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EV 101 Workshop

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Workshop Goals

- **Review** EV plans throughout the State
- **Understand** types of electric vehicles
- **Learn** about EV chargers, costs and map routes
- **Identify** ways to save money through energy programs
- **Discuss** free NCCC 1x1 advising sessions

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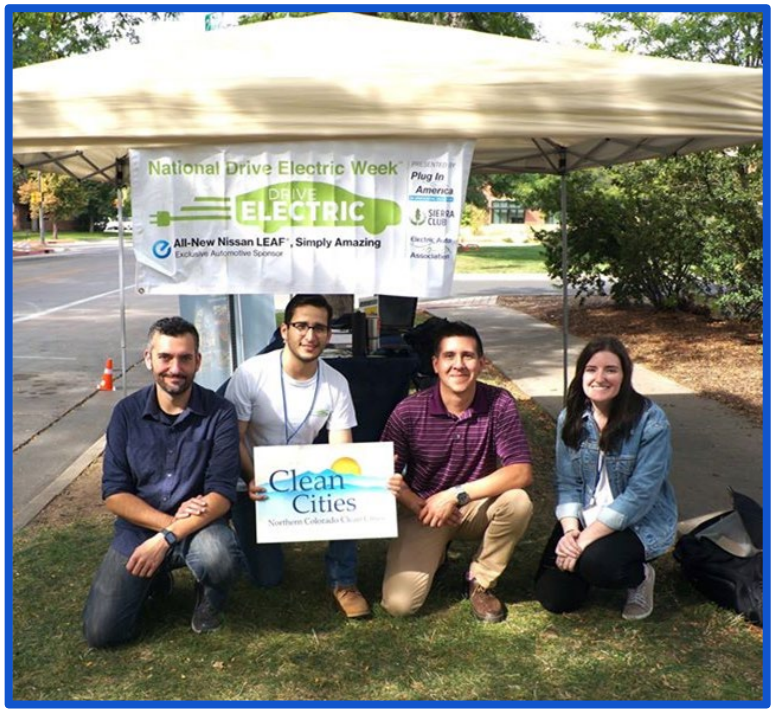
Save Energy Coalition



SECo: SECo is a 501(c)3 nonprofit that engages communities to adopt transportation and energy solutions that save energy. We focus on empowering local governments, utilities, and schools to adopt clean technologies through educational resources, grant writing, and technical analysis. We are funded by the Colorado Energy Office, U.S. Department of Energy's Clean Cities Program and local community members.

