New York Battery and Energy Storage Technology Consortium, Inc.

VIA ELECTRONIC FILING

January 15, 2021

Hon. Michelle L. Phillips
Secretary to the Commission
New York State Public Service Commission
Empire State Plaza, Agency Building 3
Albany, New York 12223-1350

Re: Case 20-E-0197 - Proceeding on Motion of the Commission to Implement Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act – NY-BEST Comments

Dear Secretary Phillips:

The New York Battery and Energy Storage Technology Consortium ("NY-BEST") submits the attached comments for the Public Service Commission's consideration in response to the Utility Transmission and Distribution Investment Working Group Report (Report) filed on November 2, 2020, as required pursuant to the Commission's "Order on Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act," issued May 14, 2020.

NY-BEST is a not-for-profit industry trade association with a mission to grow the energy storage industry in New York. We act as a voice of the energy storage industry for more than 180 member organizations on matters related to advanced batteries and energy storage technologies. Our membership includes global corporations, start-ups, project developers, leading research institutions and universities, and numerous companies involved in the electricity and transportation sectors.[1]

[1] NY-BEST comments represent the interests of the organization as a whole and not the views of any individual member. Our members have diverse interests and the organization's views are intended to be reflective of the energy storage industry collectively.

We appreciate the Commission's consideration of these comments. NY-BEST can be contacted at info@ny-best.org or by phone at (518) 694-8474. Thank you.

Sincerely,

Dr. William Acker
Executive Director

Attachment

NY-BEST Comments

Proceeding on Motion of the Commission to Implement Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act

Case 20-E-0197

January 19, 2021

Introduction

The New York Battery and Energy Storage Technology Consortium (NY-BEST) submits these comments for the Public Service Commission's consideration in response to the Utility Transmission and Distribution Investment Working Group Report (Report) filed on November 2, 2020, as required pursuant to the Commission's "Order on Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act," issued May 14, 2020.

The Transmission Planning Proceeding[2] is critically important to ensuring and accelerating New York State's thoughtful transition to clean energy and the implementation of the Climate Leadership and Community Protection Act (CLCPA)[3] and the Accelerated Renewable Energy Growth and Community Benefit Act (AREGCB Act).[4] NY-BEST fully supports and recognizes the need for local transmission and distribution system upgrades and investments to facilitate the integration of renewable energy and the path to a zero emission electric grid.

The Report contains important long-term analysis and planning toward ensuring that the State can achieve its 70% renewable energy by 2030 mandate in a timely and cost-effective manner. However, the analysis has some shortcomings, and to address these NY-BEST recommends that, at a minimum, the Phase 2 project analysis be expanded and improved as outlined in our comments herein. Our major concern is that the utilities' underlying analyses is incomplete in its inclusion of **proven cost-effective** new technology alternatives to traditional T&D solutions. Given the enormity of the scale of New York's climate-driven grid transformation, analysis inclusive of these technologies should be fully incorporated into the decision-making process for of any Phase 2 projects.

Our specific concerns and recommendations are discussed in more detail in our comments below and are summarized here:

- The Report largely and erroneously characterizes energy storage as R&D and, as a result, fails to adequately incorporate energy storage in the planning and analysis for meetings local distribution and transmission needs. NY-BEST recommends that the Commission direct utilities to include a more robust and fulsome consideration of energy storage in their analyses and planning processes. NY-BEST recognizes that in sections of the Report there are some specific project examples illustrating the

---

[2] Case 20-E-0197, Proceeding on Motion of the Commission to Implement Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act (Transmission Planning Proceeding), Order on Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act (issued May 14, 2020) (May Order).

[3] New York Public Service Law, § 66-p.

[4] New York Public Service Law §§ 162, 123 and 126.

potential benefits battery energy storage systems (BESS) can provide the state through inclusion in transmission and distribution (T&D) planning and infrastructure development. For example, CECONY identifies 125 MW across six storage projects to provide "a range of benefits, including increased headroom to integrate a growing penetration of offshore wind, DG, EVs and building electrification, targeted locational peak load reductions and voltage support, and enhanced resilience to future heat waves and flooding" including that these assets "will directly support achievement of CLCPA objectives".[5] However, the vast majority of the Report and the individual utility plans do not include energy storage in their detailed Phase 1 and Phase 2 local transmission and distribution (LT&D) analyses and planning efforts. Instead, the Report relegates storage primarily to a discussion of R&D requirements.

