Retail Storage Incentive: Upstate Considerations

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Introduction

With the approval from the Public Service Commission and implementation by NYSERDA, the Retail Storage Incentive Program relaunch later this year will deliver much anticipated and substantial benefits to New York State residents through the deployment of distribution-connected energy storage projects.

NY-BEST and ACE NY are concerned, however, that without specific consideration of upstate standalone energy storage, the program will miss the important opportunity to capture the benefits of standalone storage upstate. We continue to encourage NYSERDA to provide differentiated incentive levels for solar-plus-storage and standalone storage projects upstate to recognize the different incremental costs and diverse benefits these projects deliver. Below we explore the cost realities and unique benefits of solar-plus-storage and standalone storage.

Our Roadmap Recommendation

As we stated in our recommendations on the Energy Storage Roadmap, for the Upstate region (Zones A-G), NY-BEST and ACE NY recommend that NYSERDA establish either distinct incentive blocks for solar-plus-storage and standalone storage or a higher incentive level for standalone storage. This is necessary because these project types have both unique benefits and different economics. Solar-plus-storage projects need less incentive to be developed given the revenues currently available to them (for example, the VDER E-value) and their current operational costs (for example, no demand charges, lower interconnection costs). If a higher incentive is not available for upstate standalone storage, compared to solar-plus-storage, it is likely that developers will not pursue retail standalone storage projects in Zones A-G, leaving the upstate region without the benefits these projects can provide. The current upstate interconnection queues predominantly consist of solar-plus-storage projects, illustrating this behavior.

Solar-plus-storage projects are valuable for their ability to control when solar generation is supplied to the grid, but a dispatch schedule that maximizes solar-generated injections does not always maximize other benefits that standalone storage can provide (e.g., enabling greater

operational flexibility and versatility, shifting feeder or substation level generation and demand, responding to local grid needs).

Standalone storage, on the other hand, offers greater dispatch flexibility to provide these other benefits. Importantly, many distribution substations are maxed out and cannot support additional capacity. This is exactly where standalone storage assets are needed to support the grid, but new solar-plus-storage projects will not be feasible. Additionally, standalone storage can typically be sited closer to load than storage paired with solar, due to land requirements associated with solar.

Our recommendation is a budget-neutral adjustment that provides differentiated incentives to upstate solar-plus-storage and standalone storage to reflect the actual economics of each project type to ensure a diverse portfolio of storage assets. We defer to NYSERDA regarding whether it is preferable to have a distinct upstate standalone storage block or one block with different incentive levels for the two different types of projects. In a one-block scenario, we suggest a structure with a base rate for all projects plus an adder option specifically for standalone storage.

We provide additional discussion of our main points in the sections below.

Solar-plus-Storage

Developers are currently incentivized to add storage to a distribution-connected solar project to maximize the project's revenues in response to interconnection constraints or policy opportunities. For example, a project site might have sufficient land for a 7 MWdc project but the grid can only accept 3.5MWac at a reasonable upgrade cost (without upgrading the entire substation). If the developer builds a 7 MWdc/3.5Mwac system without a battery storage system, a substantial amount of renewable generation will be clipped by the inverter and lost. By adding the battery storage system, the solar project can make the most of its investment and capture, use, and monetize renewable generation which otherwise would be lost.

Without additional incentives, however, the costs of adding the battery far exceed the value of capturing the clipped energy in most cases. In spite of this, many developers are incorporating storage into project interconnection designs today to provide for optionality. If the cost of a battery storage system decreases or an incentive program is reintroduced, capturing the clipped energy may become economic. While adding storage to an existing interconnection

application is considered by the SIR to be a major modification, removing storage from an existing application is not. Accordingly, there is little downside to incorporating storage into project design in light of state policy objectives encouraging storage.

Standalone Storage

Developers are incentivized to pursue a stand-alone storage system to respond to the needs of the grid and provide value to the distribution system. Energy storage on the distribution grid provides a dual benefit: (1) managing the intermittency of and smoothing out renewable generation both on a feeder and substation level, and (2) providing peak load reduction and other grid services.

Under NYSERDA's successful NY-Sun program, the build out of solar has been extensive on the distribution grid. As a result, many feeders and substations are maxed out and cannot host additional generation due to thermal constraints or reliability concerns. An incentive for standalone storage is needed for standalone storage on the distribution grid to manage the existing generation, reduce curtailment, and improve hosting capacity. In addition, a standalone storage deployment incentive would deliver grid services, notably including peak shaving and duck curve management, that can reduce costs to all ratepayers.

One reason that stand-alone storage systems require a higher incentive level is that standalone storage systems typically have higher interconnection costs than solar-only systems, due to the way in which utilities study their load characteristics. Utilities evaluate storage systems assuming their worst-case impact to the grid, discharging during lowest load overnight conditions and charging during the highest load peak afternoon conditions. This results in the systems triggering extensive system upgrade protections. A developer can specify limited operational hours in the Appendix K submitted with an interconnection application to avoid triggering certain upgrades. But, limiting project operations may not fully mitigate the interconnection issues and may result in a system that is unnecessarily restricted in the event that grid conditions change. For example, if the grid experiences a duck curve due to substantial solar output during peak hours, the storage system's best use would to be to charge during those peak hours. However, the storage system may not be allowed to do so in accordance with restrictions stipulated in its Appendix K operating schedule.

In addition to higher interconnection costs, a standalone storage project's charging activities are treated as retail load on the grid, resulting in additional operational costs by way of prevailing tariffs. A distribution-connected storage system pays contract and as-used demand

charges and other typical retail charging costs intended for end-use (including the system benefits charge) to secure the energy it needs to later provide services to the grid.

Lastly, under current VDER program rules, stand-alone storage facilities do not qualify for the E-value. The emissions reductions that storage provides, both directly through energy arbitrage which aligns with emissions rates and indirectly through the displacement of peaker plant run-time, are externalized in VDER but certainly real.

Despite the opportunity to provide key value to the grid, a stand-alone storage project is burdened by additional (and in many cases unnecessary) costs that solar-plus-storage system do not have to face.

Incentives for Distribution-Connected Storage

If NYSERDA provides one fixed incentive upstate for distribution-connected solar plus storage and stand-alone storage, the likely outcome is that the vast majority of the storage deployed will be solar-plus-storage, leading to more renewable generation but leaving the benefits of standalone storage (peak shaving, duck curve management, etc.) on the table. For solar-plus-storage projects, the missing money is the difference between the cost of the system and the increased value captured from the clipped energy. For stand-alone storage, the missing money also includes a) the additional interconnection costs, b) the additional charging costs, and c) the absence of the E-value.

By not distinguishing incentives across project types, the Retail Storage Incentive Program will prioritize solar-plus-storage projects and not encourage developers to add standalone storage to substations or feeders on the grid that no longer have solar hosting capacity and that need storage to manage the aggregate solar output.

Conclusion

We encourage NYSERDA to create distinct incentives for upstate distribution-connected solar-plus-storage and for stand-alone storage. As the two types of systems are needed upstate, have different missing money requirements, and deliver unique benefits to meeting the state's goals, ratepayers, and the electric grid, two distinct incentive amounts will ensure that all types of storage are deployed, and all benefits captured. Our ask assumes that the total $/total kWh of storage could remain the same for the entire program and no additional funds would be required. The Roadmap does not provide enough incentive level detail to draw that conclusion for certain, but we assume that the overall budget can remain the same if NYSERDA uses a

combination of lower incentive for upstate paired storage combined with a higher incentive for upstate standalone storage rather than a single, average upstate storage incentive contemplated in the Roadmap.