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Why EVs Matter to Colorado

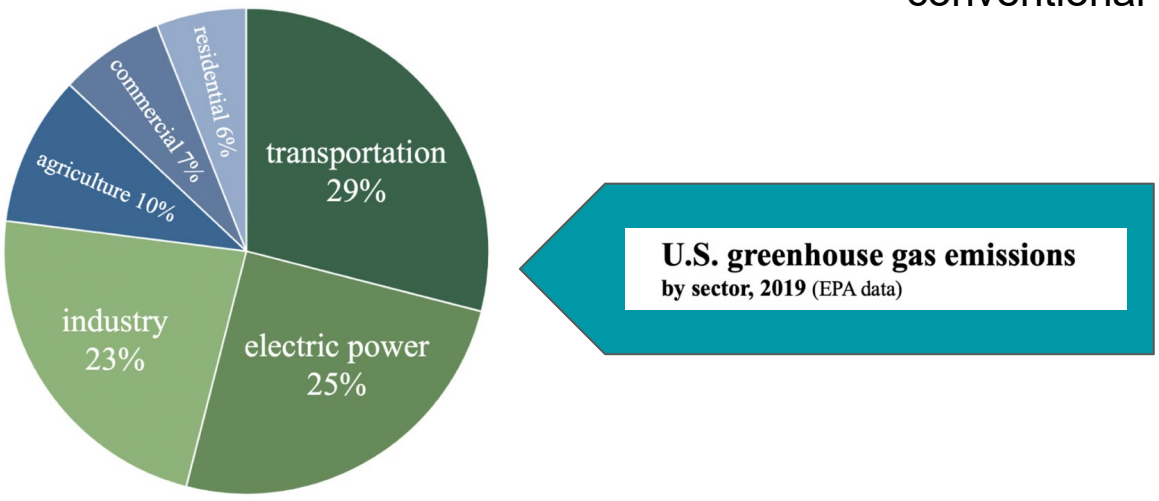
Why EVs Matter to Colorado

Environmentally

- 30% of emissions are from transportation and a large part of that is Tailpipe emissions
- These pollutants are linked to respiratory problems such as asthma
- Driving an EV creates less than half the carbon and ozone emissions than driving a gas-powered car

Economically

- The average household in Colorado spends nearly 18% of its budget on transportation
- Electricity is less expensive than gasoline and EVs are more efficient than gasoline vehicles (upfront costs)
- On average, it costs less than ½ to travel the same distance in an EV than a conventional vehicle



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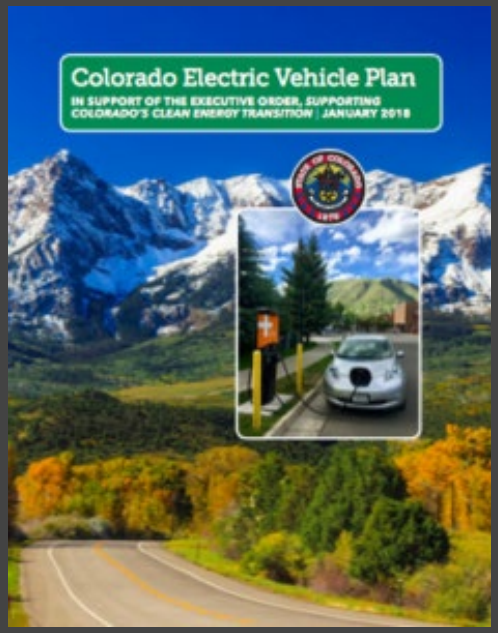
Why EVs matter to Colorado - Electric Vehicle Planning and Leadership

Regional Electric Vehicle West MOU

Signed by 8 Western Governors, establishes a framework for collaboration on an Intermountain West Electric Corridor.

Executive Order B 2019 002: Supporting a Transition to Zero Emission Vehicles



Colorado Electric Vehicle Plan

Build out key charging corridors that facilitate economic development, boost tourism, and reduce harmful air pollution.

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Electric Vehicles 101

Basics: Electric Drive Vehicles

Hybrid Electric Vehicle (HEV)

- Powered by an engine and electric motor
- Does not use electric vehicle supply equipment (EVSE) to charge the battery
- 10 – 50 miles added fuel economy

Plug-In Hybrid Electric Vehicle (PHEV)

- Powered by an electric motor and engine
- Uses EVSE and regenerative braking to charge the battery
- 50-80 miles electric range

All-Electric Vehicle (BEV)

- Powered by an electric motor
- Uses EVSE and regenerative braking to charge the battery
- 80 – 373 miles electric range

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Vehicle Search

				
EPA Fuel Economy	**2020 Chevrolet Bolt EV** Electricity **118** MPGe (combined city/highway) 127 city / 108 highway 29 kWh/100 mi Electricity 259 miles Total Range	**2020 Nissan Leaf SV/SL (62 kW battery)** Electricity **104** MPGe (combined city/highway) 114 city / 94 highway 32 kWh/100 mi Electricity 215 miles Total Range	**2020 BMW X3 xDrive30e** Elec + Gas: **60** MPGe combined city/highway .0 gal/100mi of gas + 56 kWh/100mi Prem. Gas: **24** MPG combined city/highway 4.2 gal/100mi Gasoline Only 18 miles Elec + Gas All Elec: 0-17 mi 340 miles Total Range	**2020 Ford Fusion** Regular Gasoline **23** MPG (combined city/highway) 20 city / 29 highway 4.3 gal/100mi Gasoline 414 miles Total Range
You save or spend ***27 MPG avg 2020 vehicle**	**You SAVE** **$3,250** in fuel costs over 5 years compared to the average new vehicle	**You SAVE** **$2,750** in fuel costs over 5 years compared to the average new vehicle	**You SPEND** **-$1,750** more in fuel costs over 5 years compared to the average new vehicle	**You SPEND** **-$1,000** more in fuel costs over 5 years compared to the average new vehicle
Cost to Drive 25 Miles	**$0.93**	**$1.05**	**$2.14 single charge** **$2.97 gas driven only**	**$$2.37**
Tailpipe CO2 Grams/mile	**0 grams per mile (77 g upstream CO2)**	**0 grams per mile (77 g upstream CO2)**	**204 grams per mile (77 g upstream CO2)**	**354 grams per mile (77 g upstream CO2)**

