
Overview of Utility Transportation Electrification Plans

Best Practices and Good Examples from Across the Country

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Introduction

Purpose of this Document

This document is primarily intended to be a resource for utilities, regulators, and other stakeholders as they engage in utility transportation electrification (TE) plan development and evaluation by highlighting strong program designs from around the country and proposing best practices for different components of a utility TE plan. The document identifies the different categories of investment and programs in a typical TE plan, describes innovative programs approved across the country (with accompanying links), and proposes best practices to maximize program participation and public benefits. This document is a result of Western Resource Advocates' (WRA's) experience working on these plans in our region and aims to provide an overview of what is typically contained in a TE plan, as well as explain specific program design considerations.

Overview — Utility Investment in Transportation Electrification

As the momentum for electric vehicles has grown over the last few years, utilities have emerged as a key player in building out a charging network sufficient to ease drivers into the decision to go electric. Through June 2021, investor-owned utilities across the country have approved more than \$3 billion worth of EV investment, which will support more than 6,200 Direct Current Fast Charging (DCFC) stations and over 224,000 Level 2 charging stations.¹ In total, this investment is already larger than all the money appropriated through the Volkswagen Clean Air Act Civil Settlement, and the number will only continue to grow as more plans are approved. Although the Infrastructure Investment and Jobs Act (IIJA) which was passed in 2022 dedicates up to \$7.5 billion for EV charging, this money is highly focused on creating a network of DCFC stations. The utility dollars being approved are more flexible and will help support EV charging access in single-family homes, around apartment complexes, at workplaces, on remote highway corridors, and in historically underserved neighborhoods.

WRA's region of the Interior West was particularly busy with utility TE plans in 2021. Until 2021, the Interior West (Arizona, Colorado, Nevada, New Mexico, Utah) had just over \$30 million approved for utility TE investment. In 2021, an additional \$270 million worth of investment was approved across seven investor-owned utility plans. Utilities across the region and country are at various stages of developing these plans, but many utilities have yet to make a comprehensive TE filing. For utilities still developing their plans, there are many programs to look to for inspiration. This document lays out what WRA considers best practices for utility programs based on our experience working on these proceedings and includes a few examples of well-designed programs from around the country for each category. While not every valuable or notable program is highlighted in this document, it provides a starting point for those entering the planning process or seeking to learn more about this burgeoning field.

¹ Atlas Public Policy, "Electric Utility Filing Bi-Annual Update", November 2021.
<https://atlaspolicy.com/wp-content/uploads/2021/11/Electric-Utility-Filing-Bi-Annual-Brief-2021a.pdf>

Each section includes:

- A description of the different components of TE plans;
- An explanation of why each component is important;
- A brief summary of WRA's best practices in TE plans to ensure maximum enrollment, promote effective use of the electricity grid, and spread benefits to the greatest number of customers; and
- Examples of good utility program design with a short description and URL link to the pertinent filing or webpage.

Categories of Utility Transportation Electrification Investment Portfolios

Residential Single-Family Charging

Description: Programs to incentivize managed Level 2 charging at single-family homes.

Why it's important: 80% of EV charging happens at home, and to date mostly at single-family homes.² Level 2 chargers are critical to ensuring drivers can get a full charge in just a few hours, ideally during off-peak periods. Additionally, the costs of Level 2 charging allow EV drivers to realize significant fuel cost savings compared to internal combustion vehicles.

Best Practices:

1. *Require customers getting a rebate for a Level 2 charging or panel upgrades to participate in a load management program:* Providing a residential Level 2 EV charger incentive should come with a **requirement** that participants take service in a time-differentiated rate or a managed charging program. Getting as many EV drivers as possible enrolled in a managed charging program is one of the most effective strategies a utility can take to ensuring the bulk of EV charging is shifted into off-peak periods, thereby reducing grid impacts of electrification.
2. *Offer increased incentives for low-income customers:* Utilities should also provide an enhanced rebate for low-income customers, who have less disposable income to pay for a Level 2 charger and often face more expensive panel upgrades to support Level 2 charging.

Model Programs:

Xcel Energy, New Mexico, "Home Charging Service"

- **Program Type:** On-bill financing for residential Level 2 chargers.
- **Program Description:** The Home Charging Service program provides participating customers with a full turnkey service for installing a residential Level 2 charger, at no upfront cost to the customer. The utility takes care of the initial cost of the charger, as well as its installation and maintenance. Participating customers compensate the utility through monthly charges, which are automatically added to their monthly electric bill. Importantly, in order to participate, customers must enroll in a managed charging program.

² Forbes, Electric Vehicle Owners Prefer Dedicated Home Charging Stations, February 2021.

<https://www.forbes.com/wheels/news/jd-power-study-electric-vehicle-owners-prefer-dedicated-home-charging-stations>

- Link to Program: [Southwestern Public Service Residential Programs \(downloaded March 2022\).pdf](#)



Public Service Company of New Mexico, New Mexico

- Program Type: Low-income residential Level 2 rebate.
- Program Description: Public Service Company of New Mexico (PNM) offers a rebate for low-income customers that addresses two key barriers. First, the rebate is available as a point-of-sale rebate, meaning it can be applied to the upfront purchase of the charger, rather than only being available after the customer makes the purchase. This is an important program feature because lower-income customers typically do not have excess capital available and might not be able to pay for the upfront cost, even if the utility promises to reimburse them later. Second, the rebate is appropriately sized (up to \$2,000), in recognition that many low-income customers live in older homes where expensive panel upgrades are required to accommodate an EV charger. The rebates are intended to cover all the costs of a Level 2 charger for low-income customers and be immediately applicable toward the purchase. As with PNM's standard residential Level 2 rebate, all participants are put on a Whole Home EV Rate.
- Link to Program: [Public Service Company of New Mexico Residential Low Income \(downloaded March 2022\).pdf](#)³

³ The final order in this proceeding, which is not available online due to New Mexico PRC website practices, increased this rebate from \$1,500 to \$2,000 per port for low- to moderate-income customers.

Green Mountain Power, Vermont, “Free Level 2 Charger”

- **Program Type:** Free Level 2 charger for participants enrolled in Home Charging Program.
- **Program Description:** Program provides a free Level 2 charger to all participants who enroll in a time-differentiated EV rate (“Home Charging Programs”).
- **Link to Program:** [Green Mountain Power In-Home Level 2 EV Charger \(downloaded March 2022\).pdf](#)

Multifamily Housing Charging

Description: Utility programs to increase access to EV charging in multifamily housing.

