LOW-COST INNOVATION IN *Residential EV Charging*

City Policies Enabling Cords in the Public Right-of-Way

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Policy Brief

EV Equity Initiative

INTRODUCTION

For electric vehicle (EV) drivers who lack off-street parking – residents of apartments and homes without dedicated driveways, garages, or parking spaces – access to charging at the curbside is essential. Among the EV charging strategies that cities are pursuing, policies that allow residents to safely extend a charging cord across the sidewalk public right-of-way to a parked vehicle (PROW cord policies) are emerging as a simple, low-cost alternative to dedicated public infrastructure installations. Throughout the United States, local laws generally prohibit residents from placing any structures in the PROW. Since cables extended across the sidewalk implicate city laws and raise safety and technical questions, policies are needed to authorize and establish requirements for their use in order to enable this affordable, accessible charging option while ensuring safety and ADA compliance.

Several cities have adopted a novel approach to public EV charging that authorizes charging cords' encroachment of public sidewalks – subject to compliance with various safety and accessibility parameters.[a]

This brief outlines the needs that drive cities' approaches to PROW cord policies and highlights key examples for peer jurisdictions to follow. This charging strategy, currently in the pilot stage, may provide a temporary solution until more fixed stations are developed. It could also offer a long-term, low-cost solution if local leaders and residents find that PROW cord arrangements adequately meet charging needs, are safely and durably implemented, and remain complaint-free. Any

a For brief descriptions of each city's PROW cord program, see Appendix.

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City programs reviewed in this analysis include:

- *Cambridge, MA*
- *Oakland, CA*
- *Portland, OR*
- *Seattle, WA*
- *Washington, DC*

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city with EV-driving residents who lack private garages or driveways should consider PROW cord policies as part of its EV charging strategy, both as its agencies plan and raise capital for fixed, higher-powered public charging infrastructure and as a potential permanent strategy where appropriate.

PROW CORD POLICY NEEDS: RESIDENTIAL, FINANCIAL, LEGAL

A combination of residential charging limitations, housing stock and neighborhood configurations, city laws governing the PROW, and financial constraints have created a need for policy action that enables EV charging cords extended across sidewalks to curbside parking spaces.

Residential Infrastructure

Residents who lack dedicated garages and driveways will rely heavily on the use of public spaces to meet their EV charging needs. Charging at or near home, where a driver normally parks their car for extended periods and overnight, is typically more convenient than charging at a charging hub. For residential streets with homes that do not have dedicated parking, extending charging cords from home outlets to curbside-parked vehicles provides EV drivers a convenient alternative to fully off-site charging, allowing those residents to enjoy a central benefit of EV drivership which would otherwise be restricted to homeowners with parking.

Financial Considerations

By drawing power from existing electrical infrastructure in homes without the need for permanent pedestals, cords extended across a sidewalk can allow residents and city governments to avoid expensive and prolonged infrastructural work, groundbreaking, and electrical upgrades. Additionally, charging sessions powered by home electricity enables access to residential charging rates that are typically cheaper than public charging prices.

Legal Barriers

In general, city laws prohibit permanent private uses or installations in the sidewalk and curb on the basis of safety and preservation of public space. These laws typically require a city-issued use permit (sometimes termed an "encroachment" permit) for any private installation or occupancy in the PROW. Cords extended across the PROW[b] technically trigger these permit requirements, but obtaining and issuing a permit is usually time- and cost-prohibitive for individuals who are not conducting substantial

b The Seattle, WA municipal code states that "it is unlawful for anyone to make use…of any public place without first securing a written permit" from one of several city agencies; Seattle Municipal Code §15.04.010, available at https://library.municode.com/wa/seattle/codes/municipal_code?nodeId=TIT15STSIUS_SUBTITLE_ISTUSOR_CH15.04USOCPE_15.04.035APRECO.

projects.[c] By providing guidance or regulations that create an exemption or variance affirmatively allowing PROW cords, local agencies can ensure that it is done safely and efficiently.[d]

POLICY ISSUES AND COMPONENTS

Core Issues of Concern

A policy or program that accommodates EV charging cords extended across the sidewalk must address several issues that arise from PROW encroachment:

- ***Safety and Accessibility:*** Since power cords in the PROW present pedestrian safety and accessibility considerations such as tripping hazards and barriers to pedestrians using mobility devices, they must be covered with durable, weight-bearing, and accessible/ADA-approved ramps. Note: Several cities have reported a lack of ADA-compliant EV cord-covering ramps available on the market, and agencies are actively working with the US Access Board to address the need.
- ***Parking:*** Curbside parking of a charging EV interacts with existing parking rules and should comply with the standard rules applicable on the street.
- ***Technical/Electrical:*** Allowing electrical infrastructure on the street implicates requirements around electrical design and safety specifications.
- ***Liability:*** Since the program allows temporary modification of the sidewalk with potential safety implications and is user-initiated, it should include a statement clarifying the user's liability should any incidents arise.

