THE PATH TO POWER

FLEET ELECTRIFICATION WORKSHOP

WELCOME!

Marriott St. Louis Airport

January 16, 2024

Eastern Missouri Alliance for Clean Transportation & National Renewable Energy Laboratory

EASTERN MISSOURI
ALLIANCE FOR CLEAN TRANSPORTATION

AGENDA

- Welcome and Get to Know the Room
- Preparing for your Journey: Fleet Programs and Resources
- Fleet case Studies: Fort Leonard Wood and St. Louis County
- Laying the Ground Work: Tools to Help Get Started
- ASK AN EXPERT LUNCH and Display
- Fuel for the journey: Funding Strategies for EV’s
- Powering the path forward: Utility Support for EV projects
- Building Your Roadmap: Expertise From Peers
- Final Survey

THE PATH TO POWER

FLEET ELECTRIFICATION WORKSHOP

Federal Fleet Electrification

Panel Session

January 16, 2024

Federal Fleet Stakeholders share lessons learned through almost three years of fleet electrification experience.

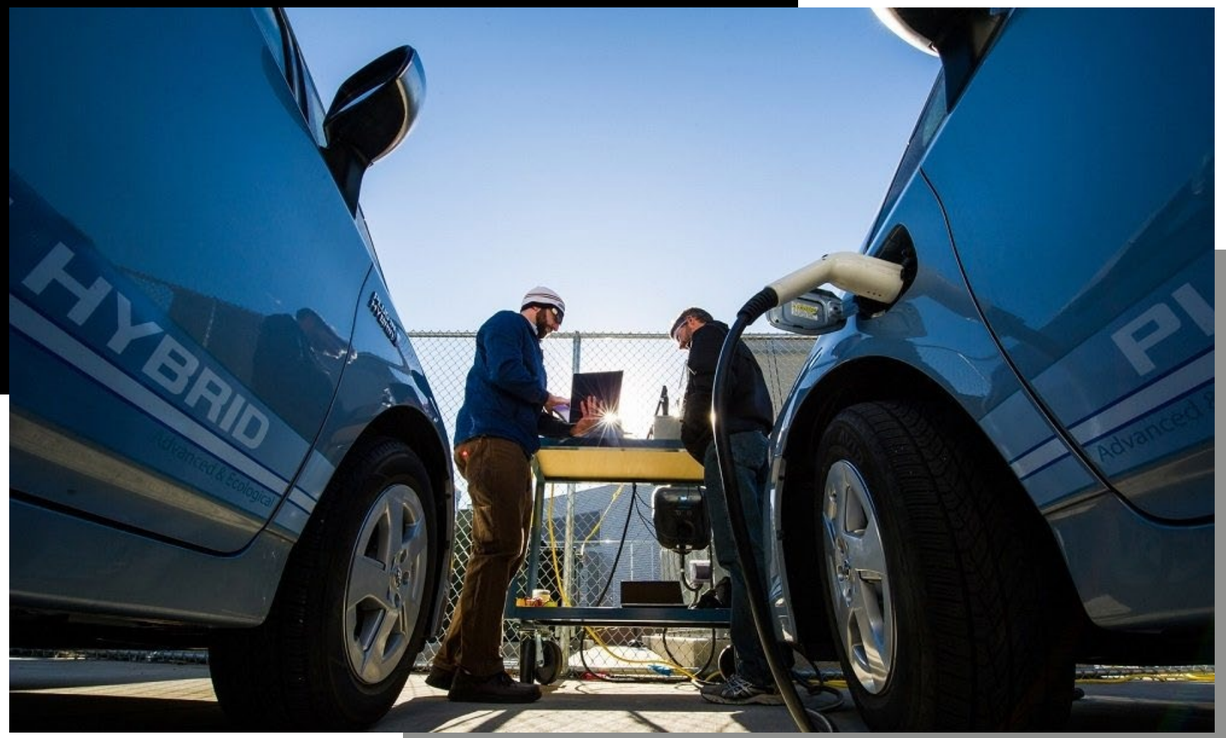
Fort Leonard Wood Stakeholders

Fort Leonard Wood EVCS Team

ABOUT

- Wide Range of Specializations, including Fleet Management, Engineering, Utility Planning & Organization

- Army Success Story for Fleet Electrification



About Our Fleet

A wide variety of solutions for the Army’s transportation needs.

- Electrification began in 2021/2022 under EO 14057
- Goal is 100% Zero Emission by 2035, with 100% Light Duty by 2027.
- Majority of Fleet is Light Duty Vehicles.
- Made up of cars, trucks, vans, available to the everyday driver.

About Our Chargers

A variety of needs and missions can seem complex, but sometimes simple solutions are the best solutions.

- Fort Leonard Wood has seen great success with Level 2 Charging Stations.
- Stations are placed in locations easily accessible to multiple users or fleet parking areas.
- Level 2 Chargers easily facilitate overnight charging for Light Duty Vehicles.
- Solar Powered Charging Stations have also been fielded by Fort Leonard Wood.

Major Questions

Fleet Electrification is a newer topic. There are many questions that circulate at all levels. The answers will likely be unique to your organization, but there are general ideas which can help start the discussion. Let's talk:

- How Do I Get Started?
- Who to Engage?
- What Should I Consider?
- How Do I Make Electrification Work?
- How Are Users Handling the Change?

How Do I Get Started?

Know Your Organization & Fleet

- Each Fleet is unique, and Electrification could be an excellent solution.
- Collect data on vehicle use and driver habits through usage records, telematics, and end-user discussions.
    - How far they drive, where they drive, how many miles a day, week, year, are all important values.

Data-Driven Decisions

- Comparing vehicle use, quantities, and parked locations will inform you on how much capacity of charging you need and where you need it.

Fleet Management

The parties responsible for monitoring and tracking vehicle use, maintenance, and acquisitions are the center of the nexus of Electrification.

Engineering/Operations

Representation from people with specializations on how your locations operate will help make the transition flow into existing infrastructure.

Planning/Leadership

The people who know what current and future expectations are provide great insight in making the right first steps and keeping the future in mind.

Utilities

Utility Specialists within your organization will want to know about this shift, and your servicing utility may have additional assistance they could offer.

What Should I Consider?

- How far and often are my vehicles driving?
  - Vehicles used infrequently, or with low to moderate (<75 miles/day, approx. 12+ hours off-time) demand are excellent candidates for electrification.

- How quick do I need them back on the road?
  - How quick you need vehicles up and running will dictate how many and what type of charger you may need.

- What Special Requirements Do I Have?
  - Vehicles towing, driving with heavy equipment, or with long idle times can all impact range. Vehicles with these requirements will have a greater charging demand.

More Questions to Consider…

- Where and how are my vehicles parked?
  - Vehicles parked in a central location help minimize the number of chargers that might be needed.
- How many vehicles are out at a time?
  - All vehicles being used routinely means all vehicles will need charged routinely. Make sure you have an adequate number of plugs to meet this need.
- Could I be Missing Something?
  - Every fleet is different, with unique needs and activities. Having the right people engaged asking the right questions makes your team more prepared for the unexpected.

How Do I Make Electrification Work?

With the foundation of a well-rounded and informed team backed by data, what are some practices to make the transition and operation smoother?

- Meet Regularly with Stakeholders
  - Setting up a regular meeting with the parties involved in your fleet electrification efforts will keep electrification on the mind and create a forum to solve any issues.
- Engage with End-Users
  - Talk with drivers of the vehicles and people at locations you are thinking of installing a charging station.
  - The end-user is a wealth of knowledge on how your vehicles will be used and bringing them in on the conversation gets them interested in EV's.
- Engage with Your Utility Provider
  - Fort Leonard Wood partnered with its serving electrical utility to provide a fast track to maintaining existing stations and installing new ones.
  - Your utility provider may be interested in working with you or may inform you on requirements you must meet.

How Are Users Handling the Change?

EV users on Fort Leonard Wood have taken to the shift well. There is an initial period of culture change, where the end-user adjusts to charging at stations during off hours, but there have been no major issues with EV's disrupting workdays. General findings from end-user interactions are:

- Users are more receptive when they feel involved in the process.
  - Informing end-users before they receive an EV, providing them opportunities to test drive EV's before they are in full service, and engaging them when deciding where to place charging stations all help ease the transition.

- Keeping charging convenient makes happier users.
  - When charging is not widely available, users will take to less efficient, more costly methods of charging, such as plugging into a wall outlet.
  - Fielding sufficient charging where it is needed and convenient to users minimizes headaches as users get into the mindset of using their EV's.

Thank You

Fleet Electrification Workshop

Craig Boyles

SAINT LOUIS COUNTY
Missouri

EV Goal

Current Fleet:

1,400 Total Licensed Vehicles

1,051 Light Duty Vehicles

349 Heavy Duty Vehicles

43 Hybrids

10 Electric Vehicles

2027 EV Goal:

- Convert 27% of Light Duty Fleet
- 279 Light Duty Vehicle Target #
- Install Charging Network
- Manage Change
- At 5 Percent of Goal

EV Plan

Milestones:
2015 Researched Alternate Fuels
2018 Upgraded Fleet Software
2021 Initiated Telematics
2022 First EV Test Purchase
2022 Developed EV Plan

Base Vehicle Criteria
- <150 miles per day EV Target
- Must use >5000 miles annually
- Smallest vehicle available
- Justify larger size vehicle

Tools
- Annual Utilization Analysis
- Telematics Reports
- Fleet Management System

Preparing for EV Transition

EV Level II Chargers:

- Initial single charger purchase
- Relatively inexpensive ~$3,000
- Wire length increases cost
- Charge during non-duty hours
- Installed 8 more Level II chargers

Department of Energy Grant

- Purchased 5 Mach Es
- 20 Level II Dual Port Chargers

EV Transition

Advantages

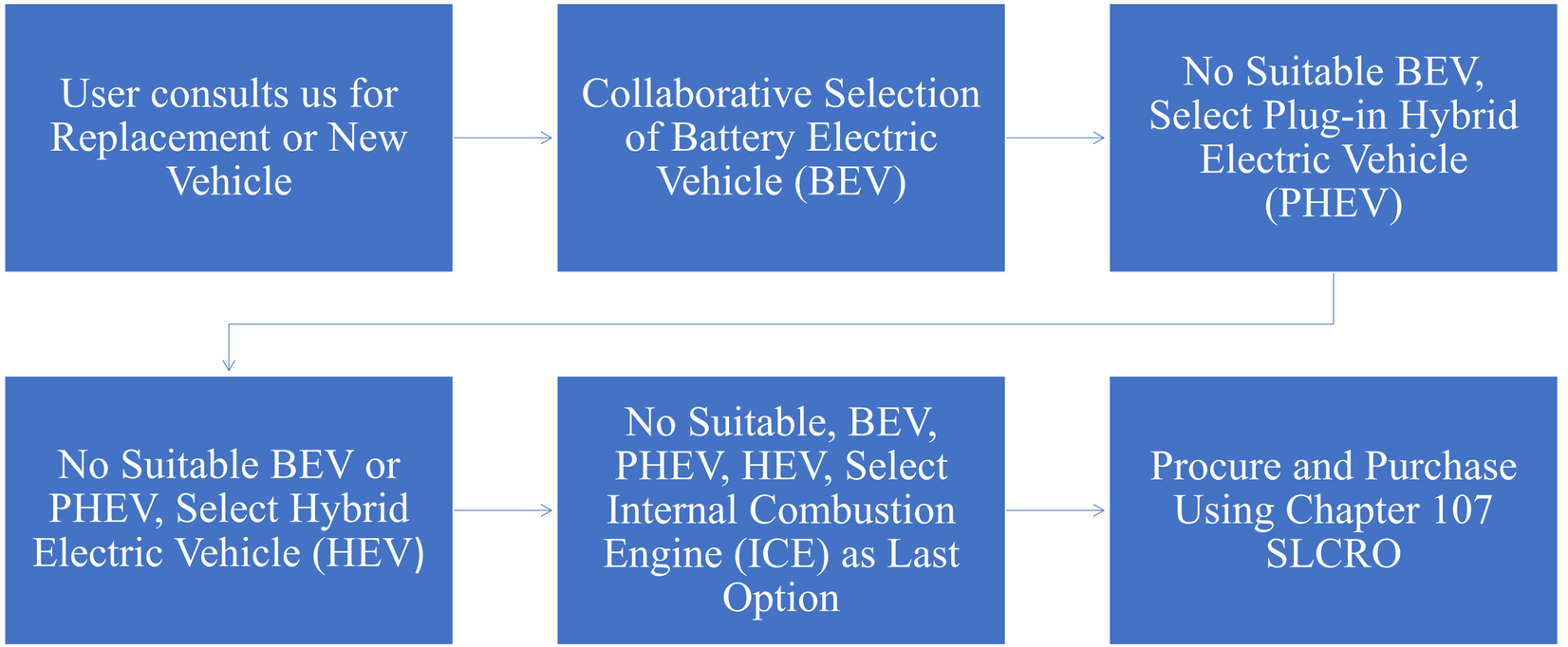
- Reduced Reliance on Fossil Fuels
- Reduced Fleet Vehicle O&M Costs
- Reduced Emissions Output
- Local Government Sustainability

Disadvantages

- High Initial County Investment
- Charging Infrastructure Installation
- EV Market
- Resistance to Change

EV Purchase Decision Process

Vehicle Purchase Process
- Priority on EV
- Plug in Hybrid
- Hybrid
- Ice (Last Resort)



EV Customer Selection

EV Criteria
- <150 Miles Per Day
- <26 Miles Per Gallon
- Justify why cannot select EV
- 27% of Fleet excellent for transition

Charger Locations
- Vehicle Parked at charger at night
- Lighted
- Gated or indoor parking preferred
- Not driven 24 hours
- Preferably near electrical supply

EV Purchase

Concerns

- Increased Pricing
- Change Management
- Manufacturer Availability
- Charging Infrastructure
- Range Anxiety/Management

EV Transition Progress Report

EV Transition

- Overwhelming Success
- Positive Employee Feedback
- Zero Range Anxiety
- 5 Percent EV/Hybrid Fleet to date

Thank you

SAINT LOUIS COUNTY
Missouri

Fort Leonard Wood

William Wibberg

Richard Pentecost

St. Louis County

Craig Boyles

Thank you, speakers!

U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Preparing for Your Journey: Fleet Programs and Resources

Erin Andrews-Sharer, Emily Kotz, NREL
EM-ACT

State and Alternative Fuel Provider Fleet Program

- Fleet compliance program created by Energy Policy Act (EPAct) of 1992, as amended
  - "Covered" state and alternative fuel provider fleets must meet requirements
  - Program focuses on acquisition of light-duty alternative fuel vehicles (AFVs) and petroleum reduction
- Two compliance options
  - Standard Compliance (SC): Focus on AFV acquisition
  - Alternative Compliance (AC): Focus on petroleum reduction
- 300+ reporting fleets in the Program today

Alternative Fuels: *

- Biofuels
- CNG
- Propane
- Hydrogen
- Electricity
- Pure B100
- Renewable diesel
- P-series fuels

* As defined by Program

State of the Program—Data

Alternative Fuels Data Center

SEARCH

FUELS & VEHICLES | CONSERVE FUEL | LOCATE STATIONS | LAWS & INCENTIVES | Maps & Data | Case Studies | Publications | Tools | About | Home

EERE » AFDC » Maps & Data

Printable Version

Maps and Data

Find maps and charts showing transportation data and trends related to alternative fuels and vehicles.

BROWSE BY CATEGORY OR EPAct GO

Biodiesel Purchases by EPAct-Regulated Fleets
Trend of State and Alternative Fuel Provider Biodiesel Purchases from 2000 to 2023
Last update May 2024
View Graph Download Data

EPAct State & Alternative Fuel Provider Fleet Exemptions
Trend of State & Alternative Fuel Provider (S&FP) exemption requests and vehicles exempted from 1997 to 2023
Last update June 2024
View Graph Download Data

AFV Requirements, Acquisitions, and Credits for Federal Agencies
Displays EPAct alternative fuel vehicle (AFV) acquisition requirements, total AFV acquisitions, and additional credits toward the acquisition requirements for federal agencies from fiscal years 2000 through 2023
Last update April 2024
View Graph Download Data

Annual Vehicle Credits Earned and Used by Regulated Fleets
Trend of State & Alternative Fuel Provider (S&FP) EPAct credits traded and transactions from 1999 to 2023
Last update May 2024
View Graph Download Data

Vehicle Credits Traded by Regulated Fleets
Trend of State & Alternative Fuel Provider (S&FP) EPAct credits traded and transactions from 1997 to 2023
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https://afdc.energy.gov/data/search?q=EPAct

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State & Alternative Fuel Provider Fleets: Fleet Compliance Annual Report Model Year 2022, Fiscal Year 2023

Photo from Getty Images, 480652712

What Is EPAct?

The Energy Policy Act of 1992 (EPAct) was enacted in part to reduce the nation's dependence on imported petroleum. Provisions of EPAct require certain fleets to acquire alternative fuel vehicles. The U.S. Department of Energy administers these requirements through its State and Alternative Fuel Provider Fleet Program, Federal Fleet Requirements, and Alternative Fuel Designation Authority.

The U.S. Department of Energy (DOE) regulates covered state government and alternative fuel provider fleets, pursuant to the Energy Policy Act of 1992 (EPAct), as amended.

For model year (MY) 2022, the compliance rate for the more than 306 reporting fleets in the State and Alternative Fuel Provider Fleet Program was 100%.[1] Fleets used either Standard Compliance or Alternative Compliance reporting methods.

Fleet Compliance at a Glance

More than 300 fleets used Standard Compliance and exceeded their aggregate MY 2022 acquisition requirements by 20% through acquisitions of creditable vehicles, biodiesel, infrastructure, and non-road equipment. The six covered fleets that used Alternative Compliance exceeded their aggregate MY 2022 petroleum use reduction requirements by 40%.

Overall, covered fleets reported use of more than 12.5 million gallons of pure biodiesel (B100), an increase from MY 2021 in total biodiesel fuel use reported. The number of reported light-duty alternative fuel vehicles (AFVs) acquired increased from MY 2021,[2] as did the number of vehicles that earned partial credit. MY 2022 marked the ninth year that fleets complying via Standard Compliance could earn credits for the acquisition of certain non-AFV electric-drive vehicles, as well as investments in alternative fuel non-road equipment, alternative fuel infrastructure, and emerging technologies. The data for MY 2022 suggest a steady presence of EPAct-covered state and alternative fuel provider fleets in the AFV, alternative fuel, and advanced technology vehicle markets.

Standard Compliance Results

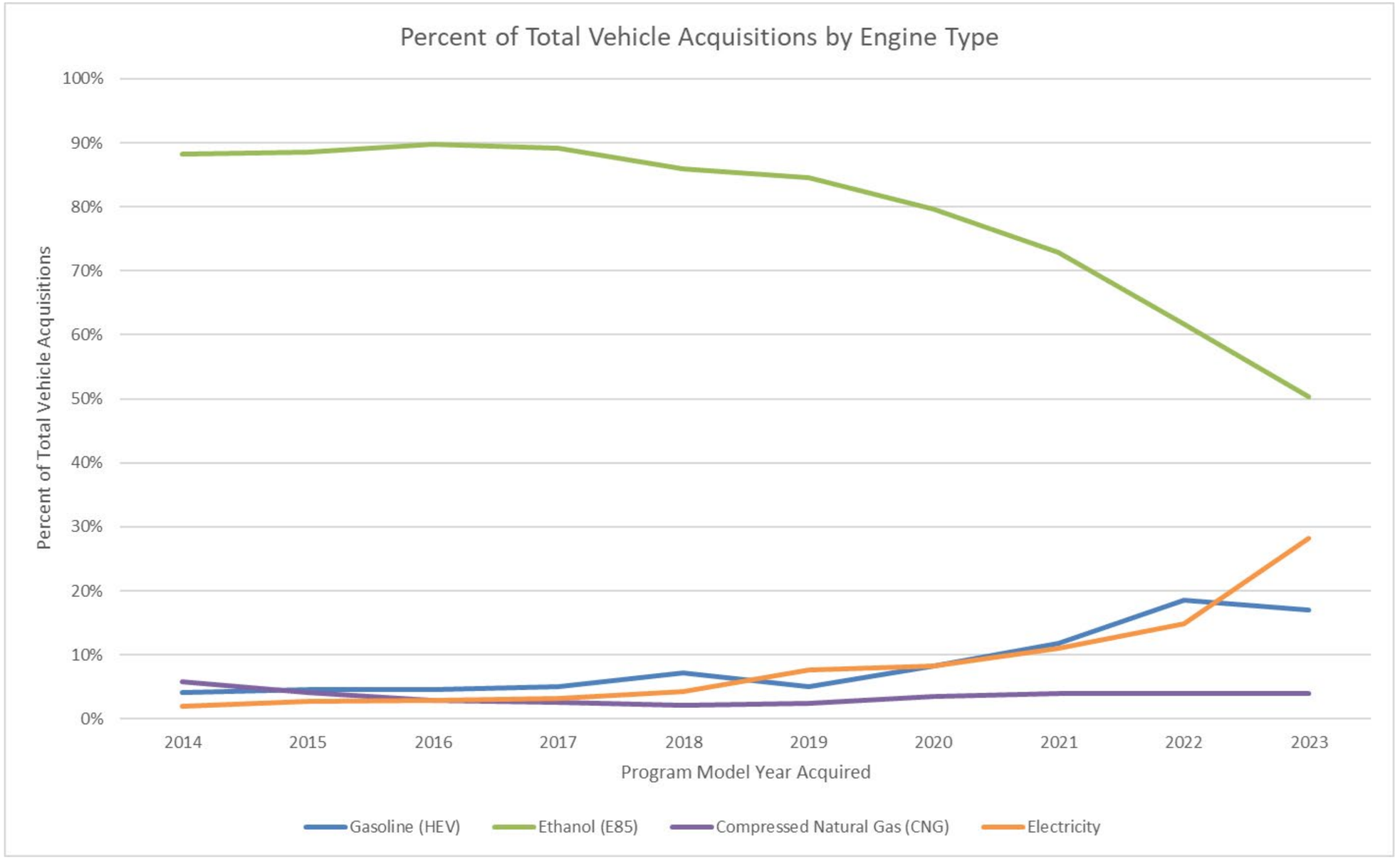
Covered state and alternative fuel provider fleets operating under Standard Compliance (10 CFR Part 490, Subpart C or D) achieved compliance by acquiring AFVs and creditable non-AFV electric-drive vehicles; purchasing biodiesel for use in medium- or heavy-duty (MD/HD) vehicles; investing in alternative fuel infrastructure, non-road equipment, and emerging technology; and/or applying banked credits earned previously or acquired from other covered fleets.

