Honorable Kathleen H. Burgess, Secretary
New York State Department of Public Service
Three Empire State Plaza
Albany, NY 12223-1350

September 10, 2018

Subject: Case No. 18-E-0130 — New York State Energy Storage Roadmap and Department of Public Service / New York State Energy Research and Development Authority Staff Recommendations (Roadmap)

Dear Secretary Burgess:

On June 21, 2018, the Staff of the New York State Department of Public Service ("DPS") and the New York State Energy Research and Development Authority ("NYSERDA") released the "New York State Energy Storage Roadmap and Department of Public Service / New York State Energy Research and Development Authority Staff Recommendations" ("Roadmap").[1] The Public Service Commission ("PSC") subsequently solicited comments on the Roadmap and the recommendations therein.[2]

As a developer, builder, and operator of energy storage systems ("ESS"), Borrego Solar Systems, Inc. ("Borrego") appreciates the opportunity to provide the following comments on the Roadmap. As per the PSC's Notice,[3] we have organized our comments based on the Roadmap's table of contents headings.

4.1.2 Commodity and Delivery Costs for Storage Charging and Discharging

Borrego urges policymakers to consider a delivery rate design for front-of-the-meter standalone ESS that accurately reflects the costs and benefits of serving these resources. Such a policy should align with other incentives set out in the Roadmap that encourage peak injections to the benefit of ratepayers and the State's environmental goals. At a minimum, ESS should not

[1] New York State Department of Public Service, New York State Energy Research and Development Authority, *New York State Energy Storage Roadmap* (Case No. 18-E-0130) (issued June 21, 2018) ("Roadmap").
[2] Public Service Commission, *Notice Soliciting Comments and Announcing Technical Conferences* (Case No. 18-E-0130) (issued July 17, 2018).
[3] *Id.*

be penalized for exporting electricity during times of peak system load through supply-based or transmission and distribution-based demand charges.

Current delivery rate design discourages deployment of front-of-the-meter ESS through the imposition of contract demand charges that are determined by the greater of what an ESS *exports* to the grid or imports from the grid. This is not appropriate for an ESS project designed to inject its full supply into the grid at times of high demand, since doing so would increase the size of the contract demand charge incurred. Such charges, like Con-Edison's SC 11 Buy-back/SC 9 Standby tariff, directly counteract the Roadmap's incentives that aim to create a smoother and cleaner peak load.[4] Front-of-the-meter ESS should be incentivized to discharge as much electricity as possible at times of high demand in order to lower system peaks.

Contract demand charges are a sizeable expense for front-of-the-meter ESS projects. Under Con-Edison's SC 11 Buy-back/SC 9 Standby tariff, the Contract Demand charge of $7.87/kw-month for 1 MW systems would be $94,440 per year if an ESS exported its full capacity at peak load.[5] This could easily dwarf all other project expenses associated with operation and maintenance, service charges, and lease payments. The figure is large enough to put numerous potential ESS projects underwater and frustrate deployment in load-congested areas where ESS is most needed.

Finally, such demand charges also put third-party owned resources at a significant disadvantage to utility-built resources, which to our understanding, are treated as transmission and distribution assets not subject to retail delivery charges. This is in conflict with the Roadmap's vision of allowing third-party ownership to cost-effectively unlock all of the potential benefits of ESS and heavily skews the market towards utility-owned front-of-the-meter assets.

4.1.3 Value Stack (VDER)

A. Over-reliance on utility-driven Non-Wires Alternatives ("NWAs") could result in suboptimal deployment of ESS

Borrego agrees that standalone ESS should be eligible for the VDER Value Stack tariff. Though far from perfect in its current iteration, a VDER tariff that fairly and accurately compensates ESS for the value such resources provide the electricity system – including values of energy, capacity, environmental benefits, and avoided infrastructure costs – serves the underlying principles of New York's REV.

