

EVI-LOCATE

EVSE Planning Tool and Cost Estimator

Problem and Objective

Problem Statement: Design costs and timelines add significantly to EVSE installation scope

Objective: Simplify the EVSE design and cost estimation process with a web tool

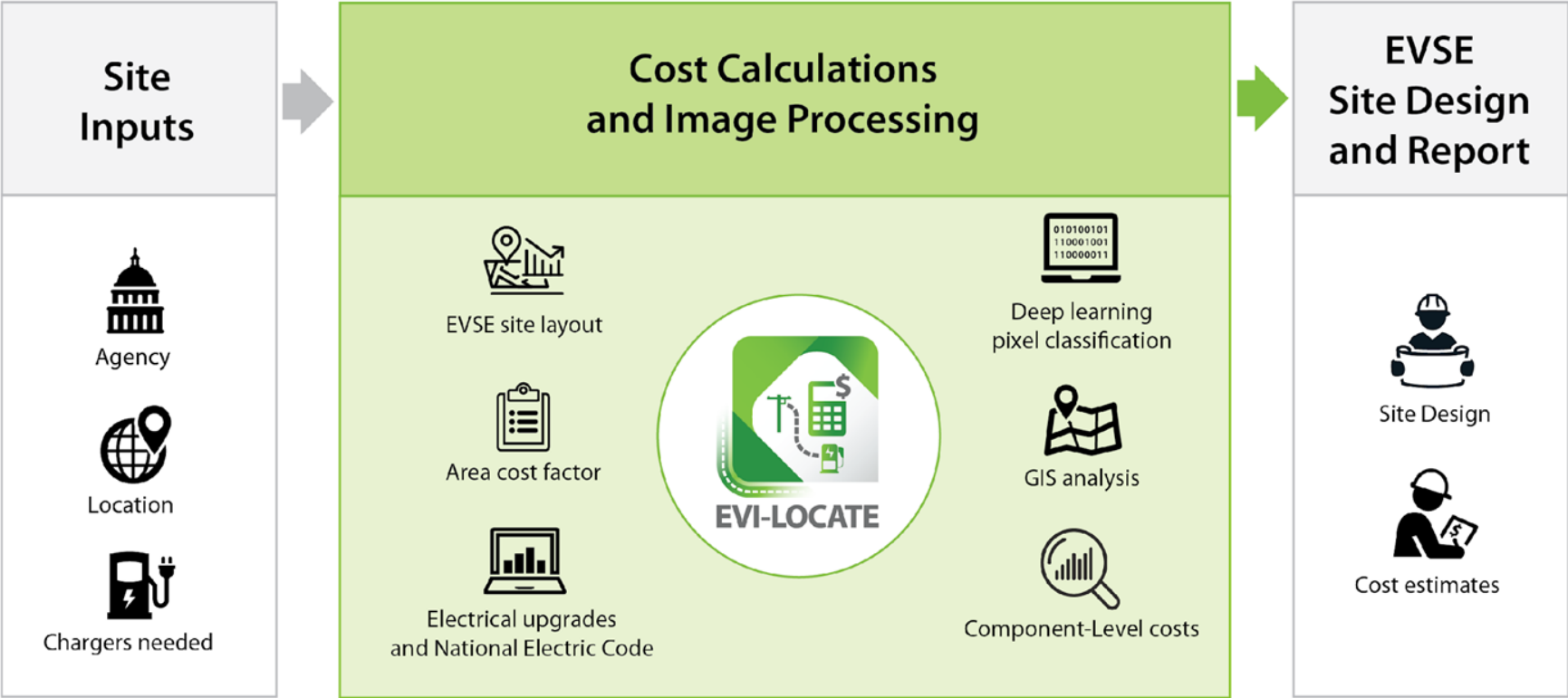
EVI-LOCATE (Electric Vehicle Infrastructure – Locally Optimized Charging Assessment Tool and Estimator)

Plan charging
station
deployments

Assess site-
specific
electrical needs

Calculate local
project costs

EVI-LOCATE: EV Charging Station Design Tool



Project Team



Fort Carson



PMRF



Camp Lejeune

Funders



Access

- Website: <https://evi-locate.nrel.gov>
- Email: evi-locate@nrel.gov
- Federal employees can sign up for accounts directly
- Federal contractors need to email evi-locate@nrel.gov with Federal EVI-LOCATE users CC'ed

