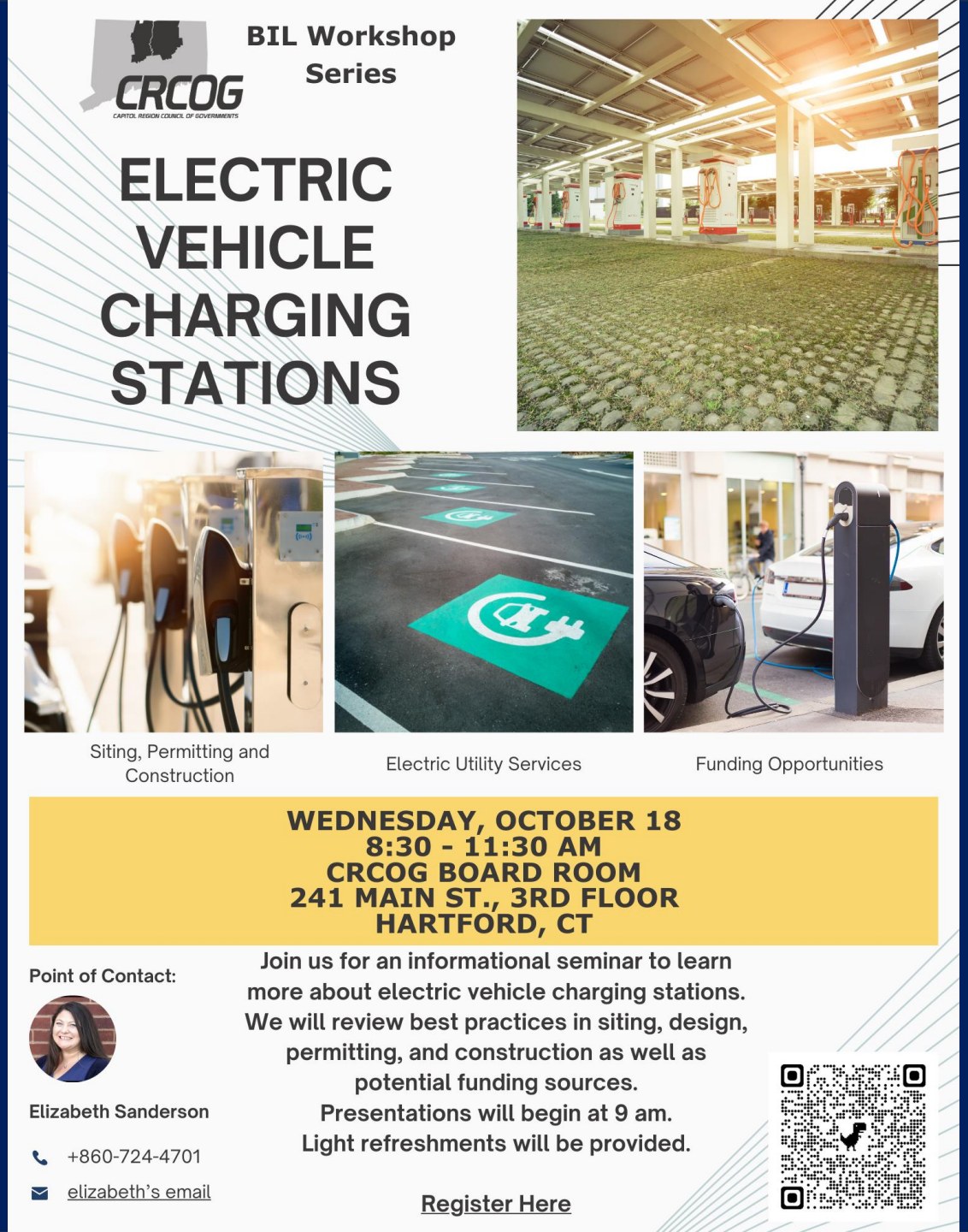
BIL Workshop Series

ELECTRIC VEHICLE CHARGING STATIONS

Matt Hart | CRCOG Executive Director

October 18, 2023

8:30 AM



BIL Workshop Series

SPEAKER BIOGRAPHIES

Johanna Hall, EIT, CeM
Weston & Sampson

Johanna serves as a Team Leader in Weston & Sampson's Environmental, Geotechnical, and Energy group. In this role, she is responsible for management and overview of project teams, budget, schedule, and technical performance. She has 20 years of engineering experience in the permitting, design and implementation of renewable energy technologies and energy efficiency projects for municipal and private entities. Johanna is a Certified Energy Manager (CEM) as designated by the Association of Energy Engineers. She has managed the implementation of multiple energy efficiency projects for the National Grid Project Expediter Program and for energy audits for facilities throughout Massachusetts.

Samuel Alpert, CEA, CEM, EIT
Weston & Sampson

Sam is a Certified Energy Manager and Certified Energy Auditor with over 15 years of energy efficiency, electric vehicle (EV) charging station, and related engineering experience. He has reviewed, identified, or analyzed energy efficiency program and EV projects for savings and feasibility, as well as provided third party evaluation support including M&V (measurement and verification) and application reviews for energy efficiency and related projects throughout the Northeast. Sam is the energy lead for Electric Vehicle projects and has helped identify, develop, and manage electric utility incentive and state and federal grant applications for multiple clients. He also is assisting the City of Boston with a focused study of the feasibility for EV curbside charging in the City with the goal to make electric vehicle charging stations accessible to all residents within a 10 minute walking radius.

