# Supercharging Your ZEV Transition

Using the ZEV Ready Planning Process

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National Renewable Energy Laboratory

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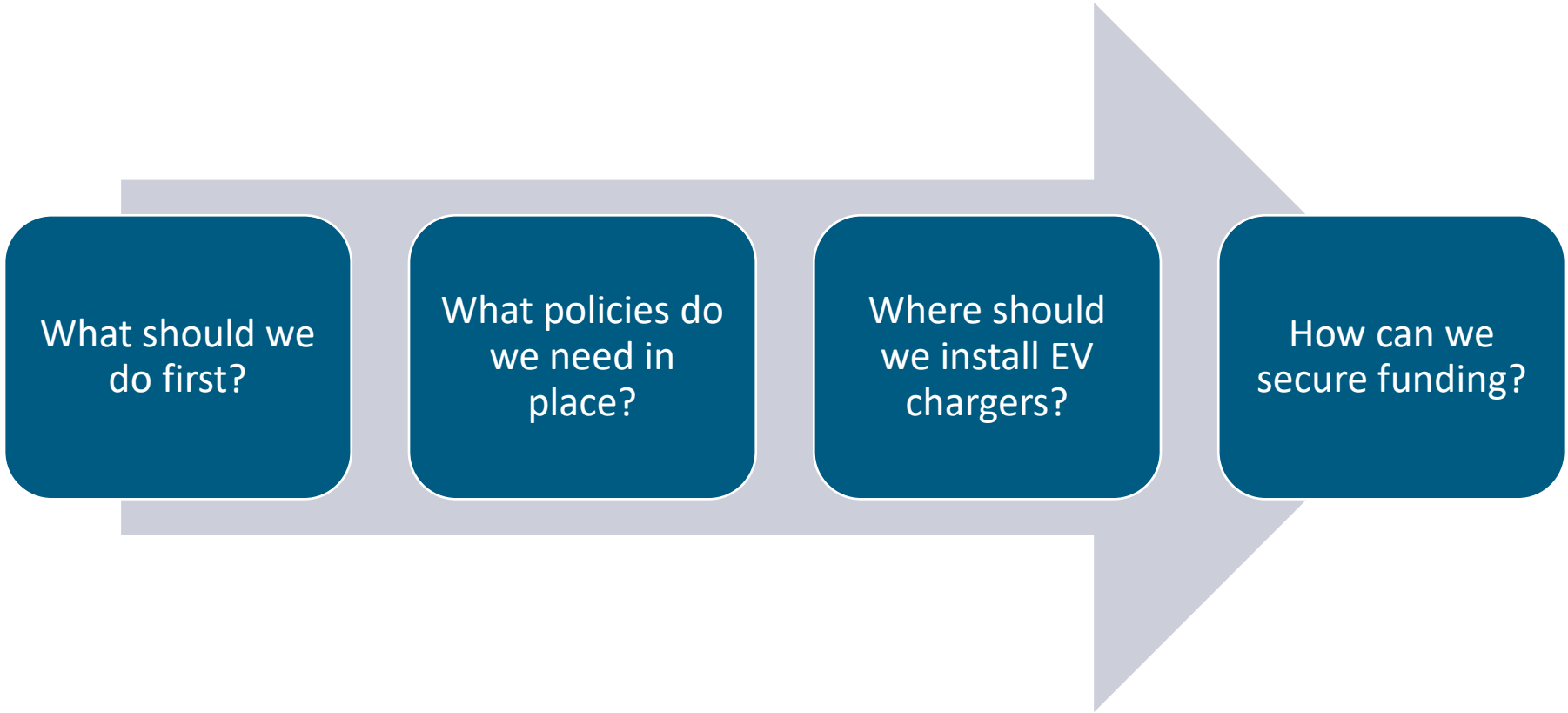
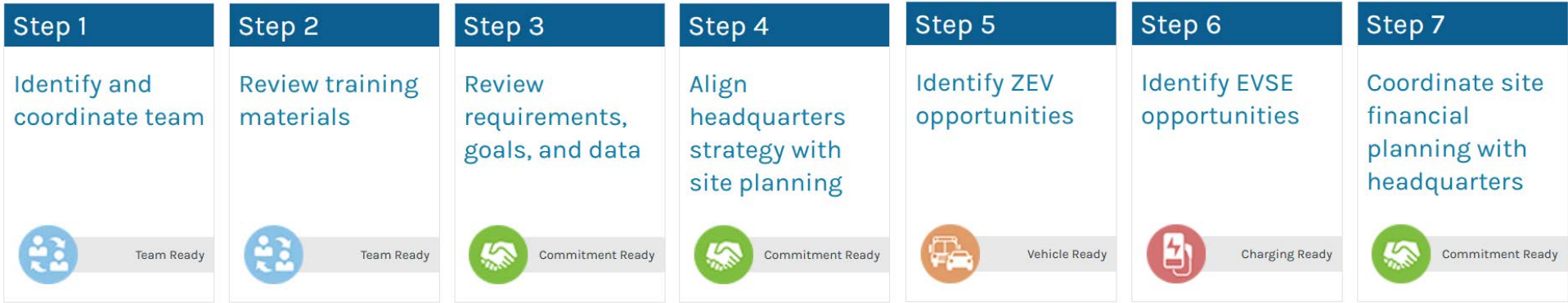
# ZEV Transition and Common Sticking Points