Why it’s important: Multifamily housing is a critical but underserved market segment for EV charging. Drivers are unlikely to purchase battery electric vehicles if they cannot charge at home, where cars are typically parked for 12 hours out of the day.⁴ However, less than half of U.S. vehicles have reliable access to dedicated off-street parking at an owned residence where charging infrastructure could be installed.⁵ To date, almost 90% of EV drivers live in single-family detached homes.⁶ It is essential for the EV market to move beyond single-family detached homes in order to scale up and to meet long-term climate and air quality goals. Installing charging stations at apartment buildings and other multifamily housing unlocks the potential for a broader, younger, and more diverse market for EVs. There are many barriers to increasing EV charging in multifamily housing complexes – but utilities are as well positioned as any other entity to develop programs to overcome these barriers. Therefore, developing well-designed multifamily housing charging programs is one of the most critical ways that utilities can increase access to EVs.

Best Practices:

1. *Offer multiple solutions to address different types of parking arrangements:* Parking arrangements in multifamily housing complexes are highly variable. Some tenants have assigned spots, and some spots are shared. A significant proportion of apartment complexes have assigned parking arrangements, which make EV charging particularly difficult. Utilities should offer programs to tackle both assigned parking and shared parking arrangements.

⁴ See Adam Langton and Noel Crisostomo, *Vehicle-Grid Integration*, California Public Utilities Department, October, 2013, p. 5 (available at <https://docs.cpuc.ca.gov/publisheddocs/published/g000/m080/k775/80775679.pdf>; see also Marcus Alexander, *Transportation Statistics Analysis for Electric Transportation*, Electric Power Research Institute, December, 2011 (available at <https://www.epri.com/#/pages/product/000000000001021848>)

⁵ Traut et al., *US Residential Charging Potential for EVs*, (Transportation Research Part D), November, 2013 (available at <https://www.cmu.edu/me/ddl/publications/2013-TRD-Traut-et-al-Residential-EV-Charging.pdf>).

⁶ Center for Sustainable Energy, *California Plug-in EV Owner Survey Dashboard*, <https://cleanvehiclerebate.org/en/survey-dashboard/ev>.

2. *Propose innovative programs to overcome the lack of landlord incentives:* Another critical barrier to EV charging in multifamily housing complexes is a lack of direct financial incentive for landlords. Many might see little benefit from installing chargers, and only costs. Therefore, utilities must find ways to minimize the costs facing landlords as much as possible, either through innovative financing models or allowing the option of direct utility ownership.
3. *Craft creative solutions to overcome billing challenges:* For assigned parking multifamily complexes, another barrier is billing. Normally the bill would go directly to the landlord, rather than the actual tenant using the charging station. Some innovative programs have found ways to use the technology in the Level 2 chargers to ensure the bill is going directly on the tenant's monthly utility bill.
4. *Offer enhanced incentives for multifamily complexes serving low-income tenants:* In recognition that both landowners and tenants in low-income multifamily complexes face greater barriers to installing EV charging infrastructure, utilities should offer larger incentives for those buildings or tenants who meet well-defined income requirements.



Model Programs:

Baltimore Gas and Electric Company, Maryland

- **Program Type:** Offers both rebates and full utility ownership of charging stations at multifamily housing complexes.
- **Program Description:** This program grew out of a recognition that simply providing an EV rebate for multifamily housing is unlikely to move the charging market for that segment to the extent that is desirable. Baltimore Gas and Electric Company (BGE) initially offered rebates of up to 50% of the costs of Level 2 and DCFC chargers for multifamily housing complexes for two years, starting in 2019. Despite leaving the offering open to up to 700 customers, the rebate resulted in the installation of only 18 sites over that two-year period. BGE shifted course and proposed an amended program involving BGE installing, owning, and operating 40 charging stations at multifamily housing complexes, at no cost to site hosts. After just two months, that improved second-generation program was oversubscribed. For multifamily housing complex owners, there are many logistical and financial barriers to installing EV charging. As the BGE example demonstrates, this is a market where rebates alone are unlikely to drive adoption forward at the

pace which is necessary, and more financial and logistical support is needed to make installation attractive for this important charging segment.

- [Link to Program: Baltimore Gas and Electric Multifamily \(downloaded March 2022\).pdf](#)

Eversource, Connecticut

- [Program Type](#): A variety of multifamily housing offerings, including rebates scaled for low-income customers and leasing options for site hosts.
- [Program Description](#): Eversource offers a program where they build, own, and maintain 100% of the make-ready infrastructure and then offer a number of ways for multifamily housing complexes to support charger installation. For standard customers, they offer up to \$20,000 applicable to both the infrastructure and the charger costs. For low-income communities, they offer up to \$40,000 for each site, applicable toward both the infrastructure and the charger costs. Finally, they also offer an innovative financing program where the utility installs and owns a charger for the site hosts, and site host pays off the capital, operations and maintenance costs of the charger in monthly payments over ten years.
- [Link to Program: Eversource Multifamily Housing \(downloaded March 2022\).pdf](#)

Xcel Energy, Colorado

- [Program Type](#): Several offerings for multifamily housing, including a new construction rebate for EV readiness and a program specifically for sites with assigned parking.
- [Program Description](#): Xcel offers four programs for multifamily housing customers, but here we will highlight two of them. First, Xcel offers an “Assigned Parking – Full Service” program, which takes an innovative approach to tackle the challenges of apartment complexes with assigned parking spots. The program offers a turnkey charging service in which the tenant with an EV pays off the cost of the installation, maintenance and energy charges directly on the tenant’s monthly bills. The service is paid off monthly, at no upfront cost to the tenant or the landlord. The tenant can also purchase the charger directly from the utility at any point. Second, Xcel also offers a “New Construction Rebate” for multifamily housing builders who exceed their local EV building code requirements and make more spots charging-ready.
- [Link to Program: Xcel Energy Multifamily \(downloaded March 2022\).pdf](#)

Direct Current Fast Charging (DCFC)

Description: Programs to increase the availability of DCFC (charging at capacity greater than 50 kW) in a utility service territory.

Why it’s important: DCFC is a critical piece to creating a complete charging ecosystem, as it allows for much faster recharging times, when compared to Level 2 charging. While DCFC is not necessary for most EV drivers on a day-to-day basis, it is a critical part of the charging landscape, as it enables long-distance travel in an EV without needing to spend several hours recharging at a Level 2 charger. Additionally, as fleets increasingly electrify, DCFC might also be necessary in ensuring vehicles can complete their full driving cycle without being slowed down with long charging times. Fleets with vehicles that drive long distances every day might need to recharge during the day, and if they do, they will need fast charging to ensure their downtime is minimized to the maximum practicable extent.