BIL Workshop Series

SPEAKER BIOGRAPHIES

Malcolm Beeler, LEP
Weston & Sampson

Malcolm, an expert in PCBs and TSCA, has 30 years of experience in project management and environmental engineering. He specializes in remedial site investigations, remedial design and implementation, remediation site management, and facility renovation and decommissioning. He has provided expert testimony on the matter and regularly works with staff from EPA Region 1 on PCB impacted sites throughout New England. Malcolm is currently working on a former salvage yard Brownfields project in Springfield, MA and has closed PCB sites through multiple pathways of TSCA. In addition, Malcolm worked on the Ryan Park Brownfields Site Assessment & Remediation project in Norwalk, Connecticut.

Jake Buckman, Program Manager, Electric Mobility
Eversource Energy

Jake Buckman is a Program Manager of Electric Mobility at Eversource. Over the last 10 years Jake has accumulated knowledge and honed skills across his time serving in the Air Force and supporting NASA Space Launch Systems. Most recently Jake has been leading the implementation of the new nine-year, $280M CT Electric Vehicle Charging Program. This program supports the build out of EV charging infrastructure for commercial and residential customers, as well as engage customers in managed charging to ensure grid reliability as EV adoption continues to scale up.

Elizabeth Sanderson, AICP RLA MPA
Capitol Region Council of Governments

Elizabeth is Bipartisan Infrastructure Law (BIL) Coordinator and Principal Program Manager at Capitol Region Council of Governments (CRCOG). As an American Institute Certified Planner, Connecticut Professional Landscape Architect, and Certified Zoning Enforcement Official, Elizabeth possesses the knowledge and experience to create and implement regional plans to bring meaningful, sustainable, and equitable change to the Capitol Region. In May 2023, Elizabeth received her MPA from the University of Connecticut School of Public Policy.

Agenda

Utility Service Requirements and Incentive Programs (Eversource)

Planning – Siting (W&S)

Permitting (W&S)

Construction (W&S)

Cost and Fees (W&S)

Lessons Learned from Completed Projects (W&S)

Federal Funding Opportunities (CRCOG)

Q&A

EVERSOURCE

UI
An AVANGRID Company

CT Electric Vehicle Charging

For Municipalities & Public Locations

Public Utilities
Regulatory Authority

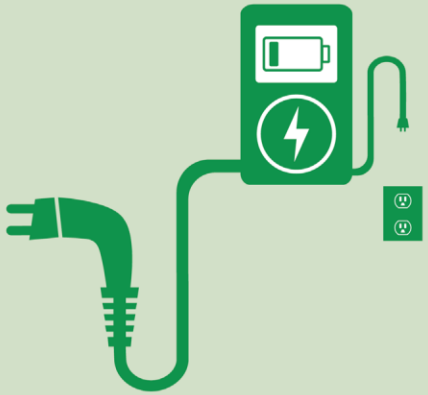
October 18, 2023

EV Charging 101

Smart/networked chargers have special functions that allow them to be remotely controlled through programs like this.

TYPES OF EV CHARGING

Level 1
Residential

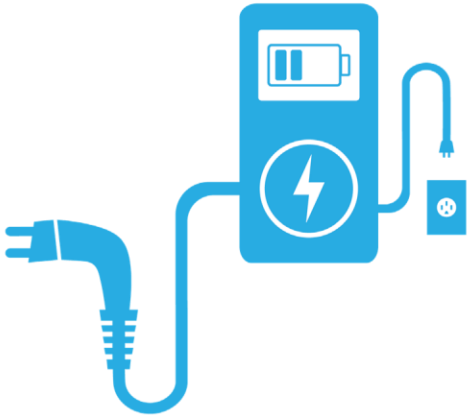


120V

Uses a standard outlet

Adds 5 miles per hour of charge

Level 2
Residential & Commercial



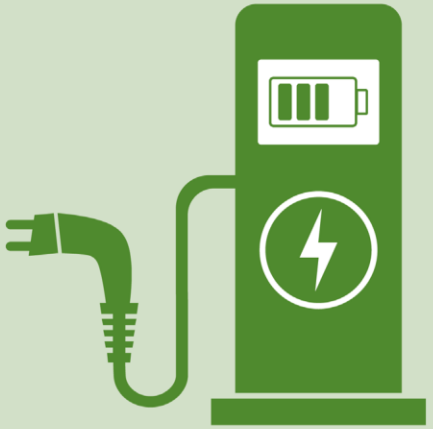
240V

Uses a 240V outlet

Can also be hardwired

Adds 20-60 miles per hour of charge

Level 3
Commercial



480V

DC Fast Charger

Hardwired

Adds 60-100 miles per 20 minutes of charge

Municipal & Public Charging

Incentive Levels

Level 2:

Baseline: $20,000

Underserved: $40,000

Underserved Communities Map

Location	EV Charger Type	Per Site Maximum Rebate Amounts	Property Type	Port Installation Requirements
Baseline	Level 2	**Up to $20,000**	Multifamily	**2**
			Public	**2**
			Workplace	**4**
	DCFC	**Up to $150,000**	Any	**2**
Underserved	Level 2	**Up to $40,000**	Multifamily	**2**
			Public	**2**
			Workplace	**4**
	DCFC	**Up to $250,000**	Any	**2**

Eligibility

EV Charger Qualified Product List (QPL)

- Chargers must be on list to qualify

Eligible Costs

Rebate Capped At:

- Chargers: up to 50%
- Make-ready installation: up to 100%
- Futureproofing : up to 100%

What's covered

	Covered by incentives		Paid for by the customer
	Infrastructure	**Electric vehicle supply equipment (EVSE) hardware**	**Other soft costs**
Examples	- Conduit & trenching - Oversized panels - Futureproofing - Cost paid to Eversource or UI for new or upgraded electric service - Pads - Permitting, site design and engineering	- Level 2 smart or DC fast charging stations	- Signs - Bollard - Network fees - Maintenance fees - Charger warranty
Paid for by	Eversource and UI reimburse up to 100%	Eversource and UI reimburse up to 50%	Customer
	Customer responsible for any remainder	Customer responsible for the remainder	

Hypothetical Project Examples

Location	Project Description	Measures	L2/DCFC Charger Cost	Make Ready Installation Cost	Proposed Total Cost	Proposed Rebate	Net Cost
New Haven (Baseline)	*Multifamily (Public)*	2 Port Level 2 charging station (single site)	$10,000	$10,000	$20,000	$15,000	$5,000
Bridgeport (Underserved)	*6 level public parking garage*	6 Port level 2 charging stations (3 sites)	$30,000	$60,000	$90,000	$75,000	$15,000
Waterbury (Underserved)	*Multifamily (Public)*	2 Port level 2 charging station (single sites)	$8,000	$30,000	$38,000	$34,000	$4,000
West Hartford (Baseline)	*DCFC located at gas station*	2 Port DCFC station (single site)	$40,000	$160,000	$200,000	$150,000	$50,000

Project process: Electric vehicle charging

1 – Select eligible charger(s) for your municipality/business

2 – Apply for charger and installation rebates

3 – Install and activate your charger(s) with a contractor

4 - Receive rebates and reduce environmental impacts

FYIs

- No approved contractors list. Open market for customer choice
- EV Rate Rider:
  - Eversource
  - UI
- Application turnaround time: 10-15 business days
- How to submit a new or upgraded service request (not required)
  - Eversource
  - UI
- Charging pricing models:
  - Pay as you go (e.g. credit card, Apple Pay)
  - Monthly subscriptions
  - Offered as an amenity for free

More information

Commercial:

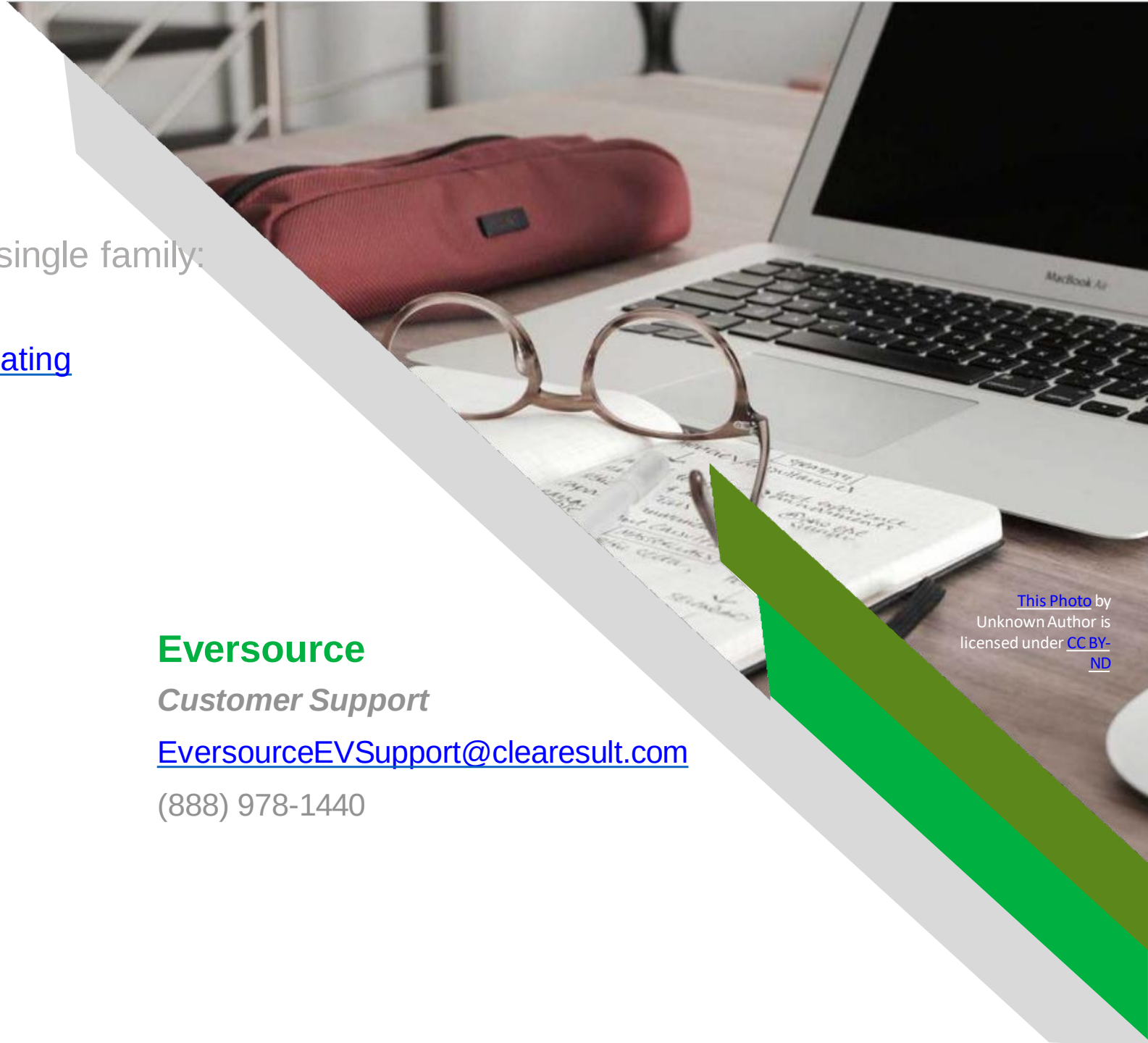
Eversource:

United Illuminating

Residential single family:

Eversource

United Illuminating



Program Support

United Illuminating

Application Support:

UIEVSupport@clearesult.com

(888) 978-1440

Program Support:

HomeEV@uinet.com

BusinessEV@uinet.com

Eversource

Customer Support

EversourceEVSupport@clearesult.com

(888) 978-1440

Questions?

Electric Vehicle Charging

Planning, Construction, Lessons Learned
Presented to CRCOG

October 2023

Johanna Hall, Samuel Alpert

Agenda

- Planning, Permitting, Construction
- User Fees and Costs
- Siting Considerations
- Vendor Topics to Consider
- Lessons Learned

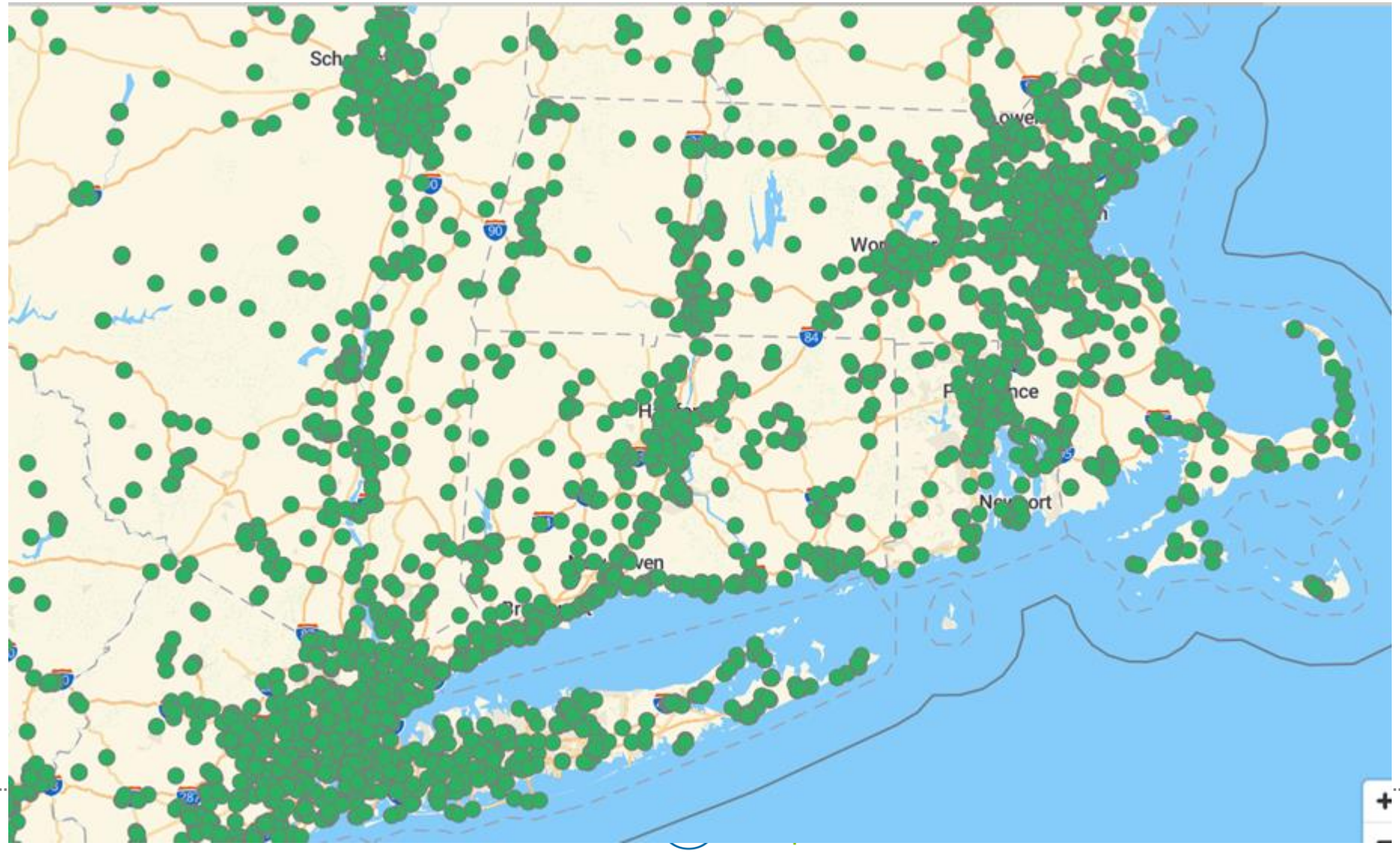
Intro to Electric Vehicles

	Level 1	Level 2	Level 3
Size	Small (i.e., wall outlet)	Medium (i.e., pole, wall, ground mount)	Large (i.e., gas station pump)
Cost	Low	Medium	High
Typical Charge Speed	8-20 hours	4-8 hours	30-60 minutes
Voltage Requirements	120V AC (12 A)	240V AC (15-30 A)	480-600V DC (120 A)
Communications / Interface	Minimal or no communications	Network communications, utility communications, user interface, software	

Intro to Electric Vehicles

- Benefits
  - Environmental Benefits
    - Transportation is the largest sector for CO_2 emissions
    - Emissions savings - approx. 7,000 lbs. CO_2 per electric vehicle
    - Improved air quality and health benefits
  - Cost Savings
    - Average of $1,000 savings per year compared to fossil fuel

