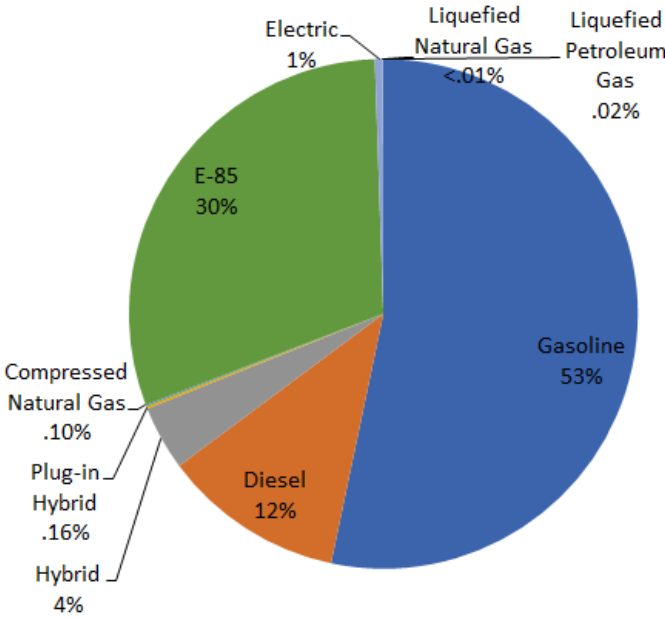
Federal Fleet Breakdown



Ownership



Size/Category



Fuel Type

GSA Fleet

Based on [2018 Federal Fleet Report]

Historical Federal Context for EVs

First GSA EVPurchase

Employee Charging - AOC requested a decision from GAO on whether it could utilize appropriated funds to install charging stations for privately owned EVs for employees or Members of Congress.

GSA Fleet Expands EV Pilot
Five additional agencies participated and 200 more EVs were added to agency fleets; 160+ level 2 networked charging stations accompanied the vehicles

EV Deployment Initiative
The Administration promotes aggregated buying of EVs. GSA offers Ford Focus BEV for just over $16,000. GSA Awards multiple award EVSE BPA. FEMP assists with installs.

2010 | 2012 | 2014 | 2015 | 2016 | 2018/2019

GSA Launches First EV Pilot
116 EVs were distributed across 21 agency fleets along with level 2 charging stations.

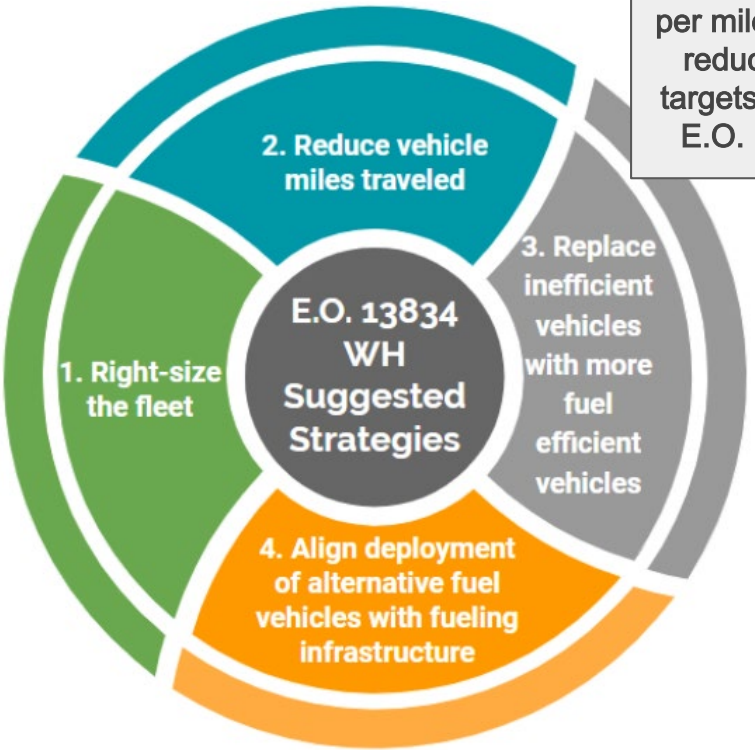
E.O. 13693 & FAST Act
20% of new acquisitions must be zero emission and plug-in hybrid electric vehicles by 2020; Allowed reimbursable workplace charging at federal facilities

