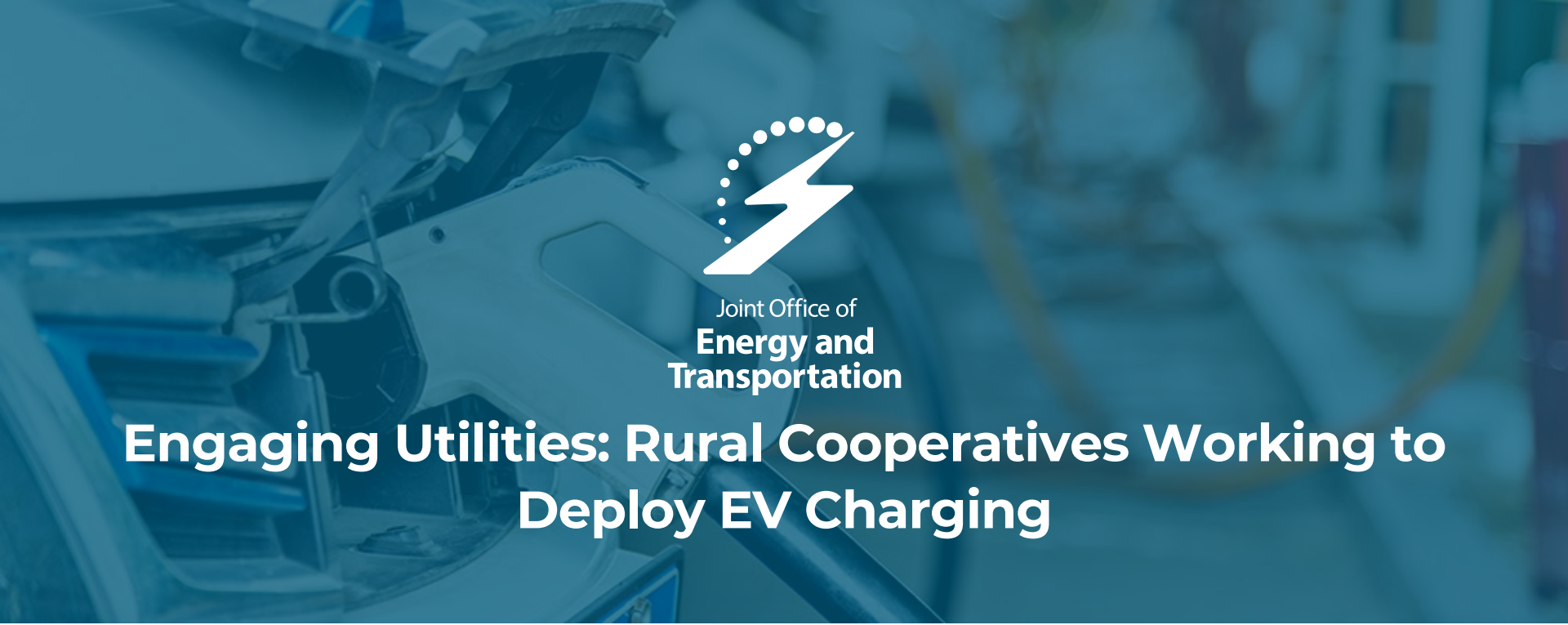


Joint Office of
Energy and
Transportation

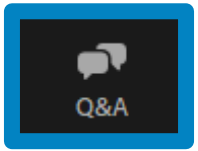
Engaging Utilities: Rural Cooperatives Working to Deploy EV Charging

6/18/2024

driveelectric.gov

Zoom Tips and Housekeeping

- Controls are located at the bottom of your screen. If they aren't appearing, move your cursor to the bottom edge.
- Submit questions using the "Q&A" window



Disclaimer

Notice: This webinar is being recorded and may be posted on the Joint Office website or used internally.

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Agenda

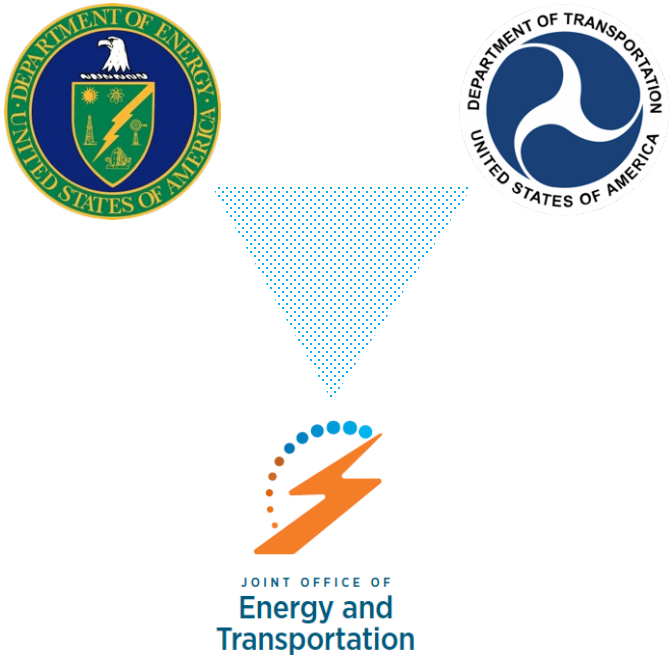
Introduction from the Joint Office

Presentations from panelists

Panel Discussion

Audience Q&A

Mission and Vision



Mission

To accelerate an electrified transportation system that is affordable, convenient, equitable, reliable, and safe.

Vision

A future where everyone can ride and drive electric.

BIL Programs Supported by the Joint Office

The Joint Office provides unifying **guidance**, **technical assistance**, and **analysis** to support the following programs:

National Electric Vehicle Infrastructure (NEVI) Formula Program (U.S. DOT)
$5 billion for states to build a national electric vehicle (EV) charging network along corridors, including **$148 million** awarded to repair and replace non-operational chargers.

Charging & Fueling Infrastructure Discretionary Grant Program (U.S. DOT)
$2.5 billion in community and corridor grants for EV charging, as well as hydrogen, natural gas, and propane fueling infrastructure

Low-No Emissions Grants Program for Transit (U.S. DOT)
$5.6 billion in support of low- and no-emission transit bus deployments

Clean School Bus Program (U.S. EPA)
$5 billion in support of clean school bus deployments

Clean Bus Planning Awards (CBPA) Program

Learn more and apply

Free technical assistance for comprehensive and customized fleet electrification transition plans.

- Fleets eligible for FTA Low or No Emission Grant Program funding, with some exceptions, can apply now for CBPA assistance.
- Deployment assistance also available at the completion of the plan.
- Funded by the Joint Office and managed by the National Renewable Energy Laboratory (NREL).
- Applications open on a rolling basis.

Joint Office of Energy and Transportation

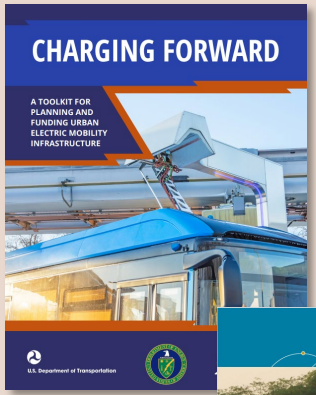
NREL Transforming ENERGY

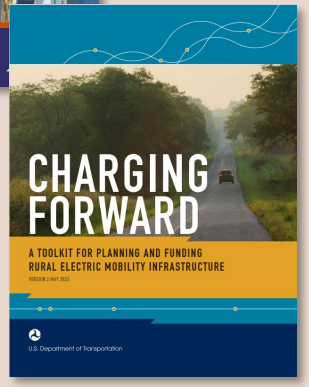
driveelectric.gov/clean-bus-planning-awards

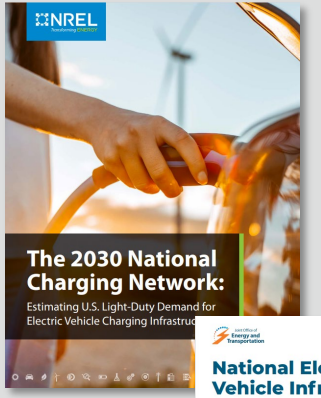
Rural and Urban EV Toolkits

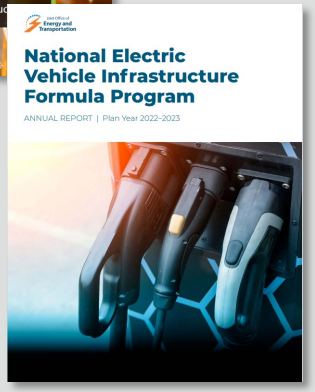
Forecasts and Reports

Help Sheets and Checklists









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Battery Buffered Case Study


Joint Office of Energy and Transportation

Technical Assistance Help Sheet

Battery Energy Storage for Electric Vehicle Charging Stations

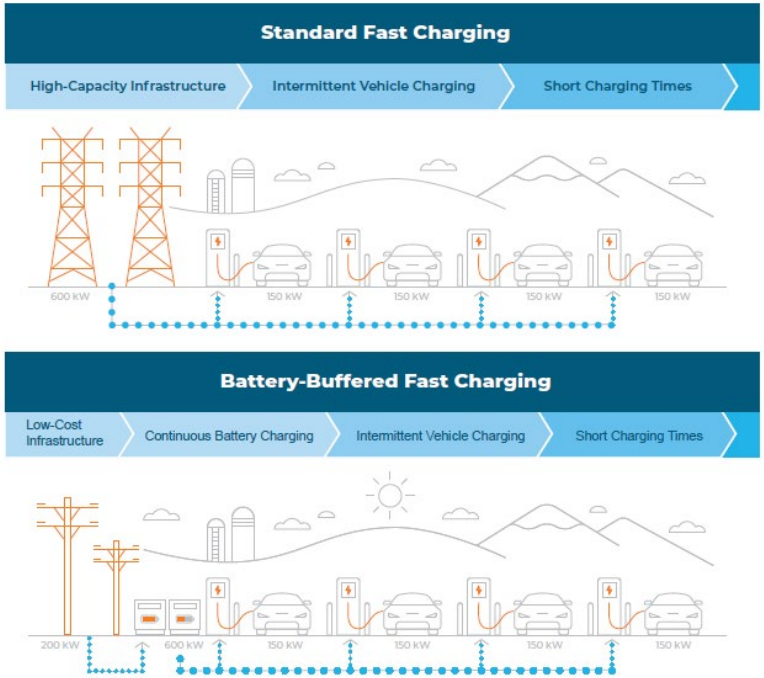
Introduction

This help sheet provides information on how battery energy storage systems can support electric vehicle (EV) fast charging infrastructure. It is an informative resource that may help states, communities, and other stakeholders plan for EV infrastructure deployment, but it is not intended to be used as guidance, set policy, or establish or replace any standards under state or federal law.

Battery energy storage systems can enable EV fast charging build-out in areas with limited power grid capacity, reduce charging and utility costs through peak shaving, and boost energy storage capacity to allow for EV charging in the event of a power grid disruption or outage. Adding battery energy storage systems will also increase capital costs for a deployment of EV charging stations, which should be weighed against potential benefits before implementation.

