Business & Technology Report

February 2025

Survey Results: Electric Vehicles Impacts and Opportunities

NRECA

America's Electric Cooperatives

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Electric Vehicles Impacts and Opportunities

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Jennah Denney is an Electric Vehicle Strategy & Solutions Manager on the Business & Technology Solutions team at NRECA. She brings over 9 years experience with Electric Cooperatives to the BTS team, and she contributes to NRECA's strategy regarding electric vehicles and emergent energy technologies by developing electric transportation project solutions with NRECA members and other stakeholders. She provides subject matter expertise in other applicable areas, such as federal funding, distributed energy resources, electrification, energy efficiency and/or demand side management, etc. Jennah formerly served as the EV Infrastructure Program Manager at Today's Power, Inc., a wholly owned subsidiary of Arkansas Electric Cooperatives, Inc., and an associate member of NRECA.

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This work contains findings that are general in nature. Readers are reminded to perform due diligence in applying these findings to their specific needs, as it is not possible for NRECA to have sufficient understanding of any specific situation to ensure applicability of the findings in all cases. The information in this work is not a recommendation, model, or standard for all electric cooperatives. Electric cooperatives are: (1) independent entities; (2) governed by independent boards of directors; and (3) affected by different member, financial, legal, political, policy, operational, and other considerations. For these reasons, electric cooperatives make independent decisions and investments based upon their individual needs, desires, and constraints. Neither the authors nor

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Executive Summary

Electric cooperatives have been active in developing programs to meet the needs of their members as they increasingly electrify their modes of transportation, whether that be residential consumers with light duty vehicles or their commercial and industrial consumers that are electrifying fleets. This report explores the impacts and opportunities presented by electric vehicles (EVs), drawing on existing research and insights from a recent survey conducted among our cooperative members and other electric cooperatives. The findings are categorized into five key areas:

1. EV Education & Outreach
2. EV Rebates Rates & Incentives
3. EV Charger Infrastructure Development
4. EV Charging Station Energization/Interconnection Process & Make Ready Programs
5. Cooperative Fleet Electrification

Understanding the Survey Approach

To develop a comprehensive understanding of the current state of EV adoption and support within the cooperative community, NRECA conducted an in-depth survey. This survey targeted three primary groups: members of NRECA's Cooperative Approach for Vehicle Electrification consortium (CAVE)[1], who currently own or are interested in, or are either offering or planning to offer EV-related programs and services, the NRECA Electric Vehicles Professional Community[2], and the Distributed Energy Resources (DER) Member Advisory Group[3]. The methodology was designed to capture a wide range of perspectives and experiences, allowing for a thorough analysis of both the challenges and opportunities associated with EV adoption.

Survey Design and Execution

The survey was carefully structured to collect both quantitative and qualitative data. A mix of multiple-choice, rating, ranking, and open-ended questions were employed to ensure a comprehensive collection of information. This approach allowed us to identify common trends while also exploring the unique perspectives of individual respondents. By covering various aspects of EV ownership and charging behaviors, as well as the specific initiatives being pursued by electric cooperatives, the survey provided a rich dataset for analysis. To encourage broad participation and accessibility, the survey was administered online using Microsoft Forms, enabling respondents to complete it at their convenience.

[1] CAVE Infrastructure Consortia: https://www.cooperative.com/topics/distributed-energy-resources/Pages/Cooperative-Approach-to-Vehicle-Electrification.aspx

[2] NRECA Professional Communities are open to NRECA voting members to support sharing of ideas on particular topics. https://www.cooperative.com/my-account/Pages/Professional-Communities.aspx

[3] NRECA Member Advisory Groups are comprised of volunteers from member cooperative who provide insights and guidance on NRECA efforts, to help ensure our offerings align to the needs and circumstances of our cooperative members.

The survey was open for three months, giving ample time for cooperative members and other cooperatives to provide detailed and thoughtful responses.

Value of the Results

The survey results revealed a diverse range of experiences and approaches with EVs across different cooperatives. These findings are crucial for understanding the key considerations when developing new EV programs and for enhancing the effectiveness of established EV-related programs. While there are challenges associated with EV adoption, the potential benefits for cooperatives and their members are significant. The insights gathered may inform the development of strategies to improve EV education, optimize charging infrastructure, and maximize the benefits of EV ownership for member consumers.

Growth of the Electric Vehicle Industry

Electric Vehicles (EVs) are transforming the automotive industry, driven by technological advancements, supporting policies, federal funding, and growing consumer demand. In the second quarter of 2024, the share of electric and hybrid vehicle sales in the United States saw an increase after a slight decline in the first quarter.[4]

According to Wards Intelligence,[5] combined sales of hybrid vehicles, plug-in hybrid electric vehicles, and battery electric vehicles (BEVs) rose from 17.8% of total new light-duty vehicle (LDV) sales in the first quarter to 18.7% in the second quarter. This growth was primarily driven by a significant 30.7% year-over-year increase in hybrid electric vehicle (HEV) sales, which rose from 8.6% of the total light-duty market in the first quarter to 9.6% in the second quarter. Plug-in hybrid electric vehicle sales also saw a slight increase, moving from 1.7% to 2.0% of the total light-duty market year over year. BEV sales, which had slower growth in the first quarter compared to the previous year, accounted for 7.1% of the U.S. LDV market in the second quarter, maintaining a similar share to the same period in the previous year.

Luxury electric vehicles continued to perform well, making up 32.8% of total luxury sales in the second quarter of 2024. Luxury vehicle sales represented 16.6% of the total light-duty market, with luxury vehicles comprising 73.8% of total battery electric sales, 8.3% of hybrid sales, and 29.2% of plug-in hybrid sales.

Categories of EVs

The category of EVs is defined by the gross vehicle weight rating (GVWR). The following are general descriptions and further details are available on EPA's website:

- **Light Duty**

  A light duty electric vehicle (LEV) has a GVWR of less than 8,500 pounds, including cars, SUVs, and pickup trucks.

- **Medium Duty**

  A medium duty electric vehicle has a GVWR of 8,501-10,000 pounds.

- **Heavy Duty**

  A heavy duty electric vehicle has a GVWR of more than 8,501 pounds, such as vans, buses, and trucks.

[44] https://www.eia.gov/todayinenergy/detail.php?id=62924
[5] Ibid

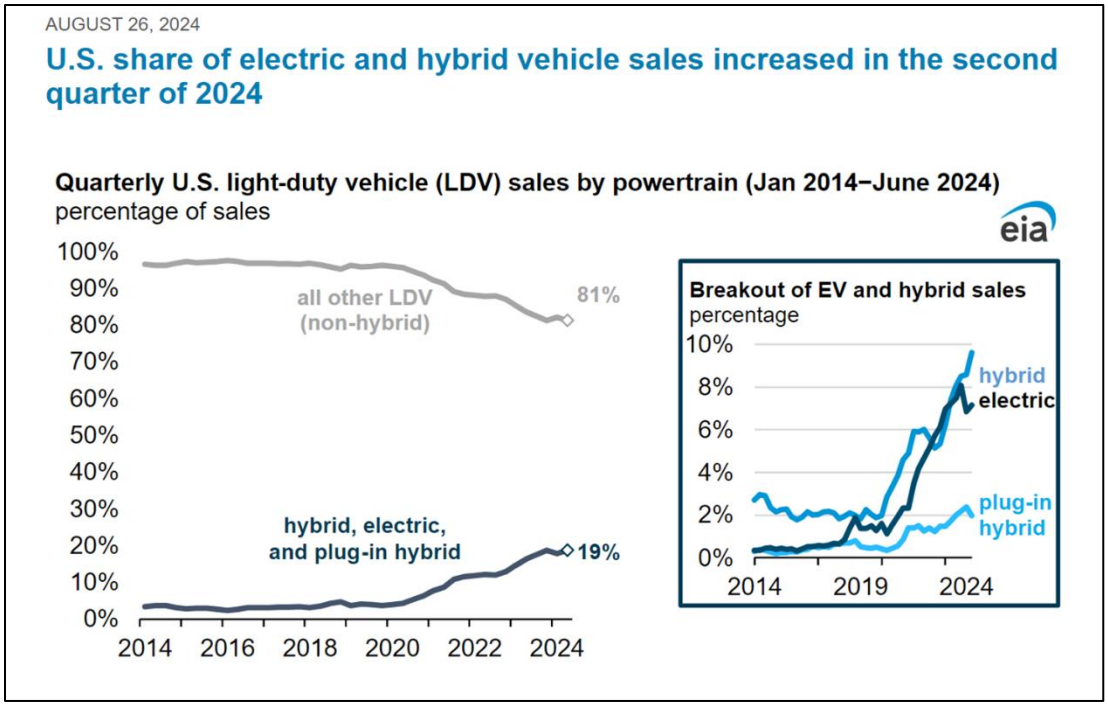


Figure 1: Expansion of the EV Market (Source: EIA)

Key Trends and Drivers of EV Adoption

Technological Advancements: Improvements in battery technology, charging infrastructure, and vehicle performance are making EVs more appealing to consumers.