E.O. 13693 replaced with E.O. 13843

Federal Fleet service cards accepted at EV Charging Stations

GSA Fleet

Executive Order 13834



- Meet existing statutory fleet requirements
- Reduce petroleum fuels at least 1% annually to achieve green on scorecard
  - Agencies set their own targets in annual Sustainability Plan
- Use Telematics when life-cycle cost effective

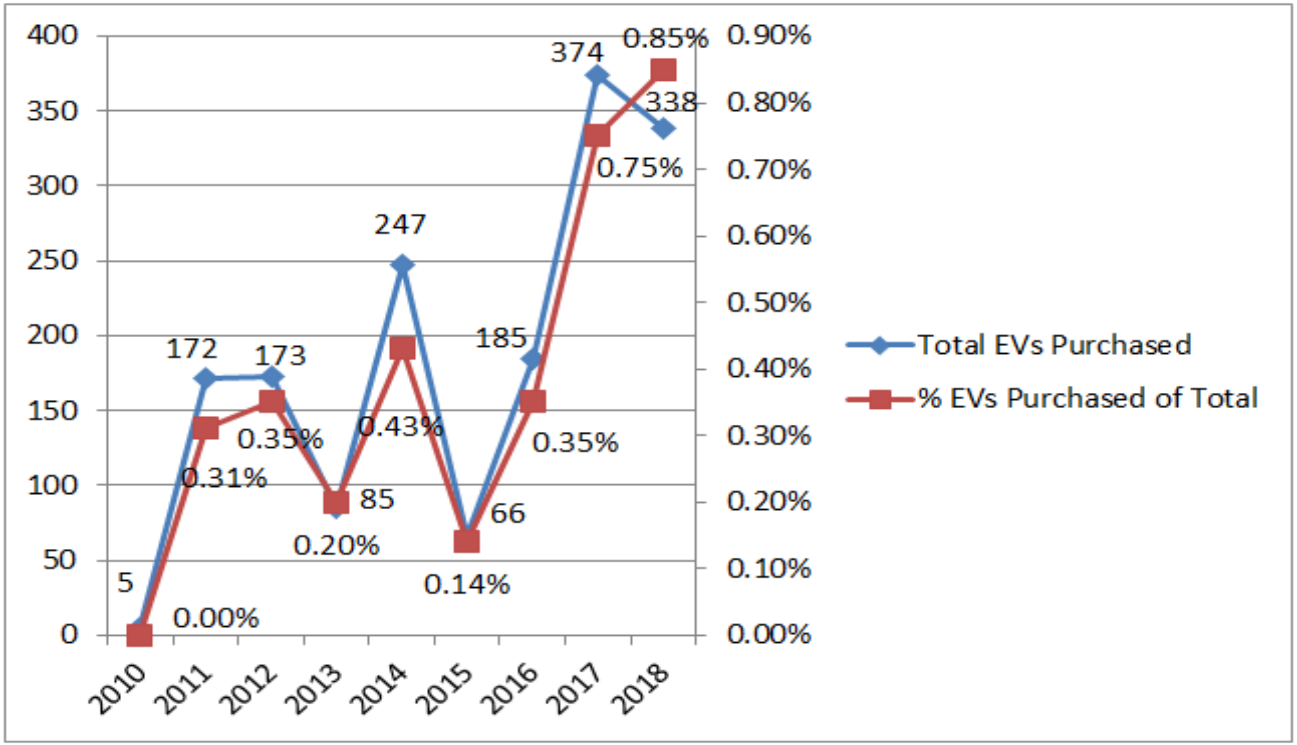
GSA Fleet

Laws Affecting the Federal Fleet

	Fleet Requirement	Statute	Description
Efficiency	**Reduce petroleum consumption**	EISA § 142	Reduce petroleum consumption by 20% and increase alternative fuel use by 10% by FY15 and continuing thereafter
Vehicle Acquisition	**Optimum fleet inventory, right-size fleets**	41 CFR 102-34.45	Select vehicles with best fuel efficiency for fleet needs
	Acquisition of AFVs	EPAct 1992 § 303	At least 75 percent of covered LDVs acquired in MSAs/CMSAs must be AFVs
	Acquisition of low GHG-emitting vehicles	EISA § 141	Prohibits agencies from acquiring vehicles that are not low-GHG-emitting vehicles
AF Use	**Alternative fuel use in AFVs**	EPAct 2005 § 701	All dual-fueled vehicles must use alternative fuel if reasonably available
	Alternative fuel infrastructure	EISA § 246	Every federal fleet fueling center must install a renewable fuel pump

Electric Vehicles (EVs)