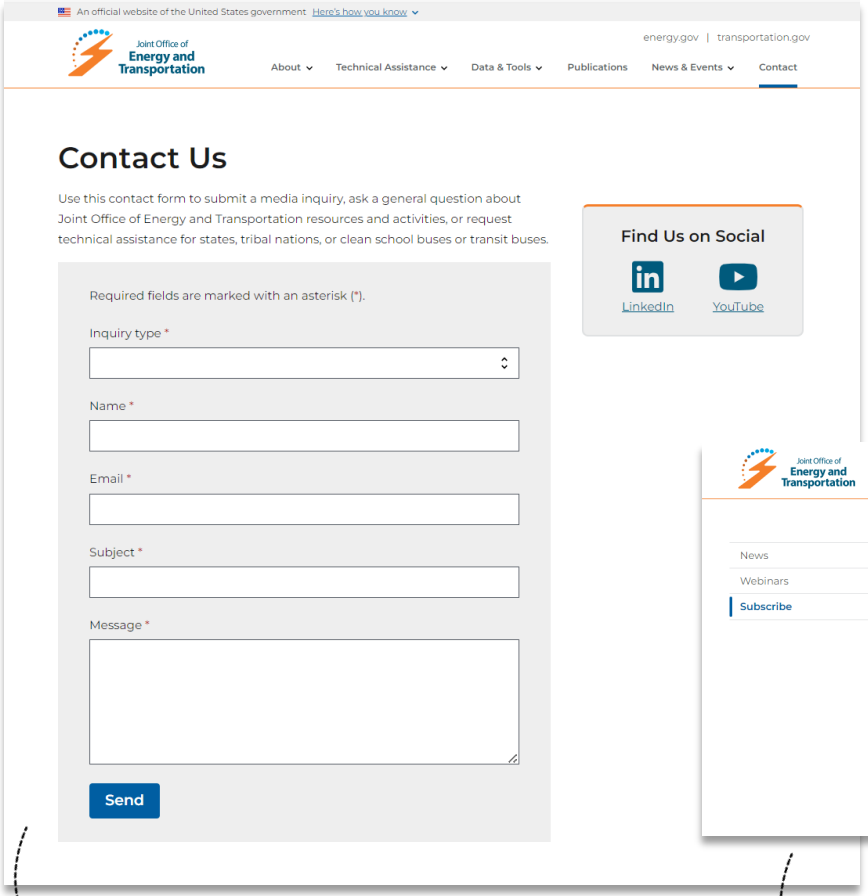
What Is Battery-Buffered Fast Charging?

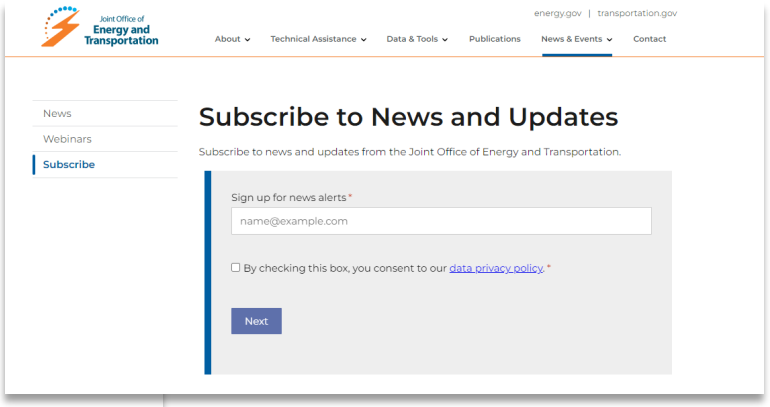
A battery energy storage system can store up electricity by drawing energy from the power grid at a continuous, moderate rate. When an EV requests power from a battery-buffered direct current fast charging (DCFC) station, the battery energy storage system can discharge stored energy rapidly, providing EV charging at a rate far greater than the rate at which it draws energy from the power grid.



Visit **Driveelectric.gov/publications**

- Request assistance via online form
- Initial response within 48 hours
- General questions and feedback welcome!





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Polling Questions

Panelists

Jennah Denney
National Rural Electric Cooperative Association

Chelsea Mead
Trico Electric Cooperative, AZ

Cyril Brunner
Vermont Electric Cooperative, VT

John Goroski
Flathead Electric Cooperative, MT

Jennah Denney

National Rural Electric Cooperative Association

May 14, 2024

Landscape of rural utilities in transportation electrification

Joint Office of Energy and Transportation

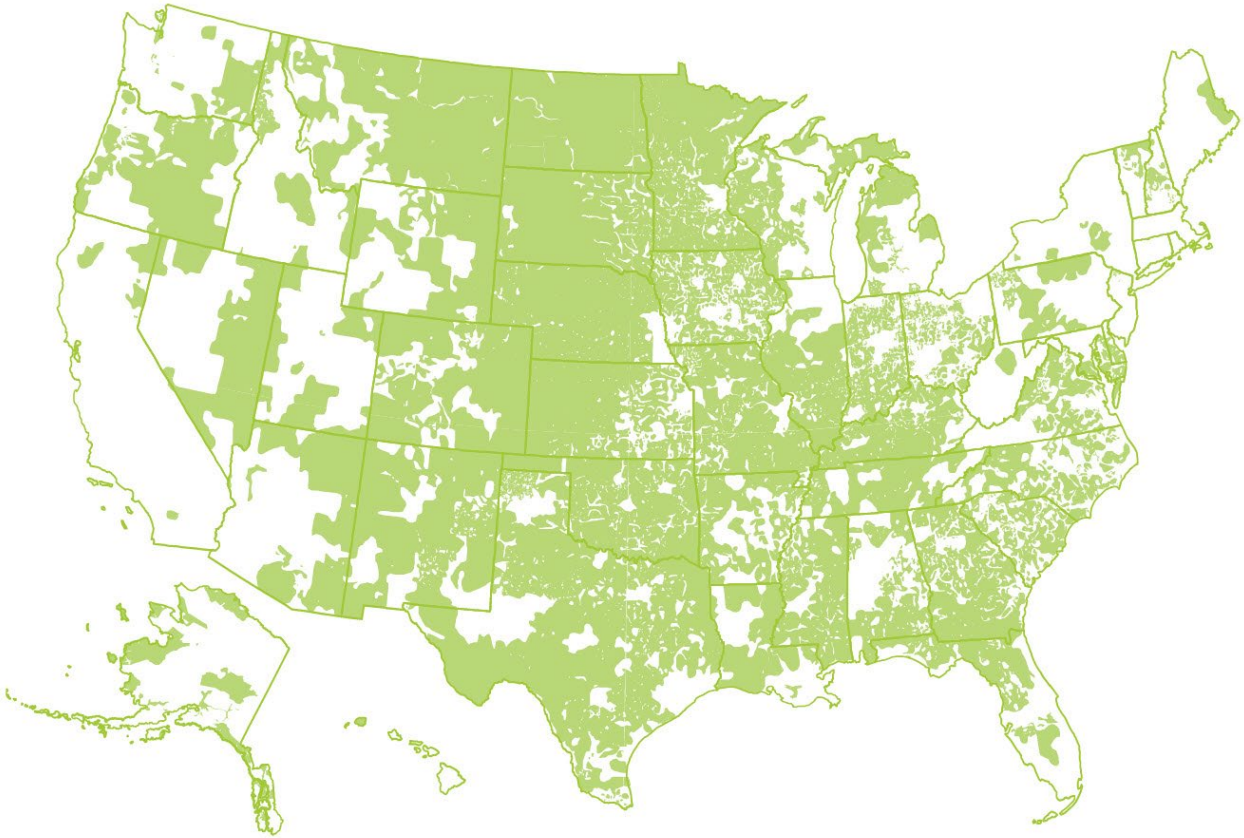
Jennah Denney – EV Strategies & Solutions Manager

NRECA
America's Electric Cooperatives

Cooperatives Focused on their Consumer-Members

NRECA
America's Electric Cooperatives

Cooperatives Power 56% of the Nation's Landmass



NRECA
America's Electric Cooperatives

Predict, Plan and Mitigate Impacts with Members at the Front of Mind

What are cooperatives doing?

Outreach

- Education
- Identification

Planning

- Grid Impacts
- Affordability & Reliability

Management

- Rates
- Curtailment

Cooperative Approach to Vehicle Electrification

Mission: The Cooperative Approach to Vehicle Electrification (CAVE) is a network of electric cooperatives that have implemented or are planning to implement a variety of electric transportation programs.

Goal 1: Focus on charging infrastructure in rural and low-income communities.

Goal 2: Create education-based programs to inform consumers, dealers, and policymakers on the value of electric transportation.

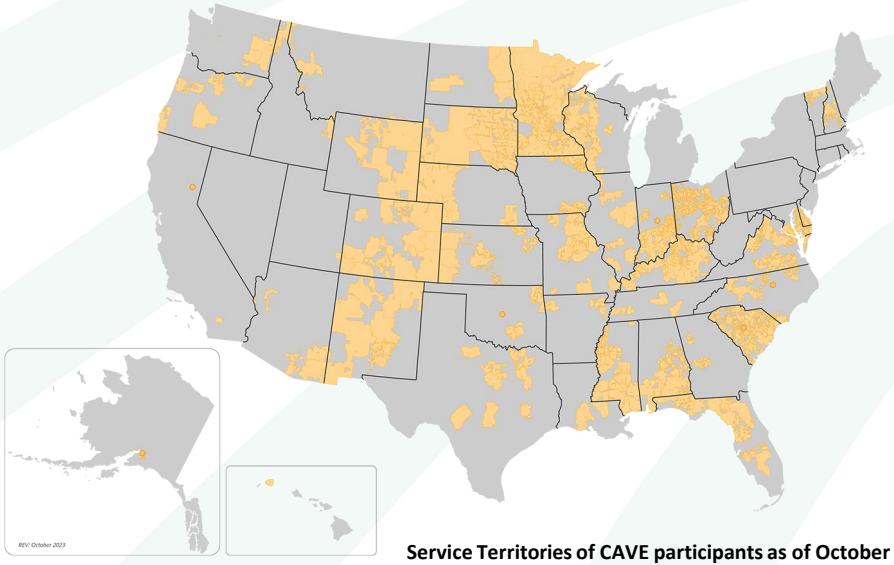
Goal 3: Explore options for fleets, transit bus, school bus, and medium/heavy-duty truck adoption and charging solutions

Goal 4: Demonstrate unique programs that utilize technologies to improve grid reliability.

216 Individuals

131 Unique Coops

38 States Represented



Service Territories of CAVE participants as of October 2023

NRECA
America's Electric Cooperatives

REWIRED: Rural Electric Utility Workflow Improvements for Rapid EVSE Deployment

Fiscal Year 2023 Vehicle Technologies Office Program Wide Funding Opportunity Announcement

FOA # DE-FOA-0002893

Name	Location (city, state)	Project Description	Federal Share
AOI 11 - Reducing Soft Costs of Electric Vehicle Infrastructure to Enable Widespread Deployment			
Electric Power Research Institute, Inc.	Palo Alto, CA	GridFAST Express: Roadmap and Actions to Address Key Challenges to the Utility Interconnection Process and Supporting Supply Chain	$6,243,941
Interstate Renewable Energy Council	Albany, NY	A Comprehensive Nationwide EV Charging Recognition and Technical Assistance Program	$6,934,952
NRECA Research	Arlington, VA	REWIRED: Rural Electric Utility Workflow Improvements for Rapid EVSE Deployment	$2,294,576

*Currently in pre-award negotiations

Preliminary - Overview

- The Project will support EVSE development and result in reduced soft costs for new EV charging installations that are scalable, replicable, and can be implemented across the nation by analyzing current and needed utility workflow improvements through peer-to-peer learning and lesson exchange amongst rural electric cooperatives.