Policy Incentives: Governments worldwide are promoting EVs through various incentives such as tax credits, subsidies, and emission regulations.

Federal Funding: The U.S. government has significantly increased its financial support for EV adoption through various funding programs and grants. This includes substantial investments in the development of nationwide charging infrastructure.

Consumer Interest: With the rise of environmental awareness, consumers are increasingly receptive to purchasing electric vehicles.

The Benefits to Cooperatives from EV Efforts

When the survey participants were asked what benefits they sought through their EV efforts, the responses brought forth some commonly shared goals. Here is a summary, along with highlights of comments in the survey:

- Education for consumer members and the co-ops
  - "Debunking myths"
  - "We want to help members make informed decisions if they are interested in an EV."
  - "Insights on charging behavior and EV locations"
  - "System planning knowledge"
  - 'Our EV initiatives are to provide us with information to understand future load determinations of residential charging within our service territories. We also hope to gain insight into the use of EV's for the potential of fleet vehicles."
  - "Identify if there is a need for an EV rate"

- Be the Trusted Resource for members on EV information
  - "Our goal was not to promote EVs but to be the trusted energy advisor on all electric appliances."
  - "Trusted resource; reliable voice"

- Enhance member satisfaction and meet member needs.

- Pursue a new revenue stream for the co-op
  - "Residential EV charging is potentially the largest kWh-sales growth opportunity since the introduction of air conditioning."

- Grid management
  - "Improved grid management; potential load shedding"

- Enhance co-op brand or image
  - "Better our Corporate Image by promoting Green Initiatives"
  - "Enhanced member understanding and appreciation to/for the co-op."

Survey Part 1: Electric Vehicle Education & Outreach Initiatives

The Value of Education and Outreach Based on Survey Results

Education and outreach programs spearheaded by electric cooperatives play a crucial role in providing their communities with unbiased and accurate information about EVs. These initiatives are essential for dispelling myths and correcting misconceptions about EVs, helping to foster a well-informed understanding of the technology. By educating cooperative staff, members, and first responders, cooperatives help ensure that all stakeholders are equipped with the knowledge they need to make informed decisions about EV ownership.

Research indicates that marketing and educational programs delivered through cooperatives are particularly effective, as members tend to trust their organizations and are more inclined to participate in initiatives they lead. Additionally, cooperative members often seek advice from family and friends when considering EV purchases. So, even if educational programs reach consumers not currently in the market to purchase a new vehicle, their knowledge can be shared with others who may be.

Instilling this knowledge is as beneficial to cooperatives as to their members. A Forbes article[6] highlights the importance of proactive communication about EVs, noting that this approach helps maintain the cooperative's brand reputation in a competitive market. Early engagement with members who are considering purchasing an EV significantly enhances member satisfaction and opens new revenue opportunities for cooperatives. In addition, such educational efforts not only guide members in understanding EV technology, but also encourage the adoption of smart charging behaviors, which are key to effective grid management. Promoting off-peak charging and load shedding capabilities helps mitigate potential strain on the grid and supports more efficient energy use.

The Shift in the Focus of EV Educational Efforts

As the EV industry keeps maturing, the landscape of EV education is likewise continually evolving. In the early days of electric vehicle (EV) adoption, education primarily focused on the vehicles themselves, as the technology was new and members needed to grasp the basics of how EVs functioned. Raising general awareness of EVs as alternatives to gas fueled vehicles was the main goal. As EVs have become more mainstream, the focus of educational efforts has shifted to more of the technical operations to optimize EV use.

> The focus of EV educational efforts has shifted from raising *general awareness* of EV benefits to the technical operations and ways to *optimize use*.

Today, education around EVs is more about emphasizing the importance of EV charging, which is a crucial aspect of ownership experience. This educational shift aims to address common concerns about

[6] 5 Ways Rural Electric Co-ops Can Strategically Communicate About EVs

the availability and convenience of charging (i.e., alleviating "range anxiety"[7]), which are often seen as barriers to broader EV adoption. By focusing on charging infrastructure, cooperatives can help their members understand the practical aspects of EV ownership, such as how to charge their vehicles, where charging stations are located, and the associated costs. This knowledge is essential for integrating EVs into everyday life and helping consumers make informed decisions about purchasing EVs. Additionally, educating members about grid-friendly charging behaviors is vital to ensuring that the increased electricity demand from EVs does not strain the power grid.

As the focus in EV education shifts from understanding the vehicles themselves to addressing the complexities of EV charging and infrastructure, cooperatives are uniquely positioned to guide their communities through this transition. As noted earlier, effective communication, trusted relationships, and strategic use of member service channels are key to educating members about the practicalities and benefits of EV ownership. Furthermore, targeted outreach and education efforts can foster an understanding of how individual charging behaviors impact the broader energy ecosystem. By promoting responsible charging practices, cooperatives can help mitigate potential grid issues and support member adopting EVs.

How Cooperatives are Implementing EV Educational Efforts

Cooperatives are implementing innovative ways to connect with their members and provide essential resources for informed EV ownership. The following sections provide further explanation on specific strategies and tools employed by cooperatives, ranging from leveraging digital platforms to hosting hands-on events. Figure 2 summarizes the response from the 40 survey respondents regarding the types of efforts they use to engage with members on EVs.

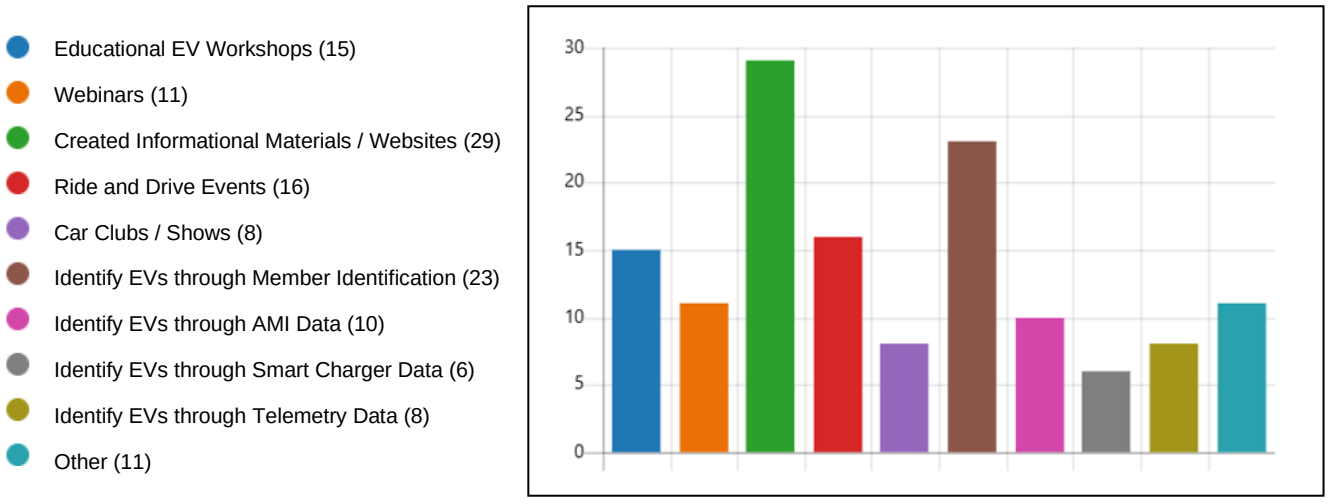


Figure 2: Survey Responses Regarding Engagement Efforts

[7] Range anxiety is a term given to a situation where a consumer fears that an EV will not stay charged for the full duration of their driving distance.