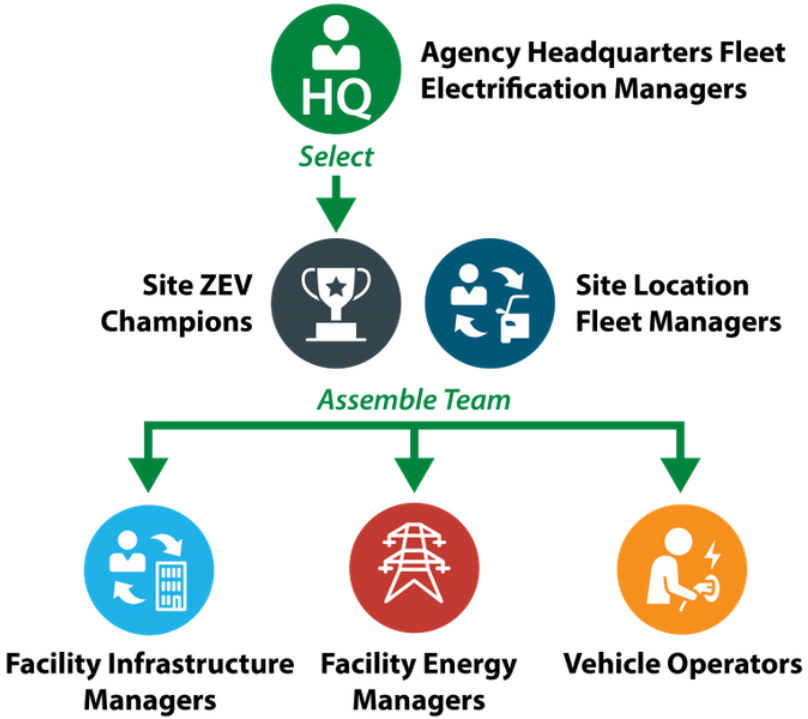
# Where Do We Start? ZEV Ready Framework

Step-by-step approach to federal fleet planning
Every step has a corresponding webpage




https://www.energy.gov/femp/federal-fleet-zev-ready-center

# Building a Team and Tracking Progress




| | ZEV Ready Step | Action |
|---|---|---|
| PLANNING | 1. Identify and coordinate team<br>Team Ready | Identify a site ZEV champion |
| | | Identify key electrification stakeholders at site |
| | | Identify other stakeholders to ensure a coordinated approach |
| | | Site ZEV champion begins engaging key stakeholders |
| | 2. Review training materials<br>Team Ready | Key electrification stakeholders complete required trainings |
| | | Key electrification stakeholders review recommended trainings |
| | 3. Review requirements, goals, and data<br>Commitment Ready | Review federal fleet requirements and how electrification helps meet those requirements |
| | 4. Align HQ strategy with site planning<br>Commitment Ready | Coordinate with headquarters on annual Zero-Emission Fleet Strategic Plan |
| | 5. Identify ZEV opportunities<br>Vehicle Ready | Identify ZEV opportunities for the entire fleet at the fleet location over the next 5 years |
| | | Coordinate ZEV replacement opportunities with personnel responsible for placing orders |