In MY 2022, fleets that used Standard Compliance:

- Acquired 9,077 creditable light-duty and neighborhood electric vehicles (NEVs).
- Earned 1,162 credits for the acquisition of 2,501 partial credit vehicles, including creditable non-AFVs (i.e., light-duty hybrid electric vehicles [HEVs], certain plug-in hybrid electric vehicles [PHEVs], MD/HD hybrid electric vehicles, and NEVs).
- Earned 1,893 biodiesel fuel use credits by purchasing more than 12.5 million gallons of B100.[3]

https://epact.energy.gov/program-annual-reports

Vehicle Acquisition—Engine Type



$32 million investment in EV charging infrastructure (2023 reporting year)

SAFP Program Support

- Resources for compliance
  - Webinars and guidance documents
  - Direct assistance
- Electrification workshops
- Clean Cities and Communities and federal fleet connections
- Technical assistance/analysis support (pilot)
- Case studies

DOE FEMP Fleet Management Program

- Helps federal fleet community access the latest information, applications, and resources related to fleet efficiency and electrification
- Provides guidance and assistance to help agencies implement federal legislative and regulatory requirements mandating reduced petroleum consumption and increased alternative fuel use

FEMP Federal Fleet Support

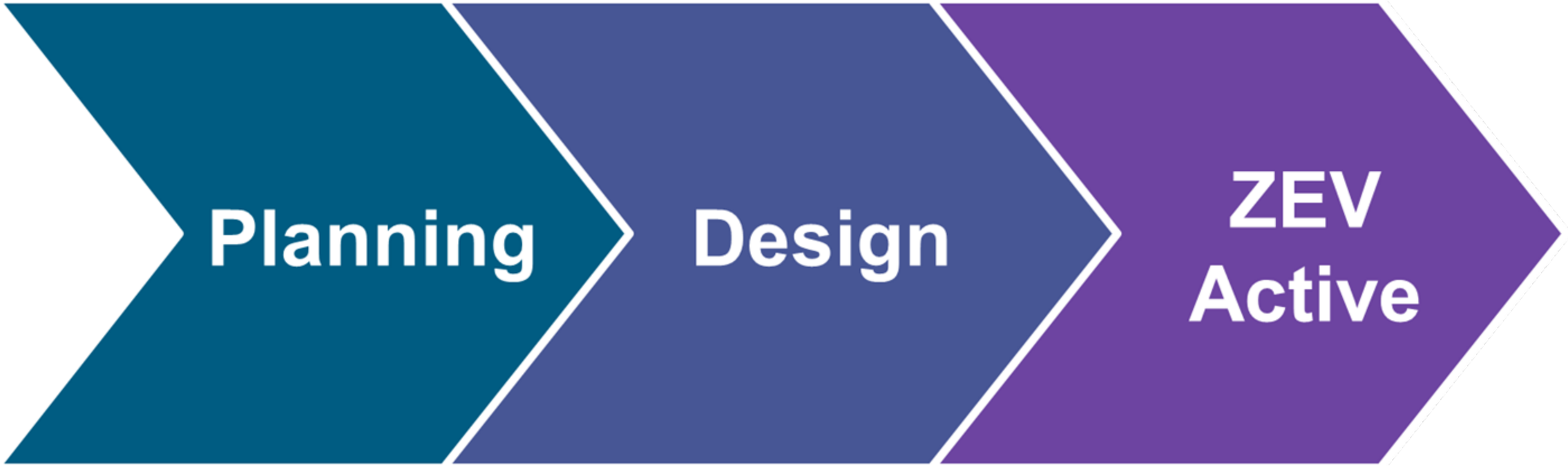
Direct assistance, resources, and tools available for:

- Statutory requirements
- Fleet data
- AFV candidates
- EV technology training
- EVSE installation planning
- Workplace charging programs
- Cybersecurity considerations
- Best practices and case studies

Simplify Fleet Electrification

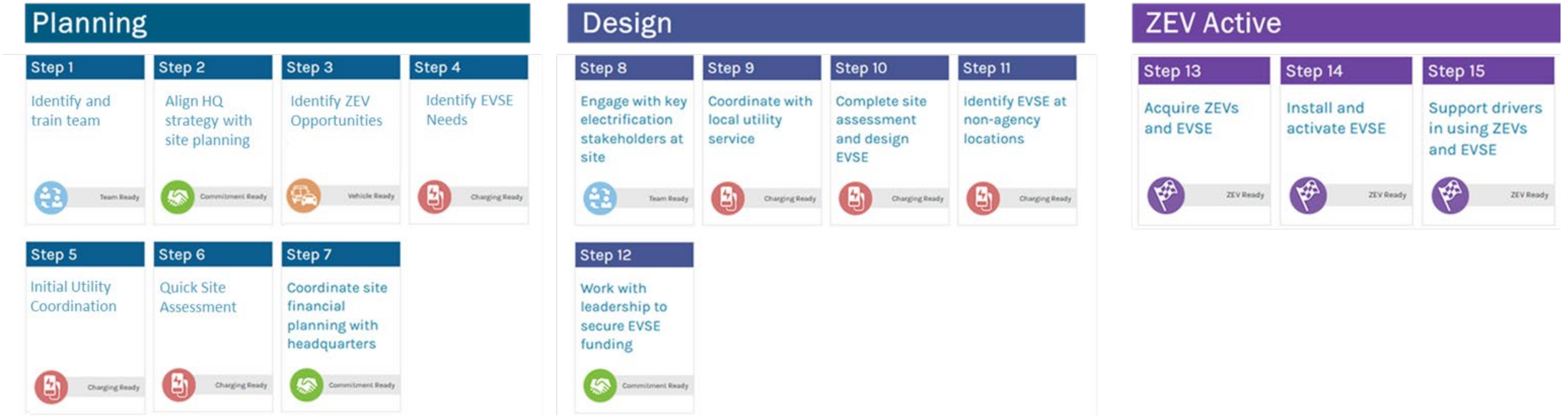
The ZEV Ready Solution

Framework to simplify and guide fleets through the process to electrify each fleet location



Federal Fleet ZEV Ready Center

15 process steps organized in 3 phases – Planning, Design, ZEV Active



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

Clean Cities and Communities

Clean Cities and Communities

January 16, 2025

Kevin Herdler, *Executive Director*

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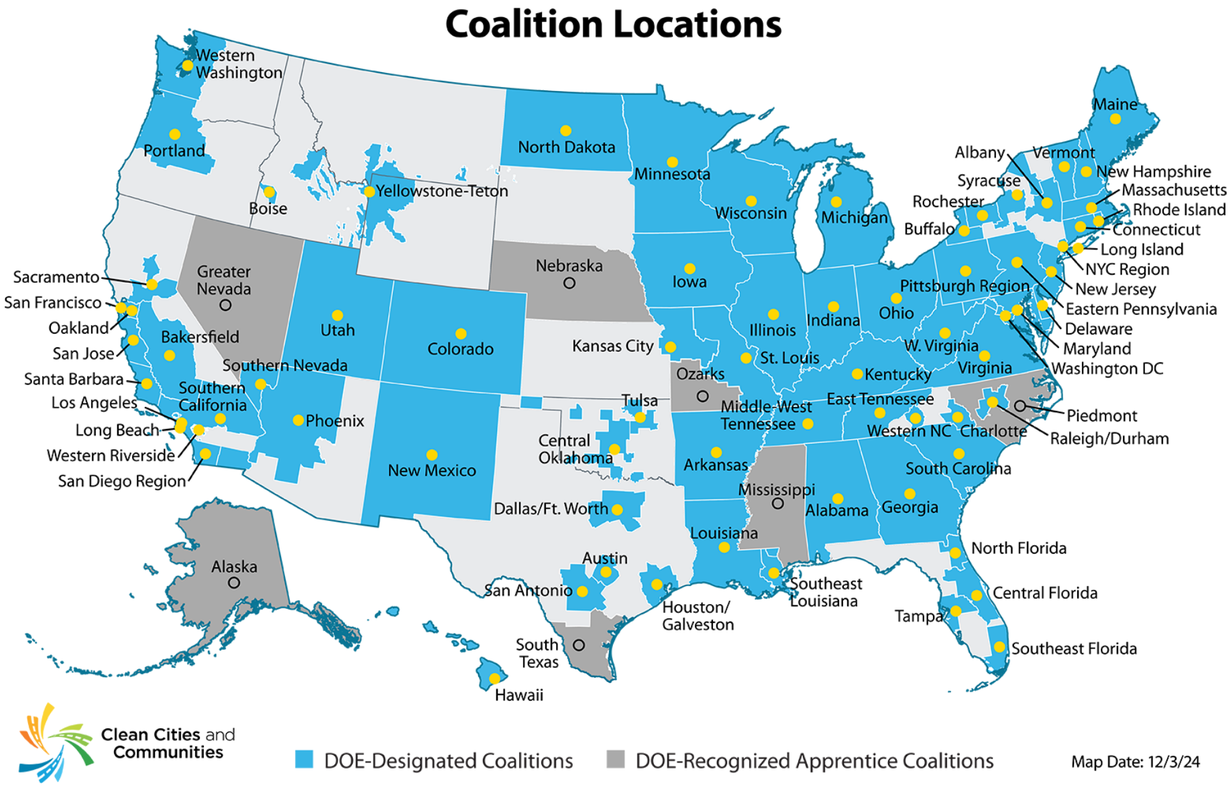
The CC&C Network

- Clean Cities and Communities is a U.S. Department of Energy (DOE) partnership to advance clean transportation nationwide.
- More than 85 Clean Cities and Communities coalitions work locally in urban, suburban, and rural communities to strengthen the nation's environment, energy security, and economic prosperity.



What We Do

Clean Cities Coalitions:

- Serve as forums for local stakeholders to connect and collaborate on saving energy and using affordable alternative fuels
- Provide grassroots support and resources on new transportation technologies and infrastructure development
- Support networks to help their stakeholders identify cost-effective solutions that work locally

Strategically Advance Clean Transportation

Access technical assistance and hands-on problem-solving support.

Connect to unbiased, data-driven tools and resources

Build partnerships

Receive personalized experience rooted in local context

Collaborate on funding opportunities

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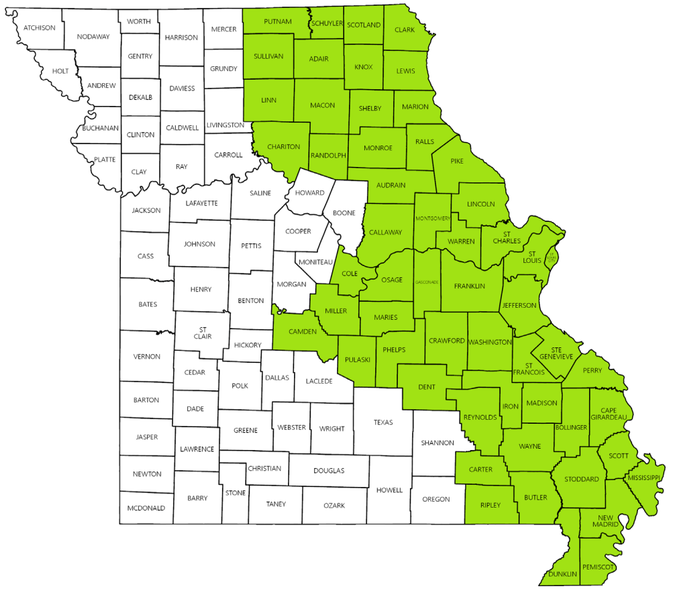
EM-ACT's mission encompasses economic vitality, environmental integrity, and energy independence, promoting domestically produced fuels and innovative mobility systems.



Clean Cities and Communities

Technical Assistance Highlight: Electric School Bus Deployment

- Electric school buses can improve air quality and alleviate health impacts from vehicle emissions
- Coalitions provide expert support for school districts to electrify school bus fleets
- Ritenour School District Fleet replaced with EM-ACT's assistance

Connect to Funding Opportunities

- Coalitions are a go-to resource to help navigate federal funding opportunities.
- Coalitions provide insights to DOE about on-the-ground needs that can help inform funding priorities.

https://cleancities.energy.gov/funding-opportunities/

Our Successes

30+ Years of Transforming Transportation

188m

Gallons of gas & diesel replaced with domestic fuels

1m

Tons of greenhouse gases offset

$32m

In assisted grants awarded to members*

* In past 5 years

Clean Cities and Communities

Thank You!

Kherdler@em-act.org

National Renewable Energy Laboratory

Erin Andrews-Sharer

Emily Kotz

Eastern Missouri Alliance for Clean Transportation

Kevin Herdler

Thank you, speakers!

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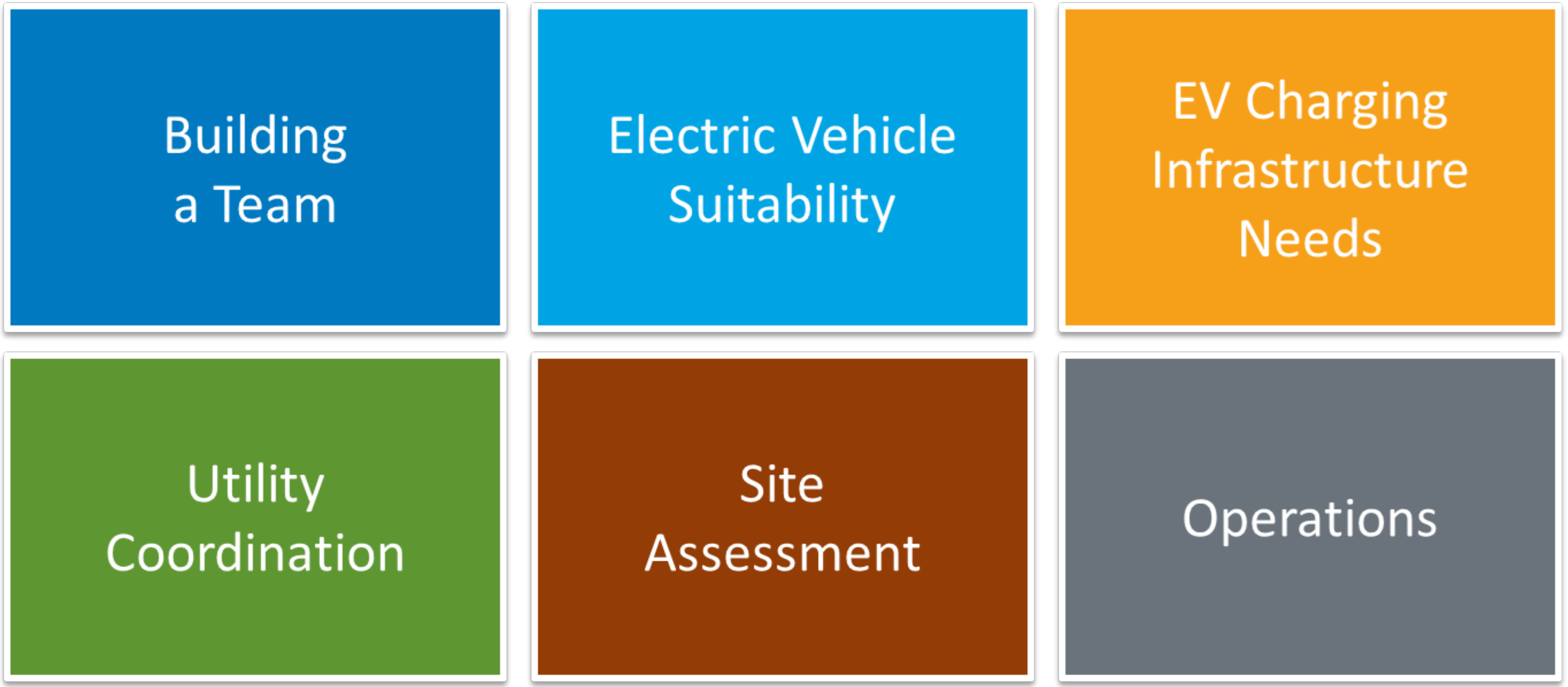
Laying the Groundwork: Tools to Get Started

Erin Andrews-Sharer, NREL
Emily Kotz, NREL
Sophia Napoletano, ICF

Fleet Electrification Process



Example Scenario—Setting the Stage

- State agency has 20 vehicles
  - 10 assigned admin vehicles
  - 5 vehicles used on two shifts for inspections
  - 5 motor pool vehicles

- Average radius of the metropolitan area is 20 miles

- Agency implemented telematics 3 years ago and is now looking to electrify its fleet per a state mandate

Building a Team

Every Project Needs an EV Champion

Develop an elevator pitch

- Why should you do it
- What are the benefits
- Why it can work for you

Be the expert

- https://afdc.energy.gov/
- Subscribe to newsletters
- Read up on new products
- Attend conferences
- Read new stories

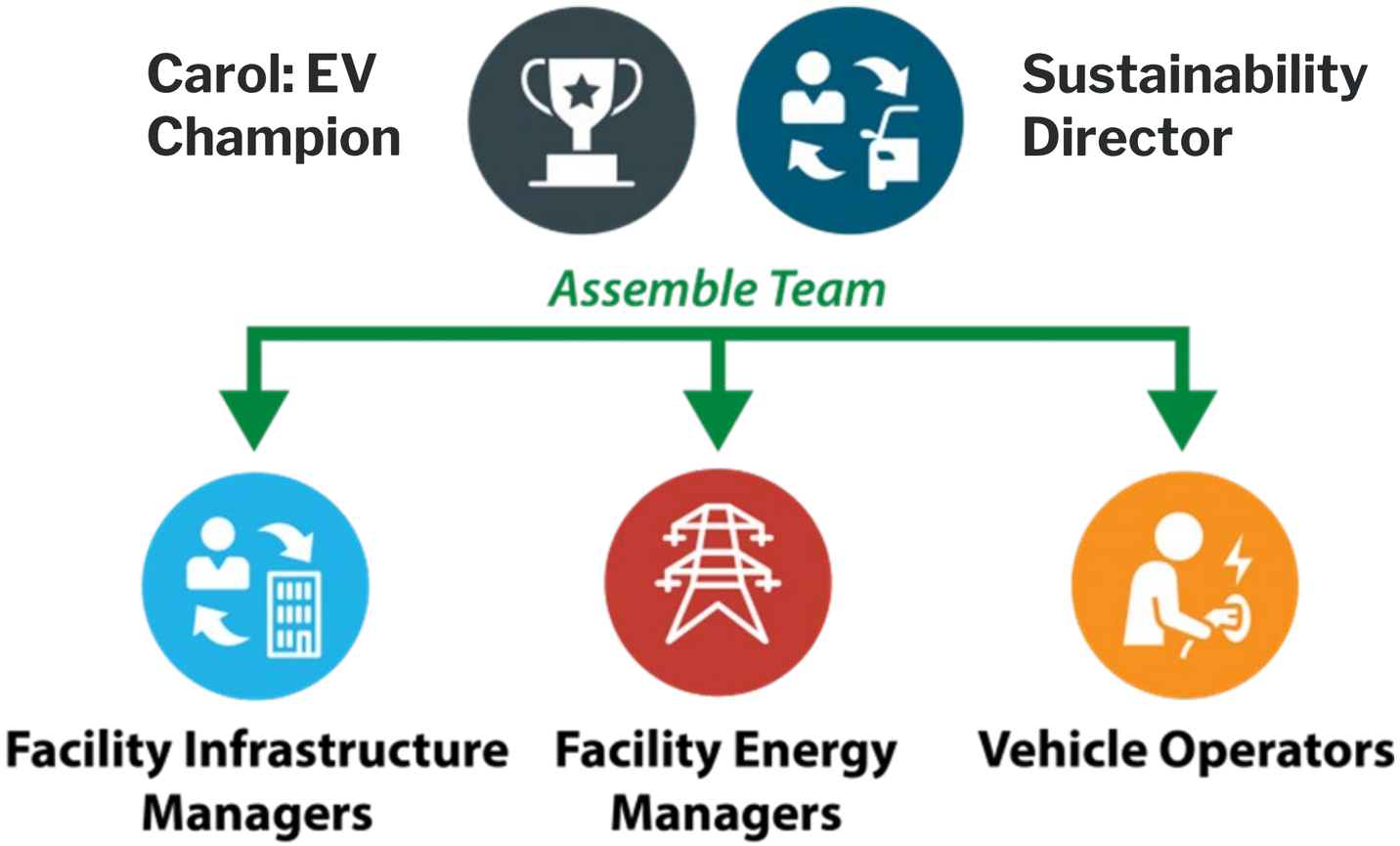
Have a plan

- Understand applicability/operations
- Develop a replacement strategy or criteria
- Understand your fleet and data
- Understand charging infrastructure requirements

Successful EV Fleets Have A Champion

It’s a Team Effort

- Identify and assemble the team
- Process requires strong and frequent collaboration
- Led by EV champion
- Core team and leadership support



Who Else May Need to Be Involved?

Contracting and Procurement

Sustainability Leadership

Local Utilities

Cybersecurity

Site Engineers and Planners

Fire Marshal

EV Suitability

Data is Key!

Vehicle Specific Data

- Yr/Make/Model
- Odometer/Hour Meter
- Life Expectancy
- Class/Weight
- Asset#/License/Identifier
- Drivetrain
- Fuel Type

Ownership Data

- Department/Sub-Dept.
- Parking Location (details)
- Acquisition Cost
- Acquisition Date
- Emergency/Special Usage
- Availability

Usage Data

- Average Daily Mileage
- Max Daily Mileage
- Hours of Operation
- Tow Capacity
- Right-size Candidate
- Dwell Time

Annual Cost Data

- Fuel
- Maintenance
- Repair
- Parts/Labor
- Accidents
- Warranty
- Insurance
- Bill Back

Spreadsheet expertise is essential!

- Understand formulas like vlookup, iferror, sumifs, etc.
- YouTube and Google are your friend

Example Scenario—Fleet Data

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Plate	Asset ID	Year	Make	Model	Vehicle Type	PrimaryFuel Type	Current Mileage (Odometer)	Current MPG	VIN	Average Annual Miles	Avg. Days in Service (Yr)	Average Daily Miles	Peak M
2	MNJ8752	A01	2016	Ford	C-Max Hybrid	Hatchback Sedan	Gasoline	65,560	26.4	1FADP5AU3GL109076	8,195	222	36.9	61
3	MNJ4875	A02	2018	Ford	C-Max Hybrid	Hatchback Sedan	Gasoline	54,156	27.8	1FADP5AU3GL109077	9,026	235	38.4	68
4	MNJ7489	A03	2018	Ford	C-Max Hybrid	Hatchback Sedan	Gasoline	56,288	26.2	1FADP5AU1JL102425	9,381	227	41.3	50
5	MNJ2007	A04	2020	Chevrolet	Equinox	Compact SUV	Gasoline	22,801	20.3	2GNAXUEV6L6223335	4,560	243	18.8	46
6	MNJ6144	A05	2021	Ford	Escape Hybrid	Compact SUV	Gasoline	32,218	25.7	1FMCU9CZ7MUB01711	10,739	248	43.3	79
7	MNJ4512	A06	2021	Ford	Escape Hybrid	Compact SUV	Gasoline	24,640	26.2	1FMCU9CZ7MUB01712	8,213	198	41.5	75
8	MNJ6241	A07	2022	Ford	Escape Hybrid	Compact SUV	Gasoline	27,788	27.6	1FMCU0BZ1NUA86749	13,894	241	57.7	72
9	MNJ7555	A08	2022	Ford	Escape Hybrid	Compact SUV	Gasoline	30,541	27.1	1FMCU0BZ1NUA86748	15,271	242	63.1	92
10	MNJ2120	A09	2023	Chevrolet	Equinox	Compact SUV	Gasoline	15,486	22	3GNAXTEG3PL246505	7,743	237	32.7	45
11	MNJ1800	A10	2023	Ford	Escape Hybrid	Compact SUV	Gasoline	5,147	27.5	1FMCU9MZ5PUA56612	5,147	165	31.2	44
12	MNJ4632	INSP1	2016	Ford	F150	.5 Ton Pickup Truck (Ext. Cab)	Gasoline	146,258	13.4	1FTEX1EP4GFA37699	18,282	305	59.9	80
13	MNJ154	INSP2	2016	Ford	F150	.5 Ton Pickup Truck (Ext. Cab)	Gasoline	131,618	12.9	1FTEX1EP4GFA37698	16,452	308	53.4	83
14	MNJ58	INSP3	2022	Ram	ProMaster City	Compact Cargo Van	Gasoline	10,256	18.8	ZFBHRFCB4N6Y01983	10,256	221	46.4	55
15	MNJ6338	INSP4	2022	Ram	ProMaster City	Compact Cargo Van	Gasoline	9,045	18.2	ZFBHRFCB4N6Y01982	9,045	248	36.5	39
16	MNJ5523	INSP5	2023	Chevrolet	Silverado 1500	.5 Ton Pickup Truck (Ext. Cab)	Gasoline	18,526	19.4	3GCNDAEK9PG104843	18,526	298	62.2	75
17	MNJ97	MP1	2014	Toyota	Prius Hybrid	Hatchback Sedan	Gasoline	34,987	28.7	JTDKN3DU5E1816745	3,499	100	35.0	55
18	MNJ236	MP2	2014	Toyota	Prius Hybrid	Hatchback Sedan	Gasoline	45,365	28.2	JTDKN3DU5E1816744	4,537	125	36.3	62
19	MNJ2005	MP3	2015	Toyota	Prius Hybrid	Hatchback Sedan	Gasoline	36,852	29.3	JTDKN3DU6F1881542	4,095	102	40.1	48
20	MNJ9912	MP4	2017	Ford	Escape	Compact SUV	Gasoline	42,277	20.5	1FMCU0F70HUA09027	6,040	168	35.9	52
21	MNJ4777	MP5	2017	Ford	Escape	Compact SUV	Gasoline	43,651	21.3	1FMCU0F70HUA09026	6,236	156	40.0	49
22														

You have the data, but how do you make it actionable to inform your fleet electrification plan?

