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Submitted electronically via dps.ny.gov

Honorable Michelle Phillips
Secretary State of New York Public Service Commission
Building Three Empire State Plaza
Albany, NY 12223-1350

RE: Case No. 18-E-0138 – Proceeding on Motion of the Commission Regarding Electric Vehicle Supply Equipment and Infrastructure

Case No. 22-E-0236 Proceeding to Establish Alternatives to Traditional Demand-Based Rate Structures for Commercial Electric Vehicle Charging

Dear Secretary Phillips:

On April 21, 2022, the Commission filed a notice soliciting comments in the above subject cases. Tesla appreciates this opportunity to provide written comment. Tesla strongly supports alternatives to traditional demand-based rate structures for commercial electric vehicle charging. More affordable charging rates will help encourage deployment of DCFC infrastructure and increase adoption of EVs in New York State. Tesla agrees that demand charges represent a significant barrier to the deployment of DCFC infrastructure, and identifies critical elements of DCFC rate design that should be considered by the New York State Public Service Commission ("NYSPSC") when directing the investor-owned utilities ("IOUs") to design charging rates that maximize infrastructure investment, utilization, and ratepayer benefits.

The State of New York has taken a strong and supportive stance in support of EV growth. New York is a signatory to public health and environmental standards that will require total sales of Zero Emissions Vehicles ("ZEVs") within the state to reach 850,000 by 2025,[1] up from the cumulative 100,000 ZEVs in the state today.[2] New York is also a signatory to the Multi-State Medium- and Heavy-Duty Zero Emission Vehicle Memorandum of Understanding committing to striving to make at least 30% of all new medium- and heavy-duty vehicle purchases zero emission vehicles by 2030 and 100% by 2050.[3] Further, last year Governor Hochul signed even more ambitious goals into law, setting a goal that 100% of "new passenger cars and trucks offered for sale or lease, or sold, or leased, for registration in the state shall be zero-emissions" by 2035, and 100% medium- and heavy-duty vehicles by 2045.[4] Adequate DCFC infrastructure is critical to achieving New York's EV adoption goals.

The potential benefits of greater EV adoption in New York are significant. With no tailpipe emissions, EVs can help reduce ozone-forming nitrogen oxide emissions and greenhouse gas emissions. Additionally, increased adoption of EVs means there will be more charging of EVs in the evening hours, which results in higher utility system utilization during off-peak hours. This provides more electricity sales to the utility at average cost rates that typically exceed the utility's marginal costs. The increased revenue to the utility from EV charging means that the utility's revenue requirement will be reached more quickly; therefore, all other ratepayers should enjoy

[1] https://www.energy.ca.gov/sites/default/files/2019-12/StateZero-EmissionVehiclePrograms_20180503_ada.pdf
Zero Emission Vehicle Memorandum of Understanding: New York portion of 3.3 million EVs by 2025.
[2] https://www.nyserda.ny.gov/All-Programs/chargeny/support-electric/map-of-ev-registrations
[3] https://www.nescaum.org/documents/mhdv-zev-mou-20220329.pdf/
[4] https://www.nysenate.gov/legislation/bills/2021/S7788

a rate decrease. MJ Bradley & Associates estimated that by 2030, each plugin EV in New York would provide $265 of net present value benefits annually. Of those benefits, utility customers would have a benefit of $166/EV/year due to higher utility revenues from EV charging obviating the need for future rate increases.[5]

Commercial EV Rate Solutions Support New York's ZEV Targets

Increasing access to DCFC charging enables the adoption of more zero-emission light-duty vehicles ("LDVs") as it allows for consistent, reliable, and affordable charging which will make the difference between buying an EV or a traditional internal combustion engine vehicle. While today a majority of EV drivers' charging occurs at home or work, customer access to DCFC is essential for long-distance travel or emergency situations, and for customers without access to at-home charging, such as those who reside in multi-family dwellings. The National Renewable Energy Laboratory estimates that approximately 3.4 DCFC chargers will be needed to support every 1,000 battery EVs.[6] As reflected in New York's Make-Ready program targets, New York will need approximately 1,500 total DCFC plugs to support the LDV ZEV targets by 2025.[7] This represents a significant increase over the State's approximately 968 existing DCFC plugs.[8]