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https://www.fueleconomy.gov/feg/Find.do?action=sbsSelect

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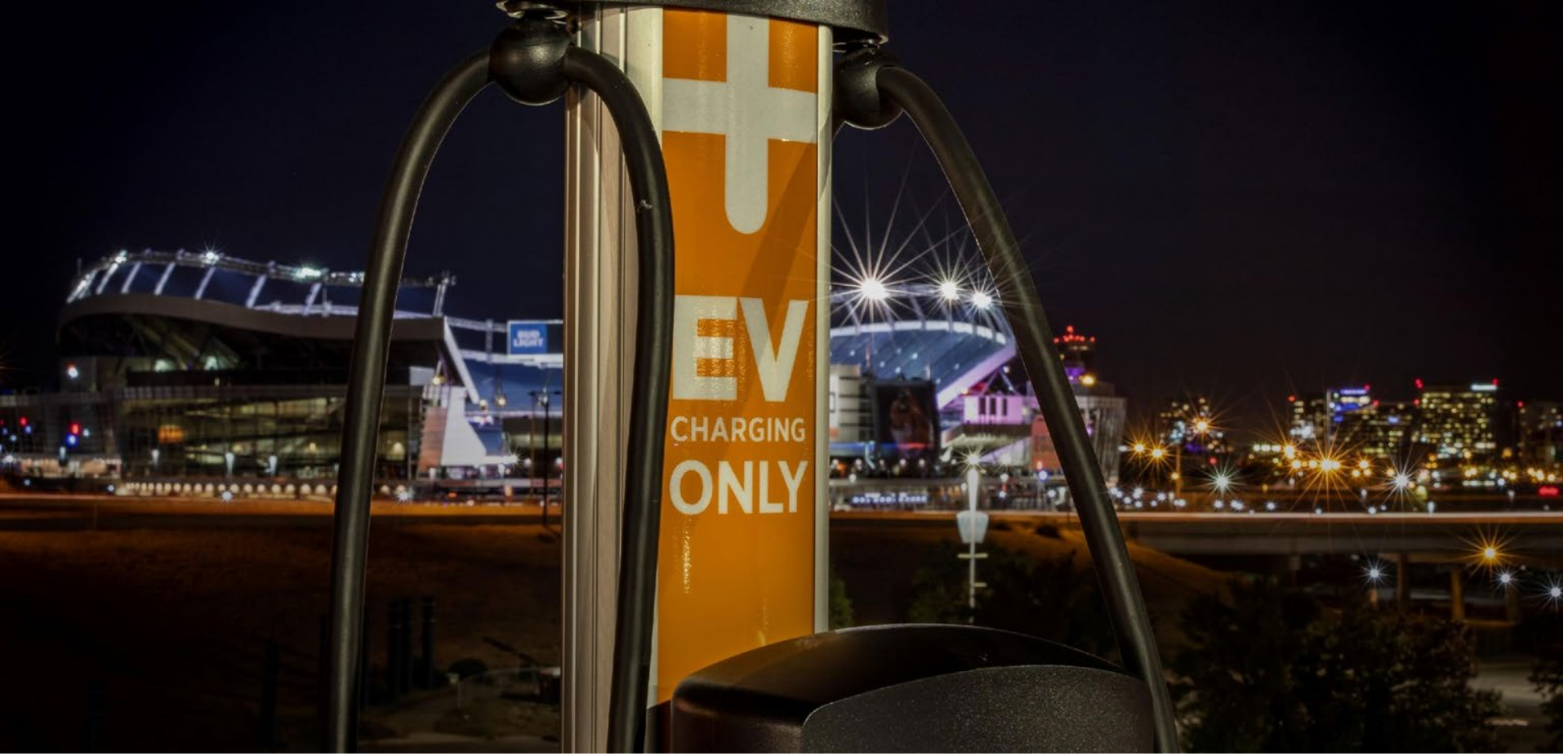