Request a New Account

Account Information

Email

First name

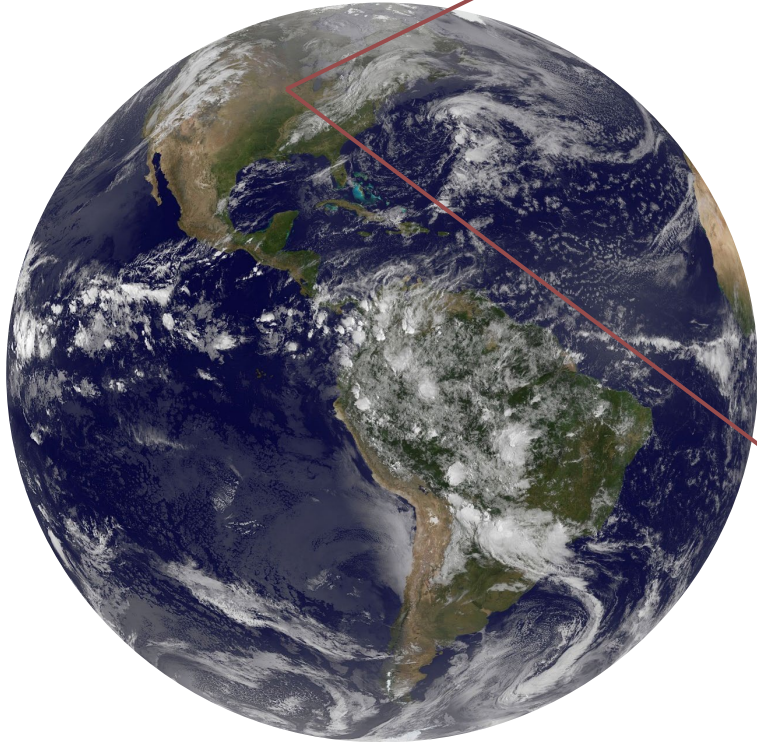
Last name

Phone

Password

Password confirmation

EVI-LOCATE Site Tour





Welcome to EVI-LOCATE

The Electric Vehicle Infrastructure-Locally Optimized Charging Assessment Tool and Estimator (EVI-LOCATE) is a comprehensive design tool to get you started on your electric vehicle supply equipment (EVSE) charging station deployments plans from layout to cost estimates.



Here are some key points to help you get started:

1. Charger requirements (desired number of charging ports and power level)
2. Existing utility assets (transformers and service panels that might connect to your chargers)

It is fine if you do not have all the information now. Your work will be saved, you can come back and edit your project later, and you can review sticking points with EV charging experts at NREL. Contact us at evi-locate@nrel.gov if you have any questions.

EVI-LOCATE is currently available only to federal users with a valid email address.

Log in to Get Started

Email

Password

Login

[Sign up for a New Account](#)
[Forgot Password](#)

Site Selection

Select
Agency

Select State

For
Department
of Defense
> Select
Base

Select your Agency

Pick from the Agency list below.

This should default to the agency that you registered with, but some folks may represent multiple agencies.

Defense Agency

Select your Agency

-- National Average --

Army - Anniston Army Depot - Alabama

Army - Fort Rucker - Alabama

Air Force - Maxwell Air Force Base - Alabama

Army - Mobile - Alabama

Navy - Mobile Area - Alabama

Army - Montgomery - Alabama

Army - Redstone Arsenal - Alabama

Army - Anchorage - Alaska

Air Force - Clear Air Force Base - Alaska

Air Force - Eareckson Air Force Base - Alaska

Air Force - Eielson Air Force Base - Alaska

Army - Fairbanks - Alaska

Army - Fort Greely - Alaska

Army - Fort Wainwright - Alaska

Air Force - Joint Base, Elmendorf - Alaska

Air Force - Davis Monthan Air Force Base - Arizona

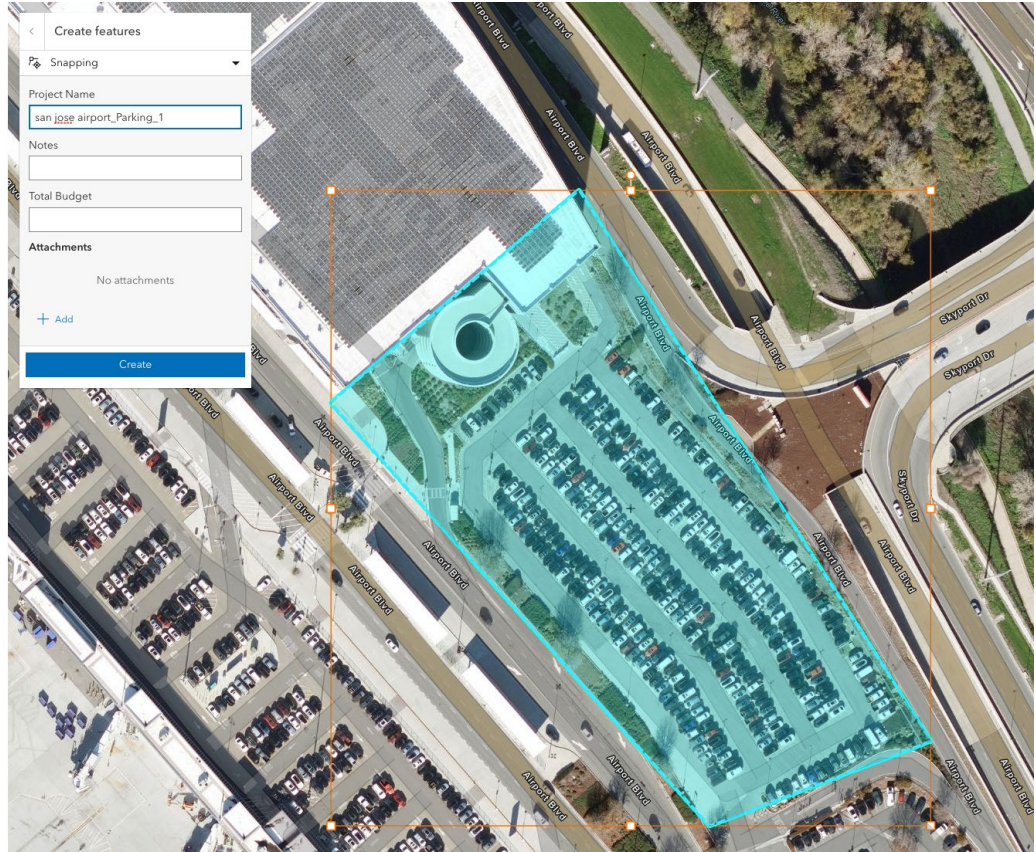
Army - Fort Huachuca - Arizona

Air Force - Luke Air Force Base - Arizona

Define Site Boundary

Define Site

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



Select EVSE Type

Select EVSE Charger Template

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

Create EVSE Configuration Template

Charger Level Clear Selection
Level 2

Mount Type Clear Selection
Pedestal

Number of Ports Clear Selection
Dual

Network? Clear Selection
Yes

Manufacturer

- ✓ ATOM POWER
- BTC POWER
- CHARGEPOINT
- EFACEC USA
- EVOCHARGE
- EVSE LLC
- GARAGE JUICE BAR LLC
- JUICEBAR
- LIVINGSTON ENERGY GROUP
- LOOP INC
- POWERCHARGE
- SEMCONNECT
- Generic

Electric Vehicle Supply Equipment (EVSE) Type Selection

If you would like to select a generic EVSE for planning purposes, select it from the dropdown menu below, available through GSA's EVSE blanket purchase agreement.