- Soft costs are non-hardware expenses, such as preliminary studies, paperwork, approval delays, communication inefficiencies, and inadequate assessment of distribution grid capacity.

NRECA America's Electric Cooperatives

Questions?

Jennah Denney - NRECA
EV Strategies & Solutions Manager
(501) 400-5548
JENNAH.DENNEY@NRECA.COOP

Chelsea Mead

Trico Electric Cooperative, AZ

EV ROADMAP

TRICO

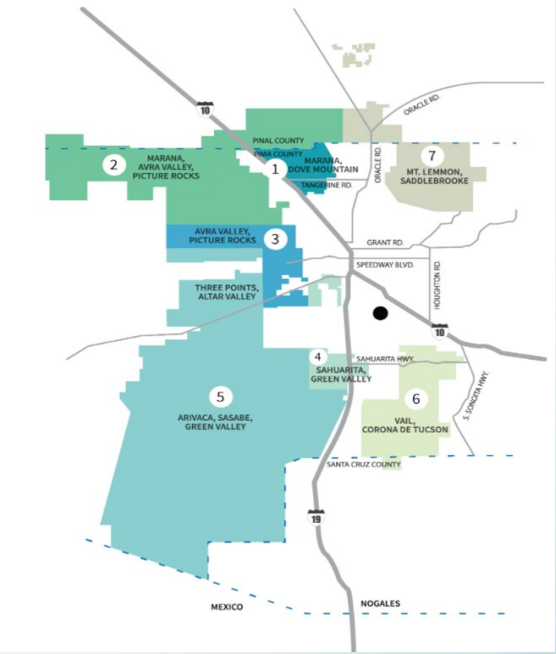
AN ENERGY COOPERATIVE

POWERED WITH PURPOSE

A Touchstone Energy® Cooperative

ABOUT US

- Trico surrounds Tucson, AZ
- 50,000 members
- 140 employees
- 4,000 miles of line
- Fully regulated by the Arizona Corporation Commission
- 255 mW summer peak
  < 100 mW winter



TRICO
AN ENERGY COOPERATIVE

Strategic Direction

Preparing for a competitive future where members will demand innovation and great value

Power Supply: Ensure ample resources, incorporating traditional, distributed, and member-owned assets.

Member Satisfaction: Engage with Members to understand and exceed their expectations.

Reliability: Delivering for Members by enhancing trust and empowering progress.

EV Roadmap

- **Strategic Approach: Develop a five-year roadmap**
  - Research other cooperative's home charging programs that include having the objective being to ensure continued purchase of cooperative-provided power.
  - Research charging stations, including pricing, warranty, NISC integration, metering and installation aspects.
  - Determine retail pricing and/or incentives, including considering a subscription-based model for the home charging unit.
  - The project may need to include a determination if a subsidiary needs to be established if the co-op is to own level 2 chargers.

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Home

- Member-owned
  - Experimental Off-Peak EV Charging Plan
    - 6.5 cents during the charging period of (10:00 pm to 5:00 am)
    - 45% reduced rate from standard retail rate
    - Maximum of 400 kWhs per month
    - Not sub metered – using interval data to calculate

TRICO
AN ENERGY COOPERATIVE

Home

- Trico-owned
  - Unlimited EV Charging Plan
    - Unlimited off-peak charging
    - $64 per month for 7.7 kW charger
    - $69 per month for 11.5 kW charger
    - $71 per month for 15.4 kW charger
    - Off-peak is 6:00 am to 9:00 am and 4:00 pm to 10:00 pm
    - $0.25 cents per kWh charged during on-peak
    - Sub meter built into charger

TRICO
AN ENERGY COOPERATIVE

Home

- Trico-owned
  - Unlimited EV Charging Plan
    - Unlimited off-peak charging
    - $64 per month for 7.7 kW charger
    - $69 per month for 11.5 kW charger
    - $71 per month for 15.4 kW charger
    - Off-peak is 6:00 am to 9:00 am and 4:00 pm to 10:00 pm
    - $.25 cents per kWh charged during on-peak
    - Sub meter built into charger
  - Trico installs, owns and maintains the unit
    - Trico conducted an RFP process
    - Defined a standard installation
      - 240-volt circuit within 20 feet of the charger

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Home

- EV Readiness Assessments
  - Trico hired an inhouse Journeyman Electrician to complete assessments, installs, and maintenance
  - Trico will assess Member service to determine its readiness for an EV charger
  - If upgrades are needed, Trico will provide an estimate
  - Member can choose to use Trico or select a 3rd party contractor to complete work

TRICO
AN ENERGY COOPERATIVE

Home

- EV Readiness Assessments
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  - If upgrades are needed, Trico will provide an estimate
  - Member can Trico or selected a 3rd party contractor to complete work
- Future
  - Managed Charging – 2025
  - V2X Charging – 2025/2026

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Public

- Third-Party or Member-Owned
  - Serve on a demand and energy rate

- Trico-Owned (2024)
  - Trico determined we won’t invest in public charging unless significant grant funds can be obtained to buy down the cost
  - NEVI Application with Pima County, Tucson, Tucson Electric Power (TEP) and Trico
    - 10 Trico-owned chargers in Pima County
    - Conducted an RFP in 2023
    - Includes 300 kW of storage per site

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Fleet

- Gauging interest
- Two models
  - Trico-owned
    - Managed charging
  - Member-owned
    - Passive Management: Rates for small, medium and large
    - Active Management

Financial assistance will be available from Trico to manage the charging

- Rebates
- Loans
- Separately metered/priced

TRICO
AN ENERGY COOPERATIVE

Contact Information

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P: 520-744-2944, ext. 1754
Trico.coop

TRICO
AN ENERGY COOPERATIVE

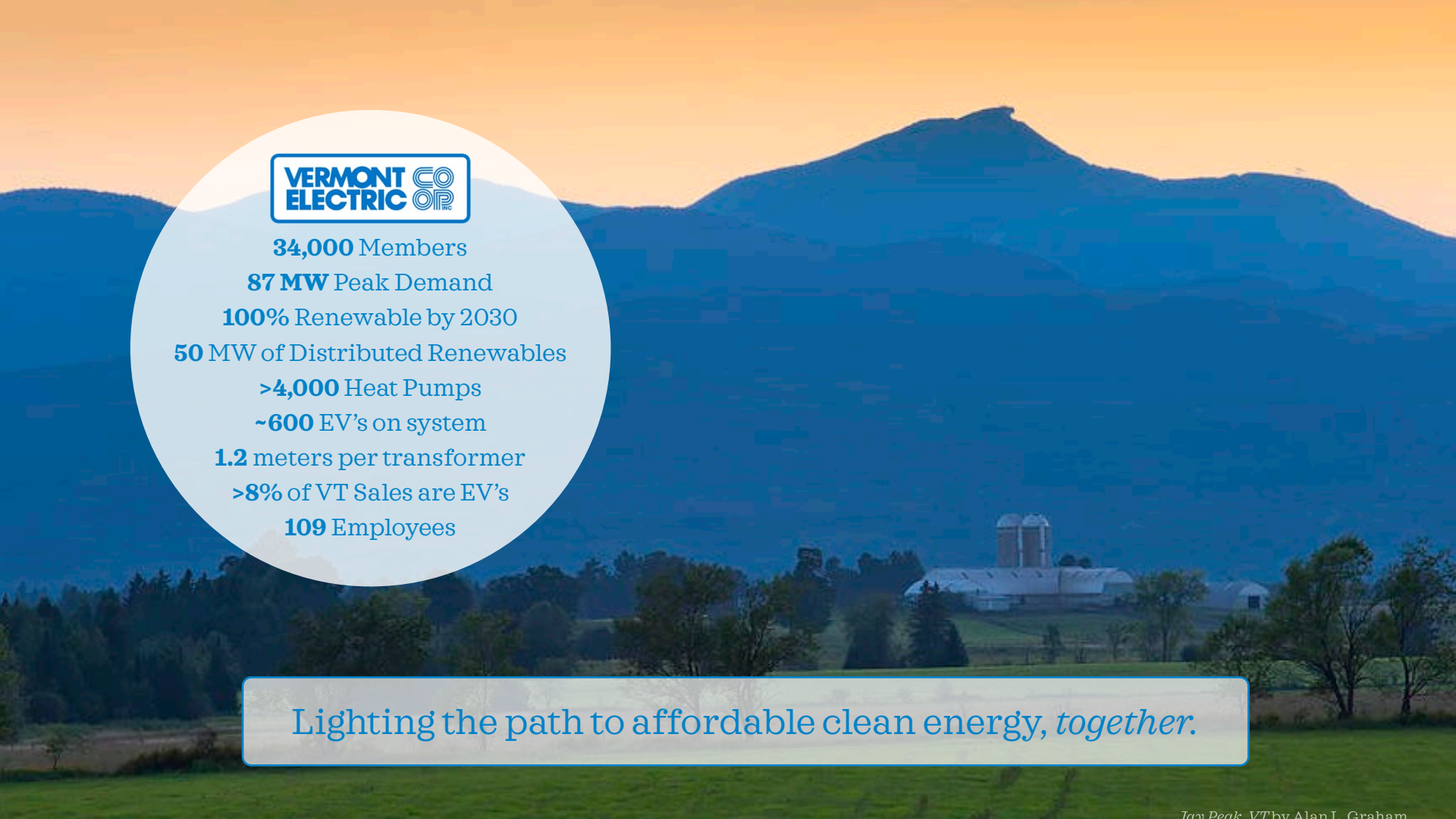
Cyril Brunner

Vermont Electric Cooperative, VT

JOET Rural Electric Cooperatives Deploying EV Charging

- Brief overview of VEC
- The challenges we face
- Why is HQ so important to VEC?
- Managing DER to defer infrastructure investment

