



October 16, 2017

VIA ELECTRONIC MAIL

Email: EVStakeholder.Group@bpu.nj.gov

**RE: New Jersey Electric Vehicle Infrastructure Stakeholder Group; Sierra Club
Response to Questions**

Dear Members of the EV Infrastructure Stakeholder Group:

On behalf the Sierra Club and its more than 22,000 members in New Jersey, we are pleased to provide the following responses to the questions posed by Board of Public Utilities Staff in its September 15, 2017 notice. As discussed more fully below, we believe that the Board and the state's electric utilities have a critical role to play in helping to accelerate electric vehicle (EV) infrastructure deployment in New Jersey and can do so in a way that complements and even fosters private sector engagement. Increasing EV infrastructure deployment is critical to accelerating EV adoption, which will keep money in state, benefit the environment and public health, and help New Jersey achieve its climate goals. We look forward to continuing to participate in the Electric Vehicle Infrastructure Stakeholder Group going forward.

Question #1: What is the present status of EVs and EV infrastructure in New Jersey?

Based on data through the end of 2016, the Auto Alliance identifies 4,740 battery electric vehicles and 6,352 plug-in hybrid vehicles in New Jersey.¹ Together, these 11,092 vehicles represent 0.16 percent of the 7,192,032 passenger vehicles in New Jersey.² This level of EV penetration puts New Jersey well behind where it should be in order to achieve both its clean cars and climate goals, which presently should be 30,000. According to the Alternative Fuels Data Center (AFDC) maintained by the Department of Energy,³ there are 214 public electric vehicle charging stations in New Jersey. Of these, 50 are direct current (DC) fast charging locations (7 of which are Tesla charging stations).⁴ Charging stations like those maintained by Tesla are not accessible by the general public and it will be important to maximize public access to the state's charging network going forward. For comparison, New Jersey is almost exactly the same size as Massachusetts (7,417 square miles versus 7,840 square miles) with a larger population (8.9 million versus 6.8 million in 2016).⁵ Yet Massachusetts has more than twice as many public electric vehicle (EV) charging stations (499 versus 214⁶), and its two largest

¹ See <https://autoalliance.org/in-your-state/NJ/> (compiled by Auto Alliance with data provided by IHS Markit as of December 31, 2016).

² *Id.*

³ See <https://www.afdc.energy.gov/states/nj>.

⁴ See <https://www.afdc.energy.gov/states/nj>

⁵ See <https://www.census.gov/data/datasets/2016/demo/popest/state-total.html>.

⁶ See <https://www.afdc.energy.gov/states/ma>

distributions utilities—Eversource and National Grid—are presently seeking approval to invest \$70 million to accelerate deployment of EV charging infrastructure with a goal of deploying more than 4,000 additional EV chargers.⁷ In our urban counties, there are studies that show half the workforce lives within 10 miles of their employment making New Jersey a prime target for electric vehicle infrastructure. New Jersey will also benefit significantly from increased electric vehicles because we get 46 percent of our greenhouse gas emissions from mobile sources and we are out of compliance with ground level ozone.

Question #2: What EV/EV infrastructure developments can be expected in the short/medium term under a Business as Usual scenario?

There have been many projections of EV adoption rates, and successive projections continue project increasingly faster rates of EV adoption. However, even the most optimistic projections of EV adoption under a business as usual scenario fall far short of putting states like New Jersey on track to achieve greenhouse gas (GHG) emission reductions of 80 percent by 2050.⁸ In Connecticut, which has a similar 80 percent by 2050 climate goal, modeling conducted by the Connecticut Governor’s Council on Climate Change concluded that 92 percent of Connecticut’s passenger and light-duty fleet needed to consist of EVs in 2050.⁹ To achieve this near-complete electrification of the transportation sector by 2050, EV adoption and EV infrastructure development needs to ramp up rapidly beginning immediately.

Certain locations for EV charging infrastructure, like multi-unit dwellings, frequently lag in charger deployment, effectively precluding EV ownership for large segments of the population. Residents of multi-unit dwellings may lack the legal or practical ability to install and access an EV charger when their vehicle is parked where they reside. There has been a failure of the competitive market to address this need, which is why this population segment has been targeted by a number of utility EV charging infrastructure proposals.¹⁰ In addition, demand chargers have proven to be a significant obstacle to developing a private sector business case for installing DC fast chargers. Studies have shown that current demand charges can swamp volumetric charges at low levels of charger utilization,¹¹ which can be prohibitive to installing these chargers without subsidies or modified rate structures.