EVSE Type:
Generic Level 2 Dual Port Pedestal

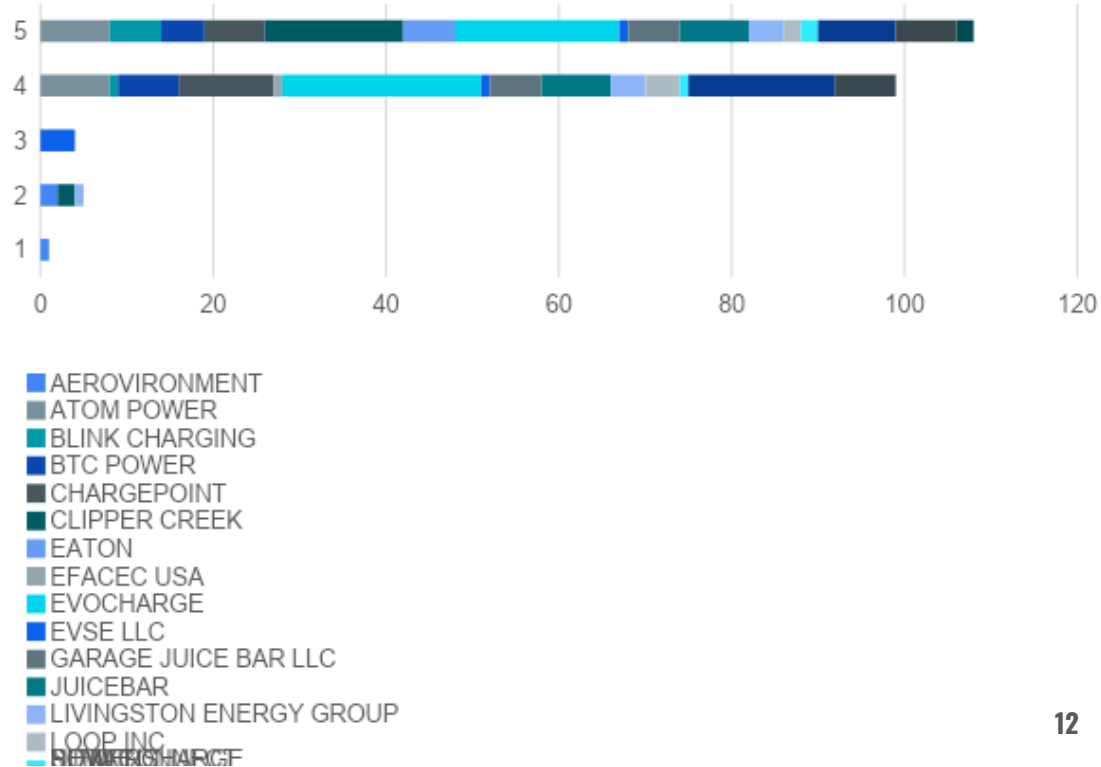
EVSE Template Details

Charging Level: Level 2
Manufacturer: Generic
Model Number: Generic
Unit Price: \$5,300
Network Provider: NA
Annual Network Cost: NA
Number of Ports: Dual
Mounting Type: Pedestal
Ampere: 45
Purchase Availability:

*EVSE: electric vehicle supply equipment

EVSE: Behind the Scenes

- All AC Level 1 and Level 2 options from GSA Blanket Purchase Agreement are available in tool
- Generic selections use median values