Accordingly, PROW cord policies and guidance must establish a set of rules that maintain users' adherence to existing public safety and accessibility standards. Various sub-considerations – including enforcement mechanisms and electrical sourcing – should be addressed in a comprehensive guidance or policy document.

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c Even with dedicated permit pathways and fee waivers, fixed infrastructure installation can be overly burdensome for residents. Berkeley, California's curbside charging pilot–which provided residents a permitting pathway toward fixed curbside charging infrastructure–was ultimately underutilized due to the high costs and process-intensive demands associated with permitting. Read more about the pilot program in CLEE's policy brief, City Public and Curbside EV Charging Strategies.

d An alternative cross-pavement solution authorizes the use of charging cables embedded in shallow channels in the sidewalk through a permitting procedure. See, e.g., "Guidance: Cross-pavement solutions for charging electric vehicles" United Kingdom Government (December 2024), available at https://www.gov.uk/government/publications/cross-pavement-solutions-for-charging-electric-vehicles/cross-pavement-solutions-for-charging-electric-vehicles. Kerbo is one example of a company that offers this solution: https://www.kerbocharge.com/.

Policy Components

To allow cord extensions across the sidewalk to vehicles parked at the curbside, local agencies with jurisdiction over the PROW and/or transportation matters (such as departments of transportation or public works) have pursued two policy pathways: 1) creating a temporary "allowed/by-right use" or exemption from city PROW use restrictions and issuing guidelines on an agency website, or 2) creating a formal permit program. The following outline draws from existing PROW cord policy regimens to briefly detail the components that a permitting program or set of guidelines may include.

Cord placement and design

Various placement and design requirements can help ensure that chargers avoid safety and accessibility hazards. Requirements can include visibility features, sidewalk perpendicularity, and slope, height and width specifications for cord covers, among others. Among existing city guidelines, only Cambridge, MA permits the use of supporting equipment that secures overhead cord extension; all other cities call for cord cover ramps placed on the sidewalk. Oakland's and Portland's guidelines include additional placement requirements based on sidewalk slope, and Oakland disallows cords within a certain distance of obstructions or broken sidewalk. In Cambridge, PROW cord arrangements are prohibited if a property is adjacent to a bike lane or within ⅛ of a mile of a public charging station.

Charging type

Agencies distinguish between low-powered Level 1 (L1) and medium-powered Level 2 (L2) chargers in their guidelines and permits (L1 charging can take 24 hours or more to completely charge a full-size EV battery; L2 charging can occur overnight). Among the cities reviewed here, only Oakland currently permits L2 charging cords in its guidance; all other cities expressly limit their guidance to L1, which can plug into a standard 120V outlet.

Parking and use restrictions

The parking arrangements for EVs charging at curbside (and using charging cords extended across the PROW) will interact with existing city parking rules. All existing PROW EV charging guidelines address curbside parking by applying standard city parking rules, disallowing reservation or holding of spaces for EV charging, and prohibiting the use of signage. In addition to parking rules, city guidelines impose restrictions on cord use – such as setting maximum charging time limits, prohibiting commercial use, and requiring cord and ramp removal following the completion of a charging session.

Electrical requirements

City policies that address PROW cords require compliance with various electrical standards, including the National Electric Code. Washington, DC and Oakland, CA establish further safety standards by requiring that fastened equipment does not exceed 80%

of the branch circuit ampere rating. Additionally, most cities require that the outlet used for charging sessions is associated with the owner's utility account. In Oakland, L2 chargers must be hardwired to a circuit (i.e., no removable plug) or connected to an outlet that is inaccessible to the public.

Liability and insurance

Liability and insurance requirements enable cities to establish clear pathways toward accountability for any hazards or compliance issues associated with cord use (and avoid cities taking on liability for users' equipment). Existing approaches to liability hold the cord user or permittee fully liable for compliance or any issues that arise from the permitted cord use. For example, in Cambridge, a permit applicant is required to show proof of homeowners or renter's insurance; in Washington, DC's and Oakland, CA's guidelines, the user is encouraged to ensure that their homeowners or renter's policy "captures this circumstance with a suggested limit of $1 million."

Enforcement

PROW cord guidelines subject violators to the same existing enforcement provisions that govern other unlawful encroachments in the PROW (and which would prohibit placement of the cord without the existence of the guidance). Some guidelines grant government officials authority to remove violating equipment at the expense of the user, and Cambridge, MA's permit policy allows for the termination of a user's permit.

