

**Electric
School Bus**
INITIATIVE

Electric Vehicle (EV) Make-Ready Programs

Considerations for Utility Regulators for
Electric School Buses and Beyond

CONTENTS

Make-Ready Programs: The Basics	1
Participant Requirements	3
Potential Infrastructure Components Covered	4
Incentives & Other Funding	5
Operations & Maintenance (O&M)	7

ACKNOWLEDGMENTS

The authors would like to thank Maria Alejandra Achury and Michelle Levinson for their review of and contributions to this guide. Atlas Public Policy is the data source for the associated table linked at the end of this resource.

AUTHORS

Greggory Kresge and Hamilton Steimer

FOR ADDITIONAL INFORMATION OR QUESTIONS

Please visit:

electricschoolbusinitiative.org

Contact:

Greggory Kresge, Senior Manager of Utility Engagement and Transportation Electrification at: gregg.kresge@wri.org

Cover photo: Katherine Roboff

About WRI's Electric School Bus Initiative

In collaboration with partners and communities, WRI's Electric School Bus Initiative aims to build unstoppable momentum toward an equitable transition of the U.S. school bus fleet to electric by 2030, bringing health, climate and economic benefits to children and families across the country and normalizing electric mobility for an entire generation.

About this Guide

This brief provides key considerations gathered from recent experience with Make-Ready programs and explores major program design elements, such as participant requirements, infrastructure investments covered, incentives offered, and operations and maintenance. It covers all classes of vehicles, with special considerations noted for electric school buses. The primary audience is utility regulators, alongside school districts, utilities and other stakeholders such as municipalities and commercial operators interested in transportation electrification. In addition, this resource links to an appendix containing a table of investor-owned utilities' commercial Make-Ready programs as of January 2022.

Make-Ready Programs: The Basics

Increasingly, electric utilities are deploying so-called “Make-Ready” programs to accelerate the installation of charging equipment for electric vehicles (EVs), making sites “ready” for electric vehicle supply equipment (EVSE) installation and operation.

While there is no recognized standard definition of Make-Ready programs, in general, they allow an electric utility to reduce the cost of the electrical infrastructure necessary to supply power to EVSE – such as chargers, software and communications equipment -- by covering all or some of the costs that are normally paid by interconnecting customers. These costs are one of the main barriers to electric fleet conversion as planning, engineering, construction and equipment costs are often substantial and can range from \$3000 to over \$100,000 per charger depending on the location, type and complexity of the equipment. Electric utilities offer these programs to support the early deployment of EVSE infrastructure and growth of EV fleets, providing grid planners and fleet managers an opportunity to determine best practices that can be applied to widescale build-out.

Make-Ready programs can be tailored to different public and commercial locations, including school bus depots as well as businesses, multi-family housing and public parking areas. They may be branded differently as well, meaning that not all programs may have “Make-Ready” in the name. Some programs have incentives designated for low-income or underserved communities. Programs can also be designed for specific vehicle types (light-, medium-, and heavy-duty).

Utilities can cover Make-Ready costs by shifting them from individual interconnecting customers to be borne instead by all utility customers through an increase in electricity rates. Another way to recover Make-Ready costs is over time through specific rates (i.e., tariffs) charged to the participants as an “adder” to the bill. An example of this approach is DTE’s

Site Infrastructure Ownership and Operation Types

Make-Ready programs come in many different forms. Who pays for site infrastructure -- from the electric service meter up to the charger -- is important, as these costs tend to be the most significant aspect of EVSE installation. Infrastructure ownership and operation can be the responsibility of the site or property owner, electric utility, tenant, site occupant, charging-as-a-service provider or any combination of these. It is important to define these ownership aspects at the start of the project.

