

February 14, 2020

Via Electronic Mail

Patrick Woodcock, Commissioner
Massachusetts Department of Energy Resources
100 Cambridge Street, Suite 1020
Boston, MA 02114

Re: Massachusetts Electric Company and Nantucket Electric Company d/b/a National Grid
CY 2019 Energy Storage Target Annual Report

Dear Commissioner Woodcock:

On behalf of Massachusetts Electric Company and Nantucket Electric Company d/b/a National Grid (“National Grid” or the “Company”), I am enclosing National Grid’s Energy Storage Target Annual Report (“Report”) to the Department of Energy Resources (“DOER”) for the year ended December 31, 2019. This Report is submitted in accordance with Section 20 of Chapter 227 of the Acts of 2018, An Act to Advance Clean Energy (the “Act”).

The Act establishes an energy storage target of 1000 megawatt hours to be achieved by December 31, 2025 and requires each electric distribution company (“EDC”) to submit an annual report to the DOER by February 15 of each year documenting the energy storage installations in its service territory. As discussed in the Report, energy storage systems (“ESS”) installed in National Grid’s service territory significantly increased from 5.7 MWh_{ac} in 2018 to 85 MWh_{ac} in 2019, representing 8.5% of the statewide ESS target. Also, ESS in the pipeline to be installed in the Company’s service territory increased from 752 MWh_{ac} in 2018 to 956 MWh_{ac} in 2019.

The enclosed Report closely follows the form of National Grid’s CY 2018 Energy Storage Target Annual Report. As with past reports, to protect customer confidentiality, National Grid has withheld personal information (e.g., name of customer) associated with each residential, commercial and industrial project, but has included the “DG WR Number” and “Case Number” or unique project identification number.

Thank you for your attention to this matter. Please contact me if you have any questions regarding this Report.

Sincerely,



Nancy D. Israel

Enclosures

cc: Will Lauwers, DOER

I. Introduction

Massachusetts law sets a statewide target for 1,000 megawatt hours (“MWh”) of energy storage systems (“ESS”) to be installed by December 31, 2025.

National Grid is strongly committed to serving as a clean energy catalyst for the region and views energy storage as a core component of the clean energy transformation required to achieve the Commonwealth’s goal of an 80 percent greenhouse gas emission reduction by 2050.

As of December 31, 2019, National Grid had approximately 85 MWh_{ac} and 23 MW_{ac} of installed ESS in its service territory, representing 8.5 percent of the statewide ESS target. National Grid also had approximately 956 MWh_{ac} and 235 MW_{ac} of ESS in the pipeline in its service territory. National Grid’s installed ESS increased significantly from 5.7 MWh_{ac} in 2018 to 85 MWh_{ac} in 2019, while its pipeline ESS increased moderately from 752 MWh_{ac} in 2018 to 956 MWh_{ac} in 2019, representing meaningful growth in operational ESS in National Grid’s service territory.¹

National Grid has been actively investigating how ESS can play a greater role in energy system optimization, that is, support operational flexibility, enhance the integration of renewable distributed generation, and reduce customer costs and constraints, while ensuring safety and reliability. National Grid works with the industry by offering the use of our ESS facilities to test a variety of use cases for utility-owned ESS and to support the deployment of customer-owned-and-operated-ESS, which can also deliver substantial benefits to our customers and the electric power system.

In our Solar Phase II program, National Grid and the Fraunhofer USA Center for Energy Innovation demonstrated the active management of net system power flow to and from the feeder through our 1.5 MW solar PV and 0.5 ME ESS project in Shirley, MA. This project tested the use of a SunDial System control platform to integrate facility loads and demand management, battery energy storage, and solar PV by optimizing power flow on the distribution system in high-penetration solar environments. In our Solar Phase III program, National Grid is adding 5.8 MW of ESS to 14 MW of existing solar PV systems. The aim of this program is to demonstrate the value of ESS for system peak load shaving, solar-ramp rate control, and mitigation of power quality issues.

In November 2019, National Grid received an award from Energy Storage North America for the deployment of a 6 MW/ 48 MWh ESS on the island of Nantucket. This system, along with a 15 MW

¹ Customers provide information about their ESS project size in energy (kWh) in alternating current (AC) or in direct current (DC). To demonstrate progress against the statewide target, which is measured in AC, this year, National Grid applied a conversion factor of 95 percent to DC-coupled projects to account for the roundtrip efficiency losses. For example, a 100 kWh_{dc} ESS would be estimated to be 95 kWh_{ac} after applying the 95 percent conversion factor. Last year, National Grid reported 341 MWh_{ac} and 433 MWh_{dc} of ESS in the pipeline to be installed in its service territory, which we estimated to be a combined total of 752 MWh_{ac}, after applying the 95 percent conversion factor.

combustion turbine generator creates a microgrid that will defer the expense of a third undersea cable, while also ensuring that the island's electrical needs are met for years to come. The system is being fitted with a predictive decision support system that will take weather, historical load, and several other parameters in to account to control the ESS in a semi-autonomous fashion.

What follows is National Grid's detailed Energy Storage Target Annual Report ("Report") to the Massachusetts Department of Energy Resources ("DOER") for the year ended December 31, 2019.

II. Reporting Requirements

An Act to Advance Clean Energy, Section 20 of Chapter 227 of the Acts of 2018, amended An Act Relative to Energy Diversity, Section 15 of Chapter 188 of the Acts of 2016, by striking out Section 15 in its entirety and replacing it with a new Section 15 containing a new statewide energy storage target of 1,000 MWh, to be achieved by December 31, 2025, and a requirement for the electric distribution companies ("EDCs") to report annually to the DOER on the new target by February 15, beginning in 2019, documenting the energy storage installations in their respective service territories.

As set forth in An Act to Advance Clean Energy, to achieve this statewide energy storage target of 1,000 MWh, DOER "may consider a variety of policies to encourage the cost-effective deployment of energy storage systems, including the refinement of existing procurement methods to properly value energy storage systems, inclusion in energy portfolio standards, the use of alternative compliance payments to develop pilot programs and the use of energy efficiency funds under section 19 of chapter 25 of the General Laws if the department determines that the energy storage system installed at a customer's premises provides sustainable peak load reductions on either the electric or gas distribution systems and is otherwise consistent with section 11G of chapter 25A of the General Laws."

This is National Grid's third annual Report to the DOER and covers the period January 1, 2019 through December 31, 2019.²

A. Data Collection

National Grid obtains uniform data and information for EDC-owned and non-EDC-owned ESS projects through the distributed generation ("DG") interconnection process. For purposes of annual Reports to the DOER, the EDCs have been requesting data and information for ESS projects they do not own from customers and developers of existing ESS projects already connected to their electric distribution systems and are requesting such data and information from customers and developers of new projects that have applied to interconnect to their respective electric distribution systems. As of December 3, 2019, the Department of Public Utilities ("DPU") issued an Interim Guidance regarding ESS requiring all applications for interconnection that include ESS to submit a completed ESS Questionnaire to provide

² Although more customer-owned ESS projects will be included in this report than in the EDCs' prior ESS reports to DOER, the data and information on each ESS projects in Massachusetts is still limited at this early stage of ESS installation in the Commonwealth as customers have not been required to provide detailed ESS project data until recent guidance from the DPU in December 2019.

technical and operational data about the proposed ESS.³ The collected data and information will be used to demonstrate measurable progress towards the achievement of the ESS 1,000 MWh target of installed ESS. These data and information include:

- ESS Installed, that is, Interconnected (MWh_{ac} and MW_{ac});
- ESS in the Pipeline to be installed (MWh_{ac} and MW_{ac});
- Policy Sources of ESS (e.g., SMART program);
- ESS Specifications (e.g., technology type, manufacturer);
- Operational Information (e.g., installation type, system configuration); and
- Applications/ Intended Use Cases (e.g., Peak Shaving/ Load Leveling).⁴

The EDCs are including the above-mentioned data and information on the ESS installed and pipeline projects in their annual reports to the DOER, to the extent such data and information has been provided to them. However, for non-EDC-owned projects, such data and information must be obtained from customers and developers, who were not required to provide such data and information until the Department's December 3, 2019 interim guidance noted above. Given that the Interim Guidance did not apply for much of the 2019 reporting year, the EDCs may have been unable to obtain some or all of this customer data and information and the level and type of data and information included for each such project may vary in this Report. Consistency of data collection and reporting should improve with the requirement for applicants to provide a completed ESS Questionnaire.

