May 14, 2022

NYSERDA
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Submitted via email: scopingplan@nyserda.ny.gov

RE: Climate Action Council Draft Scoping Plan

Dear Sir/Madam:

On behalf of SUNY College of Environmental Science and Forestry, we are submitting comments in response to the Climate Action Council Draft Scoping Plan published on January 1, 2022 to inform the Council of additional research regarding increase and adoption of electric vehicles in the Multifamily Unit Dwelling (MUD).

1. In Page 102 (Chapter 11: Transportation, *Strategy T1: Light-Duty ZEV Adoption*), the Draft scooping plan recommended a massive policy to adopt EVs in transportation (Chapter 11: Transportation, *Strategy T1: Light-Duty ZEV Adoption*). The scoping plan has planned to bring in three (03) millions of Zero Emission Vehicles (ZEVs) on road (30% LDVs and 10% MHD-Medium-and Heavy Duty) by 2030 along with increasing public and workplace charging stations.
2. In Page 125 (Chapter 12: Building), building sector is emphasized to include the onsite renewable energy, energy storage and EV battery interactive capabilities. However, none of the strategies reported in the draft scoping plan provides detailed components for implementation. Since 24% (4.6 million) people are living in MUD and most of them are built before 1980s, so required an extensive infrastructural development for charging tenants' personal vehicles at their premises[1].

Because there are no synergies in policies for synchronizing and harmonizing between these two sectors for this transition of mobility i.e., adoption of EVs for MUD, ***We recommend to include strategies for adopting EV in MUD by addressing current EV adoption problems in multifamily by learnings from other countries or locations. For example, studies in Sweden and Norway have showed that people are comparatively less anxious about limited EV range than easy access to charging stations[2,3,4]. In addition, the noticeable findings and suggestions from the Michigan,***

[1] NYS, 'Climate Action Council Draft Scoping Plan', (New York: New York State Climate Action Council, 2021), p. 340.
[2] Kathryn Canepa, Scott Hardman, and Gil Tal, 'An Early Look at Plug-in Electric Vehicle Adoption in Disadvantaged Communities in California', *Transport Policy*, 78 (2019), 19-30.
[3] Avi Chaim Mersky, Frances Sprei, Constantine Samaras, and Zhen Sean Qian, 'Effectiveness of Incentives on Electric Vehicle Adoption in Norway', *Transportation Research Part D: Transport and Environment*, 46 (2016), 56-68.
[4] Wencong Su, Habiballah Eichi, Wente Zeng, and Mo-Yuen Chow, 'A Survey on the Electrification of Transportation in a Smart Grid Environment', *IEEE Transactions on Industrial Informatics*, 8 (2011), 1-10.

North Carolina, Massachusetts, California case studies could be incorporated into the inclusion of parking space design for lowering grid load and cost optimization for EVs in MUD[5,6,7]. The onsite battery swapping (BS) technology can be installed in MUD and studies in China found this technology is cost effective and popular to EV users[8,9,10]. Moreover, policy can be adopted like London to allot 20% parking space as charging point in MUD[11] or proportional allotment of parking space for EVs practicing in Gothenburg, Sweden[12]. Aside of, increasing battery recycling facilities are also needed to be included in these policies.

Thank you for the opportunity to comment on Climate Action Council Draft Scoping Plan. Please take this research into consideration when constructing adjustments for the final scoping plan.

Sincerely,

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[5] Samy Faddel, Ali T Al-Awami, and MA Abido, 'Fuzzy Optimization for the Operation of Electric Vehicle Parking Lots', *Electric Power Systems Research*, 145 (2017), 166-74.
[6] Wencong Su, Habiballah Eichi, Wente Zeng, and Mo-Yuen Chow, 'A Survey on the Electrification of Transportation in a Smart Grid Environment', *IEEE Transactions on Industrial Informatics*, 8 (2011), 1-10.
[7] Shaobing Yang, Mingli Wu, Xiu Yao, and Jiuchun Jiang, 'Load Modeling and Identification Based on Ant Colony Algorithms for Ev Charging Stations', *IEEE Transactions on Power Systems*, 30 (2014), 1997-2003.
[8] Yu Feng, and Xiaochun Lu, 'Construction Planning and Operation of Battery Swapping Stations for Electric Vehicles: A Literature Review', *Energies*, 14 (2021), 8202.
[9] AM Vallera, PM Nunes, and MC Brito, 'Why We Need Battery Swapping Technology', *Energy Policy*, 157 (2021), 112481.
[10] Yongzhong Wu, Siyi Zhuge, Guoxin Han, and Wei Xie, 'Economics of Battery Swapping for Electric Vehicles—Simulation-Based Analysis', *Energies*, 15 (2022), 1714.
[11] Travis J Allan, and Jonathan McGillivray, 'Revving Up: Legal & Policy Changes to Support Ev Uptake—Leader Jurisdictions', *World Electric Vehicle Journal*, 8 (2016), 858-76.
[12] Ellen Olausson, Oscar Olsson, Conny Börjesson, and Stefan Pettersson, 'Public Policies for Charging of Electric Vehicles Inmultifamily Dwellings-a Case Study in Gothenburg', in *EVS30 Symposium Stuttgart, Germany, October 9-11, 2017* (2017).