EV Charging Locations in the Northeast



Example Installed EV Charging Stations

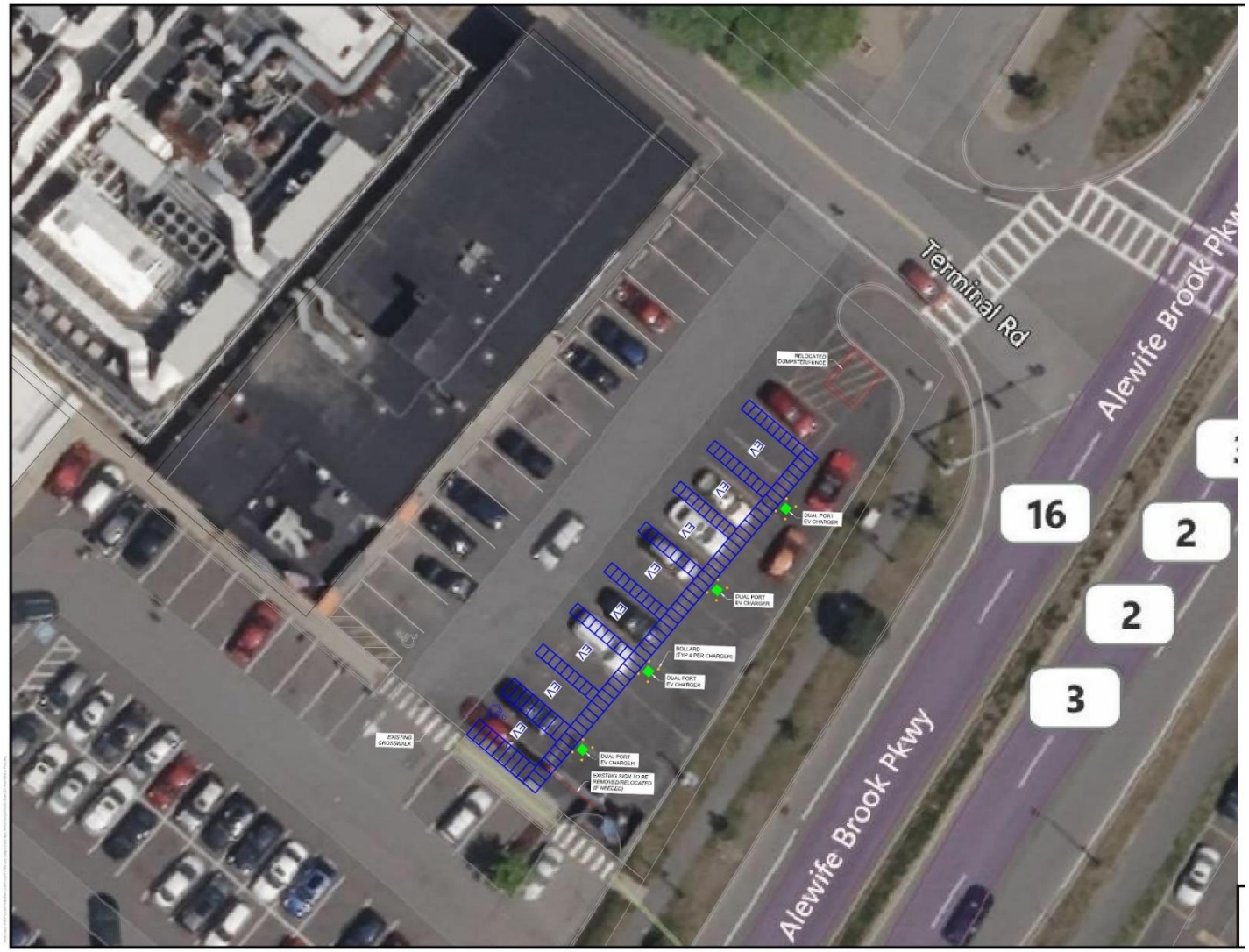
Concord Bus Facility, Concord, MA

Eversource Headquarters – Westwood, MA

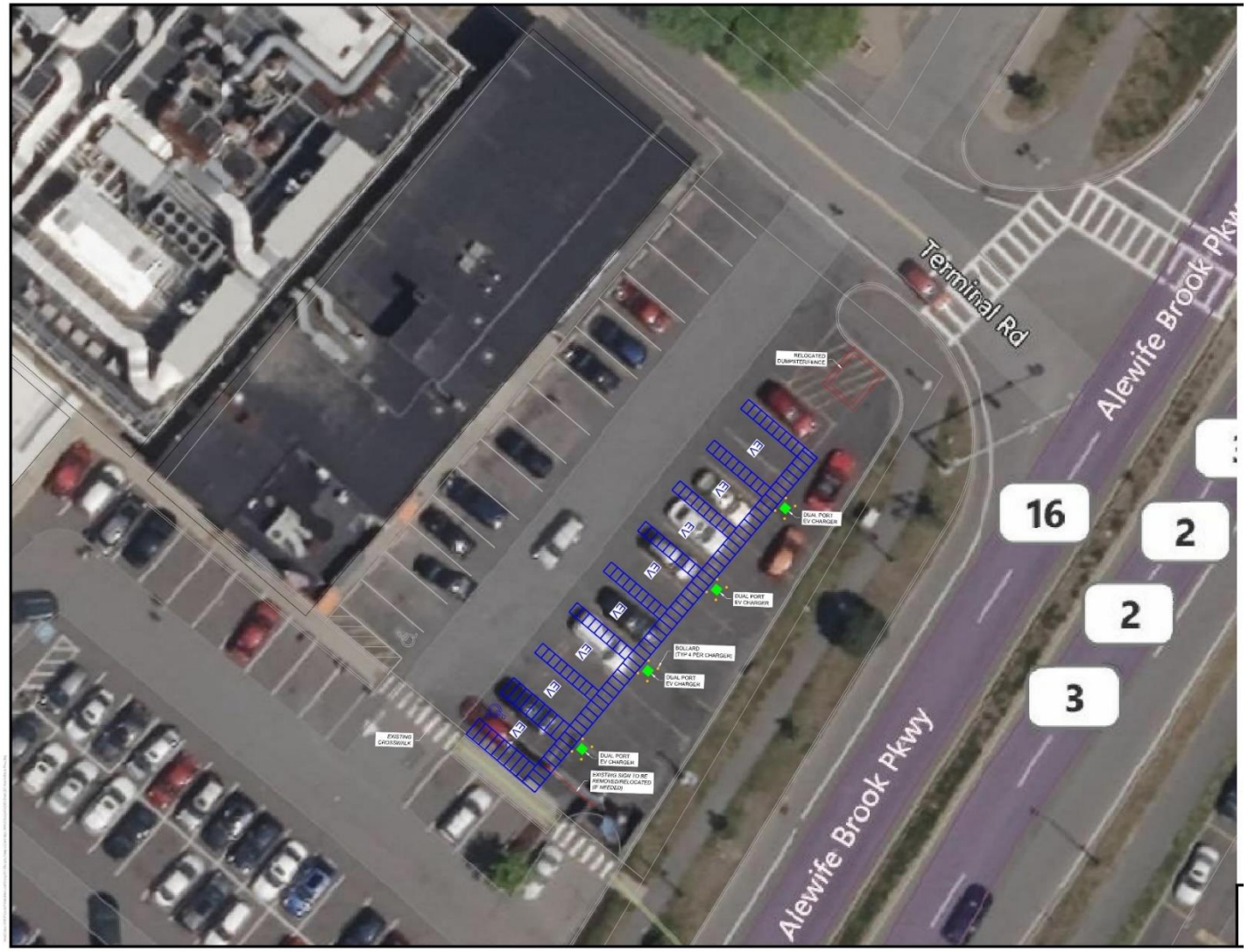
Example Installed EV Charging Stations

Level 3 Public Parking Lot, Belmont, MA

Planning


Terminal Rd
Alewife Brook Pkwy
Alewife Brook Pkwy
16
2
2
3
RELOCATED DUMPSTER/FENCE
DUAL PORT EV CHARGER
DUAL PORT EV CHARGER
BOLLARD (TYP 4 PER CHARGER)
DUAL PORT EV CHARGER
DUAL PORT EV CHARGER
EXISTING CROSSWALK
EXISTING SIGN TO BE REMOVED/RELOCATED IF NEEDED