VERMONT ELECTRIC COOP



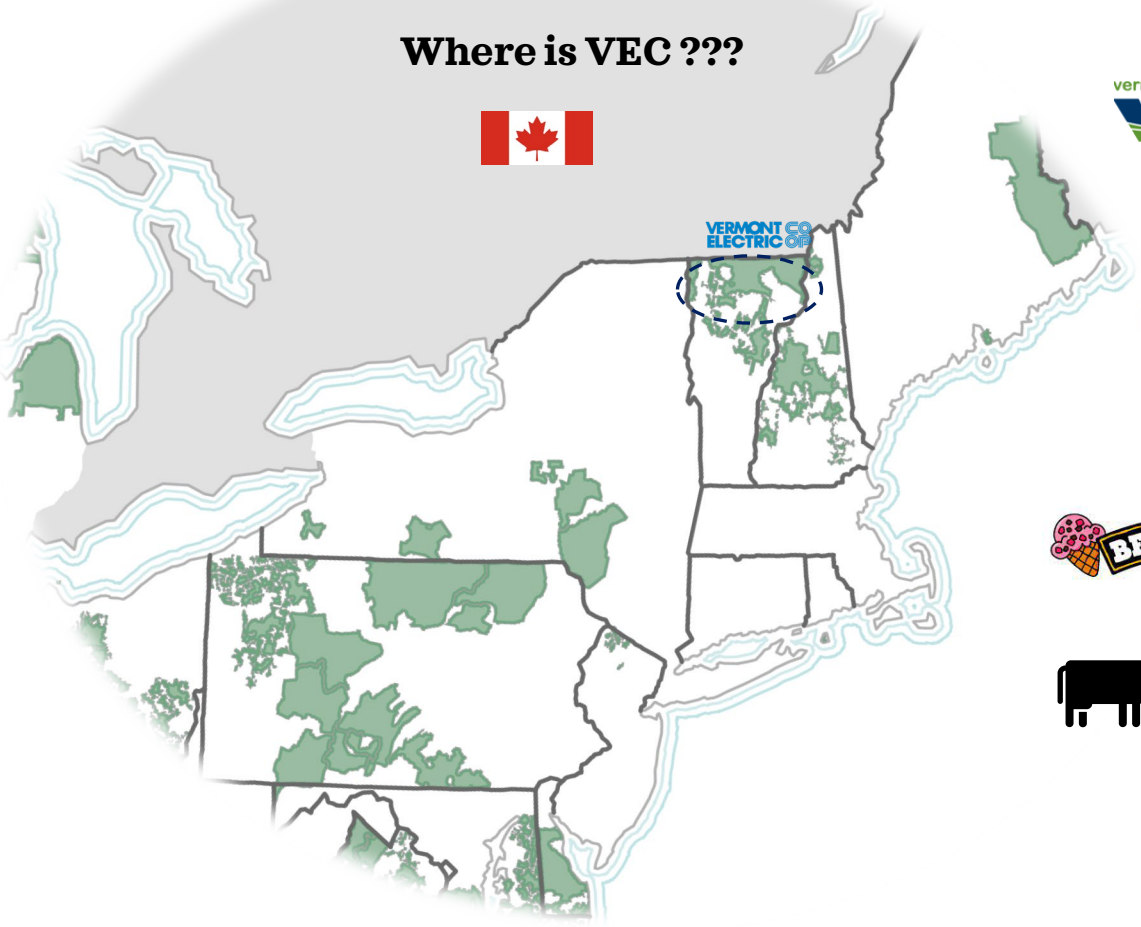
VERMONT ELECTRIC CO-OP

34,000 Members
87 MW Peak Demand
100% Renewable by 2030
50 MW of Distributed Renewables
>4,000 Heat Pumps
~600 EV's on system
1.2 meters per transformer
>8% of VT Sales are EV's
109 Employees

Lighting the path to affordable clean energy, *together.*

Jay Peak, VT by Alan L. Graham

Where is VEC ???

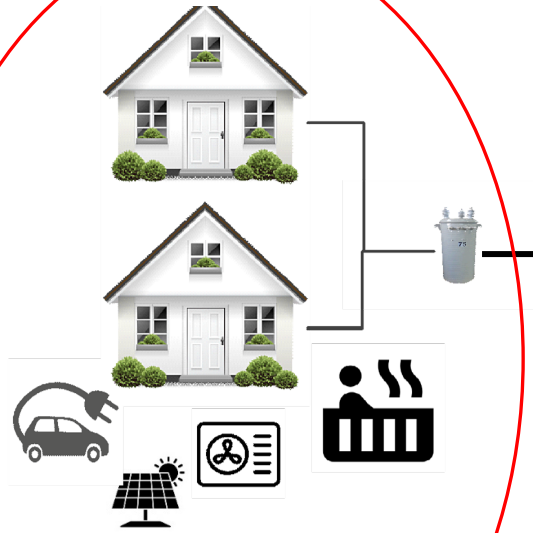


vermont electric power company
VELCO

BEN & JERRY'S

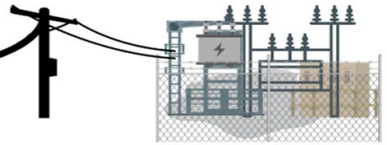
VERMONT ELECTRIC CO-OP

The Impact of Electrification



Local Homes, Buildings, and Transformers

Our focus at VEC – primarily residential



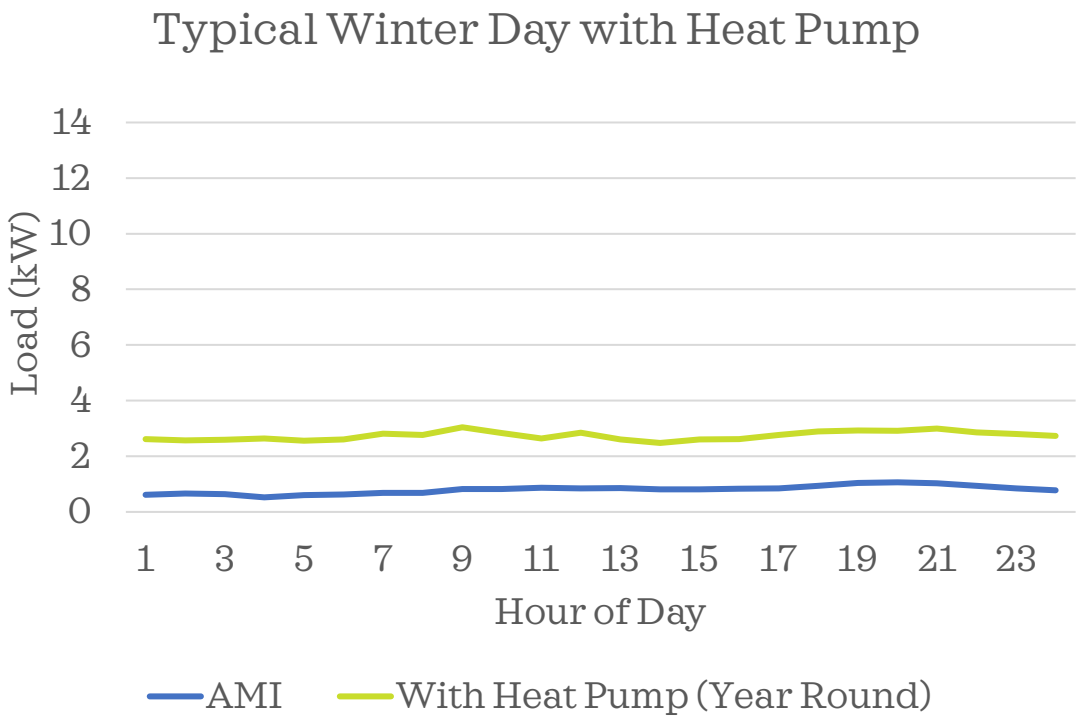
Primary Lines and Substations

vermont electric power company VELCO

ISO new england

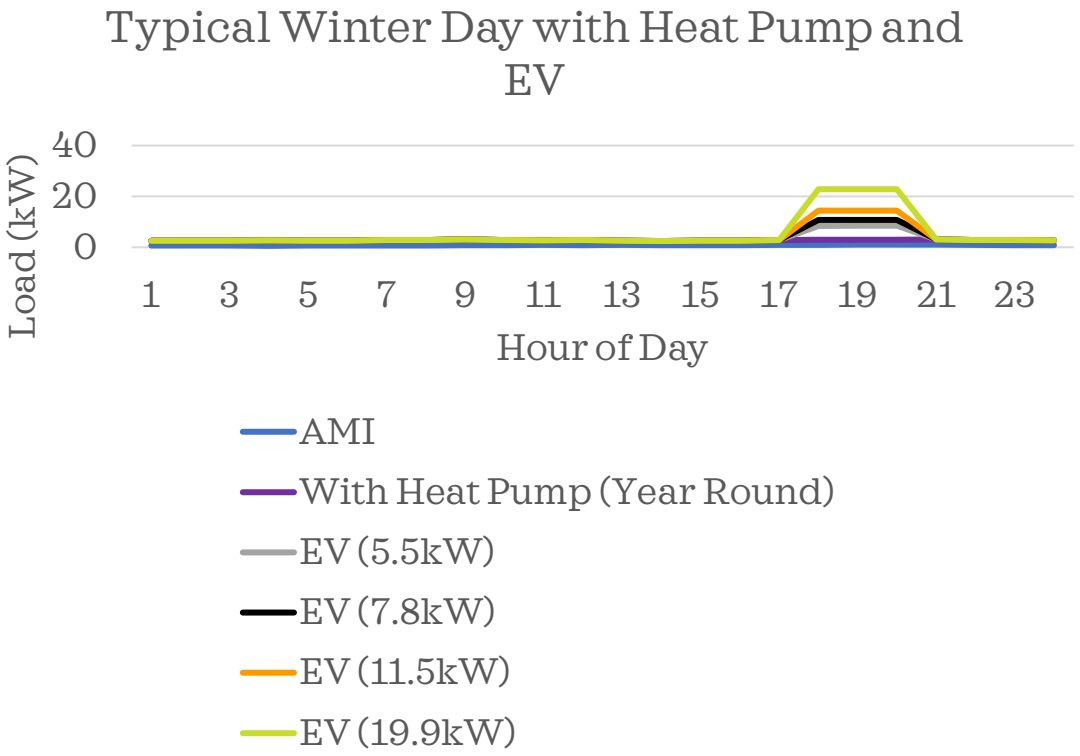
Transmission in VT and ISONE

Residential Impact of Electrification - Locally



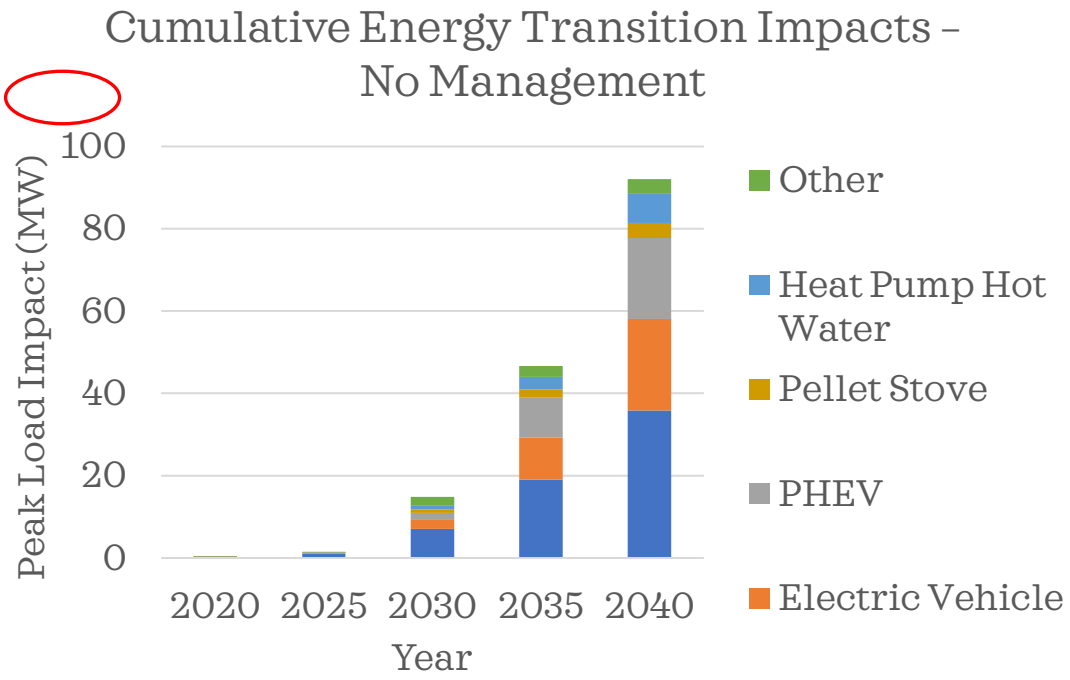
- Washer dryer
- Heat pumps today

Residential Impact of Electrification – Locally with EV's



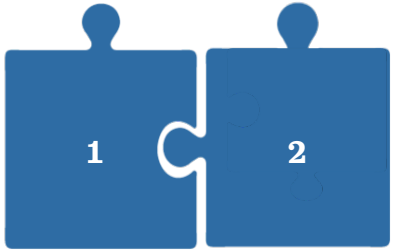
- Average EV 7.8kW
- Have seen several 19.9kW