Best Practices:

1. *Consider utility-owned DCFC stations as a tool in building a complete fast-charging network:* Utility ownership can be a crucial tool in creating a complete network of fast charging stations. There are certain locations the private market is unlikely to serve in the near future due to low near-term utilization rates, yet which are critical from an EV driver's perspective in order to allow for certain driving use cases, such as long-distance highway travel.
2. *Allow for private market participation before stepping in with utility-owned DCFC stations:* Although utility ownership can be an important tool, the private market should be given an opportunity to compete for locations in a utility-offered DCFC program before stations that are fully owned and operated by the utility are created. Utilities offering rebates or make-ready infrastructure might provide sufficient incentive for charging companies or site hosts to develop charging stations, rendering full utility ownership unnecessary. Private charging providers should be given the opportunity to compete for sites before the utility determines where it is necessary for them to own and operate sites.
3. *Fill charging gaps strategically to lower barriers to EV adoption:* Beyond filling corridor charging gaps, utility ownership of DCFC can be beneficial in urban areas unlikely to be provisioned by the private market in the near-term future. For example, siting DCFC in areas with low overall EV adoption and an abundance of multifamily housing residences that make owning an individual charger more difficult can remedy a "charging desert" problem. Siting DCFC in these areas enables people living in communities without easy access to charging to realistically pursue EV adoption.
4. *Consider the role of other funding sources in deciding where to invest.* Over the last few years, some state programs have chosen to use Volkswagen Settlement funds and other sources of funding to support a DCFC network in their state. The passage of the IIJA in 2021 will also provide funding to state departments of transportation to develop DCFC stations along federally designated alternative fuel corridors. As utilities assess where to focus on DCFC build-out, it is critical they coordinate with state agencies who are also developing these stations, to ensure they are working efficiently to build out a much-needed DCFC network.

Model Programs:

Joint Utilities of New York, New York, "Light Duty EV Make Ready Program"

- **Program Type:** Tiered incentives based upon site host's ability to meet certain criteria.
- **Program Description:** The Joint Utilities of New York offer a tiered incentive program for non-residential EV charging stations. The level of incentive depends on compliance with certain criteria, varying from 50% to 100% of the project costs. For example, publicly available DCFC projects located in disadvantaged communities are eligible for up to 100% of project costs to be covered, while DCFC projects with restricted access are only eligible for up to 50% of the costs. By providing tiered incentives, the utilities can offer the highest level of incentive to those projects that provide the highest level of benefit to the public.
- **Link to Program:** [The Joint Utilities of New York Make-Ready Program \(downloaded March 2022\).pdf](#)

Xcel Energy, New Mexico, “Public Fast Charging Portfolio”

- **Program Type:** Mixed ownership program between the private market and a utility.
- **Program Description:** This is a DCFC program which has two types of ownership. The program includes third-party-owned DCFC, as well as utility-owned DCFC. The program is staggered so that the private market has the opportunity to determine what sites it wants in year one, and the utility supports the development of these third-party-owned sites by providing the make-ready infrastructure all the way up to the customer meter. Starting in year two, the utility determines sites that are unlikely to be served by the private market and builds utility-owned and -operated chargers in the second and third year. The private market continues to be able to get utility funding for make-ready infrastructure in years two and three as well.
- **Link to Program:** [Xcel Energy Commercial \(downloaded March 2022\).pdf](#)

Fleet Charging

Description: Programs which offer charging services to electric fleets, whether they be comprised of light-duty EVs or medium- and heavy-duty electric trucks.

Why it’s important: Corporate-owned fleets of vehicles are prime candidates for rapid electrification, as these entities can take swift action to electrify a number of vehicles. Additionally, fleet owners are more likely to make cost-based decisions than private customers and calculate the reduced fueling and maintenance costs associated with electric fleets. Offering turnkey solutions can help fleets reduce the challenge of installing the necessary charging infrastructure and expedite their transition.



Best Practices:

1. *Offer fleet advisory services to interested fleet owners looking to transition to EVs:* In addition to offering fleet charging to fleets that have already electrified, dedicating resources for fleet owners considering electrifying their fleets is crucial to accelerating EV adoption. This is particularly important for fleets that consist of medium- and heavy-duty vehicles, as these fleet owners might not be aware of electric models which can function akin to their current internal combustion vehicles. Furthermore, providing assistance to guide fleet owners through the application process for the fleet programs offered by a utility ensures the programs are more accessible and wide-reaching.
2. *Offer flexibility in the ownership of charging infrastructure:* Providing multiple options with different levels of utility and customer ownership of charging infrastructure can make switching to an electric fleet easier for customers. Programs such as initial utility ownership of all charging infrastructure with monthly payments as the customer “buys out” the utility ownership can lower upfront costs for customers, making transitioning to an electric fleet a less daunting financial hurdle.

Model Programs:

San Diego Gas and Electric, California, “Power Your Drive Fleets”

- Program Type: Full-service turnkey program for medium- and heavy-duty electric fleets.
- Program Description: San Diego Gas and Electric (SDG&E) provides financial assistance for installing EV charging stations, as well as guiding fleets through the installation process. SDG&E walks customers through the entire process, from submitting an interest form online, to preliminary design and engineering, construction, and site activation. In addition, they offer several ownership options, including full utility ownership of everything up to the charging station, with the customer paying for and owning the charging station. Alternatively, the utility can own everything up to the customer meter, and then provide a rebate of up to 80% of the project costs for customers to own everything from the beyond the meter (electrical paneling, wiring, charger). This program is available only for medium- and heavy-duty electric trucks, from Class 2-8.
- Link to Program: [San Diego Gas & Electric Fleets \(downloaded March 2022\).pdf](#)

Xcel, Colorado, “Fleet Advisory Services” and Fleet Rebate Options

- Program Type: Fleet charging with multiple financing options and free consultations.
- Program Description: Xcel’s workplace charging program offers make-ready infrastructure to all interested customers, as well as the option for the utility to install, maintain, and own EV chargers on behalf of their customers. In the company-owned option, the customers get the charging infrastructure installed at no upfront cost and pay off the cost of the charger and its maintenance through monthly payments put on their monthly electric bills over the course of ten years. Customers can also pay off the cost of the charger to the company at any time and take ownership of the equipment. The program also offers rebates to reduce the total cost of the chargers for governmental fleets or fleets serving low-income populations, as well as incentives to further reduce upfront costs. In addition to financial incentives, Xcel also offers an

Advisory Service portfolio which assists fleet owners by helping them develop a comprehensive electrification plan that uses telematics data to understand which vehicles are best suited for electrification, identifies the best sites for electrification, and walks them through Xcel's programs.