## Step 2

Review training materials

Team Ready

### EV TECHNOLOGY OVERVIEW

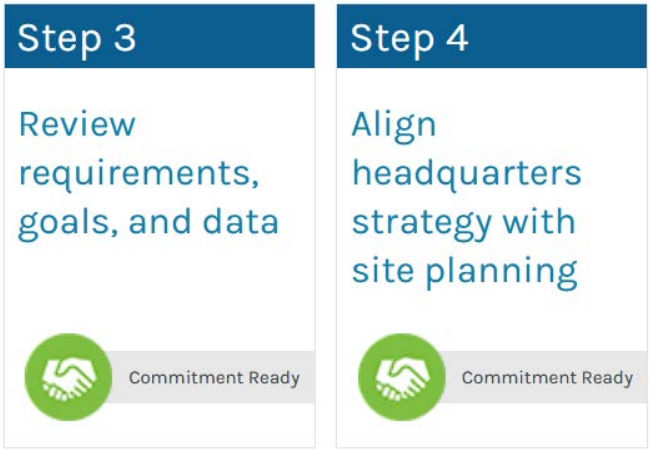

### EV FINANCIAL CONSIDERATIONS


### EVSE INFRASTRUCTURE


### DRIVING ELECTRIC VEHICLES


https://www.energy.gov/eere/femp/electric-vehicle-training

# Requirements and Policies

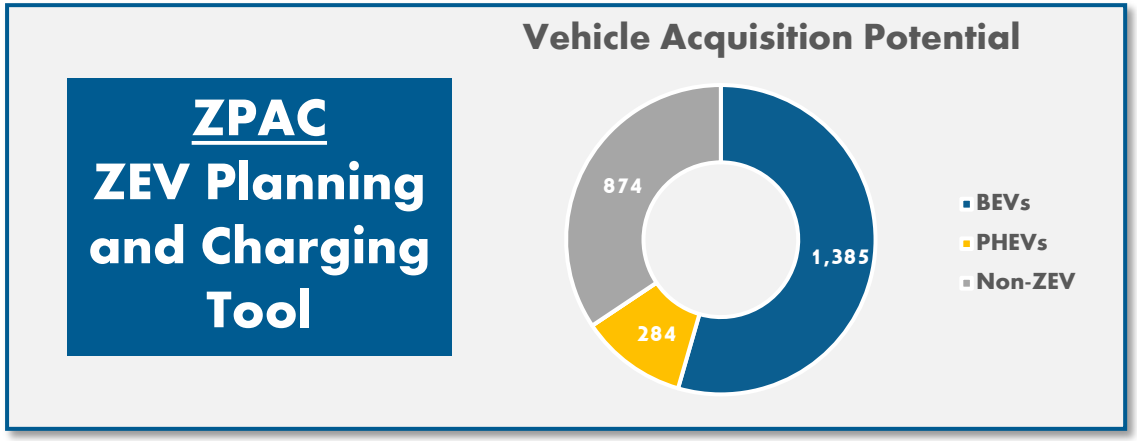



## Executive Order 14057

- 100% ZEV light-duty acquisitions by 2027
- 100% ZEV medium- and heavy-duty acquisitions by 2035

## Agency Policies (Examples)

- Install chargers before electric vehicless arrive
- Plan ZEV acquisitions for next 3 years
- Allow POVs to use fleet chargers where no conflict with site mission
- Install additional EVSE whenever new construction projects are undertaken


- ZPAC uses gasoline fueling transactions and machine learning methodology to identify ZEV opportunities
- Users select which vehicles they would like to replace with ZEVs
- Groups vehicles by lot to support EVSE planning

# Which vehicles to electrify?

Fleets review vehicle evaluation and determine which vehicles will be planned for ZEV replacement and estimate a replacement year.

| BEV Considerations | | | | | Decision Point | |
|---|---|---|---|---|---|---|
| BEV SIN Availability | Modeled BEV Range Concerns* | Reported BEV Range Concerns (Dropdown) | BEV GHG Emission Reduction Potential | Quality of BEV Candidate | ZEV Preference | Plan Year of Acquisition |
| 2 - Similar BEV | 3 - Unknown | | 1 - Very High | 2 - Good | BEV | 2024 |
| 2 - Similar BEV | 2 - Some Public Charging | | 1 - Very High | 2 - Good | BEV | 2025 |
| | | | | 2 - Good | | |
| | | | | 2 - Good | | |
| 2 - Similar BEV | 4 - Frequent Public Charging Likely | | 1 - Very High | 3 - Mediocre | | |
| 2 - Similar BEV | 5 - Very Frequent Public Charging Likely | | 1 - Very High | 4 - Challenging | Eliminate | 2025 |

**ZEV replacement available?**

**Nightly charging sufficient?** Limit mission disruption

**Fuel, cost, and emissions benefits?**

**User Identifies ZEV Targets**

# How many ports of what type?

ZEV plans are summarized by defined sites to support evaluation of charging port requirements.

| Priority | Site Information | | | BEVs - Level 2 Charging Ports | | PHEVs - Level 1 Charging Ports | |
|---|---|---|---|---|---|---|---|
| Priority EVSE Deployment | Agency | Site Name | ZIP | Existing Level 2 Ports at Site | Planned Additional Level 2 Ports at Site | Existing Level 1 Ports at Site | Planned Additional Level 1 Ports at Site |
| Yes | Federal Agency | Site 1 | ZIP 1 | 2 | 12 | 1 | 1 |