The Impact of Electrification – Systemwide



- 80 MW peak today
- Significant load growth expected by 2040
- kWH sales versus kW grid infrastructure impacts
- 30-40% of distribution transformers, lines and substations would be overloaded by 2040 without load management
- $100 million in grid upgrades, even more at the transmission level

Grid Infrastructure is the Foundation

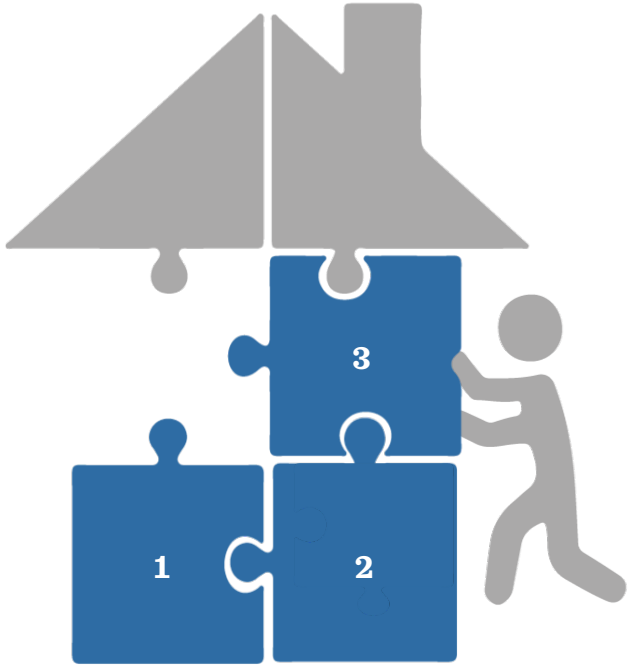


1. Maintain our existing infrastructure

2. Upgrade conditionally poor infrastructure to increase capacity and relocate or underground to improve reliability

- Annual maintenance plan to extend life of assets
- Increased standard distribution transformer from 10kVA to 15kVA
- Actively replacing 250 miles of legacy conductor (6 Steel, 8D, 6A). Currently replacing around 10 miles annually
- Seeking out grant funding to support investments (GRIP and others)

Grid Infrastructure is the Foundation



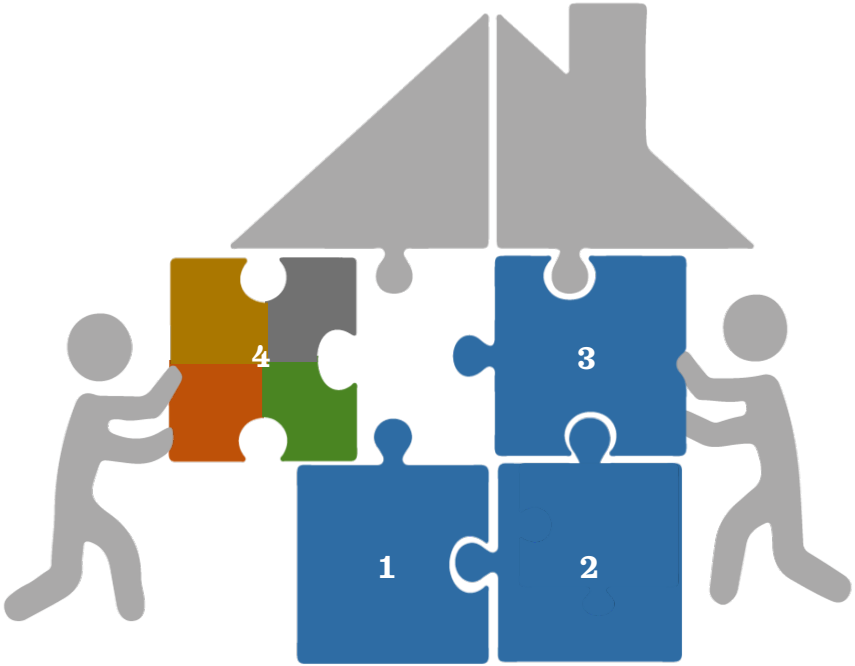
1. Maintain our existing infrastructure

2. Upgrade conditionally poor infrastructure to increase capacity and relocate or underground to improve reliability

3. Leverage existing distribution management systems (SCADA) and data sets (NISC, GIS and AMI)

- Existing data is foundational to enabling DER management for infrastructure
- Need accurate data

Grid Infrastructure is the Foundation, VPP's Will Enable More



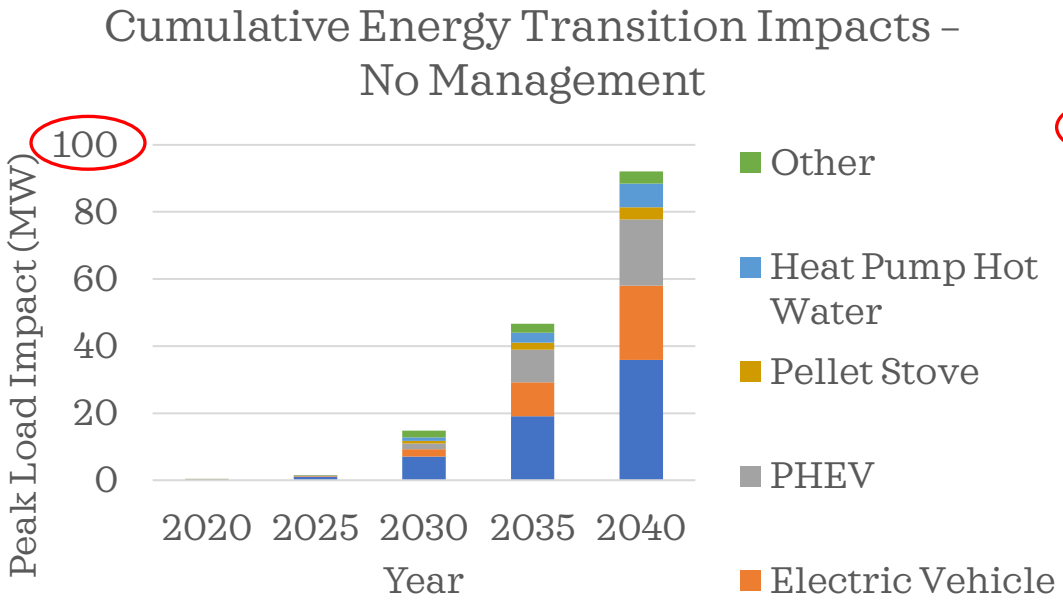
1. Maintain our existing infrastructure

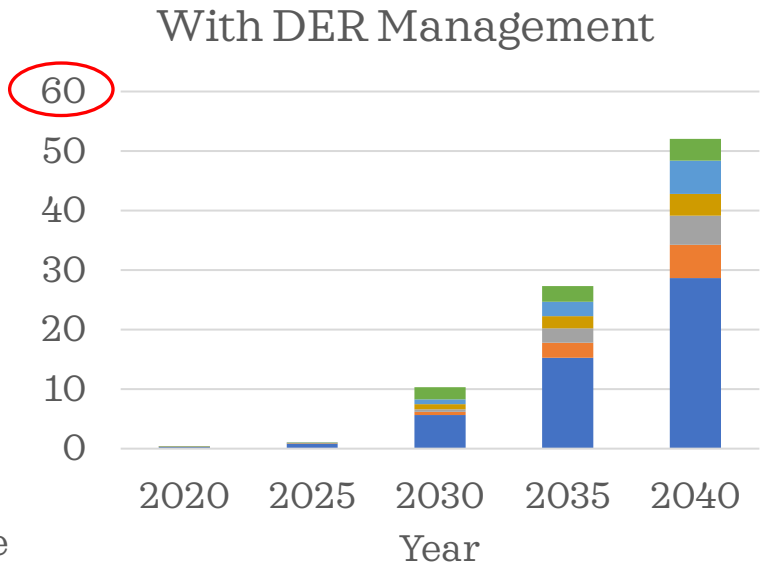
2. Upgrade conditionally poor infrastructure to increase capacity and relocate or underground to improve reliability

3. Leverage existing distribution management systems (SCADA) and data sets (NISC, GIS and AMI)

4. Create VPP's by **integrating** existing data with DER OEM's, **modeling** DER impacts, **experimenting** with pilots, and **orchestrating** devices through technology solutions built on AI

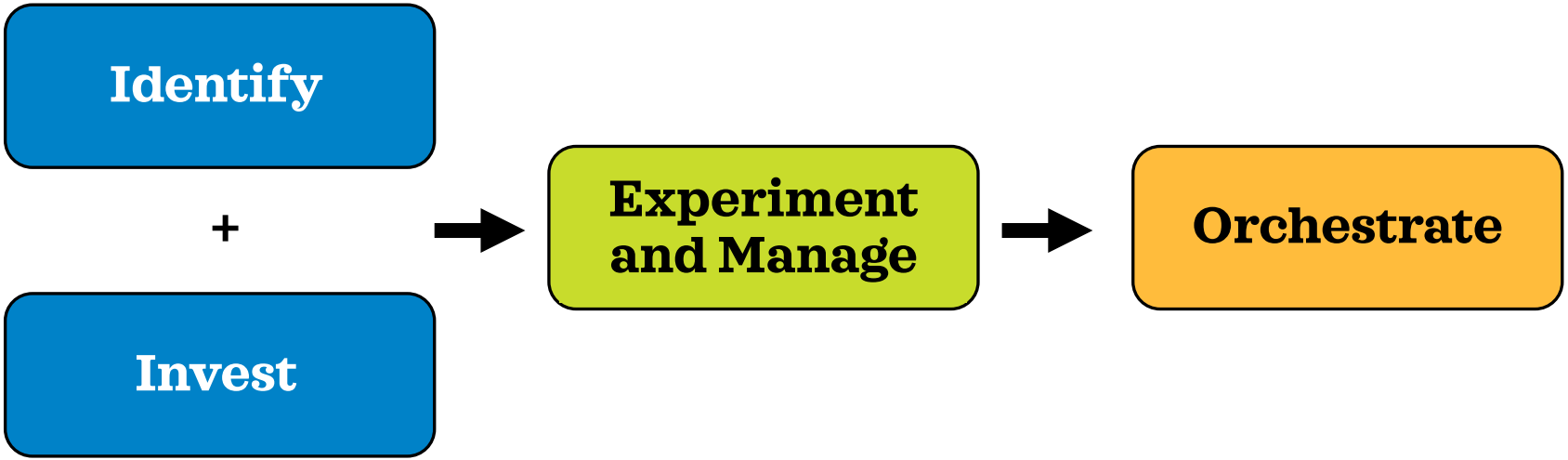
Why will VPP's and DER management help?