B. Attachment A

Attachment A to this Report includes installed ESS projects, and ESS projects in the pipeline as of December 31, 2019. For purposes of this Report, an "installed" ESS project means an ESS project that has been interconnected to an EDC's electric distribution system.

C. Policy Sources of ESS

The EDCs have jointly identified several state policies, programs, and funding sources intended to drive the installation of ESS in the Commonwealth. Where the EDCs are aware of the state policy, program or funding source associated with an ESS project, the EDCs have identified that policy source in Attachment A. Some ESS projects may participate in multiple state policies, programs and funding sources. Policy sources of ESS projects include, but are not limited to:

- Utility-owned ESS for transmission and distribution operation and management for the benefit of customers ("Utility-Owned T&D");

³ See DG Interconnection, D.P.U. 19-55, Interim Guidance – Energy Storage Systems (December 3, 2019).

⁴ *State of Charge* report, issued on September 16, 2017. According to the report, a use case is defined as an integrated set of grid services performed by a technology at a distinct site or location on the grid. <http://www.mass.gov/eea/docs/doer/state-of-charge-report.pdf>.

- Utility-owned ESS for research and development purposes, such as those projects supported by U.S. Department of Energy grants, or utility-scale solar plus storage projects developed to support research programs (“Utility-Owned R&D”);
- ESS to be paired with newly authorized large-scale energy procurements featuring 9,450,000 MWh of clean energy and 1,600 MW of offshore wind generation under Sections 83C and 83D of the Green Communities Act (“Section 83C or 83D”);
- Customer-owned ESS enrolled in a Program Administrators’ energy efficiency/ demand response demonstration project or program (“Energy Efficiency/DR program”);
- Customer-owned ESS enrolled in the EDC’s Solar Massachusetts Renewable Target (“SMART”) program that qualify for the SMART storage adder (“SMART program”); and
- Customer-owned ESS funded by the DOER’s or Massachusetts Clean Energy Center’s (“MassCEC”) Advancing Commonwealth Energy Storage (“ACES”) and Peak Demand Reduction Grant programs, which include projects to which the EDC has provided in-kind and/or financial support (“DOER/ MassCEC Funded Projects”).⁵

D. Applications and Intended Use Cases

Based on the *State of Charge* report and the EDCs’ own expertise, the EDCs have identified the following primary applications and use cases for ESS. This list may be modified as the EDCs monitor relevant industry trends and gain further hands-on experience with energy storage.

- i. Wholesale Market (i.e., Energy, Capacity, Ancillary Services): ESS have the potential to participate in all major categories of the wholesale market.
 - a. In the wholesale energy market, ESS may be able to produce revenue by arbitraging hourly electricity prices, charging when the wholesale price is low and discharging when the wholesale price is high.
 - b. ESS may participate in the Independent System Operator- New England (“ISO-NE”) Forward Capacity Auction and earn revenue by contributing to ISO-NE’s installed capacity.
 - c. ESS may also be able to generate revenue by participating in the ancillary services market (e.g., black start and frequency regulation).
- ii. Peak Shaving / Load Leveling: ESS can store energy during hours of low demand and discharge energy when the system is peaking. This may reduce the entire system peak and result in lower utilization of inefficient and expensive gas and oil units. It can also reduce ISO-NE capacity and regional network service costs.
- iii. Generation Support (e.g., Peaker Replacement): ESS can discharge when the system is peaking, thus acting in place of peaking capacity. ESS have the potential to be cleaner and more reliable than a traditional combustion turbine unit.

⁵ Any ACES or Peak Demand Reduction Grant project where the EDC is the award recipient or the EDC partner on the project.

- iv. T&D Asset Deferral: Strategic deployment of ESS has the potential to defer or eliminate traditional transmission and distribution upgrades in specific locations. The potential for transmission and distribution deferrals need to be studied on an individual basis in consideration of local circumstances and system characteristics.
- v. Power Quality (e.g., Voltage/VAR Support): ESS can provide voltage/VAR support. Reactive power cannot be efficiently transmitted over long distances, which makes distributed ESS an attractive alternative to traditional voltage/VAR support supplied by generating units in some locations.
- vi. Customer Bill Savings (e.g., Demand Charge Management): Individual customers can utilize ESS to shave the peaks and fill the troughs of their load. By reducing peak load, customers may be able to mitigate their installed capacity tag. Commercial and industrial customers may also have the potential to realize bill savings by lowering their peak demand and avoiding a demand charge. Customers with time varying rates can also use ESS to perform arbitrage by charging the ESS during less expensive off-peak times and discharging for their own use during more expensive peak periods.
- vii. Renewable Energy Integration (e.g., Ramping, Smoothing): ESS can quickly follow the variable generation of renewable resources making it smooth and dispatchable. ESS can thus support the further integration of renewable resources.
- viii. Renewable Energy Shifting: ESS have the potential to store energy generated by renewable resources when system demand is low and discharge when system demand is high.
- ix. Reliability and Resiliency: ESS can support reliability and resiliency by locally providing energy during an outage event.
- x. Microgrid: ESS can help promote a cost-effective and reliable microgrid. By storing energy produced by renewable resources or by combined heat and power ("CHP") for use when those assets are not generating, ESS can support microgrid "islanding" and going off the main grid at times when there is an electric distribution system outage or when it would be otherwise advantageous to the microgrid operator.

E. Target Results

See Attachment A for data and information regarding installed (e.g., interconnected) ESS projects and ESS projects in the pipeline to be installed.

i. Installed Projects

As of December 31, 2019, National Grid had approximately 85 MWh_{ac} and 23 MW_{ac} of ESS installed, that is, interconnected, in its Massachusetts service territory.

ii. Pipeline Projects

As of December 31, 2019, National Grid had approximately 956 MW_{ac} and 235 MW_{ac} of ESS in the project pipeline.⁶

F. Cost-Effectiveness and Viability

Energy Efficiency/ Demand Response

In Massachusetts, the energy efficiency program administrators (“PAs”) use a Total Resource Cost (“TRC”) test to determine the cost-effectiveness of an offering or program. For the purposes of determining the cost-effectiveness of storage included as part of energy efficiency and demand response, the PAs would apply the TRC standard. The PAs look at the total cost of the project, regardless of funding source, and compare that against the total benefits of the project and determine if the benefits exceed the costs. In the 2019-2021 Three Year Energy Efficiency Plan, the PAs proposed a pay for performance program design for customer-owned and sited behind-the-meter storage assets, typically referred to as daily dispatch, which means a resource type that can participate daily during the summer peak hours without adverse impacts to personal comfort or facility productivity. For pay for performance specifically, the PAs are not incenting the equipment itself, only the performance of the equipment assuming it is already in a customer’s home or facility. Therefore, when assessing the cost effectiveness of the pay for performance storage offerings, the PAs will look only at the amount of the incentive they are proposing to offer and compare that against the level of benefits the kW reduction is expected to produce.

In the 2019-2021 Three Year Plan order, the DPU did not approve full scale statewide deployment of a daily dispatch because it was determined to be an untested form of dispatch but did support learning more through demonstration. The PAs, National Grid, Eversource, and Unitil, ran daily dispatch demonstrations in summer 2019 and plan to present the findings to the Massachusetts Energy Efficiency Advisory Council (“EEAC”),

⁶ The exact amounts of energy and power of the proposed projects in AC and DC ratings could not be confirmed at the time of Report submittal, but will be known as the projects move from the pipeline to the installed list.

secure an EEAC resolution in support of daily dispatch becoming a full program offering, and submit a Compliance Filing to the DPU in Q1 2020.

The PAs made multiple presentations to the EEAC during 2019 and early 2020 to describe and support the inclusion of daily dispatch as a full program offering.⁷

G. Market Barriers and Solutions to the Adoption of Energy Storage

Market Barriers: Dual Participation

In 2019, the Federal Energy Regulatory Commission (“FERC”) conditionally approved several ISO-NE market rule changes filed in compliance with FERC Order 841, which required each Regional Transmission Organization (“RTO”) or Independent System Operator (“ISO”) to establish market participation models for ESS. Specifically, FERC required RTOs/ISOs to “account for the physical and operational characteristics of electric storage resources through bidding parameters or other means” and to ensure that ESS resources are “eligible to provide all capacity, energy, and ancillary services that [they are] technically capable of providing.”⁸

ISO-NE addressed Order 841 requirements primarily through the creation of the Continuous Storage Facility (“CSF”), a participation model that allows ESS resources to participate simultaneously as Generating Assets, Dispatchable Asset-Related Demand (“DARD”), and Alternative Technology Regulation Resources (“ATRRs”). For resources that do not wish to participate as CSFs, ISO-NE market rules also accommodate several other participation models, including combined models such as Settlement-Only Generator (“SOG”) and ATRR. Models other than the CSF model may limit an ESS’s ability to provide certain products (e.g., Reserves), but they may also afford ESS resources additional operational flexibility relative to the CSF model.