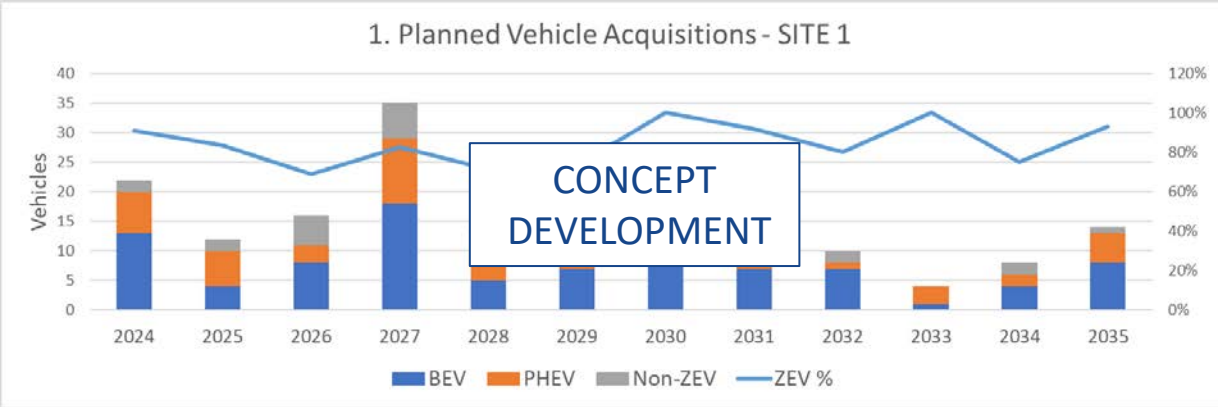
**Vehicle Location Summary**

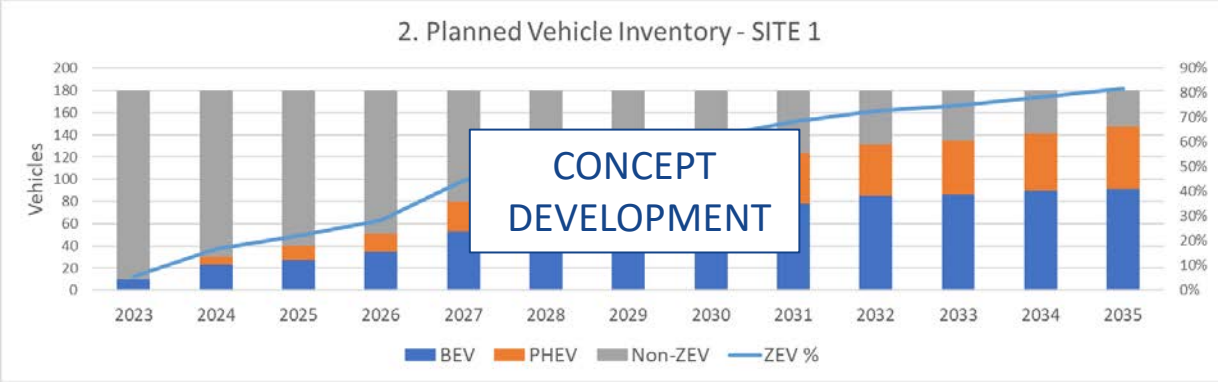
**Size EVSE for specific locations and ZEV targets**

# Evaluate Summary Plan

How will annual acquisition decisions affect E.O. goal attainment?

How will ZEV fleet grow in near and long term?