- We can save ~$50 million in Grid Investment with DER Management

VEC Flexible Load Program Focus



Identify

Vermont Tier 3 VEC Energy Transformation Program	EV Detection
Mandates utilities reduce carbon through increased electric sales Numerous incentive offerings (EV's, chargers, heat pumps) VEC maintains a record of vehicles, heating, locations and other details	Through Camus Identified over 600 potential chargers Currently run annually, looking to update frequency Cross reference with EV list Helpful to identify charging speed

Invest

	Free Level 2 Charger	Free Distribution Transformer Upgrade
Program Launch	Jan 2023	Jan 2020
Device Quantities	180+ (Emporia)	55 upgrades since 2020
Items of Note	(650+ EVs on system) Originally focused on ChargePoint and Flo and recently transition to Emporia (lower cost)	10% of reviewed transformers need an upgrade VEC Utility Designers review every incentive application Justified through Tier 3 mandate and additional sales

Manage – Electric Vehicles

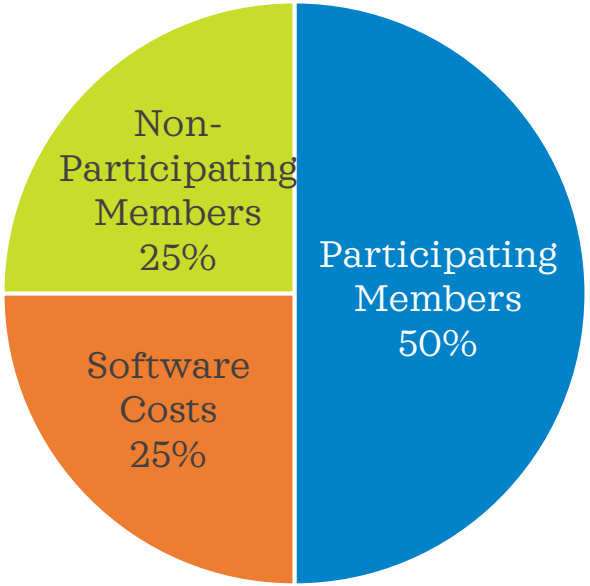
	EV Charger Bill Credit	FlexCharging Telematics	Additional Grid Services	Vehicle to X
Monthly Bill Credit	$8/month	$8/month	TBD	$6.40/month/kW
Devices Enrolled	300 (~300kW)	~60 (~60kW) Launched in March 2024	Targeting 10 locations	Targeting 1-2 locations
OEM's Targeted	Flo, ChargePoint and Emporia	"Free" communications OEMs (Tesla, Rivian, Ford, Kia, Hyundai)	ChargePoint and FlexCharging	Fermata Energy with VW ID4
Dispatch Frequency	4hrs, 4-6 times per month	4hrs, 4-6 times per month	TBD	4hrs, 4-6 times per month
Items of Note	45% of EV's managed (78% in 2023) **< 10 opt outs** since program began in 2019	Targeted at Tesla's and OEM's with free chargers Lower cost option to EVSE	Pilot for 2024 Manage for distribution transformer upgrades	Pilot for 2024 Residential bidirectional pilot

The Value of Our Flexible Load Management Program

	Number of Peaks	Approximate Dispatch Hours to Hit Peak	Annual Transmission Savings for 1 MW Peak Reduction	Success % – 4 Hour Resource
VT Monthly RNS (Regional Network Service)	12	340	$175,000	~75%
ISONE Yearly FCM (Forward Capacity Market)	1	60	$29,000	~75%
Total	**13**	**400**	**~$204,000/year**	

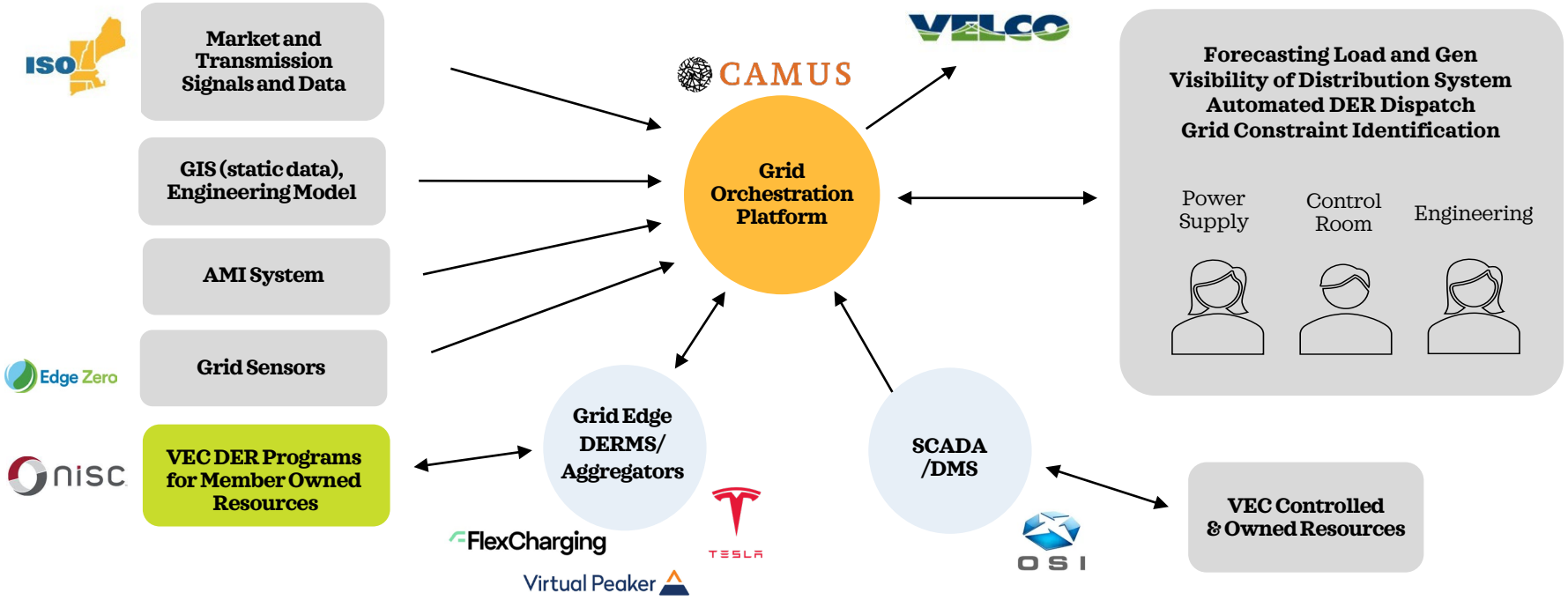
- 13 Total Peaks
- ~$204/kW/year

Program Value Pie



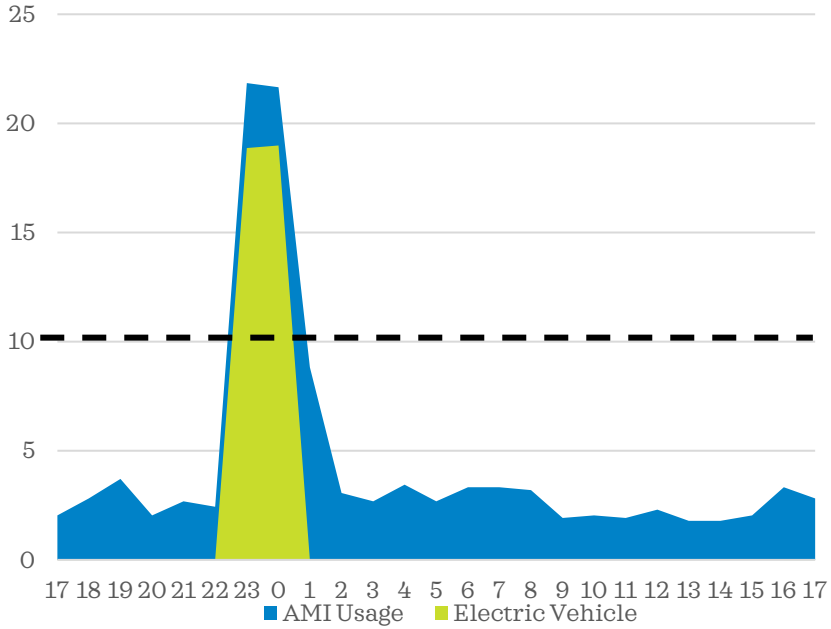
- Maximize non-participating members percentage = savings
- High enough incentive to enroll

How do we Orchestrate our Virtual Power Plant (VPP)?

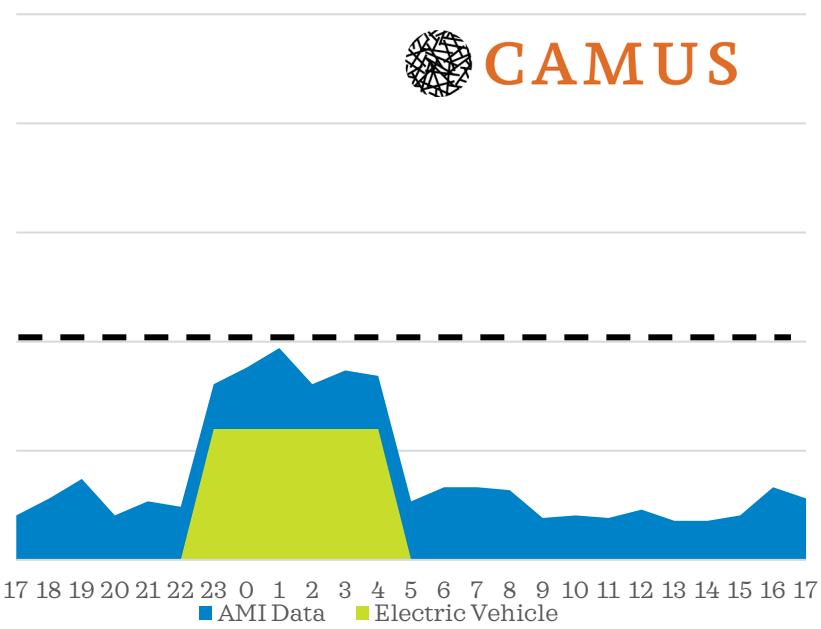


Together, these technologies enable VEC to **identify grid constraints** and **dispatch member and utility assets** to not only manage peak impacts but also **eliminate/defer infrastructure upgrades**