CONCLUSION

The PROW cord policy pilot programs initiated in US cities demonstrate a simple, low-cost strategy to expand EV charging to communities with limited access. As these cities refine their policies and more cities adopt the approach, considerations for future policy iterations include:

- How to expand cord-user eligibility to enable access for residents of upper floors and large multifamily buildings (including shared cords and cord "rentals")
- Monitoring and assessing the suitability of L2 charging for PROW cord purposes
- "Hybrid" fixed-PROW cord arrangements that insert cables into slim sidewalk channels or extend them via overhead cable management (eliminating cord cover needs)
- The relative effectiveness of permit and allowed/by-right use policy approaches
- How to broaden public awareness of PROW cord policies and guidelines

As agencies responsible for existing pilot programs evaluate compliance patterns and continued EV adoption increases demand for charging, cities with residents who lack off-street parking options should consider implementing similar policies and explore possible modifications to the existing frameworks to meet local needs.

APPENDIX: SUMMARY OF CITY PROW CORD POLICIES

	CAMBRIDGE, MA	OAKLAND, CA	PORTLAND, OR	SEATTLE, WA	WASHINGTON, DC
MODE OF ADOPTION	Department of Public Works pilot program	Department of Transportation guidance (adopted pursuant to city's Zero Emission Vehicle Action Plan)	Bureau of Transportation administrative rule (TRN 8.08 C.13) adopted pursuant to city code rulemaking authority (3.12.040)	Department of Transportation guidance	Department of Transportation guidance
PROGRAM TYPE	Annual permit ($200 application fee)	No permit required; allowed/by-right use	No permit required; allowed/by-right use	No permit required; allowed/by-right use	No permit required; allowed/by-right use
CORD LOCATIONS	Sidewalk/cord cover Overhead	Sidewalk/cord cover	Sidewalk/cord cover	Sidewalk/cord cover	Sidewalk/cord cover
CHARGING TYPE	Level 1 allowed Level 2 prohibited	Level 1 allowed Level 2 allowed	Level 1 allowed Level 2 prohibited	Level 1 allowed Level 2 prohibited	Level 1 allowed Level 2 prohibited
LOCATION RESTRICTIONS	Only allowed for residential properties that lack off-street parking Parking space must not be adjacent to a bike lane Must not be within ⅛ mile of a public charging station	Only allowed for ground-floor use in specified residential zones Only allowed for residents who lack off-street parking Sidewalk grade must be 5% or less	Only allowed if no off-street parking available at property Only allowed in single-family residential zones and local traffic streets Sidewalk grade must be 10% or less Must be located along a Local Service Traffic Street	Only allowed for ground-floor use in residential zones Guidance intended for users with no off-street parking but no formal restriction	Guidance is "primarily for properties with an adjacent sidewalk and available on-street parking" but no formal restriction
PARKING RESTRICTIONS	Applicant must hold a residential parking permit Standard parking rules apply Parking not guaranteed or reserved Signage prohibited	Standard parking rules apply Parking not guaranteed or reserved Signage prohibited	Standard parking rules apply Parking not guaranteed or reserved Signage prohibited	Standard parking rules apply Parking not guaranteed or reserved Signage prohibited	Standard parking rules apply Parking not guaranteed or reserved Signage prohibited

	CAMBRIDGE, MA	OAKLAND, CA	PORTLAND, OR	SEATTLE, WA	WASHINGTON, DC
DESIGN REQUIREMENTS	Overhead system must have aerial support with min. 9ft clearance and arm that can be retracted onto private property Ramp must be ADA compliant	Narrative requirements for ramp design, size, placement Ramp must be ADA compliant	Narrative requirements for ramp design, size, placement Ramp must be ADA compliant	Narrative and diagrammed requirements for ramp design per ADA rules, including for ½" and 1" cords	Narrative and diagrammed requirements for ramp design per ADA rules, including for ½" and 1" cords
ELECTRICAL REQUIREMENTS	Applicant must provide electrician's certification letter NEC compliant	NEC and local buildings/ construction code compliant Outlet associated with owner's utility account Rating of any equipment not fastened in place shall not exceed 80% of the branch circuit ampere rating Level 2 equipment must be hardwired or secured	NEC and local building code compliant Outlet located on private property linked to owner utility bill	NEC compliant Outlet associated with owner's utility account	NEC compliant Outlet associated with owner's utility account Rating of any equipment not fastened in place shall not exceed 80% of the branch circuit ampere rating
USE RESTRICTIONS	In place only while charging, 12-hour max	In place only when charging, 24-hour max	In place only while charging No commercial use/sale of power	In place only when charging	In place only when charging
LIABILITY	Permittee assumes all liability associated with the permitted use	User assumes all liability associated with the charging equipment	User liable for ensuring compliance with requirements	--	--
INSURANCE	Permittee must show evidence of homeowner or renter insurance	Owner "should" ensure adequate insurance coverage ($1m suggested limit)	--	--	Owner "should" consult with insurer to confirm adequate coverage ($1m suggested limit) and inquire about adding EV charger to policy
ENFORCEMENT	Superintendent of Streets may remove for health, safety, or PROW maintenance	Violations subject to city code provisions regulating PROW	Violations subject to right-of-way use enforcement program	Violations subject to city code provisions regulating PROW	Violations subject to city code provisions regulating PROW

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