Cooperative Websites & Member Service Channels

Cooperatives have effectively utilized their websites and other member service channels for Electric Vehicle (EV) education. These platforms serve as a hub for information, providing members with easy access to relevant and up-to-date information about EVs. For instance, some cooperatives have dedicated sections on their websites where they share insights about the benefits of EVs, the latest developments in the EV market, and practical advice for potential EV owners. They also use these platforms to inform members about special EV rates offered and encourage them to practice grid-friendly charging behavior.

Examples of Co-op EV Education Efforts

The following are just a few good examples of educational information about EVs on co-op websites:

Central Electric Cooperative

Central Electric has a comprehensive website with sections including an overview of EVs, 'Is an Electric Vehicle Right for You?', and 'Nuts and Bolts' of plug-in hybrids and battery electric vehicles. Their information can be found here.

Great River Energy

GRE's website includes information about their EV Charging program, offering rebates for Level Two EV Service Equipment (EVSE). Definitions of the types of qualifying EVSE are provided: Public, Workplace/Multi-family, and Fleet. Find details here.

Old Dominion Electric Cooperative

ODEC provides website information including current EV models, Savings from switching from gas to electric vehicles, charging times, local EV dealerships, and available EV financial incentives. See more here.

The following are some snapshots of the top sections of co-ops' websites for electric vehicle information, as examples:

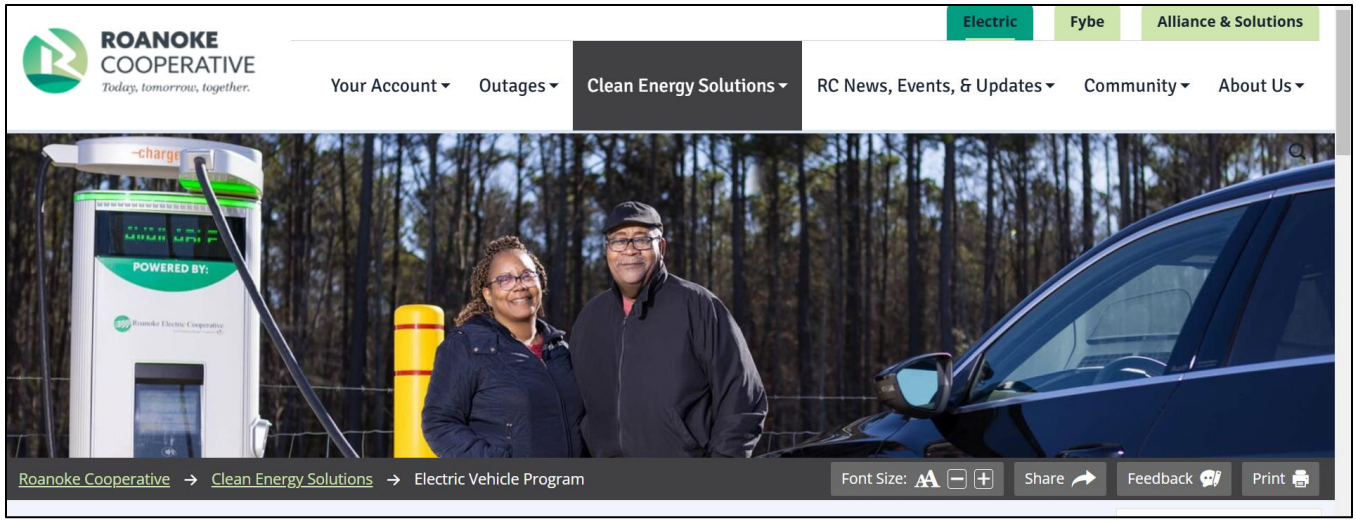
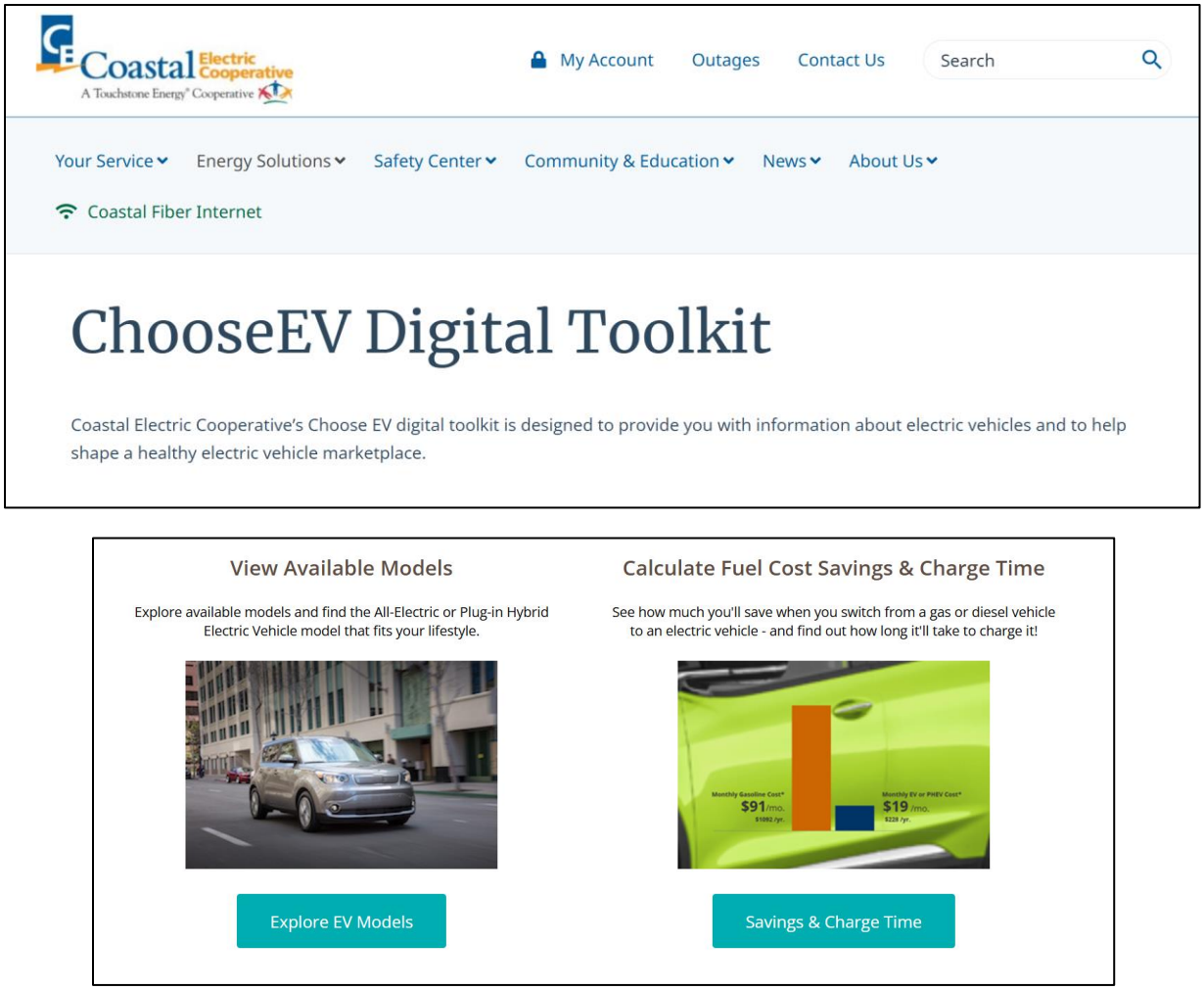


Figure 3 & 4: Examples of Co-op Websites Promoting EV Programs

Several co-ops use "ChooseEV,"[8] a resource available through CLEAResult that provides a variety of information on EVs. According to CLEAResult's website, over 500 utilities in 40 states use their content. The following are a couple examples of website content used by co-ops.

