EV Charging Policy Roadmap

SWTCH

Electric vehicles (EVs) save households and businesses money on fueling, repairs, and maintenance, improve air quality and respiratory health, and can help improve the reliability of the electric grid. These benefits will not happen automatically, however. This EV charging policy roadmap includes ten best practices for states and localities to unlock the full value EVs have to offer.

1. IMPLEMENT EV-READY BUILDING AND ELECTRICAL CODES

It is far more cost effective to install charging infrastructure when a building is under construction than to retrofit an existing building. When the infrastructure is included at the time of construction, it generally adds only 1 percent or less to construction costs, whereas retrofitting an existing building can be 4 to 8 times as costly. [1] Many building and electrical codes now establish minimum requirements for parking spaces to meet certain standards for EV-readiness. Such standards can significantly drive down the cost of installing chargers and make it more accessible, affordable, and convenient to charge.

The International Energy Conservation Code (IECC) is a model building code for commercial buildings such as office buildings, hotels, and larger apartment and condominium buildings.[2] An appendix to the 2024 IECC includes recommended EV infrastructure standards which states and local jurisdictions should adopt in their building codes.

2. LEVERAGE INCENTIVES TO EXPAND CHARGING & ACHIEVE POLICY GOALS

The business case to profitably own and operate chargers is improving as EV adoption grows, but it remains challenging. Financial incentives such as grants and rebates—for chargers, the supporting infrastructure, maintenance, and networking—can all meaningfully improve the economics and lead to increased deployment.

Not surprisingly, private deployments of publicly available chargers tend to follow EV adoption and be concentrated in more affluent areas. Unfortunately, this leaves behind many drivers who live in rural communities or lower income neighborhoods, as well as residents of multifamily buildings.

Policymakers and regulators can structure incentives to achieve public policy goals such as promoting more equitable access for households in multifamily buildings and in underserved communities. Indeed, public utility commissions, in their role as economic regulators, are uniquely positioned to work with electric utilities to address gaps in the private market.

[1] See, e.g., Southwest Energy Efficiency Project. SWEEP guide to EV infrastructure building codes.
[2] ICC Digital Codes

3. MANAGE CHARGING TO SAVE MONEY AND ADD VALUE

Managing when and how drivers charge can save money on electricity, avoid costly overbuilding of electrical infrastructure, and optimize electricity on the grid. Indeed, when charging is managed at scale, it can benefit all ratepayers by applying downward pressure on utility bills. [3]

Electric utility rates are a key regulatory tool to manage charging. Time-varying rates (TVR) that offer cheaper electricity during periods of lower demand, such as overnight and on weekends, encourage drivers to charge less expensively while avoiding adding to peak demand on the grid which can increase expenses for all utility customers.

Software-based energy management systems (EMS) are a powerful technology solution to dynamically manage charging load in real time. This capability (known as Smart Charge Management, or SCM) can save property owners money by enabling more vehicles to charge while minimizing the need for more panel capacity, wiring, and other electrical infrastructure. More sophisticated EMS solutions enable drivers to optimize charging based on multiple factors such as price, duration, and the carbon intensity of the electricity.

In addition to these localized benefits at a property, EV EMS solutions are also essential for the electric grid. After years of declining load growth nationally, the electrification of our transportation and building sectors—coupled with new demand from data centers—is adding new stress to the grid. The ability for utilities to manage all of this electrical load at scale—including from EV charging—is essential to affordably maintain the reliability and resilience of the grid.

> US DOE study anticipates that managing electric transportation load can reduce grid infrastructure costs by 15%-30%.[4]

4. CHAMPION INTEROPERABILITY

The EV ecosystem is diverse and includes charger manufacturers, network operators, automotive manufacturers, electric utilities, property owners, drivers, and other third-party service providers. A consistently reliable EV charging experience requires interoperability, which refers to the ability of all of these elements to seamlessly communicate and function together.

Charger-to-Network Interoperability: Open Charge Point Protocol, or OCPP, is the accepted open-source protocol for communication between chargers and network platforms. This avoids the risk of stranded assets by ensuring that an installed charger can operate on multiple networks. It also enables utilities to more cost-effectively integrate and manage charging load at scale. States should require OCPP certification for any publicly funded incentive programs.

Network-to-Network Interoperability: Roaming agreements between network operators enable EV drivers to charge on multiple networks using a single network login. States can encourage more network roaming by requiring it as a condition for receiving government or utility incentives. States should avoid being overly prescriptive and focus instead on the outcome of a seamless charging experience across networks. This approach encourages continued innovation by network operators to improve the roaming experience and keep costs down.

