November 15, 2023

Chair Elizabeth Mahony
Grid Modernization Advisory Council
100 Cambridge Street, #1020
Boston, MA 02114

Dear Chair Mahony and Members of the Grid Modernization Advisory Council,

OnSite Renewables ("OnSite") is writing to offer public comment to the Grid Modernization Advisory Council (GMAC) regarding critical interconnection issues and suggested recommendations to the Electric Sector Modernization Plans (ESMPs). OnSite is a Massachusetts based energy storage developer that currently has over 500 megawatts ("MW") AC of distributed energy resource projects (DERs) in the interconnection queues of the three Massachusetts Electric Distribution Companies (EDCs) – National Grid, Eversource, and Unitil. Specifically, OnSite develops energy storage DERs called battery energy storage systems ("BESS").

Background

OnSite's BESS are designed to be installed behind the electric meters of Massachusetts businesses and to serve the electric load/demand of these businesses when the state's electric distribution system is experiencing peak load that strains its ability to serve all customers. By serving the businesses' electric load/demand with the BESS rather than from the state's electric distribution system, OnSite's BESS can significantly reduce the strain on the state's system. Businesses that host systems receive lease payments for siting the BESS on their properties and Massachusetts electric ratepayers receive the benefit of a more stable electric distribution system that requires fewer costly rate-based upgrades. Massachusetts also receives the benefit of a more efficient and reliable electric distribution system, the ability to safely accept higher amounts of renewable energy generation, and a reduction in climate altering Greenhouse Gas Emissions (GHG).

The two state programs OnSite is developing BESS to operate in are aimed at increasing the number of MW of BESS in the state and meeting the state's 1000 MW hour energy storage goals by December 31, 2025, as detailed in An Act to Advance Clean Energy, Chapter 227 of the Acts of 2018.

- The ConnectedSolutions Program (CS), incentivizes placing batteries behind the electric meters of businesses to serve the electric load of those businesses during peak load events. Peak load events often occur on the local distribution system on the hottest afternoons in the summer when air conditioning loads can cause the distribution system to hit a load peak, or the coldest days of winter when electric heating can cause a distribution system load peak.
- The Clean Peak Standard incentivizes using batteries to store the energy produced in the middle of the day by solar energy projects when the load on the distribution system is low, and later discharge the batteries onto the distribution system in the afternoon as load is rising. Operating in this manner offsets the strain on the system and GHG emissions caused by trying to serve the increasing load from traditional gas turbine electric generation stations.

On pages 73 and 74 of National Grid's Electric Sector Modernization Plan under "Promoting Energy Storage; Create Opportunities", it says the utilities plan to scale the existing CS demand response program.

In 2021, OnSite received written confirmation from each of the EDCs related to the CS program:

- BESS sized larger than the onsite load would still qualify without a cap on how much larger.
- BESS would be compensated for all of the electricity provided during a peak event (both the electricity used onsite to offset load, and the excess electricity exported onto the distribution system).

After OnSite filed all of its interconnection applications and applied to enroll in CS, National Grid denied, in bulk, all of OnSite's CS applications. The utilities then revised the ratepayer funded CS rules without any public stakeholder input, capped the CS incentive payments at 150% of onsite load (despite no previous cap), and established a grandfathered deadline of June 8, 2023 – the same day the new rules were published. OnSite had, and still has, no ISAs for its projects.

By significantly scaling back the CS program, National Grid's actions directly contradict its statements in its ESMP that it plans to expand the CS program. This calls into question National Grid's and the other utilities' commitment to supporting energy storage development in the Commonwealth.

Interconnection Concerns

OnSite is deeply concerned about the readiness of the Massachusetts grid and the current policies and approach of the EDCs towards clean energy interconnection. Without significant changes, clean energy interconnection will remain in limbo for many years to come. There are several critical roadblocks that hinder the integration of energy storage projects in Massachusetts. Interconnection is the most significant.

We urge the GMAC to address the following roadblocks in its report to the EDCs regarding the ESMPs. Without changes to the current interconnection process, Massachusetts will not meet its climate goals.