[8] https://chooseev.com/



Figures 5 & 6: Excerpt of Website Information from ChooseEV

EV Events & Firsthand Experience

Another study[9] by the National Renewable Energy Laboratory (NREL) found that EVs provide a new opportunity for co-ops to engage with members through programs and educational outreach. "Ride and Drive" events, where individuals are given the opportunity to test drive various EV models, have become increasingly popular. These events allow potential EV owners to experience the unique features and benefits of EVs directly, such as their smooth and quiet operation, instant torque, and zero tailpipe emissions. These events are not only fun and engaging, but also instrumental in allowing members to form their own perceptions about EVs. They provide a platform for individuals to overcome reservations they may have about EV technology, range anxiety, or charging infrastructure, and reinforces their relationship with their electric cooperative as the trusted source in all things electric.

[9] Building the 2030 National Charging Network | News | NREL

Another approach by co-ops to provide educational opportunities is with loaner programs. These programs allow members to experience driving an EV firsthand for a longer time than a "Ride and Drive" test drive, before making the investment in purchasing their own EV. One such example is the program run by Tri-State Generation and Transmission Association, Inc. They have invested nearly $2 million to help members install EV chargers in their service area and have a fleet of EVs that they loan out for members consumers to test drive. This hands-on experience can be invaluable in helping potential owners understand the practicalities and realities of EV ownership, and be well-informed at the time they purchase their own EVs.

Examples of
Consumer Engagement Efforts for EVs

Dakota Electric

Dakota Electric offers an annual "Ride and Drive" event for the community. The event showcases a variety of electric vehicles for attendees to explore and compare. The event has been noted by car dealerships, including in dealership news articles (see example here).

Middle Tennessee Electric

Middle Tennessee Electric stands as a shining example of a multi-faceted EV program promoting consumer engagement. Their "EV Car Club" offers consumers who own or are interested in learning about EVs an opportunity to receive updates about new MTE activities and educational opportunities. MTE states that these efforts are to 'promote electric vehicle adoption among their members.' Learn more here.

EV CAR CLUB

Tri-State

Tri-State offers their "Electric Vehicle Experience" program to provide opportunity for utility employees, cooperative members, and public power district consumers to experience first-hand what it is like behind the wheel of an EV. Tri-State's program includes sedans, minivans and trucks, which can be borrowed for up to a month. Local utility electric distribution co-ops and public power districts can use the vehicles for their own Ride and Drive events for their members. Read more about this program here.

Example of a Program for Co-op Employees

EnergyUnited provides firsthand EV driving opportunities for their employees. They allow – and encourage – their staff to borrow their EVs to test drive them for a few days. The program educates staff on EVs and provides visibility to consumer-members in support of their EV charging station rebate program. Find out more in this NRECA article, New Tesla Lets a North Carolina Co-op's Employees Drive the Electric Vehicle Message Home.

For the 29 co-ops who responded to the survey question regarding whether they offer experiential opportunities for members to learn about EVs, over half indicated that they are currently offer or are planning to offer such efforts (Figure 7).

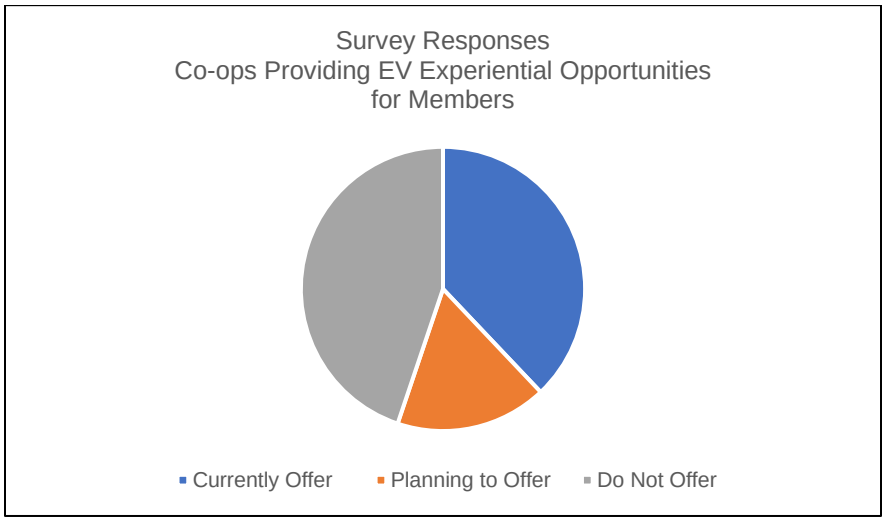


Figure 7: Co-op EV Experiential Opportunities

EV Identification

Through effective communication and outreach initiatives, cooperatives can educate members about the impact of their EV usage on the grid and the importance of sharing this information. By weaving these messages into educational campaigns, cooperatives not only build transparency and trust, but also strengthen their capacity to manage the increasing demand for EV charging infrastructure.

Engaging members through education serves as a vital starting point for identifying EVs within cooperative service areas. By informing members about the benefits and responsibilities of EV ownership, cooperatives can encourage voluntary reporting of EVs. This proactive approach is essential

for accurate load forecasting and effective grid planning, ensuring that infrastructure developments align with actual usage patterns.

Cooperatives looking for help in identifying EVs in their service areas are encouraged to contact NRECA's Consulting Services group. We offer surveys and other efforts to provide valuable insights. Learn more here.

Working with Dealerships to Bring Awareness of EV Programs

Educating local car dealerships about co-op incentive programs for EVs and about efficient charging approaches helps ensure that consumers have these insights for their decision-making and for their operation of their new EVs. Read more about this in our NRECA article, How Your Co-op Can Work with Dealers Selling Electric Cars.

Survey Part 2: EV & EV Charging Incentives, Rebates and Rates

Once members have a solid understanding of EV features and benefits, co-ops can provide further education regarding available financial support for EV adoption. EV charging incentives, rebates and rates are effective tactics to motivate members. They are also strategic tools co-ops use to engage with communities, manage grid impacts, and plan for future infrastructure needs. By leveraging educational initiatives, cooperatives can effectively promote these programs, helping to ensure that members are well-informed and motivated to take advantage of available incentives.

Financial Incentives Offered By Co-ops

The survey participants indicated the use of a variety of financial tactics to support EV adoption and optimal use. Rebates for EV purchases are available from 25% of the cooperatives surveyed. A significant 85% of respondents indicated that they offer rebates for the installation of residential chargers or Electric Vehicle Supply Equipment (EVSE) purchases. Furthermore, 27.5% incentivize off-peak charging through rebates. Other unique programs include a rebate for home builders who pre-wire EV chargers, offered by 2.5% of survey participants, and a Commercial EV Charger Leasing program, also provided by 2.5% of survey respondents.

For EV Purchases

Figure 8: EV Police Car

Example of an EV Purchase Incentive Program

Great River Energy

Through Great River Energy's program that offers financial assistance towards the purchase of a light-duty EV by organizations within their service area, and in coordination with Dakota Electric Association, the Eagan Police Department purchased a Tesla Model Y Performance EV police car. The police department has benefitted from savings of approximately $5,500 per year over a traditional squad car, as well as positive community engagement. (article)

For EVSE Purchases

Over half of the cooperatives that responded to the survey offer incentives or rebates for EV charger installations. These incentives aim to encourage the installation of EV chargers and/or promote off-peak charging, helping to manage grid load effectively. These incentives often include rebates for residential and commercial charger installations, providing financial support to members who invest in EV

infrastructure. By closely monitoring the growth of EVSE infrastructure, cooperatives can better manage load and rate developments, reduce risks related to increased system costs, and improve their forecasting abilities based on the data collected.