- [Link to Program: Xcel Energy Fleet Advisory and Assessments \(downloaded March 2022\).pdf](#)

Mass Transit Charging Infrastructure

Description: Programs which electrify existing public transit vehicles or establish new electric mobility options available to the public.

Why it's important: Many municipalities and transit agencies offer important mobility options for those who do not own cars or are seeking alternatives to driving. Supporting electrification of mass transit provides tremendous climate and equity benefits, as it helps to reduce travel in single-occupancy vehicles and reduces air and noise pollution in neighborhoods which have often faced a disproportionate share of pollution. Replacing diesel buses with electric ones therefore has significant climate, equity, and public health benefits, and utilities can help to advance this transition by helping reduce the costs of charging infrastructure to transit providers.

Best Practices:

1. *Offer incentives which recognize the greater costs of charging infrastructure needs for electric buses:* In order to reduce upfront barriers for public transit agencies, utilities should offer incentives which can significantly reduce these greater upfront costs for higher-capacity charging.
2. *Work directly with transit agencies to develop solutions tailored to their needs:* In order to ensure programs are useful for and used by their intended audiences, utilities should seek input from these agencies before rolling out programs, as transit agencies already have a good sense of what is needed from their bus fleets.

Model Programs:

Public Service of New Mexico, New Mexico, "Mass Transit Infrastructure Program"

- **Program Type:** Tiered incentives to support depot and en route charging stations for electrified mass transit serving low- to moderate-income customers.
- **Program Description:** PNM's program offers incentives for the installation of EV charging infrastructure for school districts or transit agencies serving low- to moderate-income communities. The incentives are tiered depending on the capacity of the charger, but designed to support both 450 kW en route chargers for buses to charge up during their cycles, and 100 kW depot chargers to support overnight charging.
- **Link to Program:** [Public Service Company of New Mexico Mass Transit \(downloaded March 2022\).pdf](#)

NV Energy, Nevada, "Transit Electrification Grant Program"

- **Program Type:** Grants to support transit agency electrification.

- **Program Description:** NV Energy is convening a working group of transit agencies, metropolitan planning organizations, and the state Department of Transportation to identify projects which will support electrification of public transit in Nevada. The portfolio has a budget of \$6 million and has a mandate to focus on electrifying transit agencies in historically underserved communities.
- **Link to Program:** [NV Energy Transit \(downloaded March 2022\).pdf](#)

Xcel Energy, Colorado, “Electrify Paratransit Mobility Pilot”

- **Program Type:** Electrification of paratransit medium-duty shuttle buses.
- **Program Description:** This program provides rebates for paratransit operators to purchase or lease electric shuttle buses, as well as providing necessary charging infrastructure. The program provides up to \$350,000 in funding for each bus and \$10,500 for charging stations (including up to three chargers). The pilot project will support the deployment of up to six electric paratransit shuttle buses.
- **Link to Program:** [Xcel Energy Paratransit Mobility \(downloaded March 2022\).pdf](#)

Workplace Charging

Description: Level 2 charging that is available at workplaces for employees to charge their EVs during the workday while they are parked.

Why it’s important: Workplace charging can overcome a critical barrier to EV adoption for people without access to charging at home, making EV adoption more accessible for residents of multifamily homes or those who otherwise do not have the ability to charge at home. Workplace charging allows for these EV drivers to have consistent access to Level 2 charging, instead of being dependent on DCFC for all their charging needs. Furthermore, the ability to charge at work can ease range anxiety for drivers with long commutes.

Best Practices:

1. *Minimize upfront costs to customers seeking to install chargers:* Utility-provided make-ready infrastructure and rebates for chargers can help minimize upfront charging costs for workplaces interested in offering EV charging. Another good alternative is to deploy innovative financing options that reduce upfront costs while still ensuring participants pay off the costs of the program. Either program design can incentivize workplaces to offer EV charging.
2. *Consider a requirement for programs to maximize off-peak charging:* While managed charging is typically considered in the residential context, utilities should consider how they can incentivize workplace charging in a manner which comes at lowest-cost hours, particularly in regions with high midday solar energy generation. Encouraging charging during midday off-peak hours can prevent the addition of load to peak times and avoid unnecessary grid impacts.

Model Programs:

San Diego Gas and Electric, California, “Power My Drive MUD and Workplace”

- **Program Type:** Make-ready infrastructure, charger rebate, and requirement for grid-friendly rates.

- Program Description: SDG&E installs, maintains, and owns the make-ready infrastructure for site hosts, as well as offering a rebate to offset the cost of the charger itself. The company offers a rebate of up to \$3,000 per port in addition to the make-ready infrastructure, as well as a requirement that participating customers take service at a time-varying rate which shifts charging to off-peak times.
- Link to Program: [San Diego Gas & Electric Power Your Drive \(downloaded March 2022\).pdf](#)



Green Mountain Power, Vermont

- Program Type: Turnkey Level 2 charging solutions paid in monthly charges.
- Program Description: Rather than requiring customers to cover all the upfront costs of site design, installation and hardware costs, this program provides turnkey solutions to interested customers. Paying for these costs through monthly charges removes the barrier of high upfront costs of charging installations.
- Link to Program: [Green Mountain Power Workplace Charging \(downloaded March 2022\).pdf](#)

Public Level 2 Charging

Description: Programs which offer Level 2 charging at destinations where EV drivers are likely to dwell for a long time.

Why it's important: Level 2 facilities can provide a low-cost, grid-friendly charging solution at places where EV drivers are likely to dwell for long periods of time, such as a shopping mall, hotel, recreation center, state park, or ski resort. Furthermore, these destination areas, especially those related to outdoor recreation, might be remote and far from other forms of publicly available charging.

Best Practices:

1. *Ensure Destination Level 2 Charging is included as a utility offering:* Public or “destination” Level 2 charging programs are relatively simple, and typically involve providing a rebate or make-ready infrastructure to the interested customer. While many programs actually overlook a generic Level 2 charging program, it is an important addition.
2. *Consider requiring participants to take service on time-varying rates or managed charging programs:* Managed charging has largely focused on the residential charging sector thus far, however for areas with long dwell times, it might make sense to implement for public charging.