Although NWAs should play a targeted role in deploying distributed ESS, NWA solicitations come with a number of risk-related costs and institutional limitations. For developers, developing projects in anticipation of an NWA solicitation is highly risky. The project may ultimately be unable to secure an NWA award since these procurements are

[4] *See* Consolidated Edison Company of New York, Inc., *Tariff Filing by Consolidated Edison Company of New York, Inc. to Modify Its Electric Tariff Schedule, P.S.C. No. 10, Regarding Electric Energy Storage Systems* (Case No. 17-E-0458) (Feb. 28, 2018) (filed tariff).
[5] *Id.*

capacity-limited, potentially rendering the significant investments in project development wasted. This, in turn, raises the overall development soft costs for any ESS whose compensation is to be based on winning an NWA solicitation. Moreover, the timeframe for which solicitations are open is often brief and therefore difficult for developers of long-lead-time ESS. That the number and location of NWAs is completely within the utilities' control further limits developers' ability to prepare for and respond to such solicitations. The upshot is that overly depending on NWAs to spur the deployment of distributed ESS could result in the under-deployment of these assets or deployment with higher costs.

By contrast, a VDER Value Stack tariff that fairly and accurately compensates distributed ESS for the energy, capacity, environmental, and avoided infrastructure benefits such resources provide does not have these problems. It should be the workhorse of the State's energy storage policy, with NWAs playing a targeted role to fill in any unmet demand. Relying too much on NWA solicitations would effectively outsource the ESS market development to the utilities – entrenching a utility-run process over a free market where ESS is deployed so long as the provided societal value exceeds the project's cost.

B. Borrego Supports a Call-Signal-based DRV Mechanism

The Roadmap recommends a DRV mechanism under which utilities would establish a call signal for top utility system hours. It would be similar to the existing Commercial System Relief Program that provides a 21-hour notice before a forecasted event in which the system nears 90 percent of its rated capacity.[6] Such a call signal would provide interested developers with advance notice of likely DRV hours.

Borrego supports this proposed delivery mechanism for DRV value. It represents an improvement over the current DRV, which is based on the top-ten hours of peak demand in the prior year, which can only be determined after the fact. A forward-looking call signal would give ESS operators a target to hit, and utilities, who have greater insight into when and where peak demand on their systems will occur, would be able to issue the call signals at times when load is anticipated to be highest.

Borrego suggests the following refinements to the Roadmap's proposed call signal mechanism:

- Call signals' duration should be narrowly tailored to meet the distribution need. If there is only a forecasted need during a single hour, the call window should be a single hour.

- There should be a minimum of five call signals per year. Once call signals requesting a cumulative total of 15 hours of electricity production have been issued, production in response to any further call signals should be provided bonus payments. This would recognize that this additional obligation is above and beyond that contemplated by the VDER tariff. It would provide flexibility to the utilities to respond to system needs, but

[6] Roadmap at 33.

also put in place reasonable guardrails to ensure that ESS resources receive the full DRV value.

- The DRV value should be spread over the first 15 signals called in a calendar year or the actual number of signals if fewer than 15 signals are called.

C. DRV Should be Fixed for the Life of the Tariff, Not Seven Years

As stated in prior Clean Energy Parties comments,[7] the proposal to fix the DRV value for seven years represents an improvement over the current three-year Phase One DRV delivery mechanism. However, it nonetheless fails to accurately value the benefits of avoided or deferred distribution costs over the remaining 18 years of the 25-year tariff.

ESS confers distribution relief value to the grid throughout its operational life. The Roadmap acknowledges that ESS "typically have an expected lifetime of at least 10 years."[8] Allowing this value potentially to go to zero after Year Seven, when the ESS still is avoiding costly distribution and transmission infrastructure upgrades, undervalues the resource's contributions and puts it on unequal footing with traditional utility-built infrastructure. It would also potentially discourage customers from making investments to extend the life or performance of the ESS after seven years. This is especially so if the ESS's performance is assumed within the status quo baseline that utilities use to derive the DRV in later years of the tariff, which would likely significantly reduce the expected DRV value after the seventh year.

4.1.4 Carbon Reduction and Shaping the E Value in the VDER Value Stack

A. Time-varying E-Value Will Maximize ESS Environmental Benefits

Borrego supports the Roadmap's proposed creation of a 4-8 hour window for a statewide "peak 'E'" Value that varies seasonally to recognize the higher carbon emissions that occur during peak times. This proposal would incent ESS projects to discharge electricity at environmentally optimal times and decrease the grid's overall carbon pollution.