EVSE - Charging

	EVSE	Base Cost to Install	Cost to fully Charge a nissan leaf (15 ¢/kWh)	Charging Time (hours to full)	Primary Use
Level 1	Regular Outlet, available everywhere	None	$9.00	2 to 5 miles of range per hour **(12-24 hours)**	Residential
Level 2	Charging infrastructure (need electrician)	$1.5k-5k+	$9.00	10 to 20 miles of range per hour **(3-8 hours)**	Residential/ Commercial
DC Fast	Charging infrastructure (need electrician)	$10k-30k+	(24-40 ¢/kWh) **$14-$24**	60 to 80 miles of range per 20 minutes **(30 min-2 hours)**	Commercial

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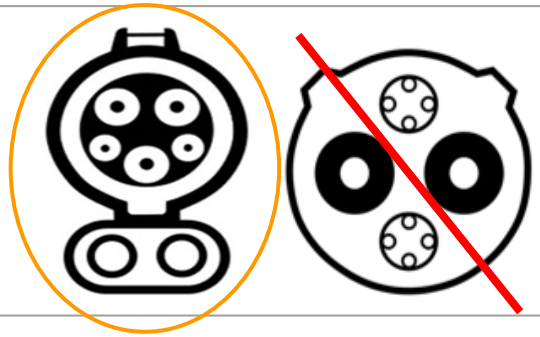
Electric Vehicle Charging Levels and Types

Plug Type	Image	Compatible Vehicles
Level 1 & 2		All EVs (J1172) Capable of V2G
DC Fast Charging		Varies – check for CCS (chademo -phasing out) Capable of V2G
Tesla L2 & DC Fast		Tesla/Ford/GM Capable of V2G

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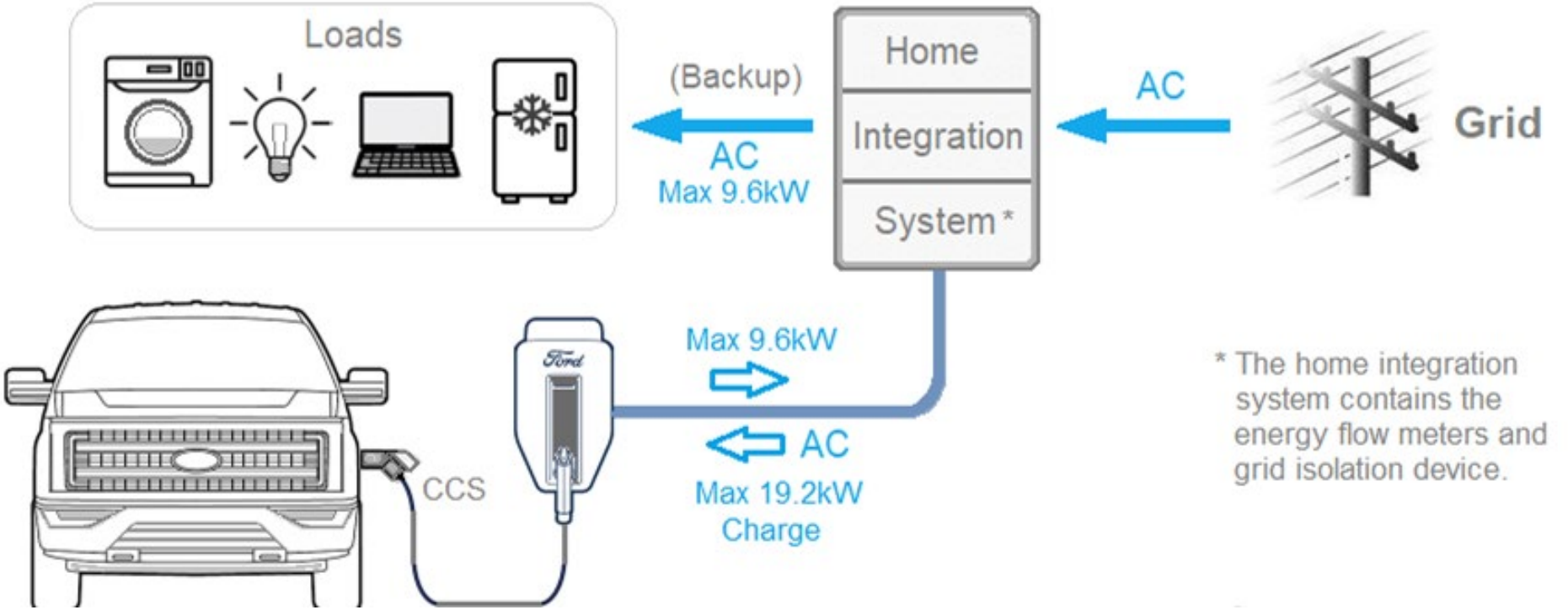
Ford Charge Station Pro and Home Integration System