2024 Pilot on Distribution Transformers

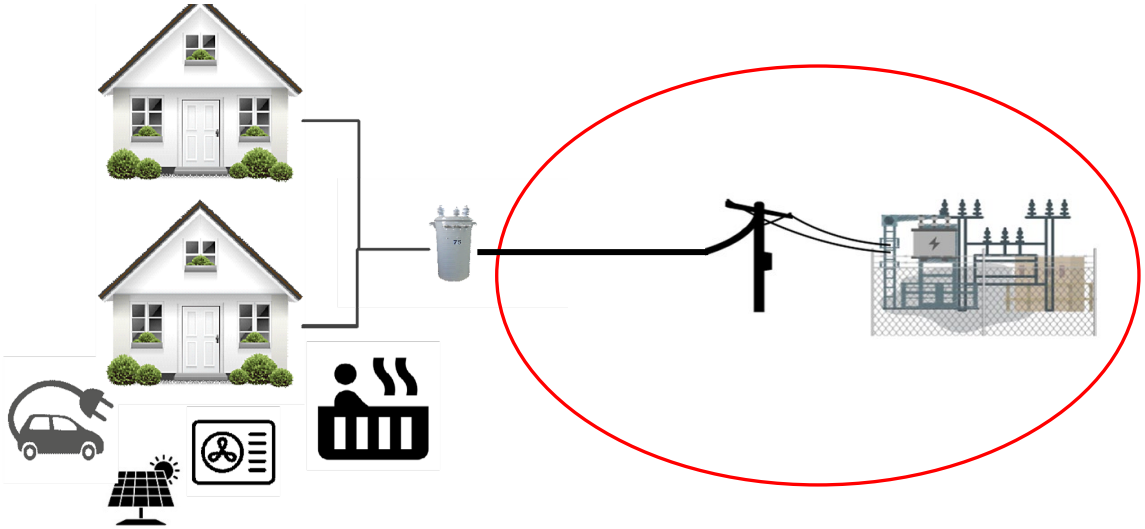


Fixed Limit – 10kVA



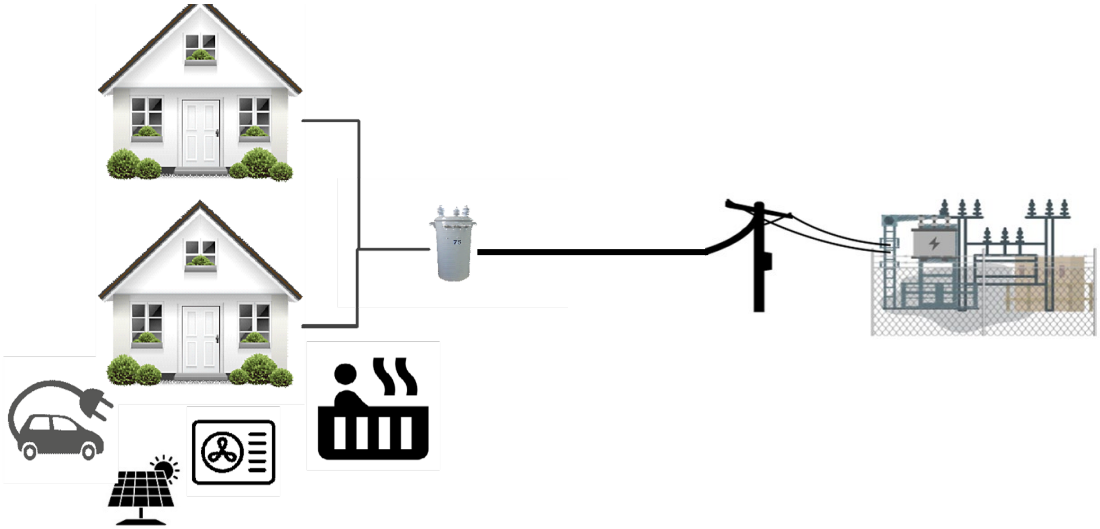
Managed charging for Fixed Limit
(Fixed Operating Envelope)

Future – Primary Lines and Substations



Primary Lines and Substations

Future – VT and Regional Transmission



Primary Lines and Substations

Transmission in VT and ISONE

Future Program Design – Carrot and Stick

Current Programs

- Credit for participation
- $8/month for EV
- $6.40/kw/month for battery

Future

- Full residential TOU Rate
- Dynamic Rates
- “stick” for those who are hitting the peaks with electrification

John Goroski

Flathead Electric Cooperative, MT

FLATHEAD ELECTRIC COOPERATIVE

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Flathead Electric Cooperative & Electric Vehicles

February 2023

Flathead Electric Cooperative

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- 58,477 Member Owners
- 75,519 Meters
- 163 Employees
- 5,124 Miles of Line
- Density = 15 Meters/Mile
- Wholesale Energy Providers:
  - BPA / PNGC
  - Basin Electric Power Cooperative
- Nine elected Board Members

Flathead's EV History

- 2012: A Flathead Electric employee purchase a 2012 Chevy Volt.
- 2015: A second Flathead Electric employee purchase 2014 Chevy Volt.

- 4-22-2015 – Flathead installed a Level 2 ChargePoint Charging station in front of Flathead's main office. Free to public. Employees charged a monthly fee.

- Internal Questions:
  - Does it make sense for FEC to own a charging network?
  - Demand Response?
  - Time of Use Rates?
  - Impact to Flathead's distribution system and transmission coming into the valley
  - ?????????

Flathead's EV History

- 2016: Flathead began focusing on workplace charging in Flathead's service territory
  - Third employee bought two plug-in hybrids for his family.
  - Workplace charging made sense for the limited range plug-in hybrids.
  - Cost of EV chargers
    - Level 2 Home - $1,000
    - Level 2 Workplace - $2,500
    - Level 3 - $25,000

Flathead's EV History

- 2017: Electric Vehicle Project
  - Scope:
    - To develop and implement an FEC Electric Vehicle (EV) program that includes the installation of EV charging stations, potential EV rate, promotion strategy, potential for renting home EV charging stations, and potential Demand Response opportunity in FEC's service territory.
  - Schedule:
    - 2017 – Put together Employee/Member Committee.
    - 2017 – Installation of FEC workplace charging station for employees.
    - 2017 – Develop member workplace charger partnership/location criteria.
    - 2017 – Analyze collected project data, assess potential EV rates, assess potential to rent home vehicle chargers to members, and demand response opportunities.
    - 2018 –Present findings to FEC management and Board.
  - FEC purchased a Chevy Bolt for the energy services team.

Flathead's EV History

- 2017-2018: Residential Time of Day Demand Rate:
  - Given the increase in EVs and Net Metering services within the valley, began analyzing a Residential T.O.D. rate. (Treat all residential members the same regardless of their lifestyles.)
- 2018: Electric Vehicle Project
  - Installed two Level 2 Workplace charging stations with DRUs: (Whitefish City Hall parking structure and Whitefish North Valley Hospital's parking lot)
  - Purchased a Chevy Bolt for Flathead's energy service team
- FEC employee upgraded 2012 Chevy Volt to a Tesla Model 3.

Flathead's EV History

- 2019: Electric Vehicle Experience (Loaner Program)
  - Leased a Nissan Leaf
  - Members were able to reserve the Nissan Leaf and Chevy Bolt for 3-4 days for an EV Experience
- 2019 EV Day
  - First EV Day - Save Your Gas for the Grill
  - Test Drives in the Nissan Leaf and Chevy Bolt

- Jun1 1, 2019: Residential T.O.D rates implemented.

Flathead's EV History

- 2020: Electric Vehicle Project
  - Continued to install two more Level 2 Workplace charging stations: Bigfork Theater of the Performing Arts and Libby Chamber of Commerce
  - Project Team expanded Scope to Level 3 Charging with potential VW Settlement Funding through the State of Montana.
- 2021: EV Experience
  - Flathead purchased a Tesla Model Y.
  - Flathead was awarded VW Settlement Funding as did a member for other sites in Montana. Flathead declined to allow our member to get the funding for their gas station.

- A fourth FEC employee purchased an EV (Tesla Model Y). Charges at home and does not pay the monthly charging fee at Flathead.

Flathead's EV History

- 2022:
  - Flathead ordered a Ford Lightning for distribution design.
  - Flathead ordered a Rivian for the EV Experience Program.
  - Second employee purchased a Model Y but kept the 2015 Chevy Volt.

- 2023:
  - Flathead ended the EV ExperienceProgram due to vehicle damage to the Tesla and Rivian. The Bolt, Tesla, Rivian and Lightning became a part of Flathead's vehicle fleet used by energy services and distribution design.
  - State of Montana passed an annual EV Registration Fee to capture commuting miles and a $0.03/kWh EV Tax on all charging stations greater than 25 kW to capture traveling miles. Electric utilities are now tax collectors.

Flathead's EV History

- 2024:
  - Installed two ZEF purchased Level 2/Level 3 stations in Kalispell and Libby using VW Funding from the State of Montana. These are only 50kW Level 3 chargers. No more free public charging.
  - Charging station rates include an energy charge and a prorated hourly connect fee (which turns into an idle fee if EV is left connected after battery reaches its charging limit). The separately metered Level 3 chargers include the 3 cent/kWh Montana EV Tax.
  - Flathead began collecting EV taxes from the Ford dealership's Level 3 charger.

EV Charging Stations in Montana

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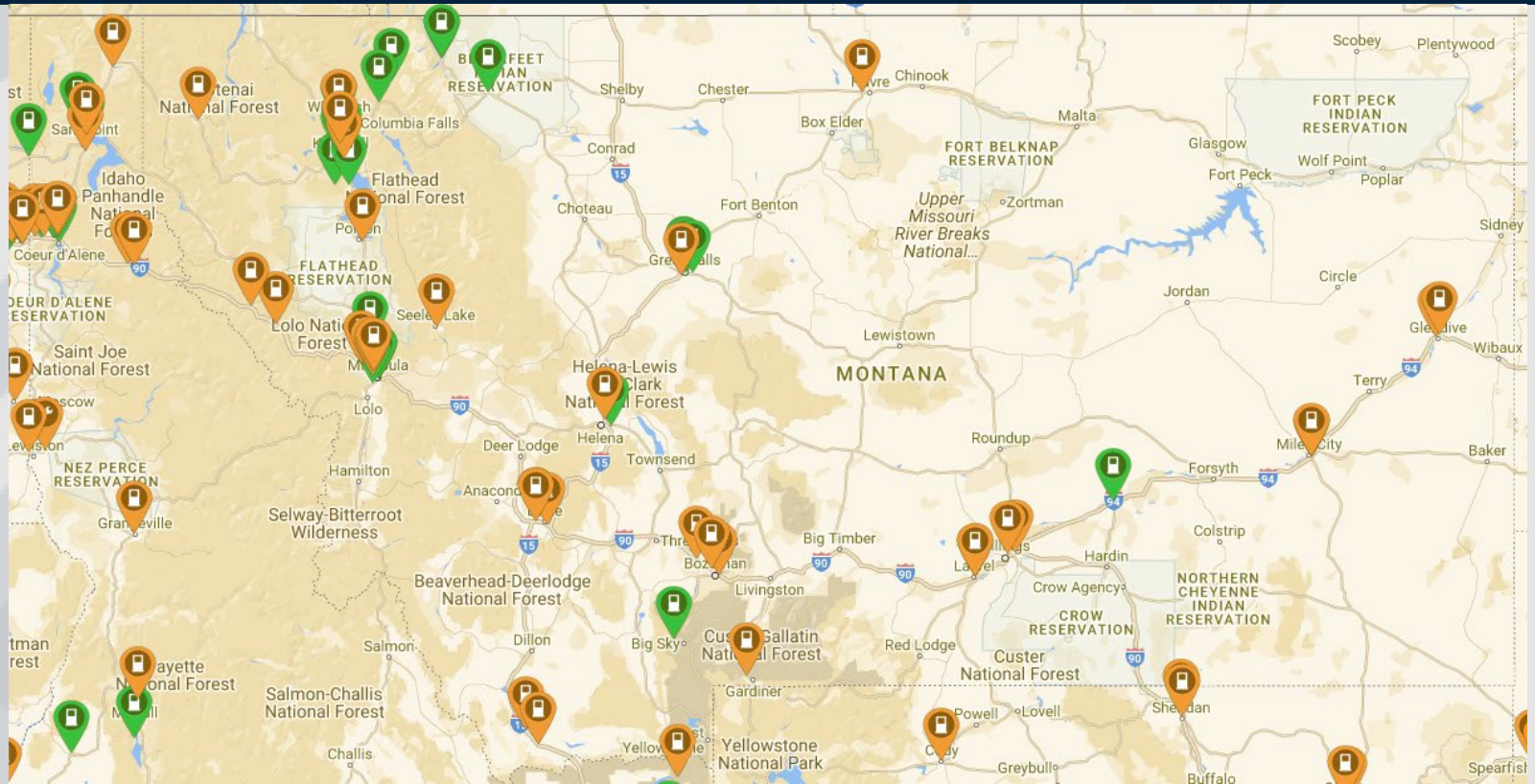