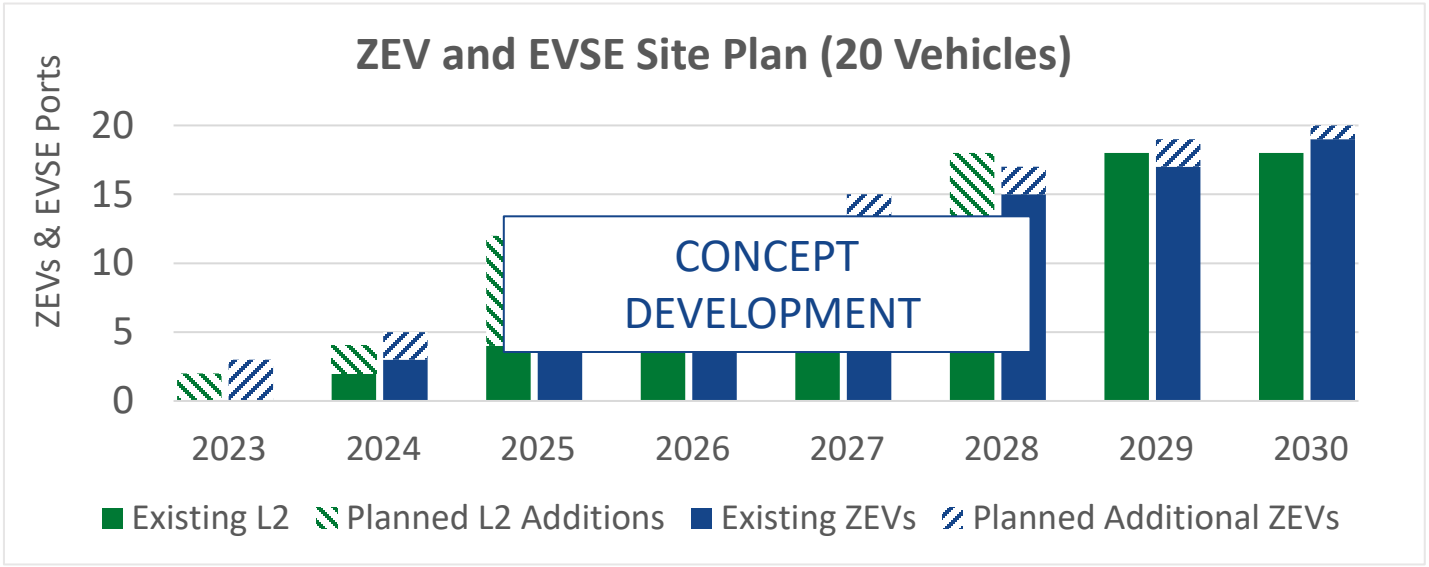


# Evaluate Summary Plan

Track progress of electrification plans

Will port plans align with ZEV acquisition goals?



# FY 24 Planned FleetDASH Updates

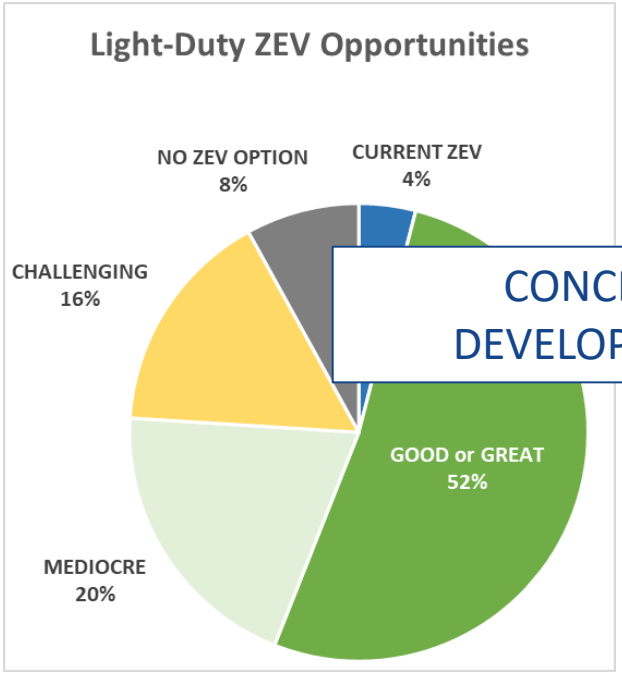
Align FleetDASH with ZPAC ZEV evaluation framework.

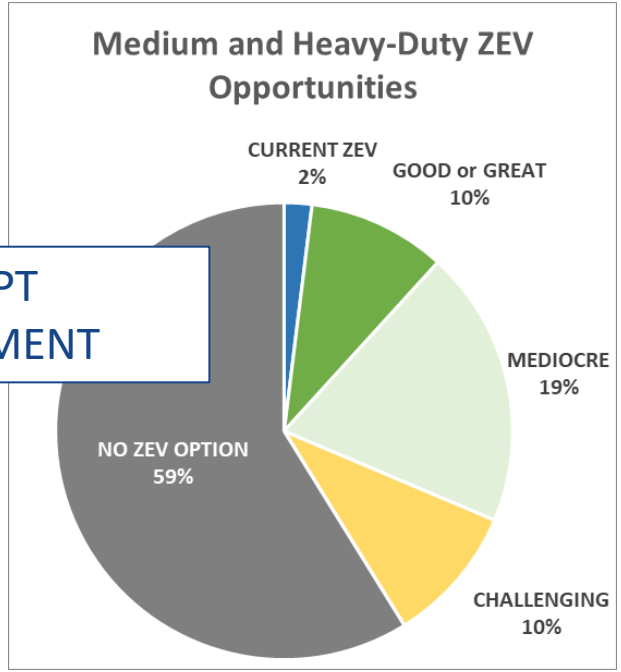
| VIN | Vehicle Weight Class | Vehicle Type | Previous 12 months GGEs | GHG Emission Reduction Potential | BEV Availability | Estimated Days Above 250 Miles? | % Near Public Fast Charging? | Quality of ZEV Candidate |
|---|---|---|---|---|---|---|---|---|
| XXXXXXX1 | LD | Sedan/St Wgn Compact | 3,000 | Very High | Identical BEV | 2 | 10% | GREAT |
| XXXXXXX2 | LD | LD Minivan 4x2 | | | ider PHEV | 1 | 75% | GREAT |
| XXXXXXX3 | LD | LD SUV 4x4 | | | tical BEV | 15 | 40% | MEDIOCRE |
| XXXXXXX4 | LD | LD SUV 4x4 | 700 | High | Identical BEV | 5 | 20% | GREAT |
| XXXXXXX5 | MD | MD Pickup | 2,500 | Very High | Similar BEV | 25 | 10% | CHALLENGING |
| XXXXXXX6 | MD | MD Pickup | 250 | Moderate | Similar BEV | 2 | 10% | GREAT |
| XXXXXXX7 | HD | HD Bus | 4,000 | Very High | Similar BEV | 30 | 40% | CHALLENGING |