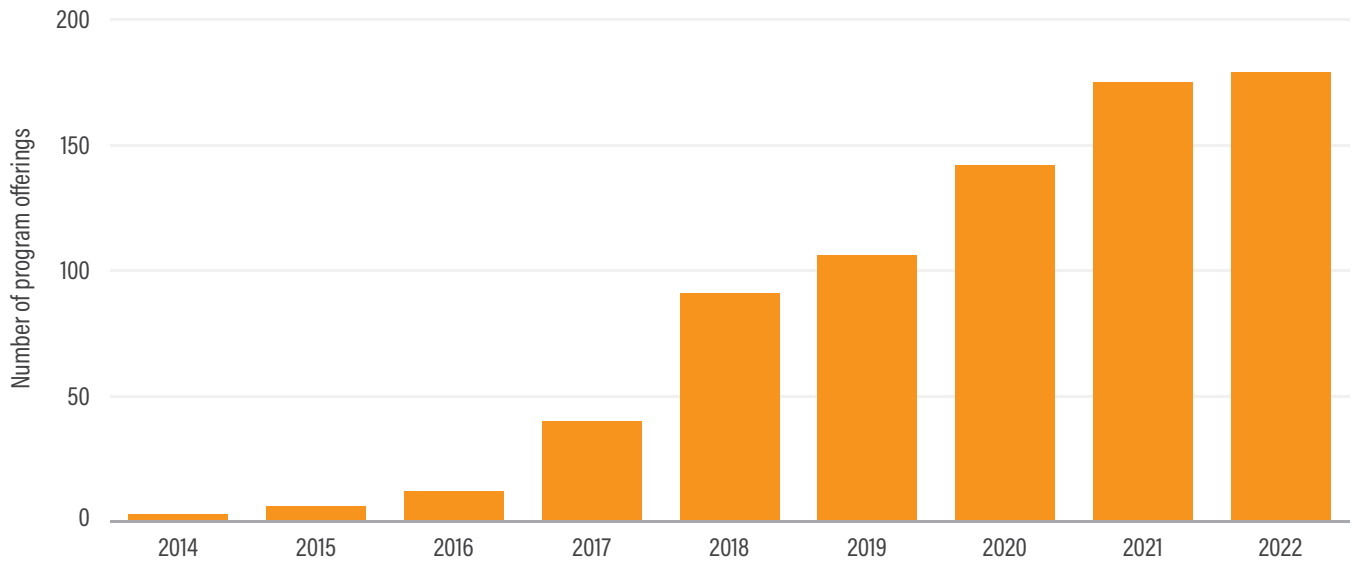
inclusive utility investment program for transit buses approved by the [Michigan Public Service Commission in November 2022](#). This Pay As You Save-style program allows the utility to capitalize transportation electrification investments and recuperate these costs via a service charge on the customer’s bill; in this case the program funds the bus battery, but covering Make-Ready infrastructure could be done similarly. When considering Make-Ready programs, regulatory agencies play a key role in weighing the societal benefits generated by programs from increased transportation electrification against the costs to all ratepayers, including non-participants in the programs. A key consideration is that high electricity rates [disproportionately burden low-income households and can hamper electrification efforts](#).

As of January 2022, there are 43 investor-owned utilities (IOUs) in the United States with at least one active Make-Ready program. As shown in the figure below, and in the linked [Appendix A: Table of Investor-Owned Utilities’ Commercial Make-Ready Programs](#), the number of these programs increased dramatically between 2014 to 2022. With

billions of dollars in new federal and state funding for vehicle electrification, including school buses as well as light-duty and other medium-and heavy-duty vehicle classes, these programs are expected to continue to grow. The next few years represent a critical time

for utility regulators to learn from early efforts, as they continue to shape future programs that support transportation electrification – thereby reducing carbon intensive fuels and emissions.

