August 6, 2018

Hon. Kathleen H. Burgess
Secretary to the Commission
New York State Public Service Commission
Empire State Plaza, Agency Building 3
Albany, New York 12223-1350
secretary@dps.ny.gov

Re: 15-E-0751 – In the Matter of the Value of Distributed Energy Resources

Comment on Staff Proposal on Value Stack Eligibility Expansion

Dear Secretary Burgess,

Vehicle-to-grid systems (V2G) allow electric vehicle (EV) batteries to export power to the electric grid at the distribution level. V2G projects have been earning revenue through frequency regulation in wholesale markets since 2013.¹ With third-party aggregation, large numbers of EV batteries could be managed to provide all the services that stationary storage is capable of, in both wholesale markets and through retail programs.

University of Delaware’s EV R&D Group, under Principal Investigator Willett Kempton, researches and develops technology and policy related to electric vehicle deployment. UD has been the leader in V2G development since 1997, when Dr. Kempton laid out the first conceptual design

¹ From 2013-2016, EVs managed by NRG and University of Delaware earned compensation in PJM Interconnection’s frequency regulation market. The University of Delaware will shortly be deploying a new, similar project. Nuvve, Inc. manages a fleet of 20 vehicles in Denmark also receiving compensation for frequency regulation.
and economic analysis for a V2G system. Since then, the Group has developed an aggregation platform and associated hardware, which is now licensed world-wide to Nuvve, Inc., and is, or has been, in commercial use in both the US and Europe.

1. New York State does not currently have a regulatory classification for V2G systems. A V2G system is defined as a charging station and its associated equipment that have the ability to allow two-way power flow between a grid-integrated electric vehicle and the electric grid, as well as the communications hardware and software that allow for the external control of the vehicle’s battery charging and discharging.

A V2G system interacts with the grid much the same as stationary storage resources, and very differently than standard EVs (even those using “smart” charging). In fact, V2G systems fall within New York’s definition of an energy storage system (ESS) in the Standardized Interconnection Requirements (SIR). Accordingly, V2G systems should be included in the regulatory framework for behind-the-meter storage, including the VDER tariff.

The May 22, 2018 Staff Proposal on Value Stack Eligibility Expansion recommends that “stand-alone storage, including storage paired with consumption load,” be made eligible for VDER tariffs. “Stand-alone storage” (as well as the already-included category of “storage paired with another eligible technology”) should be explicitly defined to include V2G systems.

2. The Staff proposal recognizes the importance of prohibiting “uneconomic arbitrage” resulting from price signals that encourage activity that increases costs to the retail utility without providing corresponding value. The proposal points out that this could occur if storage resources imported at the average retail price, and exported at the more granular VDER rate. To address this issue, the Staff proposes that storage resources participating in VDER tariffs purchase charging energy at Mandatory Hourly Pricing rates.

We would add that the inverse holds as well: an import/export rate scheme that places costs on a resource that do not reflect actual costs to the system discourages that resource from time-of-use arbitrage even when arbitrage would provide net benefits to the system (e.g., by increasing energy supply at peak demand times).

To avoid both scenarios (uneconomic costs to either the utility or the resource provider), storage resources, including V2G systems, should be billed for charging energy, and paid

---

2 “Energy Storage System (ESS): A commercially-available mechanical, electrical or electro-chemical means to store and release electrical energy, and its associated electrical inversion device and control functions that may stand-alone or be paired with a distributed generator at a point of common coupling.”

for exported energy, at the identical rate scheme. If Mandatory Hourly Pricing does in fact work out to be identical to the sum of the VDER credit elements for storage, then we agree with Staff’s proposal. Otherwise, we suggest charging be paid for, and export be compensated at, the VDER rate.

We appreciate this opportunity to contribute our comments to the VDER proceeding.

Sincerely,

/s/ Imelda Foley  
Imelda Foley  
Energy Policy Analyst  
University of Delaware EV R&D Group  
221 Academy Street  
Newark, DE 19716  
imelda@udel.edu

Willett Kempton  
Research Director, Center for Carbon-free Power Integration  
Professor, School of Marine Science and Policy  
Professor, Department of Electrical and Computer Engineering  
willett@udel.edu

Sara Parkison  
Energy Policy Analyst  
University of Delaware EV R&D Group  
parkison@udel.edu