- The Report's proposed investment criteria and evaluation methodology focus too narrowly on just "unbottling" renewable energy. NY-BEST recommends that the Commission expand the evaluation criteria to broaden the goal of maximizing renewable energy utilization from just exporting energy from constrained pockets to actual utilization. As presented, the analysis incorrectly assumes that simply exporting renewable energy from a constrained pocket during times of renewable overgeneration results in maximum generation utilization.
- The utilities' analysis does not appropriately consider different scenarios with respect to resource and load growth location. Given the immobility, high capital cost, and long implementation timeframe of transmission projects, the Commission should direct utilities to incorporate scenario planning and consideration of the value of "optionality" to reduce the risk of sub-optimal economic outcomes.
- The Benefit Cost Analysis (BCA) utilized by the Utilities incorporates a "Comparison to Traditional Investments" approach rather than an evaluation of other alternatives, such as energy storage, and, as a result, does not provide for an assessment of the least cost alternative, as required by the Commission's May Order in this proceeding. NY-BEST recommends the Commission require the utilities to modify the BCA to require an evaluation of multiple alternatives to transmission, including energy storage.
- NY-BEST recommends that the Commission direct the utilities to modify their overall planning processes and the design of specific projects to incorporate a greater consideration of alternatives to traditional transmission including the deferral and augmentation of traditional transmission with other technologies. This approach would result in a greater emphasis on maximizing overall grid benefits and reducing costs to ratepayers.
- In addition, LT&D investments can further increase hosting capacity of distributed energy resources beyond simply allowing more energy to be exported from a region. NY-BEST recommends that the Commission direct the utilities to consider innovative

[5] Utility Report at p. 123-124.

solutions, such as combining local grid control and energy storage to stabilize voltage and reduce backfeeding, in their analysis and decision-making going forward.

- There are numerous use cases for battery energy storage systems to provide value on the bulk and local transmission and distribution system. The Commission should require, at a minimum, the utilities reevaluate their Phase 2 projects with consideration for the potential use cases and benefits energy storage as a T&D asset can provide.

NY-BEST Comments and Recommendations

I. The Commission should reject the Report's characterization of energy storage as largely R&D and should require the Utilities to evaluate storage as an asset – solely or in tandem with other resources -- that can provide traditional transmission and distribution services, enhance existing infrastructure, and drive toward CLCPA goals, and facilitate the minimization of overall costs including risks associated with upfront overbuild of expensive T&D assets.

The Report inappropriately characterizes Battery and Energy Storage Systems (BESS) as Research and Development. This is clearly and factually not the case. Energy storage is being widely deployed around the world, the nation and here in New York State. In the United States, BESS deployments have been climbing at a staggering pace with 1,860 MW operational as of Q3 2020 and another 1,611 MW under construction.[6] 476 MW of energy storage were deployed in Q3 2020 alone with the vast majority coming from front-of-the-meter applications. Globally, the industry has grown at a compound annual growth rate (CAGR) of 66% with 2.9 GW added to the grid in 2019.[7] More specifically, energy storage providing transmission and distribution services is reaching the gigawatt scale globally. For example, Germany's GridBooster Program includes a 1,300 MW portfolio of energy storage to provide transmission services[8], while a 300 MW BESS in Australia will operate as a virtual transmission line to alleviate congestion on the grid.[9]

The need and demand for energy storage in New York is well understood and accepted.[10]. The CLCPA establishes a mandated target for 3,000 MW of storage by 2030. Importantly, the Power Grid Zero Emission Grid by 2040 Study conducted by Siemens[11] identifies the need for 15.5 GW of storage on the NYCA grid by 2040.

---

[6] Wood Mackenzie Power & Renewables and the U.S. Energy Storage Association, *U.S. energy storage monitor Q4 2020 full report,* December 2020 (subscription required).

[7] Wood Mackenzie, *Global energy storage capacity to grow at CAGR of 31% to 2030*, 30 September 2020. Available at: https://www.woodmac.com/press-releases/global-energy-storage-capacity-to-grow-at-cagr-of-31-to-2030/

[8] Fluence Energy, *Redrawing the Network Map: Energy Storage as Virtual Transmission*. Available at: https://info.fluenceenergy.com/energy-storage-as-virtual-transmission-white-paper-download.

