



## Colorado ARNG EVCF Case Study



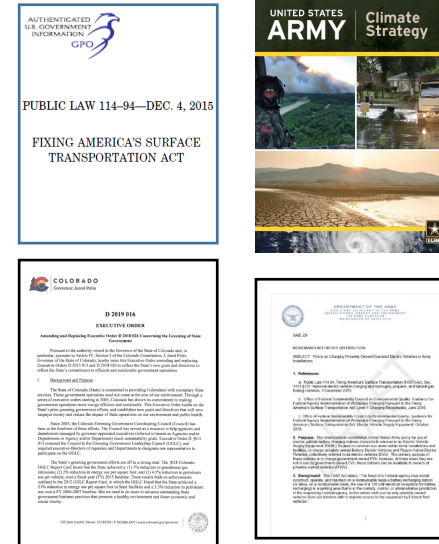
# Electric Vehicles (EV) & EV Charging Facilities (EVCF)

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G9, Colorado Army National Guard

# Purpose

To share information regarding the COARNG Electric Vehicle (EV) and EV Service Equipment (EVSE) modernization and EV Charging Facilities (EVCF) infrastructure development process

## DMVA EV Policy Drivers



# Main Points

1. EV five-year Transition Plan for three COARNG fleets (State, GSA, R&R)
2. Installation of EVSE serves operational mobility
3. EVSE Support Requirements
  1. Construction Plan
  2. Sustainment Plan

## EV five-year Transition Plan

42 U.S.C. § 13212: At least 75 percent of light-duty vehicle (LDV) acquisitions by covered Federal fleets ... must be AFVs, which include flex-fuel, electric, plug-in hybrid electric, compressed natural gas, low GHG-emitting, liquefied petroleum gas, liquefied natural gas, and fuel-cell vehicles. [also directed by EO 13834, "Efficient Federal Operations"]

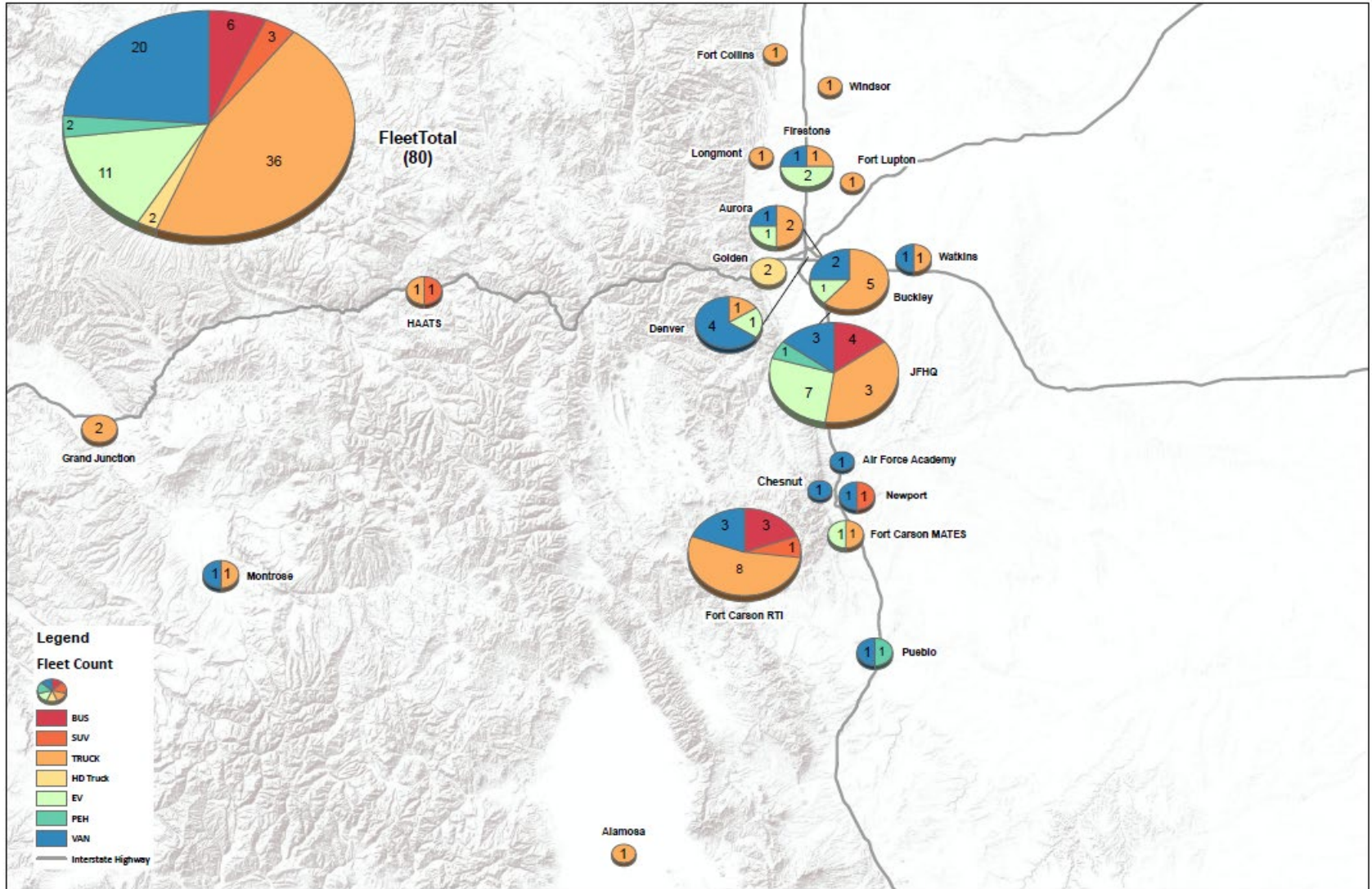
State EO D 2019 016: "Greening State Government" Reducing greenhouse gas emissions from state fleet vehicles by 15 percent by the end of SFY 22-23

