Guidance for Federal Agency Implementation of Workplace Charging Pursuant to the Fixing America's Surface Transportation Act: Electric Vehicle Supply Equipment

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1. Introduction

Fixing America's Surface Transportation Act (FAST Act) [1] authorizes the General Services Administration (GSA) and other Federal agencies to install, operate and maintain plug-in electric vehicle (PEV) charging stations for privately owned PEVs in parking areas under the custody, control, or administrative jurisdiction of the federal agency and used by Federal employees and other authorized users, and requires the collection of fees to recover these costs. The provision of PEV charging stations at the workplace can reduce greenhouse gas (GHG) emissions by enabling the displacement of commuters' petroleum fuel with lower-emission electricity.[2] Executive Order 13693 section 7(f) instructs the Federal government to consider the development of policies to promote sustainable commuting and work related travel practices including workplace vehicle charging for Federal employees, where consistent with agency authority and Federal appropriations law. Additionally, Executive Order 13693 section 3(h)(vii) instructs agencies to consider appropriate design and deployment of fleet charging infrastructure during all new major construction, repair, or alteration of agency owned buildings and the Implementing Instructions state that agencies shall consider as soon as possible the feasibility of charging infrastructure in newly acquired leased space or where a concessionaire operates a parking facility at a Federal workplace.[3,4]

This guidance, developed by the Council on Environmental Quality (CEQ) in consultation with the Office of Science and Technology Policy, supports the implementation of Executive Order 13693 by outlining how agencies can provide workplace charging opportunities under the FAST Act and provides an approach for a uniform fee for the use of existing and new hard-wired electric vehicle supply equipment (EVSE) with cordsets including alternating current (AC) Level 1 EVSE, AC Level 2 EVSE, or direct current fast chargers (DCFC) (referred to collectively in this guidance as EVSE), for the purposes of seeking reimbursement as authorized by the FAST Act. While this guidance identifies a uniform approach to reimbursement for the use of EVSE to support compliance with the FAST Act while encouraging implementation of Executive Order 13693, it is ultimately the responsibility of each implementing Agency to ensure that reimbursement is recovered where required by the FAST Act or other applicable law. This guidance applies to Federal buildings not under the jurisdiction, custody, or control of the GSA; GSA-issued guidance is forthcoming.

This guidance serves to support Federal agency policy decisions on the provision of EVSE. Additional technical assistance and informational resources on assessing employee interest in workplace charging and workplace charging installation and management are available through the U.S. Department of Energy (DOE) Workplace Charging Challenge.[5]

[1] Fixing America's Surface Transportation Act § 1413(c), 42 U.S.C. 6364 (2015).

[2] Employers participating in the U.S. Department of Energy Workplace Charging Challenge reported a combined savings of 1.7 million gallons of gasoline and 17 million pounds of GHG emissions annually. Employees with access to workplace charging are six times more likely to drive an electric vehicle than the average worker. Workplace Charging Challenge Mid-Program Review: Employees Plug In, December 2015, available at http://www.energy.gov/sites/prod/files/2015/12/f27/105313-5400-BR-0-EERE%20Charging%20Challenge-FINAL_0.pdf.

[3] Executive Order 13693, Planning for Federal Sustainability in the Next Decade, March 2015, available at https://www.whitehouse.gov/the-press-office/2015/03/19/executive-order-planning-federal-sustainability-next-decade.

[4] Implementing Instructions for Executive Order 13693 Planning for Federal Sustainability in the Next Decade, June 2015, available at https://www.whitehouse.gov/sites/default/files/docs/eo_13693_implementing_instructions_june_10_2015.pdf.

[5] Information on the U.S. Department of Energy Workplace Charging Challenge may be found at http://www.energy.gov/eere/vehicles/ev-everywhere-workplace-charging-challenge.