Model Programs:

NV Energy, Nevada, “Outdoor Recreation and Tourism Program”

- Program Type: Incentives for site host-owned Level 2 chargers placed in areas with significant traffic from tourists.
- Program Description: NV Energy offers incentives for Level 2 charging stations to support the build-out of the charging network for casino resorts, sports complexes, convention centers, rural tourism sites, and ski locations.
- Link to Program: [NV Energy Outdoor Recreation and Tourism \(downloaded March 2022\).pdf](#)

Eversource, Connecticut, “Destination Level 2 Charging Programs”

- Program Type: Make-ready infrastructure and charger incentives to encourage destination Level 2 charging.
- Program Description: Eversource’s Destination Level 2 charging program uses the National Renewable Energy Laboratory Electric Vehicle Infrastructure Pro Lite Tool (NREL EVI-Pro) to determine how many public Level 2 chargers are needed in its service territory, and uses that figure to determine the target level of Public Level 2 ports it intends to support for this program. The program provides utility make-ready infrastructure plus an incentive to cover the cost of the EV charger of up to \$20,000 for normal sites and \$40,000 for those in underserved communities.
- Link to Program: [Eversource Destination Level 2 \(downloaded March 2022\).pdf](#)

Electric School Buses

Description: Programs which electrify school buses, helping schools shift their bus fleets from diesel to electric models.

Why it's important: Exhaust emissions from diesel school buses have extensively documented adverse air quality and health impacts. Diesel exhaust is especially damaging to children’s lungs, which are still developing. As such, electrifying school buses creates tremendous positive public health impacts for a population that is especially vulnerable to pollution. Furthermore, electric school buses are cheaper to operate and maintain over their lifetimes compared to diesel models, allowing for school districts to

save money over the buses' lifetimes. However, the upfront costs of purchasing an electric school bus can be prohibitive for some school districts.

Best Practices:

1. *Partner with school districts to help transition fleets as new buses are acquired:* Working directly with school districts, including offering advisory services on the costs and process of purchasing electric school buses, can help school districts plan ahead so they can retire diesel buses and replace them with electric ones. In this way, utilities can serve as a resource, and not only a source of funding, for electric school bus procurement.



2. *Prioritize partnerships with schools serving disproportionately impacted communities and low-income neighborhoods:* Schools located in historically underserved communities often have higher levels of pollution and worse air quality than their counterparts located in more affluent areas. Additionally, these schools usually have fewer resources, making the upfront costs of electrification particularly challenging. As such, working with these schools can maximize the public health benefits of a utility's investment in electric school buses and encourage underserved school districts which might otherwise stick with polluting diesel buses to go electric instead.

3. *Incorporate managed charging programs with electric school bus fleets:* With defined duty cycles and overnight dwell times available for charging, school buses make excellent candidates for instituting managed charging. Also, managed charging programs can help schools lower their charging costs for their bus fleets and realize increased fuel cost savings. In addition, utilities should consider implementing vehicle-to-grid (V2G) technology for these fleets, given electric school buses' large batteries and regular duty cycles.

Model Programs:

NV Energy, Nevada

- **Program Type:** Electric school bus rebates with participation in vehicle-to-grid pilot rate.
- **Program Description:** This program will provide an incentive toward the purchase of electric school buses of \$250,000 per 220-kWh bus, with the requirement that all buses participate in a pilot vehicle-to-grid pilot program. Additionally, NV Energy also covers the cost of vehicle-to-grid chargers for participating school districts. The program aims to support 40 vehicle-to-grid electric school buses.
- **Link to Program:** [NV Energy Electric School Bus \(downloaded March 2022\).pdf](#)⁷

Dominion Energy, Virginia

- **Program Type:** Vehicle-to-Grid electric school bus initiative.
- **Program Description:** Dominion Energy unveiled the nation's largest utility electric school bus program in 2019, which planned to have 50 electric school buses by 2020; 1,000 by 2025; and 100% of all buses in its service territory electric by 2030. Additionally, the electric school buses would be equipped with vehicle-to-grid technology, which would support grid reliability. Dominion provides incentives for school districts to offset the high incremental costs of electric buses as compared to diesel ones.
- **Link to Program:** [Dominion Energy Electric School Buses \(downloaded March 2022\).pdf](#)

Vehicle Rebates

Description: Utility-offered rebates to purchase and/or lease a new or used EV.

Why it's important: While the costs of EVs are steeply declining and they offer savings in the form of reduced fuel and maintenance costs, the upfront purchasing price remains a barrier for many. This is particularly true for low-income customers, who would most benefit from the reduced fuel and maintenance costs EVs provide. Incentives can help reduce these barriers and get many customers who might not otherwise purchase an EV to go electric.

⁷ The final order in this proceeding required NV Energy to increase its electric school bus rebates from \$.60 per watt to \$1.14 per watt, which equals a \$250,000 rebate for a 220-kWh electric bus.

Best Practices:

1. *Offer EV rebates exclusively for low-income customers:* Utility-provided EV rebates should focus on low-income customers who meet specific income criteria. Many EV rebates programs at the federal and state levels are not easily accessible for low-income customers, so utility programs targeting these customers can help to move the needle forward and ensure these customers are not left behind.
2. *Make rebates available at point of sale:* One reason that federal and state EV rebates have not moved the needle for low-income customers is that they are only available **after** the vehicle has been purchased. Utilities can remedy this by making the rebates available to immediately lower the cost paid at the dealer, reducing barriers for low-income customers. Dealers then claim the rebate, shifting the waiting time for the rebate from the customer to the dealer.
3. *Consider varying rebate levels for different types of electric mobility options:* Utilities can offer rebates which meet customers where they are at by offering rebates for new EVs, used EVs, electric motorcycles, and electric bikes. These rebate amounts should vary by technology type, but attempt to support various forms of electric transportation.
4. *Include used vehicles in rebate eligibility terms:* Many low-income customers might be more likely to purchase used vehicles given their lower price point. As such, utilities designing rebates geared toward low-income customers ought to take this into consideration and include used vehicles in their programs and offer rebate amounts which reflect the fact that used vehicles are often purchased by low-income customers for whom vehicle purchases pose a greater financial burden.