|                  | 2020          | 2025          |
|------------------|---------------|---------------|
|                  | # / EV / PHEV | # / EV / PHEV |
| • State Fleet    | 32 / 2 / 1    | 9 / 20 / 6    |
| • G-4, GSA Fleet | 110 / 11 / 0  | 30 / 60 / 31  |
| • R&R, GSA Fleet | 48 / 0 / 0    | 38 / 2 / 8    |

# Vehicle Management Team

- Establishing a cross-functional work group is a key strategy to achieve successful transformation and adoption of Zero-Emission Vehicles (ZEV) and developing a robust support infrastructure of charging stations
- The Vehicle Management Team (VMT) function is to address concerns and questions related to a smooth transition of agency implementation of EV procurement & EVCF development
- Initial topics for the VMT to address included:
  - Conversion rate and stationing for Fleet Vehicles from Internal Combustion Engines to ZEV
  - Budgeting for EV & charging facility equipment
  - Grants and opportunities
  - Capital construction funds
  - Updates and guidance on statewide EVSE installation contract
  - Annual maintenance and subscriber costs
  - Legal review and authorities
- The VMT makes other recommendations for Leadership and decision makers
  - Funds reimbursement to off-set costs
  - Employee and public access to charging facilities

# COARNG GSA FY24 Vehicle Density



Scale: 1:1,725,000



PROJECTION .....UTM, ZONE 13N  
 HORIZONTAL DATUM .....WGS-84  
 FILE .....ENV\EVGSA\_FLEET\_24  
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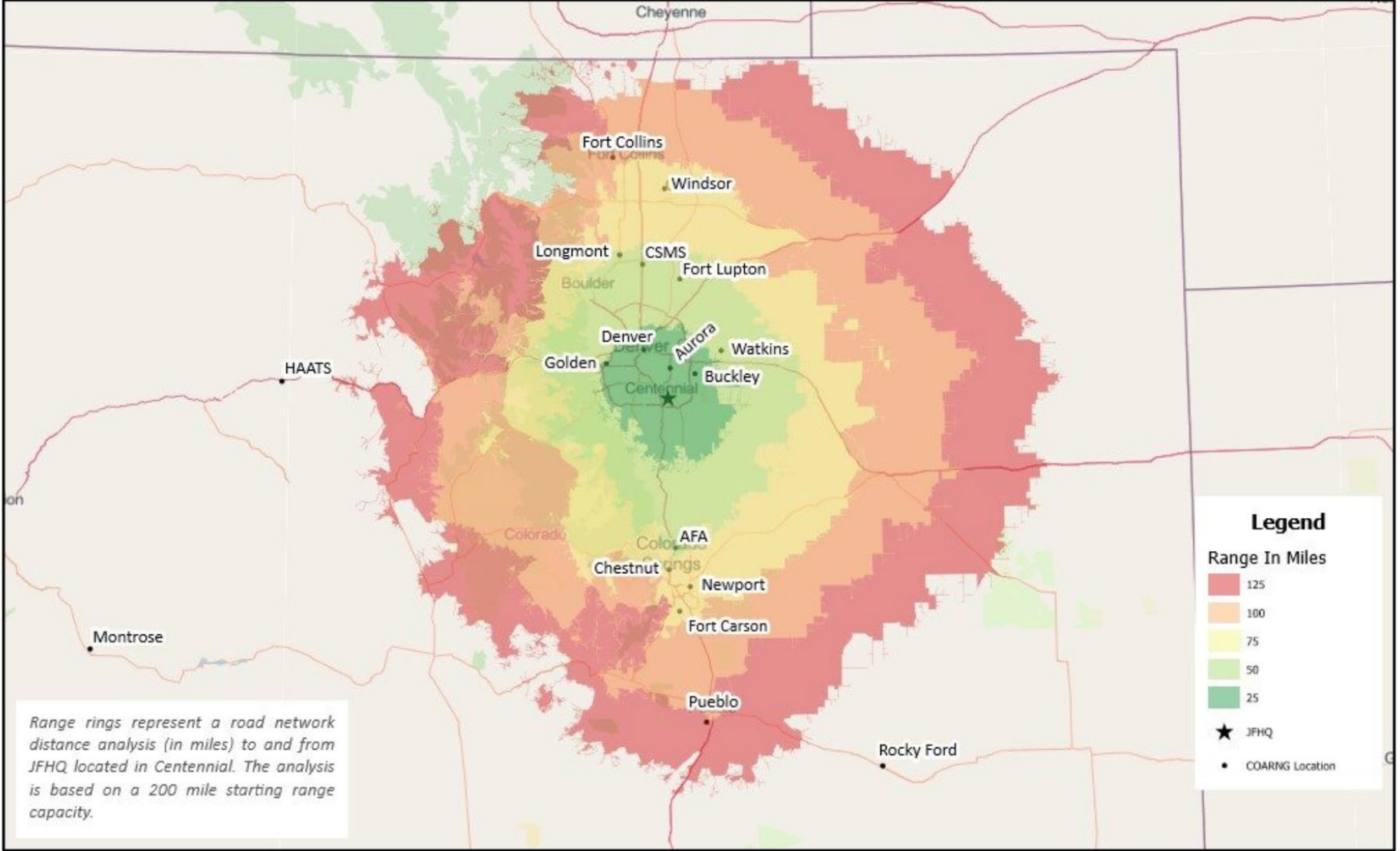
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# Colorado Army National Guard (COARNG) ZEV Information

- The vehicle management team coordinates planning for EV Charging Facilities (EVCF) where State and GSA fleet vehicle require charging
- BEV range is sufficient for most travels, with only a few facilities outside of the range
- Currently the COARNG has 35 ZEVs between State and Federal fleets
- EVCFs are capable of commercial third-party retail transactions. This capability will be used in the future to offset EV charging from facility electrical costs
- The DMVA / COARNG continues its fleet conversion to ZEVs
- Electric charging capability is not provided to employees and the public



# Electric Car Range From JFHQ



**Legend**

Range In Miles

- 125
- 100
- 75
- 50
- 25

★ JFHQ

• COARNG Location

Range rings represent a road network distance analysis (in miles) to and from JFHQ located in Centennial. The analysis is based on a 200 mile starting range capacity.