Note: The FAST Act also authorizes the provision of AC Level 1 charging receptacles, commonly known as wall outlets for privately owned PEVs, and guidance for the use of this technology under the FAST Act was issued by CEQ in June 2016.[6] The definitions of particular types of charging and PEVs in this and subsequent guidance do not preclude other emerging technologies (e.g., wireless charging) from future consideration in the context of the FAST Act authorizations for Federal workplace charging.

2. Background

The scope of this guidance is intended to address EVSE with cordsets. EVSE with cordsets can provide electricity by alternating current (AC) or direct current (DC) to the PEV battery. The EVSE may be wall-mounted or pedestal-mounted and have one or more cordsets, each with a connector that plugs into the PEV to deliver electricity to the vehicle. The equipment communicates with the PEV to ensure that the plug is securely connected to the vehicle before supplying a safe flow of electricity. For AC Levels 1 and 2 EVSE, the vehicle's onboard charging equipment converts the electricity to the direct current needed to charge the PEV's batteries. For DCFC EVSE, the charger is located inside the DCFC unit and the DCFC unit converts the electricity from alternating current to direct current; this energy flow bypasses the vehicle's onboard battery charger.

The amount of electricity likely to be received by an authorized user's PEV for daily commuting to and from the workplace is small at 4 kilowatt hours per day.[7] Research shows that PEV owners with access to workplace charging often charge at their home and use workplace charging to "top off" their PEV battery to replace the electricity used during the daily commute to work.[8] Workplace charging management policies covering usage fees and EVSE sharing can help ensure optimal authorized user use of the charging equipment.[9]

3. Planning and Reporting

(a) As described in the Implementing Instructions for Executive Order 13693, Federal agencies should include, as appropriate, planning for workplace charging in the Multimodal Access Plan (MAP) submitted as an appendix to the annual Strategic Sustainability Performance Plan (SSPP).

(b) As part of the annual submission in the Federal Automotive Statistical Tool (FAST), Federal agency Chief Sustainability Officers should coordinate with Federal agency fleet managers to report annually on implementation of workplace charging. Reporting will begin with the FY 2016 reporting cycle to be submitted by December 15. It will include the number and type of charging equipment installed at sites with active workplace charging programs, the cost of the hardware and installation, and the fee assessed to authorized users of the charging equipment.

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[6] Guidance for Federal Agency Implementation of Workplace Charging Pursuant to the Fixing America's Surface Transportation Act: Level 1 Charging Receptacles, available at https://www.whitehouse.gov/sites/default/files/guidance_for_federal_agency_implementation_of_workplace_charging_-_l1_ch....pdf.

[7] Average one-way commute (12 miles, 2009 National Highway Transportation Survey, nhts.ornl.gov), Average PEV efficiency (3 miles per kilowatt hour, U.S. Department of Energy, 2014 PEV Models, www.fueleconomy.gov).

[8] U.S. Department of Energy, Idaho National Laboratory, 2014, "Charging and Driving Behavior of Nissan Leaf Drivers in The EV Project with Access to Workplace Charging," available at http://avt.inel.gov/pdf/EVProj/WorkplaceChargingandDriving-Leaf.pdf.

[9] U.S. Department of Energy, Workplace Charging Challenge. "Workplace Charging Management Policies: Pricing." And "Workplace Charging Management Policies: Sharing" http://energy.gov/eere/vehicles/workplace-charging-management-policies-pricing and http://energy.gov/eere/vehicles/workplace-charging-management-policies-sharing (accessed September 2016).

4. Definitions

(a) *Alternating Current (AC) Level 1 EVSE:* AC Level 1 as defined in SAE Standard J1772, wall or pedestal mounted charging infrastructure with cordset designed to use 120-V AC input, and can typically add 4 to 6 miles of range to a light-duty PEV per hour of charging time.

(b) *Alternating Current (AC) Level 2 EVSE:* AC Level 2 as defined in SAE Standard J1772, wall or pedestal mounted charging infrastructure with cordset designed to use 208-V or 240-V AC input, and can typically add 10 to 20 miles of range to a light-duty PEV per hour of charging time.

