Invenergy Comments Concerning 2026 Cluster Study Enhancements

to be Considered at the January 5, 2026 TPAS/ESPWG meeting

Introduction

Pursuant to the NYISO's request for comments identified in its presentation entitled "2026 Cluster Study Enhancements For Consideration" presented at the December 3, 2025 TPAS/ESPWG meeting, Invenergy is pleased to provide the following comments. These comments focus on the following two issues:

- The need for NYISO to implement a conditional expedited deliverability study mechanism applicable to requests for the interconnection of a co-located Energy Storage Resource (CESR) in order to remove the significant impediments that currently prevent a CESR from joining with an operational generator to bid into a NYSERDA RFP; and
- Clarification as to the calculation of headroom payments applicable to planned, but not yet constructed, Upgrades when the final cost to construct the Upgrades differs from the initial estimate.

Conditional Expedited Deliverability Study Proposal

Summary:

Co-locating an energy storage resource (ESR) with an existing, operational wind or solar resource represents a cost-effective source of storage capacity for NYSERDA and consumers, because a stand-alone ESR must internalize the full cost of its interconnection, while a co-located ESR (CESR) can share those costs with the existing generator, thus reducing its overall cost relative to a stand-alone ESR.

Unfortunately, limitations on the ability of a CESR to determine the quantity of capacity resource interconnection service (CRIS) for which it may qualify in advance of bidding into a NYSERDA storage RFP are likely to prevent such lower-cost CESR resources from participating in the auction.

If NYISO were to implement a conditional expedited deliverability study mechanism, the significant impediments that currently exist to the ability of a CESR joining with an operational generator to bid into a NYSERDA RFP could be resolved.

Obtaining a CRIS Determination from NYISO:

There are two methods to determine a resource's CRIS level. Pursuant to Section 40.19 of Attachment HH, a CESR developer can participate in an expedited deliverability study (EDS) to determine what level, if any, of CRIS it can qualify to provide.

The EDS determines the deliverable MWs of the CESR, if any, but does not identify what system deliverability upgrades (SDU) would be required, and the cost thereof, for the CESR to be fully deliverable. If the CESR is found in the EDS not to be fully deliverable, it may enter into an interconnection cluster study which includes a comprehensive Cluster Study Deliverability Study (CSDS) that determines what SDUs are required for full deliverability and their costs.

To understand the challenges associated with adding a CESR to an existing, operational generator (e.g., a wind unit), it is helpful to understand how NYISO conducts a deliverability study (DS). For this example, assume a 100 MW (nameplate) operational wind unit with an energy resource interconnection service (ERIS) limit of 100 MW was studied for CRIS in its class year interconnection process and found to be fully deliverable.

In conducting the DS, the NYISO first derates the wind unit's 100 MW nameplate by 90% to determine the quantity of unforced capacity (UCAP) the unit theoretically could provide. Thus, the 100 MW ERIS is studied at 10 MW and found to be fully deliverable at 10 MW, which will be referred to as the wind unit's CRIS UCAP rating.

In the context of adding a CESR unit, assume that a 100 MW nameplate CESR wishes to pair with the wind unit. The wind unit may transfer its CRIS UCAP to the CESR, resulting in the CESR qualifying to provide 10 MW of UCAP CRIS. However, unlike the wind resource, which is derated by 90% to determine its maximum CRIS UCAP, an ESR's capacity is derated by only 10% when NYISO conducts its DS. Thus, in the absence of a deliverability limitation, a 100 MW ESR would qualify to provide 90 MW of CRIS UCAP.

But the NYISO DS only studied the wind unit at 10 MW, so for the CESR to obtain CRIS rights for the additional 80 MW of UCAP (CESR's 90 MW CRIS UCAP theoretical maximum minus the 10 MW of CRIS UCAP transferred by the wind unit), the CESR must participate in either an EDS or CSDS to determine its CRIS UCAP rating and, in the case of the CSDS, the cost of SDUs required for it to be fully deliverable at 90 MW of CRIS UCAP.

Unfortunately, NYISO will not conduct an EDS for the CESR unless and until the wind resource transfers its CRIS UCAP to the CESR. This prerequisite creates a number of significant problems for a CESR seeking to join with an operational unit and bid into a NYSERDA ISC RFP.

<u>The Problem:</u>

To bid into NYSERDA's indexed storage credit (ISC) RFP to add a CESR to an operating resource, the CESR must know how much CRIS the CESR can qualify to provide (because the indexed storage REC (ISR) imputes capacity revenue to the CESR). In the absence of this information, the CESR in our example has two options. It can spread its costs over 10 MW (the CRIS UCAP transferred from the wind unit), but

doing so will result in its bid being much less competitive than it would be were the CESR able to spread its costs over its theoretical maximum CRIS UCAP rating of 90 MW. Spreading full costs over an artificially reduced number of MW will increase consumer costs, because it will result in consumers losing the opportunity to procure the least cost source of storage capacity that would be available if the CESR developer were able to determine the CRIS UCAP it would qualify to provide.