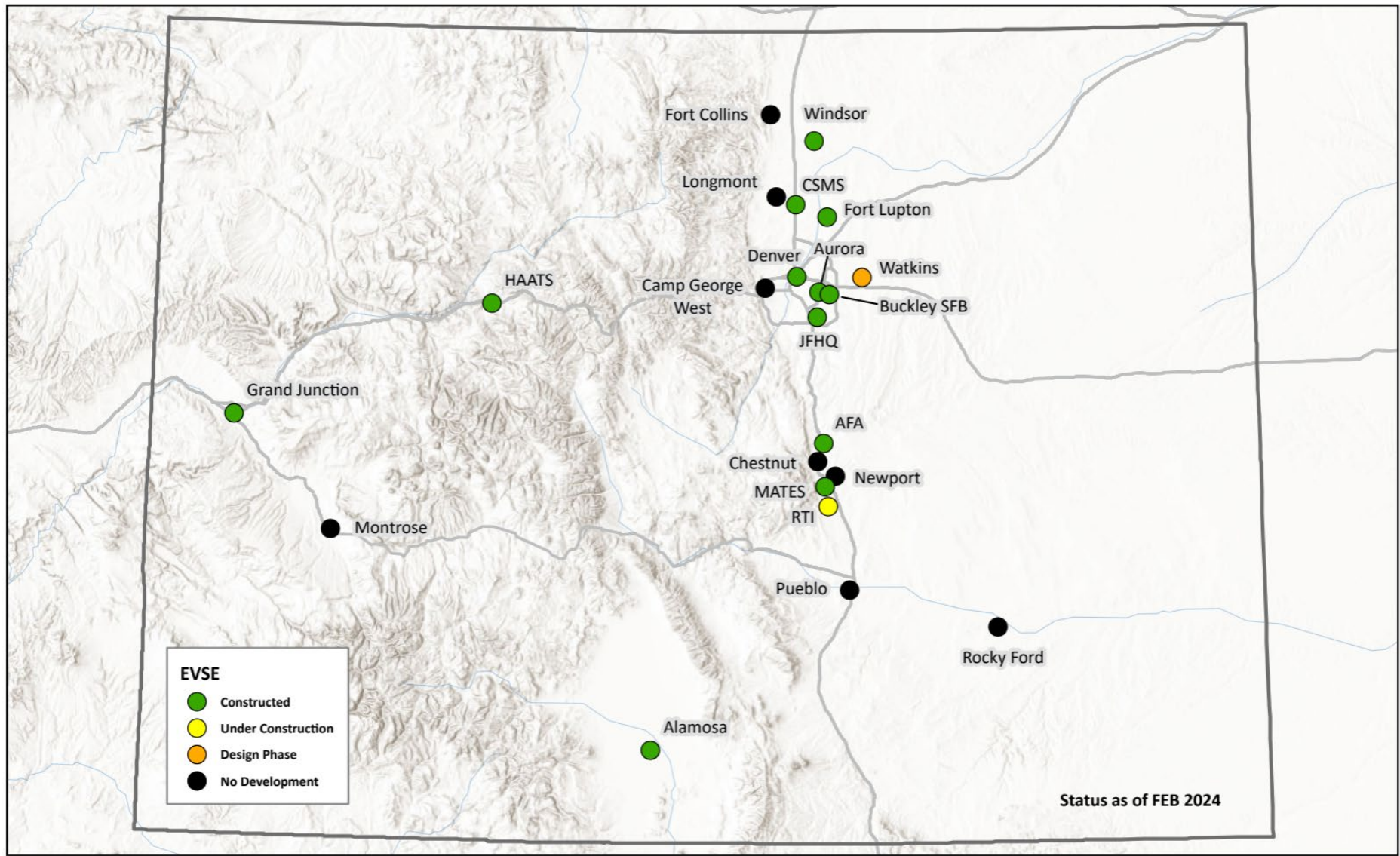
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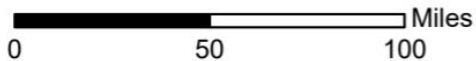
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# COARNG EVCF Status