Over the past four years, the cost of interconnection upgrades borne by DER developers have risen rapidly and the industry is reaching a point where developing a BESS is financially feasible, but the cost of interconnecting the BESS to the utility's distribution system is *not* financially feasible. Over the past 4 years, interconnection costs have risen by as much as 800% and the timeline to complete the utility's studies has increased from 3 months to *at least* 18 months **(Figure 1).**

It is OnSite's view that interconnection cost increases are due to *how* the projects are studied by the utility, rather than the actual potential impacts the projects could cause to the grid.

National Grid is studying BESS using a study methodology that assumes the systems will charge from 11pm to 3pm in Summer and Winter, 11pm – 4pm in Fall, and 11pm – 5pm in Spring. These charge schedules ensure that the charging windows overlap with the peak hour of the peak day in each season other than winter. Studying a BESS assuming it is charging at its full capacity during the peak hour of the peak day in the summer creates a very high likelihood of the BESS causing thermal overloads of the grid's infrastructure, which results in the BESS being responsible for the cost of replacing miles of distribution feeders, one or more substation transformers, and in certain cases, entire substations. These are the most significant and expensive upgrades possible and it is OnSite's view that the vast

majority of these upgrades would not be required if these BESS were studied using a charge and discharge schedule that matches how they intend to operate. **(Figure 2 graphs)**

The goal of the CS program is to discharge these BESS during peak events to reduce the load on the system. If OnSite's BESS are **not** discharging during those peaks, they aren't providing the environmental benefits the CS and Clean Peak programs were created to provide and are missing out on the program's revenue streams, which represent the majority of the revenue that makes the BESS financially feasible.

We urge National Grid to reconsider its study methodology to be more in line with how a rational market participant would operate its batteries.

Additionally, the Figure 2 graphs show that the utilities' mandated schedule assumes the BESS will discharge in the afternoon and evening when the load is already dropping, which would result in the load curve getting steeper. That would cause additional strain on the distribution system. Energy storage is supposed to be used to level the load curve, not increase the curve's climbs and drops, which is what the utilities schedules are causing.

The way the BESS are modeled assumes they will be operated in a manner that provides limited benefit to the grid, misses out on material revenue streams, and maximizes potential upgrade costs.

OnSite filed interconnection applications for over 100 5MW BESS with an assumption of $750,000 of interconnection costs for each project. Preliminary impact studies received to date have had an average interconnection cost of approximately $5 million per project. In one example, OnSite's 5 MW project in Seekonk is sharing the cost of replacing an entire substation with a 1.5 MW PV & battery project. OnSite's estimated share of the $15MM substation replacement cost is $11.5MM.

Another example was delivered to OnSite on Monday, November 13 in the form of a first final System Impact Study (SIS) for one of its projects, which includes estimated interconnection costs (+/- 25% cost estimate). In the SIS a required upgrade related to the project is upgrading 1,500 feet of a 13.2 kV distribution feeder to newer bigger wires. This is a relatively common upgrade and the 1,500' distance is shorter than what many BESS or solar projects typically require. As recently as 2020 & 2021, the utility per mile cost of upgrading a 13.2 kV distribution feeder was $250,000 - $500,000 per mile. In the case of OnSite's project, the 1,500' has an estimated cost of $573,769.76, which is over $2 million per mile, or 4 to 8 times more expensive than it was just a few years ago. National Grid and the other utilities provide no written or verbal record of how that cost is determined. Developers are expected to agree with the cost or cancel their project.

Recommendations to the GMAC to inform the EDCs ESMPs:

- Require that no customer be denied the right to interconnect an energy storage facility.
- Specify time limits for both the initial interconnection application process and for the utility's interconnection design and construction process.
- Require utilities to allow developers to self-construct interconnection upgrades.
- Establish a permanent office of an ombudsperson with the power to recommend civil penalties against the utilities when appropriate.
- Require the utilities to share their pricing estimates and the underlying assumptions when creating cost estimates in System Impact Studies and Group Studies.
- Connected Solutions:

- Relocate administration of CS from the EDCs to a state entity.
- Grandfather CS applications received before the *significant* program changes announced June 2023.
- Look to Connecticut for its grandfathering model.