A key requirement for Order 841 compliance is the ability for ESS resources to serve both retail and wholesale markets (also called “dual participation”). In its conditional acceptance of ISO-NE’s tariff revisions issued in November 2019, FERC required ISO-NE to submit a further compliance filing “to explain how its Tariff allows for electric storage resources to participate in both wholesale and retail markets.”⁹ ISO-NE submitted a compliance filing to FERC on February 10, 2020 in which it proposed new tariff language to state that ESS will “not be precluded from providing retail services so long as it is able to fulfill its wholesale Energy Market and Forward Capacity Market obligations including,

⁷ The PAs presented to the EEAC in March and November of 2019 and January 2020 on Active Demand Reduction and specifically the daily dispatch approach; <http://ma-eeac.org/march-20-eeac-meeting/>, <http://ma-eeac.org/november-20-eeac-meeting/>, <http://ma-eeac.org/january-22-eeac-meeting/>

⁸ Federal Energy Regulatory Commission Order 841, ¶320
<https://www.ferc.gov/whats-new/comm-meet/2018/021518/E-1.pdf>

⁹ FERC Order on ISO-NE Order 841 Compliance Filing, November 22, 2019
https://elibrary.ferc.gov/idmws/file_list.asp?document_id=14815902

but not limited to, satisfying meter data reporting requirements and notifying the ISO of any changes to operational capabilities.”¹⁰

Previously, ISO-NE has suggested that ESS resources may achieve “dual participation” by appropriately shaping daily bids to “indicate a strong preference” to be dispatched at certain times.¹¹ For example, an ESS may submit a bid at the ISO-NE floor price when it needs to discharge, or it may offer at the ISO-NE price cap when it does not want to discharge. By “indicating a strong preference,” resources may be able to meet most or all of their retail obligations through ISO-NE dispatch. However, this model does include some risk. For example, price spikes due to reserve constraints could exceed the offer price cap and result in a resource being called even when it does not wish to discharge. This may prevent the ESS resource from delivering energy later to meet its retail obligations or result in financial penalties if the resource does not answer ISO-NE dispatch.

For EDCs, the primary use case for utility-owned ESS devices is the deferral of a transmission or distribution investment through Non-Wires Alternative (“NWA”) projects. ESS installed as NWAs have certain reliability requirements that they must meet to properly defer or avoid system upgrades. These requirements may be limited or seasonal, leaving the ESS idle during the remaining parts of the year unless it is registered with ISO-NE. However, under ISO-NE’s current participation models, it is not possible for an asset to participate seasonally or to leave the market for portions of the year. Under the “strong preference” approach to dual participation, the ability to serve reliability requirements without incurring financial penalties is not guaranteed.¹²

In some cases, an NWA project may be capable of managing market risk appropriately to achieve the T&D deferral goal while simultaneously participating in the ISO-NE markets. In these instances, the revenue earned through participation in the ISO-NE wholesale electricity markets could reduce the NWA cost to customers. In other cases, however, market risks may prevent resources from participating in ISO-NE markets, resulting in the underuse of a ratepayer-funded ESS asset throughout the year. The inability to participate in ISO-NE markets due to operational or financial risks may result in higher customer costs or prevent projects from going forward.

National Grid believes that ISO-NE’s current approach to dual participation is an important step toward ensuring that ESS resources can achieve their full economic

¹⁰ Docket No. ER19-470-000, ISO-NE Revisions in Compliance with the Order No. 841 Order on Compliance, at 11 (Feb. 10, 2020), available at https://www.iso-ne.com/static-assets/documents/2020/02/compliance_filing_order_841.pdf

¹¹ Chris Parent, former ISO-NE Market Development Director, used this phrase at DOER’s ISO-NE panel to describe a dual participation strategy during the “Energy Storage Stakeholder Series” on December 18, 2019.

¹² An NWA project participating in the ISO-NE markets may incur costs or penalties if providing non-wholesale services prevents it from meeting wholesale market requirements.

potential. However, National Grid believes that Massachusetts customers will be best served by a seasonal exemption for resources with reliability obligations. Such an obligation would allow NWA projects to temporarily suspend market participation during certain periods of the year in order to serve reliability requirements without incurring additional risk. This model will also lower NWA costs and make energy storage technologies more cost-competitive with traditional infrastructure upgrades in the future.

Market Barriers: DC Coupled Solar Facilities with Storage

National Grid is aware that many solar facility developers seek to pair their solar capacity with battery storage capacity to take advantage of the Commonwealth's SMART program storage adder and enhance the operational capabilities of the solar generation asset. Many of these are designed to be a co-located, alternating current (AC) connection, meaning that each component, the solar PV and battery storage system, has its own dedicated inverter(s) and the battery charges from AC-power flowing into its inverter. However, an increasingly popular design is to connect the battery storage to the solar PV output behind the inverter, or multiple inverters, as a direct current (DC) connection. Such systems have combined AC output for both resources through a single AC meter.

This type of connection is allowed by the EDCs' Standards for Interconnection of Distributed Generation, and DOER's regulations of the SMART program. DOER and industry participants have highlighted that the PV output that is used to charge the ESS directly is not fully compensated under the SMART program, due to roundtrip efficiency losses of the ESS. In addition, if the developer of such a DC-coupled solar and storage system wishes to participate in the ISO-NE markets, it is currently constrained from doing so, as all market settlement must occur in AC-metered energy, and the PV and ESS cannot be seen and settled separately when behind a single AC meter. As a result, ISO-NE will only recognize a single Settlement Only Generator asset, the PV array, behind the single meter.

In the proceedings of a DPU technical session held jointly for participants in D.P.U. 19-55 and D.P.U. 17-140, DOER agreed to convene a stakeholder group to primarily consider how the SMART-eligible solar output could be fully compensated and consider additional steps that might allow for participation of DC-coupled ESS more fully in the ISO-NE markets. As part of this stakeholder process, DOER convened the EDCs and solar/ESS industry members in numerous meetings from October 2019 to the present, which has resulted in agreement in principle on a methodology for annually compensating DC-coupled ESS facility owners, participating in the SMART program, for roundtrip efficiency losses from the ESS. The details of this methodology are still in discussion at the time of this filing.

Additionally, the stakeholders, along with representatives of ISO-NE, agreed to work through the ISO-NE committee process to identify pathways to fuller market participation for DC-coupled ESS. This process is expected to include the reporting of DC-metered energy amounts from the solar and ESS assets for market settlement by the customer via a qualified meter reader, adjusted into AC-energy terms, and matched against the metered output of the utility owned AC meter. This process is expected to take 9-12 months at a minimum from the time of this filing, before a set of rules is adopted to allow such participation.

There are also ongoing efforts to develop national testing standards for DC electricity meters which, when promulgated, will further facilitate market participation of DC-coupled ESS.

H. Recommendations for Future Energy Storage Programs and Policies

Clean Peak Energy Standard

In 2020, National Grid expects that DOER will conclude the process of developing and promulgating regulations to implement the Clean Peak Energy Standard, which was enacted on August 9, 2018, when Governor Baker signed into law An Act to Advance Clean Energy. Included in this statute was the addition of the Clean Peak Energy Standard. This section of the law requires DOER to establish a baseline minimum percentage of kWh sales to end use customers that shall be met with Clean Peak Certificates (“CPCs”).

DOER is in the process of finalizing the regulation in terms of: (i) establishment of seasonal peak periods; (ii) methodology by which CPC values shall be established, which may include a process by which the EDCs competitively procure CPCs from Clean Peak Resources (“CPRs”) and enter into Long Term Contracts, subject to approval from the DPU; (iii) establishment of minimum percentage of CPCs that must be derived from demand response resources; (iv) an alternative compliance mechanism for retail electricity suppliers; and (v) procedures by which each retail electricity supplier shall annual submit for DOER’s review and filing demonstrating its compliance with the requirement of this section.

Energy storage is a central element of the Clean Peak Energy Standard, as it is eligible to qualify as a CPR when it is “primarily charged by eligible renewable resources.” National Grid sees the development of the Clean Peak Standard as an opportunity for DOER to advance the Commonwealth’s energy storage goals while also mitigating greenhouse gas and local pollutants, and the high costs of electricity supply associated with periods of peak demand.