Model Programs:

Green Mountain Power, Vermont

- Program Type: EV rebate for low-income customers.
- Program Description: Green Mountain Power offers stacked rebates for low-income customers when purchasing a new or used EV; they are eligible for an additional \$1,000 rebate on top of the rebates available to all customers.
- Link to Program: [Green Mountain Power Vehicle Rebates \(downloaded March 2022\).pdf](#)

Xcel Energy, Colorado

- Program Type: EV rebate for low-income customers.
- Program Description: Xcel offers a \$5,500 rebate for new electric vehicles and \$3,000 for used electric vehicles. Rebates are available at point of sale, and only to low-income customers who meet income qualifications.
- Link to Program: [Xcel Energy Low Income EV Rebate \(downloaded March 2022\).pdf](#)

NV Energy, Nevada

- Program Type: EV rebate for low-income customers.

- **Program Description:** NV Energy provides a \$2,500 rebate to low-income customers for the purchase of a new or used battery or plug-in hybrid EV.
- **Link to Program:** [NV Energy Lower Income Electric Vehicle Rebate Handbook \(downloaded March 2022\).pdf](#)

Innovative Programs

Description: Utility programs driving and integrating innovations in the transportation electrification sphere.

Why it's important: The TE landscape is rapidly evolving and utility programs need to be responsive. Innovation in areas like the types of electrified vehicle options available or using EVs as a grid resource has the potential to provide benefits to all ratepayers, EV drivers, and utilities. Given the potential benefits, utilities are incorporating more innovative elements into their programs. These programs can be conducted on a smaller scale as pilot programs or as part of an existing larger program.

Best Practices:

1. *Incorporate programs aimed at technologies within TE that have not been widely scaled:* Utilities have a unique opportunity to encourage adoption of newer TE technologies by offering incentives or other programs.
2. *Think about high EV-adoption scenarios and plan for grid management now:* Utilities should utilize this time before large-scale, widespread adoption of EVs to develop pilots and tweak programs for good grid management practices.

Model Programs:

Duke Energy, Florida

- **Program Type:** Rebates for non-traditional EVs.
- **Program Description:** The program is an example of encouraging electrification in the commercial and industrial sectors, with Duke Energy offering rebates for electric forklift fast chargers and electric transportation refrigeration units.
- **Link to Program:** [Duke Energy Managed Charging \(downloaded March 2022\).pdf](#)

Xcel Energy, Colorado, "Partnerships, Research and Innovation Portfolio"

- **Program Type:** A portfolio of innovative research and partnership projects developed in coordination with stakeholders.
- **Program Description:** Xcel had its Partnerships, Research and Innovation (PRI) portfolio approved in its 2020 TEP filing, which allocated \$10 million to be directed toward developing innovative projects in close coordination with stakeholders. The portfolio was approved in recognition that TE technologies are rapidly evolving, and more flexible funding can help support innovative projects to test the feasibility of these emerging technologies for greater customer benefit. The purpose of this portfolio is to increase and broaden access to electricity as a transportation fuel, minimize system costs, increase benefits of electric transportation, and inform future TEP plans. Currently Xcel is developing projects to expand electric car sharing for historically underserved communities, support electrification of municipal refuse trucks,

electrify paratransit services, test vehicle-to-building technology, and study the impact of residential EV charging on the distribution system.

- **Link to Program:** [Xcel Energy Partnerships, Research and Innovation \(downloaded March 2022\).pdf](#)

Cross-Cutting Considerations

Equity

Description: Programs which are developed specifically to assist historically underserved customers and communities transition to electric vehicles.

Why it's important: Early EV adoption has been greatest among affluent, white Americans, despite such populations only making up a small percentage of the country as a whole. In contrast, communities most impacted by poor air quality and who spend the largest shares of their income on transportation have seen minimal EV adoption due to a number of barriers. Historically disadvantaged communities and low-income households face greater financial and logistical barriers to EV adoption. Utilities must actively work to reduce the barriers for EV adoption among these communities and help them realize the benefits of TE.

Best Practices:

1. *Consider equity across all program offerings, rather than as an afterthought:* All proposed utility programs should consider the unique needs of low-income and historically disadvantaged populations. This means increased incentives and financial assistance across all the investment portfolios, and culturally appropriate customer education and outreach programs.
2. *Recognize that underserved customers require unique considerations and higher levels of investment:* Given the financial barriers facing low-income customers, programs aiming to serve them should be evaluated through a separate lens. Higher incentive levels for charging, more specifically targeted outreach programs, and even incentives for vehicle purchases can be critical to increasing EV adoption for low-income customers.
3. *Consider programs that target multiple forms of transportation:* Programs which support electrified public transportation and electric micro-mobility can help serve customers who do not own a vehicle.
4. *Make rebates for low-income customers available at the point of sale whenever feasible.* Rebates that are available only after a purchase has been completed might be difficult for lower-income customers to use, as they might not have the excess capital available to cover the purchase upfront, even if they are to be reimbursed at a later date. Making rebates available at the point of sale helps eliminate this barrier, and will make rebates more accessible to low-income individuals and facilities serving primarily lower-income customers.

5. *Set a firm number which will be the minimum investment dedicated to low-income customers and historically disadvantaged communities:* Setting a “floor” will help ensure an appropriate level of investment is dedicated toward underserved communities. This “floor” can be either across the entire portfolio of utility programs or specific to each program offering.
6. *Develop programs in consultation and partnership with groups that work directly with and serve the needs of low-income and historically disadvantaged population.* Utilities need not be experts on issues affecting low-income and disadvantaged communities in order to design programs that are uniquely tailored to these communities, as they have a number of resources to draw on. One of the best resources at a utility’s disposal is working with organizations that do specifically work in the communities that utilities are seeking to reach through their program offerings. Communicating with these groups early and often, and seeking their input on utility programs, ensures that programs focused on reaching these communities are well-designed and thoughtful. If possible, utilities should compensate community groups for their participation, as these groups are often resource-constrained and financial rewards might be required to make their participation worth the opportunity cost.

Model Programs:

Xcel Energy, Colorado

- Program Type: Equity considered across all portfolios.
- Program Description: Xcel’s program considers equity across the full spectrum of its offerings, and requires *at least* 20% of the plan’s total funding to go toward low-income customers. Increased incentives are available for low-income customers at residential and multifamily housing complexes, for workplaces and fleets serving low-income customers, and for community charging hubs located in historically disadvantaged communities. Additionally, Xcel is required to spend 30% of its Partnerships, Research and Innovation Programs budget on underserved communities, is in the process of developing a performance-based incentive to encourage investment in underserved communities, and offers a rebate for the purchase of a new or used EV for low-income customers. By providing such a diverse set of offerings, Xcel’s program aims to ensure EV adoption is accelerated in historically underserved communities.
- Link to Program: [Xcel Energy Equity \(downloaded March 2022\).pdf](#)

Eversource, Connecticut

- Program Type: Added incentives for ports in underserved communities.
- Program Description: Eversource’s program aims to increase access for underserved communities by providing an incentive adder for underserved communities across its multifamily housing, destination Level 2, workplace, and DCFC charging programs. These adders dramatically increase the utility’s maximum contribution for each site, and will lower barriers to EV charging station deployment in underserved communities.
- Link to Program: [Eversource Equity \(downloaded March 2022\).pdf](#)

Charging Optimization

Description: Programs to shift electric vehicle charging into lower-cost, off-peak periods.