Planning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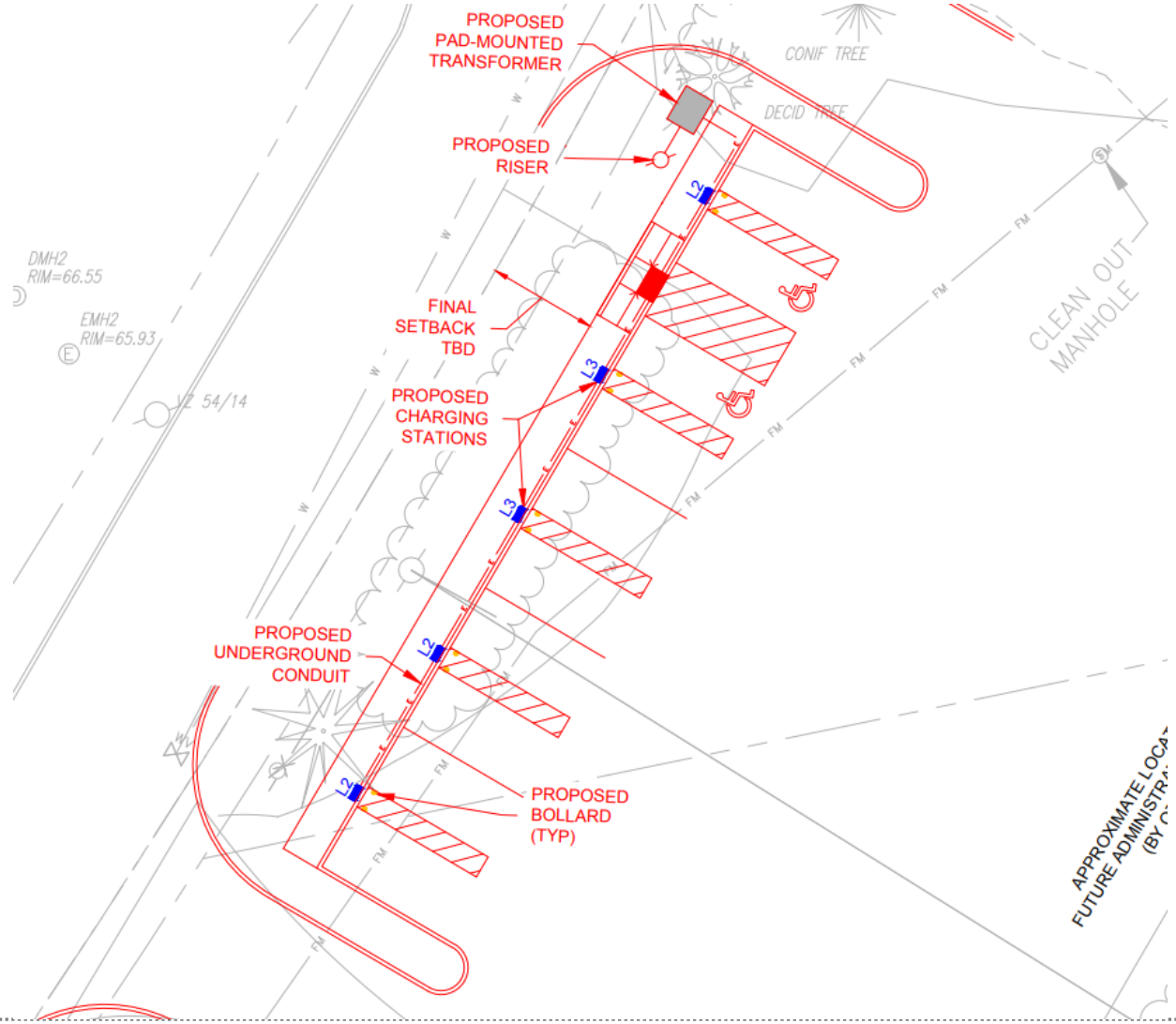
Plan Development



ADA Design Considerations

- Existing Site Conditions
  - Sidewalks, crosswalks, building entrances
  - One parking space width for hash marks
- Blue parking space striping (standard ADA)
  - Green for standard EV
- Min combined (space + aisle) width 16’

Permitting

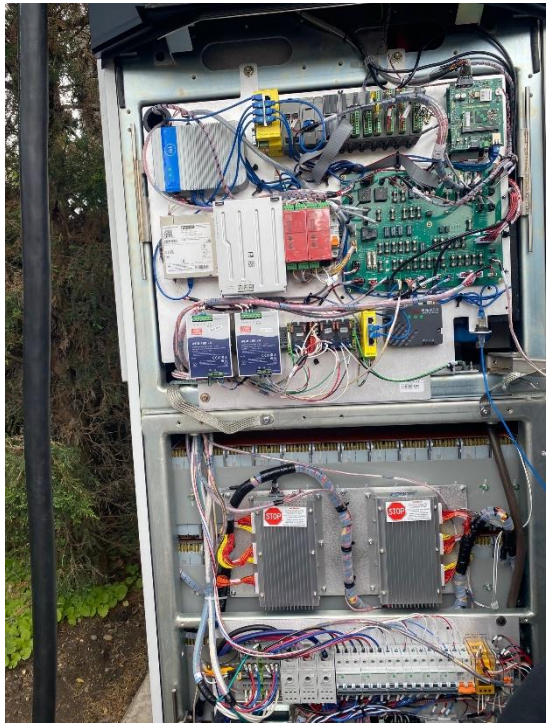
- Electrical Permit
- Building Permit (Commercial)
- Local Zoning Review
  - Special Zoning Permit (Town specific)
- CT DOT
- CT DEEP