Energy Storage System																				GENERATION						
Case Number	DG WR Number	Common Project Name	Policy Source 1	Policy Source 2	Other Source	Year Installed	Customer Type	City/Town	Storage - Technology Type	Storage - Sub-technology Type	Manufacturer	Energy kWh (DC)	Capacity kW (DC)	Energy kWh (AC)	Capacity kW (AC)	Installation Type	Application Intended Use #1	Application Intended Use #2	Application Intended Use #3	Other - Application Intended Use	DG WR Number	Co-Located with DG/Generation	System Configuration type	DG Generation Type	Capacity kW (DC)	Capacity kW (AC)
		Nantucket BESS - Bunker Road	Utility-Owned Storage - R&D			2019	Utility-Owned Transmission	NANTUCKET	Lithium Ion		Tesla			48000	6000	FTM	Reliability and Resiliency	T&D Asset Deferral				Yes	AC Coupled	Diesel/Grid supplied		10,000
178308	25638676	JACOBS ENGINEERING	MA Smart			2019	Commercial	EVERETT	Lithium Ion		Tesla			8000	4000	BTM					25638676	Yes	AC Coupled	Natural Gas	917	7788
177089	23453253	Borrego Solar	MA Smart			2019	Commercial	WINCHENDON	Lithium Ion		POWER ELECTRONICS	7320		6400	3300	Standalone					23453253	Yes	AC Coupled	Solar	7030	7800
178795	23716938	Borrego Solar	MA Smart			2019	Commercial	PLAINVILLE	Lithium Ion		POWER ELECTRONICS			4638	2310	Standalone					23716938	Yes	AC Coupled	Solar	6372	7260
178340	25403267	Tom Holt	MA Smart			2019	Commercial	AMESBURY	Lithium Ion		WSTECH	4642		4000	1600	FTM	Renewable Energy Integration (e.g.,				25403267	Yes	AC Coupled	Solar	4924	4894
176019	19078531	LSDP 12	MA Smart			2019	Commercial	SHUTESBURY	Lithium Ion		DYNAPOWER	4642		4000	2000	BTM	Renewable Energy Integration (e.g.,				19078531	Yes	DC Coupled	Solar	6000	4500
176189	20270685	Vionx Energy - Holy Name High School	Utility-Owned Storage - R&D			2017	Utility-Owned Distribution	WORCESTER	Liquid Flow Battery		VIONX ENERGY	3180		3000	500	Standalone	Renewable Energy Integration (e.g., Ramping, Smoothing)	Customer Bill Savings (e.g., Demand Charge Management, TOU	Wholesale Market (i.e., Energy, Capacity, Ancillary		20270685	Yes	AC Coupled	Wind Turbine		500
176239	19351038	Solar phase II - Patterson Rd, Shirley	Utility-Owned Storage - R&D			2018	Utility-Owned Distribution	SHIRLEY	Lithium Ion		Tesla			1000	500	FTM	Renewable Energy Integration (e.g.,	Peak Shaving/ Load Leveling	Power Quality (e.g., Voltage/VAR		19351038	Yes	AC Coupled	Solar	999	1000
189024		Solar City				2019	Residential	BOXFORD	Lithium Ion		Tesla			54	20	BTM						Yes	AC Coupled	Solar		
169807		Solar City				2018	Residential	SWAMPSCOTT	Lithium Ion		Tesla			40.5	15	BTM						No	AC Coupled	None		
197819		Solar City				2019	Residential	TOPSFIELD	Lithium Ion		Tesla			40.5	15	BTM						No	AC Coupled	None		
242091		Solar City				2020	Residential	TOPSFIELD	Lithium Ion		Tesla			40.5	15	BTM						No	AC Coupled	None		
207452		Solar City	MA Smart			2019	Residential	NORTHBOROUGH	Lithium Ion		Tesla			40.5	15	BTM						Yes	AC Coupled	Solar	9.76	10
160119	24379333	Solworks Energy, LLC				2018	Residential	HARVARD	Lithium Ion		Sonnen			32	16	BTM					24379333	Yes	AC Coupled	Solar	17.08	12
213993		Solar City	MA Smart			2019	Residential	NORTH GRAFTON	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar	2.71	7.6
202902		Solar City				2019	Residential	SUTTON	Lithium Ion		Tesla			27	10	BTM						No	AC Coupled	None		
203337		Solar City				2019	Residential	NORWELL	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
203910		Solar City				2019	Residential	MANCHESTER	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
204363		Solar City				2019	Residential	WESTPORT	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
205070		Solar City				2019	Residential	S ATTLEBORO	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
205175		Solar City				2019	Residential	WEYMOUTH	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
206824		Solar City				2019	Residential	MELROSE	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
213064		Solar City				2019	Residential	BOXFORD	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
213359		Solar City	MA Smart			2019	Residential	SALEM	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
213965		Solar City				2019	Residential	SALISBURY	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
215949		Solar City				2019	Residential	SCITUATE	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
216694		Solar City				2019	Residential	BRIDGEWATER	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
225069		Solar City				2019	Residential	BELCHERTOWN	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
168580		Solar City				2018	Residential	DUDLEY	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar	3.3	3.6
243834		Solar City				2019	Residential	WRENTHAM	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
169832		Solar City				2018	Residential	WESTFORD	Lithium Ion		Tesla			27	10	BTM						No	AC Coupled	None		
170529		Solar City				2018	Residential	MAGNOLIA	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
199765		Solar City				2019	Residential	GLOUCESTER	Lithium Ion		Tesla			27	10	BTM						No	AC Coupled	None		
227483		Solar City				2019	Residential	NORTH EASTON	Lithium Ion		Tesla			27	10	BTM						No	AC Coupled	None		
261233		Solar City				2020	Residential	REHOBOTH	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
221739		Solar City				2019	Residential	SOMERSET	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
244271		MASS RENEWABLES INC				2019	Residential	MENDON	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		5
197736		Solar City	MA Smart			2019	Residential	ROCKPORT	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar	4.41	3.8
186432		Solar City				2019	Residential	ANDOVER	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		10
200891		Solar City				2019	Residential	ATHOL	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
204685		Solar City				2019	Residential	NORTH GRAFTON	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
213962		Solar City				2019	Residential	WEST NEWBURY	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
223811		Solar City				2019	Residential	WRENTHAM	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
248297		Solar City				2019	Residential	BOLTON	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		
258893		Solar City				2019	Residential	NORTON	Lithium Ion		Tesla			27	10	BTM										