Federal EV Purchasing Trends



FY19 EVs Available through GSA

8E Nissan Leaf and Chevy Bolt

Range: 150-238 miles all-electric

8P Hyundai Ioniq

Range: 29 miles all-electric; 630 total

9P Ford Fusion

Range: 26 miles all-electric; 610 miles total

20P Chrysler Pacifica PHEV

Range: 32 miles all-electric; 520 miles total

98P Kia Niro

Range: 26 miles all-electric; 560 miles total

96P Mitsubishi Outlander

Range: 22 miles all-electric; 310 miles total

GSA Fleet

FY19 GSA EV Schedule Offerings

Passenger/Cargo Van
Zenith

80-120 Mile Ranges
Price Ceiling: $99K-109K
Seating up to 16

Shuttle Bus
Phoenix MotorCars - Zeus

100 Mile Range
Price Ceiling: $248K
12-20 Passengers

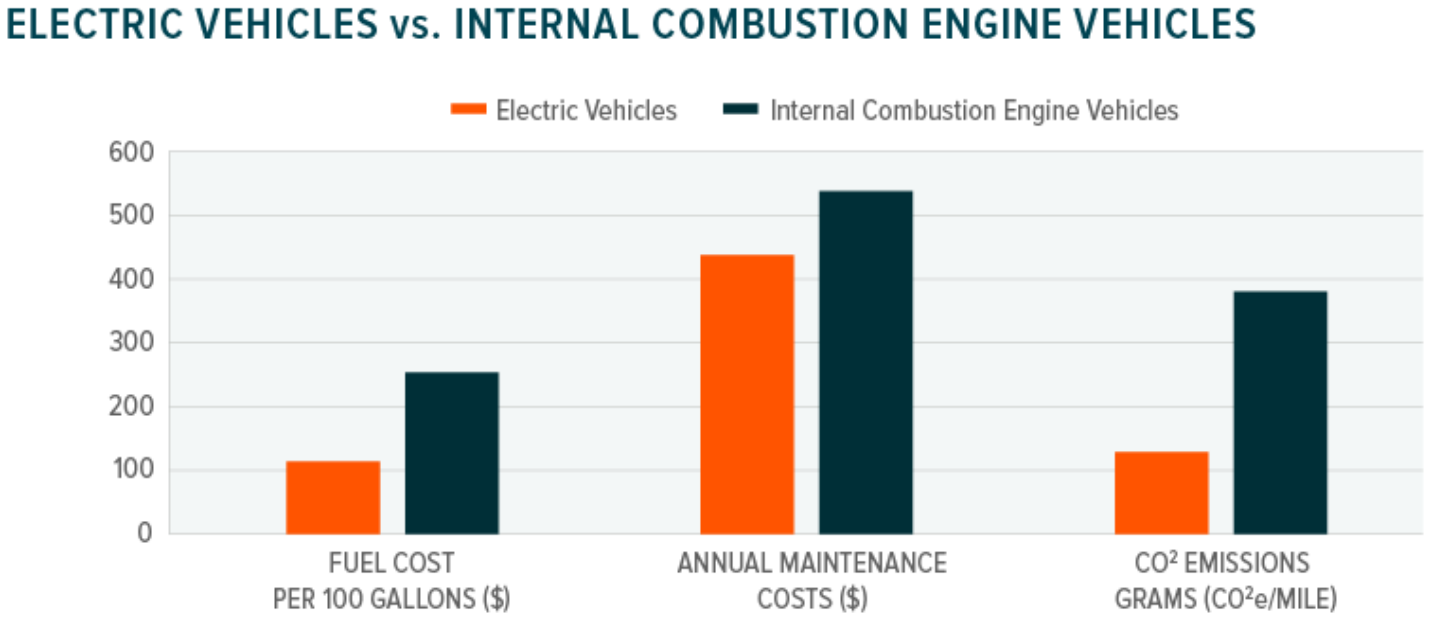
Transit Bus
Proterra

55-350 Mile Ranges
Price Ceiling: $600K-$771K
Charging Station Ceiling: $316,474

Funding for EVs

- Energy Policy Act of 2005 Section 303 requires GSA Fleet to spread the incremental cost of alternative fuel vehicles (AFVs) across the entire fleet
  - Incremental cost is the difference between the alternative fuel vehicle and the similarly sized low-bid conventionally fueled vehicle
- GSA spreads the cost of AFVs over all vehicles in the fleet via a monthly per vehicle AFV Surcharge