Why it's important: Using incentive programs to get as much EV charging as possible onto managed charging programs will help ensure EV charging creates downward pressure on electric rates for all ratepayers, whether they use an EV or not. Utilities have extraordinary influence over how EV charging load comes onto the grid, and must use their programs to ensure charging is shifting into low-cost, off-peak periods with either time-varying electric rates or active managed charging programs. Optimizing residential EV charging is easiest and most critical, but as EV use continues to grow, it is also important to look at managed charging in multifamily housing complexes, workplaces, and everywhere that EV charging occurs.

Best Practices:

1. *Require participation in an EV-dedicated rate or managed charging program as a condition for receiving a utility incentive:* All utility programs should require customers who receive an incentive for charging installation to participate either in an EV-charging rate or more active managed charging, where the utility or third-party provider actively controls the EV charging.
2. *Emphasize programs which provide a positive, seamless customer experience while maximizing grid benefits:* Charging optimization programs should be designed to maximize grid benefits, but they will only work if customers are participating in them. This means not only optimizing the program to charge at the most grid-friendly hours, but also designing programs that are easy to utilize and enable customers can plug in their EVs when they get home and have a full battery the next morning.
3. *Consider the role of vehicle telematics in charging optimization, in addition to networked Level 2 chargers:* Traditionally, networked Level 2 chargers have been the focus of utility programs when considering how to ensure vehicles can be dynamically charged. However, the technology in the vehicles themselves is also capable of providing information and being the control point for managed charging programs. Utility programs should be technology-agnostic and consider the charging optimization capabilities of both networked Level 2 chargers and vehicle telematics.
4. *For EV time-of-use rates, conduct adequate customer education and consider submetering EV chargers:* Without a clear understanding of when off-peak and on-peak periods are, time-of-use pricing and managed charging programs might leave customers frustrated and even increase their bills. Given this, utilities should be thoughtful and proactive when enrolling customers in such programs or under such rates. The rate design should be easy to understand (i.e., limiting the number of pricing periods to a manageable number) and the price signals should be clearly communicated to customers. Additionally, utilities should consider EV-only rates which submeter EV usage and can be simpler to understand and use than a whole-home time-of-use rate.

Model Programs:

Xcel Energy, Colorado, “Charging Perks”

- **Program Type:** Aligning EV charging with renewable energy generation using vehicle telematics.
- **Program Description:** Charging Perks is a pilot which uses the telematics in vehicles, and partners with auto manufacturers through the Open Vehicle-Grid Integration Platform (OVGIP) to align EV charging with high night-time wind energy generation. The utility sends a signal through the OVGIP on a daily basis, depending on daily forecasts. This is an example of active managed charging, one of the first pilots in the U.S. to test the ability of OVGIP and vehicle telematics to control charging. Customers receiving a residential rebate can take part in this program to comply with the requirement to participate in a charging optimization program, although not all vehicle manufacturers are eligible.
- **Link to Program:** [Xcel Energy Charging Perks \(downloaded March 2022\).pdf](#)

Duke Energy, Florida

- **Program Type:** Residential managed charging for EV owners.
- **Program Description:** The program is an example of crediting customers directly for off-peak charging behavior. Duke customers who only charge on-peak twice or less each month receive a \$10 bill credit.
- **Link to Program:** [Duke Energy Managed Charging \(downloaded March 2022\).pdf](#)

Eversource, Connecticut

- **Program Type:** Managed charging programs which target various charging end uses.
- **Program Description:** Managed charging programs have typically focused on charging EVs in residential single-family homes, where the majority of EV charging occurs. Eversource takes strides forward by not only offering three types of residential managed charging programs, but also requiring development of managed charging for fleet EV charging. The residential programs are aimed to serve customers with both networked and non-networked Level 2 chargers, which can lead to a higher percentage of customers participating in a managed charging program. The managed charging offerings for multifamily housing and fleets will target another important charging sector which has to date largely been left out of programs aiming to shift charging into off-peak periods.
- **Link to Program:** [Eversource Managed Charging \(downloaded March 2022\).pdf](#)

Outreach and Education

Description: Programs which make customers aware of a utility’s offerings in terms of rebates, rates, and pilots, while also performing general education about the benefits of EVs and the availability of EVs in the utility’s service territory.

Why it’s important: Education and outreach efforts ensure that utility electrification programs are widely known to utility customers. These efforts bolster participation in utility programs, expand the types of customers involved in programs, and educate utility customers about EVs and other TE.

Best Practices:

1. *Bilingual material availability:* Utilities with significant customer populations who speak languages other than English should consider these linguistic differences and make resources available in the relevant languages so that all utility customers can participate in utility program offerings.
2. *Targeted outreach to low-income customers:* Low-income customers have unique considerations and often utilities have programs specifically directed toward these groups. As such, utilities should develop specific messaging for their outreach efforts for low-income customers that take this into consideration. This means developing messages that will resonate with lower-income customers, and putting those messages in places where those customers will see them.
3. *Partnerships with relevant organizations in the community:* Working with community organizations can bolster a utility's ability to educate customers and perform outreach throughout its service territory to a variety of populations. Especially for groups who do not respond to traditional utility messaging, partnering with organizations that work directly with these populations can be incredibly impactful. Ideally, participating community groups should be compensated for their participation.
4. *Campaign spanning multiple forms of media:* Utilities should employ a variety of communications platforms, such as social media, utility websites, TV or radio, and other appropriate channels, to try and inform as many customers as possible about their programs.



NV Energy, Nevada

- Program Type: Bilingual website describing programs and navigating the EV purchasing experience.