[9] Victoria State Government, *The Victorian Big Battery*. Available at: https://www.energy.vic.gov.au/renewable-energy/the-victorian-big-battery.

[10] NYS Public Service Commission Order "Order Establishing Energy Storage Goal and Deployment Policy, December 13, 2018, http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={FDE2C318-277F-4701-B7D6-C70FCE0C6266}

[11] Reference to Siemens study

Given the State's recognition of storage as an essential component of the State's clean energy future, all system planning efforts should fully consider and incorporate the role for energy storage. As such, the Utilities should be required to consider the benefits and potential of these resources in their analyses.

This is not to say all BESS should and will be beneficial as a T&D asset, but rather that a portion of this existing demand can and should enhance the bulk and local T&D system to better integrate renewable energy, support the adoption of DERs, provide voltage and power quality support, and result in lower risk, faster build modular solutions.

The potential financial requirement of the transition to a 70 percent renewable grid requires close consideration of costs – grid-scale battery energy storage is an important cost-effective alternative to building conventional transmission and distribution infrastructure that are fractionally utilized. While making any asset investment decision, the key is to determine whether the asset would be utilized throughout the year or only used during specific periods of the year. For example, a peaking generation facility or a network upgrade project may only be needed when the load exceeds a threshold value. Energy storage offers an economic option to either defer or displace such investment decisions mitigating and reducing the costs of T&D system upgrades and increasing the utilization of existing infrastructure.

As such, the utilities analysis should be revised to include additional focus on storage as a T&D solution, not as an afterthought, or future state option, but as an option available today to unlock greater benefits for the residents of New York State.

II. The Report's proposed investment criteria should be broadened to incorporate improved grid utilization as part of the evaluation criteria.

The Report proposes a broad set of criteria against which to analyze proposed local transmission and distribution investment designed to achieve the CLCPA mandates.[12] These criteria represent a thorough list of requirements any grid infrastructure investment in the state of New York should meet in pursuit of the mandated goals of the CLCPA. However, the specific criterion "*Greater renewable energy utilization (i.e., to reduce curtailments and increase renewable power delivery to New York customers)"* only addresses unbottling and curtailment of renewable energy and does not address "spillage" – energy spilled due to over production rather than just congestion -- which will become an increasingly important issue as the renewable penetration increases over time. NY-BEST recommends that the evaluation metric not be unbottled energy but, rather, be broadened to include renewable energy utilization. Further, it is important that this metric be evaluated over the life of the project because the reduced curtailment benefits associated with relieving local congestion may reduce significantly as greater renewable penetration creates over-generation times.

NY-BEST would also like to stress that energy storage meets all the proposed investment criteria as presented in the Report, strongly suggesting that it is an optimal tool for accomplishing the goals of the CLCPA. Grid-scale battery energy storage is an optimal asset that aligns with each investment criteria, further reinforcing the need for the Utilities to fully

[12] Utility Report at p. 3.

evaluate and incorporate potential BESS T&D solutions into their planning and decision-making processes. This is described in more detail below:

- *Cost effectiveness of local transmission and distribution investments*
  - Grid-scale BESS is a cost-effective alternative to traditional infrastructure investments, capable of being deployed to optimally meet the needs of the grid and enhance the utilization of existing infrastructure.
- *Greater renewable energy utilization (i.e., to reduce curtailments and increase renewable power delivery to New York customers)*
  - BESS can be deployed as a transmission or distribution asset, mimicking the operation of conventional infrastructure to increase system headroom and energy deliverability for renewable energy, resulting in less curtailment and increased renewables delivery.
- *Streamlined renewable energy project deployments to deliver benefits more quickly*
  - BESS are capable of being deployed months to years faster than traditional grid infrastructure, matching the rapidly deployment speed of renewable energy projects. That deployment speed can increase capacity for renewable energy on the T&D system more quickly, leading to increased savings for New York customers.
- *System expandability to interconnect renewable generation*
  - Grid-scale energy storage is a modular, low-impact solution with limited footprint compared to conventional T&D poles and wires. BESS resources can be scaled to meet growing renewable generation demand and expand with the grid as needed, as opposed to the often lumpy and large-scale up-front investment needed to expand conventional transmission and distribution infrastructure.
- *Improved system flexibility to manage intermittent resources*
  - BESS is proven to provide increased flexibility to the grid through grid services.
- *Firmness of renewable generation projects that would be facilitated by the proposed local transmission and distribution investments*
  - Grid-scale energy storage's modular deployment capability ensures investments match known requirements rather than projected future scenarios. BESS limits the need for "firmness of renewable generation projects" as it can be deployed in small increments as specific renewable project developments become more certain. Conventional T&D infrastructure requires long-term projections of generation, increasing uncertainty and the odds of underutilized infrastructure.

