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BY ELECTRONIC MAIL

Hon. Michelle L. Phillips
Secretary to the Commission
New York State Public Service Commission
Three Empire State Plaza
Albany, New York 12223

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

COMMENTS

The New York State Energy Research and Development Authority (NYSERDA) submits the following comments regarding the Department of Public Service Staff Straw Proposal for Conducting Headroom Assessments (Straw Proposal) prepared in response to the February 11, 2021 Order on Phase 1 Local Transmission and Distribution Project Proposals (Phase 1 Order). NYSERDA fully supports the proposal to conduct a regular headroom assessment with the objective of publishing actionable information for renewable energy developers, policy makers, and other stakeholders on a consistent basis to help inform project siting and more efficient use of existing and future resources, ultimately reducing costs.

The Phase 1 Order identified the need for a common analytical framework for the Phase 2 transmission projects to enable a standardized assessment of capacity and energy headroom. NYSERDA agrees with the Commission's conclusion and recommends that this framework be used to address the prioritization of Phase 2 transmission projects, particularly those projects that would alleviate constrained areas that are expected to experience exacerbated curtailment rates as new state-contracted intermittent generators enter operation.[1] These areas include 1) Avangrid's Genesee Valley, Hornell and South Perry, Elmira and Bath, and Ithaca local transmission pocket, 2) National Grid's Watertown/Oswego/Porter sub-zone, and 3) Avangrid's Berkshire and Mechanicville/National Grid's Albany South and Capital Northeast/ Central Hudson's Northwest transmission areas, all regions that have been identified by NYISO as the likeliest to experience increased congestion and curtailment rates absent new upgrades. NYSERDA also agrees also with Staff's assertion in the Straw Proposal that a common analytical framework will have substantial benefits for the siting of future large-scale renewable energy projects.[2] The Straw Proposal noted that a consistent analysis of existing and future headroom potential will be

[1] Case 20-E-0197, NYSERDA comments on the Utilities Transmission and Distribution Investment Working Group Report, p. 2-3 (filed January 20, 2021)
[2] Case 20-E-0197, Order on Phase 1 Local Transmission and Distribution Project Proposals, p. 19 (filed February 11, 2021)

required to *"identify high-priority and high-value locations for targeted transmission development, and to improve the quality of the information available to policy makers, renewable generation developers, and other stakeholders."*[3] NYSERDA agrees with this assessment and urges that the data be made available in a timely manner, and in as accessible and digestible a form as possible, to support the viable siting of proposed projects by renewable generation developers.

The Initial Report on the Power Grid Study noted that utility-identified Phase 1 transmission projects, comprised of planned reliability upgrades and asset maintenance programs, "*appear to expand the local grid's headroom sufficiently to integrate the land-based renewable resources needed to meet the CLCPA's 2030 requirements, and possibly beyond*." However, the conclusions in the report also advise that some Phase 2 projects should be "*prioritized to support renewable generation development in attractive locations*".[4] The benefits of a standardized headroom analysis approach for assessing the most beneficial Phase 2 transmission projects are clear, but this approach can also be used to produce data that can significantly improve renewable energy generation project siting decisions based on existing and expected future headroom, including the procurement of future clean energy resources by NYSERDA.

Future-looking estimates of headroom would be best served by a uniform set of cases that allows the utilities to account for expected upgrades in a standardized manner (e.g., a current estimate of headroom, and future estimates of headroom in 2025 and 2030 following the expected completion of new renewable energy and transmission facilities).

NYSERDA recognizes that this is the start of an iterative process that can be improved over time, and the remainder of the comments primarily address several aspects of the Straw Proposal:

1) The cost-saving benefits of publicly available and regularly updated data regarding the estimated headroom on specific areas of the transmission and distribution grid.
2) Data that estimates current and future potential headroom to inform the siting, procurement, and approval of new renewable energy generation and transmission projects should be advanced urgently due to the near-term needs.
3) The importance of developing a standardized assessment to estimate energy headroom, which would align with the State's energy goals, understanding that estimates of capacity headroom may need to be prioritized for near-term data needs.
4) Support for including portions of the distribution system as part of capacity & energy headroom assessments.