High-power charging will also be important for the development of medium and heavy duty ("MHD") EV applications as well as EV fleets across the spectrum from LDV to MHD. Meaningful EV rate Solutions are critical to support the further growth and development of all EV use cases from LDV to MHD and vehicle fleets. Despite MHD vehicle adoption lagging LDV deployment, rate Solutions will help pave the way for MHD applications in New York and will remove a significant barrier to adoption currently.

In the comments below Tesla addresses the questions raised by NYSPSC including providing examples of commercial EV rates, additions to the existing rate design principles, and areas of the Solutions design that are necessary to develop a good commercial EV rate option. Overall, Tesla recommends that NYSPSC develops EV rate Solutions that lean more heavily towards volumetric-based time-of-use ("TOU") rates as a replacement to existing demand-based rates.

Demand Charge Mitigation

Demand charges represent a significant barrier to the development of DCFC infrastructure. A study conducted by the Rocky Mountain Institute found that when utilization of DCFC stations is low, which is common given the nascent nature of EV technology, demand charges can account for up to 90% of a station's monthly electricity bill, resulting in prohibitively high operating costs.[9] This conclusion is consistent with the findings of a study commissioned by New York State Energy Research and Development Authority ("NYSERDA").[10] Tesla agrees that shifting DCFC customers to demand charge-free or reduced rates would help mitigate the high costs associated with the development and operation of DCFC infrastructure. Demand charge-free rates will maximize

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[5] https://www.mjbradley.com/reports/mjba-analyzes-state-wide-costs-and-benefits-plug-vehicles-five-northeast-and-mid-atlantic

[6] Wood, Eric et al., National Plug-In Electric Vehicle Infrastructure Analysis, U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy, September 2017, p. xi, available at https://www.nrel.gov/docs/fy17osti/69031.pdf.

[7] NYSPSC Case 18-E-0138 Order Establishing Electric Vehicle Infrastructure Make-Ready Program and Other Programs. Issued and Effective: July 16, 2020. Appendix B.

[8] Alternative Fuels Data Center, U.S. Department of Energy, Electric Vehicle Charging Stations (as of May 22, 2022) https://afdc.energy.gov/fuels/electricity_locations.html#/analyze for non-Tesla DCFC station count, and internal Tesla data for Superchargers in NY.

[9] Fitzgerald, Garrett and Chris Nelder, *EVgo Fleet and Tariff Analysis,* Rocky Mountain Institute, 2017, p. 1, available at: https://rmi.org/wp-content/uploads/2017/04/eLab_EVgo_Fleet_and_Tariff_Analysis_2017.pdf

[10] Electricity Rate Tariff Options for Minimizing Direct Current Fast Charger Demand Charges; Final Report, Energetic Incorporated, prepared for NYSERDA (December 2015) p. 1.

deployment of EVs and associated environmental benefits, as well as increase the substantial ratepayer cost savings associated with EV adoption.

1. ***Provide examples of commercial electric vehicle charging tariffs or operating cost relief programs (solutions) from jurisdictions outside of New York that should be considered or avoided, based on the experience in those jurisdictions, and explain why they are effective or ineffective.***

Commercial EV Charging Tariff Examples

To help drive EV adoption and maximize ratepayer benefits, many utility commissions across the country have already directed utilities to implement DCFC-applicable charging rates that include a reduced demand charge. The table below includes samples and descriptions of EV charging rates approved by other state's public utility commissions:

Utility	EV Charging Rate Design
Southern California Edison, CA	Approved demand charge free rate for all non-residential DCFC load for a five-year period, followed by the phase-in of a modest demand charge over the following five years. Time-of-use (TOU) volumetric energy charges increased to recover costs previously recovered in the demand charge.
Eversource, CT	Approved demand charge free rate for all DCFC charging load with increase in volumetric energy charge to recover costs previously recovered in the demand charge. No limit on term of rate offering.
Florida Power and Light, FL	Rate Riders GSD-1EV and GSLD-1EV provide 75-hour demand charger limiter. A 75-hour demand limiter assists stations with usage levels below ~10% load factor (75 hours/720 hours = 10.4% load factor).
Evergy, KS	Approved Business EV Charging Service tariff that includes low demand charge (~$3/kW) with strong seasonal, three-period time-of-use rate.
NV Energy (North and South), NV	Approved DCFC rate with a ten-year transitional demand charge (2019-2028).
Con Edison, NY	Approved economic development rate for DCFC, that includes a demand charge discount for seven years. Unfortunately this rate is only available for new stations that also participate in other funding programs.
Pacific Power, OR	Approved rate beginning with a demand charge discount of 90%, phasing in at 10% per year until the demand charge is restored at 100%. Volumetric energy charges are adjusted to recover costs previously recovered in demand charges.
PECO, PA	Approved five-year pilot rate in which the customer receives a fixed demand credit, initially equal to 50% of the combined maximum nameplated capacity rating for all DCFCs connected to the service to the customer's billed distribution demand.
Dominion, VA	Rate GS-2 is a technology neutral commercial rate, applicable to all non-residential customers. GS-2 is billed as an all-volumetric rate at usage levels below 200 kWh per kW (~27% load factor). Above 200 kWh per kW (27% load factor), the rate is automatically billed with a demand charge and correspondingly lower energy charge. Rate is designed so that crossover back to demand billing is beneficial to customer. Rate is billed demand or non-demand depending on customer's usage for that specific month and can switch back and forth to accommodate variability without removing customers from this beneficial rate.

Optimal Commercial EV Rate Design Examples

Of the various demand charge-free charging rate structures, the model approved for California's Southern California Edison is optimal. Under this rate, the demand charges for charging load will be suspended entirely for five years, then gradually phased-in over the subsequent five years. The final demand charge under this rate option will be considerably lower than the demand charge under the alternative default commercial rate. This rate provides certainty and affordability, and encourages DCFC infrastructure investment in one of the highest cost electricity markets in the country.

Another good model for a more straightforward EV TOU rate with a reduced demand charge is Evergy Kansas Business EV Charging Service ("BEVCS") rate. This rate has a demand charge around $3/kW and includes a three period, seasonally differentiated time-of-use rate: [11]

BUSINESS EV CHARGING SERVICE

RATE FOR SERVICE

		Summer Season	Winter Season
A.	Customer Charge (Per Month)		$ 105.97
B.	Facility Charge (Per kW of Billing Demand per month)		$ 3.069
C.	Energy Charge per Pricing Period (Per kWh)	Summer Season	Winter Season
	On-Peak Period	$0.17979	$0.11522
	Off-Peak Period	$0.08298	$0.05458
	Super Off-Peak Period	$0.02755	$0.02416

This type of EV TOU rate with a low demand charge is the most simple and straightforward commercial EV rate design. In the future if an EV charging station is particularly busy (i.e. higher load factor) it could make sense for that customer to switch back to regular commercial rates in order to receive a higher demand charge and a correspondingly lower energy charge. Although this rate does include a demand charge it is substantially lower than the regular commercial tariff a charging station would otherwise be placed on if it were not for this commercial EV rate option. The time-of-use price signal is consistent and has a strong on-peak to off-peak differential that incentivizes grid-beneficial charging. Time-of-use price signals are preferable to demand-based price signals since TOU price signals are consistent and are not muted by singular anomalous events (i.e. one 15-min interval of peak demand in a month).