Identify EV Candidates

Light Duty

Medium Duty

Heavy Duty

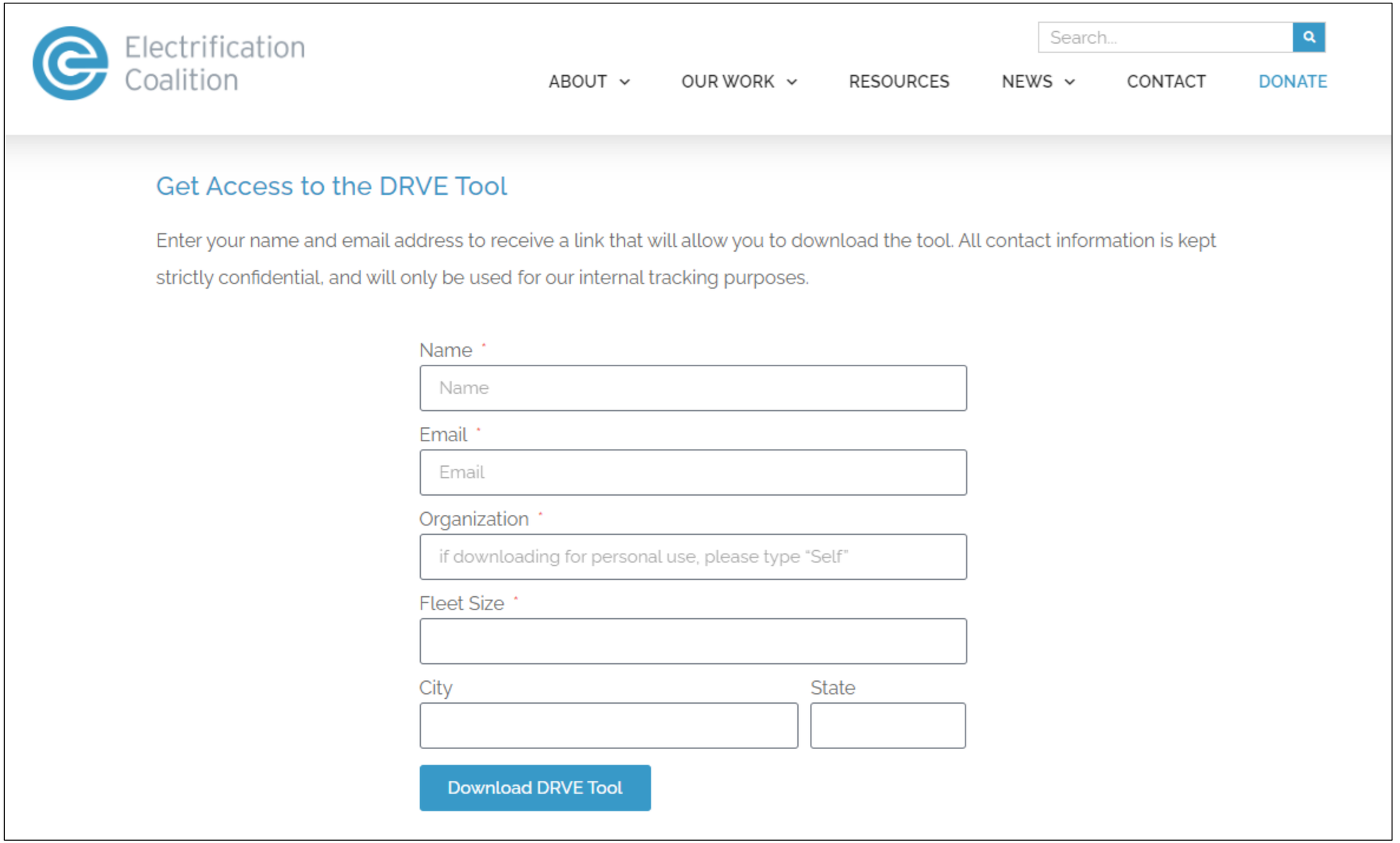
Off-Road

Understand Operations
- Talk with operators, supervisors, etc.
- Verify with data

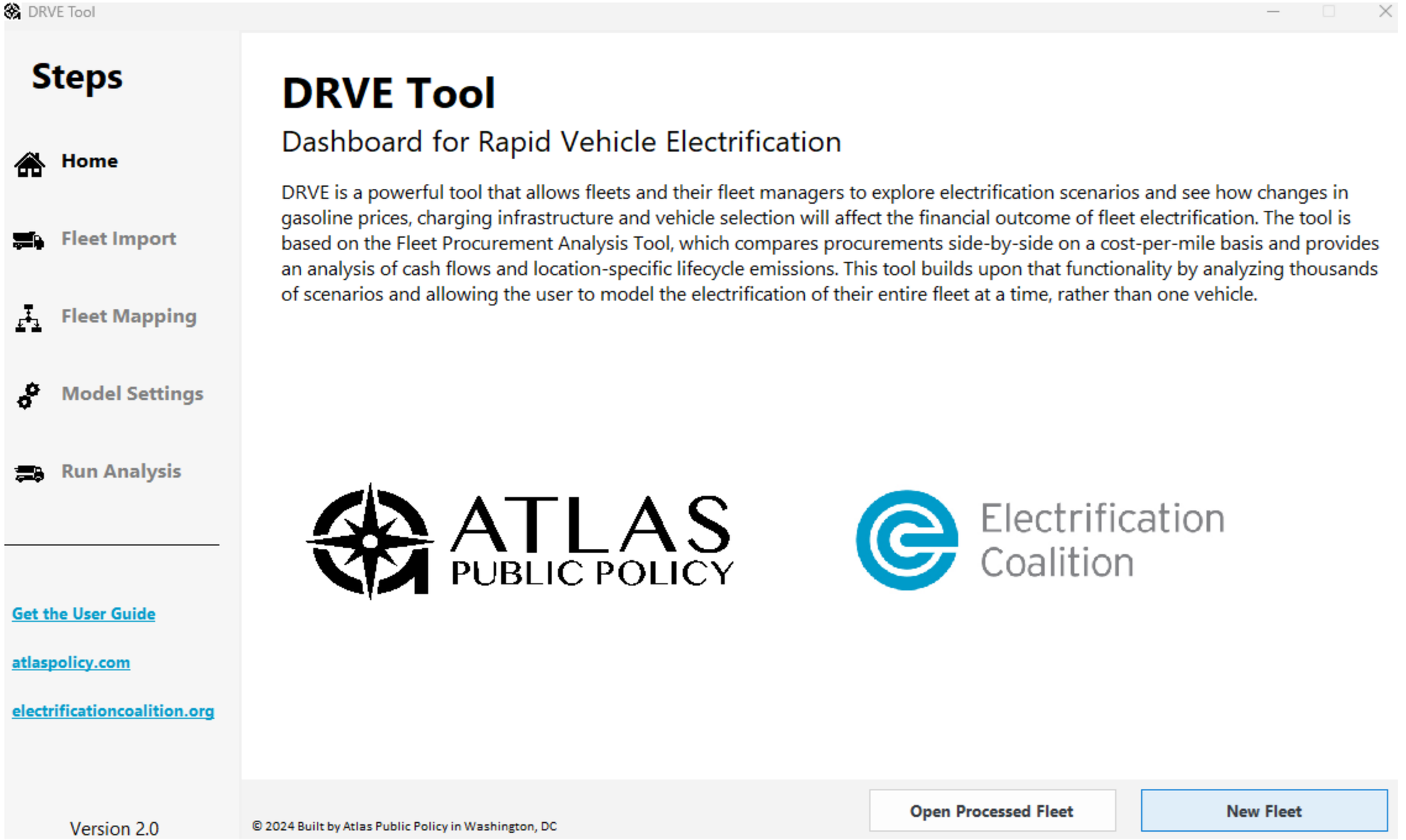
Research Available Options
- Clean Cities and Communities / Peer Fleets
- Understand EV Capabilities

Search Tools
- AFDC Vehicle Search Tool
- CALSTART ZETI Tool
- Climate Mayors EV Purchasing Collaborative

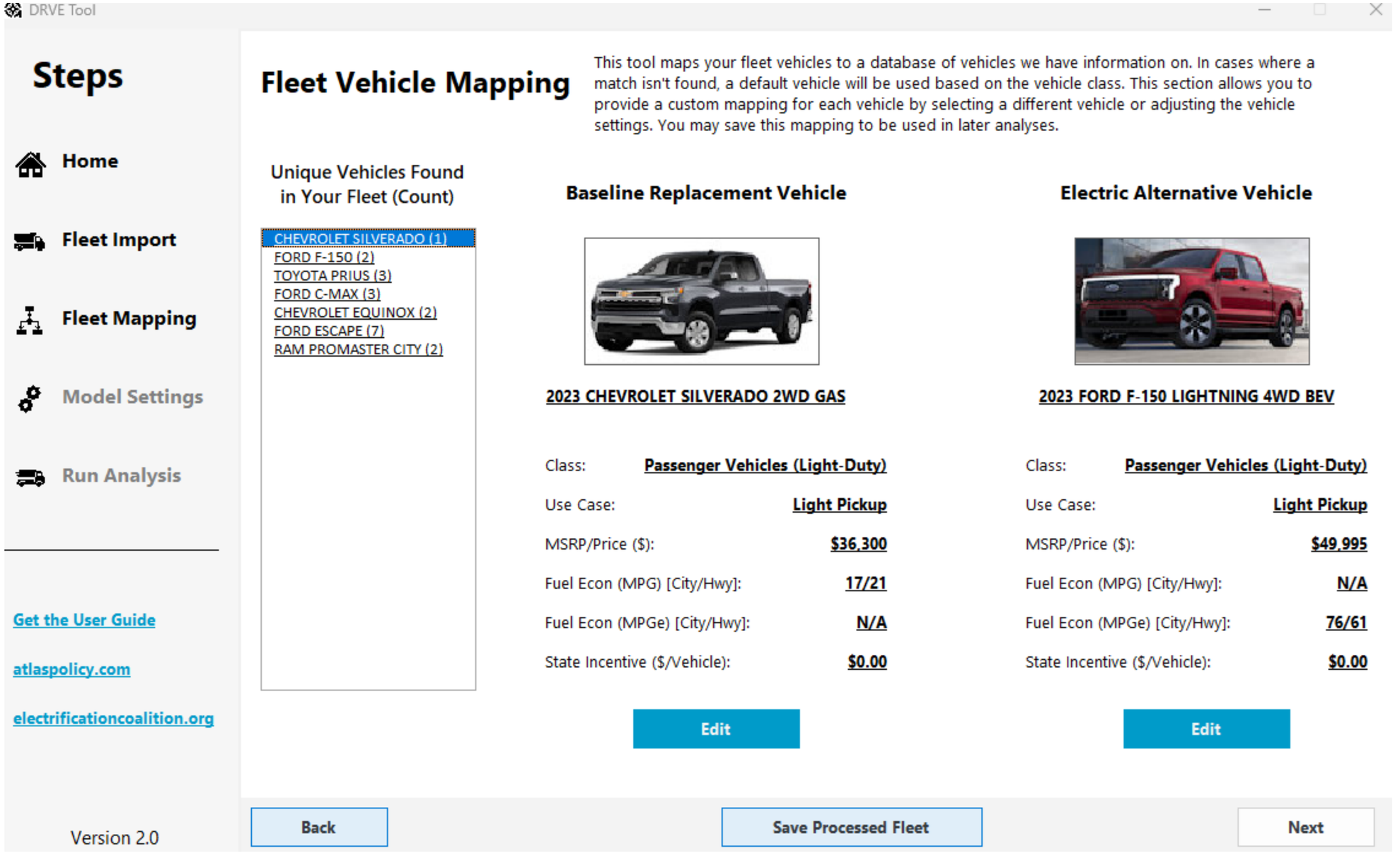
Example Scenario: DRVE 2.0



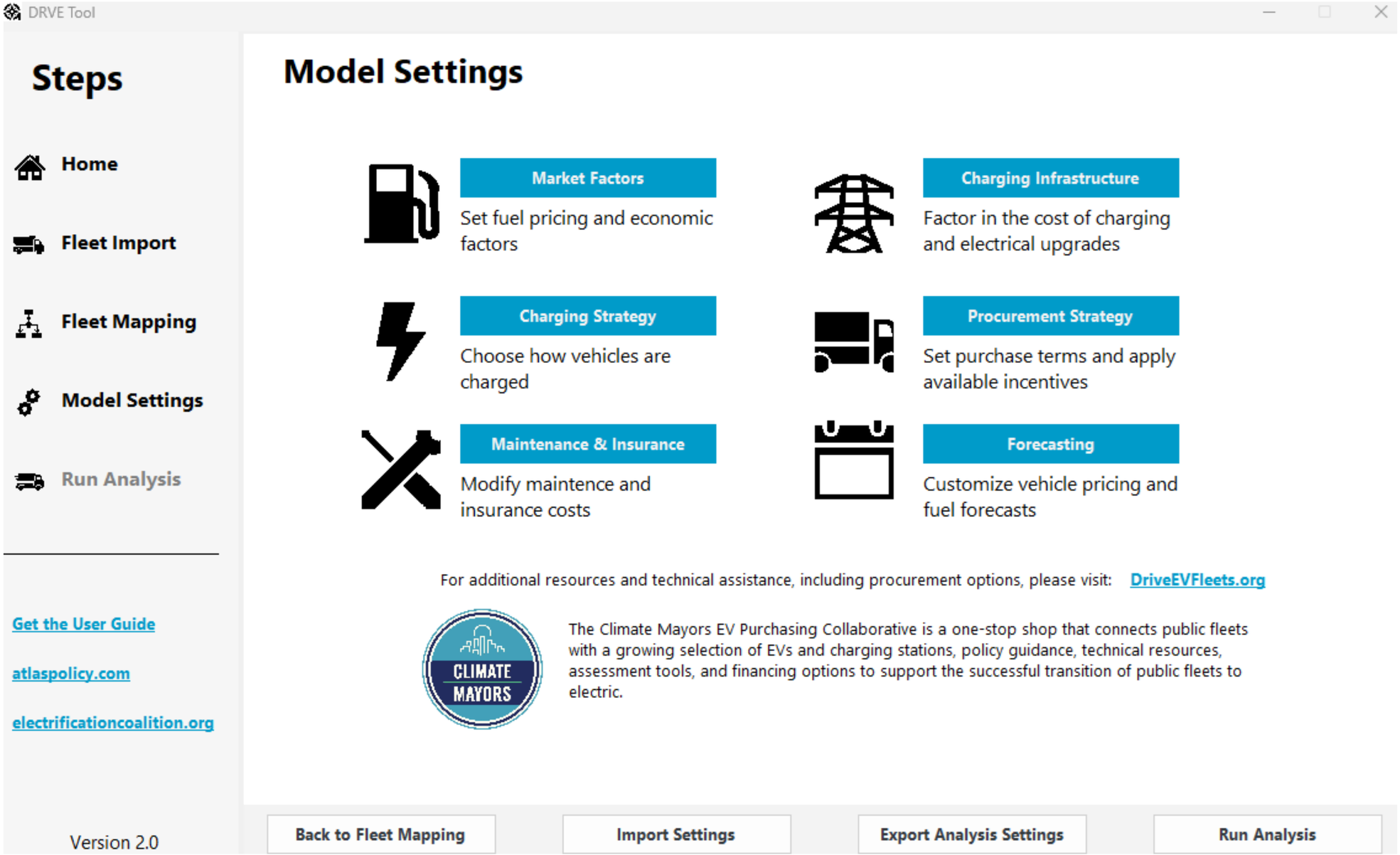
Example Scenario: DRVE 2.0



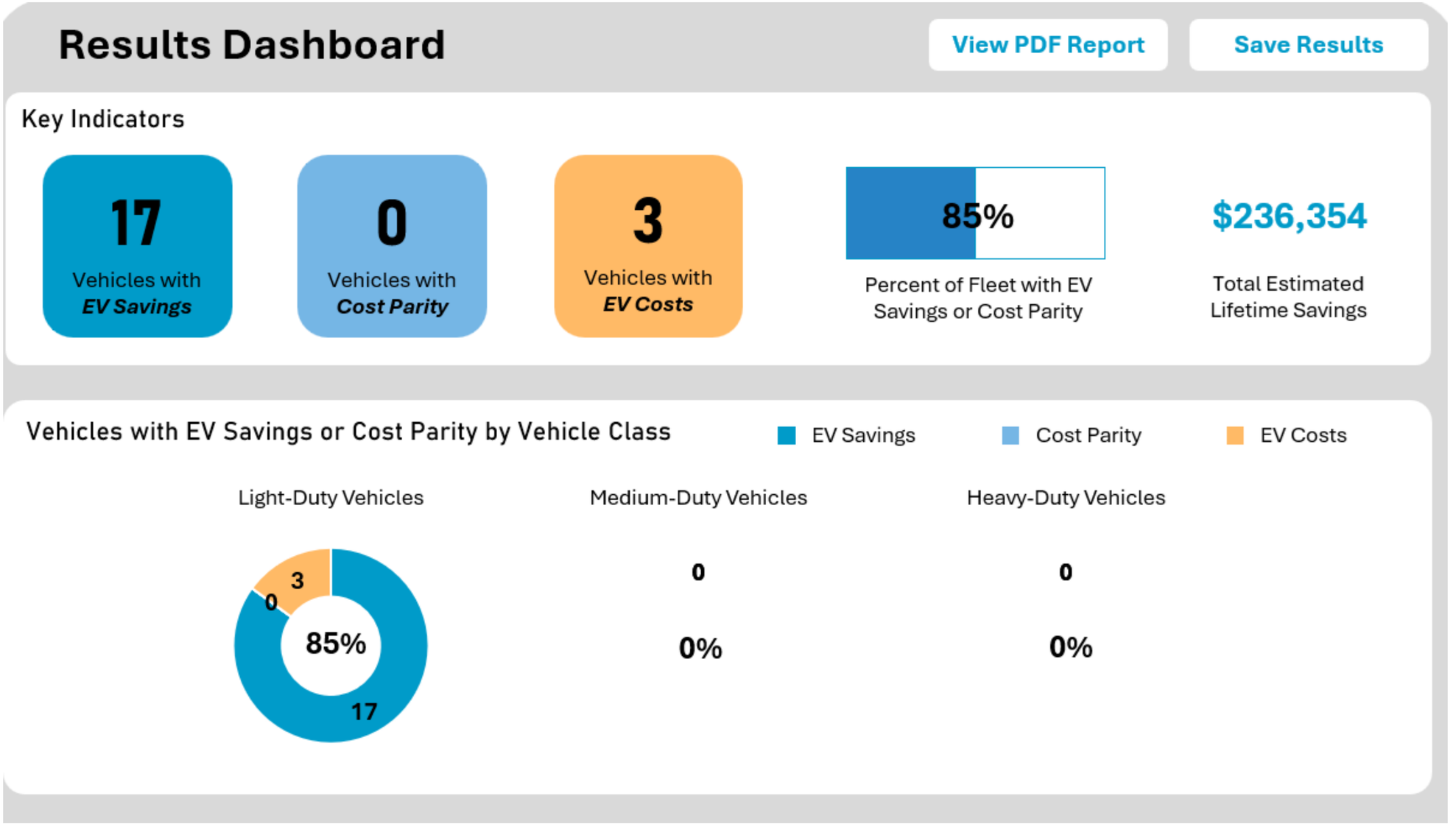
Example Scenario: DRVE 2.0



Example Scenario: DRVE 2.0



Example Scenario: DRVE 2.0



Example Scenario: DRVE 2.0

Original Fleet Vehicle	Conventional Replacement	Electric Replacement	Count	Conventional Average NPV	Electric Average NPV	Average EV NPV Savings	Average Percent Savings from EVs	Conventional Average Cost per Mile	Electric Average Cost per Mile	Average EV Savings per Mile
Passenger Vehicles (Light-Duty)										
Car										
FORD C-MAX	2024 CHEVROLET TRAX GAS	2023 FORD MUSTANG MACH-E RWD LFP BEV	3	$49,352	$44,875	$4,477	9.1%	$0.56	$0.51	$0.05
TOYOTA PRIUS	2024 TOYOTA PRIUS GAS	2023 FORD MUSTANG MACH-E RWD BEV	3	$40,128	$43,278	($3,150)	-7.9%	$1.00	$1.08	($0.08)
Light Pickup										
CHEVROLET SILVERADO	2023 CHEVROLET SILVERADO 2WD GAS	2023 FORD F-150 LIGHTNING 4WD BEV	1	$65,862	$55,238	$10,624	16.1%	$0.51	$0.43	$0.08
FORD F-150	2023 FORD F150 PICKUP 2WD GAS	2023 FORD F-150 LIGHTNING 4WD BEV	2	$60,756	$53,819	$6,937	11.4%	$0.50	$0.44	$0.06
Minivan										
RAM PROMASTER CITY	2023 FORD TRANSIT CONNECT VAN FWD GAS		2	$43,687		$43,687	100.0%	$0.65		$0.65
SUV/MPV										
CHEVROLET EQUINOX	2024 CHEVROLET EQUINOX FWD GAS	2024 CHEVROLET EQUINOX 1LT BEV	2	$47,021	$37,028	$9,993	21.3%	$0.80	$0.64	$0.17
FORD ESCAPE	2023 FORD ESCAPE FWD GAS	2024 CHEVROLET EQUINOX 1LT BEV	7	$52,547	$39,537	$13,009	24.8%	$0.65	$0.50	$0.15

Discussion Questions

- Who has telematics on their vehicles and how do you use it?
- Has anyone used DRVE 2.0 or a different TCO tool?
- What data do you need to make decisions?
  - What data is hard to obtain?
  - What data do you need to communicate to others?

EV Charging Infrastructure

EV Charging Infrastructure

	Input Voltage (V)	Output Power (kW)	LDV Charge Rate	Primary Fleet Use
Level 1	120	1.4–1.9	2 to 5 miles of range per hour of charging	PHEVs and low mileage BEVs
Level 2	208 or 240	6.6–19.2	10 to 40 miles of range per hour of charging	BEVs that don't require a quick recharge
DC Fast	Typically 480	25–350	100 to 200+ miles of range in 30 minutes of charging	BEVs that need a quick recharge

Steps to Identify EVSE Needs

1 – Group ZEVs by where they park

2 – Determine the duration the ZEV needs to charge

3 – Identify what type of EV charging is needed

4 – Determine an EV:EVSE ratio for the project area

5 – Consider futureproofing opportunities

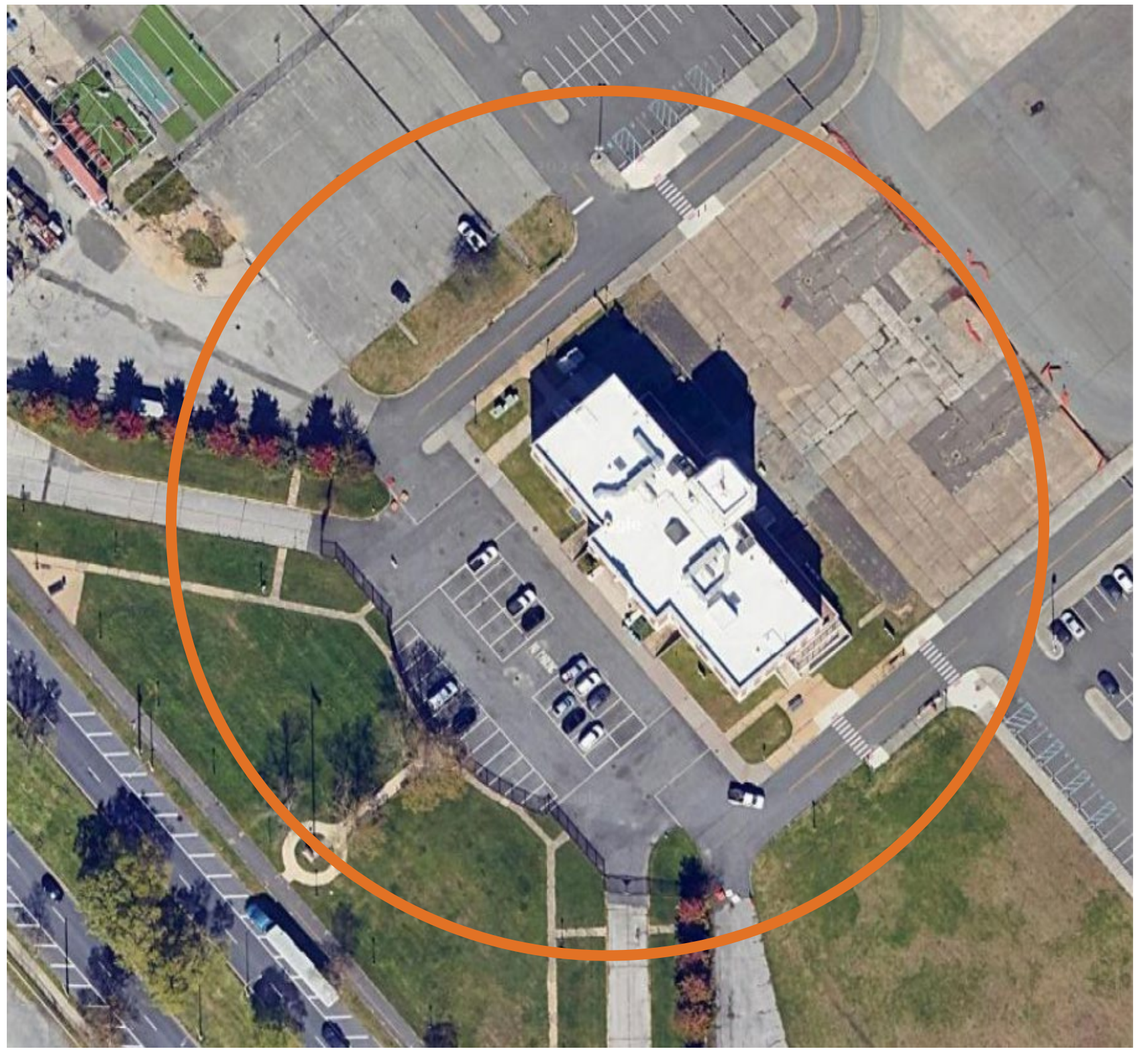
Example Scenario: Charging Context

Based on our operational and telematics data, we know that:

- All 20 vehicles return to the site at the end of their day (i.e., no vehicles are taken home by staff or otherwise park offsite)
- While the admin and motor pool vehicles spend an average of 20.5 hours per day on site, our inspection vehicles only spend around 11 hours on site each day as they are double shifted
- Admin and motor pool vehicles are only used Monday through Friday and on average 194 days per year, but the inspection vehicles are used Monday through Saturday and on average 276 days per year

Example Scenario: Group Vehicles By Where They Park

- Create EV charging station “projects” for the parking areas where ZEVs will or could park
- Use telematics or your fleet management information system to group vehicles



Example Scenario: Determine the Duration the ZEV Needs to Charge

For each EV in the project area, look at the following information:

Battery size/range for ZEV replacement (BEV vs. PHEV)

How many miles the vehicle travels and how it compares to the ZEV replacement range

Vehicle dwell periods

Available parking and flexibility to move ZEV after charging is complete

- **Vehicles will need to charge every 2 to 4 days (overnight)**
- **Midday charging would rarely be needed**

Example Scenario: Identify What Type of EV Charging Is Needed

When calculating the EV charging power level needed to support fleet vehicles, consider:

- Rarely will a vehicle need to charge from 0–100%
- For vehicles relying on overnight charging, Level 1 or 2 charging is often sufficient
- For vehicles that need on-site midday charging, DC fast charging may be needed

$$Power\ (kW) = \frac{Energy\ (kWh)}{Dwell\ Time\ (hours)}$$

Standard Level 2 (~6.7kW) EV charging stations will be sufficient (could consider managed charging to save costs)

Example Scenario: Determine EV:EVSE Ratio

How many EVSE ports are needed to support fleet of 20 vehicles once they are 100% EVs?

2:1 EV:EVSE ratio to provide flexibility
10 EV charging station ports for 20 BEVs

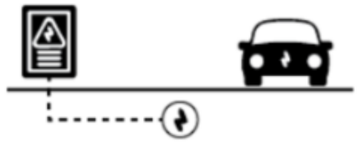
Example Scenario: Consider Futureproofing Opportunities

Considerations:

- Timeline for replacing the ZEV (what is needed in the next two years vs. further out in the future)
- Add extra capacity in a service panel/ transformer upgrade or extra conduit to reduce future site work

EV-Capable Parking Space: Electrical Panel Capacity & Conduit

- Install panel capacity and conduit (raceway) to accommodate the future build-out of EV charging with 208/240 V, 40-amp circuits.
- Rational: Provide hard-to-retrofit elements during new construction while minimizing up-front cost.

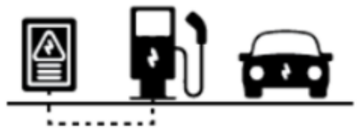


EV-Ready Parking Space: Install full circuit

- Full circuit installations include 208/240V, 40-amp panel capacity, raceway, wiring, receptable, and overprotection devices similar to a dryer circuit.
- Rational: Full circuits are plug-and-play ready and minimize total costs and additional barriers to installing Electric Vehicle Supply Equipment (EVSE).

EV-Installed: Install EV Charging Station (also known as Electric Vehicle Supply Equipment or EVSE).

- Install charging stations during new construction.
- Rational: Provide a visible signal that building supports EV charging and reduce future EV charger installation costs to zero.