ESS can provide environmental benefits by injecting cleaner electricity into the grid when demand is high and the grid is at its dirtiest. The grid's pollution is not evenly distributed throughout the hours and days of the year, but instead is concentrated during certain key time-periods. When ESS-discharged energy displaces high-emitting, fossil-fueled generation, it also displaces the carbon pollution that those power plants produce.

This is true not only for greenhouse gasses, the avoidance of which is compensated by the current E-value, but also for local pollutants such as nitrogen oxides (NOx), sulfur dioxide (SOx), Ozone, air toxics like mercury, and particulate matter. Like GHGs, the marginal emissions rates for these pollutants are most elevated at times and locations experiencing high load, when older, dirtier fossil-fueled generation is called upon to perform. The current E-value

[7] *See* Clean Energy Parties, *Comments on the Staff Whitepaper for Avoided Distribution Costs* (Case No. 15-E-0751) (Aug. 27, 2018).
[8] Roadmap at 45.

does not compensate for taking these local pollutants out of the air, water, and bodies of New Yorkers, but adopting the Roadmap's time-varying E-value would nonetheless contribute to that effort.

Finally, we urge Staff to consider whether an alternative and optional E-value structure based on a narrower set of months or hours would be more appropriate for grid-charged, standalone ESS. The Roadmap proposes that the net carbon benefit should be calculated based on an assumed peak/off-peak delta in marginal emission rates, and that the time-window be the same set of 460 summer hours used for Capacity Value Alternative 2. However, because ESS are dispatchable, they are capable of hitting a smaller target with sufficient advance notice. Crediting injections for a more limited set of hours that have higher expected MERs could result in a larger peak/off-delta for standalone, grid-charged systems. This would create a stronger, more concentrated incentive to dispatch ESS during those hours when the grid is expected to emit the most pollution.

B. Opt-in and Retroactive E-Value for all ESS

The time-varying E-Value should be made available on an opt-in basis to all standalone and paired ESS, including ESS installed before the date that such variable E-Value is adopted.

Making the time-varying E-value available retroactively will encourage existing ESS to operate in alignment with the VDER tariff's environmental signals. An already deployed ESS would be able to adjust when and how it charges and discharges to achieve a cleaner peak with little to no additional development costs.

Moreover, in light of the dynamism, potential, and uncertainty surrounding ESS technology, it is better for policymakers to err on the side of optionality. That is, on balance, it is preferable to provide the ESS market a choice of reasonable compensation mechanisms without requiring that all projects sign up for a particular option. Providing developers the flexibility to choose between different alternative E-values would allow a multitude of different ESS projects to flourish at lower costs to ratepayers.

4.2.2 IOU Business Model

The Roadmap reaffirms that third-party ownership of storage, including capacity, is core to New York's REV principles and the "first best choice" for ESS regulation, and, accordingly, the current limitations on utility ownership should be maintained. We strongly support this.

ESS provides myriad benefits to the grid that "stack" on top of each other. These include energy, capacity, avoided transmission and distribution costs, environmental value, demand response, ancillary services, and demand charge management. But as the Roadmap recognizes, ESS technology is still evolving rapidly and has multi-use, modular, and mobile applications that the market has yet to realize. With this much uncertainty and potential, developers are in the best position to discover which combination of these present and future benefits will create the most value for a given project, and to take the kinds of risks and secure financing to explore and

demonstrate new use cases. Third-party ownership is thus essential and should remain a cornerstone of New York's ESS policy.

In a similar vein, it is worth noting that overreliance on utility procurement via an NWA solicitation could limit the benefits that private sector innovation could provide. Allowing utilities to directly control the pace at which ESS is deployed and potentially to favor their own investments above those of third parties could produce a suboptimal outcome for both ratepayers and the State's policy goals.

4.4 Market Acceleration Incentive

Borrego supports the Roadmap's market acceleration incentive as a necessary measure to achieve New York's goal of 1,500 MW of storage by 2025 and as a bridge to a scalable and self-sustaining ESS market. We urge the swift implementation of this incentive to take advantage of the federal investment tax credit that will begin declining at the end of 2019.

An upfront $/kWh incentive based on the capacity of the ESS facility would provide revenue certainty that will reduce financing costs of ESS. NY-Sun's MW Block program has achieved great success in no small part due to the clear, upfront signals it provides the distributed solar market. Developers and financiers can readily integrate these incentives into their project modeling, and thus act upon the preferences that policymakers have put in place. The market acceleration incentive should take a similar approach.

