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## Earthjustice Comments on Charging Infrastructure

*Additional submitted attachment is included below.*

EARTHJUSTICE

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**Re: Docket No. 20-IEPR-02 Commissioner Workshops on Plug-In Electric Vehicle Charging Infrastructure**

**Summary**

Earthjustice appreciates the opportunity to provide comments on Commissioner Workshops on the Status of Plug-in Electric Vehicle ("EV") Charging Infrastructure. As California battles the devastating impacts of worsening climate destabilization and deteriorating air quality, the only acceptable response is to re-double our efforts eliminating the sources of pollution which cause both these crises.

Tackling the largest contributor of greenhouse gas emissions and NOx pollution in California requires a wholesale transformation from a combustion-based to a zero-emission transportation sector. This, in turn, requires a massive deployment of accessible, ubiquitous and flexible ZEV charging infrastructure. We therefore applaud the Commission for hosting this important workshop series, and for seeking input on the work they are doing to advance infrastructure deployment in a way that can center equity while harmonizing transportation electrification with the broader energy transition.

We echo the repeated refrain from workshop participants that accelerating installation and infrastructure deployment is a key imperative for the Commission and its partner agencies. In our comments, we explain our concern that reliance on the Mobile Source Strategy for vehicle populations may lead to an under-estimate of actual charging infrastructure need. Next, we underscore the need for greater attention to freight electrification—including in the off-road and port sectors—and emphasize the need for maximizing larger-scale, near-term deployments of charging infrastructure to enable more rapid displacement of pollution in freight-impacted communities. Finally, we provide our perspective and suggestions for how tools and findings discussed throughout the workshop can be leveraged to improve e-mobility access and achieve progress on multiple State objectives.

1. **Pegging Infrastructure Projections to the Mobile Source Strategy May Underestimate Actual Charging Need**

We are concerned that the CEC's reliance on ZEV deployment scenarios under CARB's Mobile Source Strategy may result in low-balling actual charging infrastructure need. Using CARB's META tool, we find that the Mobile Source Strategy yields roughly 189,000 MD/HD ZEVs in 2030 under the "long-term goals" scenario, or roughly 175,000 MD/HD ZEVs under the "medium-term goals" scenario. The figure is substantially lower than 3 separate analyses which estimate that somewhere between 303,000 and 400,000 MD/HD ZEVs are needed in 2030 to be on a stable path toward carbon neutrality. Although the CARB Board recently committed to achieving zero-emission trucks everywhere feasible by 2045, the draft Mobile Source Strategy update shows modest levels of electrification relative to other

carbon neutrality pathway scenarios for California. E3's Carbon Neutrality Study, SCE's Pathway 2045 Study, and Lawrence Berkeley National Laboratories Working Paper all forecast the need for roughly twice the ZE trucks in 2030 as CARB's MSS. In the chart below, we compare ZEV vehicle forecasts under various scenarios:

**Table 1: 2030 ZEV Population under Carbon Neutrality Scenarios**

| Scenario | ZEV M/HDV Population in 2030 | M/HDV Population in 2030 | On-Road ZEV Percentage in 2030 | Details and Assumptions |
|---|---|---|---|---|
| CARB Advanced Clean Truck Sales Results[1] | 73,209 | 1,634,235 | 4.5% | ACT penetration only. |
| CARB MSS 2020 – Midterm Goals[2] | 174,910 | 1,634,235 | 11% | ACT penetration + Accelerated Turnover |
| CARB MSS 2020 – Longterm Goals[3] | 189,934 | 1,634,235 | 12% | Same as above, but includes end-user requirement |
| SCE Pathway 2045[4] | 303,000 | 1,600,725 | 19% | Figure excludes buses (2030 ZEB stock assumed to be 50%, or 36,000 ZEBs) |
| LBNL Climate-Consistent Scenario[5] | 381,748 | 1,384,481 | 28% | Assumes all ZEVs are BEVs and 100% ZEV Sales by 2030 |
| LBNL HEVi-Pro[6] | 133,808 | N/A | N/A | Only counts GVWR > 10k (excludes Class 2B vehicles, which are modeled under Evi-Pro II) |
| E3 Pathway Carbon Neutrality[7] | 350,000-400,000* | 1,700,000* | 20-24% | *figures are estimates based on area chart |