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194950		Solar City	MA Smart			2019	Commercial	NORTH ANDOVER	Lithium Ion		Tesla			27	10	BTM	Peak Shaving/ Load Leveling						Yes	AC Coupled	Solar	11.7	10
210891		Solar City	MA Smart			2019	Residential	E BRIDGEWATER	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar	12.2	10	
248584		Solar City	MA Smart			2019	Residential	WEST NEWBURY	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar	12.29	10	
177730	25112926	Solar City				2018	Residential	ANDOVER	Lithium Ion		Tesla			27	10	BTM					25112926	Yes	AC Coupled	Solar	12.35	20	
202799		Solar City	MA Smart			2019	Residential	WESTFORD	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar	12.6	10	
200681		REVOLUSUN	MA Smart			2019	Residential	ANDOVER	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		10	
244028		Solar City				2020	Residential	BELCHERTOWN	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		10	
161494	25062684	Solar City				2018	Residential	SHUTESBURY	Lithium Ion		Tesla			27	10	BTM					25062684	Yes	AC Coupled	Solar		10	
217237		Solar City	MA Smart			2019	Residential	WESTMINSTER	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar	12.87	10	
184342		Solar City				2019	Residential	ANDOVER	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		10	
218868		Solar City	MA Smart			2019	Residential	E LONGMEADOW	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar	12.87	10	
202074		Solar City	MA Smart			2019	Residential	SOUTH EASTON	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		10	
189490		Solar City	MA Smart			2019	Residential	ESSEX	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		10	
233871		Solar City	MA Smart			2019	Residential	ANDOVER	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar	13.2	10	
173388		Solar City				2019	Residential	DRACUT	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		7.6	
238751		Solar City	MA Smart			2019	Residential	ESSEX	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		10	
202681		Solar City	MA Smart			2019	Residential	NORWELL	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		10	
183596		Solar City				2019	Residential	WEYMOUTH	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		17.25	
200495		Solar City				2019	Residential	COHASSET	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar		17.5	
231390		Solar City	MA Smart			2019	Residential	LEOMINSTER	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar	14.85	10	
247186		Solar City	MA Smart			2020	Residential	HARVARD	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar	16.39	15.2	
254944		Solar City	MA Smart			2020	Residential	SOUTHBOROUGH	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar	16.39	15.2	
216596		Solar City	MA Smart			2019	Residential	BELCHERTOWN	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar	16.5	25.2	
232600		Solar City	MA Smart			2020	Residential	NORTH DIGHTON	Lithium Ion		Tesla			27	10	BTM						Yes	AC Coupled	Solar	17.33	15.2	
178636	26093470	Solar City				2019	Residential	NORTHBOROUGH	Lithium Ion		Tesla			27	10	BTM					26093470	Yes	AC Coupled	Solar		20	
197699		BLUESEL HOME SOLAR	MA Smart			2019	Residential	S HAMILTON	Lithium Ion		Sonnen			15	7	BTM						Yes	AC Coupled	Solar	7.4	6.4	
213132		VALLEY SOLAR INC	MA Smart			2019	Residential	GT BARRINGTON	Lithium Ion		Sonnen			15	7	BTM						Yes	AC Coupled	Solar		7.83	
214156		Critical Mass Solar	MA Smart			2019	Residential	ANDOVER	Lithium Ion		Tesla			14	13.4	BTM						Yes		Solar		6	
263256		Solar City	MA Smart			2020	Residential	BILLERICA	Lithium Ion		Tesla			14	13.4	BTM						Yes		Solar	7.57	7.6	
249821		Solar City	MA Smart			2019	Residential	SAUGUS	Lithium Ion		Tesla			14	13.4	BTM						Yes		Solar	8.19	7.6	
221211		PALMETTO SOLAR	MA Smart			2019	Residential	DRACUT	Lithium Ion		Tesla			14	13.4	BTM						Yes		Solar		10	
251650		CERTIFIED SAFE ELECTRIC	MA Smart			2019	Residential	HAUFAX	Lithium Ion		Tesla			14	13.4	BTM						Yes		Solar		10	
236175		MASS RENEWABLES INC	MA Smart			2019	Residential	LANCASTER	Lithium Ion		Tesla			14	13.4	BTM						Yes		Solar		10	
168282		Solar City				2018	Residential	BERLIN	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	2.1	4.2	
192755		Solar City	MA Smart			2019	Residential	MANCHESTER	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	2.28	3.8	
241860		ALL ENERGY SOLAR	MA Smart			2019	Residential	E LONGMEADOW	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		3.48	
225946		Solar City	MA Smart			2019	Residential	QUINCY	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	2.6	3	
161843	24958636	Solar City				2017	Residential	HAUFAX	Lithium Ion		Tesla			13.5	5	BTM					24958636	Yes	AC Coupled	Solar	3	3	
186376		Solar City	MA Smart			2018	Residential	QUINCY	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	3.05	3	
190278		Solar City				2018	Residential	BILLERICA	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	3.78	3.8	
194751		Solar City	MA Smart			2018	Residential	SALEM	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	3.78	3.8	
246762		Solar City	MA Smart			2019	Residential	WESTBOROUGH	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	4.1	3.8	
247003		Solar City	MA Smart			2019	Residential	REVERE	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	4.1	3.8	
247453		Solar City	MA Smart			2019	Residential	ATTLEBORO	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	4.1	3.8	
202337		Solar City	MA Smart			2019	Residential	WORCESTER	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	4.2	3.8	
230204		Solar City				2019	Residential	SALEM	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		5	
208344		Solar City	MA Smart			2019	Residential	SWANSEA	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	4.5	5	
169528		Solar City				2018	Residential	SEEKONK	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		5	
215916		Solar City	MA Smart			2019	Residential	W BRIDGEWATER	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	4.58	3.8	
173543		Solar City				2019	Residential	WESTBOROUGH	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	4.68	5	
190265		Solar City	MA Smart			2019	Residential	FRANKLIN	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	4.88	5	
226647		REVISION ENERGY	MA Smart			2019	Residential	ROCKPORT	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		5	
245424		Solar City				2019	Residential	LEOMINSTER	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar			
234609		REVISION ENERGY	MA Smart			2019	Residential	MANCHESTER	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		5	
162534	25128344	Solar City				2018	Residential	SCITUATE	Lithium Ion		Tesla			13.5	5	BTM					25128344	Yes	AC Coupled	Solar		5	
172993		ALL ENERGY SOLAR				2018	Residential	BERLIN	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		5	
230125		SUNLIGHT SOLAR ENERGY	MA Smart			2019	Residential	MANCHESTER	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	5.12	4.64	
201010		Solar City	MA Smart			2019	Residential	SAUGUS	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	5.2	5.2	
168469		Solar City				2018	Residential	DIGHTON	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		5.2	
249471		Devlin Contracting and Maintenance	MA Smart			2019	Residential	HAUFAX	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	5.58	4.5	
219723		Solar City	MA Smart			2019	Residential	METHUEN	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	5.67	5	
193952		Solar City	MA Smart			2019	Residential	E LONGMEADOW	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	5.67	5	
148173	22333557	Solar City				2017	Residential	ATTLEBORO	Lithium Ion		Tesla			13.5	5	BTM					22333557	Yes	AC Coupled	Solar	5.67	7.6	
194157		MASS RENEWABLES INC				2018	Residential	ATTLEBORO	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		6	
170803		Solar City				2018	Residential	BELLINGHAM	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	5.76	5.2	
161785	24955942	Solar City				2017	Residential	MELROSE	Lithium Ion		Tesla			13.5	5	BTM					24955942	Yes	AC Coupled	Solar	5.85	5	
162061	25207191	Solar City				2018	Residential	NEWBURYPORT	Lithium Ion		Tesla			13.5	5	BTM					25207191	Yes	AC Coupled	Solar	5.85	5.2	
166864		Solar City				2018	Residential	WESTPORT	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		6.6	
183851		Solar City	MA Smart			2018	Residential	S GRAFTON	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	5.85	5.2	
233385		Solar City	MA Smart			2019	Residential	SOMERSET	Lithium Ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	5.94	5	
161531	25066755	Solar City				2018	Residential	BARRE	Lithium Ion		Tesla			13.5	5	BTM					25066755	Yes	AC Coupled	Solar</			