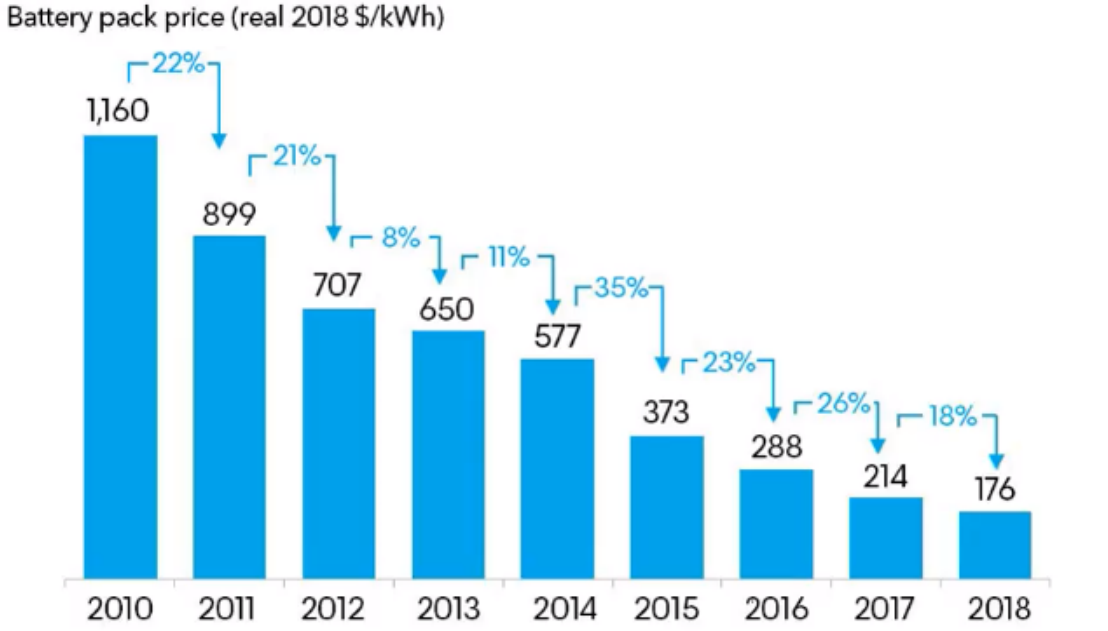
Making the Case for EVs



Fuel cost comparison data from the U.S. Department of Energy, as of 3/10/2018. Compares the national average cost of 100 gallons of gasoline to the cost of electricity for a similar amount of fuel, called an eGallon. Annual maintenance costs sourced from Kate Palmer, James E. Tate, Zia Wadud, John Nellthorp, "Total cost of ownership and market share for hybrid and electric vehicles in the UK, US and Japan," Applied Energy, Volume 209, 2018, Pages 108-119. CO^2 Emissions data from the Union of Concerned Scientists, 2018.