Customizing EVSE rebates based on charger types may be beneficial. Programs are still new, and formal lessons learned are yet to be established. Tailoring rebates to different types of chargers can help ensure that incentives are effectively meeting the needs of members and encouraging the adoption of beneficial charging behaviors.

Example of an EVSE Rebate Program

Great River Energy's website includes information about their EV Charging program, offering rebates for Level Two EV Service Equipment (EVSE). Definitions of the types of qualifying EVSE are provided: Public, Workplace/Multi-family, and Fleet. Find details here.

Rates for EV Charging

The survey revealed that 37.5% of the co-op respondents offer a time-based rate for EV charging, while 32.5% provide a whole house rate that includes EV charging. Additionally, 7.5% of responding cooperatives have a subscription rate for EV charging, and 15% offer a demand rate.

By encouraging off-peak charging, these programs help balance the load on the grid, potentially avoiding the need for expensive infrastructure upgrades. This strategy can also help cooperatives manage energy supply more efficiently, reducing costs and improving service reliability.

Example of TOU Rates For EVs

A good example of promoting savings in EV operations with TOU rates can be seen in Hancock-Wood Electric Cooperative's website, as they advise their members "Charge your electric vehicle after 10 p.m. Most vehicles won't need a full 8 hours to charge – configuring for a 6 a.m. departure is better than starting exactly at 10 p.m." See more here.

A key insight from the survey is that encouraging off-peak EV charging through Time-of-Use (TOU) rates and other incentives can lead to significant financial savings. By shifting EV charging to times when demand is lower, cooperatives can reduce the need for expensive infrastructure upgrades and avoid the high costs associated with meeting peak demand. This approach is a straightforward way to save money, avoid unnecessary expenses, and make better use of existing resources.

The following graph, Figure 9, summarizes the responses regarding financial incentives for EV purchase and use provided by the surveyed co-ops.

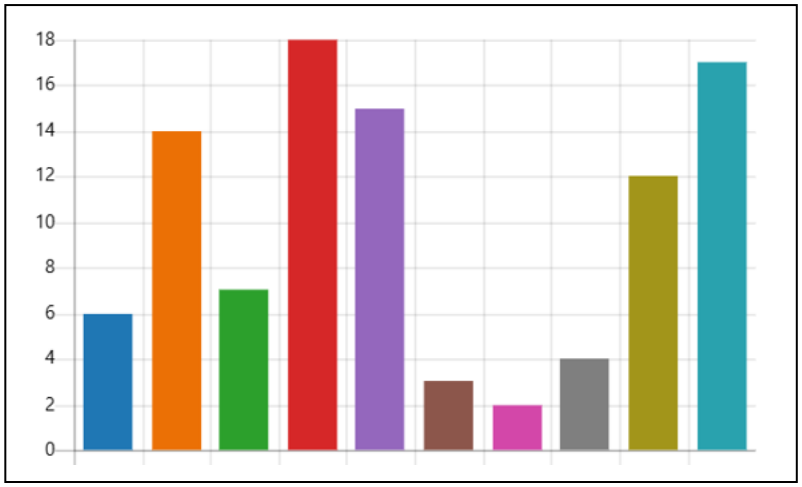
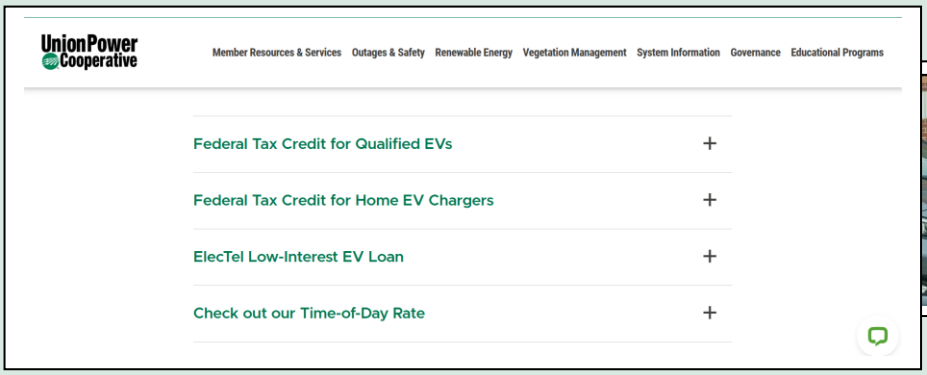
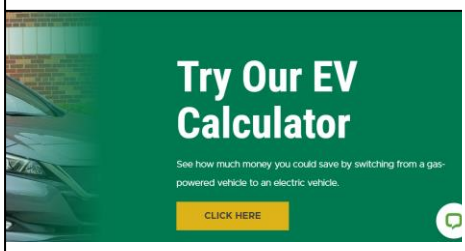


Figure 9: Incentives, Rebates, and Rates for EVs

Example of Multiple Incentives Offered by Co-op

Union Power Cooperative provides comprehensive information on their website about a variety of financial incentives to support EV transition, including federal funding and programs by the co-op, along with educational information and an EV Calculator. Excerpts are show below and see their full website here.





A useful resource for consumers to explore incentives offered in their area, is the U.S. Department of Energy Efficiency & Renewable Energy's U-Finder. Cooperatives can also load their information to this site, to assist members in navigating utility rebates.

Grid Management

As EV adoption continues to rise, effective grid management becomes increasingly important. The increase in kWh sales is attractive, but at the same time can pose load challenges. Having insights into the number of EVs coming into a co-op's service area, as well as new EV chargers and EVSE, and the charging behaviors of EV owners is paramount in effective load management.

EV rate, rebate, and incentive programs serve as powerful tools for optimizing grid management. Cooperatives can leverage smart charging solutions, such as time-varying rates and demand response programs, to manage energy loads and prevent grid overloads. By closely monitoring EV charging patterns, cooperatives can proactively address potential issues, such as transformer overloads, and enhance grid stability.

Future Planning

Having a proactive, hands-on approach to EV advancement also facilitates better planning and responsiveness to future challenges. Even co-ops who are not yet fully engaged in EV-related initiatives, recognize the critical importance of tracking new chargers for effective grid management. Gathering data on charger installations and usage patterns provides insights for understanding where EVs are located within the service area, enabling better assessment of members' needs and planning for necessary upgrades to the distribution network.

By closely monitoring the integration of EV chargers, these cooperatives can anticipate future demand, ensuring that infrastructure improvements align with EV growth. Additionally, leveraging data analytics allows them to develop and refine rebate programs, ensuring incentives are distributed fairly and effectively to support this transition. Such a data-driven approach not only enhances decision-making but also fosters a more responsive and equitable framework for managing the evolving energy landscape.

Member Satisfaction & Engagement

The survey results also show that EV rate, rebate, and incentive programs significantly boost member satisfaction and engagement. Offering a variety of rate options and potential savings not only keeps members happy, but also strengthens their loyalty.

Key Takeaways

Overall, EV rate, rebate, and incentive programs offer practical benefits that include better grid management, higher member satisfaction, new revenue opportunities, and avoided costs. They help

cooperatives take a proactive approach to managing their grids and prepare for the future growth of EVs. As more members adopt EVs, these programs will be key to ensuring that cooperatives can effectively manage their grids and continue to provide top-notch service.

Survey Part 3: EV Charging Infrastructure Development

As the adoption of EVs steadily accelerates, the development of robust charging infrastructure becomes essential. However, this progress comes with the risk of limited flexibility in load shaping that can lead to a greater need for grid infrastructure upgrades. When charging demand is less predictable, utilities may face increased pressure to enhance their grid capabilities to accommodate peak loads. This often results in costly upgrades to substations, transformers, and distribution lines to ensure reliable service. Playing an integral role in the development of EV charging infrastructure, co-ops are better able to manage EV charging and grid infrastructure and gain valuable insights for future investment planning. As one survey respondent aptly stated: "EV's will not succeed without better infrastructure."