Discussion

1. **DPS and the New York utilities should continue pursuing a methodology for estimating existing and future headroom and make the data available to the public at regular intervals to inform project viability and avoid additional costs to ratepayers.**

For parties advancing generation projects within the State, publicly available headroom data that is updated regularly would help direct development efforts to locations where new projects are relatively more viable from a grid perspective. Publishing headroom estimates at regular and predictable intervals, such that developers of new renewable energy generators can estimate and understand the headroom potential at proposed points of interconnection, would allow for greater and earlier visibility into the viability of a potential site. As more intermittent generators interconnect to the electric grid, certain areas will be naturally advantageous due to having greater headroom; making this data public will facilitate

[3] Case 20-E-0197, Staff Straw Proposal for Conducting Headroom Assessments, p. 1 (filed March 16, 2021)
[4] Case 20-E-0197, Initial Report on the Power Grid Study, p. 3 (filed January 19, 2021)

faster siting of viable projects and ideally reduce the attrition of projects that are too often abandoned after commencing the interconnection study process.
Publishing these headroom estimates annually, ideally prior to the launch of NYSERDA's annual Tier 1 Renewable Energy Certificate (REC) procurements (beginning with the planned Q2 2022 Tier 1 solicitation launch), would allow participating developers to more accurately estimate their expected levels of economic congestion and physical curtailment based on the existing and estimated future headroom at the project's proposed point of interconnection. The headroom data would ideally include an explanation of results and assumptions and be conveyed in a manner such that stakeholders can easily understand, similar to the headroom results published as a result of the Phase 1 transmission projects in the Initial Report on the Power Grid Study excerpted in Figure 1 below.[5]

The outputs could be potentially published at a more granular level to provide more actionable data, including headroom available at specific transmission lines and substations, and would have the potential to guide policy makers and inform in the procurement of future renewable energy generators. See Figure 2 for a comparable example posted by the Ontario Independent Electricity System Operator (IESO) with transmission availability data posted to inform bidders participating in its 2015 procurement for large-scale renewable projects.[6]

Figure 1: National Grid Local Transmission "Headroom" vs. Renewable Generation Interconnected to Local Transmission Grid (MW)

Local Transmission Area	Zone	Existing Renewables	CARIS New Renewables by 2030	Existing Headroom Estimates		Proposed LT Project Headroom Benefits	
				Low	High	Phase 1	Phases 1+2
National Grid							
Watertown/Oswego/Porter	C-E	2,748	1,329	1,010	1,080	300	870
Porter/Inghams/Rotterdam	E-F	137	878	430	550	150	660
East of Syracuse	C	157	777	1,620	1,850	90	-
Albany South	F	82	122	710	810	280	570
Southwest	A	2	892	540	810	310	440
Capital/Northeast	F	9	671	660	730	-	-
Genesee	B	30	752	630	900	-	-

Figure 2: Connection Availability and Transmission Availability Test (TAT) Table Excerpt, IESO 2015 Large Renewable Energy Projects Procurement

[5] Case 20-E-0197, Initial Report on the Power Grid Study, p. 32 (filed January 19, 2021)
[6] Request for Proposals for the Procurement of up to 565 MW of New Large Renewable Energy Projects, July 2015 https://www.ieso.ca/-/media/Files/IESO/Document-Library/energy-procurement/LRP/LRP-I-contract/LRP-I-RFP-20150731.ashx

Transmission Circuit	Area	Area Availability (MW)	Circuit Availability (MW)
B28S	Bruce	No Area Availability	
B3	Southwest	550	90
B31L	East	550	No Availability
B3E	Northeast	150	90
B3N	West of London	550	No Availability
B4	Southwest	550	90
B40C	Southwest	550	Some
B41C	Southwest	550	Some
B4B	Northeast	150	110
B4E	Northeast	150	110
B4V	Bruce	No Area Availability	
B562L	Bruce	No Area Availability	

Headroom data would allow developers to account for these estimates in their binding bids submitted to NYSERDA, increasing the viability of future contracted projects and thereby reducing overall project attrition and creating a more efficient process for all parties. Additionally, without transparent headroom data, future Tier 1 REC prices may be improperly inflated due to potential congestion and curtailment risk (real or perceived) being accounted for by developers in their bids. See Figure 3 for the aggregated congestion costs borne by generator operators along major transmission paths in the day ahead and real-time markets from 2014-2018 (totaling $5.82 billion), costs that may be factored into the economic viability and total cost of future renewable generators.[7] Further, if a transmission project is built after a project is awarded a Tier 1 REC contract (and the developer was not fully aware at the time of its bid of the incremental headroom the transmission project would create), New York would effectively be paying for both the congestion and curtailment that a developer accounted for in its original bid, and the cost of the transmission project (intended to alleviate the original congestion), further increasing rates for New Yorkers. Publishing headroom data will provide more certainty and more accurate information to stakeholders and could result in both reduced REC prices bid to NYSERDA and less cost to New York overall.