Figure 1 | **Number of approved Make-Ready programs offered by investor-owned utilities over time**



Participant Requirements

Make-Ready programs can include requirements for participation. For example, customers may have to commit to a minimal new electricity demand (load) or number of charger installations. They may also have to keep their chargers operational and share data for a specific duration, sometimes up to ten years from first use. Other make-ready programs require participants to enroll in a time-of-use (TOU) rate or in a demand-response (DR) program where they agree in advance to curtail their energy consumption during periods of generation shortfall. Electric utilities often use TOU and DR mechanisms to avoid having to make additional investments in smaller generating units to meet short-duration peaks, or having to take more dramatic steps to reduce electrical demand through limiting power supplies to specific customers (i.e., load shedding). Moreover, Make-Ready programs are not heavily promoted to all customers as they tend to apply to very specific customer segments, and funding is limited.

Consider:

- Ensuring program requirements are clear to potential participants
- Including an easy-to-follow checklist that contains program requirements such as site service, payment mechanisms, expected participation costs and labor

Potential Infrastructure Components Covered

Make-Ready programs can cover payment for infrastructure on the utility (line) side and/or the customer (load) side of the electric service meter, depending on the program.

Some Make-Ready programs do not cover EVSE hardware, like charging stations, or soft costs, like labor and project management time. Where a utility incurs costs that are not approved through the Make-Ready program, the customer typically will pay for these through a per-kilowatt-hour (kWh) adder on their electricity bill, or they will need to pay for these costs on their own. The electric utility, however, might own and operate all the infrastructure or just the infrastructure up to the charging station. Most often, a regulatory body like a public utility commission will dictate which costs utilities are allowed to reimburse under a Make-Ready program. Allowable costs are often those that would be considered capital expenditures for equipment and construction that can be depreciated over time.

Consider:

- Who owns, operates and maintains each physical component from the meter up to and including the charger?
- How does the electric utility measure success of the program? This could be the number of enrollments or participants and should also include equity metrics on demographics, income level and pollution exposure.
- How and when are these external costs presented to the customer?
- Are incentives through the program large enough to induce EV fleet adoption?
- Does the total system work as designed – the right amount of electricity at the right time, at the lowest customer cost, while providing reliable charging to the EV?
- Does the program help the electric utility or cause more electrical demand during peak consumption times?