- Program Description: NV Energy's EV website provides a number of easy tools which not only describe the utility's EV programs, but also help prospective customers locate where they can purchase an EV and compare the costs of an EV versus a gasoline-powered vehicle. The website is easy to navigate, and also can be easily translated into Spanish by toggling the screen.
- Link to Program: <https://www.nvenergy.com/cleanenergy/electric-vehicles>

El Paso Electric, New Mexico

- Program Type: Bilingual Spanish-English program with targeted low-income outreach and education.
- Program Description: El Paso Electric has committed to ensuring all program materials are available in both English and Spanish, as well as dedicating 20% of its entire education and outreach budget to targeting low-income customers. El Paso Electric plans to partner with community organizations that serve low-income and Spanish-speaking populations, including affordable housing authorities, to provide programming for low-income customers. Additionally, El Paso Electric is seeking input on its education and outreach programs through a series of stakeholder meetings.
- Link to Program: <https://www.epelectric.com/renewables-tech/electric-vehicles/transportation-electrification-plan/customer-outreach-program>

Other Components

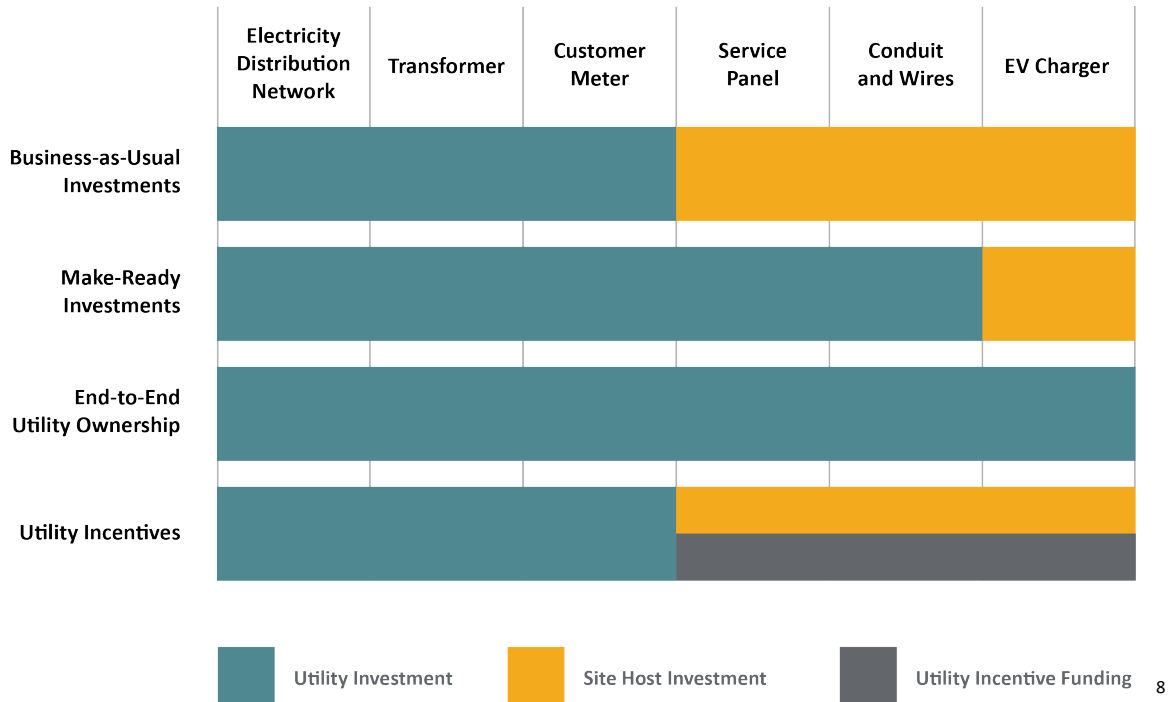
There are a few other common components of TE plans which bear consideration. While they are not programs like those discussed above, they can impact the effectiveness of the programs and the utility's TE efforts in general.

Program Flexibility

Flexibility within a TE plan can help maximize its impacts. Examples of flexibility include shifting designated funds between programs based on the popularity of programs, the ability to exceed budget caps, and making mid-plan adjustments to programs to make them more accessible or efficacious. Having the flexibility to adjust based on feedback from customers and partners ensures TE plans can meet the needs of the communities they seek to serve to the best of their abilities.

Utility Investment Strategy/Ownership Model

The utility’s approach to investing to support EV charging stations is a critical component of a TE plan. Four models of utility investment strategy are commonly discussed, visualized in the graphic below:



This graphic visualizes the four basic ownership models: 1) business-as-usual investments; 2) make-ready investments; 3) end-to-end utility ownership; and 4) utility incentives. While these four investment strategies are generally the best way to conceptualize the suite of utility investment categories, it is important to note that utility investment strategies can be more complex. For example, in a single portfolio, a utility might offer a hybrid approach of offering both make-ready investments and rebates for chargers, like the Eversource or Southern California Edison programs mentioned earlier. Or a utility might offer an end-to-end utility ownership option or a utility incentive option, depending on the customer’s choice, like the Nevada Energy and Xcel Energy examples. Finally, there are even more nuanced approaches, like the monthly payment options where the utility owns the equipment originally but the customer pays it off with monthly bill payments. This is a model which WRA greatly favors, as it reduces the upfront cost of EV installation but puts less pressure on ratepayers over the long term. Eversource, Xcel Energy, and Green Mountain Power are all testing out this on-bill-financing option in various capacities.

⁸ Direct Testimony of Alaric Babej, page 51. Public Service Company of New Mexico Application for Approval of Transportation Electrification Plan, December 20, 2020.

While there are specific models of ownership that are often cited, the best approach is for a utility's TE plan – as a whole – to include a diverse suite of programs with a mix of ownership models. For some charging end uses, one investment strategy might be better than others. For example, simply offering a utility incentive might get the job done for the residential sector, while a rebate alone is unlikely to move adoption in the multifamily housing sector. Bringing a diverse investment strategy across the portfolio of programs is likely the most strategic way to increase access to EV charging across the entirety of the utility's plan.

Line Extension Policy

Line extension policies are usually not aspects of utility TE proceedings, but occasionally utilities use this forum to update line extension protocols to be aligned with the state of EV technology. For example, Black Hills Energy (Colorado) updated its line extension policy in its "Ready EV" plan to remove practices that were discriminatory toward DCFC stations and made them far more expensive than line extensions for normal electric customers. If a utility's line extension policy has such discriminatory measures, it can be critical to update them to make sure they are not hindering TE in its service territory.

DCFC Rate Design

Similar to line extension policy, DCFC rate design is sometimes addressed within TE plans. Utilities that have not yet proposed rates for EV fast charging stations might only offer rates which have demand charges, discouraging private developers from building DCFC stations. However, many utilities have already addressed the issue of demand charges with alternate EV rates, and might not need to address directly in their TE plans.

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