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241215		Solar City	MA Smart			2019	Residential	MELROSE	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	8.19	5
241012		Solar City	MA Smart			2019	Residential	SEEKONK	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	8.19	7.6
171193		Solar City				2018	Residential	NORTH ANDOVER	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
236990		Solar City	MA Smart			2019	Residential	FRANKLIN	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	8.19	7.6
173891		Solar City				2019	Residential	AVON	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
262703		Solar City	MA Smart			2020	Residential	CHELMSFORD	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	8.19	7.6
265846		Solar City	MA Smart			2020	Residential	FRANKLIN	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	8.19	7.6
172860		Solar City				2019	Residential	SCITUATE	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
208969		MASS RENEWABLES INC	MA Smart			2019	Residential	FAYVILLE	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	8.4	10
167261		Solar City				2018	Residential	WESTMINSTER	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	8.45	6.6
166920		Solar City				2018	Residential	GLOUCESTER	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	8.45	7.6
186856		Solar City				2019	Residential	GLOUCESTER	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
201347		Solar City				2018	Residential	AYER	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
229816		Solar City	MA Smart			2019	Residential	MILLBURY	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	8.82	10
177286	22071923	Solar City				2017	Residential	NORWELL	Lithium ion		Tesla			13.5	5	BTM					22071923	Yes	AC Coupled	Solar	8.84	7.6
205311		REVISION ENERGY				2019	Residential	MEDFORD	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
205312		REVISION ENERGY				2019	Residential	AMESBURY	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
183956		Solar City				2018	Residential	FOXBORO	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	9.1	7.6
212657		Solar City				2019	Residential	STOUGHTON	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
213331		Solar City				2019	Residential	GLOUCESTER	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
222022		Solar City	MA Smart			2019	Residential	WORCESTER	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	9.16	7.6
199977		Solar City	MA Smart			2019	Residential	BOLTON	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	9.24	7.6
221795		Solar City				2019	Residential	BERLIN	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
223112		Solar City				2019	Residential	BELLINGHAM	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
223555		Solar City	MA Smart			2019	Residential	WEYMOUTH	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
225326		Solar City				2019	Residential	HAVERHILL	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
226784		Solar City				2019	Residential	ATTLEBORO	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
230363		Solar City				2019	Residential	W BRIDGEWATER	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
162751	25198031	Solar City				2018	Residential	WEYMOUTH	Lithium ion		Tesla			13.5	5	BTM					25198031	Yes	AC Coupled	Solar	9.6	7.6
236255		Solar City				2019	Residential	LYNN	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
264834		Solar City				2020	Residential	BEVERLY	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
183789		REVOLUSUN	MA Smart			2019	Commercial	BEVERLY	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		7.68
161654	24972048	Solar City				2018	Residential	NORTHBOROUGH	Lithium ion		Tesla			13.5	5	BTM					24972048	Yes	AC Coupled	Solar	9.9	12.6
168823		Solar City				2018	Residential	UPTON	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		9.8
170684		REVISION ENERGY				2018	Residential	HAMILTON	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		9.8
162118	25227417	Solar City				2018	Residential	HAVERHILL	Lithium ion		Tesla			13.5	5	BTM					25227417	Yes	AC Coupled	Solar		3.8
199141		MASS RENEWABLES INC	MA Smart			2019	Residential	WESTBOROUGH	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	9.92	10
168812		Solar City				2018	Residential	WESTPORT	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	10.08	7.6
162629	25133880	Solar City				2018	Residential	NORTH ANDOVER	Lithium ion		Tesla			13.5	5	BTM					25133880	Yes	AC Coupled	Solar		11.6
230808		Solar City	MA Smart			2019	Residential	STURBRIDGE	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	10.08	7.6
208186		MASS RENEWABLES INC	MA Smart			2019	Residential	TOPSFIELD	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		10
167826		Solar City				2017	Residential	RANDOLPH	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
247404		Solar City				2019	Residential	ANDOVER	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		10
170741		Solar City				2018	Residential	STURBRIDGE	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
204911		Solar City	MA Smart			2019	Residential	MELROSE	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	10.09	7.6
196522		MASS RENEWABLES INC	MA Smart			2018	Residential	FOXBORO	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	10.23	10
172244		Solar City				2019	Residential	BROCKTON	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
172580		Solar City				2019	Residential	SHUTESBURY	Lithium ion		Tesla			13.5	5	BTM						No	AC Coupled	None		
172526		Solar City				2018	Residential	W STOCKBRIDGE	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	10.5	
214800		Solar City	MA Smart			2019	Residential	LOWELL	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	10.68	7.6
198903		MASS RENEWABLES INC	MA Smart			2018	Residential	TOPSFIELD	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	10.85	10
254580		MASS RENEWABLES INC	MA Smart			2020	Residential	LEOMINSTER	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	11.06	10
245447		Solar City	MA Smart			2019	Residential	RUTLAND	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	11.22	10
197623		MASS RENEWABLES INC	MA Smart			2018	Residential	N BILLERICA	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	11.55	10
184850		MASS RENEWABLES INC				2018	Residential	LINWOOD	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		10
201831		Solar City	MA Smart			2019	Residential	FOXBORO	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		10
202596		MASS RENEWABLES INC	MA Smart			2019	Residential	LINWOOD	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	11.97	10
250915		MASS RENEWABLES INC	MA Smart			2019	Residential	ABINGTON	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	11.97	10
239647		MASS RENEWABLES INC				2019	Residential	SOUTHBOROUGH	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
167700		Solar City				2018	Residential	WESTMINSTER	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar	12.03	10
249036		Solar City				2019	Commercial	GLOUCESTER	Lithium ion		Tesla			13.5	5	BTM						No	AC Coupled	None		
189988		MASS RENEWABLES INC				2018	Residential	LANCASTER	Lithium ion		LG Chem			13.5	5	BTM						Yes	AC Coupled	Solar	12.06	10
206642		REVOLUSUN	MA Smart			2019	Residential	AMESBURY	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		10
234661		MASS RENEWABLES INC	MA Smart			2019	Residential	ABINGTON	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		10
263988		REVISION ENERGY	MA Smart			2020	Residential	NEWBURYPORT	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		10
166770		Solar City				2018	Residential	SEEKONK	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		12.6
185639		Solar City				2019	Residential	WESTFORD	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		
189220		Solar City				2019	Residential	MENDON	Lithium ion		Tesla			13.5	5	BTM						Yes	AC Coupled	Solar		19
258163		VALLEY SOLAR INC	MA Smart			2019	Residential	NORTHAMPTON	Lithium ion		Sonnen			10	7	BTM						Yes	AC Coupled	Solar		6.96
256604		VALLEY SOLAR INC	MA Smart			2019	Residential	WILLIAMSBURG	Lithium ion		Sonnen			10	7	BTM						Yes	AC Coupled	Solar		7.83
262510		ENERGY MONSTER	MA Smart			2019	Residential	FRANKLIN	Lithium ion		Sonnen			10	7	BTM						Yes	AC Coupled	Solar		11.6
190461		SUNRUN INC				2018	Residential	WILBRAHAM	Lithium ion		LG Chem			9.8	5	BTM						Yes</				