Challenging Commercial EV Rate Design Example

An example of a rate structure to be avoided is Florida Power and Light's 75-hour demand limiter which includes a "cliff" for EV charging stations at 10% load factor. EV charging stations generally operate in the load factor window of 1% to 30%. A charging station with 1% load factor is very low usage and a 30% load factor represents a busy charging station where a station may start to experience drivers waiting to use a charger. At a load factor of around 30% traditional demand-based electricity rates can begin to resemble the electricity costs paid by other commercial customers. For these reasons, Tesla recommends any charging Solutions put forward by the New York IOUs consider charging stations up to 30% load factor at a minimum to provide for a smooth on-ramp back to existing rate options and prevent perverse incentives and rate "cliffs."

2. ***When evaluating the impact of potential solutions, what assumptions should be applied to appropriately represent the investment decision that charging station developers and/or site hosts must make?***

Charging station investments are long-term investments and any potential rate solution should provide visibility out to a 10-year time horizon since that is comparable to the same investment time-horizon for EV charging

[11] https://www.evergy.com/-/media/documents/billing/kansas-central/other/bevcs-business-ev-charging-service-12062021_03282022.pdf

station development. Additionally, considering EV charging stations across the entire operational load factor window from 1% up to 30% load factor at a minimum is also important. These considerations allow for those making investment decisions to have both a temporal as well as an operational runway if EV adoption accelerates more quickly than expected. EV charging customers are likely to look more like other commercial customers in the future as adoption continues to increase and EV rate solutions support investment decisions near-term to develop the industry towards that future state.

3. ***How should the rate design principles articulated by the Commission in the REV Track Two Order be applied when evaluating the potential solutions in this proceeding? Are there additional rate design principles you believe should be applied and why?***

When developing solutions in this proceeding, the NYSPSC should consider design principles that align commercial EV charging, utility customer, and stakeholder benefits. Principles included in the REV Track Two Order referenced in the PSC Notice are relevant, such as encouraging outcomes that include policy goals (e.g., specific emissions reductions as required by the CLCPA[12]), transparency, stability, and encouraging efficient decision making.[13]

As NYSPSC directs the New York IOUs to create DCFC-applicable charging rates, Tesla recommends that the Commission also consider the following key program criteria to maximize infrastructure deployment and ratepayer benefits:

Key Criteria #1: The commercial EV rate(s) must be technology neutral.
The objective of an EV charging rate is to help drive deployment of DCFC stations and adoption of EVs, which results in significant ratepayer, economic, and societal benefits. To ensure highest utilization and participation on this charging rate, no DCFC-capable vehicle or manufacture should be excluded from the rate. Additionally commercial EV rates should remain open to all separately metered EV charging whether that be banks of Level 2 chargers, public DCFC, MHD applications, or EV fleets using a combination of DCFC and Level 2 chargers.

Key Criteria #2: The commercial EV rate(s) must be available to new and existing stations.
To help minimize the cost of demand charges on existing developers, and ensure that investment is available for future charging, participation in new rates should not be limited to new stations. If existing stations are not eligible for DCFC rates, they would be at a price disadvantage to new stations.

Key Criteria #3: The commercial EV rate(s) should remain optional.
As utilization grows, charging station load profiles can resemble a shape similar to an average commercial customer where demand charges become more manageable. EV rates should remain optional to ensure affordability as stations mature and charging customers should not be precluded from enrolling in regular commercial rates if they choose to do so now or in the future.

Key Criteria #4: The commercial EV rate(s) must be available to all non-residential charging, including fleet and heavy-duty charging.
To ensure that any adopted rate does not quickly become outdated, with the increased adoption in electric vehicle fleets and forthcoming release of heavy-duty EV trucking technology, charging rates should not include a

[12] Climate Leadership and Community Protection Act ("CLCPA"): On July 18, 2019, the Climate Leadership and Community Protection Act (Climate Act) was signed into law. New York State's Climate Act is among the most ambitious climate laws in the world and requires New York to reduce economy-wide greenhouse gas emissions 40 percent by 2030 and no less than 85 percent by 2050 from 1990 levels. https://climate.ny.gov/

[13] Order Adopting A Ratemaking And Utility Revenue Model Policy Framework. Case 14-M-0101 – Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision. May 19, 2016.

limit on kW or kWh participation. One way to ensure that all DCFC-capable technologies will continue to have access under a charging rate is to direct utilities to create a complementary charging rate for each commercial rate currently offered. Eligibility for each of these tariffs would continue to be governed by existing limitations in of the customer's load or demand.