EV Charging Stations in FEC

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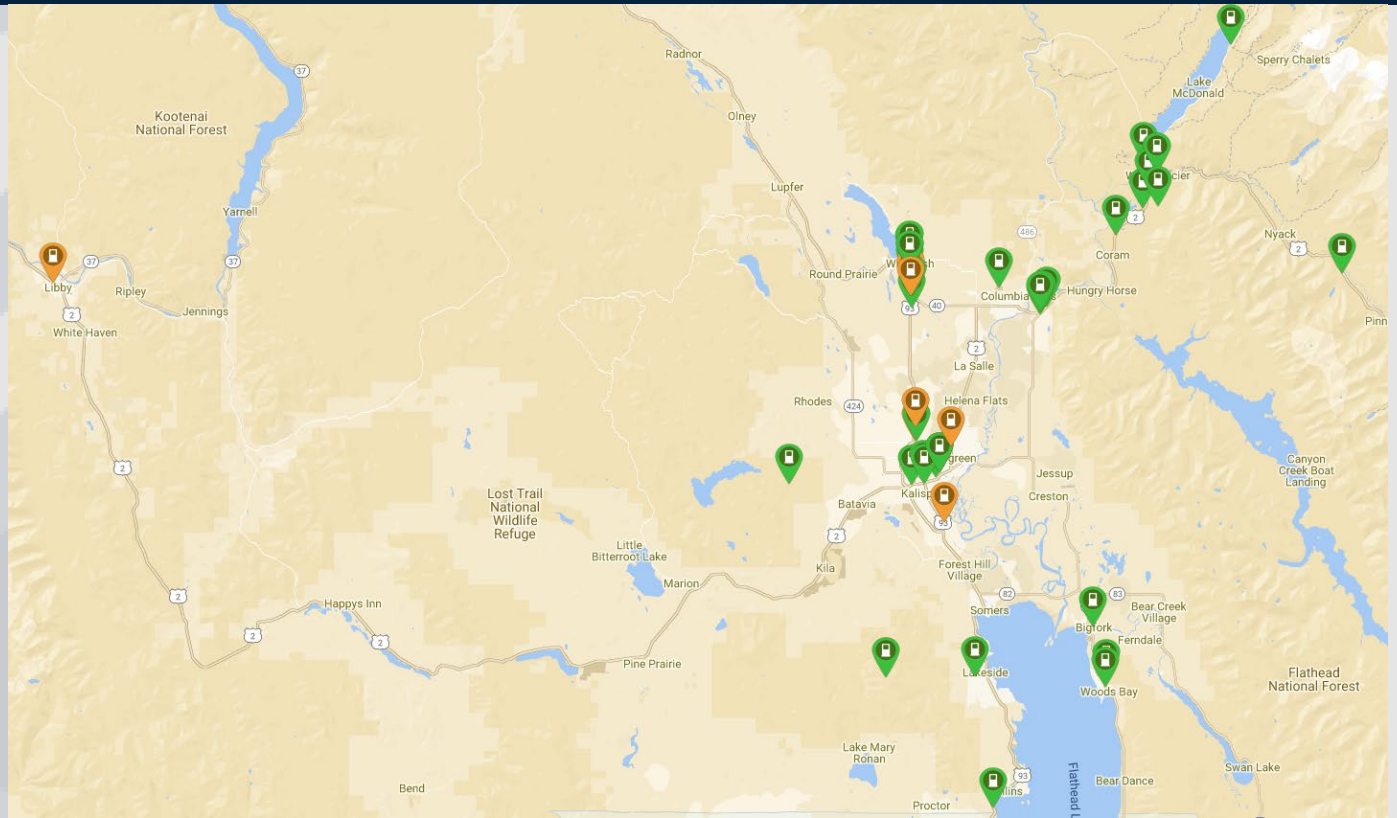

EVs in FEC

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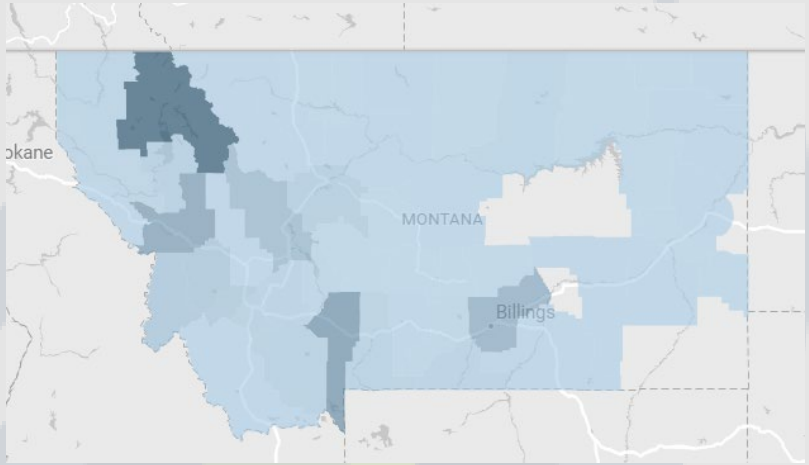
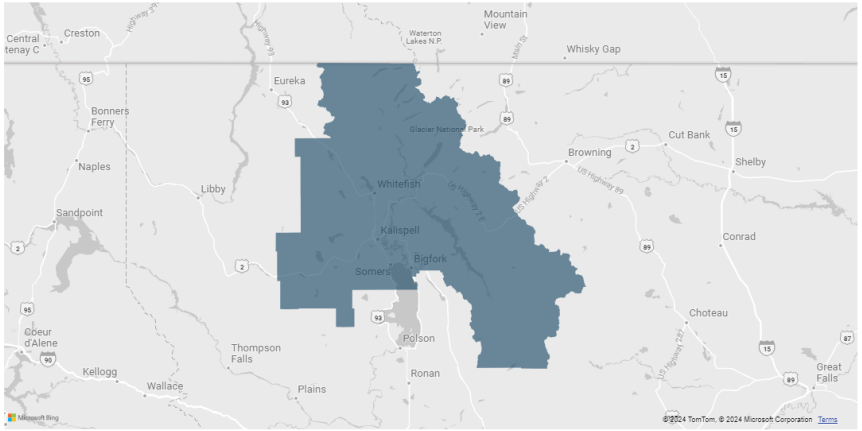


EVs on the Road by County and ZIP Code



Key Statistics

1,364
EVs on the Road

1,097
BEVs on the Road

267
PHEVs on the Road

10.55
BEVs per 1k People

2.57
PHEVs per 1k People

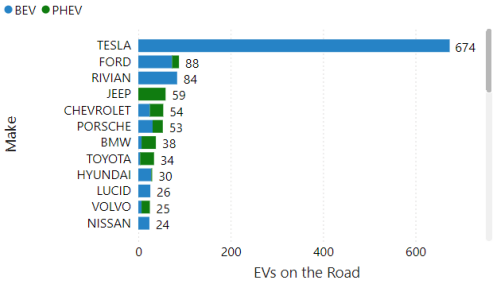
109.70
BEVS per DCFC Ports

42.63
EVs per Level 2 Port

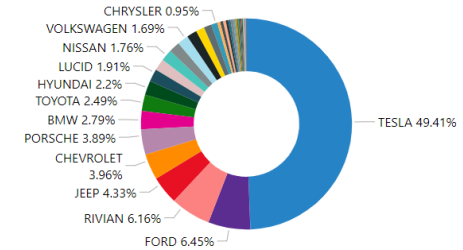
6514
Vehicle Makes

13891
Vehicle Models

EVs on the Road by Vehicle Make and Model



Market Share by Vehicle Make



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Panel Discussion and Audience Q&A

Resources

The National Rural Electric Cooperative Association

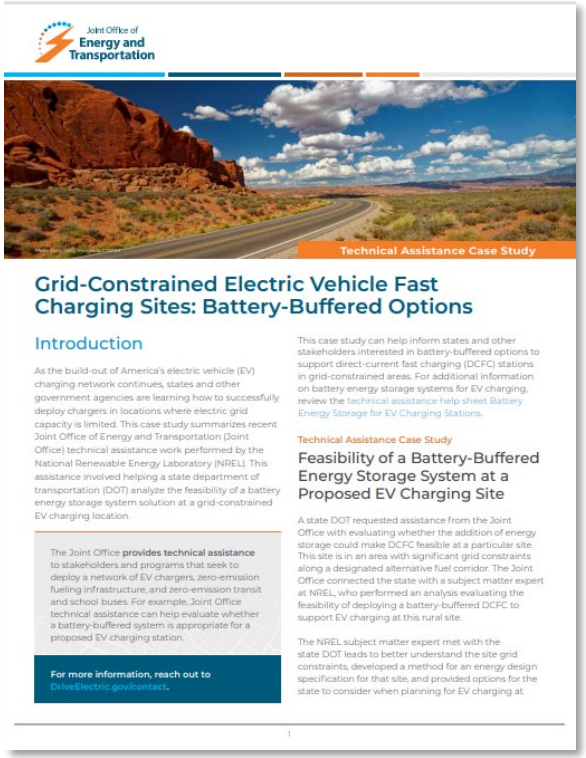
Home - Trico Electric Coop

Lighting the path to affordable clean energy, together — Vermont Electric Coop

Electric Vehicles - Flathead Electric Cooperative

Grid-Constrained Electric Vehicle Fast Charging Sites: Battery-Buffered Options (driveelectric.gov)

Battery Energy Storage for Electric Vehicle Charging Stations (driveelectric.gov)



Joint Office of Energy and Transportation

Technical Assistance Case Study

Grid-Constrained Electric Vehicle Fast Charging Sites: Battery-Buffered Options

Introduction

As the build-out of America's electric vehicle (EV) charging network continues, states and other government agencies are learning how to successfully deploy chargers in locations where electric grid capacity is limited. This case study summarizes recent Joint Office of Energy and Transportation (Joint Office) technical assistance work performed by the National Renewable Energy Laboratory (NREL). This assistance involved helping a state department of transportation (DOT) analyze the feasibility of a battery energy storage system solution at a grid-constrained EV charging location.

The Joint Office **provides technical assistance** to stakeholders and programs that seek to deploy a network of EV chargers, zero-emission fueling infrastructure, and zero-emission transit and school buses. For example, Joint Office technical assistance can help evaluate whether a battery-buffered system is appropriate for a proposed EV charging station.

For more information, reach out to DriveElectric.gov/contact.

This case study can help inform states and other stakeholders interested in battery-buffered options to support direct-current fast charging (DCFC) stations in grid-constrained areas. For additional information on battery energy storage systems for EV charging, review the technical assistance help sheet Battery Energy Storage for EV Charging Stations.

Technical Assistance Case Study

Feasibility of a Battery-Buffered Energy Storage System at a Proposed EV Charging Site

A state DOT requested assistance from the Joint Office with evaluating whether the addition of energy storage could make DCFC feasible at a particular site. This site is in an area with significant grid constraints along a designated alternative fuel corridor. The Joint Office connected the state with a subject matter expert at NREL, who performed an analysis evaluating the feasibility of deploying a battery-buffered DCFC to support EV charging at this rural site.

The NREL subject matter expert met with the state DOT leads to better understand the site grid constraints, developed a method for an energy design specification for that site, and provided options for the state to consider when planning for EV charging at

Thank you!

Today's Presentation:
Engaging Utilities: Rural Cooperatives Working to Deploy EV Charging

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