Pipeline Projects																							GENERATION				
Energy Storage System																											
Case Number	DG WR Number	Common Project Name	Policy Source 1	Policy Source 2	Other Source	Interconnection Status	Customer Type	City/Town	Year	Technology Type	Other Technology	Manufacturer	Energy kWh (DC)	Capacity kW (DC)	Energy kWh (AC)	Capacity kW (AC)	Installation Type	Application / Intended use #1	Application / Intended Use #2	Application / Intended Use #3	Other - Application/ Intended Use	DG WR Number	Storage Co-located with DG/ Generation	System Configuration Type	DG/ Generation Type	Capacity kW (DC)	Capacity kW (AC)
185512		NextSun Energy	MA Smart			Conditional Approval	Commercial	NORTON		Lithium Ion		Power Electronics	1278		4260 BTM		Renewable Energy Integration (e.g., Ramping, Smoothing)						DC Coupled	Solar	2000		
184039		Borrego Solar	MA Smart			Construction	Commercial	DUNSTABLE		Lithium Ion		Power Electronics	20000		5000 FTM		Renewable Energy Integration (e.g., Ramping, Smoothing)					Yes	DC Coupled	Solar	8300		
185409		Borrego Solar	MA Smart			Construction	Commercial	TYNGSBORO		Lithium Ion		Power Electronics	20000		5000 FTM		Renewable Energy Integration (e.g., Ramping, Smoothing)						DC Coupled	Solar	8300		
186270		Cypress Creek Renewables LLC	MA Smart			Study	Commercial	OAKHAM		Lithium Ion		IHI-Solar Partner	16800		4200 FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)					Yes	DC Coupled	Solar	4998		
197531		Cypress Creek Renewables LLC	MA Smart			Study	Commercial	HAWLEY		Lithium Ion		IHI-Solar Partner	16800		4200 FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)					Yes	DC Coupled	Solar	4998		
200441		Cypress Creek Renewables LLC	MA Smart			Study	Commercial	WINCHENDON		Lithium Ion		IHI-Solar Partner	16800		4200 FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)					Yes	DC Coupled	Solar	4998		
200896		Cypress Creek Renewables LLC	MA Smart			Study	Commercial	HARDWICK		Lithium Ion		IHI-Solar Partner	16800		4200 FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)					Yes	DC Coupled	Solar	4998		
200898		Cypress Creek Renewables LLC	MA Smart			Study	Commercial	WESTMINSTER		Lithium Ion		IHI-Solar Partner	16800		4200 FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)					Yes	DC Coupled	Solar	4998		
185368		Cypress Creek Renewables LLC	MA Smart			Study	Commercial	ATHOL		Lithium Ion		IHI-Solar Partner	16800		4200 FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)				Yes	DC Coupled	Solar	4998		
185392		Cypress Creek Renewables LLC	MA Smart			Study	Commercial	ATHOL		Lithium Ion		IHI-Solar Partner	16800		4200 FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)				Yes	DC Coupled	Solar	4998		
190867		Cypress Creek Renewables LLC	MA Smart			Study	Commercial	PHILLIPSTON		Lithium Ion		IHI-Solar Partner	16800		4200 FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)					DC Coupled	Solar	4998		
200718		Cypress Creek Renewables LLC	MA Smart			Study	Commercial	MONROIE		Lithium Ion		IHI-Solar Partner	16800		4200 FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)				Yes	DC Coupled	Solar	4998		
193521		BlueWave Solar	MA Smart			Study	Commercial	DOUGLAS		Lithium Ion			14000		3500 FTM		Peak Shaving/ Load Leveling						DC Coupled	Solar	4995		
197148		Clean Energy Collective	MA Smart			Study	Commercial	SOUTHBRIDGE		Lithium Ion			12000		3000 FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Power Quality (e.g., Voltage/VAR Support)		Renewable Energy Shifting			DC Coupled	Solar	4318.65	3375	
178314	25861839	Kearsarge Solar LLC	MA Smart			Study	Commercial	HAVERTHILL		Lithium Ion		Power Electronics	12000		2000 Standalone		Renewable Energy Shifting					25861839	Yes	AC Coupled	Solar	4056	4800
184045		Clean Energy Collective	MA Smart			Design	Commercial	CHARLEMONT		Lithium Ion		Sungrow	10000		2500 FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Power Quality (e.g., Voltage/VAR Support)		Renewable Energy Shifting			DC Coupled	Solar	3360	2750	
178997	26082687	Clean Energy Collective	MA Smart			Conditional Approval	Commercial	HAMPDEN		Lithium Ion		SMA	10000		2500 Standalone		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Power Quality (e.g., Voltage/VAR Support)		Renewable Energy Shifting		26082687	Yes	DC Coupled	Solar	4900	2500
193939		Nexamp	MA Smart			Study	Commercial	GRANBY		Lithium Ion		Power Electronics	3000		4500 BTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)					DC Coupled	Solar	3364.34	2500	
178155	25559704	Kearsarge Solar LLC	MA Smart			Study	Commercial	BELLINGHAM		Lithium Ion		Power Electronics	10000		9000	2250 FTM	Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Power Quality (e.g., Voltage/VAR Support)		Renewable Energy Shifting		25559704	Yes	AC Coupled	Solar	7040	
193132		INDUSTRIA ENGINEERING	MA Smart			Study	Commercial	GRAFTON		Other		EPF Power	8456		FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Peak Shaving/ Load Leveling					DC Coupled	Solar	4560		
197527		Cypress Creek Renewables LLC	MA Smart			Study	Commercial	HARDWICK		Lithium Ion			8400		2100 FTM		Renewable Energy Shifting						DC Coupled	Solar	4998		
178110	25319191	SYNCARPHA SOLAR LLC	MA Smart			Study	Commercial	HUBBARDSTON		Lithium Ion		Sungrow	8000		4400 FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)				25319191	Yes	AC Coupled	Solar	7619	8730
191116		BlueWave Solar	MA Smart			Study	Commercial	HAVERHILL		Lithium Ion			8000		4000 Standalone		Renewable Energy Integration (e.g., Ramping, Smoothing)						DC Coupled	Solar	4000		
197015		SYNCARPHA SOLAR LLC	MA Smart			Study	Commercial	FLORIDA		Lithium Ion		Sungrow	8000		4000 FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)					AC Coupled	Solar	7000.26	8980	
178572	25502268	SYNCARPHA SOLAR LLC	MA Smart			Study	Commercial	MILLBURY		Lithium Ion			8000		4000 Standalone		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Peak Shaving/ Load Leveling				25502268	Yes	AC Coupled	Solar	7619	8730
244368		Nextera Energy Resources	MA Smart			Study	Commercial	E LONGMEADOW		Lithium Ion		Power Electronics	8000		3000 FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Peak Shaving/ Load Leveling					DC Coupled	Solar	7259.2	9000	
178235	25831253	Zero Point Development	MA Smart			Study	Commercial	NEW BRAINTREE		Lithium Ion		Green Power Technologies	8000		2000 Standalone		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)				25831253	Yes	AC Coupled	Solar	3500	2500
194417		Nextera Energy Resources	MA Smart			Change Review	Commercial	BRIMFIELD		Lithium Ion		Power Electronics	8000		FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)					DC Coupled	Solar	3000		
211642		BlueWave Solar	MA Smart			Supplemental Review	Commercial	N BROADFIELD		Lithium Ion		Power Electronics	6500		3250 FTM		Renewable Energy Shifting						DC Coupled	Solar	4980		
243349		Kearsarge Solar LLC	MA Smart			Design	Commercial	BEVERLY		Lithium Ion		Power Electronics	7100		1760 BTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Customer Bill Savings (e.g., Demand Charge Management, TOU Arbitrage)					DC Coupled	Solar	3886		
185527		Zero Point Development	MA Smart			Design	Commercial	LANCASTER		Lithium Ion		Green Power Technologies	4960		3158 BTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Customer Bill Savings (e.g., Demand Charge Management, TOU Arbitrage)				Yes	DC Coupled	Solar	0.37	4950	
178578	25736221	Zero Point Development	MA Smart			Design	Commercial	CHARLTON		Lithium Ion		Green Power Technologies	4960		3150 BTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Customer Bill Savings (e.g., Demand Charge Management, TOU Arbitrage)				25736221	Yes	DC Coupled	Solar	4950	
178097	24508325	Zero Point Development	MA Smart			Study	Commercial	WARREN		Lithium Ion		Green Power Technologies	4960		3150 BTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Customer Bill Savings (e.g., Demand Charge Management, TOU Arbitrage)				24508325	Yes	DC Coupled	Solar	7017	4950
178653	25753431	Zero Point Development	MA Smart			Construction	Commercial	SOUTHBRIDGE		Lithium Ion		Green Power Technologies	4609		3143 BTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Customer Bill Savings (e.g., Demand Charge Management, TOU Arbitrage)				25753431	Yes	DC Coupled	Solar	7000	4600
177638	24574215	SEABOARD SOLAR	MA Smart			Study	Commercial	WEST BROOKFIELD		Lithium Ion		INGETEAM	6089		2340 BTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Peak Shaving/ Load Leveling				24574215	Yes	AC Coupled	Solar	1364	1582
177639	24574212	SEABOARD SOLAR	MA Smart			Study	Commercial	W BROOKFIELD		Lithium Ion		INGETEAM	6089		2340 BTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Peak Shaving/ Load Leveling				24574222	Yes	AC Coupled	Solar	1364	1582
177778	23834270	SEABOARD SOLAR	MA Smart			Study	Commercial	WARREN		Lithium Ion		INGETEAM	6089		2340 BTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Peak Shaving/ Load Leveling				23834270	Yes	AC Coupled	Solar	6968	3200
215920		TJA Clean Energy, LLC	MA Smart			Conditional Approval	Commercial	BLACKSTONE		Lithium Ion		Samsung	6028		2750 FTM		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Peak Shaving/ Load Leveling					DC Coupled	Solar	4950		
244408		TJA Clean Energy, LLC	MA Smart			Study	Commercial	BRIDGEWATER		Lithium Ion		Samsung	6028		2750 Standalone		Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Peak Shaving/ Load Leveling					DC Coupled	Solar	4990		
178309	25319134	SYNCARPHA SOLAR LLC	MA Smart			Study	Commercial	HUBBARDSTON		Lithium Ion																	