Key Criteria #5: The commercial EV rate(s) should make use of volumetric energy charges in place of demand charges where possible, therefore providing grid-beneficial time-of-use ("TOU") price signals to charging operators.

TOU windows with strong on-peak to off-peak price differentials are a better price signal for charging operators rather than demand charges. TOU price signals have the benefit of consistently encouraging grid-beneficial charging whereas a demand charge, once set for the month, provides no further incentive for grid-beneficial charging for the remainder of the month. Additionally, an on-peak TOU window of 4 hours or less provides a more actionable price signal than a longer on-peak window of more than 4 hours. TOU price signals are best sent to charging operators and should not be mandated as pass through price signals directly to EV drivers. the charging operator can determine how best to incentivize user behavior and make their own determination as to whether and how those costs are passed on to the customer.

Key Criteria #6: The commercial EV rate(s) should provide certainty and stability for long-term investments.

Fleet owners and charging providers are making investments over a long-term period. Rates should provide certainty and stability with regards to structure and price signals to provide confidence for pursuing charging investments for an investment over at least a 10-year period. Therefore, time limited rates should be avoided. Rate solutions should also provide certainty over the full window of EV charging station utilization up to at least 30% load factor.

Key Criteria #7: The commercial EV rate(s) should not require any additional data-sharing with the utility beyond what is available from the utility meter.

The utility should be able to access the data they need from separately metered EV charging installations and should not require onerous data reporting requirements as a condition of eligibility. Utility meter interval data – already accessible to IOUs – oftentimes provides the granularity necessary for both ratemaking as well as understanding the dynamics of EV charging on the distribution grid. The utilities should utilize their existing metering infrastructure in conjunction with interval meters to gain valuable insights into EV charging behavior, including temporal information as well as how much charging occurs in aggregate.

Key Criteria #8: The commercial EV rate(s) should not require undue administrative burden to enroll in the rate nor ongoing administrative reporting requirements.

Enrolling in a non-residential EV charging rate should be as simple as enrolling in any other utility rate where a customer has eligibility. The customer should be able to work with their customer representative to switch over to the EV charging rate without the need for any specific application, electric vehicle supply equipment vendor request for proposals, qualified equipment lists, or ongoing reporting requirements.

Key Criteria #9: The commercial EV rate(s) must include manageable eligibility requirements.

To maximize participation in a charging rate, eligibility requirements should be manageable. While Tesla was generally supportive of the Business Incentive Rate ("BIR") proposed by Con Edison, the eligibility requirement that new quick charging stations must receive economic incentives from a federal, state, or local municipality presents difficulties given the limited availability to EV charging station incentives. Any new DCFC rates should not include such eligibility requirements.

4. ***What solution design elements should be considered to best maintain an incentive to manage electric demand?***

Out of all the design elements highlighted, making use of volumetric TOU price signals (***Key Criteria #5***) is most important to maintain an incentive to manage electric demand. TOU price signals are superior to demand charges as an incentive to manage demand since the price signal continues to be sent even after a peak demand has been set for the month. Under the demand charge regime, there is no motivation for customers to manage their demand once they set a peak for the month. With TOU rates, the price signal remains consistent ***every day*** and has the potential to better incentivize more ***consistent***, long-term behavioral changes. The motivation to manage electric demand under a TOU price structure encourages longer term thinking and more sustainable changes rather than "one-time use" approaches.