We acknowledge that CARB's Mobile Source Strategy is properly focused on maximizing reductions of both near-term NOx and long-term GHG emissions, and therefore places greater emphasis on accelerating turnover in the heavy-duty (Class 4-8) sector, which is a disproportionately large pollution source, than on overall number of ZEVs. Nevertheless, the table above compares interim-2030 vehicle stock, indicating that near-term emissions reductions for both GHGs and NOx would likely be greater if

[1]Based on CARB's META Tool for the 2020 Mobile Source Strategy, Available at https://content.govdelivery.com/accounts/CARB/bulletins/298be4f
[2] Id.
[3] Id.
[4] SCE Pathway 2045 Appendices at 5 https://www.edison.com/content/dam/eix/documents/our-perspective/201911-pathway-to-2045-white-paper-appendices.pdf
[5] Margaret McCall and Amol Phadke, Clean Trucks Standards Consistent with Carbon Neutrality are Economically and Environmentally Compelling (Dec 2019) available at: https://www.arb.ca.gov/lispub/comm/bccomdisp.php?listname=act2019&comment_num=108&virt_num=97
[6] Bin Wang, Medium- and Heavy-Duty Electric Vehicle Infrastructure Projections (Aug 6, 2020) at slide 10, available at https://efiling.energy.ca.gov/getdocument.aspx?tn=234209
[7] Amber Mahone et al, Achieving Carbon Neutrality in California (Aug 2020) at 43-44 https://ww2.arb.ca.gov/sites/default/files/2020-08/e3_cn_draft_report_aug2020.pdf

CARB's Mobile Source Strategy matched the level of electrification shown to be necessary under other carbon neutrality analyses.

To ensure that infrastructure assessments support the highest level of ZEVs deployed and highest potential level of pollution displaced, modelers from LBNL and CEC working on the EVI-Pro II and HEVI-Pro tools should consider modeling inputs from a range of truck electrification scenarios. The MSS, which is forecasts the low-end of needed ZEVs relative to other California pathway analyses, may be insufficient to reflect the scale of electrification needed to meet near-term air quality and long-term carbon neutrality goals.

**2. Freight Electrification Must Proceed More Rapidly to Alleviate Pollution Burdens on Low-Income and Disadvantaged Communities**

**a. Electrification of the Off-Road and Port Sectors**

We appreciate the CEC's leadership in modeling infrastructure needs for all categories of road and highway transportation, from DC fast-charging for inter-regional road trips, to widespread public infrastructure for TNC electrification. In particular, we want to uplift the CEC's effort to examine infrastructure needs for electrification of the off-road, port, and airport sectors. Off-road mobile sources are the largest category of statewide NOx emissions.[8] While staff has said this assessment is still in its early stages, understanding infrastructure needs for off-road and freight electrification is critical for addressing high pollution burdens concentrated in communities of color living adjacent to freight facilities. Off-road freight equipment, typically powered by diesel, are an onerous source of harmful air pollution. The South Coast Air Quality Management District projects that by 2023, oceangoing ships will surpass diesel trucks as Southern California's largest source of NOx pollution.[9]

Yet the potential to advance zero-emission solutions in these segments is ripe—the CPUC has already approved electrification projects for rubber-tired gantry cranes, noting that that diesel-powered gantry cranes are the second largest source of NOx emissions at the Port of Long Beach.[10] We encourage the CEC to continue its important work with Ports and partner agencies to accelerate adoption of ZE alternatives to diesel-powered off-road equipment and vehicles that make up the State's freight system. In previous comments, we highlighted the status of various CARB freight regulations and the need for infrastructure support to realize the long-overdue emission reductions in the State's disadvantaged communities living near freight hubs and corridors.[11]