V2



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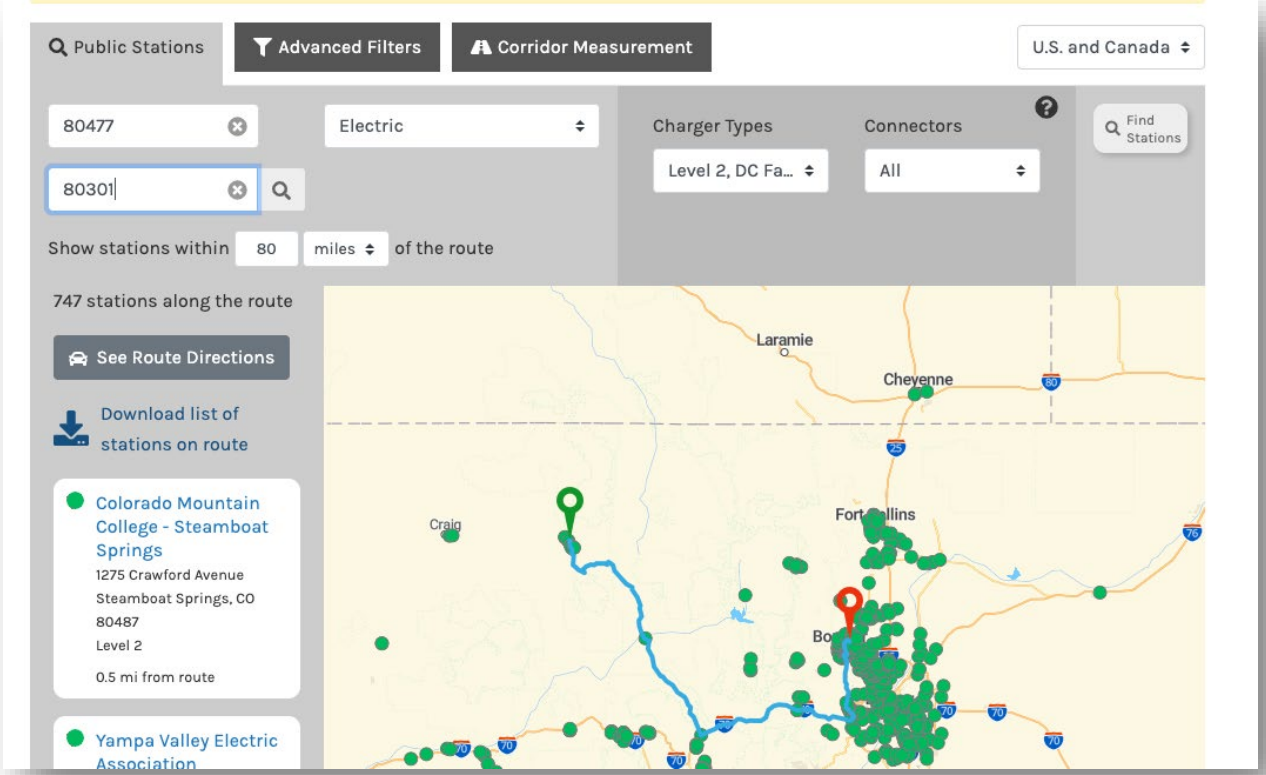