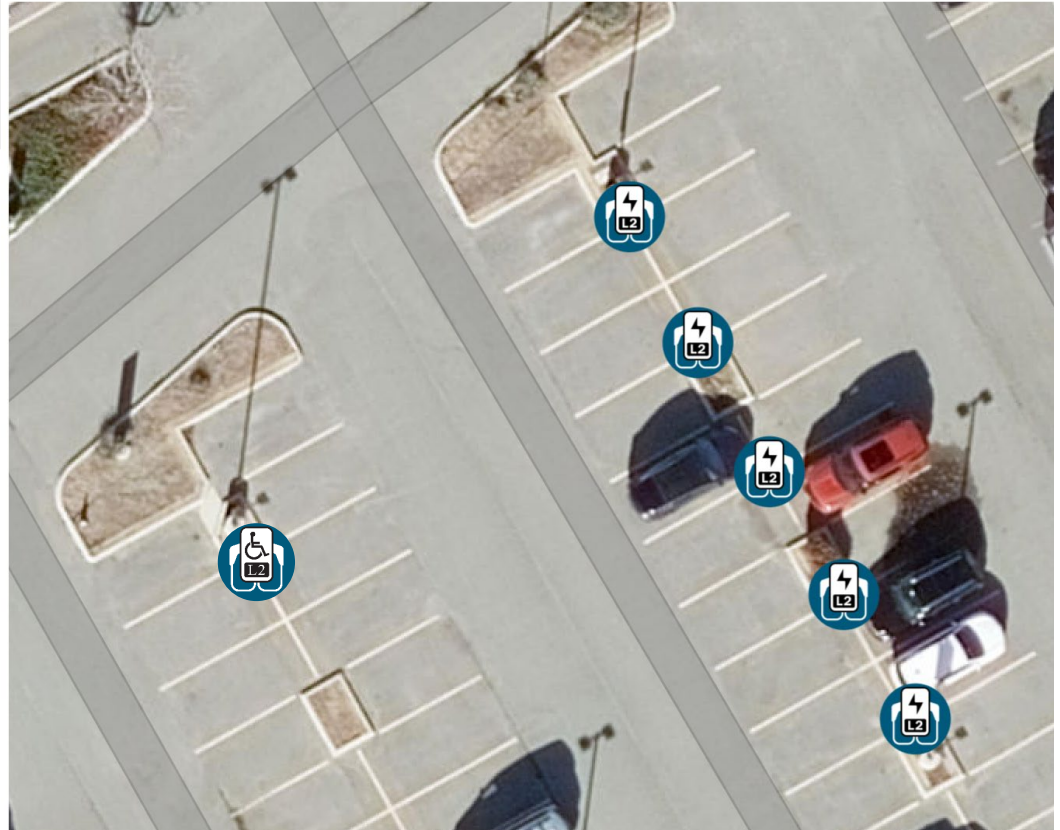


Locate Chargers

Drop Chargers on Map

- Currently users can only select AC Level 1 and Level 2 uni-directional chargers
- Working on DC fast chargers and bidirectional chargers

Total of new **Generic Level 2 Dual Port Pedestal** EVSEs Added: 5



Manage Transformer

These questions will help you identify whether you need a new transformer to support EVSE charging stations or have sufficient physical and electrical capacity to use a new transformer if you would like.

Would you like to include Transformer costs in your project estimate? [?](#)

Yes No

Details

EVSE Charger Level: Level 2

Total Number of EVSE Ports: 16

Amperage: 45

Power Factor: 0.95 [Edit](#)

Loading Limit: 85% [Edit](#)

Do you want to add a new transformer or upgrade an existing transformer?

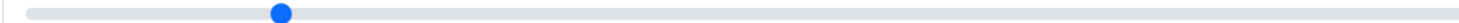
Add New [?](#) Upgrade Existing [?](#)

What is the secondary voltage rating for the existing transformer? [?](#)

208V

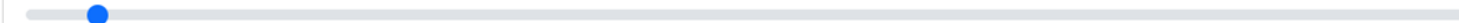
What is the rating (in kVA) of the existing transformer? [?](#)

200 kVA



What is the total peak load (in kVA) drawn from the existing transformer? Must be less than 170 (existing rating x loading limit) [?](#)

50 kVA



Success! Your existing transformer appears to have sufficient capacity to connect the EVSE charging stations that you would like to install. Therefore, EVI-LOCATE recommends connecting the EVSE charging stations to this transformer and that a new transformer is not required.

EVI-LOCATE Transformer Page

Transformer Questions

Determine Transformer Needs

- Default power factor (0.95) and loading limits (0.85) can be updated
- Transformer rating?
- Secondary voltage rating?
- Existing peak load?



Edit options

Power Factor: 0.95

Loading Limit: 85%

Update Cancel



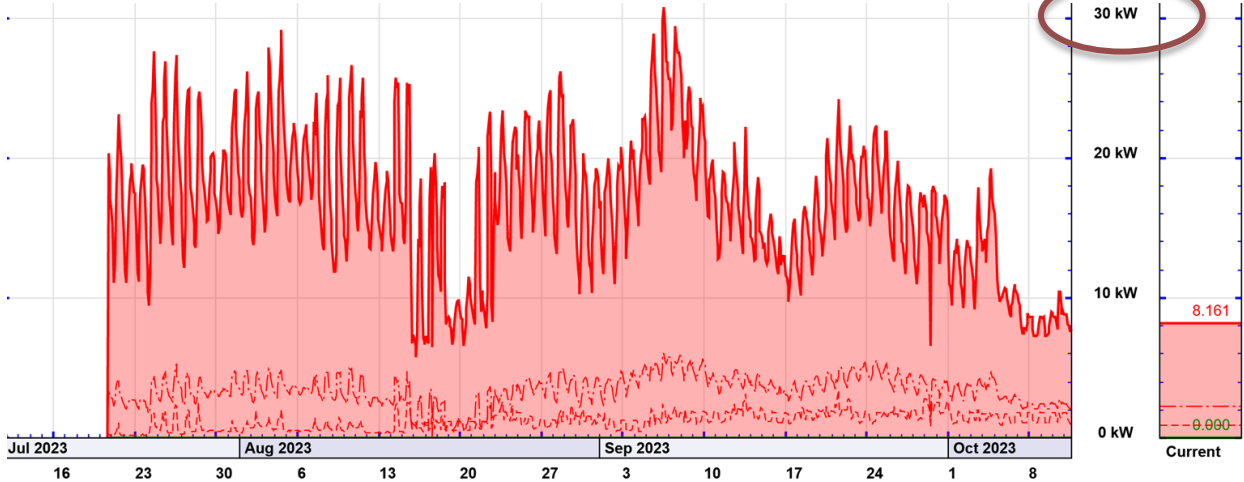
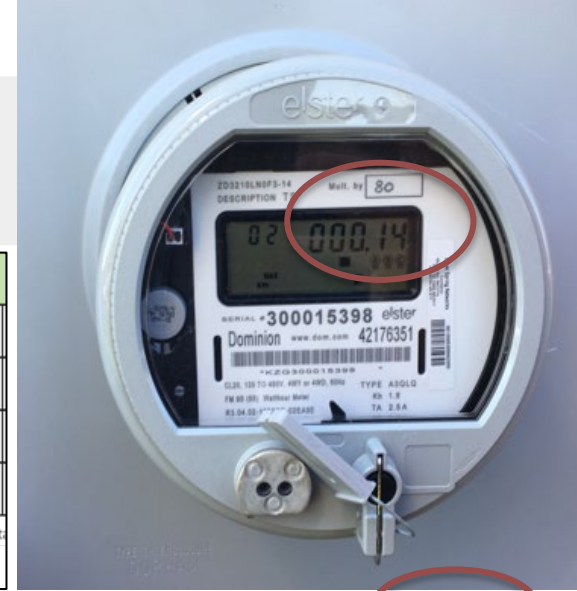
Transformer Continued: Peak Load

Three places to find existing load

1. Utility bills (only if at transformer level)
2. Check demand meter
3. Use a CT to measure load

Company B		
Billing Element	Meter Reading	Rate
Energy Usage	60,000 kWhr	\$0.06/kWhr
Demand Charge	490 kW	\$13/kW
Total Charges		

Table 1 - Demand charge calculation © Tryst



EVI-LOCATE Service Panel Page

What is the voltage rating of your service panel? ?