This section delves into the multifaceted aspects of EV charging infrastructure development, focusing on the unique challenges and opportunities presented by fleet electrification, workplace charging solutions, and the integration of third-party chargers. Highlights show how co-ops can play a pivotal role in this landscape, not only by facilitating the installation of charging stations, but also by providing essential support and resources to help ensure that these systems are reliable and efficient.

Supporting Fleet Electrification and School Bus Charging

Electrifying fleets, including school bus fleets, presents unique challenges compared to residential EV charging. Fleet vehicles typically have higher energy demands and require more robust charging infrastructure to operate effectively. Unlike residential charging, which usually occurs overnight, fleet charging often needs to happen quickly and may coincide with peak demand hours, complicating load management. This complexity necessitates tailored solutions to ensure efficient and reliable fleet electrification.

Cooperatives are increasingly recognizing the importance of supporting the electrification of school bus fleets, which are a critical fleet in many service areas. For instance, the partnership between Dakota Electric Association and Great River Energy to test an electric school bus resulted in annual savings of $12,000 in fuel and maintenance costs. This successful pilot underscores the potential for significant cost savings and environmental benefits when transitioning school buses to electric power.

Another example of co-ops supporting school bus electrification is a joint effort of East Central Energy (ECE) and Great River Energy. In 2022, ECE worked with the Ogilvie School District in their service area to support Ogilvie's application for federal grant funds for school bus electrification. The Environmental Protection Agency offered a "Clean School Bus" program, including a $395,000 rebate for an electric school bus and related charging infrastructure. Ogilvie was a recipient of the grant in October 2022, and received their electric school bus in May 2024, supported by additional grant funds from Great River Energy and ECE. [10]

Figure 10: Electric School Bus

[10] "Clean, Green and Powered by ECE – Ogilvie goes electric." ECE Co-op Advantage newsletter, September 2024.

By supporting programs for the installation of charging infrastructure and implementing smart charging technologies, cooperatives can facilitate faster charging times and optimize energy use, reducing the risk of grid overload. This is particularly important for school bus fleets, as they require reliable and efficient charging solutions to operate smoothly. See the following figures for example of Roanoke Electric's EV efforts.

Figures 11 & 12: Roanoke Electric Cooperative Electric School Bus and EV Charging Station (article)

Co-ops Leading By Example

Transitioning fleets – including school bus fleets – to electric vehicles not only reduces operational costs for fleet operators, but also provides cooperatives with valuable data on charging behaviors and energy consumption patterns. This data-driven approach enables cooperatives to manage energy demand more effectively, ensuring that fleet charging aligns with grid capacity and does not strain resources during peak times. By analyzing this data, cooperatives can identify trends and make informed decisions about future infrastructure investments.

Moreover, by leading the charge in fleet electrification, cooperatives can set a powerful example for other organizations in their service areas. Demonstrating the practical benefits of adopting electric vehicles—such as cost savings, reduced emissions, and enhanced operational efficiency—can inspire other businesses and school districts to follow suit. This collective shift towards electrification not only supports sustainability goals but also strengthens the cooperative's role as a community leader in the transition to cleaner energy. Discussion on co-op fleets is included in Section 5 of this report.

Additionally, cooperatives can offer educational resources and support to fleet operators, helping them navigate the complexities of electrification. Workshops, webinars, and one-on-one consultations can empower fleet managers with the knowledge they need to make informed decisions about their transition to electric vehicles.

Opportunities and Challenges with Implementing EV Infrastructure

Twenty-nine (29) of the co-ops surveyed identified various opportunities and challenges associated with implementing EV charging infrastructure. Key opportunities include enhanced member satisfaction and new revenue streams. However, co-ops also noted significant challenges, such as regulatory and demographic constraints, high infrastructure investment costs, and technical issues.

Revenue Streams and Infrastructure Investment

EV charging infrastructure, while not immediately profitable, is increasingly seen as a potential future revenue stream through enhanced kWh sales. As electric vehicle (EV) usage grows, managed home charging programs are expected to become essential. These programs can help avoid costly system improvements while providing additional revenue opportunities for co-ops.

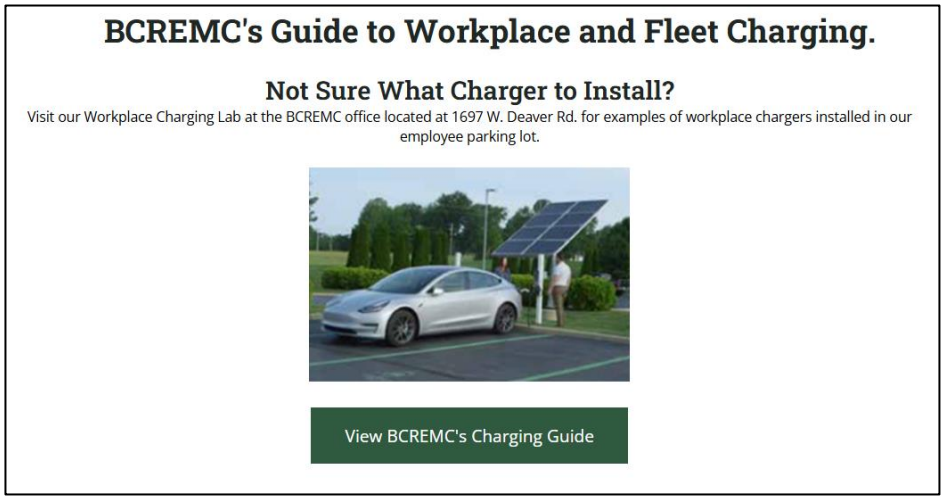
However, the significant infrastructure upgrades that are often required, particularly for fleet and public chargers, present major challenges. For instance, survey results indicate that the high costs associated with installing Level 3 (L3) chargers can be prohibitive without external funding or partnerships. Additionally, implementing direct load control programs for residential chargers can also incur high costs, and members may resist necessary demand fees.

Despite these challenges, cooperatives are actively pursuing various initiatives to enhance charging infrastructure. Initiatives include workplace charging programs, the installation of Level 2 chargers at cooperative offices, and the deployment of DC fast chargers to alleviate range anxiety and meet the needs of their members. By balancing the costs of these investments with the benefits of increased EV adoption, cooperatives can effectively manage demand and create a more robust charging network that supports both current and future needs.

Workplace Charging Solutions

Workplace charging is a crucial area where cooperatives can significantly influence the adoption of electric vehicles (EVs). By promoting and facilitating the installation of charging stations at workplaces, cooperatives can support the growing number of employees and businesses transitioning to electric vehicles. These workplace charging solutions provide convenient access to charging for employees, enhancing their overall experience and satisfaction.

To maximize the impact of workplace charging, cooperatives can offer educational resources and support to businesses regarding the benefits of EVs and the importance of charging infrastructure. Workshops, informational sessions, and partnerships with local businesses can help create a comprehensive approach to workplace charging that benefits everyone involved. Additionally, promoting workplace charging can help shift some of the EV charging load from home to daytime hours, thereby alleviating the evening peak demand on the grid and improving overall grid stability.



Example of Co-op Workplace Charging Education Program

Bartholomew County REMC

As part of Bartholomew County REMC's website information on EVs, they offer guidance on workplace and fleet charging. (Website)

Figure 13: BCREMC Website EV Information

Cooperatives can lead by example by implementing charging stations at their own offices, encouraging employees to consider driving electric vehicles. This initiative not only benefits those who own EVs, but also creates a supportive environment for staff contemplating the switch. One survey respondent shared the benefits they experience by having their own charging stations, "Owning a public charging station such as a level 2 or DCFC charger has helped us to better guide members who are looking for an EV charger installation. We understand the challenges and are equipped to have meaningful conversations."

The following charts in Figure 14 show ownership of EV chargers by co-op survey respondents.