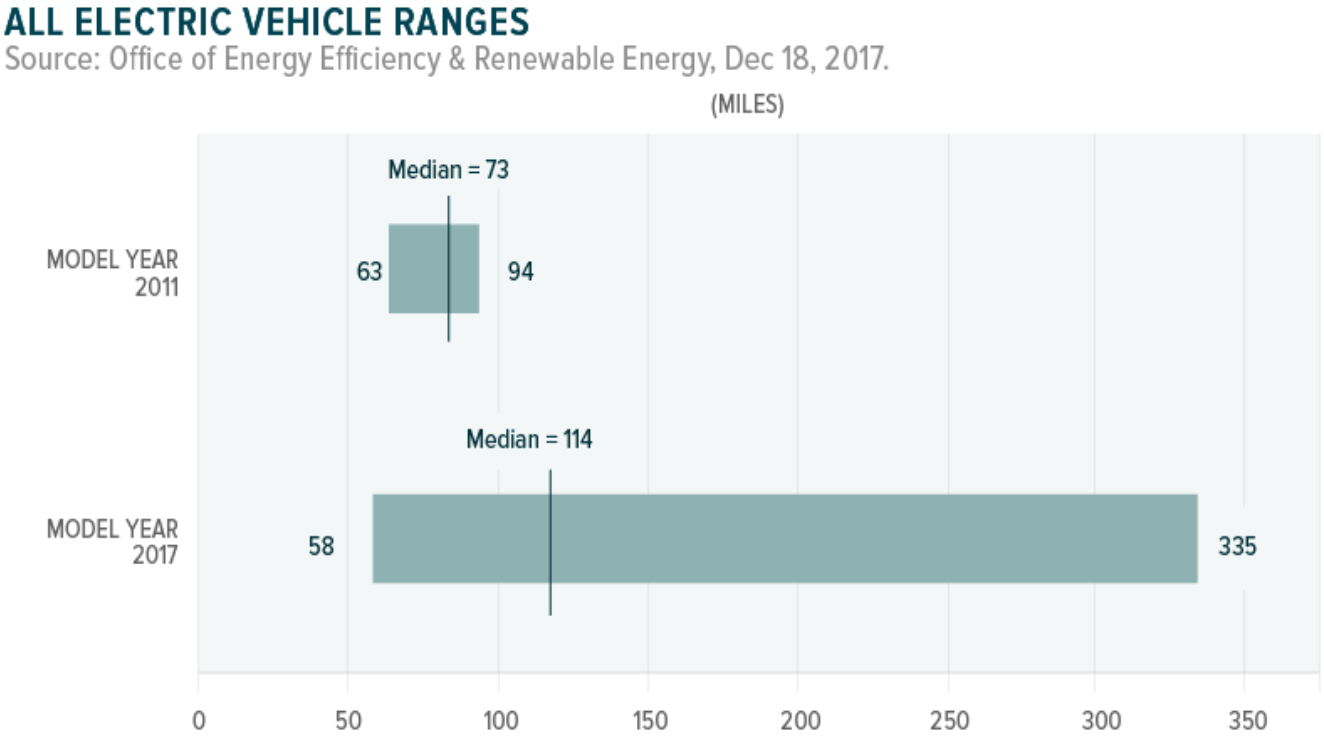
Making the Case: Price

Lithium-ion battery price survey results: volume-weighted average

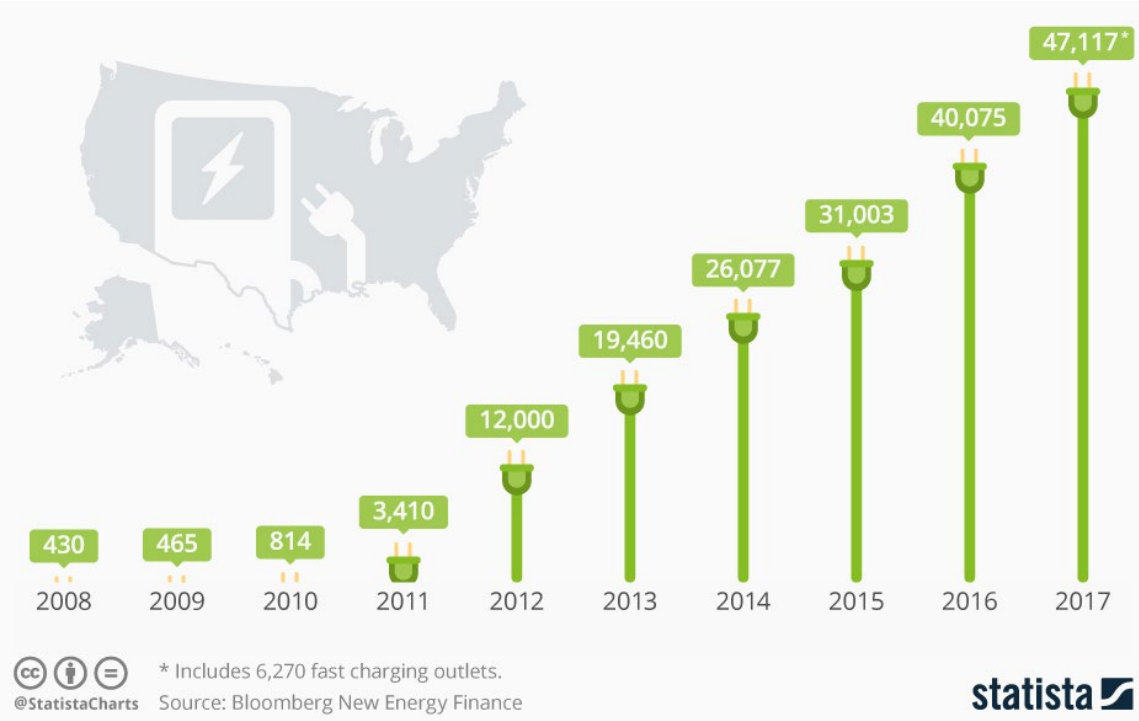


Source: BloombergNEF. Note: The data in this chart has been adjusted to be in real 2018 dollars.

Making the Case: Range



Making the Case: Availability



Charging Stations

Charging Station Basics

Level 1

2-5 miles of range per hour

120 volt charging. 7-21 hours for full charge. Charging cord provided standard with vehicle. Can plug into wall outlet or be dedicated freestanding/wall mounted station.

Station/Cordset: $0-$1,500*

Harder to capture data by vehicle.

Level 2

10-20 miles of range per hour

240 volt charging. 2-10 hours for full charge. Most stations can collect data with optional data/network services. Can be freestanding or wall mounted.

Station: $500-$10,000*

Data: $200-$300 annually

Works with any type of PHEV/EV.

DC Fast Charging

60-80 miles of range per 30 minutes

480 volt charging. Full charge in 30-60 minutes. Stations collect data with optional data/network services. Freestanding only.

Station: $13,000-$50,000*

Data: $200-$600

Not all EVs can use DC fast chargers.