Alternatively, the CESR can bid assuming it will qualify to provide 90 MW of CRIS UCAP, but it then will be exposed to either being short, if it is found to be only partially deliverable for the delta, or having to pay the cost of SDUs needed to qualify for its theoretical maximum CRIS UCAP rating, which could be very significant, rendering its bid economically infeasible. This also is likely to increase consumer costs relative to what they would incur if accurate CRIS UCAP information were available to the CESR developer.

In addition, upon transferring its CRIS UCAP to the CESR, the wind unit loses its ICAP revenues. And the CESR will not receive revenues to cover this exposure until it reaches commercial operation, so ICAP revenue is lost during the period from the CRIS transfer to the CESR's commercial operation date (several years later).

As mentioned, NYISO will not study a proposed CESR in an EDS unless the wind unit first transfers its CRIS to the CESR. That is, NYISO will not conduct a Conditional EDS (CEDS), assuming a transfer amount from the wind unit. This circumstance may effectively eliminate the ability of a low cost CESR to bid into the ISC RFP.

Possible Solution:

If NYISO were willing to conduct a CEDS, the CESR could acquire the information needed to support a cost-effective bid into the ISC RFP.

How CEDS could work: If NYISO were to conduct a CEDS assuming the wind unit would transfer its CRIS UCAP to the CESR (i.e., study the wind unit at 0 MW CRIS UCAP), it could then determine how much additional CRIS UCAP could receive beyond the 10 MW UCAP CRIS assumed from the wind unit the CESR, up to the lesser of the ESR nameplate or 90% of the ERIS/CRIS ICAP rating (i.e., 90 MW).

This information would enable the ESR resource to bid into the ISC RFP based on the amount of UCAP CRIS it qualifies for, which would allow it to develop its most cost-effective bid.

To maintain maximum availability of UCAP on the system, the CESR would be permitted to transfer the wind resource's UCAP to the CESR on the date the CESR reaches commercial operation. In this way, the wind resource would remain a capacity resource available to the NYISO market until such time as the CESR is ready and able to accept the CRIS transfer an become a capacity resource in the NYISO.

A further enhancement may also warrant consideration as it would allow both co-located resources to use the capacity rights in a way that maximizes UCAP. If, at the developers' request, NYISO were to study CRIS at 100% of the requested level, instead of the resource's derated UCAP rating, it could then allow CRIS to become a ceiling for the total combined UCAP of the co-located resources. UCAP for each resource would be based on its individual ICAP x CAF and if the total combined UCAP were to exceed the CRIS limit then the Market Participant could select which resource to prioritize for UCAP allocation. MISO has proposed a similar change that is well supported by stakeholders.[1] This enhancement would better utilize co-located ICAP for UCAP, allowing incrementally more UCAP to participate in the capacity auctions, helping keep capacity prices low while maintaining the same level of resource adequacy.

For example, assume a 100 MW wind resource coupled with a 100 MW CESR resource interconnected at a shared POI with a 100 MW injection limit. If the wind resource is accredited for UCAP purposes at 10% and the CESR at 89%, then, assuming there are no deliverability constraints, the wind unit would qualify for 10 MW of CRIS UCAP and the CESR would qualify at 89 MW. The total UCAP of both resources would be less than the injection limit and CRIS limit, meaning the wind resource could retain its UCAP CRIS rating and the CESR could obtain its maximum usable CRIS UCAP rating.

Clarifying Headroom Accounting Rules

Summary:

Ensuring developers are reimbursed accurately for the Headroom they construct would incentivize developers to build out the transmission system in an efficient and cost-effective manner, because developers know they will be reimbursed for the additional capacity they create beyond what they actually need.

However, due to tariff ambiguity, the Headroom accounting rules could be interpreted as being based on Upgrades being already in-service at the time the Headroom payment is calculated, which means that Headroom payments may not accurately reflect the costs of upgrades that are still under development when the Headroom payment is determined. Such an interpretation would result in developers paying for Upgrades that create Headroom being reimbursed less for Upgrades that are still under construction than Upgrades that are in-service at the time the Headroom account is calculated.

Clarifying the Headroom accounting rules so that developers are reimbursed accurately through Headroom payments for upgrades that are still under development will ensure proper cost allocation and that developers are not left bearing the cost of Headroom used by others. This would provide for treatment of Headroom developers that is consistent with the allocation of Upgrade costs among developers in the same class year or cluster as provided in Attachment HH, section 40.16, which allows the

[1] https://cdn.misoenergy.org/20250820%20RASC%20Item%2009%20Co-Located%20Resource%20Accreditation%20(RASC-2019-2)713764.pdf

connecting transmission owner to recover from developers assigned responsibility for Upgrades the final, as-built cost of those Upgrades.