POSSIBLE COVERED ELEMENTS OF MAKE-READY INFRASTRUCTURE PROGRAM

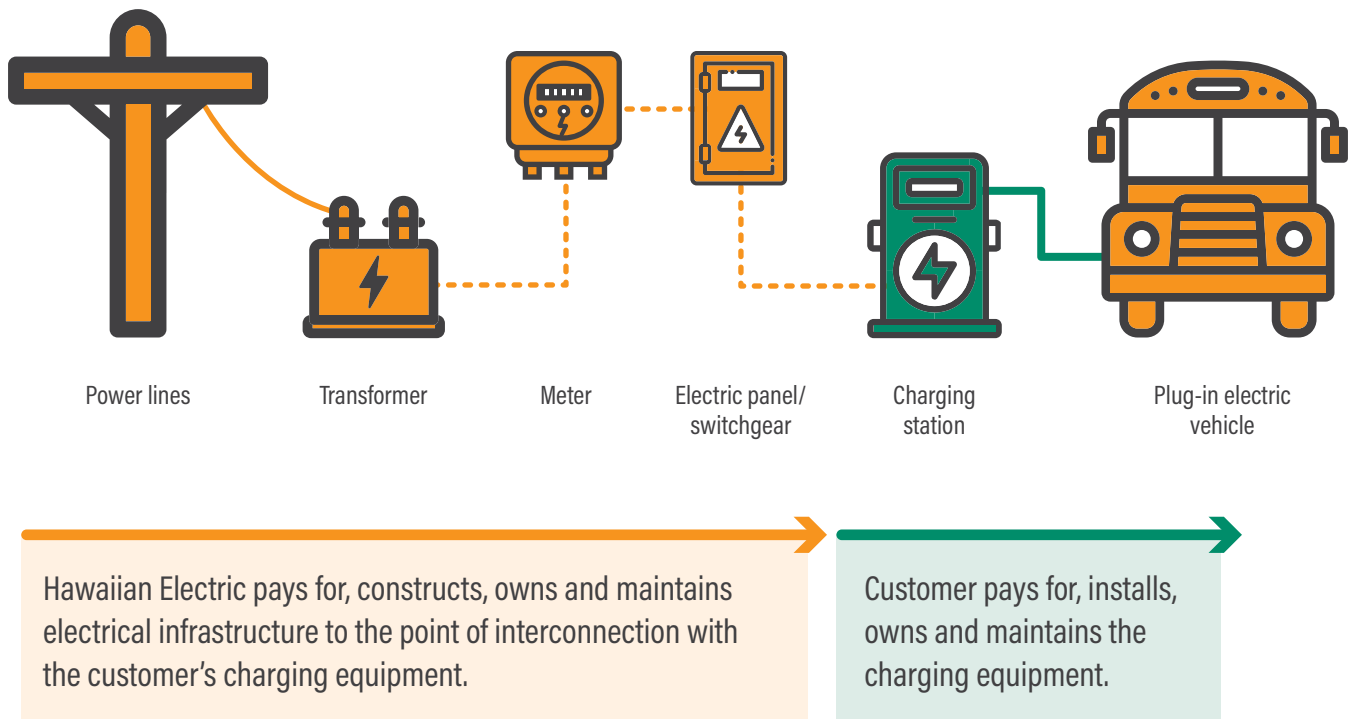
Design	Protective bollards/posts
Permitting	Signage
Line Extensions	EVSE that may include the mounting pedestal, charger, network equipment (i.e., routers, modems, ethernet/fiber cables)
Transformer Upgrades	Vehicles and/or batteries
Meter Socket and Connection Upgrades	Training
Load side infrastructure that may include service wiring, panels, breaker panels, conduit, and disconnects	Maintenance and repair

Incentives & Other Funding

Make-Ready programs offer different types of incentives to customers to install EVSE, including rebates for equipment like chargers; partial or total cost coverage or reimbursement for infrastructure upgrades like new panels, step-up transformers, wiring and trenching; and free technical assistance like feasibility studies, charging analysis, and site assessments. Costs covered by the electric utility might differ depending on the charger installed and location type. For programs that do not cover EVSE hardware, customers may be able to utilize separate incentives to lower their capital costs. Furthermore, sometimes electric utility Make-Ready programs can be stacked with other funding or grant programs to lower the overall cost.