208V

Are there any open spaces to install additional circuit breakers in the existing service panel?

Yes No

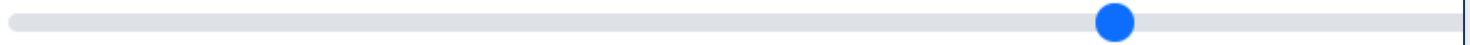
How many unused Circuit Breaker spaces are available on the existing service panel to support

10 spaces



What is the current rating in ampere (A) of the Main Circuit Breaker on the existing service panel?

200 ampere (A)



What is the total peak load (kW) drawn from the existing service panel? ?

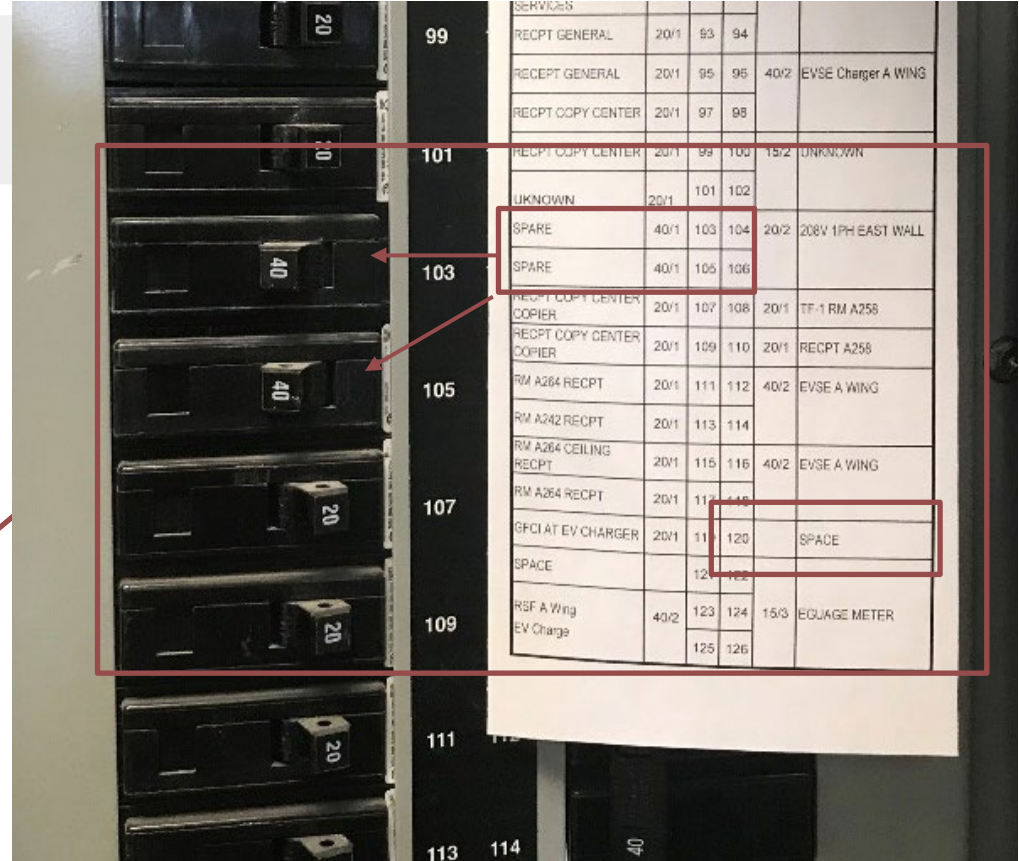
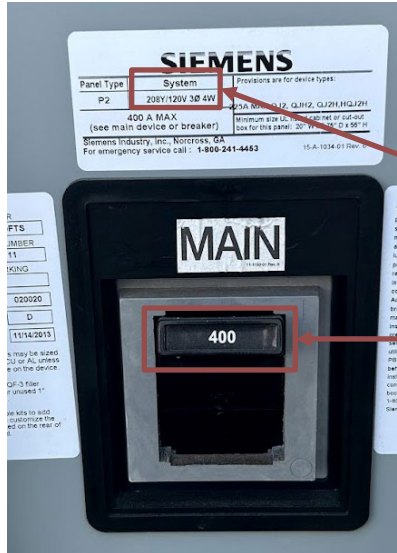
50 kilowatt (kW)