III. Scenario planning and value of optionality should be incorporated in the Utilities' analysis and decision-making

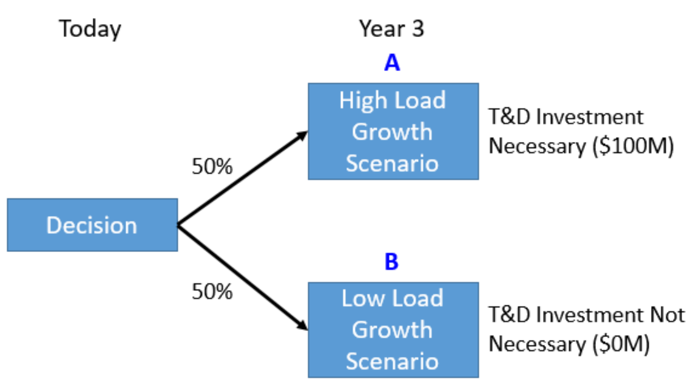
NY-BEST is confident that the State will achieve the CLCPA goals. However, having confidence in achieving the goals is different from having the detailed knowledge of how the growth of clean energy and new load will be distributed in the state in the future. Determining the optimal location and having high confidence in where projects will be sited will be a continuous endeavor that will adapt over time to technological, regulatory, and economic developments. This means that scenario planning is essential, and optionality is valuable to build into the system beginning today.

With immovable, high capital, long-time-horizon investments being considered, attempting to prescribe the future without consideration of a wide range of scenarios could put at risk investments totaling tens of billions of dollars. An over reliance in the Report on only a handful of scenarios risks insufficient planning for a broad range of future outcomes.

Though it is true that clean energy projects are likely to follow transmission infrastructure development, this approach – using the bulk grid to define where to deploy generation – as opposed to allowing the optimal locations of generation assets to drive bulk grid needs -- risks a sub-optimal result with either: (1) underutilized transmission assets, stranding potentially billions of dollars of capital; or (2) a sub-optimal deployment of renewables to utilize existing transmission (e.g., deployment of solar in a region when wind in another would provide lower cost energy).

Battery energy storage projects can support efficient deployment of resources by providing more optionality (e.g., delaying conventional infrastructure requirements until the demand/generation is better understood and known or by scaling up in modular increments as demand/generation scales) and by deferring lump sum investments in traditional T&D projects

To illustrate the financial impact of delaying or fully deferring a traditional T&D project, consider the following example. Utility X is considering a $100M T&D upgrade today based on forecasted load growth in 3 years and foresees two scenarios each with a 50% probability (see figure below).



If the T&D upgrade is made today, the utility will spend $100M. However, if the utility is able to spend $10M on an energy storage solution that can address the near-term reliability need, then there is an option value of delaying the capital expenditure decision until year three. Note that with a "right-sized" energy storage solution in place, the traditional distribution capital expenditure will only be made in the High Load Growth Scenario (A) and not in the Low Load Growth Scenario (B). Because (A) has a 50% probability of occurring, the expected capital expenditure today decreases from $100M to $50M because of the optionality provided by deferring the investment decision. After accounting for the $10M cost of energy storage, the net savings of energy storage is $40M, see table below:

Scenario	Formula	Expected CAPEX
Base case: Without energy storage	$100M x 100%	$100M
With energy storage optionality	$0M x 50% + $100M x 50%	$50M
Savings with Energy Storage		$50M
Cost of Energy Storage		($10M)
Net Savings with Energy Storage		$40M

This model can become far more sophisticated to account for multiple time periods, but it illustrates how optionality is financially valuable and results in significant savings. NY-BEST recommends that the Commission direct the utilities to consider scenario planning and optionality in their analysis and decision-making processes.

IV. The Benefit Cost Analysis (BCA) utilized by the Utilities should be modified to require an evaluation of multiple alternatives to transmission.