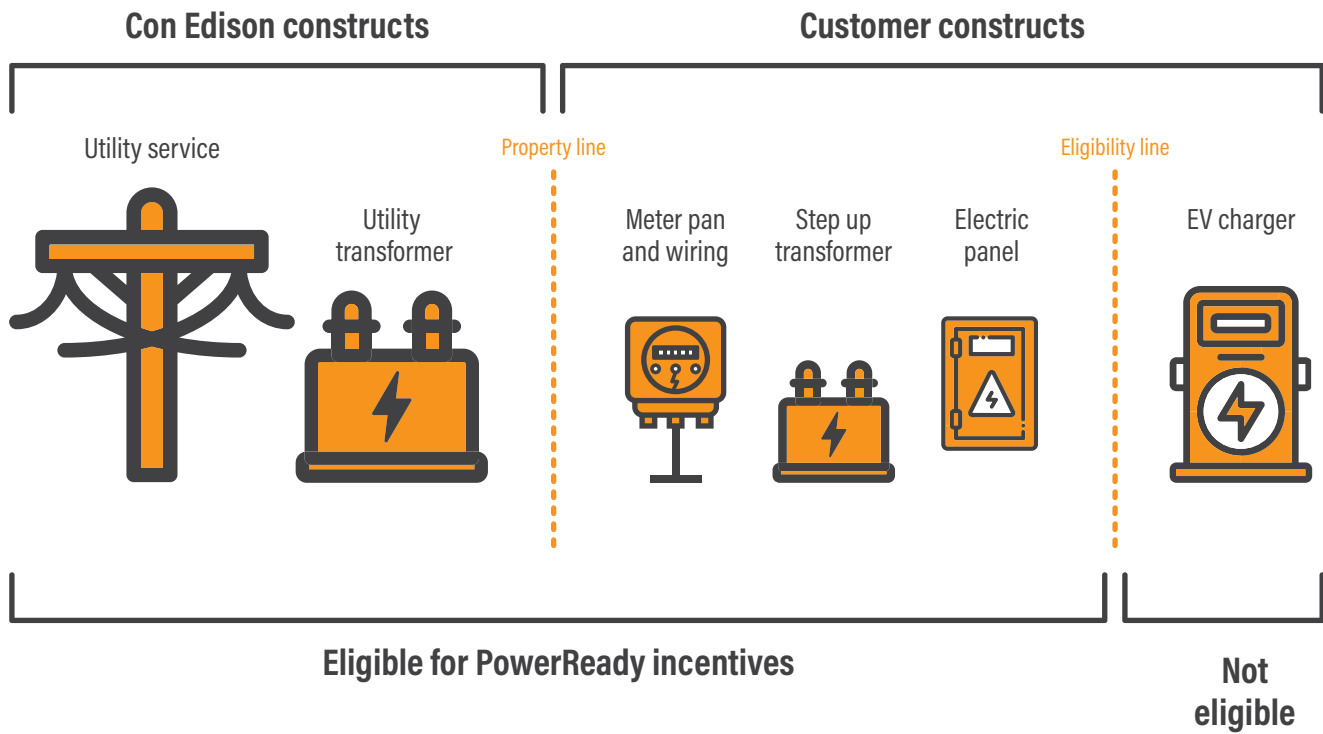
In the two figures below, both Hawaiian Electric and ConEdison have branded Make-Ready programs that offer varying levels of incentives and expense coverage. In the case of Hawaiian Electric, the electric utility pays for and owns all infrastructure and equipment including operations and maintenance costs up to the charging equipment. In the case of ConEdison, the electric utility will pay for and construct necessary infrastructure up to the property line. Site owners are then eligible for some project cost reimbursement up to the charger. In both examples, site owners are responsible for owning and maintaining the charging equipment.

Figure 2 | **Example of Electric Utility Construction Beyond the Service Meter**



Source: Charge Up eBus Pilot | Hawaiian Electric

Figure 3 | Example of Electric Utility Construction Up to the Service Meter



Source: POWERREADY Electric Vehicle Program | Con Edison

Consider:

- How do the customers access the funding?
 - Reimbursement after equipment purchase (hardest and most restrictive, due to out-of-pocket requirements that are not equitably achievable)
 - Rebate with lower pre-negotiated prices (easier with less out-of-pocket requirement)
 - Up-front money paid in advance of the actual payment (easiest with no out-of-pocket cost)
- How can customers learn about all incentives and opportunities to maximize their EV fleet needs and offset the highest potential costs?

Operations & Maintenance (O&M)

The costs of ongoing operations and maintenance (O&M) are an important part of any program. Make-Ready programs may require customers to operate and maintain their charger for a minimum time and provide usage data to the utility. If the contract is terminated early, customers may be liable to reimburse the electric utility for the years left in the contract. O&M of chargers and EVSE owned by the utility may or may not be the customers' responsibility.

Consider:

- Is the electric utility proactively maintaining the EVSE, and are parts readily available to avoid potential production and shipping delays?
- Who will service the EVSE? Is the technician trained and qualified?
- Can money be allocated for continued maintenance and repair such that recommended spare parts can be kept on-hand to increase reliability of the charger and associated equipment?

To learn more, please access a table of investor-owned utilities' commercial Make-Ready programs on our website:

electricschoolbusinitiative.org/electric-vehicle-make-ready-programs



Electric
School Bus

INITIATIVE