**b. Maximizing Larger Near-Term Deployments in "No-Regret" Freight Sectors**

While workshop presentations highlighted multiple planning exercises that are underway to better understand charging needs under a range of vehicle duty-cycles and site-level circumstances, we encourage the Commission not to wait for the results of each of these processes to enable larger commercial deployments for already-defined policy priorities that we know require considerable infrastructure investment. Several of CARB's regulations (e.g. the Advanced Clean Truck Rule and the ZE Cargo Handling Equipment regulation) rely on early deployment of technologies that "are expected to

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[8] Joshua Cunningham, ZEV Technology Rollout for Deep Emission Reductions (Aug. 6, 2020) At slide 2

[9] South Coast Air Quality Management District, Progress and Challenges in Meeting 1997 8-Hour Ozone NAAQ Standard in South Coast Air Basin (Jul. 19, 2019) at slide 9 http://www.aqmd.gov/docs/default-source/planning/scab-1997-8-hour-ozone/scab-1997-8-hour-ozone---public-consultation-meeting---presentation.pdf?sfvrsn=6.

[10] D.18-01-024, Findings of Fact 28, 32.

[11] Adrian Martinez et al, Joint Comments of Earthjustice, CCAEJ, and EYCEJ (June 11, 2020) Available at https://efiling.energy.ca.gov/GetDocument.aspx?tn=233443&DocumentContentId=65968

transfer and accelerate the deployment of zero-emission operations in other freight and heavy-duty applications." Successful deployment in early years of the regulations can trigger positive feedback loops that will increase the rate of widespread transportation electrification. Conversely, failure to ensure smooth rollout of ZE technology could result in resistance from operators and greater difficulty to meeting increasingly stringent regulations. A recent report by Data for Progress makes the case that arge-scale demonstration and deployment projects should make up the bulk of a progressive climate R&D program for the Department of Energy, explaining that the "[c]ommercial scale projects help sort out issues with technology, bring down costs, and reduce risks for further investments."[12]

Therefore, we encourage the CEC to pursue additional strategies for increasing the scale of infrastructure installation in obvious deployment categories, such as overnight depot charging at freight facilities and public fast charging along freight and transit corridors. In these segments of the charging infrastructure network, the greatest risk is too little action. Early action under these regulations are crucial to securing reductions of criteria pollutants and air toxics in line with commitments to meeting federal air quality standards under the State Implementation Plan. More directly, they are crucial to reducing the disproportionate health risks for communities living near freight hubs.

Indeed, accelerated near-term advancement in high-suitability segments is likely of national importance. Recent analysis by Rocky Mountain Institute and the North American Council on Freight Efficiency finds both Northern and Southern California are considered "hotspots" for electric truck readiness.[13] The report underscores the need for near-term electric truck deployments in these high-priority regions as a way to secure valuable lessons for the future and accelerate the broader transition to electric trucks in regions that are currently less favorable to heavy-duty electrification.

### 3. Suggestions for Charger Deployment Strategies that Maximize Multiple Benefits

The workshops provided a fascinating overview of analytic tools that the CEC and its partners are developing through the AB 2127 process to identify charging gaps and priority areas for enabling more equitable charging access. Panelists from Session 1 highlighted creative solutions for outreach and improved ZE mobility access for disadvantaged communities, while CEC staff and researchers from partner universities offered interesting frameworks for analyzing the benefits of different suites of DERs bundled with charging infrastructure.

In each of these cases, we support the CEC's interest in layering value streams by pairing charging infrastructure deployment with energy-storage, distributed energy generation, and smart-charging (VGI/V2L) capability. These approaches can mitigate costs for medium- and heavy-duty charging when high load requirements requires expensive upgrades. DERs and storage can also help manage the costs of large power consumption needs for vehicles with inflexible duty cycles. Off-grid projects that connect electric vehicles to distributed solar and storage, and enable vehicles to operate as mobile, dispatchable generators can deliver multiple benefits for communities in fire-prone and rural areas.