Panel Questions

Determine Service Panel Needs

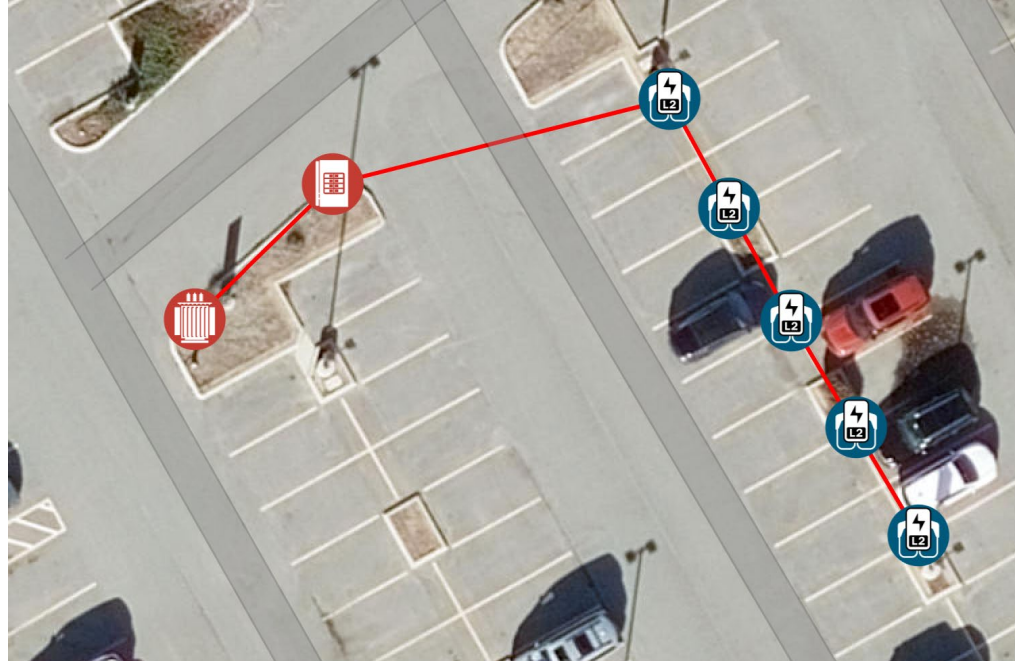
- Voltage rating?
- Unused circuit breaker spaces?
- Main breaker current rating?
- Existing peak load?



Wiring: Connecting the Equipment

Wiring Run

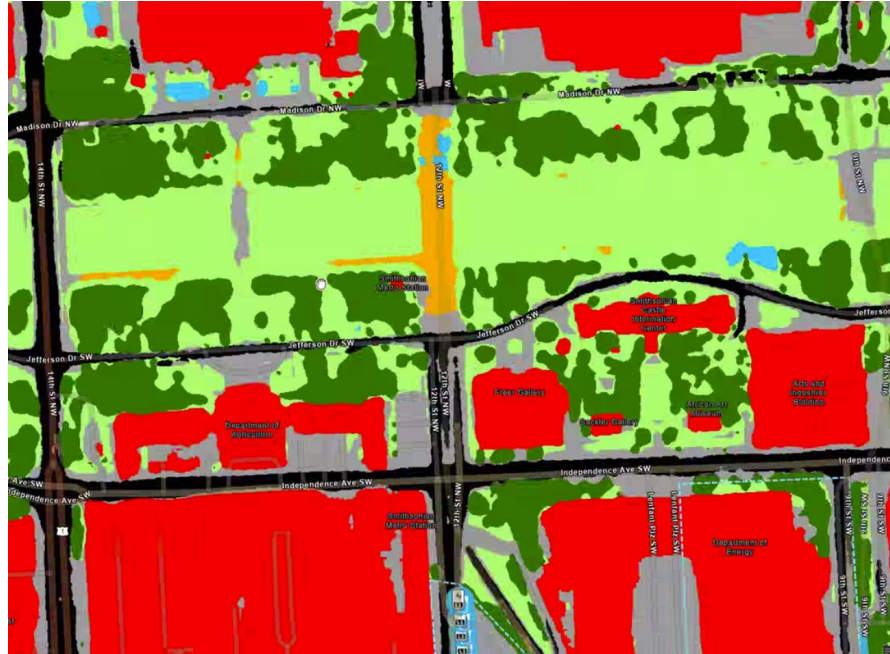
- Tool identifies low-cost line from transformer to panel to chargers
- Identifies hardscape and softscape



Wiring: Behind the Scenes

Wiring Run

- Siting algorithm uses near infrared imagery to distinguish surface type and buildings
- Identifies least cost path to run conductors and conduit



Wiring: Behind the Scenes

Wiring Run

- We cannot see under the ground, so final designs should reflect existing utilities and conditions



