TO: Chris R. Holden, Chair of the Utilities and Energy Committee, California State Assembly

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SUBJECT: Zero-Emission Vehicle (ZEV) Charging Station Implementation Analysis and Recommendations

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Executive Summary

In September 2020, California Governor Gavin Newsom announced an Executive Order N-79-20 requiring all new passenger vehicles sold in the state to be 100% zero-emission by 2035. The Zero-Emission Vehicle (ZEV) Market Development Strategy, published by the California Governor's Office of Business and Economic Development (GO-Biz), is meant to help California move collectively toward the ambitious statewide targets established by Executive Order N-79-20. And improving access to electric vehicle (EV) charging infrastructure is essential to achieve the state's decarbonization goals. However, government leaders face some barriers to increasing EV charging access for multi-unit dwellers in California. I recommend that California considering the community's specific needs and conditions when they are designing policies.

Analysis

Passenger vehicles are responsible for nearly a third of California's emissions. Jenkins (2020) found that the ZEV Strategy will cumulatively reduce economy-wide greenhouse gas emissions 46 million metric tons by 2030. For most of Californians, they consider how high availability of charging station as the first priority before buying ZEVs. Therefore, the state government needs policies to widespread EV charging infrastructure. The "Electric Vehicle Charging Station Permitting Guidebook" from GO-Biz mentioned that California aims to reach 5 million ZEVs on the road by 2030 and 250,000 shared plug-in electric vehicle (PEV) chargers, including 10,000 direct current fast chargers (DCFC) and 200 hydrogen stations by 2025.

Many ZEVs are now available for low-income people and cheaper than traditional vehicles over their lifetime (Sperling, 2018). However, adoption of both new and used PEVs in **disadvantaged communities** occurs at 5.7% and 8.7% of all PEV sales, respectively (Canepa, Hardman, & Tal, 2019). Compared to non-disadvantaged communities, disadvantaged communities have a higher proportion of people living in apartments or renting their homes (Canepa, Hardman, & Tal, 2019). In addition, few people in apartments or condominiums can access electric vehicle charging. Nicholas, Hall, and Lutsey (2019) pointed out that roughly 90% of California's chargers are located at homes overall, but as few as 18% are located at multi-unit dwellings (MUDs), but nearly 50% of Californians live in MUDs (Turek, DeShazo, Siembab, & Baum, 2016). **Environmental justice** needs to be considered. The inequitable distribution of EVs will exacerbate significant health risks faced by disadvantaged communities. Take **racial equity** among communities for example. Studies show that communities of color are already disproportionately harmed by local vehicle air pollution (Maine, 2019) because most of them live in the central of metropolises. African Americans are about three times more likely than white residents to live in high-traffic areas and breathe harmful gases (Jackson, 2021).

For the low access to the EV charging stations in MUDs, I identified three social science barriers for solving this problem. First, few people living in MUDs buy ZEVs, so these disadvantaged populations are often unable to take advantage of federal tax credits that

incentivize EV adoption. Second, people living in cities often don't own their homes and can't just decide to install an electric car charger. Third, electrical upgrades at older MUDs can be costly. Hence, the state urgently needs policies to scale EV charging access to MUDs or disadvantaged communities.

Alternatives

Alternative 1: State Government Funding

The State has been investing in charging infrastructure and hydrogen stations over the past decade. The CEC has invested $94.9 million in charging infrastructure and $110.9 million in a network of hydrogen stations in key metropolitan areas around the State (Baroody, Eckerle, Bevan, 2020). It's a good signal that the state government dedicated funding for expanding ZEV infrastructure. However, given the financial challenges that public utilities face during the COVID-19 later period and wildfire, the long-term stability of these government funds is uncertain.

Alternative 2: Building Codes

The 2019 California Green (CALGreen) Code changes went into effect on January 1, 2020. Currently, California requires all new MUDs, regardless of size, to implement EV charging in 10% of parking spaces. Legislative regulations have the political power to urge local governments to act. However, 10% is not enough for MUDs to have charging spaces for each family for a long term goal- reaching the 100% light-duty ZEV sales target in 2035.

Alternative 3: Community Divide Consideration

Utilities are central to the accelerating process of expanding EV infrastructure. Utilities need to identify and invest in locations that readily support charging capability. Also, most of them will under the direction of the California Public Utility Commission (CPUC) to determine the best way to spend time and money. Many MUD markets are currently underserved and policy design can address the electric vehicle charging infrastructure gaps specifically based on local or regional conditions. For example, Colorado has recently identified rural communities as an underserved market. Both PUC and International Council on Clean Transportation (ICCT) add the rural-urban divide consideration into utility program design (Myers, 2019, April 30). Policy design could help close the gap long-term, but it takes time to explore needs, write questionnaires to MUDs, and wait for feedback from those MUD people. This alternative is not flexible for any changes in a short time.

Recommendation

I suggest "Alternative 3" because utilities are key partners for rolling out EV charging infrastructure programs. PUCs in Minnesota, Oregon, and New York are developing and implementing utility EV charging infrastructure programs with different approaches and levels of sophistication (Myers, 2019, April 3). Each of their own strategies holds lessons for policymakers and utilities in other states considering solutions to the problem.

Endnotes

Disadvantaged communities: the EPA uses four different measures to classify disadvantaged communities: exposure to different types of pollutants, environmental indicators, sensitive populations (elderly, young, etc.), and socioeconomic factors (e.g., household income).

Environmental justice: solutions to environmental problems need to be just and equitable as they are tied to underlying social issues that contribute to an impacted population's environment. PEVs may be especially beneficial if they are adopted in or around DACs as they can reduce tailpipe vehicle emissions and contribute to environmental justice efforts to improve air quality in the areas where they are driven.

Racial equity: the condition that would be achieved if one's race no longer predicted how one fares.

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