Scale: 1:2,850,000



PROJECTION .....UTM, ZONE 13N  
 HORIZONTAL DATUM .....WGS-84  
 IMAGE SOURCE .....ESRI  
 FILE .....ENVEVSE/EVSE\_PLAN  
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# EV Service Equipment (EVSE) Infrastructure Funding Methods

- 1<sup>st</sup> charging station was purchased by the state through a grant, no federal dollars.
- 2<sup>nd</sup> charging station was partially state and federally funded
- 3<sup>rd</sup> charging station was funded by both G4 Logistics (Pedestal & associated equipment) and Cooperative Agreement, G9 Facilities (electricity from building to station)
- 4<sup>th</sup> & 5<sup>th</sup> were acquired a \$181K grant through the Colorado Energy Office
- 6<sup>th</sup> and subsequent EVCF are expected to be federally/state funded depending on the site



# EVSE Construction Timeline / Cost

## State EO D 2019 016: “Greening State Government”

Agencies and departments shall include the following in their capital construction renewal requests for new construction and substantial renovations: Plan 20% of parking spaces pre-wired for EV charging and 5% EVSE installed

| Location               | # Ports | Station Activation Date | Source of funds             | Cost Equipment | Cost Construction Install | Other Cost Construction | Total Construction Cost |
|------------------------|---------|-------------------------|-----------------------------|----------------|---------------------------|-------------------------|-------------------------|
| JFHQ Centennial        | 4       | 6/12/2020               | 100% State                  | \$11,110.00    | \$15,635.00               | \$4,258.00              | \$31,003.00             |
| CSMS                   | 2       | 6/18/2020               | Fed-\$19,526 State-\$6,905  | \$5,555.00     | \$13,625.00               | \$5,213.00              | \$24,393.00             |
| MATES Fort Carson      | 4       | 2/25/2022               | 100% Federal                | \$10,500.00    | \$26,000.00               | \$6,500.00              | \$55,396.00             |
| Aurora RC              | 4       | 7/8/2022                | 100% State                  | \$20,150.00    | \$57,644.00               | \$4,250.00              | \$82,044.00             |
| Denver                 | 4       | 7/8/2022                | 100% State                  | \$20,150.00    | \$77,650.00               | \$4,500.00              | \$102,300.00            |
| JFHQ Centennial        | 6       | 4/12/2023               | Fed-\$87,159-State-\$29,054 | \$23,400.00    | \$87,258.00               | \$7,555.00              | \$118,213.00            |
| BSFB                   | 4       | 6/1/2023                | 100% Federal                | \$15,600.00    | \$80,927.00               | \$7,033.00              | \$103,560.00            |
| Alamosa RC             | 4       | 11/30/2023              | 100% Federal                | \$14,734.00    | \$47,698.00               | \$12,847.00             | \$75,279.00             |
| HAATs Training Site    | 4       | 11/30/2023              | 100% Federal                | \$14,712.00    | \$68,670.00               | \$11,793.00             | \$95,175.00             |
| Fort Lupton RC         | 4       | 12/20/2023              | 100% Federal                | \$7,400.00     | \$37,186.00               | \$11,380.00             | \$55,966.00             |
| Grand Junction RC      | 4       | 12/20/2023              | 100% Federal                | \$14,800.00    | \$112,996.00              | \$13,053.00             | \$140,849.00            |
| North Colorado Springs | 4       | 12/31/2023              | 100% Federal                | \$14,712.00    | \$120,327.00              | \$10,587.00             | \$145,626.00            |
| Windsor RC             | 4       | 12/31/2023              | 100% Federal                | \$14,712.00    | \$68,852.00               | \$11,588.00             | \$95,152.00             |
| RTI Fort Carson        | 6       | 2/15/2024               | 100% Federal                | \$32,597.00    | \$109,962.00              | \$13,787.00             | \$156,346.00            |
| Watkins                |         | Design                  |                             |                |                           |                         |                         |
| Peterson               |         | Plan                    |                             |                |                           |                         |                         |
| RMMA                   |         | Plan                    |                             |                |                           |                         |                         |