Source: https://afdc.energy.gov/fuels/electricity-codes-and-ordinances

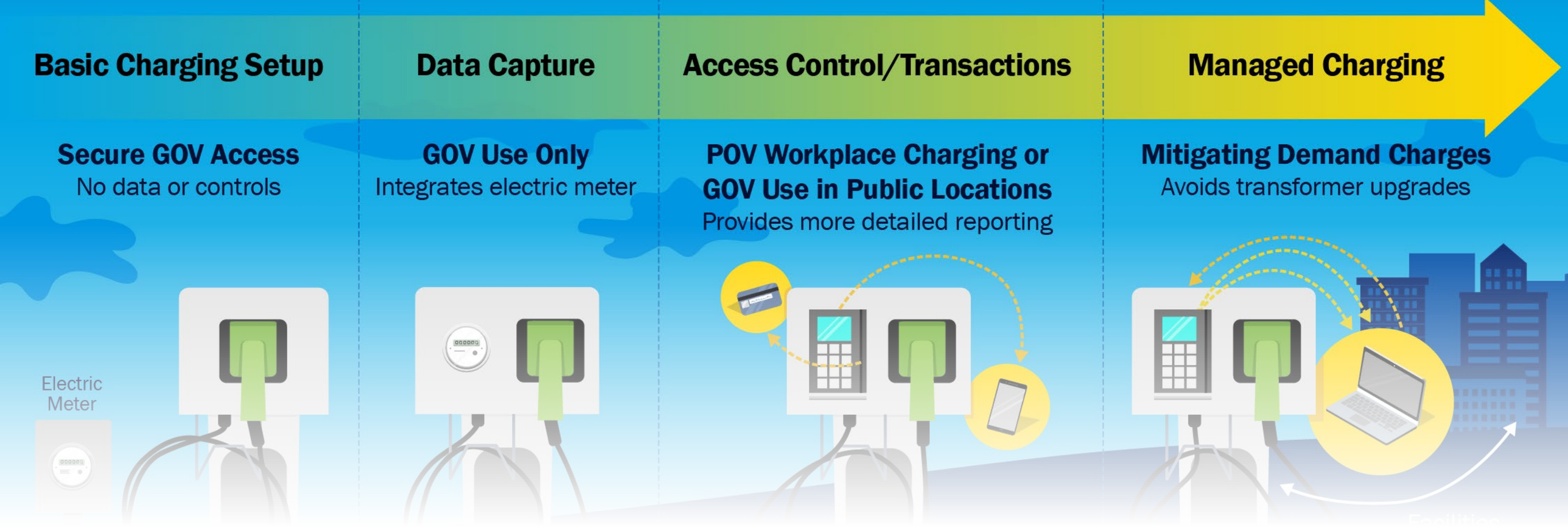
Phase 1: Install 6 ports

Phase 2: Install 4 ports

Decide Who Has Access to EV Charging Stations

EV charging station access levels differ based on who can use the charging station (fleet-only, employee-only, shared, other)

The primary EV charging station access decision at most fleet facilities is whether employee charging access for employee privately owned vehicles (POVs) will be permitted (workplace charging)



- A networked EVSE has built-in data management or metering capabilities that track the energy use
  - Commonly provides the ability to process payment transactions, control vehicle access, track charging session data, and manage charging

Comparing Networked vs. Non-Networked EVSEs

	Networked	Non-Networked
Payment	Can collect payment	Can’t collect payment
Data Tracking	Tracks/reports charging session level data	Does not track/report on charging data
Connectivity	Requires connectivity (e.g., cellular service); connectivity issues can disrupt service	No connectivity required
Load Management	Load management capabilities (complexity will vary)	No load management capabilities outside of power sharing
Costs	Higher upfront and ongoing costs	Lower upfront and ongoing costs

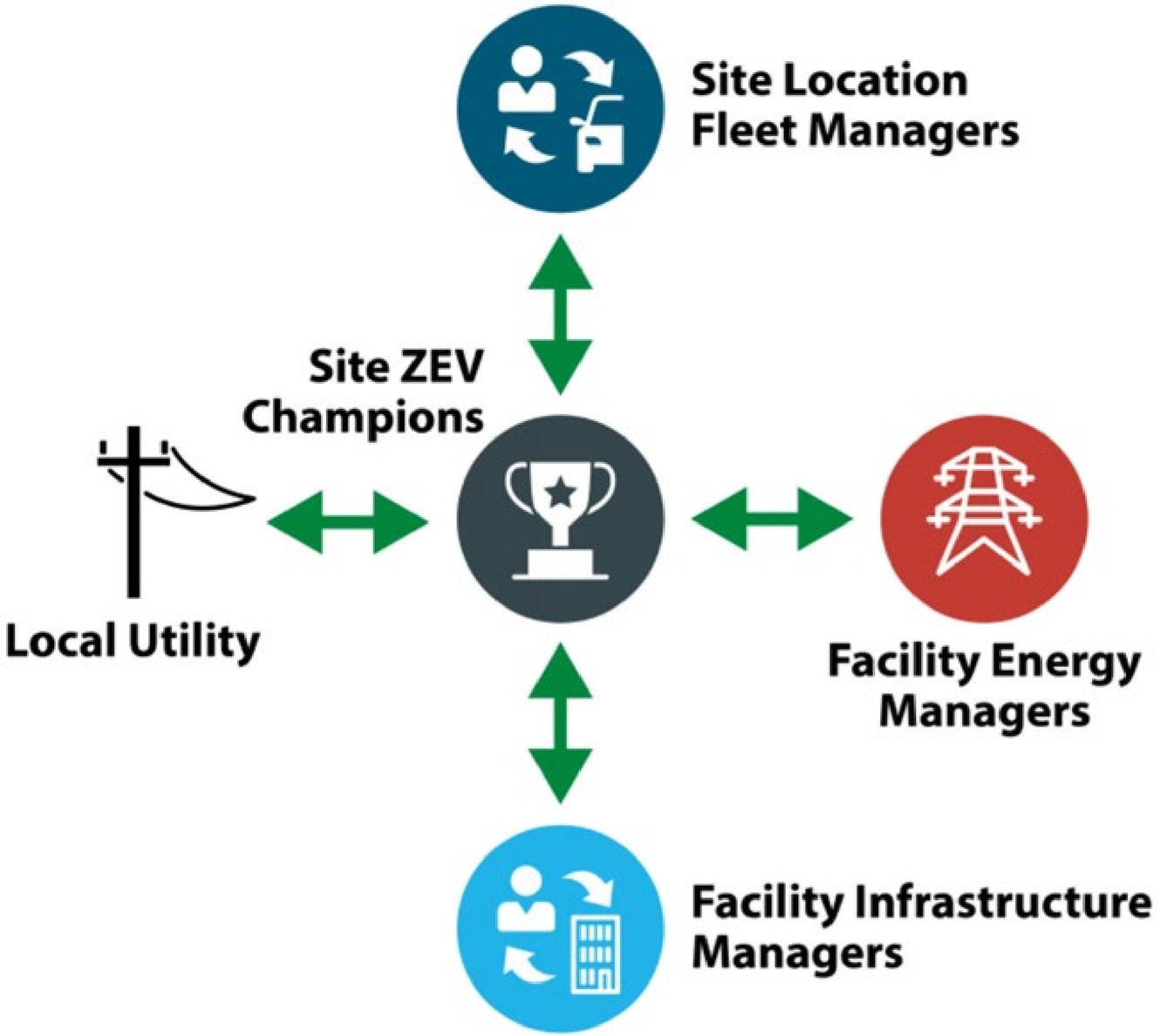
Discussion Questions

- How many fleets have installed EV charging stations?
  - Did you consider any future proofing – to plan for more charging in the future?
- What kind of charging ratio are you using?
  - 1:1, 2:1, or higher?
- Who is using networked versus nonnetworked charging?

Site Assessment

Site Assessment

EVSE design has wide impacts across the fleet location, including both fleet and facility operations. Critical to success is effective coordination between the site ZEV champion, site fleet manager, and facility infrastructure manager as well as your local utility.



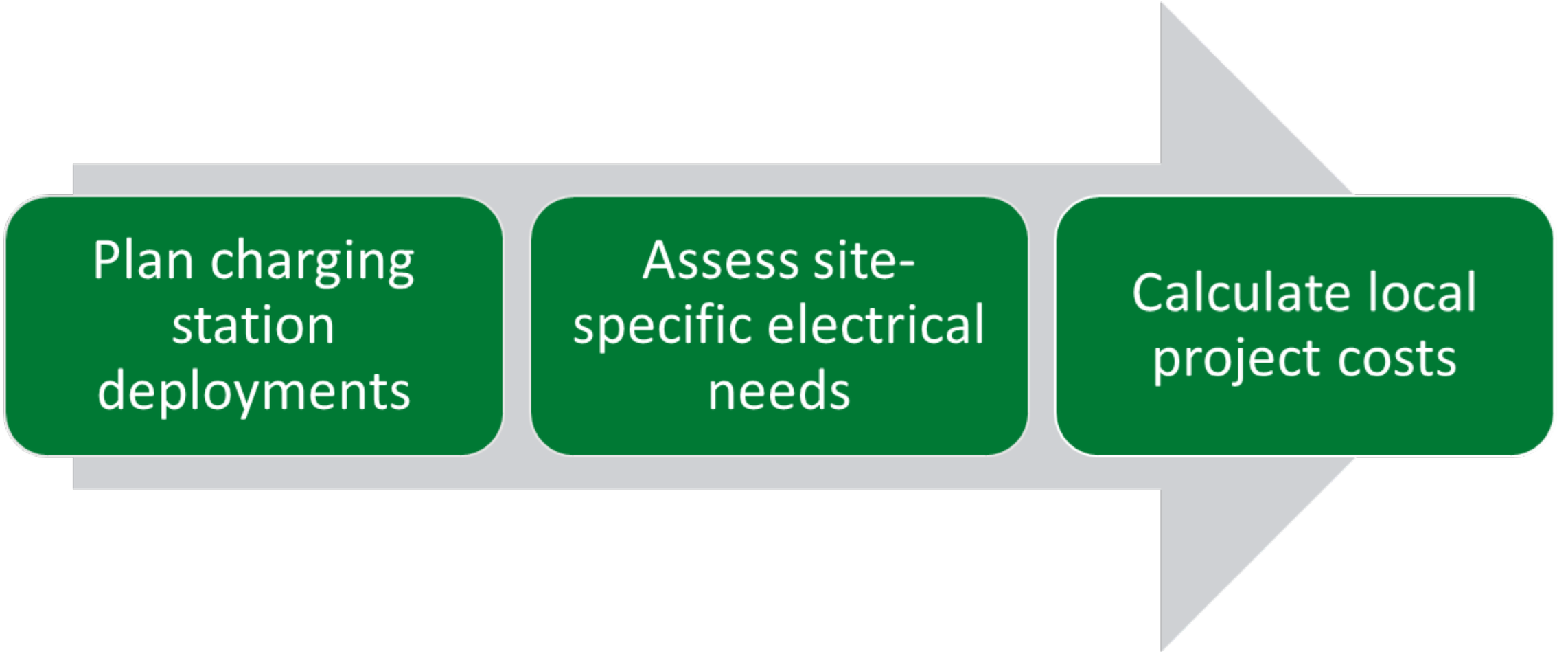
Example Scenario: Site Assessment

Site assumptions

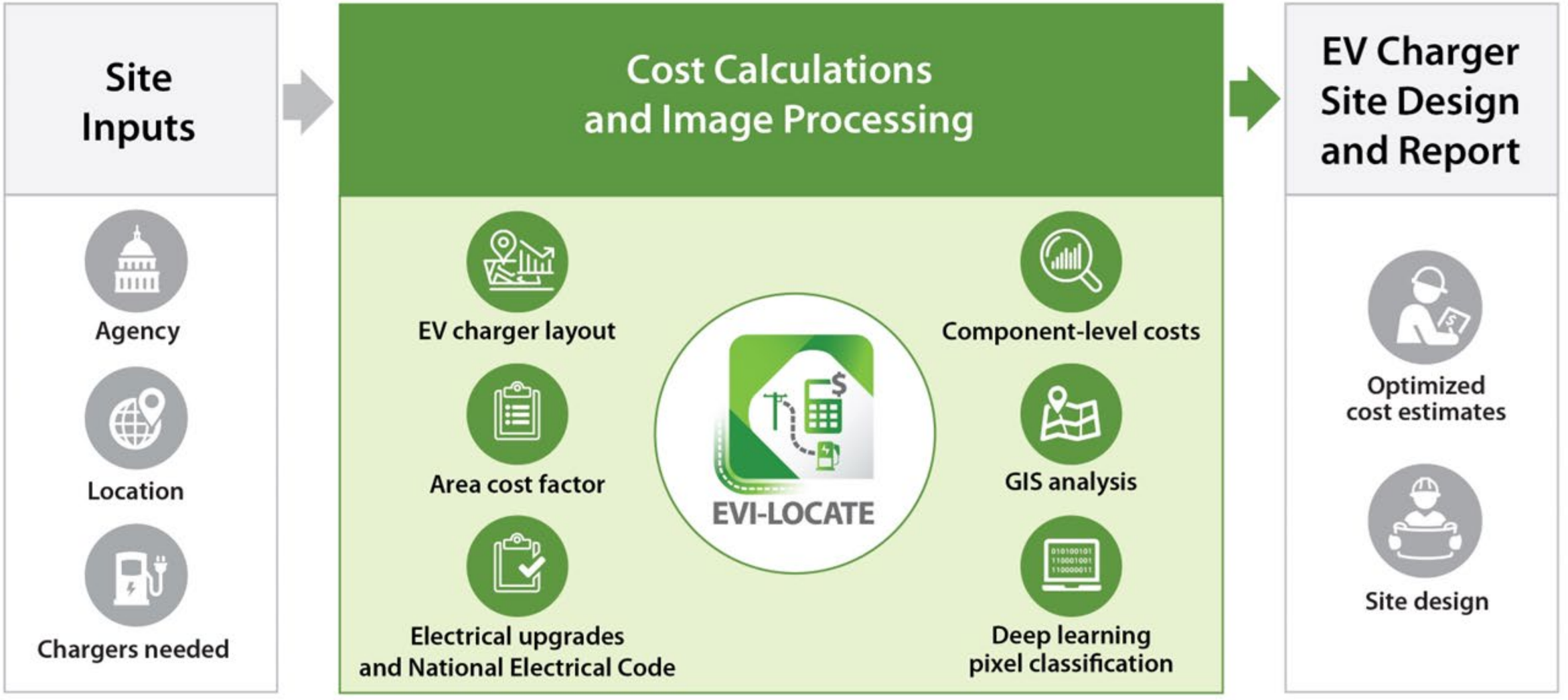
- Agency’s headquarters building is older and needs electrical upgrades
- Building does have a large capacity 3-phase service
- Fleet vehicles park in a fleet-only parking area

Electric Vehicle Infrastructure – Locally Optimized Charging Assessment Tool and Estimator

EVI-LOCATE



EVI-LOCATE: EV Charging Stations Site Assessment Tool



Public Login: https://evi-locate.nrel.gov/

EVI-LOCATE

Electric Vehicle Infrastructure — Locally Optimized Charging Assessment Tool and Estimator

NREL Transforming ENERGY

Resources Contact

Federal User Access | Public User Access

Public Log In

Don't have an account? Click **Public Log In** above, then click "**Create a EVI-LOCATE Hub Community account.**" in the resulting popup to request access.

Welcome to EVI-LOCATE

The Electric Vehicle Infrastructure - Locally Optimized Charging Assessment Tool and Estimator (EVI-LOCATE) is a comprehensive design tool that helps you create an electric vehicle charging station deployment plan, from layout to cost estimates.

EVI-LOCATE

The following key data can help you start a site analysis:

- Charger requirements-desired number of charging ports and power levels
- Existing utility assets-transformers and service panels that might connect to your chargers.

You do not need to have all your site information to start using the tool. You can save your work and edit your project later. You can also review sticking points with EV charging experts at NREL. Contact us at evi-locate@nrel.gov if you have any questions.

Define Site Boundary

Define Site

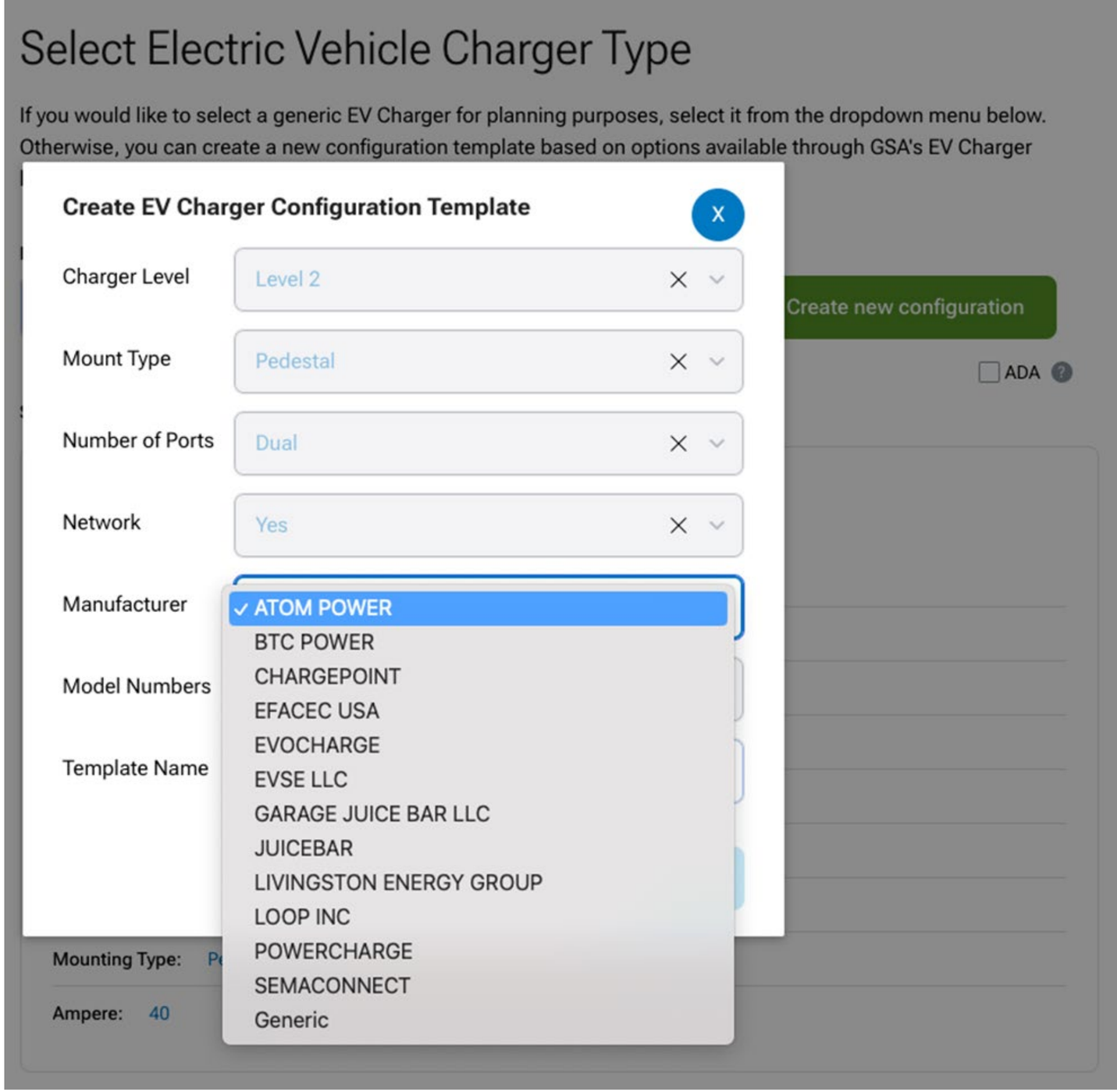
- Draw a polygon project area
- Name your site
- Make sure the polygon is large enough to include the charging stations, transformer, and panel

Select EVSEs

Select Template and Add to the Map

- Users can filter to their preferred charger or select generic option
- Add to the map

Generic Level 2 Dual Port Pedestal

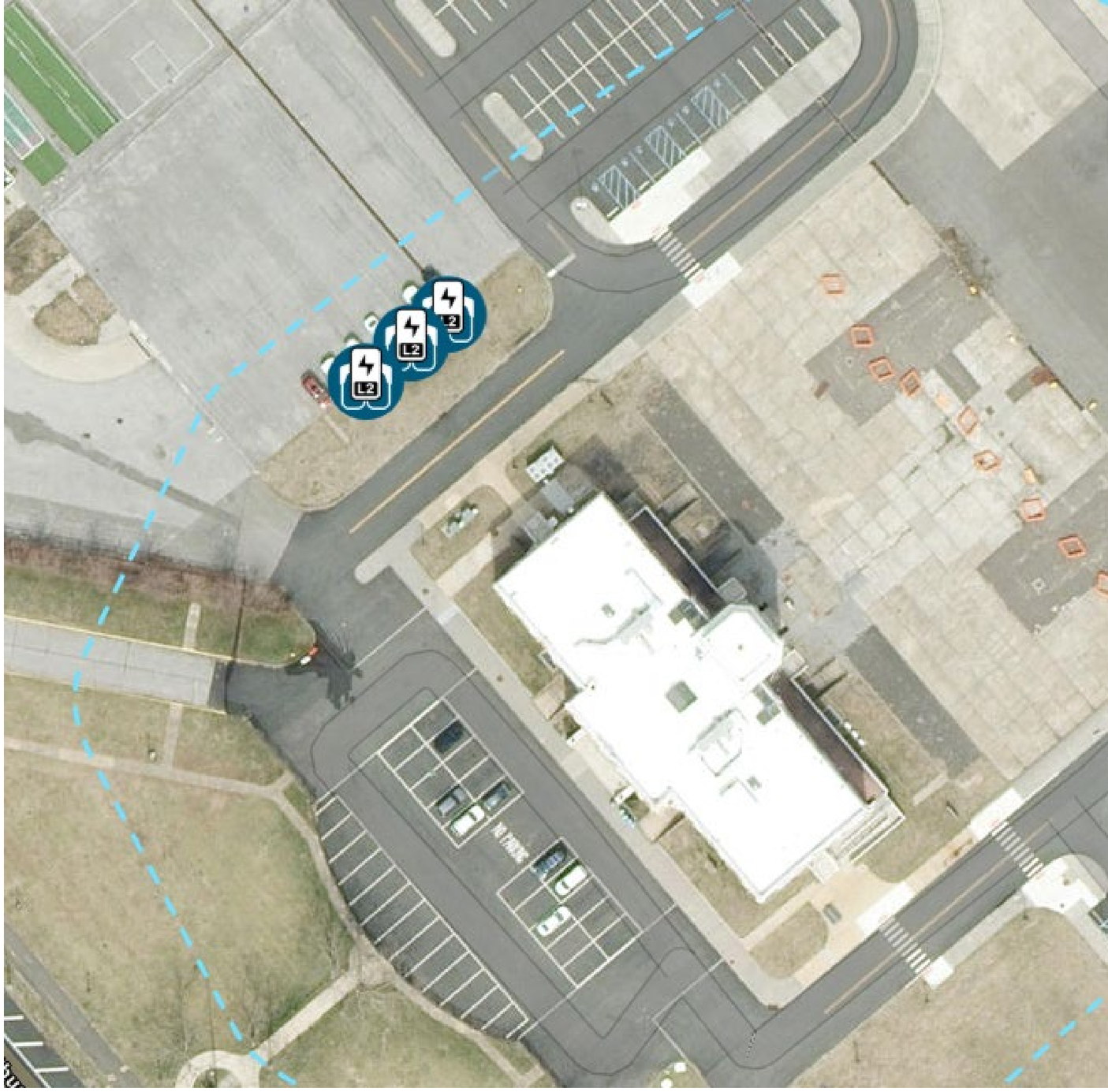


Select EVSEs

Select Template and Add to the Map

- Users can filter to their preferred charger or select generic option
- Add to the map

Add three dual port EV charging stations

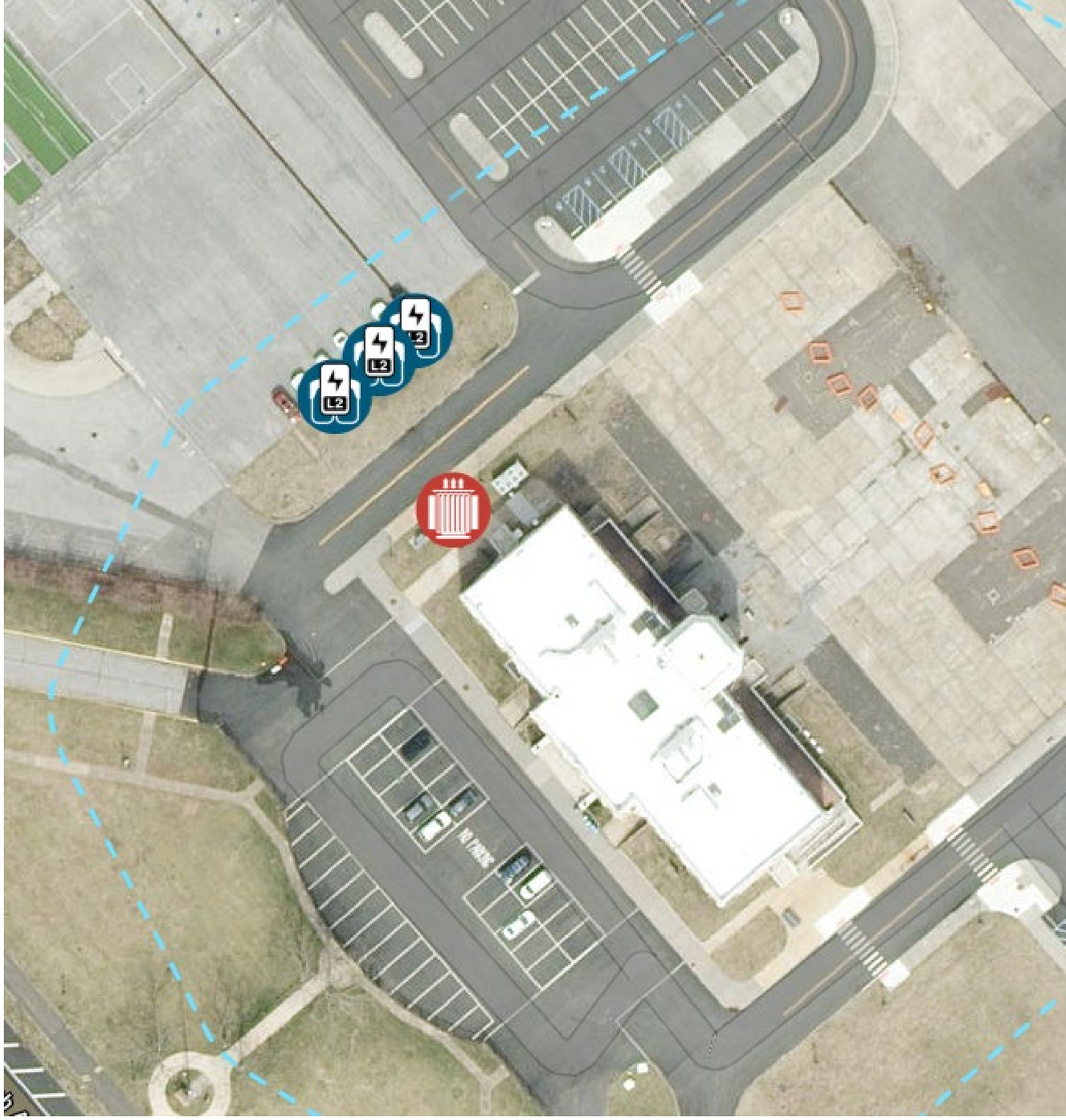


Transformer

Manage Transformer

- Select if costs should be included and whether to add a new or use the existing transformer
- Input existing rating (kVA) and peak load (kVA) to check if existing equipment is sufficient