#### a. Partnering with AB 617 Communities for Implementation of Insights from EDGE

We are excited to see the progress on the CEC's development of the EVSE Deployment and Grid Evaluation ("EDGE") tool and look forward to the insights it will provide for site-level and distribution/transmission planning. We furthermore appreciate the CEC's pursuit of analytic tools to

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[12] Arjun Krishnaswami and Jake Higdon, "A Progressive Climate Innovation Agenda: Federal Policy Recommendations" (Aug. 2020) at 7 https://filesforprogress.org/memos/climate-innovation-agenda-policy.pdf.
[13] Jessie Lund and Mike Roeth, High Potential Regions for Electric Truck Deployment (Aug. 2020) https://rmi.org/insight/high-potential-regions-for-electric-truck-deployments

assess how smart charging can be deployed in communities that face both high vehicle ownership burdens and grid constraints. We propose that CEC staff explore opportunities to collaborate with AB 617 communities on implementing the insights of the EDGE tool.

As CEC Specialist Micah Wofford explained, one of the main analytical limitations of the EDGE tool is its reliance on patchy data inputs that are many years old, in particular for the "Location Affordability Index."[14] We encourage the CEC to seek opportunities to build off the expertise and groundwork undertaken by communities through the AB 617 process. As we await the availability of richer data sets on VMT and household income, the CEC can pilot EDGE as a tool for existing and planned Community Emission Reduction Programs to assist with site-level and neighborhood-level distribution and transmission planning in priority communities that the State has already identified as having high economic and environmental pollution burdens.

**b. Support Infrastructure to Enable ZE Mobility Options Beyond Vehicle Ownership**

Maximizing ZE-miles enabled for low-income and disadvantaged communities is critical to ensure that all Californians are benefitting from the transition off of combustion. However, California's vehicle-dependent land use policies have inherent inequities that transcend vehicle technology. While we believe electric vehicle ownership can provide a path to fuel and maintenance cost savings for individuals that depend of private vehicle ownership, many low-income communities and workers face the impossible decision of having to accept car ownership costs they cannot actually afford or foregoing basic mobility access. This tension can potentially be resolved through electric car-sharing programs. A UC Berkeley survey of 9,500 car-share users found that 25 percent of car share members sold a vehicle, and each car-sharing vehicle replaced between 9 and 13 vehicles.[15] Displacing monthly expenses associated with car ownership while enabling access to zero-emission mobility is a critical environmental justice imperative that could be missed or deferred by focusing solely on charger deployment for privately-owned vehicles.

As highlighted by several of Session 1's panelists, electric-car sharing programs had multiple benefits in the communities they worked with, both as a form of mobility access and as a means of outreach and marketing. As Panelist Jin Zhu explained, a recurring theme of EV outreach events in DACs is that for most community members who test ride an EV, it is there first time ever experiencing an electric vehicle, and many community members note how fun and quiet driving an EV is. This point was echoed by Panelist Tara Gray, who highlighted that the EV test ride events were "very, very popular" and were many participants' first time experiencing an electric vehicle.

While the benefits of ZE-car sharing programs for low-income and disadvantaged communities are clear, the potential to implement them may be challenged by the absence of willing operators. For example, affordable housing organizations that might be supportive of low-income car-share program for their residents, but will likely lack the staffing and resources to manage additional programs. The CEC's light-duty charging infrastructure programs should aim to work with EVSE suppliers to take on program operation. The CEC's current partnership with the Fresno Black Chamber of Commerce and other

[14] See Slide on Analytic Limitation (household dynamic data is from 2014, VMT data is from 2013-2015, and the American Community Survey is from 2016).
[15] Martin, Elliot, and Susan Shaheen. Greenhouse Gas Emission Impacts of Carsharing in North America. 4 Dec. 2011 http://innovativemobility.org/wp-content/uploads/2015/03/Greenhouse-Gas-Emission-Impacts-of-Carsharing-in-North-America-publication.pdf

partners to develop the EV shared mobility system is a promising initiative that should be earnestly expanded.