(c) *Authorized User*: An individual authorized by a Federal agency to use its parking area. This includes agency employees, as well as its contractors, subcontractors, and visitors.

(d) *Cordset*: Equipment that extends from an EVSE and plugs into a PEV with a connector to deliver electricity by alternating current or direct current to the PEV battery. The equipment communicates with the PEV to ensure that the plug is securely connected to the vehicle before supplying a safe flow of electricity.

(e) *Direct Current (DC) Fast Charger:* Charging infrastructure with off-board-the-vehicle charger and cordset used by PEVs compatible with the three technologies in use in the United States, CHAdeMO, SAE Combined Charging System (CCS), and the Tesla Supercharger. SAE proposed charging level definitions include DC Level 2 (200-450 V DC Output, up to 90 kW, which normally uses 480 V input) and DC Level 3 (200-600 V DC Output, up to 240 kW). DC Fast Chargers can typically add about 25 miles (24 kW) to 50 miles (50 kW) or more of range in 20 minutes. Not commonly used as a workplace charging option.

Wall-mounted Level 1 EVSE used for workplace charging (New York Power Authority Photo)

Pedestal-mounted Level 2 EVSE paired with solar and used for workplace charging (Argonne National Laboratory Photo)

(f) *Electric Vehicle Supply Equipment (EVSE):* Electrical hardware used to supply electric energy to a plug-in electric vehicle.

(g) *Parking Area*: Any federally owned or leased building, structure or surface lot for vehicles, including light-duty vehicles, motorcycles, and bicycles.

(h) *Plug-in Electric Vehicle (PEV)*: A vehicle that (a) draws motive power from a battery; (b) can be recharged from an external source of electricity for motive power.

(i) *Privately Owned PEVs:* PEVs not acquired for federal agency use, including PEVs that are owned or leased by authorized users.

5. Principles for Determining Reimbursement for Workplace Charging

The following principles for Federal agency provision of EVSE are consistent with the principles outlined in *Guidance for Federal Agency Implementation of Workplace Charging Pursuant to the Fixing America's Surface Transportation Act: Level 1 Charging Receptacles*.

(a) While this section identifies a uniform approach to reimbursement for the use of EVSE to support compliance with the FAST Act while encouraging implementation of Executive Order 13693, it is ultimately the responsibility of each implementing Agency to ensure that reimbursement is recovered where required by the FAST Act or other applicable law.

(b) Federal agencies should assess fees for workplace charging at a given parking area that are uniform for each type of EVSE, so that authorized users who select a particular type of EVSE pay the same fee, regardless of which charging unit is used.

(c) Except in the scenarios described in 5(e), the fees charged to an authorized user have a component that relates to the cost of the electricity provided and a component that relates to hardware, construction, installation, and maintenance costs.

(d) The component of the fee that relates to the cost of electricity should be based on the national average for commercial electricity rates for the preceding calendar year, as reported by the U.S. DOE Energy Information Administration (EIA).[10] Agencies may use the state, local or observed electricity rate of the charging equipment host facility. Agencies should use renewable energy where feasible and cost effective.

(e) In accordance with the FAST Act, in determining the component of the fee that relates to hardware, construction, and installation costs, Federal agencies are not required to include the costs of installing or constructing any charging equipment:

(1) installed or constructed on or before December 4, 2015.

(2) installed or constructed primarily for use by Federal agency fleet vehicles.

(3) installed or constructed pursuant to appropriations for the purpose of installing or constructing charging equipment, scenarios where Federal agencies have authority and appropriation under law other than the FAST Act

[10] U.S. Department of Energy, Energy Information Administration. Electric Power Monthly Table 5.3, available at http://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_03.

(f) For charging equipment and installation costs other than those described in subsection (e), agencies should include the cost of installing and constructing EVSE into the fee charged to authorized users, based on anticipated authorized user demand[11] and an expected 10-year lifetime for the charging equipment[12] and a 40-year amortization period for installation costs,[13] until these costs are fully recovered.