New transformer needed to support the project

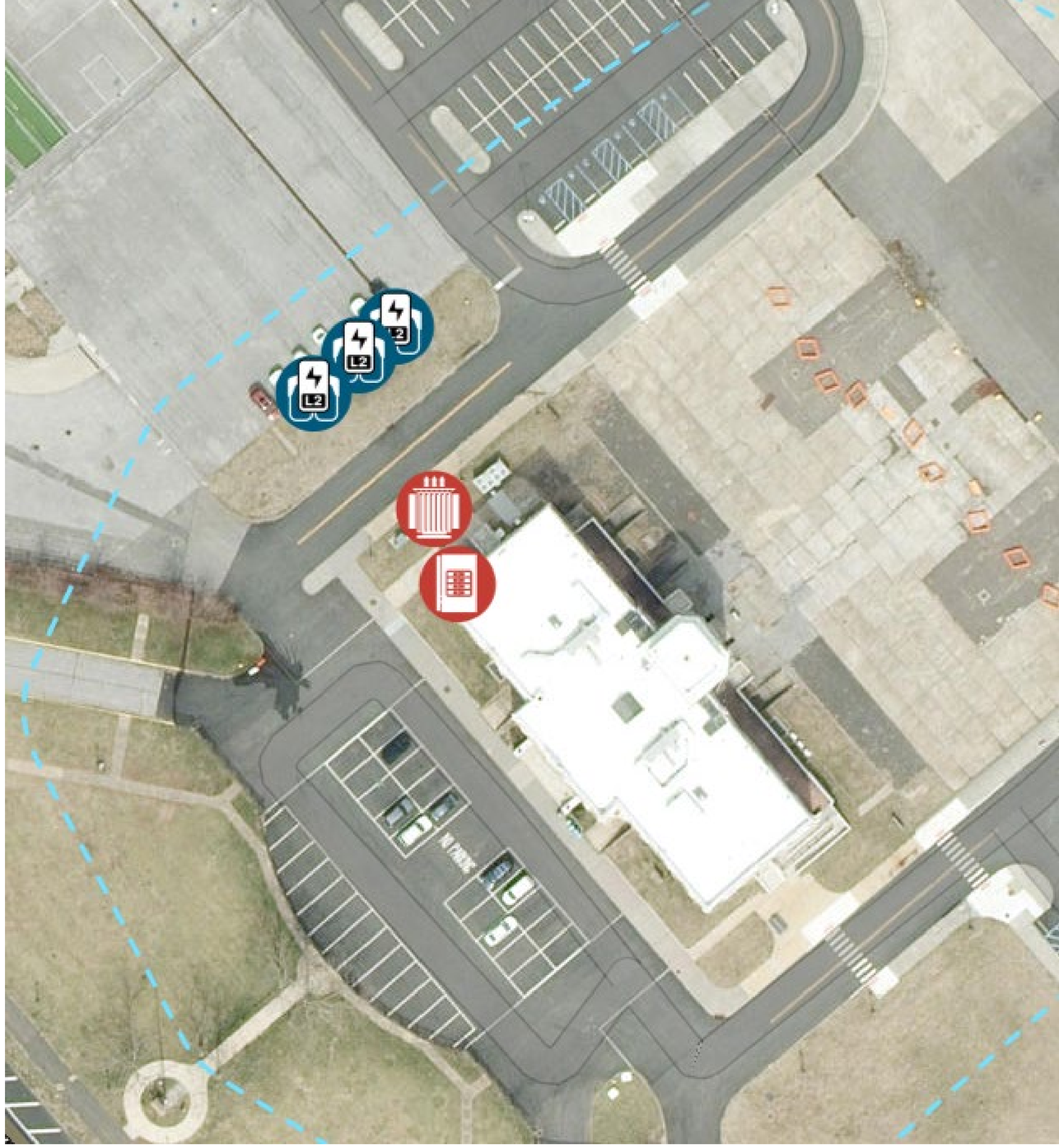


Service Panel

Manage Service Panel

- Select if costs should be included and whether to add a new or use the existing service panel
- Input existing voltage rating and (if using an existing panel) number of open spaces to check if existing equipment is sufficient

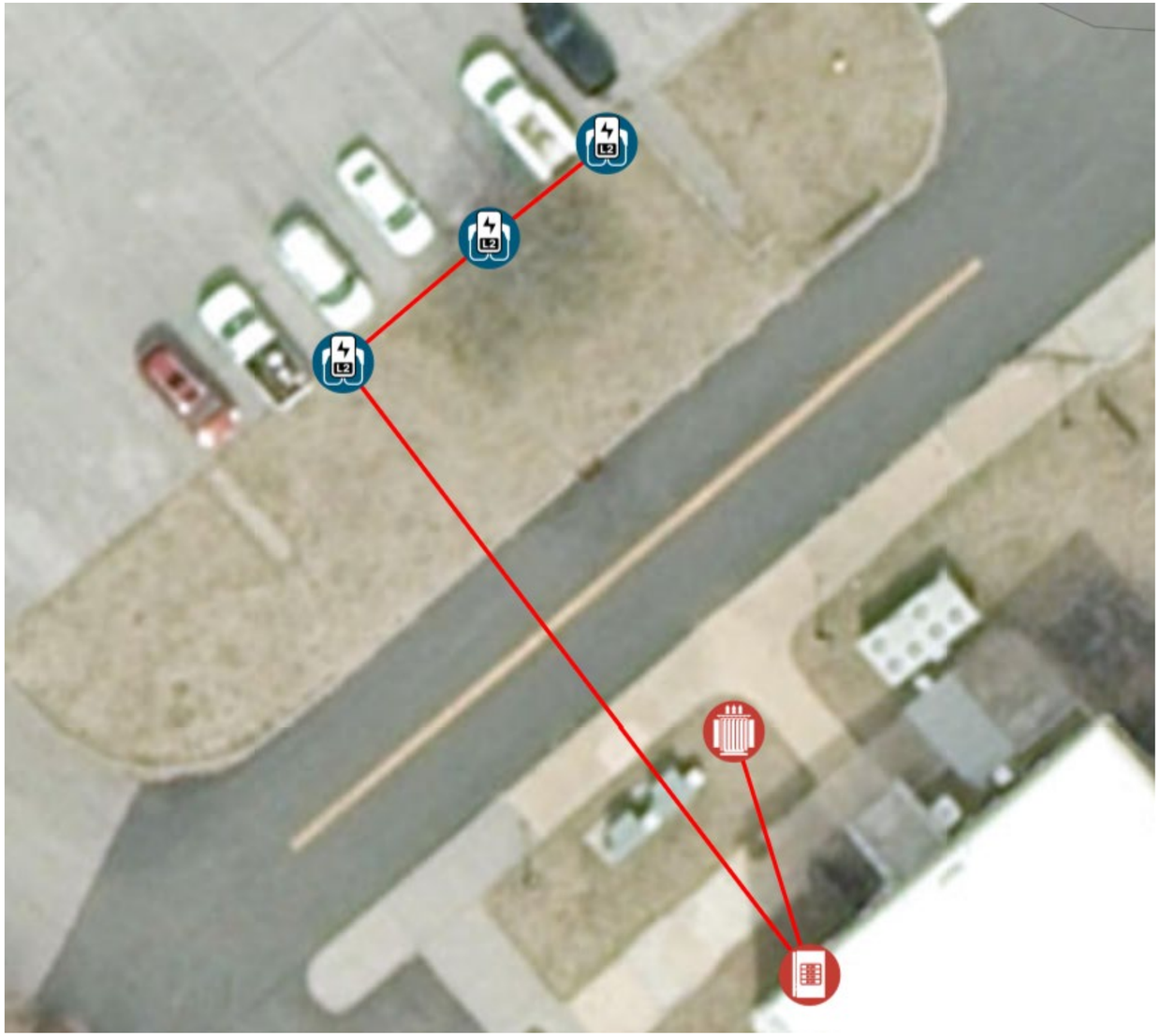
New service panel needed to support the project



Wiring: Connecting the Equipment

Wiring Run

- Tool identifies low-cost line from transformer to panel to chargers
- Identifies hardscape and softscape



Generate electric lines connecting the electrical equipment with the EVSE

Cost Calculations

Edit Cost Assumptions

Inputs for **Example Site**

EV GROUP 1 ADDITIONAL CONSTRUCTION COST COMPONENTS

Bollards:	Include
Wheelstops:	Include
Signage:	Include
Painting:	Include

PROJECT COSTS (%)

EVI-LOCATE includes default numbers for project costs that can be modified by the user. Please update any of these defaults as appropriate for your project.

State and Local Sales Tax Percent
0%

Contractor Overhead Percent
15%

Contractor Profit Percent
10%

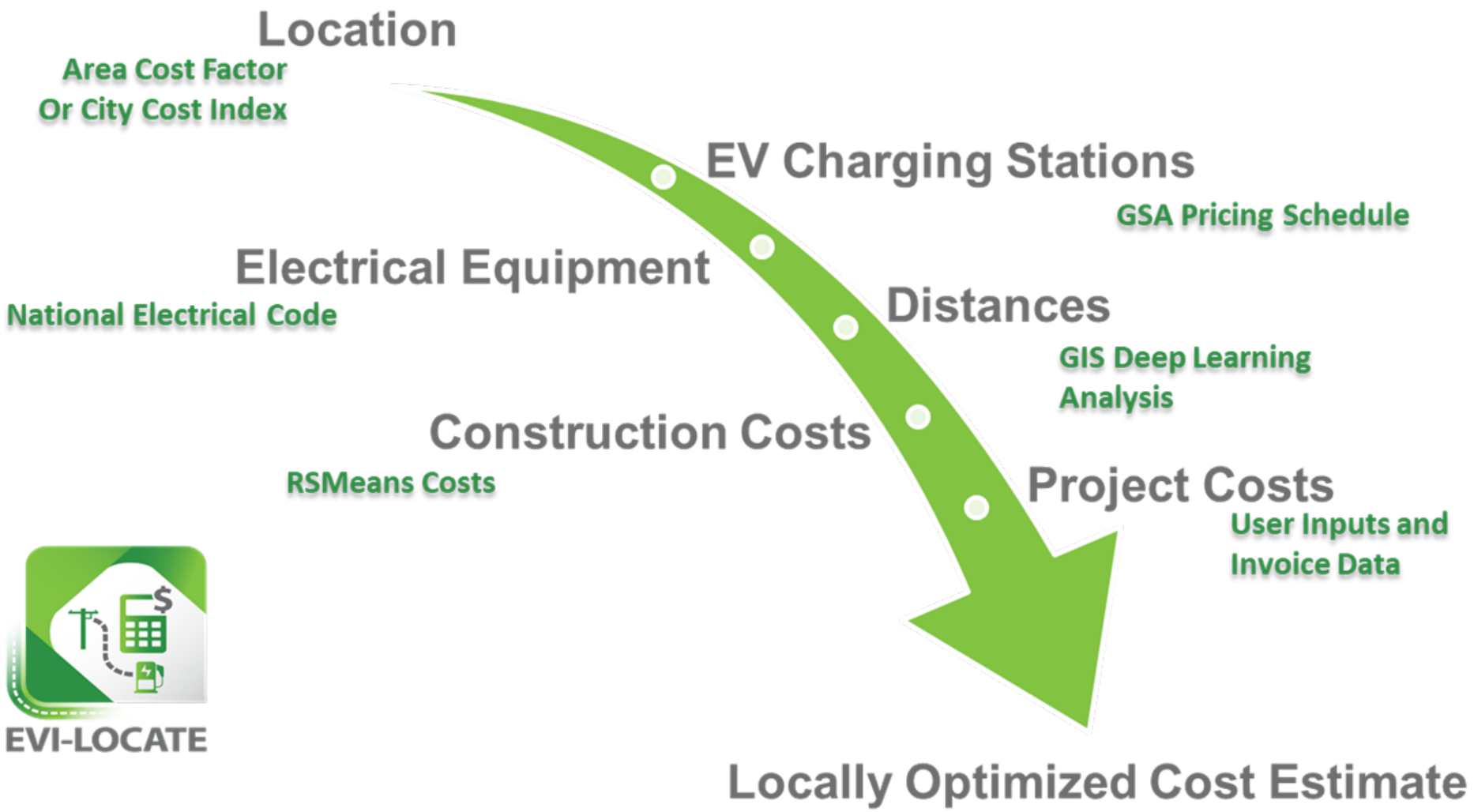
Bond Costs Percent
2.5%

Permits and Zoning Percent
2%

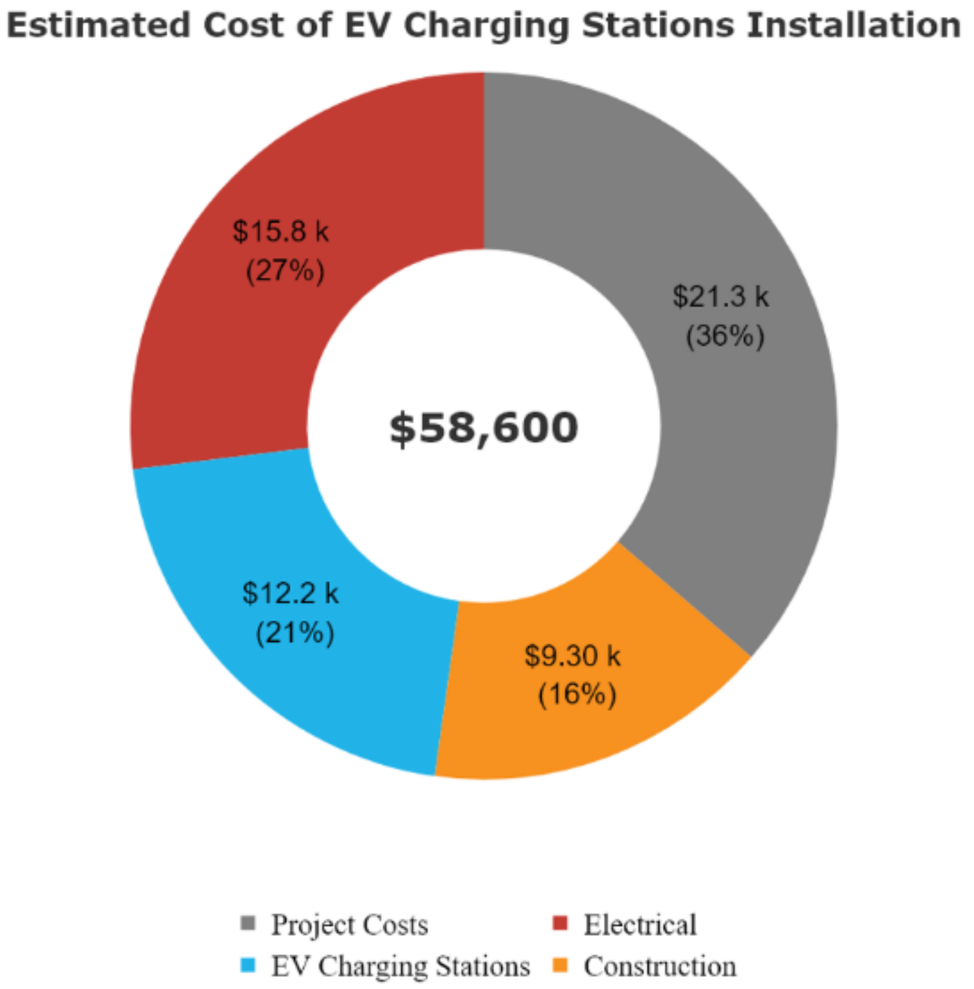
Contingency Cost Percent
20%

Generate Calculated Costs

Cost Estimator Components and Data Sources



Detailed Cost Estimates



- Accelerate the site design process
- Unify assumptions for cost calculations
- Generate detailed estimates in 20 minutes
- Organize agency EV charging planning

Discussion Questions

- Do you think EVI-Locate would help with your planning?
  - If so, how?
- Other Questions?

Final Questions

- What other tools have you used?
- How many fleets plan to lead and execute the fleet electrification internally?
  - How many intend to outsource to contractors?

Key Takeaways:

- ➢ You are the expert on your fleet, and it is critical to have baseline understanding of the electrification process
- ➢ Know what questions to ask of the experts
- ➢ There are resources available to you and your fleet

Contact Information

Erin Andrews-Sharer: Erin.andrewsharer@nrel.gov

Emily Kotz: Emily.kotz@nrel.gov

Sophia Napoletano: Sophia.napoletano@icf.com

National Renewable Energy Laboratory

Erin Andrews-Sharer

Emily Kotz

ICF

Sophia Napoletano

Thank you, speakers!

Back-up Slides

Limitations of Conventional Charging

- Plug and leave approach
- Limitations for larger fleets:
  - Inefficient charging power allocation.
  - Time consuming for larger fleets.
  - Human error.
- Increased operational costs:
  - Charging during peak pricing hours.
  - Uncoordinated charging leading to **peak demand charges.**
  - Infrastructure upgrade requirements.
- At-capacity local grids struggling to meet larger EV fleet needs.

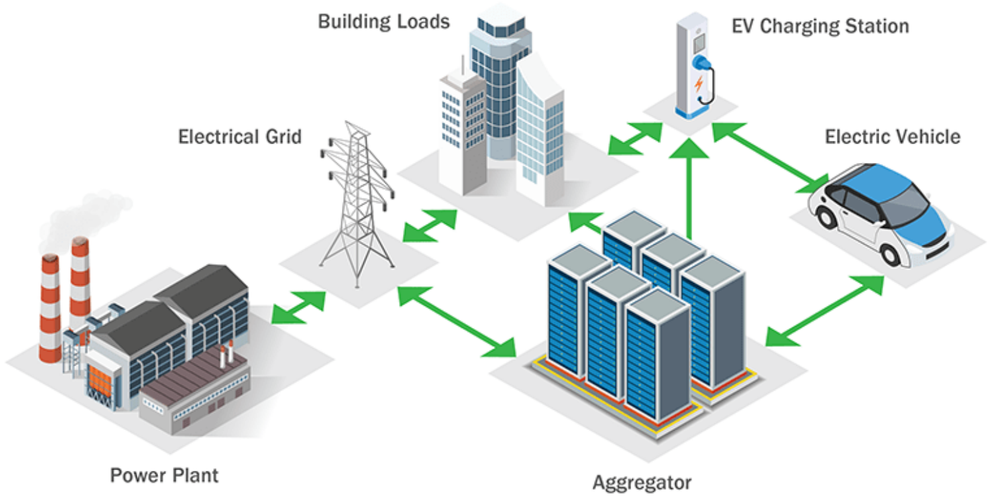
What Is Managed Charging?

- EV charging may be managed and controlled
  - Strategically plan vehicle charging
  - Avoid expensive upgrades
    - Set a limit on the system load
  - Reduce energy costs
    - Shift charging to off-peak pricing hours
    - Reduce peak demand charges
  - Manage a large fleet
    - Ensure EVs are charged when needed
- Requires a networked EVSE with a standard communications protocol
- Offers various levels of sophistication, from manual scheduling to automatic planning

Manually planning and scheduling when and how to charge. Illustration by NREL.

What Is Smart Charge Management?

- Managed charging, smart charging, etc.
- **Dynamic** coordinated control of EV charging
- Can balance energy needs among:
  - Connected EVs/EV charging stations
  - Buildings
  - Energy generation
  - Grids
- Uses sophisticated communication protocols (such as Open Charge Point Protocol [OCPP] and similar) and work based on a pre-defined objective function
- Objective Function: Intended goal



Smart Charge Management can connect and communicate with multiple entities simultaneously to ensure control objective. Illustration by NREL.

Benefits of Smart Charge Management

- Optimize energy usage and cost:
  - Time of use rate
  - Demand charges – enforce power ceiling
  - Renewable energy utilization
- Reduce EV charger installation costs and timeline:
  - High number of EV charging stations can lead to system overloading
  - Make use of existing electrical and EV charging infrastructure

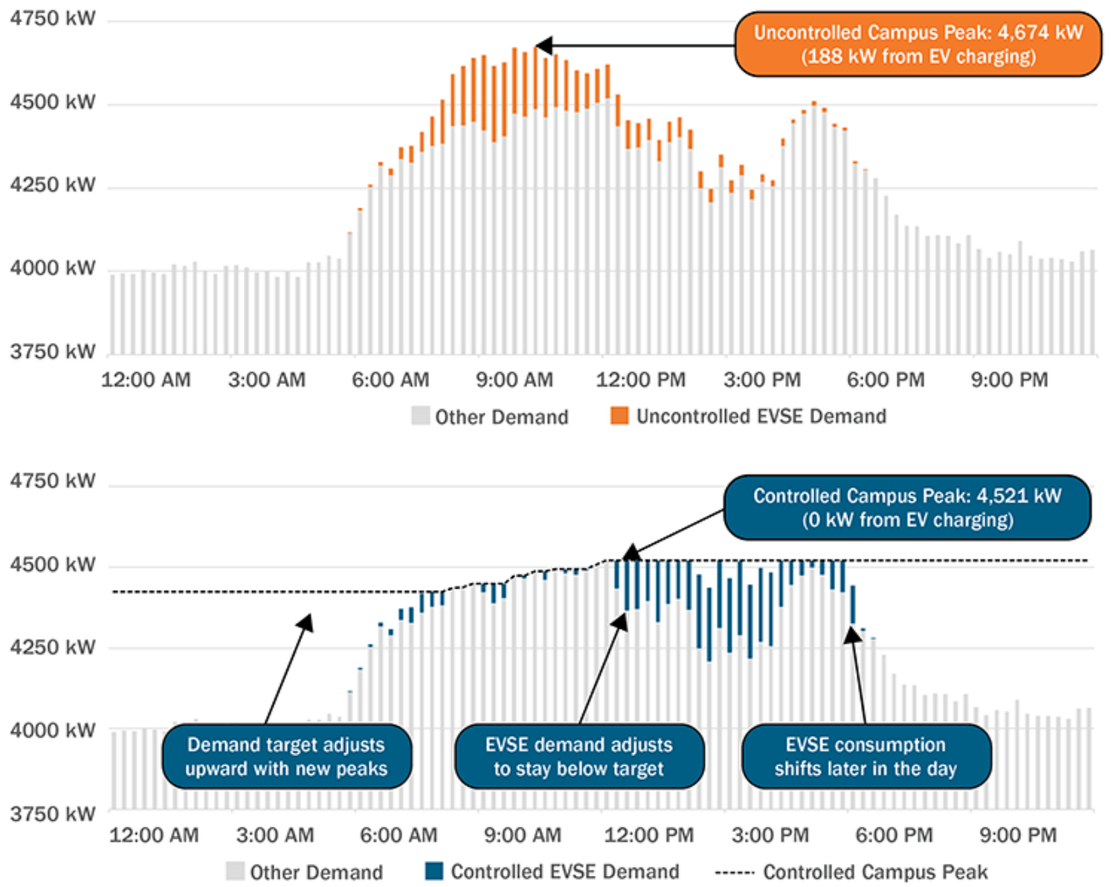


Illustration adapted from the NREL report, [Integrating Electric Vehicle Charging Infrastructure into Commercial Buildings and Mixed-Use Communities: Design, Modeling, and Control Optimization Opportunities]

Benefits of Smart Charge Management

- Optimize fleet and building operations and ensure vehicle readiness:
  - Ensure vehicle readiness
  - Schedule charging during off-peak
- Support connected loads during extreme events:
  - Demand response events
  - Utilize EVs as mobile energy storage units