The BCA utilized by the utilities incorporates a "Comparison to Traditional Investments" approach. The BCA compares the levelized cost of local transmission investments needed to reduce renewable energy curtailments to the addition of supplemental renewable energy that would otherwise be needed to offset curtailments to achieve the CLCPA mandates. This approach focuses on the societal cost of each, which is a key feature of the approach the Commission requires the utilities to use in other contexts. However, it importantly does not evaluate transmission against other technology solutions such as energy storage or a combination of alternative technologies. **As a result, the analysis does not provide for an assessment of the lowest cost option.** NY-BEST recommends that the Commission expand the BCA methodology to require an evaluation of other alternatives to transmission, including energy storage.

V. Innovative solutions utilizing advanced technology should be considered to increase the hosting capacity of distributed energy resources and to improve "NYC clean energy hubs" described in the Report.

The hosting capacity of distributed energy resources is a key limitation to the amount of renewable energy that can be deployed. The report does not address innovative solutions to increase hosting capacity beyond the ability to export energy. The deployment of hardware and software solutions on the LT&D grid to better control and stabilize the grid can substantially increase hosting capacity. An example is coordinated control of energy storage either at a substation or on a distribution circuit to stabilize voltage and prevent backfeeding or thermal overloads. On a larger scale, the proposed "energy hubs" would be beneficial to the further penetration of renewables. The effectiveness of the "energy hubs" would be improved by adding energy storage. NY-BEST recommends that the Commission direct the utilities to consider innovative solutions, such as combining local grid control and energy storage to stabilize voltage and reduce backfeeding, in their analysis and decision making going forward.

VI. There are numerous use cases for battery energy storage systems to provide value on the bulk and local transmission and distribution system. The Utilities should refine their proposals with these use cases of BESS included.

Energy storage can provide valued grid services across the entire domain of the transmission and distribution bulk system.

1. Peak load relief and congestion management: Injecting power downstream of thermal constraints or congested facilities during peak hours, energy storage can provide peak load relief and congestion management.
2. N-1 capacity release: Providing automatic power injection to support grid stability during contingency events.
3. Distribution grid support: Injecting real and reactive power to maintain stability and quality to support greater penetration of intermittent distributed resources.

The following use cases and examples are meant to highlight the types of solutions that should be considered by the utilities.

A. Peak load relief and Congestion management: Increase headroom and energy deliverability

One of the key applications of energy storage technology on the transmission system is to release capacity from thermal or voltage constrained lines or interfaces. Operating in a manner so as to mimic the operations of a traditional transmission or infrastructure asset, storage can inject and withdraw energy from the system to increase headroom and support the integration of renewable energy.

For example, Central Hudson Gas & Electric (Central Hudson) evaluates the existing capacity headroom within their system based on 2019 peak and minimum load and projected generation and storage capacity.[13] In this analysis, Central Hudson makes the conservative estimate that all energy storage on the system will behave in the worst possible manner as it is considered to be unmanaged by the utility or ISO. While a fair assumption based on capacity being pulled from the interconnection queue and applications, the analysis fails to consider that a portion of this capacity could be contracted or developed to operate as a T&D asset, mimicking the operations of conventional infrastructure (rather than generation).

As an illustrative example, if 20% of the expected storage capacity in the Northwest 115/69 kV and Westerlo Loop transmission areas is considered to be storage as a transmission or distribution asset, the expected headroom constraint substantially decreases, mitigating or reducing the need for conventional upgrades and investments (*see* Figure below).

Mitigating the relieving potential congestion with storage as a T&D resource can reduce the need for additional system upgrades, working in coordinating with conventional resources to mitigate the full congestion on the system. Central Hudson should devote additional consideration for storage as a T&D asset.

Figure: Revised Northwest and Westerlo Loop Headroom Calculations with Consideration for Storage as a T&D Asset

Transmission Area	Reported Load Headroom (MW)	Reported Generation Headroom (MW)	Energy Storage as T&D (MW)	Load Headroom (with Storage as T&D)	Generation Headroom (with Storage as T&D)
Northwest 115/69kV	-146	-204	40	**-66**	**-124**
Westerlo Loop 69kV	-17.6	-116.8	10	**2.4**	**-96.8**

As a second example, National Grid analyzes the current peak curtailment capacity (MW) across their system and identifies Phase 1 and 2 projects to expand headroom and eliminate curtailment.[14] The Commission should request National Grid refine their Phase 2 proposals with the direct inclusion of energy storage as a T&D asset for three primary reasons.