OnSite also supports the recommendations made by Kate Tohme of New Leaf Energy:

1. *The ESMPs should propose a long-term proactive distribution system planning process for the interconnection of DG, utilizing the analysis process proposals and subsequent comments submitted in DPU 20-75. Proactive distribution system investments are critical to ensuring DERs can interconnect to the grid at a reasonable cost and expeditious manner to meet the Commonwealth's goals. The proactive planning process should be as uniform across all three EDCs as possible, ensuring coordination of overarching assumptions and DER stakeholder engagement.*
2. *The ESMPs should propose a long-term cost allocation methodology for proactive infrastructure upgrades to enable the interconnection of DG to succeed the reactive investment approval process conducted through the Provisional System Planning Program. If this is not possible before the January filing, then the EDCs should submit a detailed proposal and timeline for a stakeholder process that will develop a long-term cost allocation methodology. This proposal should include how the stakeholder engagement and discussion will occur in parallel to the ESMP proceedings and should propose a date by which the EDCs will file a long-term cost allocation proposal at the DPU.*
3. *Extension of the Provisional System Planning Program as currently proposed in the ESMPs will require significant additional adjudicatory proceedings over the next 5 years and will not incorporate proactive system planning as required by the Climate Act. The EDCs should submit a detailed proposal for streamlining of CIPs over the next 5 years, including incorporation of proactive system planning in advance of the next ESMP process. The proposal should include, at a minimum, batch review of existing group studies as well as application of the long-term proactive analysis process and cost allocation methodology in the interim between this and the next ESMP process.*

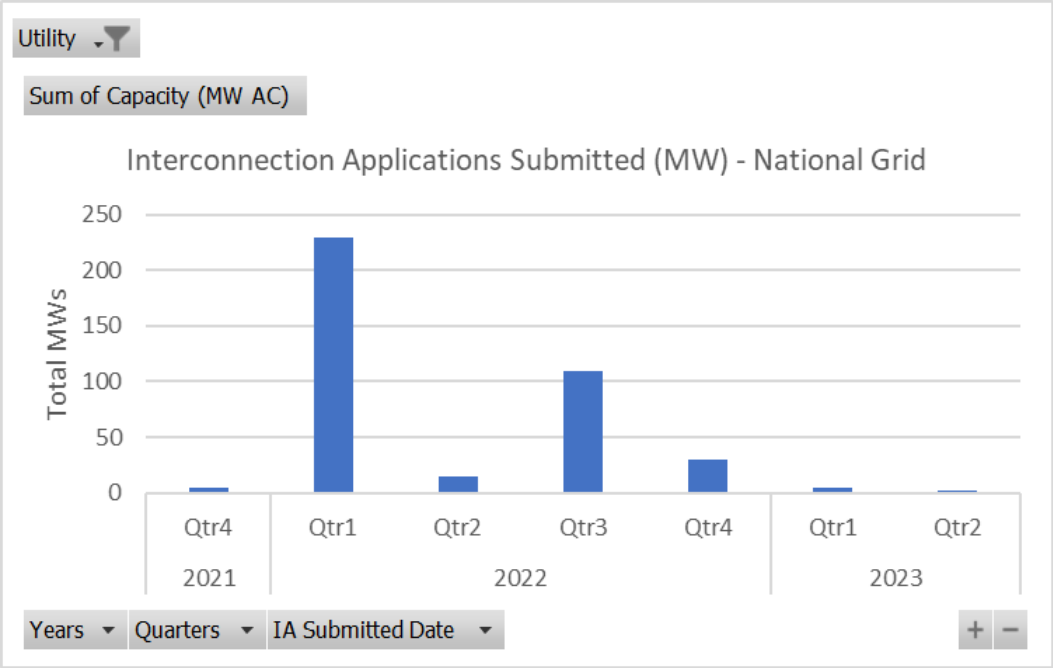
In our review of stated storage targets, it will be impossible for the EDCs and the Commonwealth to reach energy storage goals unless urgent measures are taken to improve the realities we are trying to work through on a daily basis.