CONCEPT DEVELOPMENT

# FY 24 Planned FleetDASH Updates

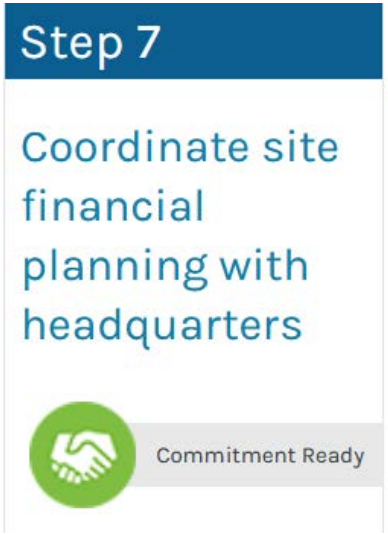
Track growth in ZEV inventory and identify challenging vehicles to electrify.




CONCEPT DEVELOPMENT

# Financial Planning




- Plan A: Direct Appropriations
- Plan B: Get Creative
  - Utility incentive programs
  - Assisting Federal Facilities with Energy Conservation Technologies (AFFECT) grants
  - Energy saving performance contracts (ESPCs)
  - Areawide contracts (Exhibit A)
  - Charging as a service

# Utility Incentive Programs

## EV U-Finder: Electric Vehicle Utility Finder

**Enter ZIP Code to identify local utilities, electric vehicle support programs, and Clean Cities Coalitions.**

72863

*Powered by the U.S. Utility Rate Database (https://openei.org/apps/USURDB/)*
*Utility territories last updated February 2021.*

See Introduction worksheet for notes on using EV U-Finder.

***Customer Types:**
G: Government or Public; C: Commercial; R: Residential

**Identified active utilities in 72863**

| Utility | Utility Name | Utility Ownership | Known EVSE Funding Eligibility?* | Known Advisory Services Eligibility?* | Known Federal EVSE Incentives? | GS |
|---|---|---|---|---|---|---|
| 1 | Entergy Arkansas Inc | INVESTOR | GCR | | Y | |
| 2 | Arkansas Valley Elec Coop Corp | COOPERATIVE | | | | |
| 3 | Village of Brainard, Nebraska (Utility Company) | PUBLIC | | | | |

https://www.energy.gov/femp/articles/ev-utility-finder-ev-u-finder

# EV U-Finder Incentive Listing

**Identified incentive details are listed below.**

## Edison Electric Institute Investor Owned Utility Incentives

For more details see "EEI Database" worksheet

Increase row heights to view complete details.

| Incentive | EEI Electric Company | EEI Holding Company | Program Name | Description | |
|---|---|---|---|---|---|
| 1 | Entergy Mississippi | Entergy | Utility Owned Direct Current | EML filed an application in Docket No. EC-123-0082-00 for a pilot to construct, own, | ht |
| 2 | Entergy Louisiana | Entergy | eTech Program | The eTech program provides customer support by dedicated field representatives | ht |
| 3 | Entergy Mississippi | Entergy | eTech Program | The eTech program provides customer support by dedicated field representatives | ht |

## American Public Power Association Public Utility Incentives

For more details see "APPA Database" worksheet

Increase row heights to view complete details.

| Incentive | Utility | EVSE Incentives | Program Website |
|---|---|---|---|
| 1 | City of Colton (CA) | Residential: Up to $500 for Level 2 charger. | https://www.ci.colto |
| 2 | - | - | |