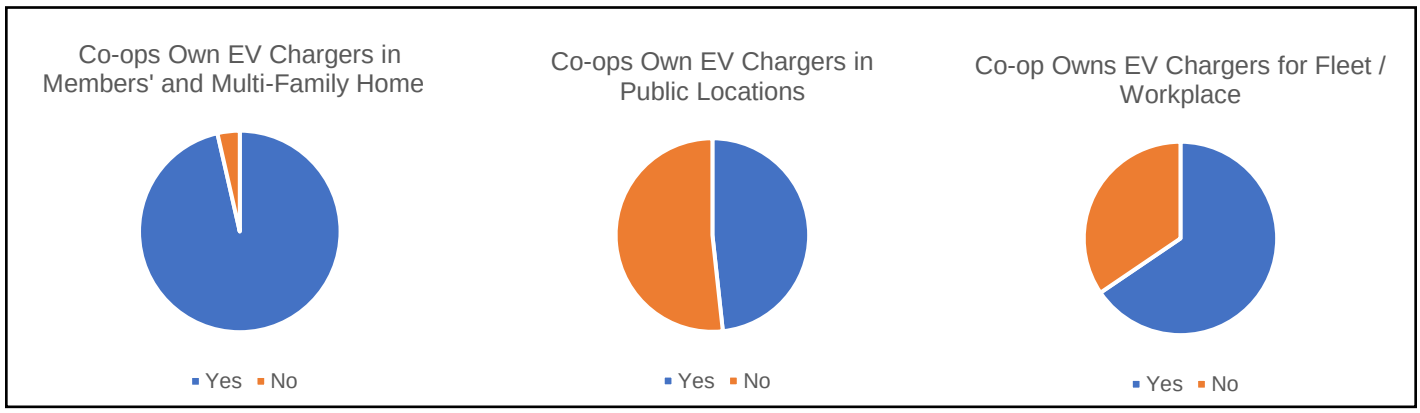


Figure 14: Types of Co-op Ownership of EV Chargers

Support for Third-Party Chargers

Cooperatives can significantly enhance the development of EV charging infrastructure by supporting third-party charging stations. While third-party chargers can present challenges in terms of load management — due to their less predictable usage patterns—they are essential for expanding the EV ecosystem by increasing the accessibility of charging infrastructure. By offering technical assistance,

providing grid connection services, and advising on optimal charger placement, cooperatives can help ensure that third-party chargers are reliable, efficient, and well-integrated into the local grid. This collaborative approach allows cooperatives to expand public charging options without bearing the full financial burden of infrastructure development.

Incentive programs, such as rebates, can significantly lower the costs associated with installing third-party charging stations, making it more appealing for businesses and developers to invest in these projects. Furthermore, effective incentive programs by co-ops can encourage the installation of charging stations that are better integrated into the grid. This integration can enhance load management, allowing for more efficient energy distribution and reducing the need for extensive upgrades. When businesses and developers are incentivized to install charging stations that align with grid capabilities, it helps to stabilize demand and minimize the risk of overloading the system.

Example of Supporting Third-Party EV Chargers

4 County Electric Power Association and TVA joined with S and S Shell to install the utility's first EV Charging Station (article)

Moreover, as more charging stations become available, the overall demand for upgrades may decrease. A well-distributed network of charging stations can help flatten peak demand curves, allowing for smoother energy consumption patterns. This, in turn, reduces the financial burden on utilities and cooperatives, ultimately leading to lower costs for consumer members.

Cooperative Collaboration

To maximize the impact of fleet, workplace and public charging infrastructure, cooperatives can collaborate closely with local businesses and key accounts. This collaboration might include providing technical expertise, conducting feasibility studies, and offering cost-benefit analyses to help ensure that the charging solutions implemented are both practical and economically viable. By helping businesses secure funding and incentives for EV infrastructure projects, cooperatives can reduce the financial burden on these entities, making it easier for them to adopt EV technology. This partnership approach not only facilitates the broader adoption of EVs, but also strengthens the cooperative's relationship with its commercial and industrial members, reinforcing its role as a trusted energy partner in the community.

Survey Part 4: EV Charging Station Energization / Interconnection Processes and Policies

This section focuses on the EV charging station energization and interconnection process, focusing on the experiences and strategies of rural electric cooperatives. It includes various aspects of EV integration, including interconnection policies, load management strategies, anticipated benefits, and lessons learned based on responses from 23 co-ops participating in the survey research.

Uniformity in Interconnection Policies

The survey findings indicate that a significant majority of cooperatives — 18 out of 23 respondents — do not have distinct policies for interconnecting or energizing EV charging stations compared to other new electrical loads. See Figure 15. This trend suggests that many cooperatives are adopting a uniform approach to integrating new electrical loads, treating EV charging stations similarly to other types of infrastructure.

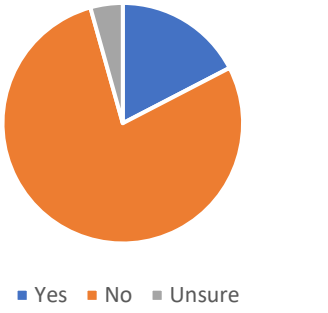


Figure 15: Co-ops Having EV Policies/Requirements

By classifying EV chargers as standard electrical loads, cooperatives can streamline the interconnection process. This eliminates the need for separate procedures or guidelines specifically tailored for EV infrastructure, thereby reducing administrative overhead and accelerating the deployment of charging stations within cooperative territories.

In some instances, cooperatives are incorporating EV chargers into their broader Distributed Energy Resources (DER) strategy. This approach aligns with how they manage other DERs, such as solar photovoltaic systems and battery storage. By integrating EV chargers into existing systems and processes, cooperatives can help ensure that these new loads are effectively managed and seamlessly integrated into the grid. While this uniformity offers several advantages, it may also overlook the unique challenges and opportunities associated with EV charging infrastructure. For instance, the potential for high demand peaks or the necessity for advanced load management strategies might not be adequately addressed by existing policies designed for more traditional electrical loads.

Cooperatives with Specific EV Policies and Programs for Load Management

In contrast to the majority, a few cooperatives have implemented policies specific to the interconnection and energization of EV charging stations. These cooperatives may be addressing particular challenges, such as managing the grid impact of clustered charging stations or leveraging opportunities presented by EVs as flexible loads or grid resources.

For example, some cooperatives have recognized that EV chargers can cause significant localized demand spikes, especially in areas where multiple high-capacity chargers are installed. To manage these potential peaks, they have developed targeted strategies, such as requiring smart charging technology and integrating chargers into demand response programs. These measures not only mitigate the risk of grid overload but also leverage the flexibility of EV loads to enhance grid stability and efficiency.

Long-Term Cost Reduction and Scalability

Based on survey data, as EV adoption continues to grow and the number of EVSE installations increases within cooperative service areas, managed charging strategies are becoming increasingly vital. Without these measures, rising peak demand could lead to significant increases in grid maintenance and upgrade costs. By leveraging a combination of rate structures — such as Time-of-Use (TOU) rates that encourage charging during off-peak hours to spread the load more evenly throughout the day, and demand charges that disincentivize high power usage during peak times — co-ops can effectively manage energy consumption. Additionally, subscription rates can provide members with predictable pricing for charging services, further promoting off-peak usage.

Technological solutions play a crucial role in this management strategy. Telematics systems[11] offer real-time data on EV charging patterns, enabling cooperatives to dynamically manage load and adjust charging schedules based on current grid conditions. This insight into individual and fleet charging behaviors allows for more precise demand management and forecasting.

Smart Charging Programs utilize connected chargers that can be remotely controlled to shift charging times or reduce power draw during peak periods, ensuring that charging aligns with grid capacity. This automation helps prevent grid overloads and maintains service reliability.

Distributed Energy Resource Management Systems (DERMS) are essential for coordinating and optimizing the operation of distributed energy resources, including EVSEs. By integrating EVSEs into a DERMS, cooperatives can manage the grid more efficiently, balancing supply and demand in real time while optimizing the use of available resources. DERMS also enable the implementation of advanced grid management strategies, such as load shifting and demand response, which further enhance grid stability and reduce operational costs. Find out more about DERMS in NRECA's publication "Energy Transition Behind the Meter: DERs, DERMs, & VPPs" and other DERMS content on cooperative.com.