(g) Agencies are strongly encouraged to explore innovative financing or cost-share of EVSE projects to reduce the total amount of costs for which the agency needs reimbursed by authorized users.

(h) Agencies that choose to carry out the authorities in the FAST Act through a contract with a vendor should consider these principles and the guidance below, as appropriate, in developing terms and conditions with the vendor.

(i) In accordance with the statutory authority under the FAST Act, fees collected shall be deposited monthly in the Treasury to the credit of the respective agency's appropriations account for the operations of the building where the EVSE is located and available for obligation without further appropriation during the fiscal year collected and the fiscal year following the fiscal year collected. Governmental entities that do not receive further appropriations should consult with their legal counsel to determine how the reimbursement and deposit provisions should apply.

6. Guidance for Level 1 EVSE, Level 2 EVSE, and DCFC

(a) Introduction. As noted above, workplace charging is anticipated to be used to "top off" PEV batteries, replacing the electricity used during the daily commute to work.

EVSE costs can broadly be categorized into those associated with hardware, installation, and operations and maintenance. EVSE hardware is available from many different manufacturers with a variety of designs and features. Product attributes range from a simple unit that turns on and off to units that collect data, communicate between the grid and users, and provide a billing option for the host. The EVSE attributes required by Federal agencies will depend on the intended users (fleet and authorized user), site specific conditions, and data management needs for the station. EVSE hardware costs can vary widely depending on charging level, number of cordsets, communications system requirements, data analysis needs, and other features. EVSE hosts may also need to factor in ongoing service and data costs depending on EVSE hardware and software needs. Although regular maintenance is generally not required for basic Level 1 and Level 2 EVSE, EVSE hosts may consider purchasing service packages to support ongoing operations and

[11] U.S. Department of Energy, Workplace Charging Challenge. "Sample Employee Survey for Workplace Charging Planning." http://energy.gov/eere/vehicles/downloads/sample-employee-survey-workplace-charging-planning (accessed September 2016).

[12] U.S. Department of Energy, November 2015, Costs Associated with Non-Residential Electric Vehicle Supply Equipment, available at http://www.afdc.energy.gov/uploads/publication/evse_cost_report_2015.pdf.

[13] Electric utilities have estimated the lifetime of installing new electric infrastructure and distribution service to EVSE as 40 years (Southern California Edison, October 2014, Prepared Testimony in Support of Southern California Edison Company's Charge Ready Application: Volume 02 – Phase 1 Charge Ready and Market Education Pilot), 50 years (San Diego Gas & Electric, April 2014, Prepared Direct Testimony of Jonathan B. Atun Chapter 4: on Behalf of San Diego Gas & Electric Comp) and 44 years (Pacific Gas & Electric Company, February 2015, Pacific Gas & Electric Company Electric Vehicle Infrastructure and Education Program Prepared Testimony).

maintenance of workplace charging. The costs associated with installing EVSE can also vary widely, depending on site location, available electrical capacity, and labor costs, but Federal agencies can use the following installation best practices[14] to minimize project cost drivers:

Procurement

- Participate in aggregated purchases offered by GSA that reduce redundant contract administration action and provide EVSE volume pricing discounts. Contact the GSA Fleet Alternative Fuel Vehicle Team at GSAfleetafvteam@gsa.gov for more information.
- Evaluate EVSE financial incentives offered by utilities, states or other entities.

EVSE Unit

- Choose the EVSE unit with the minimum level of features needed considering operational and data gathering needs to minimize up-front procurement cost and minimize the more periodic maintenance required by advanced units as compared to basic units.
- Choose a wall mounted EVSE, if possible, to minimize concrete or soil excavation or drilling of holes through building structures, known as trenching or boring, for routing of electrical conduit and wiring.
- Choose a dual- or multi- port EVSE to minimize installation costs per charge port.
- Determine the electrical load available at the site and choose the quantity and level of EVSE units to fit within that available electrical capacity.