## Alternative Fuels Data Center (AFDC) Laws and Incentives

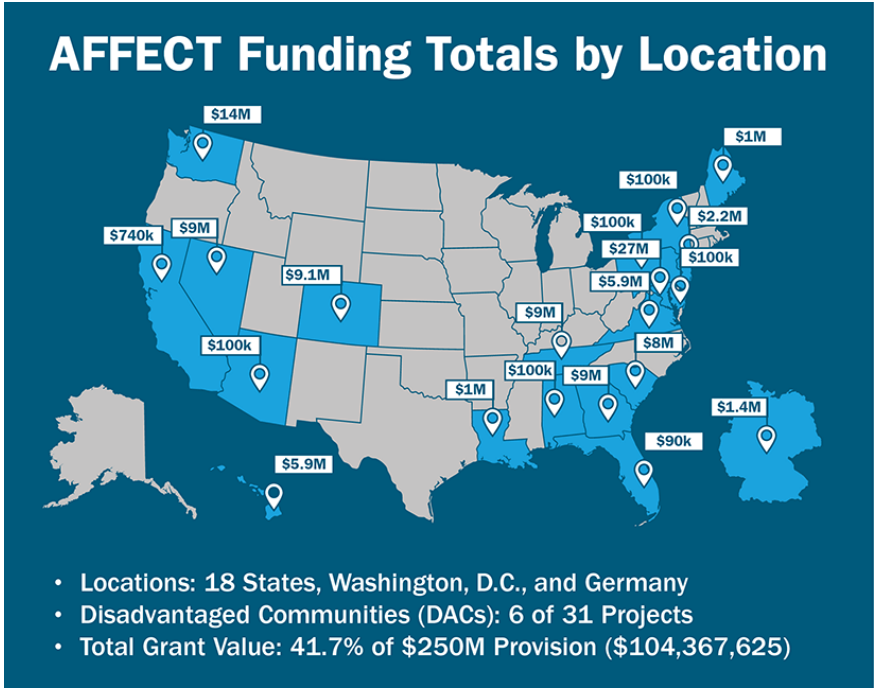
https://afdc.energy.gov/laws/state

Increase row heights to view complete details.

| Incentive | State or Utility? | Title | Incentive Description |
|---|---|---|---|
| 1 | STATE | AFV Incentives - San Joaquin Valley | The San Joaquin Valley Air Pollution Control District administers the |
| 2 | STATE | Technology Advancement Funding - South Coast | The South Coast Air Quality Management District's (SCAQMD) Clean Fuels |
| 3 | STATE | Alternative Fuel and Vehicle Incentives | The California Energy Commission (CEC) administers the Clean |
| 4 | STATE | EVSE Incentive Program Support | The California Electric Vehicle Infrastructure Project (CALeVIP), funded |

# 2024 AFFECT Federal Agency Call

## Phase 1 Awards




## Phase 2 Coming in Spring

- April 19 current submission deadline
- FEMP will be providing an updated FAC and holding guidance calls prior to submission deadline
- Similar amount of funding available to Phase 1