Cost Calculations

Cost Adjustment

- Slider bars for project costs
- e.g., Feds may not need to pay taxes

Edit Percentages

State and Local Sales Tax Percent: **0%**

Contractor Overhead Percent: **15%**

Contractor Profit Percent: **10%**

Bond Costs Percent: **2.5%**

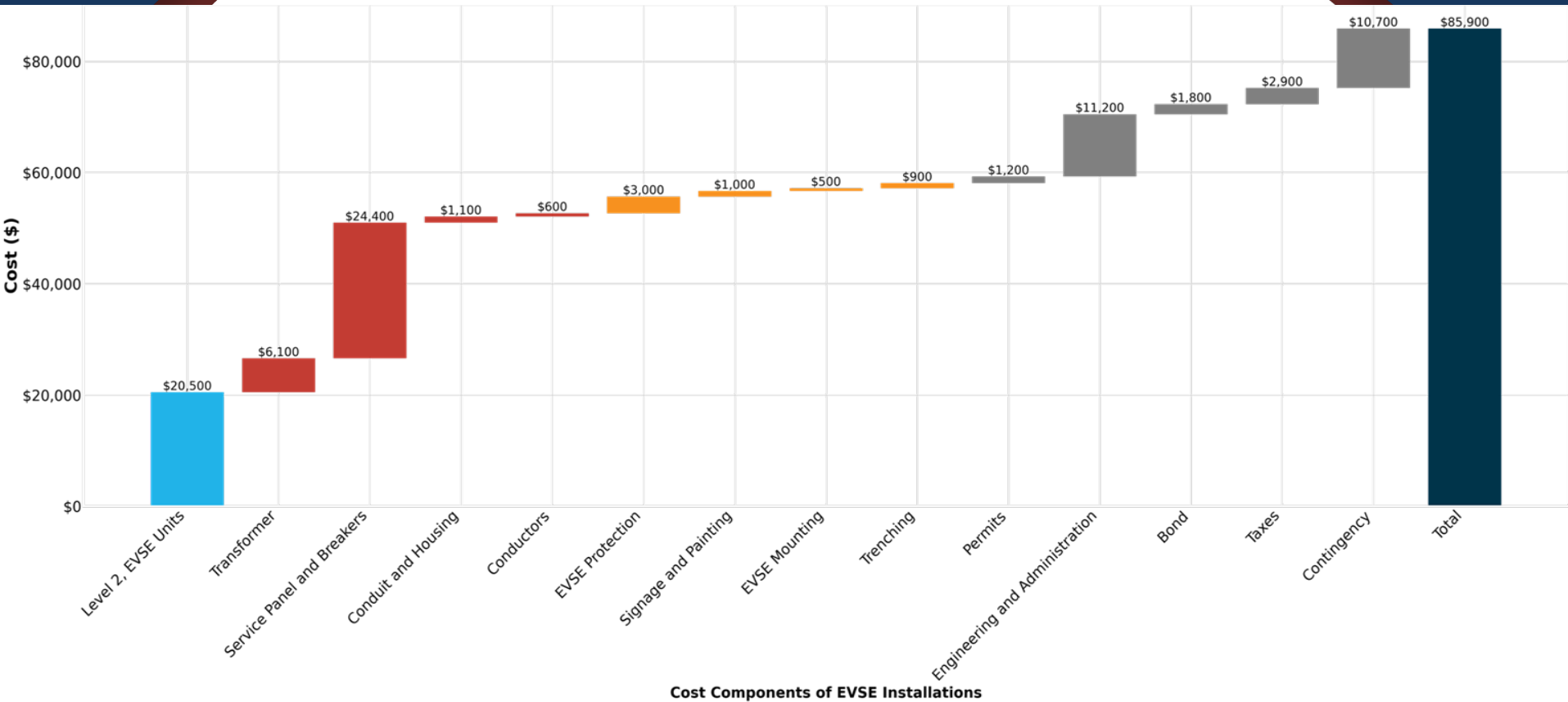
Permits and Zoning Percent: **2%**

Contingency Cost Percent: **20%**

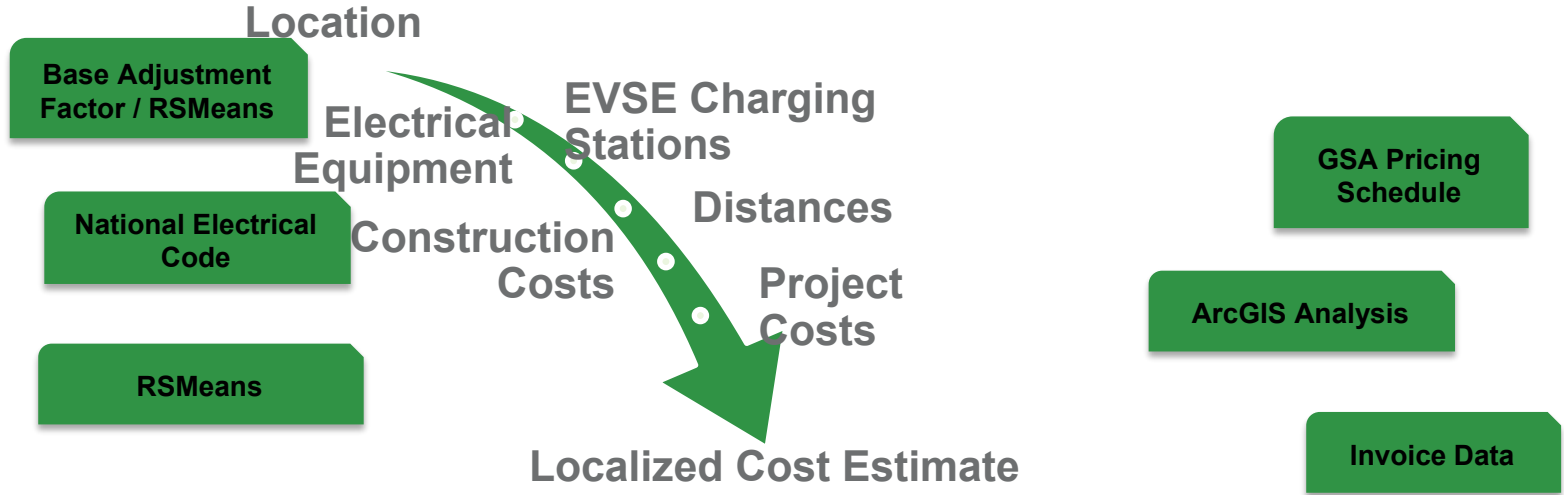
Please include 'Agency Supervision, Inspection, and Overhead' costs along with 'Contingency Cost'.

Update **Cancel**

Detailed Cost Estimates



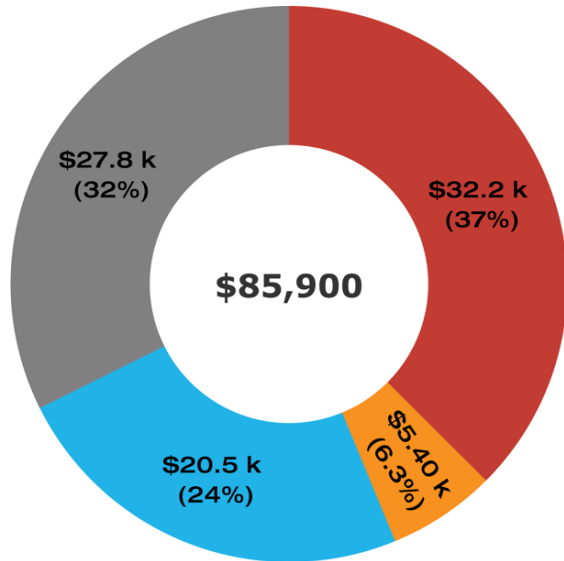
Cost Estimator Components and Data Sources