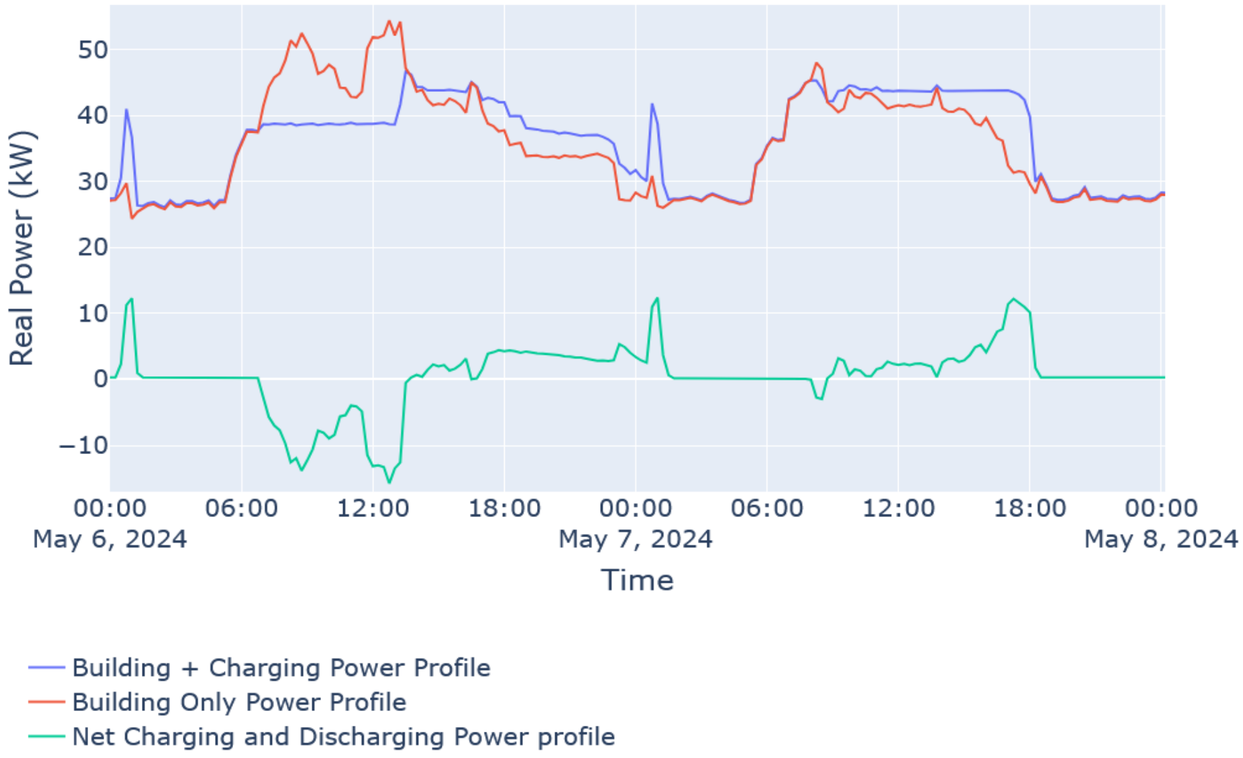
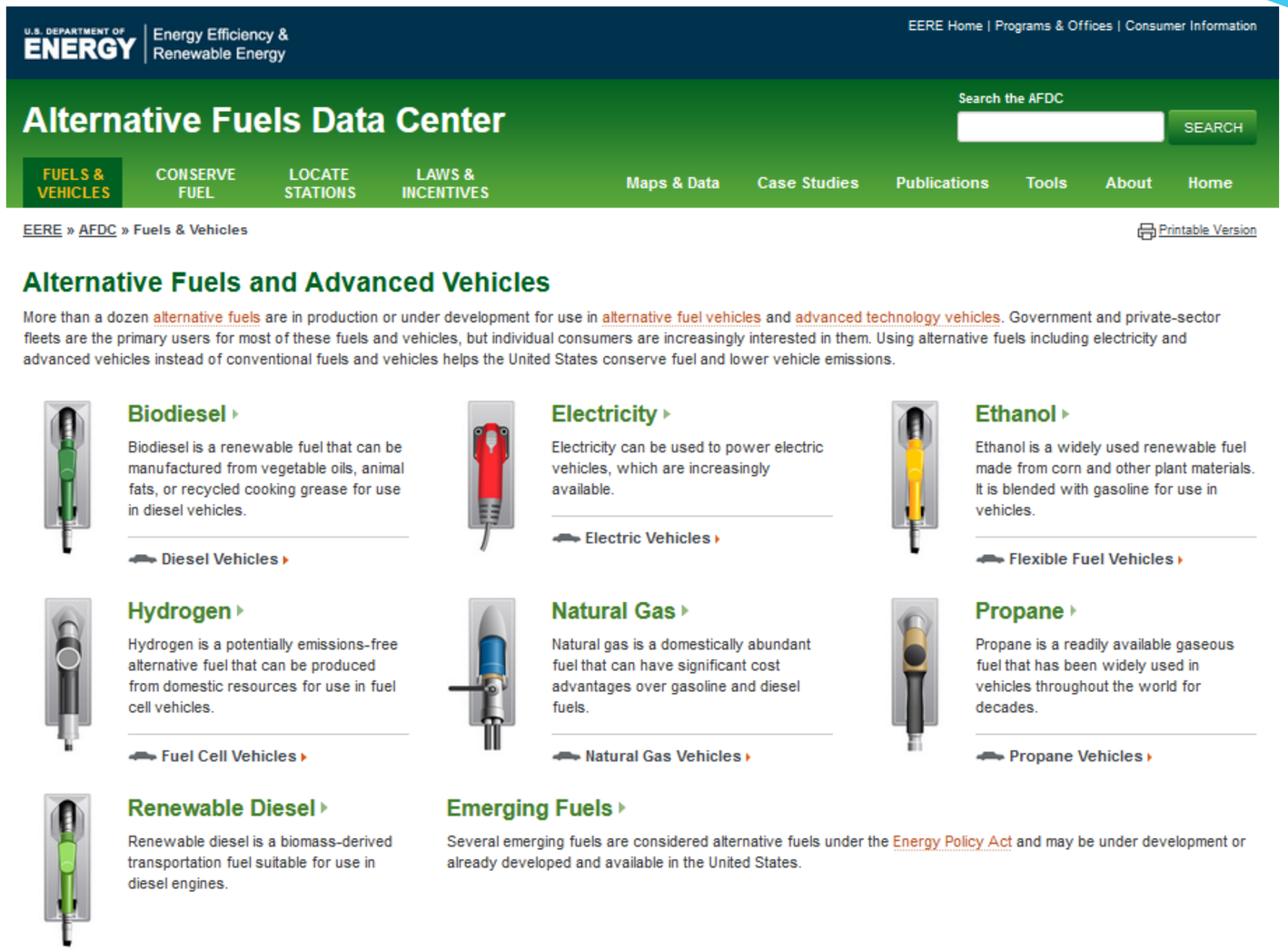


Chart provided by a federal building testing V2G technology.

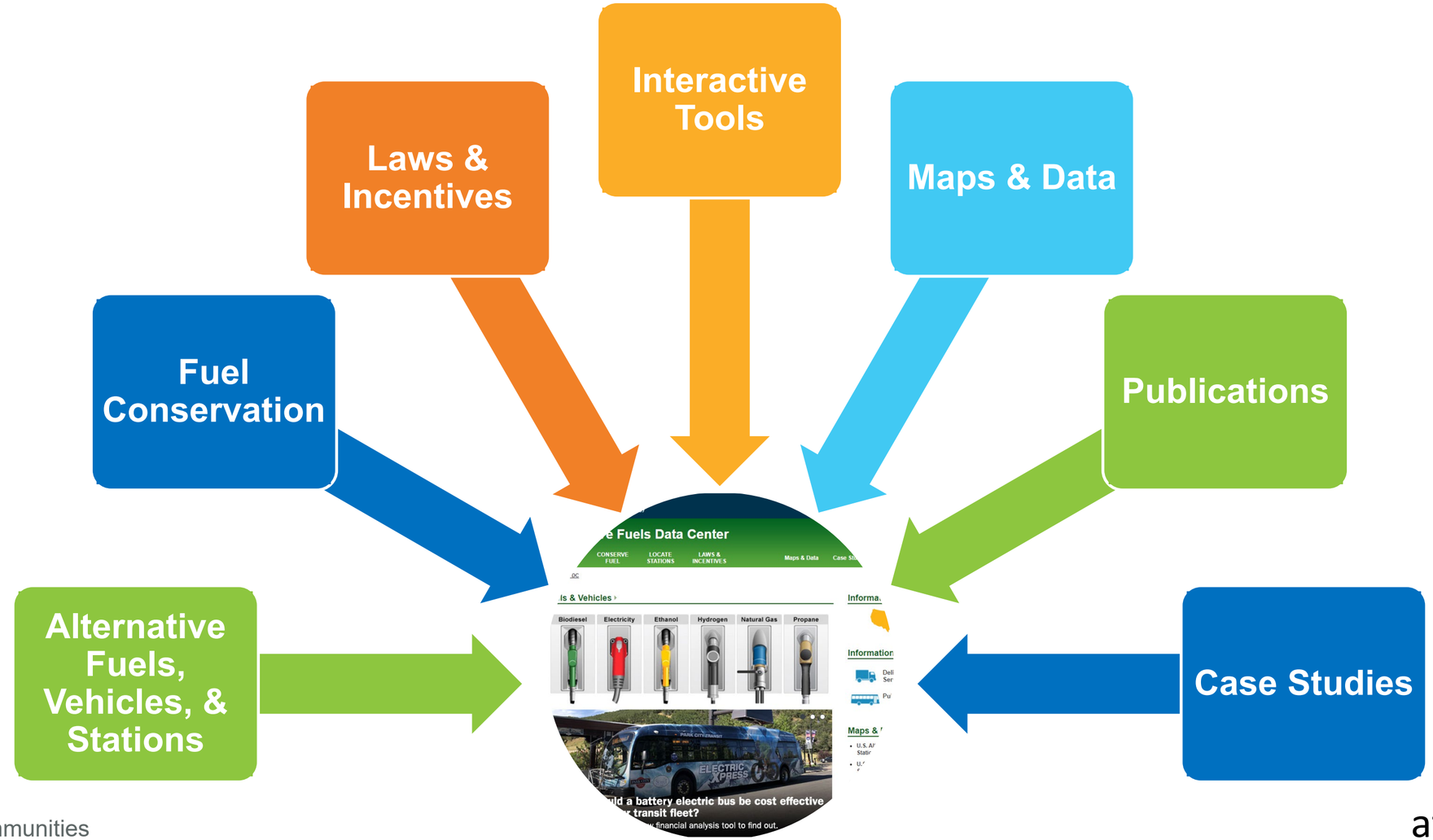
Alternative Fuels Data Center (AFDC)

Alternative Fuels Data Center (AFDC)

afdc.energy.gov



What does the AFDC provide?



afdc.energy.gov

Who uses the AFDC?

Fleet managers

Transportation planners

Fuel providers

Utilities

Clean Cities and Communities coalitions

3 Million
users annually

12 Million
pageviews annually

25 Million
station searches annually

Fact Sheets

ENERGY.GOV
Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Clean Cities and Communities

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Find popular publications related to alternative fuels and vehicles, infrastructure development, emissions, and saving fuel.

About Clean Cities and Communities

- American Recovery and Reinvestment Act: Clean Cities Project Awards
- Clean Cities Coalitions 2022 Activity Report
- Clean Cities Coalitions Overview
- Clean Cities Contacts
- Clean Cities Technical Assistance Project (Tiger Teams)
- Clean Cities: A Model of Collaborative Technology Innovation Built Over 30 Years
- Designing a Successful Transportation Project: Lessons Learned from the Clean Cities American Recovery and Reinvestment Act Projects

New Publications

- Adoption of Plug-in Electric Vehicles: Local Fuel Use and Greenhouse Gas Emissions Reductions Across the U.S
- Clean Cities Coalitions 2022 Activity Report
- Community Charging: Emerging Multifamily, Curbside, and Multimodal Practices

Additional Resources

Find hundreds of publications on

Your go-to source for Clean Cities and Communities publications.
cleancities.energy.gov/publications

U.S. DEPARTMENT OF ENERGY
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Ethanol Basics

Ethanol is a widely used, domestically produced renewable fuel made from corn and other plant materials. Ethanol can be blended with gasoline in different amounts. In fact, more than 98% of gasoline sold in the United States contains ethanol to oxygenate the fuel and help to reduce air pollution.[1] Using ethanol in fuel also helps the nation increase the use of domestic alternative fuels, thereby potentially reducing reliance on imported oil. Gasoline and gasoline blendstocks can also use ethanol as an octane enhancer to increase vehicle performance.

What ethanol blends are available?

Nearly all fuel-grade ethanol is sold as E10, a low-level blend of 10% ethanol, which is approved for use in all conventional light-duty vehicles. E15 (10.5%–15% ethanol) is approved for use in model year (MY) 2001 and newer light-duty conventional vehicles. To use E85, a high-level blend containing 51%–83% ethanol (depending on geography and season), a vehicle must be a flexible fuel vehicle (FFV). Intermediate blends between E15 and E85 are also approved for FFVs. These blends are typically available through blender pumps, which draw fuel from two storage tanks—one containing regular gasoline, and another containing E85. The most common blends are E20 and E30.

Ethanol may be labeled in a variety of ways at the pump. *Photo by Dennis Schroeder, NREL 47090*

What is an FFV?

An FFV, as its name implies, has the flexibility of running on more than one type of fuel. FFVs can be fueled with unleaded gasoline, E85 (flex fuel), or any combination of the two. Like conventional gasoline vehicles, FFVs have a single tank and fuel system. However, FFVs differ in fuel-system materials and control systems to account for ethanol content (Figure 1). There are currently more than 20 million FFVs registered in the United States.[2] However, many FFV owners don't realize their car is an FFV and that they have a choice of fuels. An FFV is often distinguished by an emblem on the back of the vehicle, and some FFVs have yellow fuel caps. To find FFV models, see the Alternative Fuels Data Center's (AFDC) Alternative Fuel and Advanced Vehicle Search (*afdc.energy.gov/vehicles/search/*).

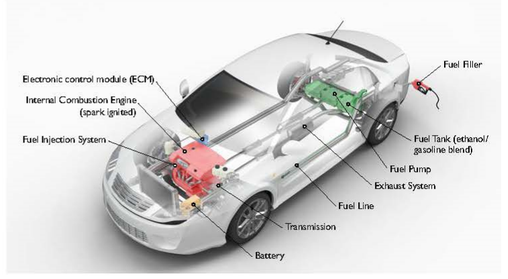


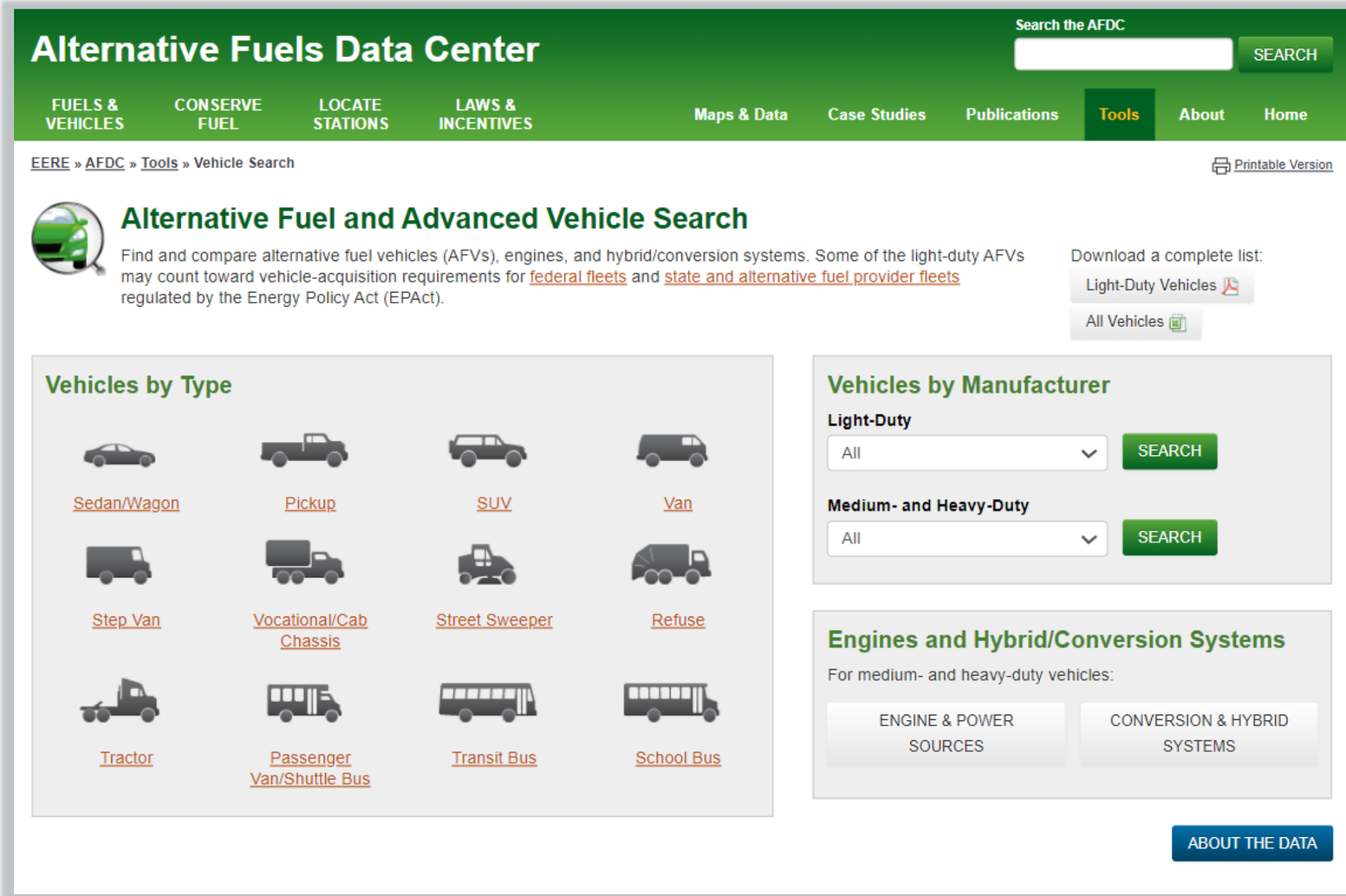
Figure 1. FFV Components. *Illustration by Josh Bauer, NREL*

[1] *Pocket Guide to Ethanol 2017*, Renewable Fuels Association, *http://www.ethanolrfa.org/wp-content/uploads/2017/02/Pocket-Guide-to-Ethanol-2017.pdf*

[2] Vehicle populations were determined using 2016 Polk vehicle registration data purchased by the National Renewable Energy Laboratory.

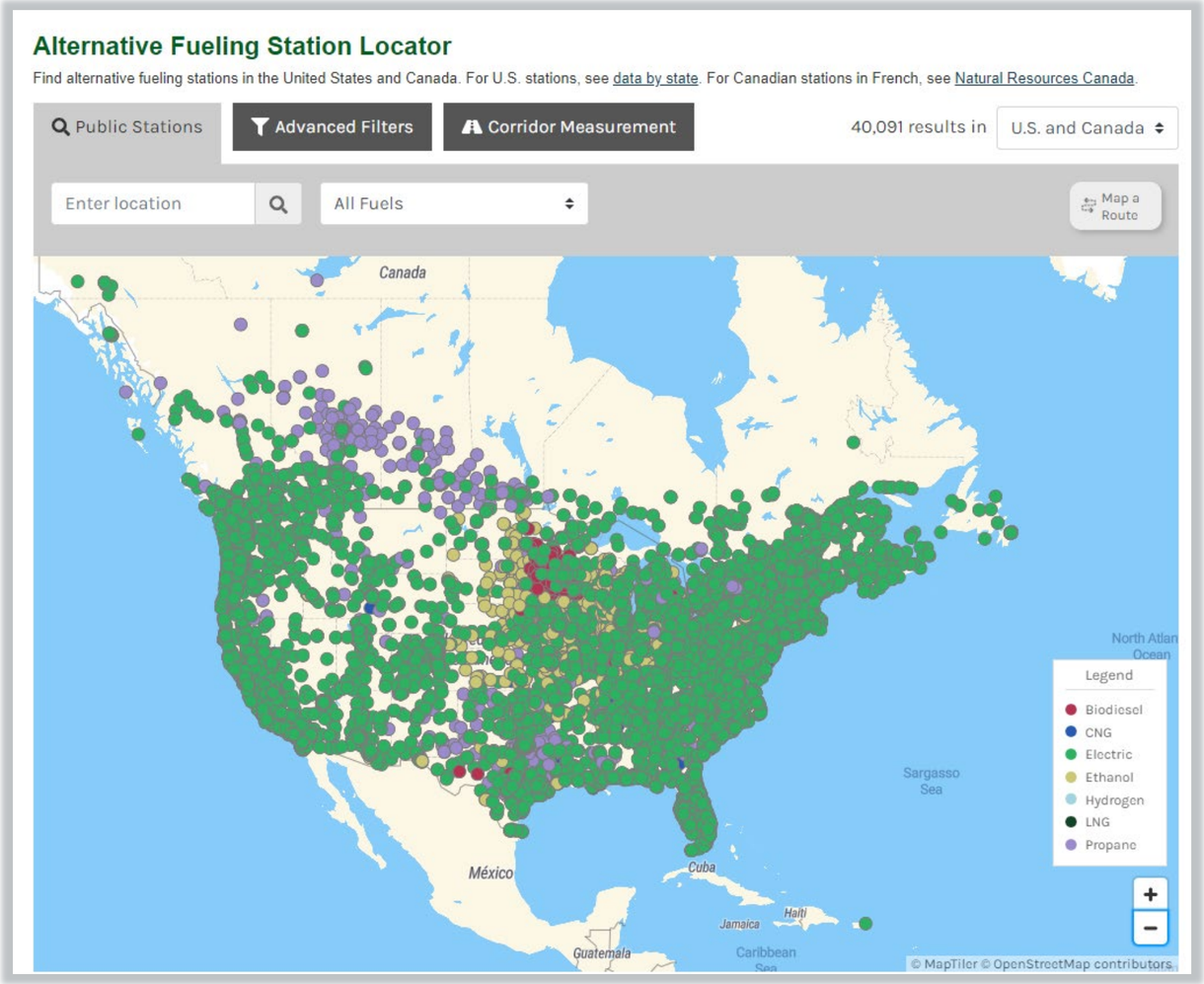
Alternative Fuel and Advanced Vehicle Search

- Compare all classes of alternative fuel vehicles, electric vehicles, and hybrids.
- Website: afdc.energy.gov/vehicles/search

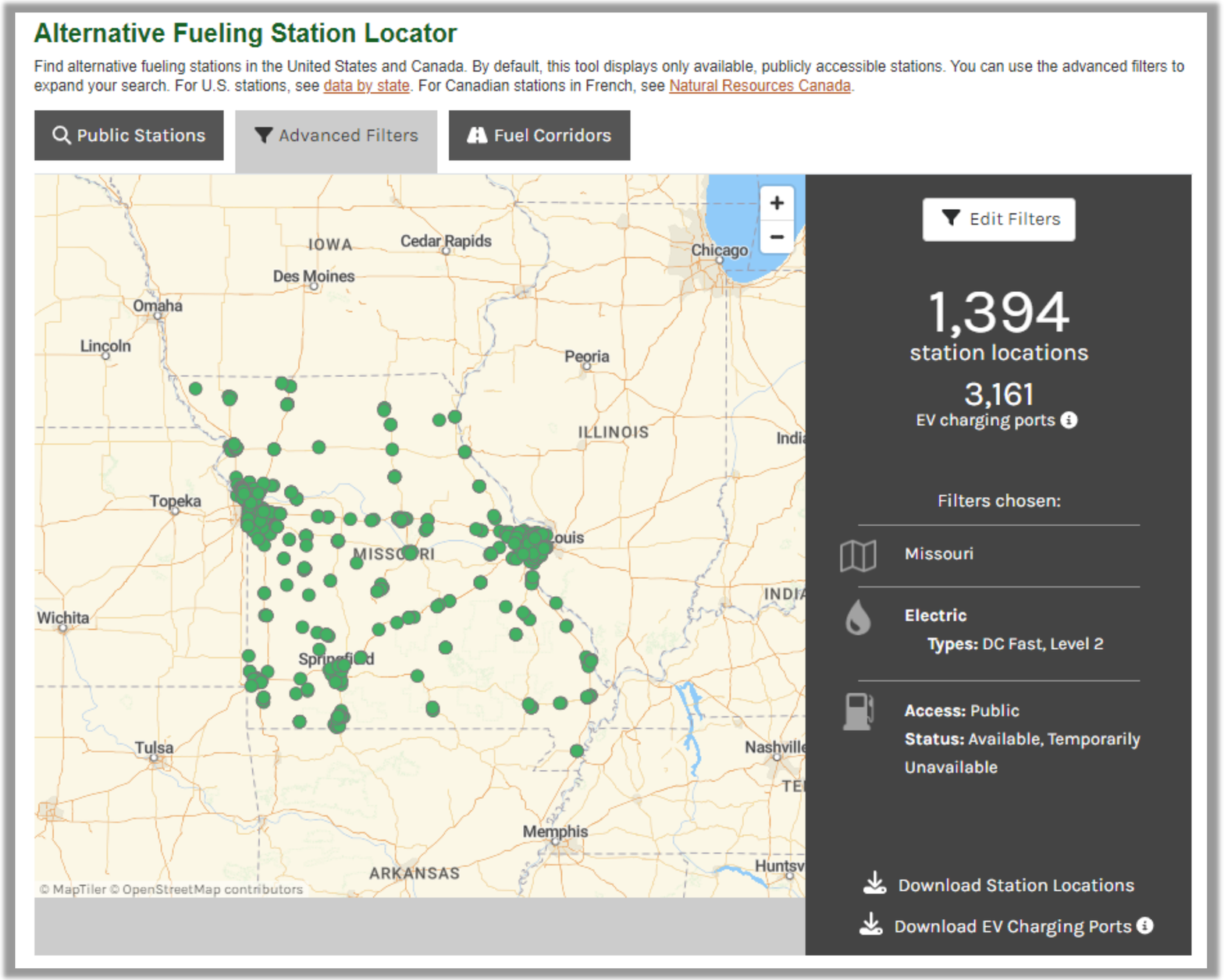


Alternative Fueling Station Locator

- Locate alternative fueling stations and get maps and driving directions.
- Website: afdc.energy.gov/stations