As discussed below, while it is important to plan for anticipated EV deployment in New Jersey, it is equally critical to adopt a proactive approach to developing the infrastructure needed to support the buildout of EVs that will be required for New Jersey to achieve its climate goals or be able to meet the number of electric vehicles that are required under New Jersey’s Clean Car Law.

⁷ See Massachusetts Department of Public Utility dockets 17-05 and 17-13.

⁸ NJ Rev Stat §§ 26:2C-38, -40 (requiring an 80 percent reduction in statewide GHG emissions from 2006 levels by 2050).

⁹ Connecticut Dept. of Energy and Env’tl. Protection, Governor’s Council on Climate Change (GC3) Meeting Minutes - March 7, 2017 Meeting, http://www.ct.gov/deep/lib/deep/climatechange/gc3/3_7_17_gc3_meeting/gc3_meeting_3_7_2017.pdf.

¹⁰ E.g., Eversource (Mass. DPU docket no. 17-05); National Grid (Mass. DPU docket no. 17-13); Pepco (DC PSC formal case no. 1143).

¹¹ E.g., Rocky Mountain Institute, EVgo Fleet and Tariff Analysis: Phase 1: California (Apr. 2017).

Question #3: What goals for EV Infrastructure should be established?

Other states that have modeled a pathway to achieving long-term 80 percent by 2050 climate goals have concluded that nearly all passenger and light-duty vehicles must be electric in the next three and a half decades. With a little more than 7 million vehicles in New Jersey today even conservatively assuming no increase in this number and only 90 percent electrification by 2050, 6.3 million vehicles would need to be electrified in 33 years. At a linear rate of increase, this would mean adding approximately 190,000 EVs per year every year for the next 33 years.

The National Renewable Energy Laboratory (NREL) has developed a tool—the EV Infrastructure Projection (EVI-Pro) tool—that can assist states in planning for EV charging infrastructure buildout. EVI-Pro takes as inputs numbers of vehicles with different capabilities (e.g., plug-in hybrid electric vehicle with 40 mile electric range, or battery electric vehicle with 200 mile range) and then uses actual travel profiles to output the number of chargers of what types of needed and, depending on the specificity of the travel profile data, can also output where those stations should be located.

We urge the Board to work with NREL to use the EVI-Pro tool to help identify levels of electric vehicle charging infrastructure that will be required to support anticipated and desired levels of EV penetration. Recently the Maryland Public Service Commission retained NREL to provide the Maryland utilities with a “gap analysis” to aid the utilities in developing EV charging infrastructure proposals as part of the Maryland Grid of the Future proceeding.¹² A similar analysis could readily be undertaken in New Jersey and would provide the Board with a strong analytic foundation for the role for utilities and others in supporting this infrastructure buildout.

Question #4: What role should the Board, other government agencies, electric utilities, non-governmental organizations and the private market have in addressing EV/infrastructure adoption?

The Board and the state’s electric utilities have an important role to play in accelerating EV infrastructure deployment in New Jersey. This role is complementary to the role of the private market and early action by utilities to increase EV charging infrastructure and promote increased EV adoption will actually help to galvanize subsequent private sector investment by improving the business case for future EV charging infrastructure investments.

There are at least three important areas for engagement by the Board and the state’s utilities: (1) EV-appropriate rate design; (2) utility investments in EV charging infrastructure; and (3) EV education and outreach. Sierra Club’s recommendations are animated by the principles that utility engagement in the EV space should: (a) effectively use price signals and load management practices to maximize benefits to the system, electricity customers and EV drivers, including facilitating the integration of renewable resources; (b) provide equitable deployment of services, including commitments to disadvantaged communities; (c) foster a competitive market and the engagement of third party vendors of EV supply equipment and services in a manner that supports continued growth of the broader EV charging industry; and (d) increase access to EV

¹² Maryland Public Service Commission, Public Conference 44.

charging beyond single-family homes with a focus on multi-family dwellings, workplaces, and public high-power “fast charge” locations, in order to improve EV adoption and awareness.