EVI-LOCATE

Higher Level Costs and List of Materials

Estimated Cost of EVSE Installation



- Electrical
- Project Costs
- EVSE
- Construction

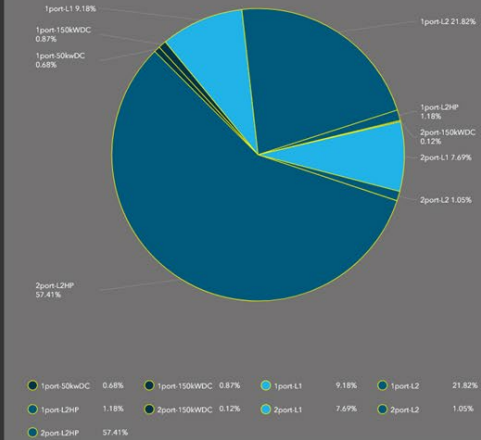
Item	Quantity	Units
Level 2 Dual Port Pedestal Stations	5	each
Pad-Mounted Transformer	1	each
Service Panel for Indoor Parking	1	each
Main Circuit Breaker	1	each
Pull Boxes	2	each
Circuit Breakers	10	each
EMT-Electrical Metallic Tubing Conduit	195	L.F.
THWN Conductors	12	C.L.F.
Bollards	10	each
Wheel stops	10	each
Signage Posts	10	each
Painting	290	ft
Hardscape Trenching	150	L.F.

Dashboard and Agency Organization

Total Number of Study Sites

306

EV Chargers By Type



Total Number of Transformers

346

Total Number of Service Panels

314

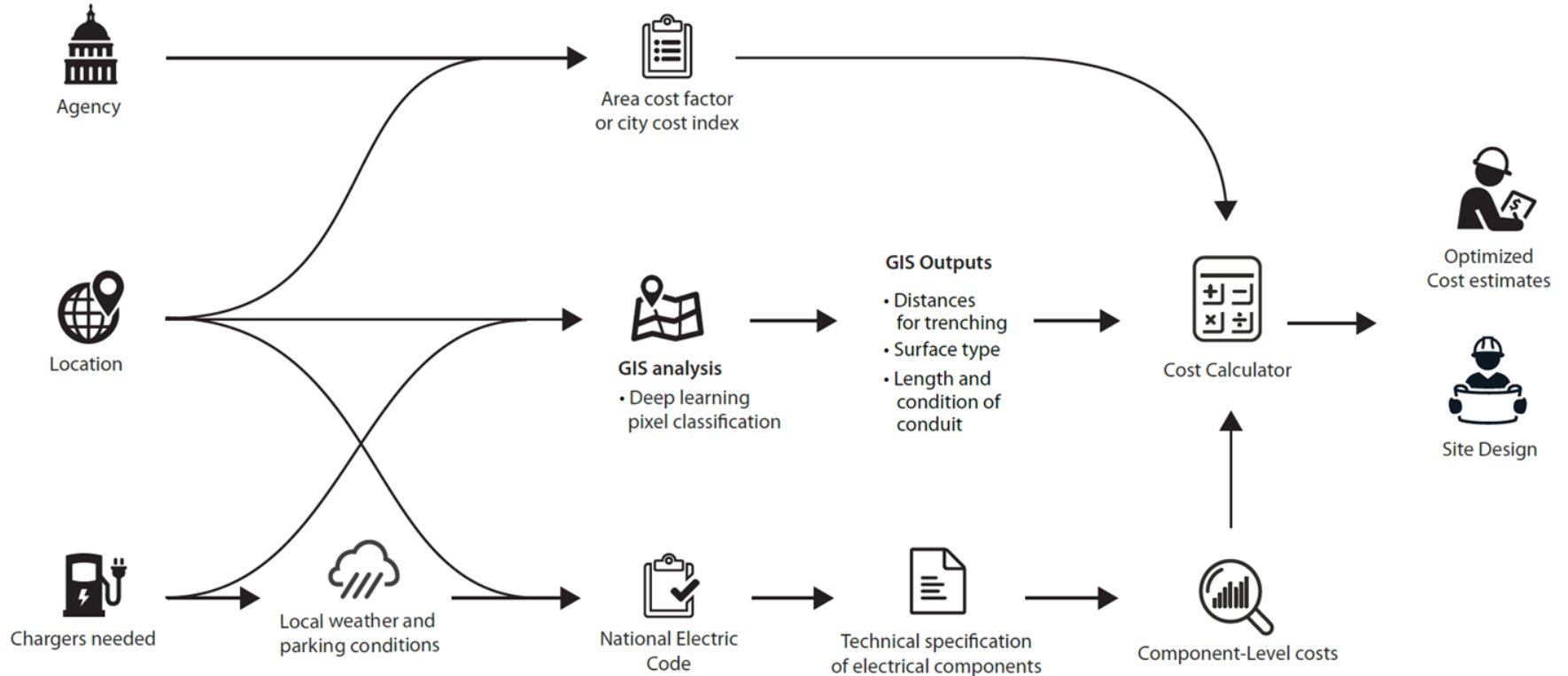
Total Number of EV Chargers

1.6k

Site Inputs

Cost Calculations and Image Processing

EVI-Locate Outputs



EVI-LOCATE Benefits

Accelerate the site design process

Unify assumptions for cost calculations

Generate detailed government estimates in 20 minutes

Organize EVSE planning throughout agency



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Cabell Hodge

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<https://evi-locate.nrel.gov>