By spreading charging demand across non-peak hours and optimizing grid usage through these smart technologies and rate structures, cooperatives can avoid immediate infrastructure upgrades and extend the life of existing assets.

Furthermore, as cooperatives continue to refine their strategies and technologies for integrating EVSEs, the process of adding new charging stations becomes more streamlined. This scalability is essential as EV adoption accelerates, ensuring that the cooperative can accommodate growing demand without compromising grid reliability or significantly increasing costs.

[11] Telematics systems use GPS technology and on-board diagnostics (OBD) to plot an asset's movements on a computerized map.

Strategic Considerations for the Future

As EV adoption continues to expand, cooperatives might consider revisiting and refining their interconnection policies and rate structures to better accommodate the evolving landscape of EV infrastructure. One area that could benefit from attention is the potential influence of third-party aggregators and companies that may install Distributed Energy Resources (DERs) alongside their EVSE installations. These third parties could introduce new dynamics in energy management, which may impact traditional cooperative control and grid stability.

The integration of DERs, such as solar panels or battery storage, with EVSEs installed by third parties could present new challenges in managing energy flows. These systems might operate independently of cooperative oversight, potentially leading to scenarios that necessitate more sophisticated grid management strategies. As such, it could be advantageous for cooperatives to explore updates to customer charges and rate structures. Adjusting rates to reflect the integration of third-party DERs and their potential impact on peak load management could help cooperatives maintain grid reliability while ensuring fair compensation for the services they provide.

Looking ahead, cooperatives might also consider positioning themselves for future initiatives, such as Vehicle-to-Grid (V2G) technology. While V2G capabilities are still in the early stages of development and adoption, they represent a promising area where EVs could eventually provide power back to the grid during peak demand times. Proactively planning for V2G integration, alongside developing competitive offerings or partnerships that include DER management and smart charging solutions, could enable cooperatives to stay ahead of market trends and continue to play a central role in energy distribution.

Conclusion

The survey results indicate that most cooperatives currently view EV charging stations as just another new electrical load, applying uniform interconnection policies. However, the experiences of cooperatives that have implemented specific EV policies highlight the potential benefits of a more tailored approach. As EV adoption continues to grow, cooperatives may need to refine their policies and strategies to fully capitalize on the opportunities presented by EVs, ensuring that they can integrate and manage this new load effectively into their energy systems.

Survey Part 5: Electrifying Cooperative Fleets

As noted earlier in this report, several cooperatives have introduced EVs into their fleets primarily for educational purposes and to gain firsthand experience with EV technology. These initiatives are aimed at enabling the cooperatives to share accurate and practical information with their members, and to demonstrate their expertise in EVs.

Current Electrification Efforts

Based on responses from 29 of the survey participants, a significant number (69%) have already incorporated electric vehicles (EVs) into their fleets. Furthermore, over half of those who do not currently have EVs in their fleet are planning to add or considering EVs in the future. This proactive approach is driven by the goals of enhancing operational efficiency and reducing fuel and maintenance costs.

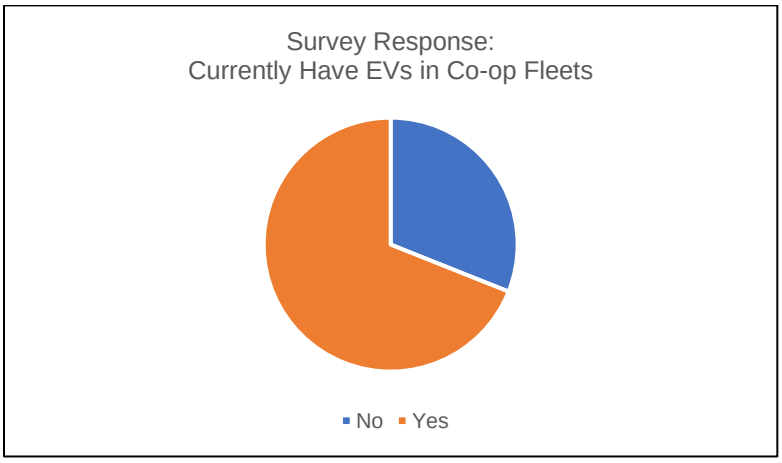


Figure 16: Co-ops with EVs in Fleets

The types of EVs in use range from passenger vehicles like the Tesla Model 3, Chevy Bolt, and Ford Mach-E to light-duty pickups like the Ford F-150 Lightning. Some cooperatives are also exploring the use of hybrid bucket trucks and considering the electrification of larger vehicles as technology advances.

A few cooperatives have also installed charging infrastructure at their offices and are using EVs as pool vehicles or assigning them to specific employees for daily work tasks. By installing dedicated charging infrastructure, these cooperatives are gaining crucial experience with EV technology, enabling them to better manage the integration of these vehicles into their grid systems and share their knowledge with members.

Challenges and Considerations

For 55% of cooperatives considering adding EVs or expanding their existing fleets, the strategic benefits are clear. By adopting EVs, cooperatives can optimize charging times, avoid peak demand periods, and strategically manage loads to maintain grid stability. Fleet vehicles offer a controlled charging

environment, enabling cooperatives to experiment with different load management strategies. These strategies can then be applied to member-owned EVs as adoption grows. Additionally, the firsthand experience gained from operating fleet EVs positions cooperatives as trusted advisors, capable of guiding their members through the complexities of EV ownership.

While the adoption of EVs is promising, the survey highlighted several challenges that cooperatives are facing. Range anxiety remains a significant concern, especially in rural and remote areas where charging infrastructure is less developed. Additionally, the upfront costs associated with purchasing EVs, and the necessary charging equipment present financial hurdles. Operational challenges, such as vehicle performance in cold climates and during high-demand activities like storm restoration, were also noted. These factors contribute to the 31% of cooperatives that have not yet incorporated EVs into their fleets, as they carefully evaluate the practicality and cost-effectiveness of such a transition.

Strategic Benefits and Future Opportunities

The experience gained from fleet electrification is invaluable. According to the 55% of participating cooperatives that say they plan to add EVs to their fleet, there is interest in expanding as more models become available that meet the specific needs of the cooperatives.

Several cooperatives have plans to continue integrating EVs into their fleets. Many cooperatives have found that by experimenting with different load management strategies in a controlled environment, they can better prepare for broader EV adoption within their service territories. Managed charging strategies, including the use of rate structures, telematics, and Distributed Energy Resource Management Systems (DERMS), will be critical as more EVs are introduced. These tools will help cooperatives integrate new EVSEs more efficiently, maintaining grid stability while avoiding unnecessary increases in maintenance and upgrade costs as cooperatives support members and businesses that adopt EVs.

Example of Advancements in EV Strategy

Co-ops are continuing to expand EV efforts, finding new ways to leverage valuable partnerships and bring benefits to consumer-members. An example is Vermont Electric Co-op (VEC), who last year announced a new EV program with partners Camus Energy and FlexCharging. The approach uses telematics and a grid orchestration platform, with aim of bringing 75% of VEC's members' EVs into the co-op's managed charging program. Some benefits expected through this effort come from cost-savings of facilitated enrollment of EVs, integration into VEC's billing system for on-bill credits, and semi-autonomous dispatch of local resources for proactive management of grid capacity. Read more about this effort on VEC's website.

Conclusion

The Cooperative EV Activity Survey reveals key insights into how cooperatives are approaching the integration of EVs within their energy systems. By learning from shared experiences and proactively addressing challenges, cooperatives can better support their members, enhance grid management, and prepare for the future growth of electric vehicles. The insights gathered from this survey will be invaluable in shaping future EV initiatives and ensuring the reliability and sustainability of cooperative grid infrastructure.

Additional Resources

- NRECA EV Resources Summary
- NRECA Cooperative.com EV Homepage
- NRECA Cooperative.com EV Search Results
- NRECA *Business and Technology Update* Monthly Newsletter