Headroom Accounting Rules:

NYISO's rules require subsequent developers to reimburse prior class year developers for the use of System Network Upgrades, System Deliverability Upgrades, or Distribution Upgrades ("Upgrades") paid for by prior class year developers when the Headroom created by the Upgrade is in excess of that actually used by the prior developers. Each subsequent developer whose project uses the Headroom within the applicable period of time following the Headroom creation, makes Headroom payments as provided for in Attachment HH (previously Attachment S) of the Tariff.

The Headroom reimbursement obligation recognizes that prior year developers fund network upgrades that benefit other customers and therefore subsequent developers should contribute to their cost, consistent with the Commission's cost causation principles.

NYISO determines the Headroom reimbursement payments. The Headroom payment made to each prior developer is an amount equal to c/(b)x(d), where "c" is the depreciated cost of the Upgrade at the time of the subsequent Cluster Study, "b" is the total number of Projects in all prior and current Class Years and Cluster Studies using the Upgrade, and "d" is the total number of Projects in all the prior Class Years and Cluster Studies that have previously made payments for the Upgrade, both Headroom payments and payments for original installation. NYISO will depreciate the Headroom cost annually, starting with the year the Headroom account is first established. (Attachment HH, Section 40.17.1.3.1).

NYISO publishes Headroom accounts for each interconnection customer and other entities, and updates those accounts to reflect the impact on subsequent projects. Headroom accounts are closed when the electric values in the account are reduced to zero or when ten years have passed since the account was established, whichever occurs first. (Attachment HH, Section 40.17.1.4.3)

Subsequent projects pay the prior entity the Headroom payment within the five-business day period specified in Section 40.15.2.8. Section 40.15.2.8 in turn requires that interconnection customers signify their willingness to pay their share of interconnection costs by, among other things, satisfying its Headroom payment obligation following the initial decision round or subsequent decision round as relevant. Headroom obligations for fully constructed upgrades must be satisfied with a cash payment. For upgrades that are not fully constructed, the headroom payment can be made in the form of headroom security. (Attachment HH, Section 40.17.1.5).

The Problem:

NYISO's cost-allocation rules expect a developer to pay for the cost of Upgrades that must be constructed to connect its generator to the NYISO system. The developer is

then entitled to be reimbursed through Headroom payments from subsequent developers that also will make use of the Upgrades.

While the Tariff reasonably provides that the Headroom payment will cover the proper share of actual costs for any upgrade that is already in service when the Headroom payment is calculated (i.e., the original cost of the Upgrade less depreciation incurred prior to the date that the subsequent developer will start using the Upgrade),[2] it doesn't clarify how that Headroom payment should be adjusted when the actual cost of a planned Upgrade may increase over the amount estimated when the Headroom Payment is first identified. As a result, the developer may be picking up a disproportionate share of the Upgrade cost.

This shortfall could occur for two reasons. First, the Headroom payment is based on estimated cost of the Upgrade when the Headroom amount is first determined. Development and construction costs can rise for a number of reasons beyond the control of the developer, yet the Headroom accounting rules appear not to directly account for the fact that the Headroom payment could increase to reflect such actual costs.

Second, even when the Upgrade is not yet in service, it appears that NYISO assumes that the Upgrade has already been in service for some period of time at the time the Headroom estimate is calculated, and then reduces the construction estimate to reflect some amount of depreciation. However, under mandatory accounting and ratemaking requirements, depreciation starts only when the Upgrade is placed in service. Headroom payments that are determined prior to the Upgrade being placed in service should therefore be based on original facility cost without depreciation.

The Headroom accounting rules appear to create different reimbursement schemes depending on if the Upgrade is in-service or under development at the time the payment is determined. The result is that developers paying for the full cost of Upgrades that are not in-service when the Headroom payment is determined for subsequent developers may not be accurately reimbursed for their proper share of that cost through Headroom payments. It may also be the case that Headroom payments should be decreased if the cost to construct the Upgrade is lower than the initial estimate.

Interpreting the Headroom rules as prohibiting adjustment in the Headroom account to reflect the actual as-built cost of the Upgrades would be inequitable and inconsistent with the Tariff approach to addressing developer responsibility for as-built Upgrade costs that apply in the very similar context of allocating such costs to developers in the same Cluster Study or Class year that is provided for in Attachment HH, section 40.16, which allows the connecting transmission owner to recover from developers assigned responsibility for Upgrades the final, as-built cost of those Upgrades. Clearly, there is no basis to treat these two situations differently.

[2] Attachment HH, Section 40.17.1.4.1.2.

Possible Solution:

Clarify NYISO's interpretation of the Headroom accounting rules to ensure that:

1) the Headroom payment for subsequent developers can be modified after it is initially calculated to reflect the final cost of the Upgrade; and

2) the Headroom payment is based on the depreciated cost of the Upgrade if the Upgrade is already in service, while basing the payment of the undepreciated cost when the Upgrade is not yet in service.

Conclusion

Invenergy appreciates this opportunity to offer the foregoing comments in response to the NYISO's efforts to identify lessons learned throughout the inaugural cluster study process and to implement enhancements to that process.