# E-fuel (electricity) for vehicle charging operations

- COARNG method: Fleet Operations pays incremental electricity costs associated with charging vehicles at COARNG facilities to offset overall utility costs
- The fleet EVs have a key FOB that they use at the charging station
  - Key FOBs are linked to specific vehicles to allocate the cost of the electricity to appropriate fleet
  - COARNG G9, Installations, and Environment, controls the authorized users list and registers the ZEVs access card
  - EVCFs provide detailed data identifying charging transactions logged for authorized users, e.g., ZEV vehicle ID, charging time, and kWh consumed

# Maintenance & Operations Cost

- Maintenance agreement with Chargepoint (*Not an endorsement*) covering parts and labor Cost: \$650 annually for each station
- Operation cost (Chargepoint cloud network for managing charging stations – collects revenue, data, and deposits funds into state account) Cost: \$480 annually for each station

# Revenue

- The DMVA worked to pass state legislation that gave the required authorization to create an offset account for the operation, upkeep, and supply of electricity for EV charging infrastructure. The bill's drafting process began in August 2022, and in April 2023, Governor Jared Polis signed it into law after it had been approved by the Colorado Legislature. The law become operative on July 1st, 2023.
- Required DMVA 'Cash' account to use Chargepoint third party billing
- The cash account will be used to offset DMVA E-fuel and the O&M costs



SENATE BILL 23-236

BY SENATOR(S) Bridges and Kirkmeyer, Zenzinger, Cutter, Gonzales, Hansen, Jaquez Lewis, Kolker, Marchman, Priola, Winter F., Fenberg; also REPRESENTATIVE(S) Sirota and Bockenfeld, Bird, Amabile, Brown, Froelich, Hamrick, Jodeh, Joseph, Kipp, Lindsay, Lindstedt, Michaelson Jenet, Parenti, Snyder, Valdez.