## Two specific ways to incorporate EVSE into AFFECT proposals

- EVSE is used for load management
- EVSE is paired with energy generation

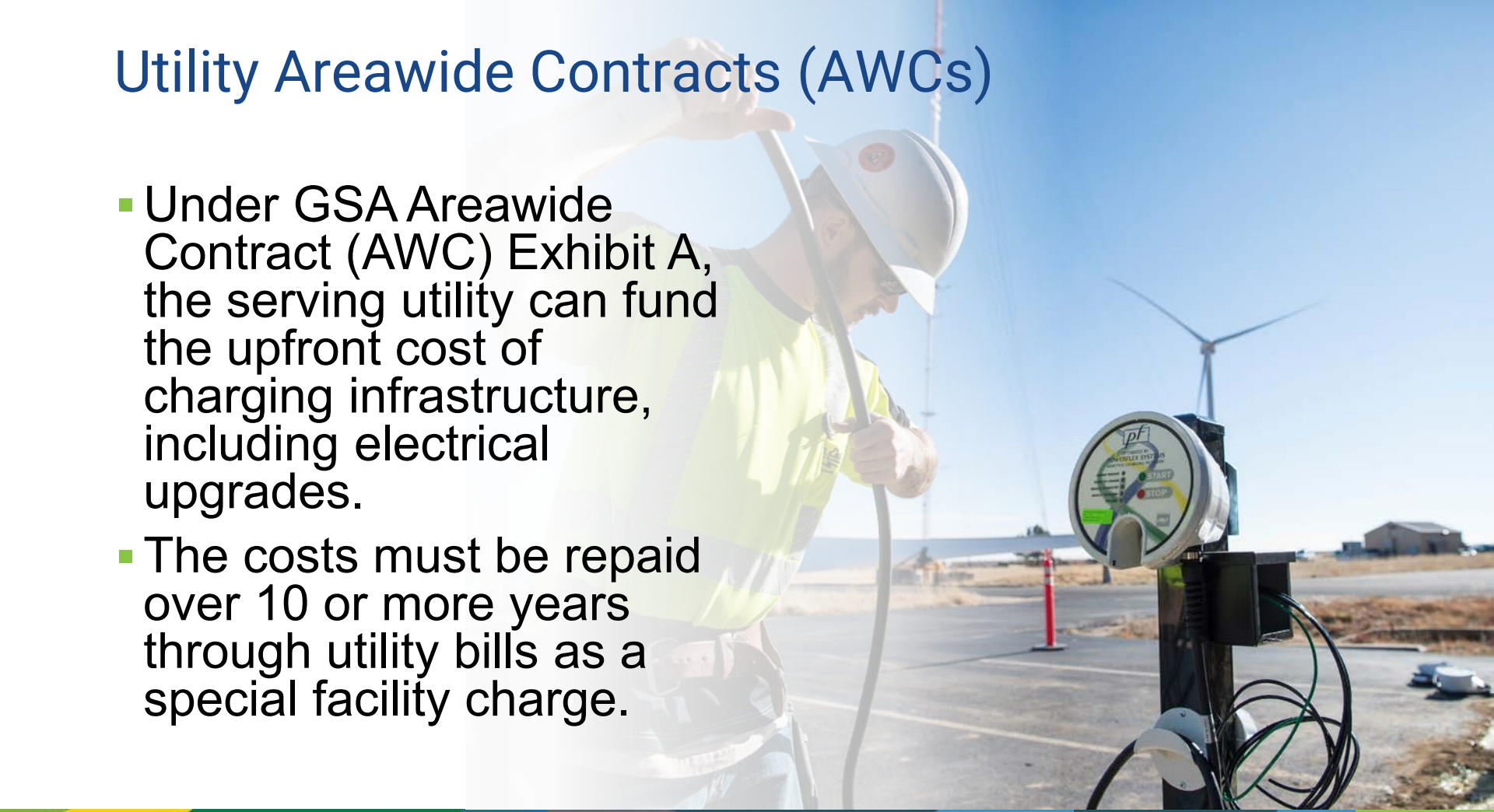
Assisting Federal Facilities with Energy Conservation Technologies Funding Recipients | Department of Energy

# Energy Savings Performance Contracts (ESPCs)

- EVSE can be incorporated into ESPCs in 3 scenarios:
  - Power generation energy conservation measure (ECM) in which EVSE is used to facilitate delivery of power to an end use
  - Charging capabilities employed for load management (e.g., demand response program)
  - Replace existing EVSE with more efficient EVSE

# Utility Areawide Contracts (AWCs)

- Under GSA Areawide Contract (AWC) Exhibit A, the serving utility can fund the upfront cost of charging infrastructure, including electrical upgrades.
- The costs must be repaid over 10 or more years through utility bills as a special facility charge.



# Charging as a Service (CaaS)

- Many EVSE providers will offer charger lease programs
- CaaS may include electrical upgrades or be limited to the charger itself
- Maintenance and charger replacement may be included

# GSA BPA: gsa.gov/evse

| Category | Price Range |
|---|---|
| Level 1 Charging Stations | $450 - $69,852 |
| Level 2 Charging Stations | $279 - $73,350 |
| DC Fast Charging Stations | $13,127 - $266,138 |
| Solar/Off-grid Charging Stations | $64,605 - $574,191 |
| Portable Charging Stations | $5,907 - $73,350 |
| Site Planning/Validation and Preparation Work | $55 - $367 (hourly) / $553 - $6,980 (other) |
| Power Management and Metering | $60 - $28,711 |
| Network Data Plans and Packages | $20 - $5,924 |
| Operation, Repair and Maintenance Plans | $20 - $62,998 |
| Non-Conventional Solutions | $151,617 |
| Charging as a Service | $106 - $460 (monthly plan) |

## Design Phase

| Step 8 | Step 9 | Step 10 | Step 11 | Step 12 |
|---|---|---|---|---|
| Engage with key electrification stakeholders at site | Coordinate with local utility service | Complete site assessment and design EVSE | Identify EVSE at non-agency locations | Work with leadership to secure EVSE funding |
| Team Ready | Charging Ready | Charging Ready | Charging Ready | Commitment Ready |

# ZEV Ready Framework

https://www.energy.gov/femp/federal-fleet-zev-ready-center

## ZEV Active Phase

| Step 13 | Step 14 | Step 15 |
|---|---|---|
| Acquire ZEVs and EVSE | Install and activate EVSE | Support drivers in using ZEVs and EVSE |
| ZEV Ready | ZEV Ready | ZEV Ready |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