(1) Rate Design

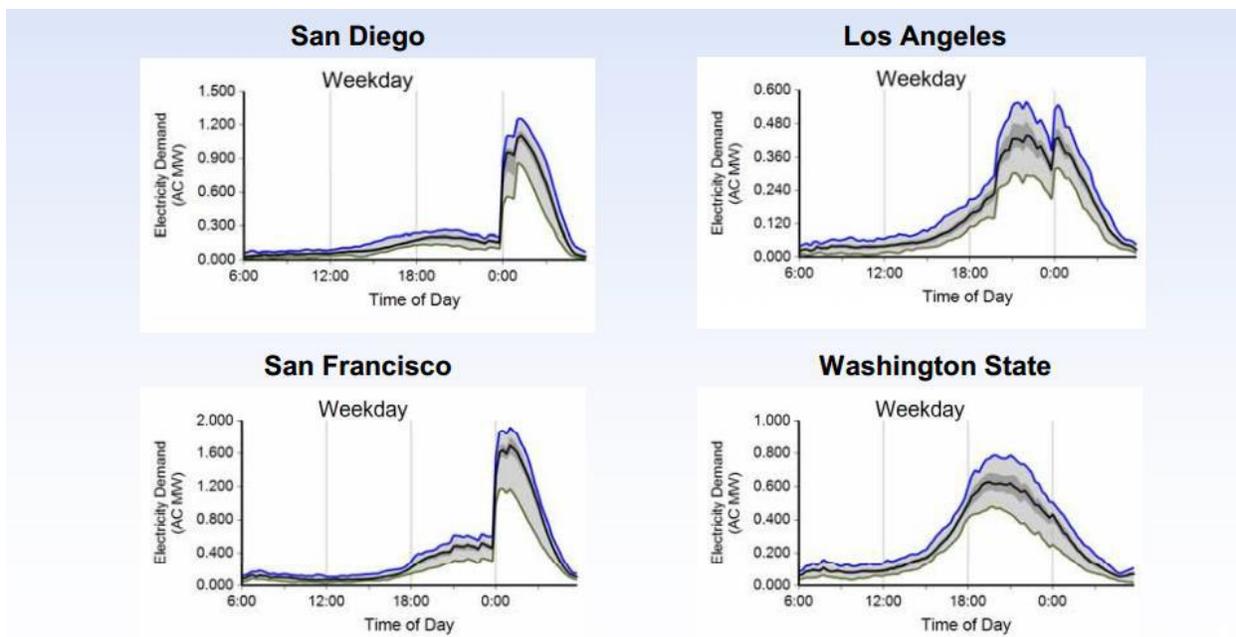
With regard to rate design, EVs represent a potential significant increase in load over the coming decades, particularly if New Jersey is successful in promoting their adoption. Whether this new load places strains on the grid or, instead, serves to lower electric rates by increasing the billing determinants of which the fixed costs of the system are spread will depend on what steps the Board and the state’s utilities take to manage that load. There is broad consensus that time-varying or time-of-use (TOU) rate structures are an essential component to ensure increased benefits to electric system stakeholders from EVs by incentivizing EV owners to charge their cars at optimal times.¹³ TOU charging is critical to pushing overall electricity rates down and customer savings up because it can lead to the increased utilization of otherwise idle generation assets (and other parts of the grid) and avoid the need for added capacity/transmission investments.¹⁴ Importantly, TOU rates can incentivize charging in a manner that helps to integrate renewable energy into the grid. The Department of Energy’s EV Project, which has tracked the charging behavior of thousands of EVs since 2011, has shown that in areas with TOU rates and effective utility education and outreach, the majority of EV charging occurs during off-peak hours.¹⁵ This was not the case in areas without TOU rates, where EV demand generally peaked in the early evening, exacerbating early-evening system-wide peak demand.¹⁶ This is reflected in the charging patterns for several areas, shown below, with TOU pricing (San Diego and San Francisco) and without (Los Angeles and Washington State).

¹³ See, e.g., CalTEA II at 19-20; Regulatory Assistance Project, *In the Drivers Seat: How Utilities and Consumers Can Benefit From the Shift to Electric Vehicles* at 4-7 (April 2015); Glazner, *Electric Mobility and Smart Grids: Cost Effective Integration of Electric Vehicles with the Power Grid*, Symposium Energieinnovation (February 2012); Michael Kintner-Meyer, Kevin Schneider, & Robert Pratt, *Impacts Assessment of Plug-in Hybrid Vehicles on Electric Utilities and Regional U.S. Power Grids* (November, 2007).

¹⁴ CalTEA I at 38; CalTEA II at 17.