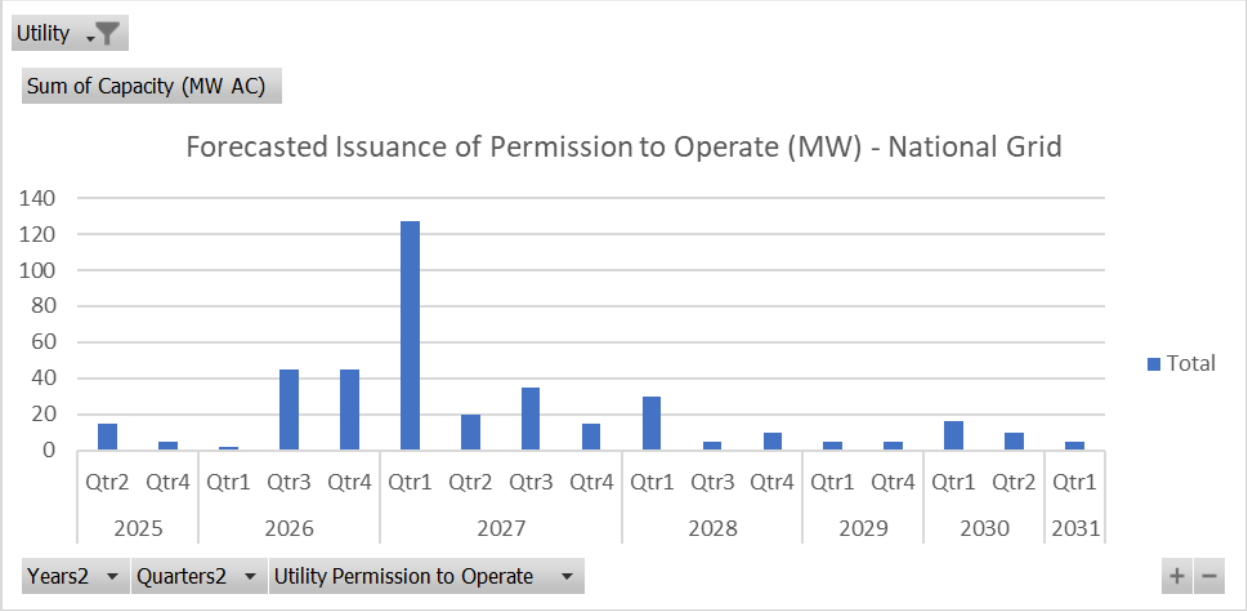
We thank the Grid Modernization Advisory Council for its critical work, and urge you to prioritize interconnection issues in your report to the EDCs regarding their ESMPs.