Location

- Place the EVSE close to the electrical service to minimize the need for trenching/boring and the costs of potential electrical upgrades.
- Instead of locating the EVSE at a highly visible parking spot a great distance from the electrical panel, use signage to direct PEV drivers to the EVSE unit.
- If trenching/boring is needed, minimize the trenching/boring distance.
- Choose a location that already has space on the electrical panel with a dedicated circuit.
- Consult best practices for installing EVSE in compliance with the Americans with Disabilities Act (ADA).[15]

Long Term Planning

- Contact the site's utility early in the planning stages to discuss electricity consumption and demand charges as well as electrical service needs. Avoid utility demand charges by balancing charging time windows with other electricity usage and working closely with the utility.
- Consider the quantity and location of EVSE that are planned for installation over the next 10-40 years when installing the first unit. Upgrade the electrical service for the anticipated long term EVSE load and run conduit to anticipated future EVSE locations. This will minimize the cost of installing future units.
- Consider the electricity infrastructure for EVSE when building a new facility. It is less expensive to install extra panels and conduit capacity during initial construction than to modify the site later.

(b) It is difficult to compare or predict EVSE hardware, installation, operations and maintenance (or service) costs because actual costs of a project will depend on the specific needs and constraints of the EVSE and its users. The cost ranges and associated reimbursement fees shown in this guidance should be used for the purpose of preliminary investigation of establishing a workplace charging program and not as a tool for estimating the cost of an individual project. Federal agencies should consult with EVSE vendors, utilities, and electricians to obtain cost estimates for projects for their facilities.

[14] Adapted from U.S. Department of Energy, November 2015, Costs Associated with Non-Residential Electric Vehicle Supply Equipment, available at http://www.afdc.energy.gov/uploads/publication/evse_cost_report_2015.pdf.
[15] U.S. Department of Energy, November 2014, ADA Requirements for Workplace Charging Installation. http://energy.gov/sites/prod/files/2015/11/f27/WPCC_complyingwithADArequirements_1114.pdf.

Table 1: Estimated Reimbursement Fees for Level 1 EVSE, Level 2 EVSE & DCFC EVSE Scenarios[16]

	Example Scenarios: Level 1 EVSE, Level 2 EVSE & DCFC EVSE	Installation Cost to Reimburse per EVSE	Hardware Cost to Reimburse per EVSE	Electricity Cost per Employee per Day	Total Biweekly fee per Employee	Daily fee per Employee
1	Basic Wall Mount Level 1 EVSE	$1,000.00	$500.00	$0.45	$13.19	$1.32
2	Basic Pedestal Level 1 EVSE	$2,000.00	$1,500.00	$0.45	$29.54	$2.95
3	Basic Wall Mount Level 2 EVSE	$1,000.00	$1,000.00	$0.45	$10.44	$1.04
4	Basic Wall Mount Level 2 EVSE *installed before 12/04/15, or installed primarily for use by Federal agency fleet vehicles or installed pursuant to appropriations for the purpose of installing EVSE*	$0.00	$0.00	$0.45	$2.27	$0.23
5	Basic Pedestal Level 2 EVSE	$2,500.00	$2,300.00	$0.45	$21.16	$2.12
6	Networked Pedestal Level 2 EVSE	$2,500.00	$4,500.00	$0.45	$47.32	$4.73
7	Networked Pedestal Level 2 EVSE *installed before 12/04/15, or installed primarily for use by Federal agency fleet vehicles or installed pursuant to appropriations for the purpose of installing EVSE*	$0.00	$0.00	$0.45	$11.50	$1.15
8	Networked DCFC EVSE	$14,250.00	$25,000.00	$0.45	$109.94	$10.99

(c) Reimbursement. This guidance provides an approach for a reimbursement policy in accordance with the FAST Act for EVSE as follows:

(1) Agencies should assess authorized users who charge their PEV batteries at EVSE at a particular facility a flat daily, biweekly, monthly or annual fee for the privilege of doing so. To provide uniformity in setting this fee across the government, agencies should use national averages for commercial electricity rates, one-way commuting distances, and PEV efficiencies. As Federal agency experience administering workplace charging programs expands, and based on Federal agency information provided in the reporting described in 3(a) and 3(b), CEQ may adjust these assumptions in future guidance based on data provided by agencies.