5. ***What solution design elements should be considered to encourage increased utilization of charging stations over time?***

Out of all the design elements highlighted, rate certainty and stability (***Key Criteria #6***) is most important to encourage increased utilization of charging stations over time. As long as an EV rate does not include load factor "cliffs" where there is a perverse incentive to maintain utilization ***below*** a certain level, charging station owner/operators as well as site hosts of charging stations are usually highly incentivized to increase utilization of charging stations as much as possible up to the point of saturation. Ideally charging stations will be just busy enough to continuously serve drivers without forming lines. Once customer demand exceeds charging capacity at a site (i.e. lines begin forming) whether that be on a daily, weekly, or even on a holiday basis, an additional charging station usually needs to be built or an expansion of an existing charging station is needed. Electric rates as designed for regular commercial customers as well as EV rates designed for the explicit purpose of commercial EV charging normally encourage increased utilization over time.

6. ***What solution design elements should be considered good investment decisions for charging stations?***

A commercial EV rate that brings the electricity costs of EV charging stations in line with either residential or commercial electricity rates will have adequately overcome the rate barriers towards EV charging station deployment. In 2021, across New York State the average residential electricity cost was 18.80 cents/kWh and the average commercial electricity cost was 15.47 cents/kWh.[14] EV charging owners/operators and site hosts paying similar electricity costs to other utility customers ensures the long-term viability of charging station investments.

7. ***Should the solution design address sites that may be necessary to establish a minimum network of public charging but are located in areas that are likely to experience lower utilization in the long-run?***

Yes, including an all-volumetric EV TOU rate option as an alternative to demand-based rates should adequately address this concern.

8. ***Should a separate service class for commercial electric vehicle charging stations be established for tariff-based solutions?***

No, EV charging happens across different service classes and it is worth keeping this distinction. Residential EV charging happens in the residential rate class while public DCFC and other types of commercial EV charging happen in the commercial rate class. It is premature to consider creating a separate rate class for EV charging use cases specifically. The rate benefits of EV charging across the residential and commercial classes are worth

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[14] "*Sales (consumption), revenue, prices & customers*" Monthly Form EIA-861M (formerly EIA-826) detailed data (1990 – present). Downloadable as XLS file here: https://www.eia.gov/electricity/data.php

considering holistically to gain a full picture of overall effect on rates but this does not require EV charging to be placed in a separate rate class.

9. What selection criteria should the Commission use to rank potential alternative tariffs?

Stakeholder support for potential alternative tariffs should be considered as part of the ranking, especially the input of those who will take service on the alternative tariffs in the future. The Commission should seek a balance of simplicity and effectiveness while ensuring that the rate solutions put forward adequately address the issue at hand. Tesla encourages the Commission to prioritize commercial EV ***rate*** solutions and put those above what could be considered ***technology*** solutions (i.e. collocated storage, managed charging, etc). Commercial EV rate design will result in innovation over time if a consistent price signal is sent through meaningful time-of-use volumetric charges.

10. How should the Commission determine whether the alternative tariffs or cost relief programs are effective (e.g., possible metrics)?

The number of EV charging stations that enroll on the alternative tariffs is a good measure of success. Using that measure to define success, however, will be too late if the Solutions are poorly designed in the first place or do not get utilized by EV charging site hosts and operators. Alternative tariffs that bring the electricity costs for commercial EV charging stations in line with existing commercial and residential customers with long-term certainty and stability will be the greatest measure of effectiveness. If the alternative tariffs achieve relative cost comparison to existing rates for other customers, this effort will have been a success and will help accelerate EV charger deployment in the state.

11. How should the Commission determine whether the alternative tariffs or cost relief programs are still necessary in the future?

It is worth monitoring enrollment on the alternative tariffs and analyzing aggregated and anonymized utility meter load data for EV charging stations on the alternative tariffs. Monitoring this data over time will help inform future decisions around alternative tariffs and it is worth considering this over an extended time horizon of at least ten years.

Tesla appreciates the opportunity to provide comment on these issues, and the Commission's consideration. More affordable charging rates will help encourage deployment of DCFC infrastructure and increase adoption of EVs in New York State. EV rates will result in increased deployment of the best available emissions reduction technology (BEVs) and ensure New York State meets its ZEV deployment target of 850,000 EVs by 2025.

Respectfully submitted,

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