Sincerely,

Silas Bauer
OnSite Renewables

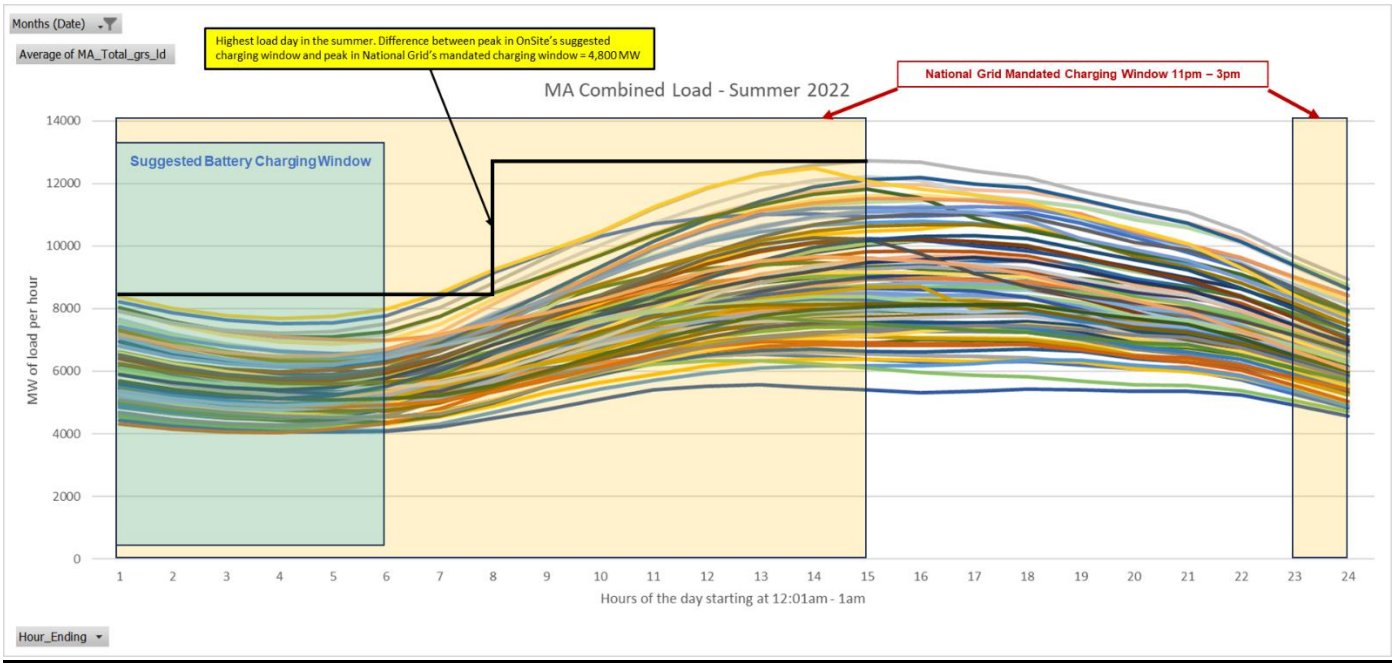
Figure 1: Interconnection Study Timelines