On-site Charging Infrastructure

When public charging is not a viable option, agencies may need to procure and install charging stations for their site. There are three main steps to the process:

1. **Planning**
   Complete site planning, talk to stakeholders, and do market research about the costs/process for purchasing, installing, and managing charging stations

2. **Acquisition**
   Work with agency Contracting Officer to procure equipment

3. **Installation**
   Ensure that installation is possible and secure installation support BEFORE purchasing charging equipment

Best Practices:

Planning for On-Site Charging Infrastructure

Planning

- Identify & engage stakeholders early and often
- Get the right people on the bus
- Understand Current and Future Demand
- Location Set-up and Limitations
- Do it!

Wall Mounted | Single Port | Dual Port

Best Practices:

Charging Infrastructure Acquisition

Options for Purchasing EVSE

- GSA blanket purchase agreement (BPA)
  - Pre-negotiated and pre-competed contract solution open to all GSA Leasing and Purchasing agencies
  - Level 1, 2, and DC fast charge stations from 5 different manufacturers + data network plans
- GSA Schedules (GSAAdvantage.gov)
  - Level 1, 2, and DC fast charge stations + data network plans
    - 40 different configurations available from 12 different manufacturers
    - 13 different data network plans available from 3 different manufacturers
  - Station prices range from $500 - $40,000
- Open Market
  - Use when desired configurations / specifications are not available from GSA Schedules
  - Reference Federal Acquisition Regulation (FAR) Parts 13 and 15

How to Purchase EVSE from GSA's BPA

1

Visit gsa.gov/evse

For full list of available products, vendor information, and ordering guide

2

Agency Contracting Officer (CO) Determines Acquisition Threshold

Per FAR 8.405-c, for orders > Micro-Purchase Threshold ($10,000) < Simplified Acquisition Threshold ($250,000), simply select **lowest priced** model within desired CLIN from awarded, and place order directly with vendor

3

Agency CO Places Order Against BPA

in accordance with FAR 8.405(C) requirements. All order and delivery arrangements are made by the agency with vendor

Best Practices:

EVSE Installation

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Government-wide Installation Options

- Work with Building Management
  - Agencies located in GSA-managed facilities contact local GSA facilities contracting office or Judy Parnell (judy.parnell@gsa.gov) for A/E contracts
- Fee-for-service programs to support EVSE planning and installation
  - DOT Volpe Center: https://www.volpe.dot.gov/work-with-us/how-initiate-work
  - DOE's Clean Cities Program contractors: technicalresponse@icf.com
- Compete it
  - GSA Schedule (Schedules 03FAC, 84 and 56)
  - Other contracting vehicle
- Seek resources/assistance from station vendor/manufacturer
  - Some charging station providers have certified-installers you can use to help with installation or conduct your own market research

Engaging with Utility Company

- Utilities are key stakeholder in installation project and can provide Information about electrical capacity at installation site
- Add charging station support to pre-existing areawide public utility contract
  - Type and extent of support varies depending on the location and areawide agreement terms
  - Contact energy@gsa.gov for more information
- Additional incentives from other utilities and local/state governments may available for federal agencies
  - Visit https://PlugInAmerica.org for available incentives by state

Resources for Federal Fleet Managers

Resources

- GSA Alternative Fuel Vehicle Team - GSAFleetAFVTeam@gsa.gov
  - GSA Fleet EVSE Resources
  - GSA Fleet EV and EVSE Training on GSA Fleet Drive-thru
- DOE Resources
  - DOE Plug-In Electric Vehicle Handbook for Fleet Managers
  - DOE Workplace Charging site
  - DOE/FEMP EV and EVSE Training
- CEQ FAST Act Guidance on Workplace Charging
- Case Studies and Lessons Learned from State and Municipal Governments
  - CALTrans Best Practices for Workplace Charging
  - PEV Collaborative Report: Plugging in at Work
  - California Department of General Services Fleet EVSE Guide

Questions?

Contact us at gsafleetafvteam@gsa.gov

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