Construction

- Infrastructure
  - Trenching
  - Pads
  - Cabling
  - Electrical

- Charging Station
  - Wiring
  - Activation
  - Commissioning
  - Testing

- Civil / Paving / Painting



User Fees

- Cost per Charge range
  - $0.20/kWh - $0.40/kWh
  - $2-4/hour
  - Additional fee for longer term (if recurring revenue desired or high-demand area)

Costs

- **Infrastructure**
  - $25,000 - $50,000 per station
- **Charging Station Equipment**
  - Level 2 $8,000 - $30,000
  - Level 3 DCFC $100,000 - $300,000
- **Equipment Installation**
  - Level 2 $10,000 - $40,000
  - Level 3 DCFC $40,000 - $100,000

Other Topics of Interest for Vendors

- Networking
- Two-way Metering
- Solar tie-in
- Commissioning
- Warranty

Lessons Learned

- Early Utility Coordination
- Planning & Zoning Challenges
- Installation Delays
- Application Programs
- Equipment Purchases
- Scheduling

Summary of Incentives

EV Station Funding Opportunities

State	Incentive Provider	Cap Range	%	Includes
CT	Eversource	$20,000-$250,000	50%	Charging Station; Plus up to 100% Make Ready and Future Proofing
CT	United Illuminating (UI)	$20,000-$250,000	50%	Charging Station; Plus up to 100% Make Ready and Future Proofing
CT	CT NEVI Program	Details TBD	TBD	Details TBD
Federal	IRS Federal Tax Credit	$30,000	30%	Charging Station
Federal	DOT CFI Grants		80%	Public Charging Station + Infrastructure
Federal	DOT National Alternative Fuels Corridors (AFC) Grants		80%	Public DC Fast Charging Station
Federal	DOT Community Alternative Fuels infrastructure (AFC) Grants		80%	Public DC Fast Charging Station

Vehicle Funding Opportunities

State	Incentive Provider	Cap Range	%	Includes
CT	CHEAPR – Center for Sustainable Energy	$4,250		Electric Vehicle: Battery or Plug-in Hybrid
CT	Norwich Public Utilities	$1,500		Electric Vehicle: Battery or Plug-in Hybrid
CT	Mutual Security Credit Union			EV Loans
Federal	IRS Federal Tax Credit	$7,500		Electric Vehicles
Federal	DOT CFI Grants		80%	Public Transportation Electric Vehicles
Federal	DOT National Alternative Fuels Corridors (AFC) Grants		80%	Public Transportation Electric Vehicles
Federal	DOT Community Alternative Fuels (AFC) Grants		80%	Public Transportation Electric Vehicles

Federal

U.S. DOT FHWA ELECTRIC VEHICLE CHARGER RELIABILITY AND ACCESSIBILITY ACCELERATOR GRANT

* **Program Purpose:** U.S. Department of Transportation (U.S. DOT) Federal Highway Administration (FHWA) has up to $100M available to improve reliability of existing electric vehicle infrastructure. Funds must be used to repair or replace existing publicly accessible Level 2 or Direct Current Fast Charging chargers that are broken or non-operational, per the National Renewable Energy Laboratory's list of Alternative Fuels Station Locator, as of October 11, 2023. FHWA anticipates funding all eligible projects.

* **Eligible Applicants** include State DOTs and local governments.

* **Grant Applications are due by November 13; Apply online** at **Grants.gov** (Opportunity Number: 693JJ324NF00001)

* Visit **CRCOG's Summary** or the **Program Website** for more information.

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Federal

U.S. DOT FHWA Electric Vehicle Charger Reliability and Accessibility Accelerator Grant - CRCOG | Capitol Region Council of Governments

State

CTDOT GRANT FOR PHASE 1 OF THE NATIONAL ELECTRIC VEHICLE INFRASTRUCTURE PLAN

* **Program Purpose:** Connecticut Department of Transportation (CTDOT) has approximately $15M available to implement Phase 1 of the State's National Electric Vehicle Infrastructure (NEVI) Plan, which focuses on building-out electric vehicle fast-charging stations in priority areas across the state.

* **Key Dates and Deadlines:**
  - CTDOT anticipates opening the **call for Letters of Intent (LOI) on September 28.**
  - Applicants must **submit LOIs by 5 pm on November 9 2023.**
  - CTDOT anticipates publishing the **Request for Proposals (RFP)** in early **2024.**

* Visit **CRCOG's Summary** or the **Program Website** for more information.

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State

CT Department of Transportation (CTDOT) National Electric Vehicle Infrastructure (NEVI) Plan Formula Funding Opportunity - CRCOG | Capitol Region Council of Governments

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