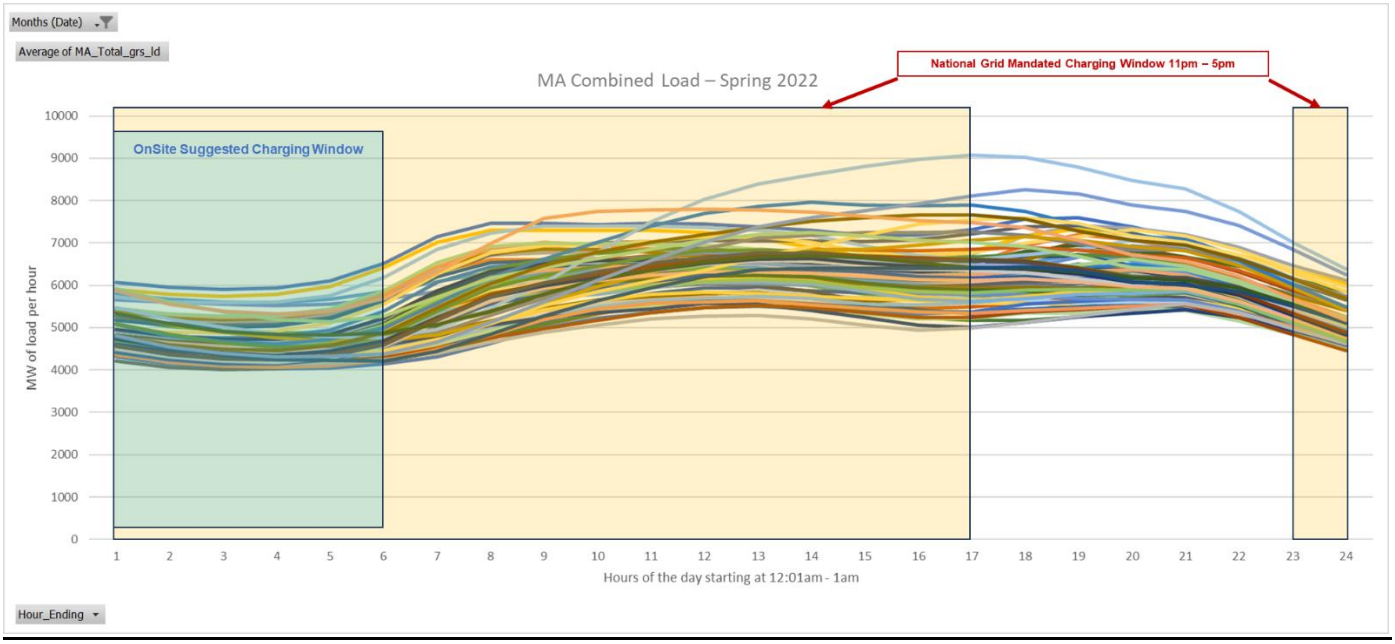


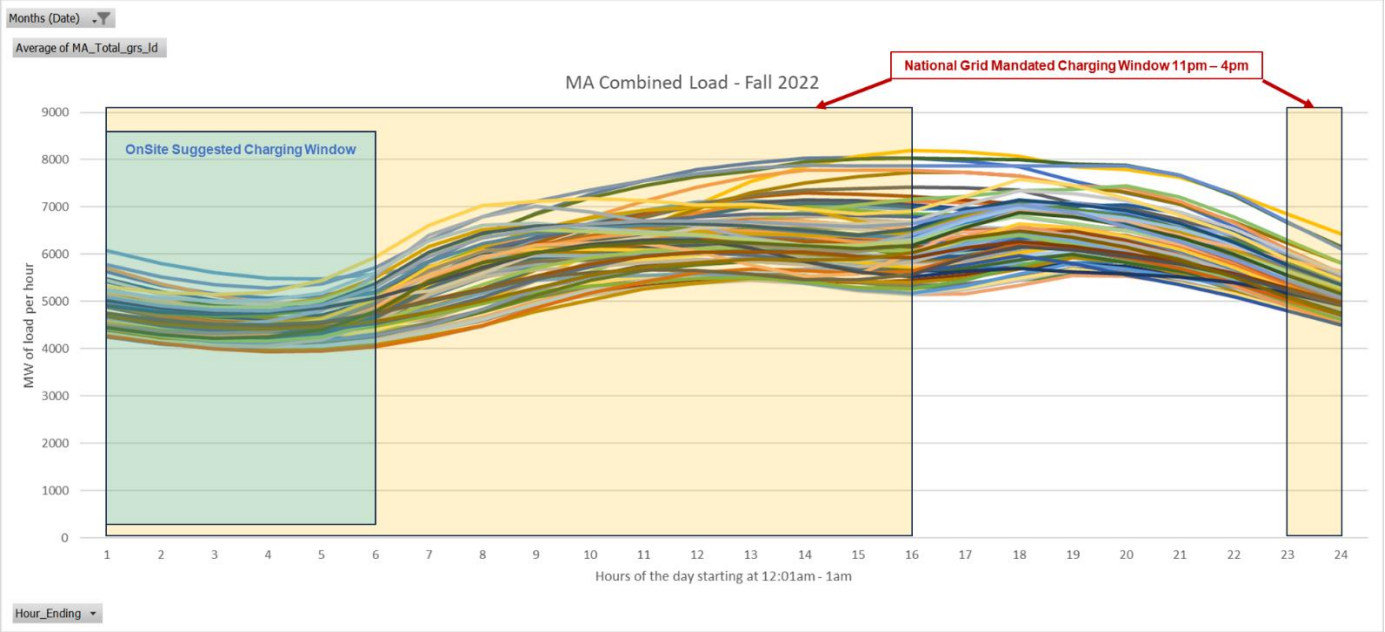


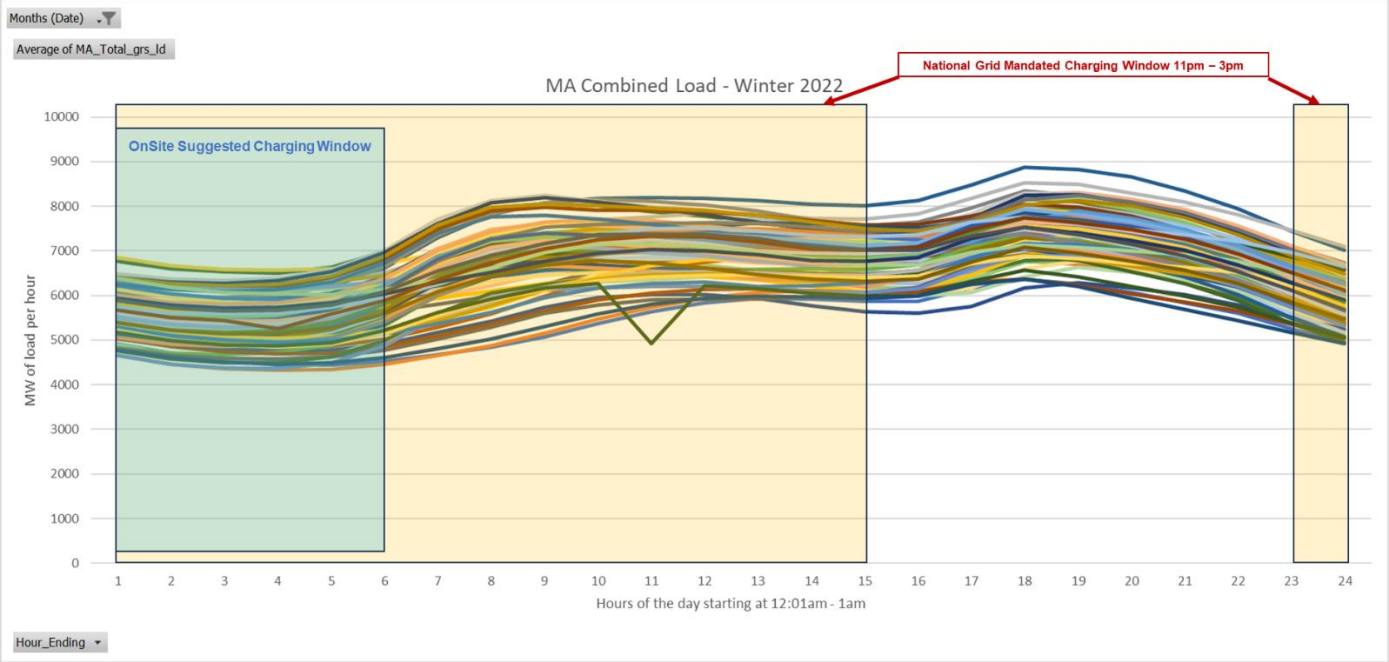
Longer study timelines lead to very long waits before projects can start operating. OnSite is estimating that the majority of its projects will reach Permission to Operate (PTO – permission to discharge and charge on the distribution system) from National Grid by 2026 into 2027. OnSite estimates that none of its projects will receive PTO prior to Q2 of 2025. Most projects will require 4-5 years to complete National Grid's studies and construction timeframes – time from filing an interconnection application to PTO (historically this timeframe was 1-2 years). ***National Grid stated in its Sept. 2023 ESMP that it alone will exceed the State's 2025 energy storage target based on the projects in its interconnection queue at the end of 2022. Data shows that OnSite projects made up approximately 75% of National Grid's interconnection queue at the time.***

Figure 2: Interconnection Study Charge/Discharge Schedules









National Grid's mandated charging schedule increases GHG emissions, increases the cost of interconnection, burdens ratepayers and developers with unnecessary costs, and kills projects, harming the state's ability to achieve its aggressive GHG reduction and energy storage goals.

ISO-NE 2023 ISO-NE Variable Energy Resource (VER) Data Series (2000-2022) Rev. 0 from: https://www.iso-ne.com/system-planning/planning-models-and-data/variable-energy-resource-data/