First, National Grid's analysis does not consider the 8760-hourly distribution of constraints on their system. Their analysis considers the "Highest Base Case Generation Curtailment" as the additional system capacity to solve for. For each constrained area, conventional infrastructure is recommended to unlock that level of capacity at a minimum. This does not factor in that portions of that curtailment likely only exist for short periods of each day in certain seasons (this is particularly likely given that curtailment is based on variable generation). Thus, their proposed solutions may sit unutilized for a vast portion of the year,

[13] Utility Report at p. 79.

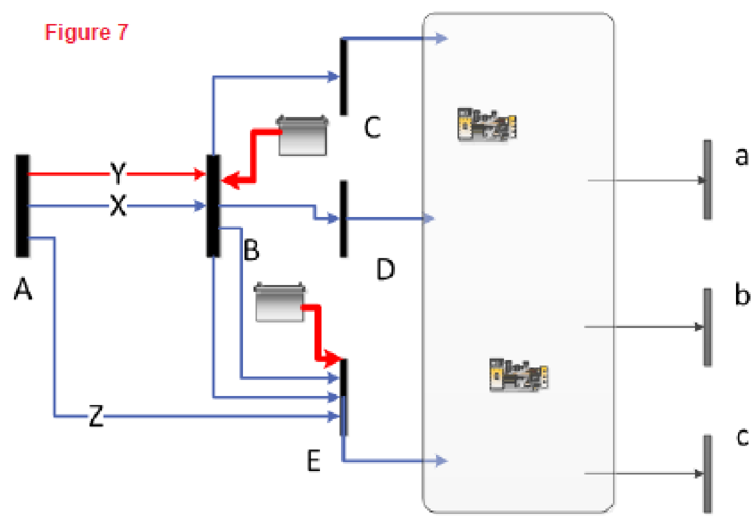
[14] Utility Report at 160.

leading to inefficient spend. Battery energy storage assets, in combination with conventional infrastructure, better solves certain curtailment issues by matching the daily profile of the constraint, charging and discharging as the constraint appears and disappears. Storage solutions can lower costs to reduce curtailment, while being utilized for other grid services during non-constrained periods.

Second, National Grid's congestion management solutions are based solely on the base case peak curtailment. They do not incorporate any scenario planning and allow for only limited optionality (See Section III).

B. N-1 Contingency: Unlock and better utilize existing assets on the grid

Battery energy storage systems can provide N-1 contingency relief, allowing greater utilization of existing infrastructure. Consider the following simplistic example. In the figure below, assume that the lines X, Y and Z are all rated at 500 MW. Technically, this should provide a total transfer capability of 1500 MW across the interface from substation A to B. However, to be "N-1" secure, we can only operate the interface at a maximum of 1000 MW. The result is that we end up not fully utilizing the transmission lines that we currently have in the system. Technologies like energy storage can help transmission planners and operators overcome this limitation by freeing up unused capacity on existing lines. In the same example, appropriate storage capacity additions at substations B and E can help increase throughputs across the interface from substations A to B. In this mode of operation, the storage units will be pre-programmed to respond to a contingency event to maintain the reliability of the system.



Source: Quanta Technology Whitepaper[15]

As an example, LIPA includes an evaluation of their headroom under N-1 conditions.[16] Under light load conditions, there is no headroom. Under peak load conditions there is 200 MW of

[15] "Market Design for Congestion Relief With Energy Storage", Quanta Technology, available at http://quanta-technology.com/sites/default/files/doc-files/Emerging%20Technologies%20White%20Paper%20-Energy%20Storage_final3.pdf, accessed on Feb 2, 2018

[16] Utility Report at p. 130.

headroom only the East of Holbrook transfer region. Under N-1 conditions, some aspects of the bulk electricity system in LIPA's territory will be underutilized; in other words, the headroom capacity will be higher if the N-1 restriction can be avoided.

Battery energy storage should be considered as an option to provide N-1 contingency release. Battery energy storage can automatically inject power into the grid during a contingency event providing reliable service until additional resources can be brought online or restarted. Eliminating the need to reduce available headroom across existing assets, storage increases the effective operative capacity of existing transmission and distribution lines. LIPA should consider and incorporate BESS as a potential solution to expand N-1 headroom.

We encourage the Public Service Commission and all the Utilities to consider these types of applications of energy storage while performing transmission needs analysis. This is important because it addresses the issue of better utilizing the existing transmission infrastructure.