¹⁵ Schey, et al, *A First Look at the Impact of Electric Vehicle Charging on the Electric Grid*, The EV Project at EVS26 (May 2012); see also The EV Project, *How do PEV owners respond to time-of-use rates while charging EV Project vehicles?* (July 2013).

¹⁶ *Id.*



However, poorly integrated EV load can undermine these potential benefits. At high levels of EV penetration, unmanaged demand could strain the existing system, undermining reliability and driving the need for new generating resources as well as upgraded substations, distribution lines, and transformers, thereby potentially risking increasing costs for all ratepayers.¹⁷ Maximizing EV benefits requires that the electric demand created by EVs be structured properly

The Board should require the state’s electric utilities to propose EV-appropriate TOU rates for approval by the Board. Utility submissions include both “EV-only” TOU rates, which utilize a separate or sub-meter, and “whole-home” TOU rates, where all electricity use is billed by time-of-use on a single meter. For access to EV-only TOU rates, the installation of a second utility meter or meter upgrades may be required, which can be a prohibitive cost for the prospective EV driver.¹⁸ In order to ease access to EV-only rates, the Board should consider lower-cost sub-metering options. In California, for example, sub metering for EV drivers has undergone extensive testing as a simpler metering option. While whole-home TOU rates may not require new metering equipment, they do not provide the price transparency of EV-specific TOU rates and involve uncertainty regarding net benefits. Consequently, a whole-home TOU rate should be designed to be revenue-neutral for the majority of customers when compared to the standard rate, but result in a lower bill for the EV driver who charges during off-peak hours but does not shift any non-EV load. To reduce ratepayer anxiety, the Board should consider utility programs that offer a first-year price guarantee for a TOU rate, where an EV driver would receive a bill credit if after the first year the TOU rate resulted in higher electric charges than the

¹⁷ See California Public Utilities Commission, Decision 95-11-035 (Utility Involvement in the Market for Low-Emission Vehicles); *see generally* CalTEA II.

¹⁸ MJ Bradley & Associates (2015) Electricity Pricing Strategies to Reduce Grid Impacts from Plug-in Electric Vehicle Charging in New York State. Page 8.

standard rate.¹⁹ In sum, the Board should consider both whole-home TOU tariffs and EV-only rates, with a focus on cost effectiveness and ease of access for EV drivers.

The Board should ensure that “off peak” periods are long enough for vehicles to fully charge, and that incentives are in place to take advantage of current and emerging EV charging technologies. The length of “off peak” charging periods and a well-designed incentive structure can help spread out charging demand, avoiding a significant and rapid increase in charging demand at the start of an “off peak” period. Since vehicles need different times to charge and customers need their vehicles fully charged at varying points, encouraging charging to start with sufficient time until the vehicle is needed, rather than right at the beginning of the period, can prevent such a perverse outcome. Successful TOU rate structures also require technology that can fulfill both current and future needs associated with EVs. For example, charging stations should be equipped with meters to collect, store and manage charging data that can be used to design smart pricing schemes that are based on demand. It is therefore important that utility-managed EV programs provide the infrastructure needed for effective vehicle-to-grid integration. Current infrastructure should also anticipate future needs, such as bidirectional or vehicle-to-grid charging, which will be a critical component of widespread EV use in the years to come.

(2) EV Charging Infrastructure

Lack of charging infrastructure is presently a significant barrier to EV ownership. Market research conducted by Nissan suggests that availability of sufficient charging infrastructure is significantly related to customers’ appetite for purchasing EVs.²⁰ Whereas only 36 percent of EV owners were likely to very likely to repurchase at existing levels of EV infrastructure, approximately 80 percent were likely or very likely to repurchase at ideal levels of charging infrastructure.²¹ In addition, Nissan saw an increase in Leaf sales in 2013 when Nissan installed DC Fast Charging stations in select markets.²² Tesla has witnessed similar results with its Supercharger network of DC Fast Charging stations. Tesla officials report their DC Fast Charging network has been critical to growing sales of the Model S sedan.²³

The Board should establish a work group through which the state’s utilities will be required to develop and submit for Board approval proposals to increase EV charging infrastructure in their service territories. The proposals should be developed with input from participants in the work group and informed by an analysis conducted using the NREL EVI-Pro tool discussed above to identify the necessary density of and optimal locations for public EV charging infrastructure in New Jersey. While the Sierra Club does not take a position on the

¹⁹ See Consolidated Edison- Electric Vehicle Rates-Price Guarantee, available at <http://www.coned.com/electricvehicles/rates.asp>.