Check out the AFDC EV Station Locator and Map a Route to locate electrification sites

Finding a Public Station

U.S. DOE Alternative Fuel Data Center (web only):
https://afdc.energy.gov/fuels/electricity_locations.html#/find/nearest?fuel=ELEC

PlugShare (web and app):
https://www.plugshare.com/

Chargepoint (web and app):
https://na.chargepoint.com/charge_point

EVgo (web and app):
https://www.evgo.com/charging-locations/

State Programs, Tax Incentives, and Other Resources

Grants Poster Here

Charge Ahead Colorado

- Charge Ahead Colorado provides grant funding for community-based Level 2 (L2) and DC fast-charging
- Public locations: businesses, schools, gas stations, apartments, workplaces, parks, etc
- **Applications accepted each February, May, and October**

EV Charging Station Power Level	CEO Maximum Funding	Maximum Incentive Per Charger
Level 2 (Under 19kW), Per Port	80%	$4,500
19 - 49 kW, Per Port	80%	$6,250
DCFC, Single-Port (50 - 99kW)	80%	$35,000
DCFC, Dual-Port (50 - 99kW - simultaneous charging)	80%	$50,000
DCFC, Single-Port (100kW+)	80%	$50,000
DCFC, Dual-Port (100kW+ - simultaneous charging)	80%	$70,000

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90% Enhanced Incentive for Qualified Disproportionately Impacted Communities

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- https://www.irs.gov/pub/irs-pdf/p5724e.pdflorado.org/incentives/tax-credits/
- https://www.irs.gov/pub/irs-pdf/p5724f.pdf

Next Steps:

- **Contact NCCC for free 1x1 advising on all things EV!**
  Ask questions and get resources on:
  - Fleet or business transportation planning
  - Vehicles and infrastructure questions
  - Local, state and federal incentives
  - Location of current stations

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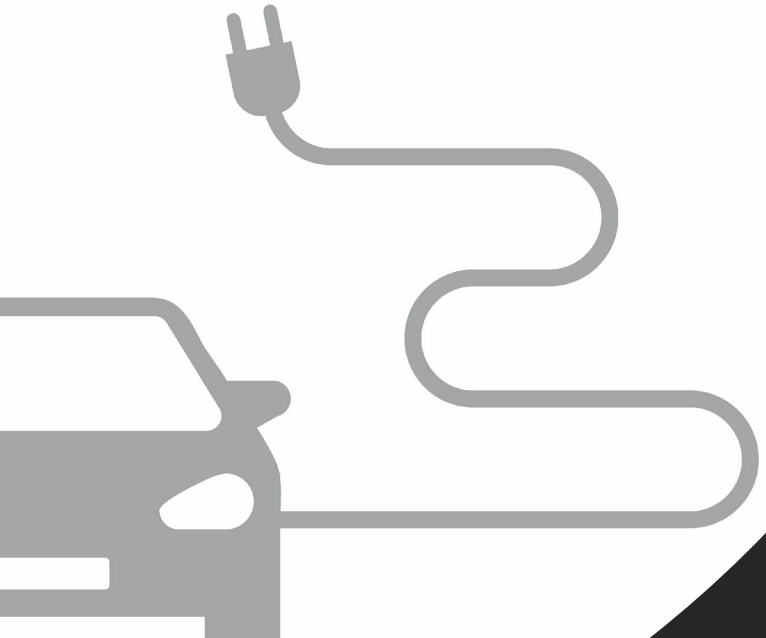

Thank you!

Questions?

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