Furthermore, basing the incentive on the kWh, rather than the kW of ESS, aligns with the operational benefits that ESS can provide. As evidenced by the E3 models cited in the Roadmap, the energy storage industry considers kWh a more appropriate metric for measuring ESS capability because it measures both capacity and duration, both of which are crucial to the value ESS can provide.

We further support the Roadmap's proposed bifurcation of the incentive into one program for standalone systems, developed through a PSC proceeding, and one for ESS paired with solar PV, administered by NYSERDA in conjunction with NY-Sun's MW Block program.

For standalone storage, we support a bridge incentive of $370/kWh issued in kWh blocks that decline by 10%, a little more than the anticipated year-over-year cost reduction in ESS over the near-to-midterm (2019-2025). In our view, this would cost-effectively galvanize the ESS market in New York and achieve the State's intermediate goal of deploying at least 500 MW by 2021-22. Like NY-Sun's MW Block program for distributed solar facilities, the amount of kWh capacity allocated to each successive block would increase as the $/kWh incentive decreases.

In light of present project economics, these figures would not be sufficient to spur ESS development across the entire State, but would be able fill in the "missing money" for a fair number of downstate projects in the near term. Were New York inclined to set different regional incentives for standalone storage systems, our initial modeling indicates that a minimal bridge incentive of $425/kWh in upstate Zones A-F would stimulate ESS development in those areas of the State.

For ESS paired with distributed solar generation, we support including an adder under NY-Sun's MW Block program that corresponds to $325/kWh. This adder could be allocated in $/kWh capacity or converted to a $/kW adder currently employed in NY-Sun's MW Block program based on the expected ratio of ESS MWh capacity to solar MW capacity for certain projects.

Taken together, these incentives should jumpstart the State's ESS market and put it well on its way to deploying 1,500 MW of ESS by 2025.

4.5.1 Continue to Reduce Soft Costs

The Roadmap takes note of the high soft costs associated with interconnecting ESS to the grid, and recognizes the potential interconnection bottlenecks that the Roadmap's incentives could produce.[9]

We support Staff's recommendation that the DPS Interconnection Policy and Technical Working Groups (IPWG and ITWG) develop a prioritized list of critical issues that must be resolved to allow ESS to reach commercial scale.[10] However, we recommend these problems be addressed within the next six to twelve months, rather than three years. This process would culminate in a recommendation to DPS Staff by December 2018.

The IPWG and ITWG's collaborative, stakeholder-driven work has been instrumental in lowering the costs of interconnecting distributed energy resources in New York and updating the Standardized Interconnection Requirements. Leveraging these existing groups to address the interconnection challenges of ESS is a logical step and likely would lower the barriers to entry and increase transparency for ESS developers. December 2018, moreover, is a reasonable deadline for the IPWG and ITWG to provide recommendations to DPS Staff.

4.5.4 Data Access

Borrego supports increased data transparency generally, and the Roadmap's recommendation, specifically, to require utilities to provide developers with hourly load data for substations, with increasing granularity over time.

4.7.1 Bulk System Focus & 4.7.2 Dual Market Participation

Borrego supports the Roadmap's call for NYSERDA and other State policymakers to work with the NYISO to enable ESS to participate in the wholesale markets.

We also support the Roadmap's recommendation that the NYISO develop rules and procedures to facilitate participation for ESS that are not available year-round.[11] For example, if an ESS receives its capacity compensation by producing electricity during the 460 summer hours

[9] Roadmap at 20.
[10] Roadmap at 55.
[11] Roadmap at 70.

under the VDER's Alternative Two Capacity Value, it is available to participate in wholesale capacity and ancillary service markets from September to May. Revising wholesale market rules to allow for such seasonal participation would decrease capacity costs to wholesale customers and spur greater ESS deployment.

We agree that ESS should be exempt from any buyer side-mitigation rules enacted by the NYISO. [12] There is no evidence that ESS can manipulate wholesale market prices through the exercise of market power, especially smaller projects that receive most of their compensation through the distribution tariff. Inhibiting the participation of these resources would not only result in higher energy, capacity, and ancillary services costs to wholesale customers, but a significantly less reliable, less resilient grid.

Sincerely,

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[12] Roadmap at 66.