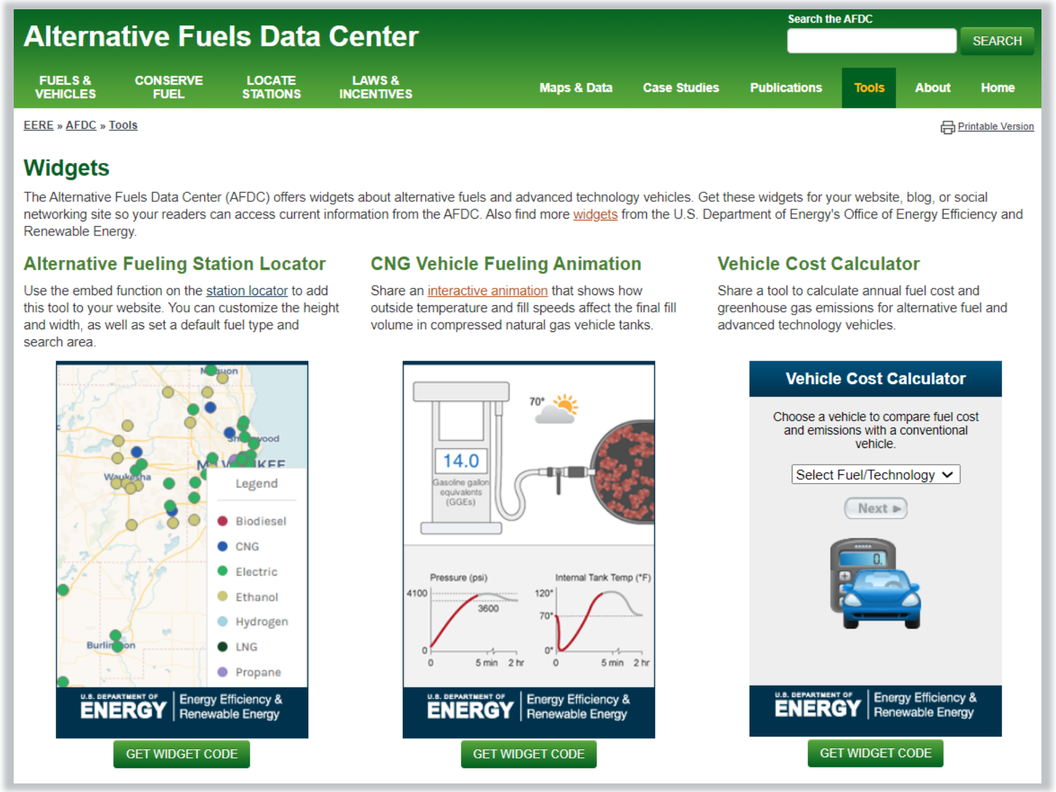


Public EV chargers in Missouri

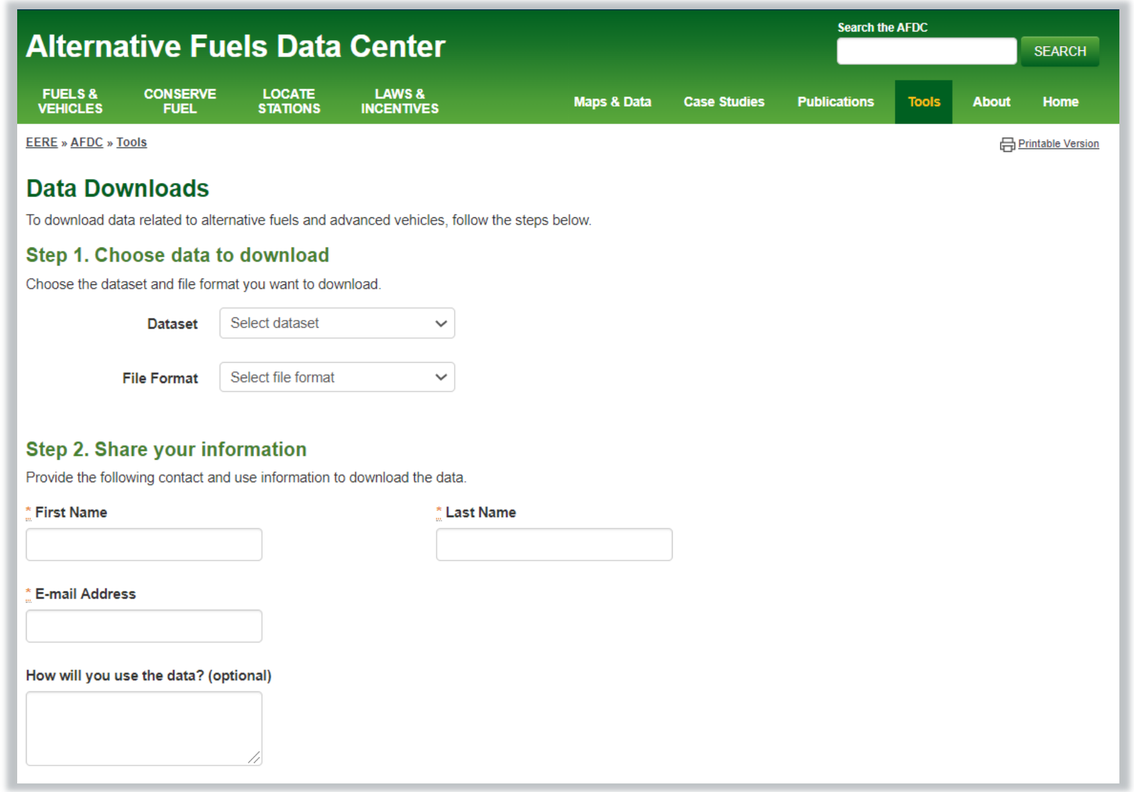


Screenshot taken 1/8/2025

AFDC Data Downloads and Widgets



afdc.energy.gov/widgets

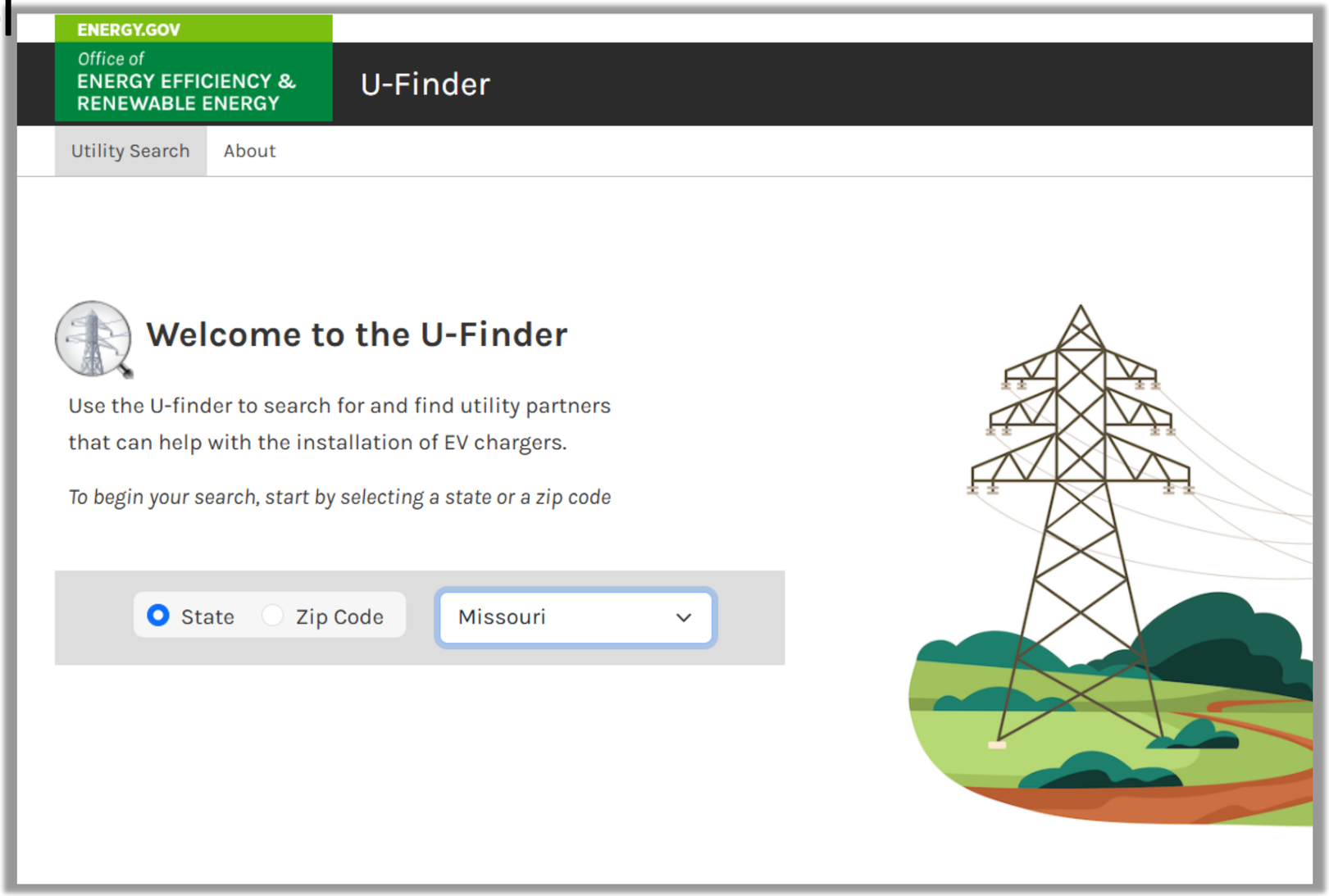


afdc.energy.gov/data_download

developer.nrel.gov/docs/transportation

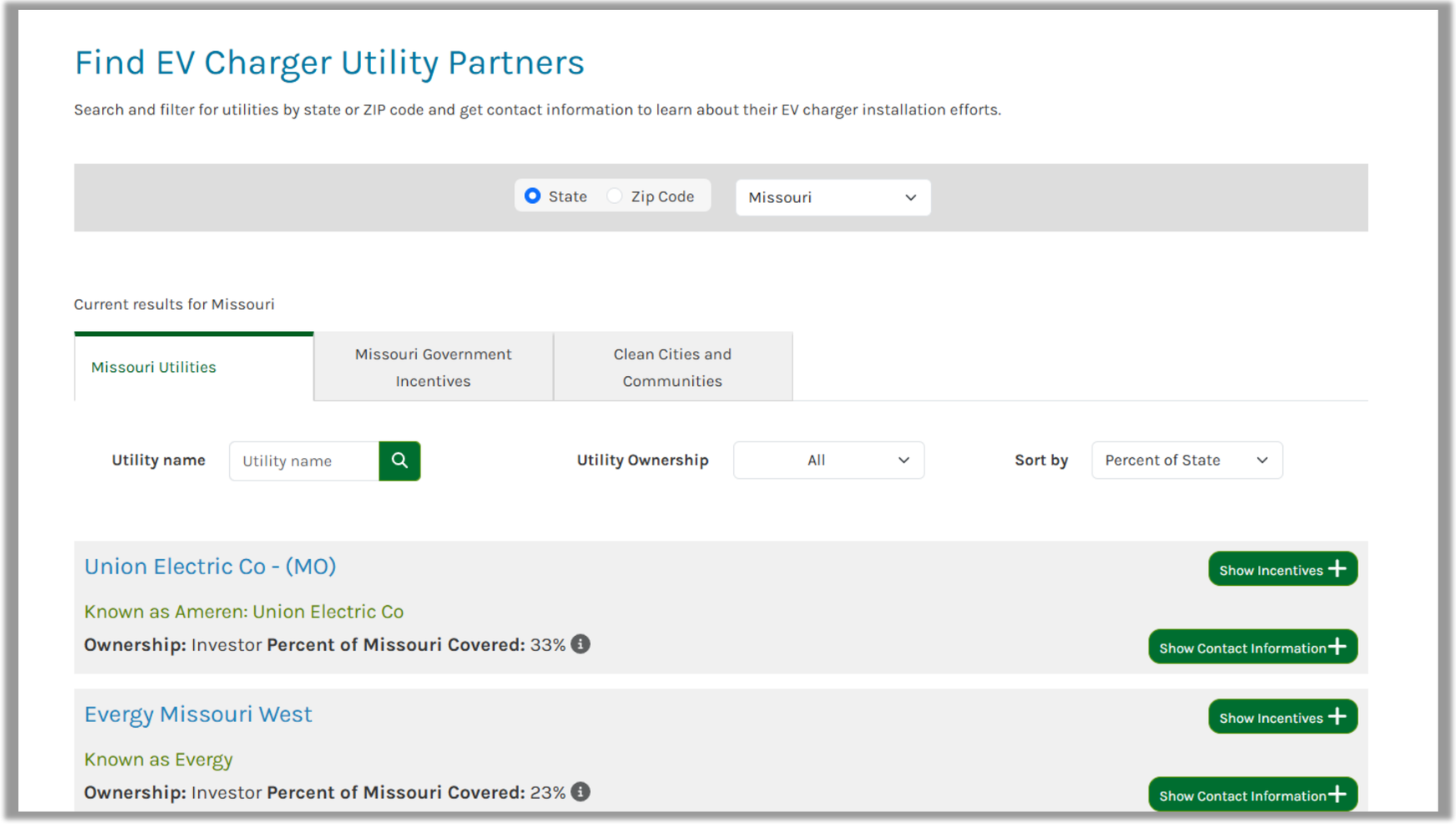
U-Finder Tool

- Search for local utility partners that can help with installation of EV chargers



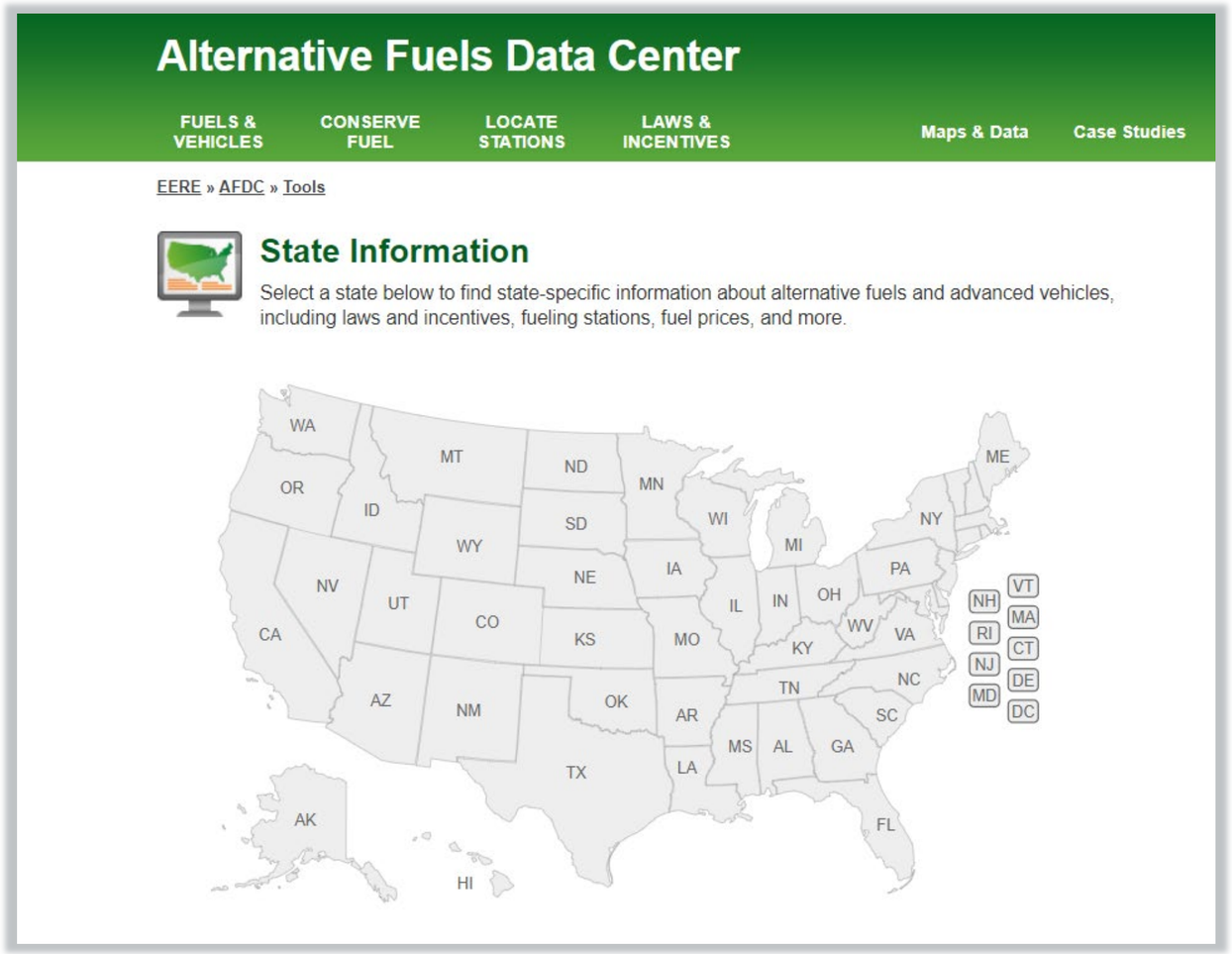
U-Finder Tool

- Find utility and government incentives by state or zip code
- Find utility contact information



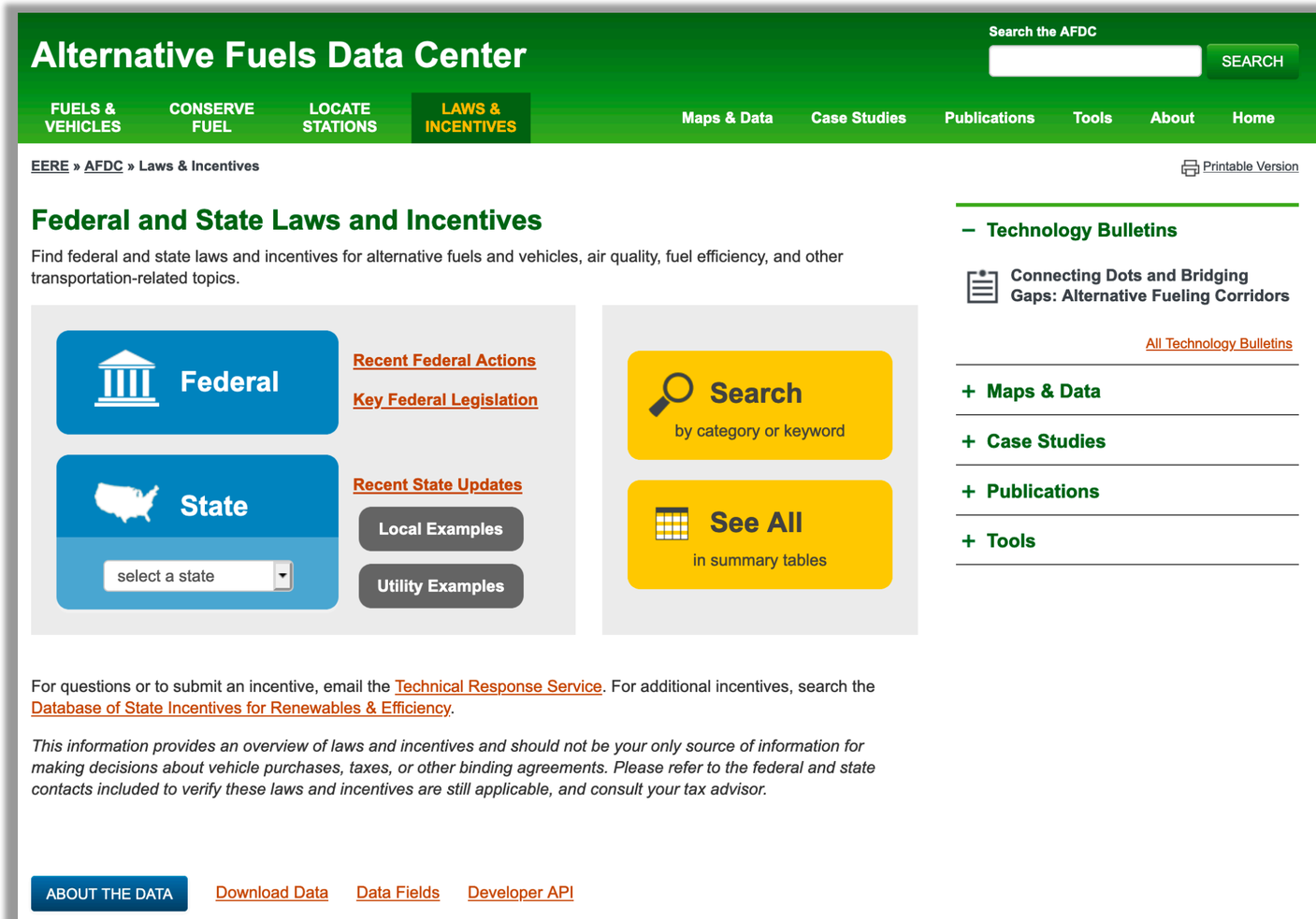
State Information Search

- Find state information about alternative fuels and advanced vehicles.
- Website: afdc.energy.gov/states

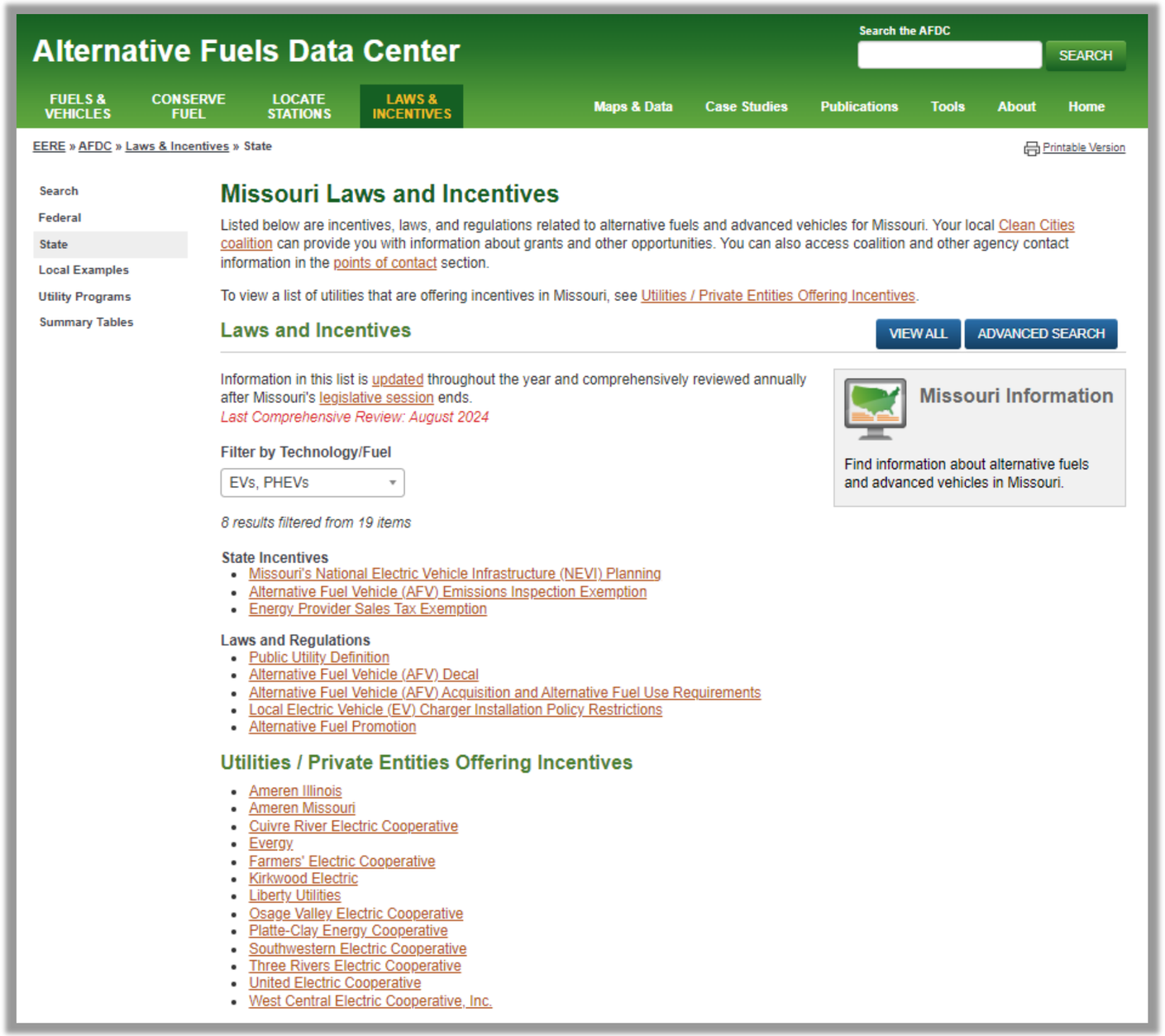


Federal and State Incentives Database

- Find federal and state laws and incentives for alternative fuels and vehicles, air quality, fuel efficiency, and other transportation-related topics.
- Website: afdc.energy.gov/laws

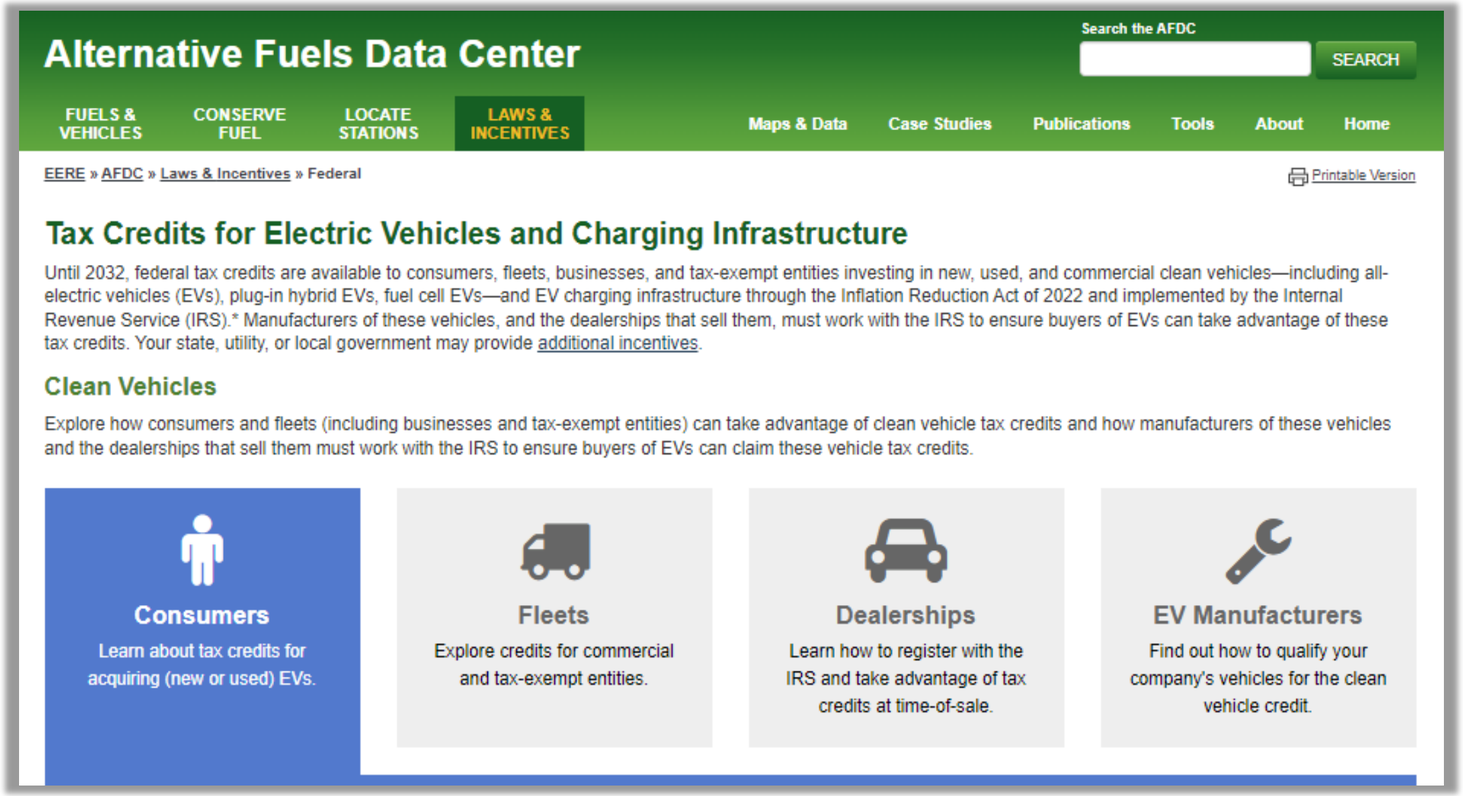


Missouri EV Laws and Incentives Page



Federal Tax Credits for EVs and Charging Infrastructure

- Learn how consumers, fleets, businesses, and tax-exempt entities can take advantage of clean vehicle and alternative fuel infrastructure tax credits.