²⁰ David Peterson, “1700 Fast Chargers by 2016” presentation to the California PEV Collaborative, Nissan North America (Mar. 10, 2015).

²¹ *Id.*

²² Rovito, M., “Will Nissan’s No Charge to Charge Program Drive Leaf Sales?” Charged Electric Vehicles Magazine, July 3, 2014.

²³ Baumhefner, M., Hwang, R. And Bull, P., “Driving Out Pollution: How Utilities Can Accelerate the Market for Electric Vehicles,” Natural Resources Defense Fund, June 2016, citing Lankton, Cal, Director of EV Infrastructure, Tesla Motor Company, “Plenary Panel: Technology Marches On – The Impact of New Vehicle and Infrastructure Technologies,” EPRI Plug-in 2014 conference, San Jose, California, July 2014.

ownership model utilities should employ (e.g., utility ownership of make-ready charging infrastructure, utility ownership of EV chargers, or rebates for charging infrastructure and/or chargers), it is important that these investments be targeted at locations that are underserved by the private sector where vehicles are parked with sufficient dwell times to obtain a usable charge. All utility proposals should also be required to include investments in charging infrastructure in urban areas and in environmental justice communities to promote access to clean, electric transportation and achieve localized air quality benefits. Investments that are used and useful and consistent with the public interest should be recoverable from ratepayers.

(3) Education and Outreach

Utilities should also develop proposals for education and outreach regarding both their EV charging infrastructure programs discussed above, as well as benefits of EVs and any available EV rebates. Education and outreach components are a standard component of utility EV proposals in other states.²⁴

Finally, with regard to funding, it is critical that the Societal Benefits Charge not be used to support utility investment in EVs.

Question #6: Should owners and operators of EVSE that provide electric vehicle charging service be regulated as electric utilities? Are operators of EVSE reselling electricity or providing a charging service?

It is both correct as a matter of law and important as a matter of policy that owners and operators of EVSE not be regulated as electric utilities. Owners and operators of EVSE are providing a charging service, not engaging in the resale of electricity. Other states to consider this question have reached the same conclusion. For example, the Massachusetts Department of Public Utilities distinguished sale of EV charging services from re-sale of electricity and found that owners or operators of EV supply equipment (“EVSE”) are “not selling electricity within the meaning of” its utility regulations.²⁵ As the Department explained, “the EVSE owner or operator is selling EV charging services, i.e., the use of specialized equipment -- EVSE -- for the purpose of charging an EV battery.”²⁶ The Department ruled that “[t]his result is true regardless of the business model the EVSE owner/operator uses to charge customers for charging services, even if the charge is by a per-kilowatt hour basis or other volumetric energy basis.”²⁷

Likewise, the New York Public Service Commission concluded that EV charging stations “do not fall within the definition of ‘electric plant’ because Charging Stations are not used for or in connection with or to facilitate the generation, transmission, distribution, sale or furnishing of electricity for light heat or power” but rather “are used to provide a service, specifically, charging services.”²⁸ The Commission in New York noted that “while the customer is using

²⁴ See, e.g., Eversource (Mass. DPU 17-05); National Grid (Mass DPU 17-13).

²⁵ Mass. Dept. of Pub. Utilities, Order No. 13-182-A (Aug. 4, 2014), at 7.

²⁶ *Id.*

²⁷ *Id.*

²⁸ See In the Matter of Electric Vehicle Policies, N.Y.P.S.C. 13-E-1099, at 4 (Nov. 14, 2013).

electricity, this is incidental to the transaction.”²⁹ And like Massachusetts, the New York PSC concluded that “the method of calculating the transaction fee, specifically the use of a per kWh price, will not confer jurisdiction where none otherwise exists.”³⁰

Moreover, treating owners and operators of EVSE as electric utilities would erect a significant barrier to private sector investment in the development of public EV charging stations and should not be adopted by the Board. Although treating site hosts as outside traditional utility regulation relinquishes control of charger station rates, in the context of utility investments in EV charging infrastructure deployment, the Board can require that the utilities’ contracts with site hosts include provisions preventing exorbitant pricing at stations supported by the utility programs.

Thank you for your consideration.

Respectfully submitted,



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²⁹ *Id.*

³⁰ *Id.*