Figure 3: Historic Demand Congestion by Constrained Paths 2014-2018 (nominal $M)

Constraint Path	2014	2015	2016	2017	2018	Total
CENTRAL EAST	$1,136	$915	$641	$598	$540	$3,829
DUNWOODIE TO LONG ISLAND	$155	$138	$164	$88	$133	$677
LEEDS PLEASANT VALLEY	$42	$111	$63	$101	$9	$327
EDIC MARCY	$7	$0	$32	$125	$107	$271
PACKARD HUNTLEY	$7	$41	$54	$30	$41	$172
GREENWOOD	$13	$19	$31	$18	$62	$143
DUNWOODIE MOTTHAVEN	$40	$2	$2	$30	$65	$139
NIAGARA PACKARD	$18	$22	$44	$12	$9	$104
EGRDNCTY 138 VALLYSTR 138 1	$20	$18	$8	$17	$20	$82
NEW SCOTLAND LEEDS	$9	$32	$13	$18	$5	$76

To support the release of updated and accurate data at regular intervals, and given the important support the headroom study will give to the accomplishment of the State's climate goals, NYSERDA respectfully requests that adequate resources be allocated to these assessments for each participating utility and the NYISO, such that the headroom assessments can be conducted regularly to account for changes to the

[7] 2019 NYISO Congestion Assessment and Resource Integration Study (CARIS) Report, p. 36.

portfolio of renewable energy generators and the grid (such as transmission upgrades in development and transmission projects reaching commercial operation).

2. **Data estimating current and future potential headroom and produced using a uniform approach is urgently needed to inform the siting, procurement, and approval of new renewable energy and transmission projects.**

The need to proceed with a timely headroom analysis to inform the procurement of renewable energy resources is urgently needed. The priority should be establishing a headroom methodology that can be commenced in a timely manner and can be improved upon in future updates, and accordingly, NYSERDA supports the near-term development of capacity headroom data to inform near-term generation and transmission siting decisions. While energy headroom estimates may ultimately provide more beneficial results, capacity headroom estimates are preferred in the short-term due if they can be advanced in a timely manner.
Publishing the results of different power flow cases to assess capacity headroom, each with its own dispatch and load assumptions, could also reveal important differences for developers, NYSERDA and other stakeholders to consider when assessing the viability and benefits of a project. Compared with amalgamating all power flow cases into one aggregate headroom metric, presenting the results of each power flow case individually would better inform siting and policy decisions for future renewable energy and transmission projects.

To account for future cases in a standardized manner, the methodology should prescribe the set of projects that are included in each case (e.g., future cases could include projects with an active power purchase agreement or Tier 1 REC agreement, projects that have completed a Class Year study process, and/or projects that have been approved by the applicable jurisdictional permitting body). To the extent practical, and noting that outputs may be less precise, analyses through 2035 and 2040 should be considered to support the trajectory to New York's target of a zero-emissions electric grid by 2040.

3. **The energy headroom methodology should be advanced in some form despite the additional complexity if a reasonable, standardized approach can be employed, so long as it is not developed at the expense of near-term headroom data needs.**

Commission Orders require that Tier 1 REC solicitations for large-scale renewables be conducted annually, at least through 2026, to maintain the development trajectory needed to reach New York's target of generating 70% of its electricity from renewable resources by 2030. Pending the results of future Tier 1 REC solicitations and other renewable generation procured for end use in New York, NYSERDA expects to contract for more than 25 million megawatt hours of annual generation (at a rate of 4.5 million per solicitation) to meet this goal,[8] in addition to the more than 13 million megawatt hours of annual generation from already contracted solar and onshore wind facilities that are expected to enter operation by 2025.[9]

Several of New York's primary clean energy targets outlined in the Climate Leadership and Community Protection Act are generation-based, not capacity-based, and include generating 70 percent of the State's electricity from renewable resources by 2030 and 100 percent from zero emission resources by 2040.[10] For this reason, NYSERDA believes that access to energy headroom data (including assumptions) will be an important component to ensuring the State is on track to meet its energy goals. Despite the noted

[8] Case 15-E-0302, Order Adopting Modifications to the Clean Energy Standard, p. 26 (filed October 15, 2020)
[9] Large-scale Renewable Projects Reported by NYSERDA: Beginning 2004, projects listed as Under Development. https://data.ny.gov/Energy-Environment/Large-scale-Renewable-Projects-Reported-by-NYSERDA/dprp-55ye
[10] New York Climate Leadership and Community Protection Act, https://climate.ny.gov/

complexities, NYSERDA believes that it would be valuable to establish a standardized process that seeks to assesses energy headroom, as opposed to only assessing capacity headroom, to facilitate longer-term planning of transmission and renewable energy generation. However, as mentioned above, the need for energy headroom data should not overburden the need for near-term data to inform project development and siting. Should a near-term solution assessing capacity headroom be the most practical approach, NYSERDA encourages utilities, NYISO and DPS Staff to expand the approach to energy headroom analysis as soon as practical.