Contact Information

Sophia Napoletano: Sophia.napoletano@icf.com

PATH TO POWER

Electrification Coalition Fleet Funding Tools

January 16, 2025

Electrification Coalition

ABOUT THE ELECTRIFICATION COALITION

Electrifying transportation for our economic and national security

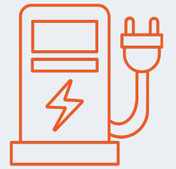
The Electrification Coalition is a nonpartisan, nonprofit organization that develops and implements a broad set of strategies to facilitate the widespread adoption of electric vehicles to overcome the economic, public health, and national security challenges that stem from America's dependence on oil.

ELECTRIFICATION COALITION

Programs Around the United States

Federal Policy

State Policy



Charging Infrastructure Expansion

Fleet Electrification

Electric Freight Consortium

Port Electrification Network

Agenda

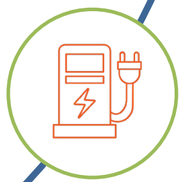
January 16, 2024

Federal Tax Credits

Electric Vehicle Funding Finder

Purchasing Collaboratives

Electric Vehicle Adoption Leadership (EVAL)



Questions

Funding Opportunities & Other Resources

Electrification Coalition

FEDERAL POLICY

EV Incentives

- Commercial Clean Vehicle Tax Credit (30D/45W)
  - Personal vehicles: **$7,500** tax credit
  - Businesses: up to **$7,500** tax credit for light-duty vehicles, up to **$40,000** tax credit for medium- and heavy-duty vehicles
  - Not all manufacturers/vehicles meet eligibility requirements
  - Income and battery materials are not considered when assessing vehicle eligibility

Photo Source: Shutterstock, rights purchased for DC Roadmap

FEDERAL POLICY

EV Incentives

- Alternative Fuel Vehicle Refueling Property Tax Credit (30C)
  - Residential: **30%**, up to **$1,000**
  - Commercial: **6%**, up to **$100,000** per unit
- Elective Pay/Direct Pay
  - Allows **tax-exempt entities**—such as state and city governments and non-profit organizations—to utilize federal tax credits
  - See the EC's Elective Pay page for details

Photo Source: Shutterstock, rights purchased for DC Roadmap

FINDING FUNDING & CREATING POLICY

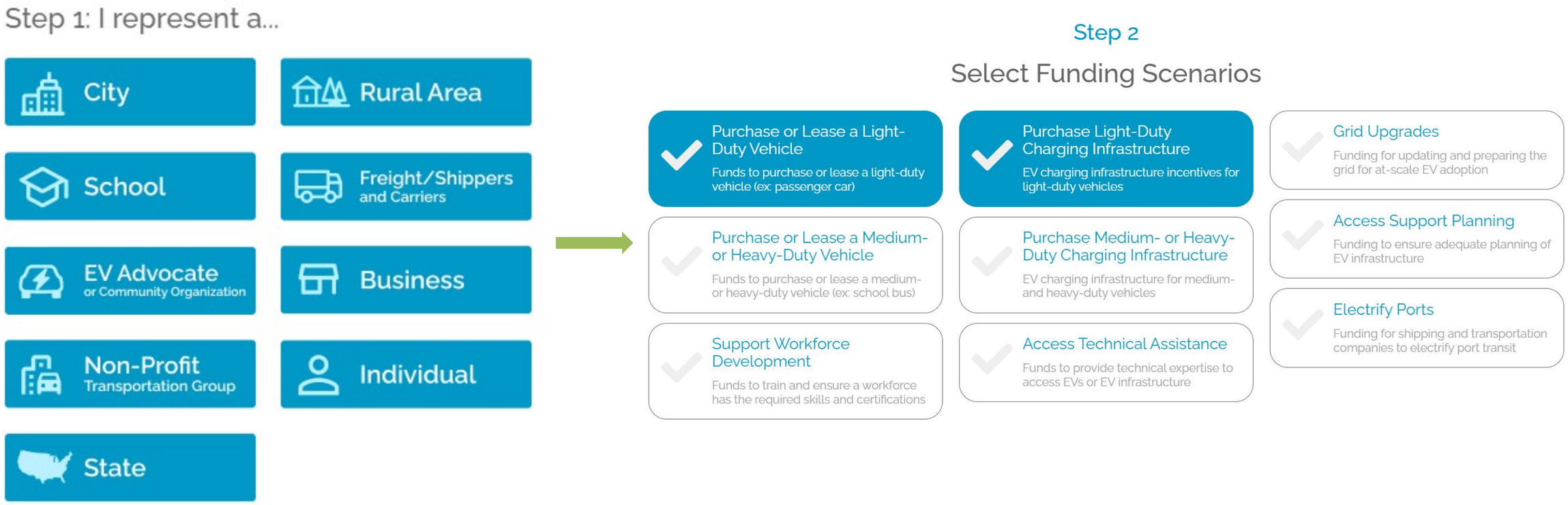
EC Resources

- **Dashboard for Rapid Vehicle Electrification (DRVE Tool)**: customizable, user-friendly fleet electrification tool that generates a personalized total cost of ownership analysis
- **EV Funding Finder**: choose-your-own-adventure style navigator for EV funding opportunities
- **AchiEVe: Model Policies to Accelerate Electric Vehicle Adoption**: toolkit that details the best policies and implementation strategies to accelerate EV adoption

Photo Source: EVgo

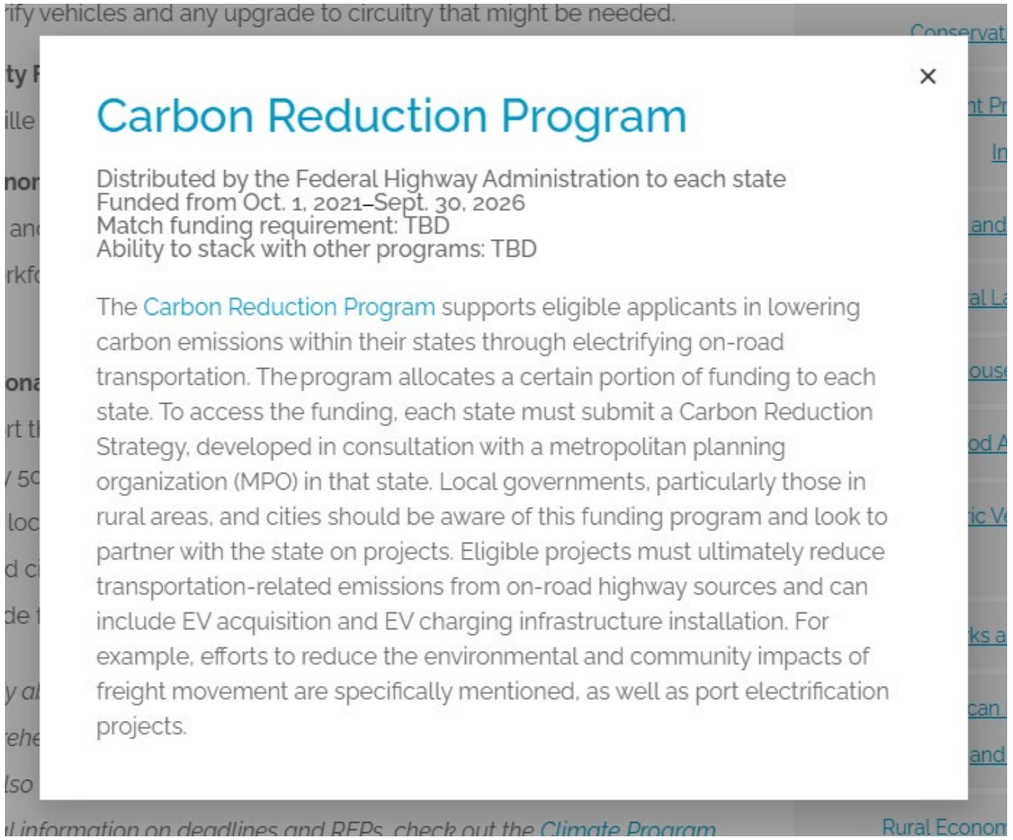
FINDING FUNDING & CREATING POLICY

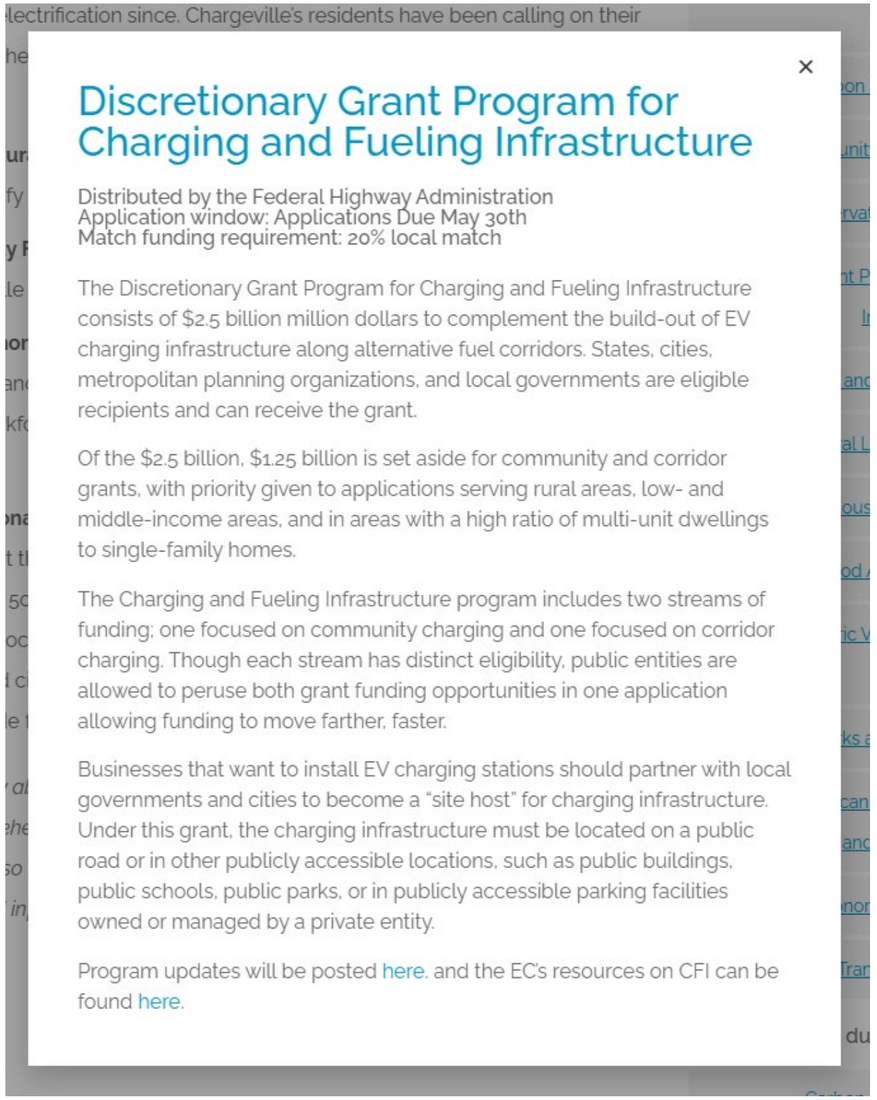
EV Funding Finder



FINDING FUNDING & CREATING POLICY

EV Funding Finder





EV Purchasing Collaborative

Electrification Coalition

What is the EVPC?

- A turnkey, one-stop online procurement portal providing U.S. public entities equal access to **competitively bid for EVs and charging infrastructure**
- All vehicles available through the program have gone through the competitive bid process with Sourcewell, a government purchasing agency
- Partners include the EC, Climate Mayors, Sourcewell, the National Auto Fleet Group, and other organizations
- More information at https://driveevfleets.org/

Photo Source: 2023 EC Events

Who can participate?

Any U.S. public entity, including (but not limited to):

- Cities
- Counties
- Courts
- School districts
- State agencies
- Public universities

Photo Source: Shutterstock, rights purchased for DC Roadmap

How it Works

1 Search for your organization

Confirm you are a Sourcewell member. Even if you have an existing contract with them, it is recommended that you check.

2 Check availability

Visit the National Auto Fleet Group's website to browse the available vehicles and identify which ones you are interested in.

3 Request a quote

Fill out your information in the form on the website to receive a quote.

4 Order and receive your EVs

Place your order via the website and wait for delivery of your vehicles!

Examples of Available EVs

2024 Ford Mach-E

MSRP: $43,495

226 miles

2024 Ford E-Transit

MSRP: $46,890

215 miles

2024 Ford Lightning

MSRP: $54,995

230 miles

Photo Source: EV Purchasing Collaborative

Other Services Provided

- Resources on EVs, EV policies, case studies, and procurement
- Contacts for medium- and heavy-duty electric chassis and equipment procurement
- Electric school bus automaker contacts
- Vendors for charging station solutions at a discount
- Contact for managed and leased fleet solutions

Photo Source: Shutterstock, rights purchased for DC Roadmap

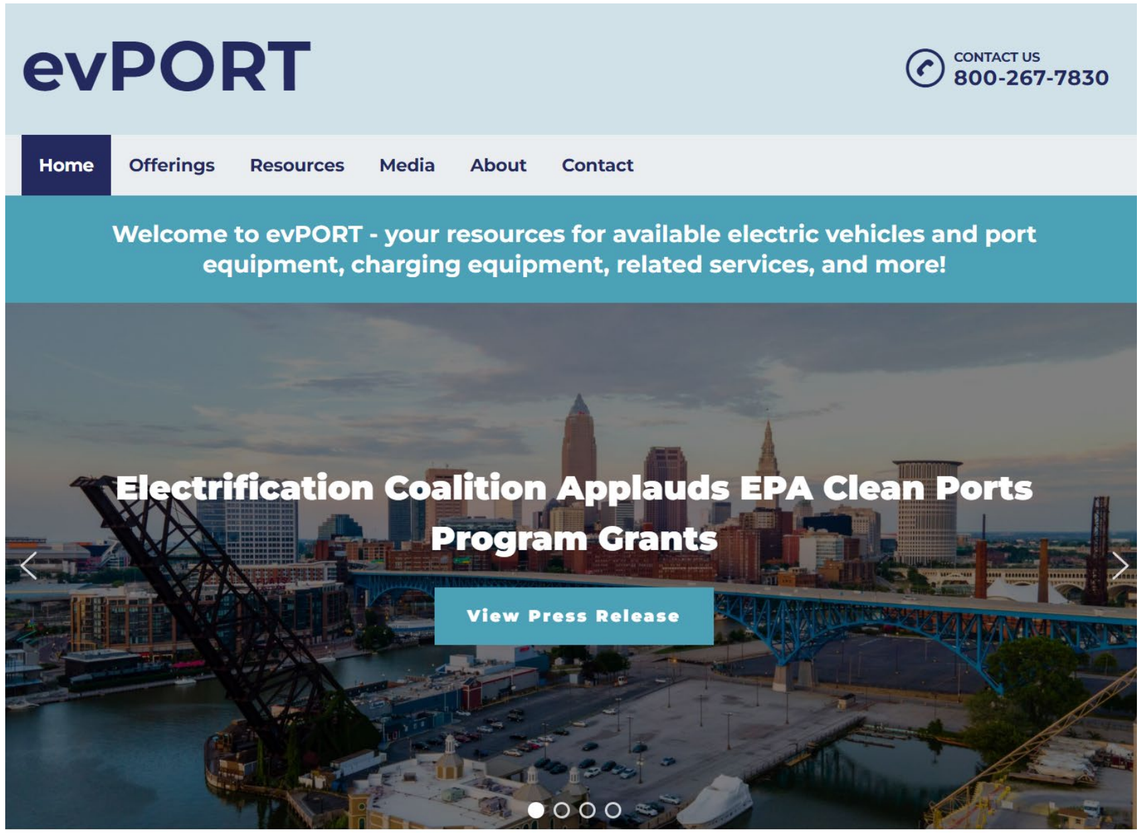
Other EV Deployment Programs

Ports and Workplace Deployment

Electrification Coalition

evPORT

- A collaborative purchasing portal for electric vehicles and related equipment at ports
- Includes medium- and heavy-duty vehicles, forklifts, utility vehicles, and charging infrastructure vendors
- More Sourcewell contracts to come
- Check it out at evport.org!



Electric Vehicle Adoption Leadership Certification

Get EVAL certified!

- Backed by the **U.S. Department of Energy** and run in collaboration with Forth, Plug In America, EVNoire, and other partners
- Seeks to **advance workplace charging** by recognizing the critical role that workplaces play in charging access
- Offers **technical assistance** and other resources to organizations facilitating access to clean commute options, including EVs
- **Nationally recognized certification** that distinguishes employers leading the charge to increase U.S. energy security and lower emissions

Questions?

Electrification Coalition

Electrification Coalition

Jill Goldwasser

Policy Associate

jgoldwasser@electrificationcoalition.org

ElectrificationCoalition.org

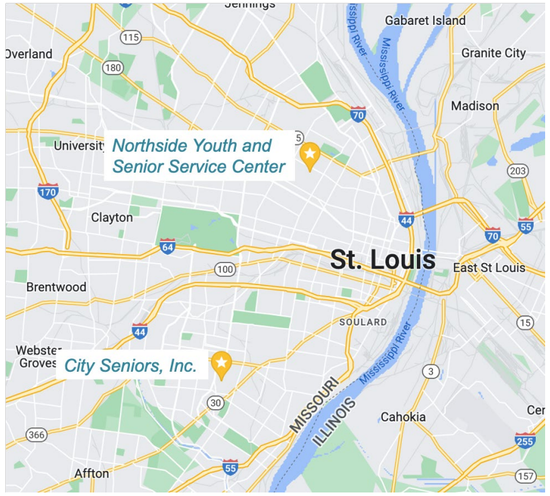
Electric Vehicle Experience

Jennifer Bess, Executive Director

jbess@stlouiscityseniors.com

www.stlouiscityseniors.com

SiLVERS: St. Louis Vehicle Electrification Rides for Seniors



- The SiLVERS program provided five all-electric Chevy Bolts to two senior centers (Northside and City Seniors, Inc.)
- EVs are used to provide rides and deliver meals to seniors
- **Objectives:** Increase EV adoption and reduce transportation-related operating expenses for social service agencies, showing that:
    - EV fleets can save community-based organizations money and improve service delivery
    - EV chargers can serve both CBO fleets, as well as staff and community members
    - Pilots like this can accelerate regional EV adoption
    - With tools and best practices based on this model, SiLVERS can be replicated by CBOs and social service agencies nationwide

OPERATIONS

- **Components of SiLVERS**

  - 5 new Electric Vehicles for the fleet
    - 3 at Northside Youth and Senior Service Center
    - 2 at City Seniors, Inc.
  - Car insurance covered through Forth
  - 5 EV chargers to be used in the fleet and by the public
    - Chargers, installation, maintenance and operation covered by program
  - $25,000 for each CBO personnel time
    - Over 3 years, covers personnel time for training in the program and promotion to community

2020 Chevrolet Bolt Hatchback

Charging Stations

Meal Delivery

- 6300 Meals monthly = 75,600 annually
- 315 persons served monthly = 510 annually

Electric Vehicle Transportation

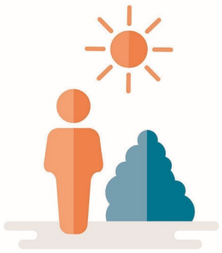
- 100 rides monthly = 1200 annually
- 450 possible passengers

RESULTS (through June 2023)

FORTH Empowering Mobility

100,765
meals delivered

2,055
rides provided



460
unique individuals received rides

45,000+
lbs of CO2 saved

28451.060 KWHs
Total Energy

or

45521.696
Metric lbs of CO2 saved

=

CO2 Emissions From:

2276.1
Gallons of gasoline

22163
Pounds of coal burned

Greenhouse gas emissions avoided by:

5.690
Tons of waste recycled instead of landfilled

Carbon sequestered by:

25.606
Acres of U.S. forests in one year

Improved Business Model

- Home Delivered Meal Drivers upgraded from using personal vehicles to electric vehicles for meal delivery.
- Annual fuel reimbursement cost savings $5000 to staff

- **<u>Annual Costs:</u>**
- Insurance - $2000
- Electricity - $1700
- Registration tags - $30
- Electric Vehicle Decal - $120
- Repairs – tires $300
- Charging station repairs - tbd

The Culprit in our Story

- Charging station worked intermittently from the start
- Extreme weather

  Hot – above 95

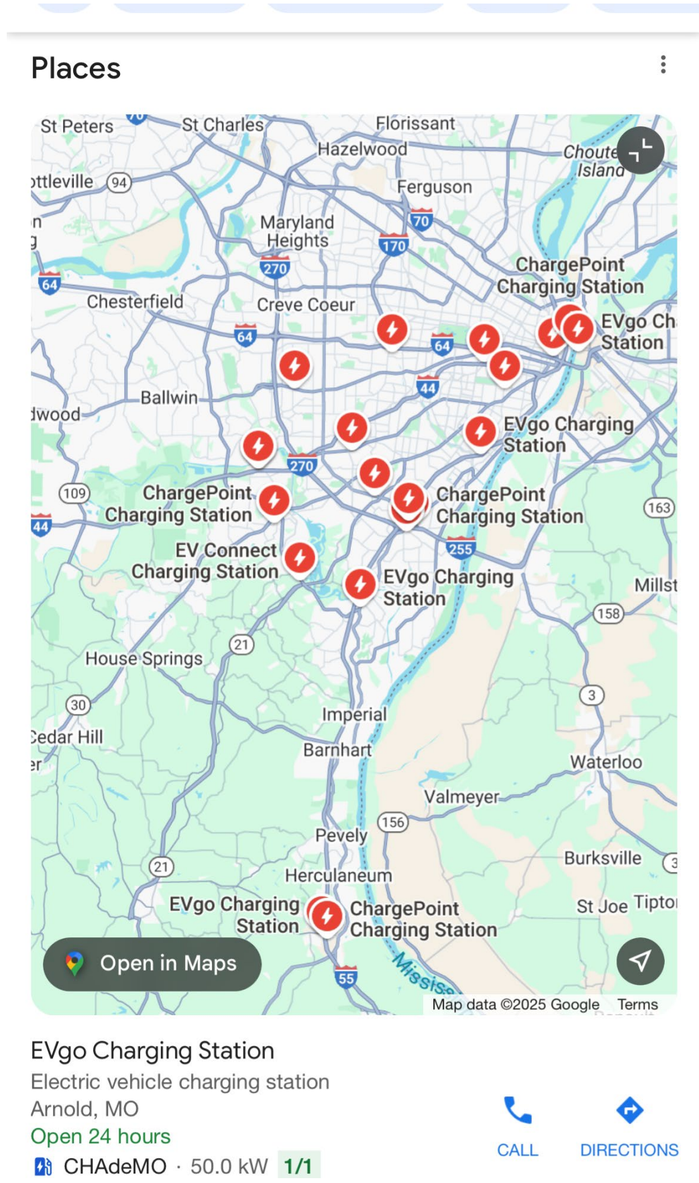
  Cold – below 32
- electrical issues

EV Box

AMP UP

What to do when you have a Charging Emergency

- Google EV stations
- Choose a suitable one that is public
- Take your credit card
- Take a book and/or make sure your phone is charged - this will take an hour or so depending on the charger and your immediate battery need



The Consistent Hero of our Story The Electrical Tower

Other findings:

- Regenerative breaks charge the battery enough to help in a pinch
- As long as you do not accelerate while coasting system will put you into a recharge mode
- Don’t handle well in snow and ice

STAFF AND CLIENT EXPERIENCE

Staff Feedback from Survey

“This is a great program, and we're excited for a possible "SiLVERS V2" where hopefully we can find funding to expand the capacity of the program so more seniors can take rides. Thank you for the partnership!”

“Passengers have enjoyed the quiet, smooth rides that the EVs provide. The drivers enjoy not having to go to the gas stations as often when they’re able to use the EVs.”

“It has made me consider my next vehicle purchase being EV.”

“The EVs have been very useful and have saved on fuel costs.”

Client Feedback

“Smooth ride, getting in/out is easy.”

“I like, no I love the electric vehicle. It’s smooth.”

Questions?

Ranken Technical College

Andy Jesse

Chris McNeally

Chris Mitchell

Ronnie Raines

William Stewart

Mike Whitcraft

Thank you, speakers!

Thank You for Attending!

Please complete our final survey about your experience

EASTERN MISSOURI
ALLIANCE FOR CLEAN TRANSPORTATION