C. Distribution grid support: Increase distributed resource capacity and power quality

Battery energy storage systems can also provide direct benefit to the distribution grid, enhancing local reliability in coordination with tradition distribution grid infrastructure. By injecting real and reactive power to maintain voltage stability and improve power quality, energy storage can support greater penetrations of intermittent distributed generation on the distribution system (e.g., rooftop PV solar).

Significant increases in distributed solar PV on feeders can cause "voltage stiffness" in feeders. In some cases, this can restrict the amount of solar that can be integrated at the feeder level. Appropriately positioned storage systems can help address voltage issues and provide additional benefits like Volt/Var control to the feeder.

The Consolidated Edison Company of New York (CECONY) identifies a constraint the Greenwood / Fox Hills 138 kV TLA (370 MW constraint).[17] As a result, they have proposed the addition of two feeders, each increasing capacity 300 MW for a total of 600 MW. As described in the LT&D report, CECONY's proposed project fails to consider an optimal solution on two fronts.

First, there is no discussion of the duration of the constraint throughout the year. A feeder addresses the constraint 24 hours a day, 7 days a week, 365 days a year. However, if the TLA is only constrained for a few hours during peak conditions each day, then a BESS that can provide the same relief may be more cost-effective and optimally sized.

Second, the proposed solution goes far beyond the 370 MW constraint to allow an additional 230 MW of capacity. If that additional headroom is not required, but rather an outcome of the bulky investment size of traditional infrastructure, energy storage is better equipped to provide a modular solution that addresses only the constraint in question. A 70 MW storage solution is likely to be highly cost-effective compared to a 300 MW feeder. If on the other hand, CECONY believes the TLA will be used to unlock future resources as suggested, battery

[17] Utility Working Group Report at p. 110.

energy storage provides superior optionality as it can be deployed in smaller increments to match future clean energy growth as opposed to a single, large, up-front feeder investment.

CECONY, and all Utilities, should evaluate opportunities on their distribution grid to combine conventional infrastructure upgrades (e.g., the first feeder line in the Greenwood / Fox Hills 138 kV TLA) and storage as a T&D asset (e.g., a series of energy storage projects to release the remaining congestion and future renewables deployment).

VII. The Commission should require Utilities to do further analysis to evaluate the potential for energy storage systems to defer, replace, or expand the scope of solutions while lowering end customer costs, incorporating specific use cases

The broad range of use cases for storage and the examples provided herein are not fully representative of all of the specific projects in which energy storage is a superior option compared to traditional grid infrastructure, but rather they are meant to highlight the need for more sophisticated planning that fully considers these options and their potential.

The Commission should require, at a minimum, the Utilities to reevaluate their Phase 2 projects with consideration for the potential use cases and benefits energy storage as a T&D asset can provide.

A series of important modeling and planning questions are listed below that should be answered for each identified constraint.

- *CLCPA Constraint Modeling and Planning Questions:*
  - What are the 8760-hour characteristics of the underlying upgrade need? MWs above threshold limit, consecutive hours of overload duration (like critical load level analysis in some jurisdictions).
  - What is the amount of curtailment reduction for various scenarios as a function of time? What level of curtailment in the future is due to congestion compared to spillage?
  - When does the need first appear? At what load level? How does the need grow/change over time?
  - What is the load or generation growth the need assumes? Using a probabilistic analysis evaluate the potential financial impact under various scenarios and quantify the value of optionality in planning.
  - What additional value could energy storage bring when not needed for its T&D function?
  - What is the net cost of the energy storage solution that could meet the need compared to the net cost of the traditional T&D alternative?

NY-BEST recommends the Commission adopt these questions into the utilities future planning analyses.

Conclusion

NY-BEST fully supports and recognizes the need for local transmission and distribution system upgrades and investments to facilitate the integration of renewable energy and the path to a zero-emission electric grid.

Although the Utility Working Group Report contains important analysis and planning toward ensuring that the State achieves its renewable energy goals, it fails to adequately consider proven cost-effective technology alternatives to transmission, such as energy storage. Our comments include several recommendations for the Commission's consideration which would maximize renewable energy utilization, lower costs and achieve the State's clean energy goals through a more holistic analysis that incorporates energy storage.

NY-BEST appreciates the Commission's consideration of our comments and recommendations and we stand ready to assist the Commission, Department staff and the utilities should you have any questions about our comments.