The Straw Proposal notes that the generation from large-scale renewables "*may be limited or curtailed due to the same set of potential limiting conditions that determine Capacity Headroom but, unlike capacity, which is evaluated based on points of maximum system use conditions, energy requires a view of potential curtailments over the course of an entire operating period, such as the entire year".*[11] As the fleet of intermittent renewable energy generators grows, NYSERDA agrees that it will be important to account for this temporal nature of renewable generation, particularly for areas of the upstate grid that serve primarily intermittent generators.

NYSERDA supports the methodology proposed by Staff in the Straw Proposal and welcomes other recommendations to determine the most accurate and efficient method to estimate energy headroom that complement existing capabilities of the utilities. NYSERDA believes that a scenario-based power flow analysis as proposed can provide a fuller understanding of energy headroom (accounting for the full 8,760-hour profile for a given year's headroom) by pursuing multiple scenarios or cases that represent expected load and energy dispatch characteristics throughout a typical year.

NYSERDA understands that the NYISO plans to complete a System & Resource Outlook, a 20-year study of system and congestion, which will replace Phase 1 of the biennial Congestion Assessment and Resource Integration Study (CARIS) process. The new process intends to incorporate an energy deliverability assessment that will likely result in outputs similar to those proposed in the Straw Proposal. NYSERDA suggests that the NYISO be consulted regarding the ability to expand this analysis to include not only expected congestion but also energy headroom in order to provide actionable data to stakeholders as efficiently as possible.

4. The standardized method should account for headroom estimates on both the bulk power system and the lower voltage distribution system to the extent practical.

As a component of the proposed unified planning data and models included in the Straw Proposal, Staff recommended that "*detailed sub-transmission and distribution models should be included within these models to the extent they are closely intertwined with transmission and/or may have significant levels of renewable resources."*[12] NYSERDA agrees with this recommendation. While it may not be necessary to model the statewide distribution system at all voltages, modelling certain distribution systems that are commonly targeted by renewable energy developers as potential points of interconnection would be a valuable component of a standardized headroom assessment, particularly for higher voltage distribution systems not included in the existing distribution hosting capacity maps such as 34.5 kV and 69 kV distribution infrastructure.

The Straw Proposal primarily assessed onramps, offramps, and constraints related to high voltage transmission facilities (115 to 230 kV) and extra high voltage facilities (345 to 765 kV).[13] Although the constraints and headroom estimates at these voltages are the most material for assessing overall system

[11] Case 20-E-0197, Staff Straw Proposal for Conducting Headroom Assessments, p. 2 (filed March 16, 2021)
[12] Ibid, p. 3
[13] Case 20-E-0197, Staff Straw Proposal for Conducting Headroom Assessments, p. 2 (filed March 16, 2021)

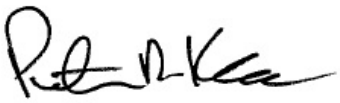
congestion and headroom potential, many individual generators are continuing to propose to interconnect at lower voltage levels where energy headroom estimates would not necessarily be available under the proposed approach. In the most recent version of the NYISO interconnection queue at the time of this filing, 35 solar projects totaling 714 megawatts of proposed renewable capacity were proposed to interconnect at voltages less than 115 kV.[14] Modelling these lower-voltage areas may provide helpful information for the siting of relatively smaller (less than 100 megawatts) large-scale renewable generation projects. Additionally, future methods should ensure that the growing generation attributable to distributed energy resources, primarily solar projects interconnecting via the Coordinated Electric System Interconnection Review (CESIR) process, are accounted for via the most practical approach (e.g., netting distributed generation against load may be sufficient to control for headroom availability in areas with a high amount of distributed generation).

Understanding that the complexity and labor needed to model these lower voltages will result in greater resource needs, NYSERDA views assessing this lower voltage network as important for producing results that help determine whether large-scale projects proposing to interconnect at voltages less than 115 kV are sited at viable points of interconnection. Because not all areas of the distribution network are viable for large-scale renewables due to other siting considerations (e.g., available undeveloped land, topography, setbacks from other development), not all sub-115 kV lines may be critical for this level of analysis. However, this voltage class should not be discounted entirely if the data could inform pockets of available headroom at voltages less than 115 kV.

NYSERDA could also employ this headroom data to inform the evaluation of bids and the ultimate selection of projects for award if all proposed projects (i.e., proposed projects interconnecting across varying voltages in all utility service territories) could be equitably evaluated with the newly available data.

NYSERDA appreciates the opportunity to provide these comments. If you have any questions regarding this filing, please contact me at 518.862.1090, ext. 3366.

Sincerely,



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[14] NYISO Interconnection Queue, Published May 17, 2021, https://www.nyiso.com/interconnections