Similarly, we encourage CEC staff to examine whether—and how suitably—metrics such as avoided cost of charging or willingness-to-pay reflect the benefits of investing in zero-emission public transit. It is our view that investments in electrifying public transit can go hand-in-hand with holistic transit upgrades that are already long-overdue in California, and are likely to be negatively impacted by the fiscal pain of COVID-19 as transit budgets shrink in the face of ridership declines. Prioritizing charging infrastructure deployment for ZE buses can enable ZE mobility access for transit-dependent communities, while improving urban air quality and creating good-paying, local jobs in both infrastructure installation and manufacturing. Los Angeles Metro just committed to its second large ZEB pilot to run its brand new J line, which serves the majority-low-income communities of El Monte through Compton. The BYD transit buses, built in Lancaster, California, are manufactured by union workers. Research shows that investing in public transit and investing in manufacturing jobs have high multiplier effects[16]—ZEB infrastructure for public transit can achieve both while reducing pollution harm in overburdened communities.

### c. Small-Scale Community Blueprints with a Focus on Municipal, University, School, and Hospital Facilities

The CEC's School Bus Replacement program is an effective means of enabling highly suitable zero-emission mobility for children and communities most impacted by air pollution. The program is very popular and under-resourced: of the 1,600 diesel buses seeking to be replaced by ZEBs, only 233 were funded.[17] We continue to encourage the CEC to work with other California agencies to determine other, more cost effective ways to fund the conversion of school buses to electric models. For example, other states have used strategies involving utility ownership of batteries and other investment models for advancing electric school buses.[18]

In a perfect world, the School Bus Replacement program would not only be fully funded, but it would be expanded to reach the fleets of a broad range of public and non-profit fleets. However, given limited funding streams, we hope CEC staff can continue to connect at least smaller-scale versions of the expertise developed through the community blueprint model—like the EV Blueprint prepared for the Port of Long Beach—to all manner of municipal, university, school, and hospital (MUSH) facilities. MUSH facilities are typically thought of as "anchor" institutions: public or non-profit entities that are rooted in place and driven by local social missions, making them ideal candidates for planning exercises that advance environmental goals while achieving long-term operational savings. [19] Beyond their employees, they act as public resources to their communities, and therefore expand the reach of increased EV awareness. As it relates to building retrofits, the MUSH sector typically draws a more unionized workforce than other commercial segments, and therefore offers a path to high-road jobs.[20] Equipping these institutions with EV readiness plans can ensure that more socially-beneficial shovel-ready projects

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[16] Dan Lashof, Manufacturing Electric School and Transit Buses: Manufacturing Jobs and Economic Growth (Apr. 2020) https://files.wri.org/s3fs-public/expert-note-electric-buses.pdf
[17] Brecht, Patrick. 2020. 2020-2023 Investment Plan Update for the Clean Transportation Program. at 61.
[18] *See e.g.*, Dominion Energy, *Electric School Buses*, *available at* https://www.dominionenergy.com/ourpromise/innovation/electric-school-buses.
[19] Carla Skandier and Johanna Bozuwa, "Leveraging anchor institutions' power to build a local, sustainable, and inclusive energy system" (Sept. 3, 2018) https://thenextsystem.org/learn/stories/anchor-strategy-energy-transition
[20] Betony Jones et al, Californina Building Decarbonization – Workforce Needs and Recommendations (Nov 2019) https://innovation.luskin.ucla.edu/wp-content/uploads/2019/11/California_Building_Decarbonization.pdf

are fleshed out and also improve the ability of these institutions to apply for CEC and Air District funding whenever they are available.

While awarding detailed community blueprints to more grantees may not be possible due to resource constraints, the CEC should consider taking a greater role in incentivizing the full participation of school districts and other MUSH facilities in V2G-enabled fleet electrification. The CEC should coordinate incentives for EVSE companies to move beyond pilot projects and enable commercial scale integration of V2G for MUSH facilities considering fleet electrification. The incremental cost and complexity of smart charging can make it unappealing to non-profit and public hosts, but support from EVSE companies and CEC or other agency staff could expand the promising results seen from other school bus VGI pilots.

**Conclusion**

We appreciate the Commission's continued dedication to studying and sharing findings on the challenge of assessing and effectively deploying charging infrastructure to support the rapid and equitable transition to zero-emission transportation. We appreciate your consideration of our feedback and look forward to continuing to engage with the Commission and other partners on advancing this critical challenge for our State's public health and our climate.

Sincerely,

Sasan Saadat, Research and Policy Analyst
Adrian Martinez, Staff Attorney

Earthjustice