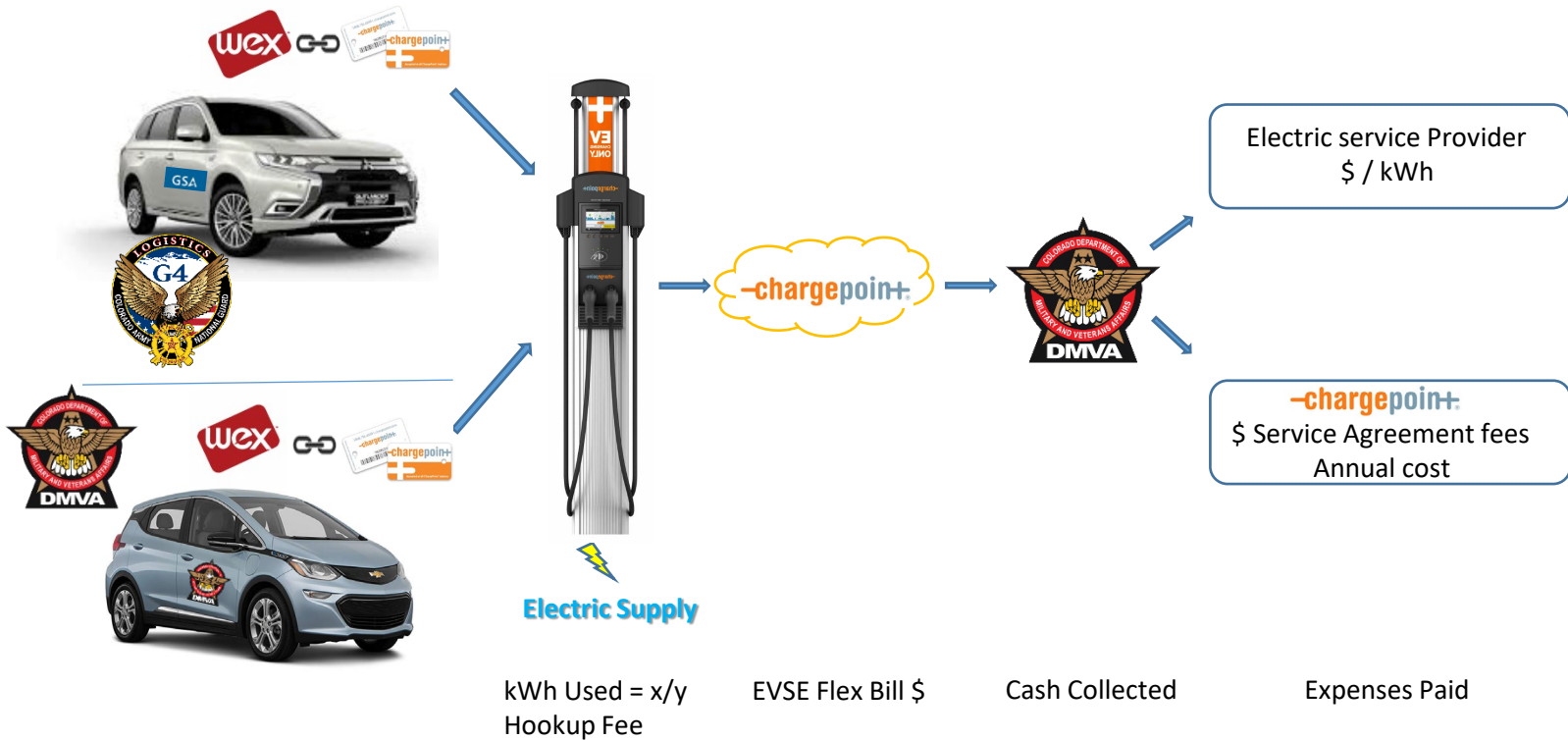
CONCERNING THE CREATION OF THE ELECTRIC VEHICLE SERVICE EQUIPMENT FUND, AND, IN CONNECTION THEREWITH, MAKING AN APPROPRIATION.