(2) Table 1 provides a selection of installation and hardware cost scenarios for EVSE at federal facilities. These scenarios should be used as reference cases by agencies as they determine the charging solutions that are best suited for their facilities. Each example case provides a suggested fee

[16] See Appendix for all assumptions and citations.

based on assumptions for installation and hardware cost, usage and other factors. Agencies may use the U.S. DOE Electric Vehicle Supply Equipment Reimbursement Tool to Support Federal Agency Implementation of Workplace Charging[17] to estimate the fees that they will need to assess authorized users based on their specific charging scenario. Agencies should periodically revisit the assumptions used in their charging scenario to ensure an accurate assessment of cost recovery. As described in *Guidance for Federal Agency Implementation of Workplace Charging Pursuant to the Fixing America's Surface Transportation Act: Level 1 Charging Receptacles*, a flat biweekly fee of $6.00 or a daily fee of $0.60 is suggested for existing or new Level 1 charging receptacles that require no unusual installation construction.

(3) Agencies should also be mindful of the upper fee threshold that authorized users at their facilities will pay for the use of EVSE.[18] For example, agencies can plan workplace charging programs that reduce authorized user fees by minimizing hardware and installation costs or by developing a strategy to permit authorized users to use EVSE installed primarily for use by agency fleet vehicles. Agencies should design a successful workplace charging program with fees assessed to authorized users at a level that will:

(i) Reimburse agencies for EVSE in accordance with the FAST Act.

(ii) Encourage high utilization by authorized users.

(iii) Relieve congestion by making EVSE available to authorized users that most need to charge their PEVs.

(d) Facilities safety and management. Federal employees, agencies, and Federal parking area owners and managers should ensure a safe and successful workplace charging experience Level 1 EVSE, Level 2 EVSE, and DCFC. This can be done by consulting safety and management best practices, on topics such as mechanisms for fee collection, published by the U.S. DOE Workplace Charging Challenge.[19]

(1) Agencies should implement a mechanism of vehicle labels or other markings that indicate that an employee or authorized user has a PEV and is reimbursing the agency for the use of an EVSE at specified parking locations.

(2) Parking spots with access to an EVSE should be identified in a sufficient manner to denote service for PEVs. At sites owned by the Federal Government, these spots should be clearly marked with charging station signage, consistent with the recommendations published by the U.S. DOE Alternative Fuels Data Center,[20] to ensure that authorized users are aware of the charging opportunity.

[17] U.S. Department of Energy, Workplace Charging Challenge. "Electric Vehicle Supply Equipment Reimbursement Tool to Support Federal Agency Implementation of Workplace Charging," available at http://energy.gov/eere/vehicles/workplace-charging-federal-facilities (accessed September 2016).

[18] 80% of employers who responded to the 2015 Workplace Charging Challenge Annual Survey provided free charging access while 20% required employees to pay a fee. DOE found that workplace charging fees ranged from the equivalent to the cost of electricity to a maximum fee of $1.00/hour to control user demand at a highly congested facility. U.S. Department of Energy, December 2015, Workplace Charging Challenge Mid-Program Review, available at http://energy.gov/eere/vehicles/downloads/vehicle-technologies-office-workplace-charging-challenge-reports.

[19] U.S. Department of Energy, Workplace Charging Challenge. "Install and Manage PEV Charging at Work." http://energy.gov/eere/vehicles/workplace-charging-challenge-install-and-manage-pev-charging-work (accessed September 2016).