[3] See, e.g.: Shenstone-Harris, S., et.al. (2024). Electric Vehicles Are Driving Rates Down For All Customers. Synapse Energy Economics.
[4] U.S. Department of Energy. (2024). Multi-State Transportation Electrification Impact Study.

5. FOCUS ON MULTIFAMILY

More than 30% of all U.S. households live in multifamily apartment and condominium buildings, but less than 5% of these households have at-home charging. [5] Installation costs, electrical capacity constraints, driver access and billing considerations, and internal association dynamics are all factors that make it more complicated and challenging to deploy charging at multifamily properties than in a single family home.

Charging at multifamily properties not only expands access to charging, but also enables the savings that come from charging at home. Charging at home is almost universally less expensive than charging at a commercial, publicly available charger. (At-home chargers are also much less likely to become inoperable and need repair.) These savings are especially relevant for low- and moderate-income (LMI) households. LMI households make up an above-average share of multifamily households, and pay a higher percentage of their household income on transportation. For all of these reasons, the multifamily sector merits an intentional focus by policymakers and innovative strategies to support charging.

> The National Renewable Energy Laboratory (NREL) estimates more than one million Level 2 charging ports will be needed at multifamily properties and workplaces to achieve the national goal of 50% of new light-duty vehicle sales being zero- emission by 2030 [6]

6. HARMONIZE STANDARDS

Consistency of charging standards across jurisdictions helps support market predictability and economies of scale for charging providers, streamlines deployment, and promotes a more uniform charging experience for drivers. The federal National EV Infrastructure (NEVI) standards have become a de facto set of minimum standards for the industry. They address a range of topics such as reliability, interoperability, roaming, data security, payment processing, and more. [7] States should avoid creating a patchwork landscape of different standards across the country, and instead look to the NEVI standards as a guiding framework.

[5] Joint Office of Energy and Transportation. (2024). Community Charging: Emerging Multifamily, Curbside, and Multimodal Practices, at p. 10.
[6] National Renewable Energy Laboratory. (2023). The 2030 National Charging Network: Estimating U.S. Light-Duty Demand for Electric Vehicle Charging Infrastructure, at p. 36.
[7] See Federal Register National Electric Vehicle Infrastructure Standards and Requirements.

7. ESTABLISH RELIABILITY STANDARDS

Drivers should have confidence that when they pull up to an EV charger, it will work. Unfortunately, publicly available chargers are inoperable or offline far too often. Many factors contribute to chargers being down such as broken hardware, interrupted network connectivity, and external factors such as grid outages.

States can improve the charging experience by establishing reliability standards for publicly available chargers. Any such standards should be outcome-based—such as setting a maximum percentage of time that a charger can be down—rather than being prescriptive about how charging operators will achieve that standard. This flexibility allows the market to compete with different business models and service plans that can achieve reliability goals while driving costs down.

8. RELY ON INTERNAL METERS

Embedded electrical meters within chargers can deliver utility-grade accuracy and avoid the added expense of installing external submeters. It is often wrongly assumed that an external utility submeter is needed to bill an EV charger's electricity usage to an individual tenant or customer. In reality, the need for additional metering infrastructure can largely be avoided with intelligent, networked EV charging equipment.

The National Institute of Standards and Technology (NIST) has published metering accuracy standards for EV chargers. SWTCH recommends states and local jurisdictions follow these standards for internal meters.[8]

9. HARNESS MARKET FORCES TO DECARBONIZE TRANSPORTATION

A Clean Fuels Standard (CFS) is a practical, effective, and market-based solution to incentivize cleaner transportation fuels—including electricity as a fuel. Using an emissions trading approach, a CFS incentivizes the transportation sector to reduce the carbon intensity of fuels without any taxpayer or utility ratepayer subsidies. Experience has shown that this approach successfully reduces the carbon intensity of fuels without increasing the price at the pump. [9] To most effectively support continued investment in EV charging infrastructure, a CFS should be designed to accrue credits to EV charging network operators.

CFS goes by different names such as Low Carbon Fuel Standard (LCFS) and Clean Transportation Standard (CTS).

10. ENSURE THE RIGHT TO INSTALL CHARGERS

Many community bylaws and other rules set by homeowners associations (HOAs) and property managers prohibit residents from installing chargers, even at their own expense. These restrictions are most common with apartment or condominium buildings but can also apply to single-family home subdivisions, cooperatives, and other properties.

"Right-to-charge" legislation prohibits HOAs and other bodies from unreasonably preventing a resident from installing a charger. This is a key policy tool to democratize access to charging and the benefits that accrue from driving electric.

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[8] National Institute of Standards and Technology, Handbook 44, Section 3.40.
[9] Bates White Economic Consulting. (2022). Low Carbon Fuels Standards Market Impacts and Evidence for Retail Fuel Price Effects, at p. 2.