*Be it enacted by the General Assembly of the State of Colorado:*

**SECTION 1.** In Colorado Revised Statutes, add 28-3-110 as follows:

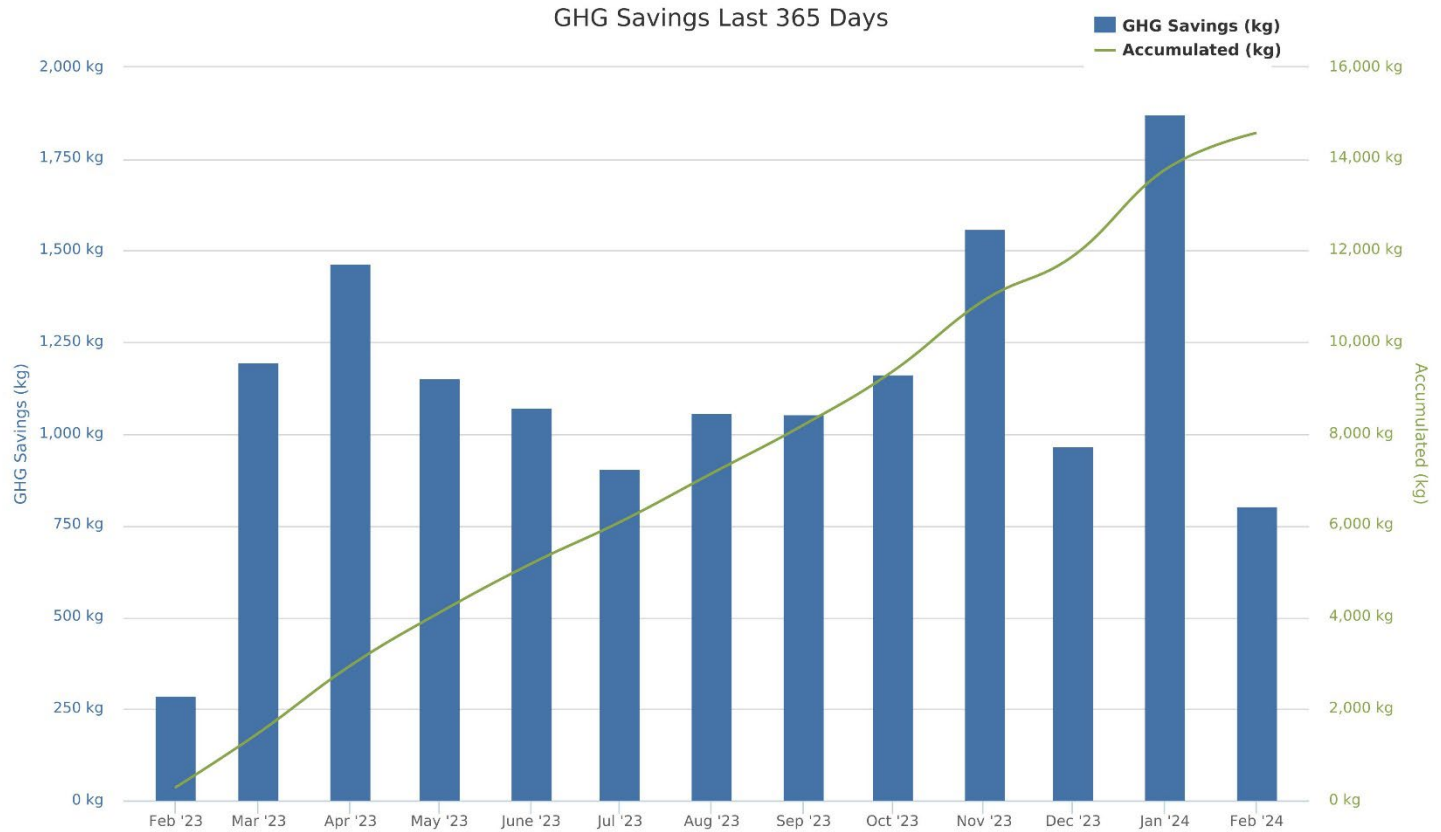
**28-3-110. Electric vehicle service equipment fund - created - use of fund - gifts, grants, and donations - definitions.** (1) THE ELECTRIC VEHICLE SERVICE EQUIPMENT FUND IS HEREBY CREATED IN THE STATE TREASURY. THE FUND CONSISTS OF MONEY CREDITED TO THE FUND

# O&M Cost Off-Set - EV Charging Cash Flow





# Operations Status



## Financials

Session Fees    Utility Cost

**\$537.00**

You've dispensed **2.07 MWh** of electricity over the last 30 days. Recoup your costs by charging a fee. ChargePoint will send you the money.

Estimated monthly cost based on electricity price of \$0.26 per kWh.

## Environment

Lifetime

Here's how EV charging has helped:



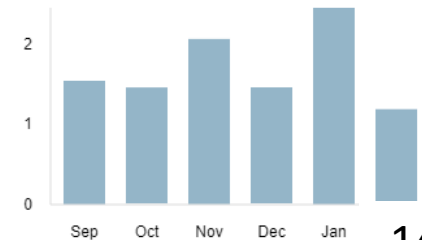
You've avoided 26,741kg greenhouse gas emissions



That's like planting 686 trees and letting them grow for 10 years

## Energy

in MWh





# QUESTIONS



DEPUTY CHIEF OF STAFF FOR  
INSTALLATIONS & ENVIRONMENT