[20] U.S. Department of Energy, Alternative Fuels Data Center. "Signage for Plug-In Electric Vehicle Charging Stations." http://www.afdc.energy.gov/fuels/electricity_charging_station_signage.html#station (accessed September 2016).

Appendix

Assumptions for Estimated Reimbursement Fees for Level 1 EVSE, Level 2 EVSE & DCFC EVSE Scenarios

Assumptions		Notes	Source
Installation cost (dollars)	--	See scenario table	Scenario informed by pricing on GSA Schedule, costs reported in GSA Office of Fleet Management's 2014 Electric Vehicle Pilot, and "Costs Associated with Non-Residential Electric Vehicle Supply Equipment," http://www.afdc.energy.gov/uploads/publication/evse_cost_report_2015.pdf
Hardware cost (dollars)	--	See scenario table	Scenario informed by pricing on GSA Schedule, costs reported in GSA Office of Fleet Management's 2014 Electric Vehicle Pilot, and "Costs Associated with Non-Residential Electric Vehicle Supply Equipment," http://www.afdc.energy.gov/uploads/publication/evse_cost_report_2015.pdf
Installation lifetime (years)	40	Assumes no major electrical service upgrade is needed	Electric utilities have estimated the lifetime of installing new electric infrastructure and distribution service to EVSE as 40 years (Southern California Edison, October 2014, Prepared Testimony in Support of Southern California Edison Company's Charge Ready Application: Volume 02 – Phase 1 Charge Ready and Market Education Pilot), 50 years (San Diego Gas & Electric, April 2014, Prepared Direct Testimony of Jonathan B. Atun Chapter 4: on Behalf of San Diego Gas & Electric Comp) and 44 years (Pacific Gas & Electric Company, February 2015, Pacific Gas & Electric Company Electric Vehicle Infrastructure and Education Program Prepared Testimony).
Hardware lifetime (years)	10	Assumes single port cordset	U.S. Department of Energy, November 2015, Costs Associated with Non-Residential Electric Vehicle Supply Equipment, http://www.afdc.energy.gov/uploads/publication/evse_cost_report_2015.pdf.
Commute distance (miles)	12	Average U.S. one-way commute	2009 National Highway Transportation Survey, nhts.ornl.gov
PEV Efficiency (miles/kWh)	2.8	Average efficiency of 2015 PEV models	U.S. Department of Energy, www.fueleconomy.gov
Electricity Price (cents/kWh)	$0.1059	Average commercial customer price; assumes no demand charges.	Energy Information Administration, 2015, www.eia.gov/electricity/monthly/epm_table_grapher.cfm
Networked EVSE service fee (dollars/year)	$240.00	Fee only considered for networked EVSE	Average monthly service fee on GSA Schedule, July 2016
Additional service fees (dollars/year)	$0.00	Agencies may choose to obtain reimbursement for additional service fees for provision of EVSE	
Billing period (days)	10	Assumes 10 working days per biweekly period	
Level 1 EVSE authorized users charging per day	1	Assumes policy is to have one authorized user charge per day at Level 1 EVSE	
Level 2 EVSE authorized users charging per day	2	Assumes a policy is in place to limit authorized user charging to half day session so two PEVs can charge in one workday at Level 2 EVSE	For more information, see: Workplace Charging Management Policies: Sharing, http://energy.gov/eere/vehicles/workplace-charging-management-policies-sharing
DCFC EVSE authorized users charging per day	4	Idaho National Laboratory found that a DCFC EVSE at a workplace in California was typically used between 2-6 times per workday	Idaho National Laboratory, June 2014, Workplace Charging Case Study: Charging Station Utilization at a Work Site with AC Level 1, AC Level 2, and DC Fast Charging Units, https://avt.inl.gov/sites/default/files/pdf/EVProj/WorkplaceEVSEUtilizationAtFacebookJun2014.pdf