Case Number	DG WR Number	Common Project Name	Policy Source 1	Policy Source 2	Other Source	Interconnection Status	Customer Type	City/Town	Year	Technology Type	Other Technology	Manufacturer	Energy kWh (DC)	Capacity kW (DC)	Energy kWh (AC)	Capacity kW (AC)	Installation Type	Application / Intended use #1	Application / Intended Use #2	Application / Intended Use #3	Other - Application / Intended Use	DG WR Number	Storage Co-located with DG/ Generation?	System Configuration Type	DG/ Generation Type	Capacity kW (DC)	Capacity kW (AC)	
254306		Solar City				Completion Documents	Residential	W BRIDGEWATER		Lithium Ion		Tesla			54	20	87M						Yes	AC Coupled	Solar			
247814		MASS RENEWABLES INC				Construction	Residential	BOXFORD		Lithium Ion		Tesla			54	20	87M						Yes	AC Coupled	Solar			20
257644		PV SQUARED				Completion Documents	Residential	WESTMINSTER		Lithium Ion		Tesla			54	20	87M						Yes	AC Coupled	Solar			20
249752		Solar City	MA Smart			Completion Documents	Residential	WRENTHAM		Lithium Ion		Tesla			54	20	87M						Yes	AC Coupled	Solar		4.1	3.8
245548		Solar City	MA Smart			Conditional Approval	Residential	HAVRHILL		Lithium Ion		Tesla			54	20	87M						Yes	AC Coupled	Solar		17.96	17.6
208014		Solar City				Design	Residential	NORTH EASTON		Lithium Ion		Tesla			40.5	15	87M						Yes	AC Coupled	Solar			
270545		Solar City				Conditional Approval	Residential - Heat	BRADFORD				Tesla			40.5	15	87M								AC Coupled	Solar		
204210		Solar City				Completion Documents	Residential	GLOUCESTER		Lithium Ion		Tesla			40.5	15	87M						Yes	AC Coupled	Solar			
265476		Solar City				Conditional Approval	Residential	GRAFTON		Lithium Ion		Tesla			40.5	15	87M						Yes	AC Coupled	Solar			
213675		Solar City				Conditional Approval	Residential	WESTFORD		Lithium Ion		Tesla			40.5	15	87M						Yes	AC Coupled	Solar		15	
253195		Solar City				Completion Documents	Residential	FLORENCE		Lithium Ion		Tesla			40.5	15	87M						Yes	AC Coupled	Solar		15	
266020		Solar City	MA Smart			Conditional Approval	Residential	NORTH GRAFTON		Lithium Ion		Tesla			40.5	15	87M						Yes	AC Coupled	Solar		7.56	7.6
257906		Solar City	MA Smart			Conditional Approval	Residential	ANDOVER		Lithium Ion		Tesla			40.5	15	87M						Yes	AC Coupled	Solar		11.35	10
268394		Solar City	MA Smart			Conditional Approval	Residential - Heat	HANDOVER		Lithium Ion		Tesla			40.5	15	87M						Yes	AC Coupled	Solar		11.35	10
230608		Solar City	MA Smart			Construction	Residential	NORTON		Lithium Ion		Tesla			40.5	15	87M						Yes	AC Coupled	Solar		19.54	32.6
270035		BOSTON SOLAR				Conditional Approval	Residential - Heat	TEWKSBURY		Lithium Ion		Tesla			40.5	15	87M						Yes	AC Coupled	Solar		28.7	9.84
204820		Solar City				Construction	Residential	SOUTHFIELD		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
205004		Solar City				Construction	Residential	NORTH GRAFTON		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
206827		Solar City				Screening	Residential	ANDOVER		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
212493		Solar City				Completion Documents	Residential	HARVARD		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
248827		Solar City				Completion Documents	Residential	DUNSTABLE		Lithium Ion		Tesla			27	10	87M								AC Coupled	Solar		
264869		Solar City				Design	Residential	LEOMINSTER		Lithium Ion		Tesla			27	10	87M								AC Coupled	Solar		
270996		Solar City				Conditional Approval	Residential	TOPSFIELD		Lithium Ion		Tesla			27	10	87M						No	AC Coupled	None			
243391		Solar City				Completion Documents	Residential	BOLTON		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
243846		Solar City				Conditional Approval	Residential	CHELMSFORD		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
246090		Solar City				Completion Documents	Residential	NORTHBOROUGH		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
252036		MASS RENEWABLES INC				Completion Documents	Residential	WENHAM		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			20
252243		MASS RENEWABLES INC				Completion Documents	Residential	LYNNBORO		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		11.35	10
257042		Solar City				Completion Documents	Residential	NORTH ADAMS		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
260147		BOSTON SOLAR	MA Smart			Completion Documents	Residential - Heat	E BRIDGEWATER		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
261505		Solar City				Conditional Approval	Residential	LAWRENCE		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
263958		BOSTON SOLAR				Completion Documents	Residential	WESTFORD		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
264017		Solar City				Conditional Approval	Residential	DRACLUT		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
265140		Solar City				Completion Documents	Residential	FLORENCE		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
265840		Solar City				Conditional Approval	Residential	ATHOL		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
267108		REVOLUSUN				Screening	Residential	TOPSFIELD		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
261359		Solar City				Conditional Approval	Residential	WOLLASTON		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
272817		Solar City				Screening	Residential	ANDOVER		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
273131		Solar City				Screening	Residential	SALEM		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			
265790		Sunbug Solar LLC	MA Smart			Completion Documents	Residential	ALFORD		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			9.8
242635		Solar City				Conditional Approval	Residential	WESTFORD		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			10
271730		Solar City				Conditional Approval	Residential	WESTBOROUGH		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			10
232178		Solar City				Conditional Approval	Residential - Heat	WILLIAMSTOWN		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			10
236527		Solar City				Completion Documents	Residential	BOXFORD		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			10
262763		REVOLUSUN	MA Smart			Conditional Approval	Residential	BEVERLY		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			10
270855		REVISION ENERGY				Screening	Residential	NEWBURYPORT		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			10
272601		Solar City				Conditional Approval	Residential	DUNSTABLE		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			10
270193		REVISION ENERGY	MA Smart			Conditional Approval	Residential	BYFIELD		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			10
245629		Solar City				Completion Documents	Residential	BROCKTON		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			10
260959		BOSTON SOLAR	MA Smart			Design	Residential	PEMBROKE		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			10
259189		MASS RENEWABLES INC	MA Smart			Completion Documents	Residential	FOXBORO		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar			12
259369		Solar City	MA Smart			Completion Documents	Residential	BELLERICA		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		3.78	3.8
213815		Solar City				Conditional Approval	Residential	MEDFORD		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		6.5	
214779		Solar City	MA Smart			Completion Documents	Residential	BROCKTON		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		7.32	17.6
261261		Solar City	MA Smart			Meter Installation	Residential	SAUGUS		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		7.56	7.6
267109		Solar City	MA Smart			Design	Residential	RANDOLPH		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		7.56	7.6
268709		Solar City	MA Smart			Screening	Residential	PEMBROKE		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		8.19	7.6
250240		Solar City	MA Smart			Completion Documents	Residential	MEDFORD		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		8.19	17.6
250967		Solar City	MA Smart			Construction	Residential	LOWELL		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		8.19	17.6
266776		BOSTON SOLAR	MA Smart			Completion Documents	Residential	ANDOVER		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		8.28	6.67
265447		Solar City	MA Smart			Completion Documents	Residential	DRACLUT		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		9.45	10
248702		Solar City	MA Smart			Conditional Approval	Residential	NORTON		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		10.4	20
199441		Solar City				Completion Documents	Residential	W STOCKBRIDGE		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		10.71	10
263166		Solar City	MA Smart			Meter Installation	Residential - Heat	WESTFORD		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		11.34	10
265791		Solar City	MA Smart			Completion Documents	Residential	BRIDGEWATER		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		11.34	10
268549		Solar City	MA Smart			Completion Documents	Residential	FOXBORO		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		11.34	10
266941		Solar City	MA Smart			Application	Residential	FRANKLIN		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		11.34	10
258486		Solar City	MA Smart			Meter Installation	Residential	WESTFORD		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		11.35	20
264770		BOSTON SOLAR	MA Smart			Conditional Approval	Residential	WESTFORD		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		11.9	9.86
255931		Solar City	MA Smart			Completion Documents	Residential	SOUTHBOROUGH		Lithium Ion		Tesla			27	10	87M						Yes	AC Coupled	Solar		12.3	20
260128		BOSTON SOLAR	MA Smart																									

Case Number	DG WR Number	Common Project Name	Policy Source 1	Policy Source 2	Other Source	Interconnection Status	Customer Type	City/Town	Year	Technology Type	Other Technology	Manufacturer	Energy kWh (DC)	Capacity kW (DC)	Energy kWh (AC)	Capacity kW (AC)	Installation Type	Application / Intended use #1	Application/ Intended Use #2	Application/ Intended Use #3	Other - Application/ Intended Use	DG WR Number	Storage Co-located with DG/ Generation?	System Configuration Type	DG/ Generation Type	Capacity kW (DC)	Capacity kW (AC)
23959		Next Grid Inc.	MA Smart			Conditional Approval	Commercial	STOUGHTON		Lithium Ion		Dynapower				250	FTM	Peak Shaving/ Load Leveling						DC Coupled	Solar		250
249462		Kilawatt Consulting	MA Smart			Conditional Approval	Residential	ASHLEY FALLS		Lithium Ion		Kilawatt Consulting LLC	18			20	BTM	Customer Bill Savings (e.g., Demand Charge Management, TOU Arbitrage)	Renewable Energy Shifting	Reliability and Resiliency			Yes	DC Coupled	Solar	895.86	20
269050		SOLAR WOLF ENERGY	MA Smart			Conditional Approval	Residential	NORTHBOROUGH		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar		7.6
271109		Northeast Solar	MA Smart			Conditional Approval	Residential	GOSHEN		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar		7.6
271185		Northeast Solar	MA Smart			Conditional Approval	Residential - Heat	BELCHERTOWN		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar		7.6
245951		SOLAR WOLF ENERGY	MA Smart			Conditional Approval	Residential	MANCHESTER		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar		13.6
245182		Solar Design Associates	MA Smart			Conditional Approval	Residential	LEOMINSTER		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	3.7	7.6
244288		SUNRUN INC	MA Smart			Conditional Approval	Residential	FALL RIVER		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	4.75	7.6
266889		SUNRUN INC	MA Smart			Conditional Approval	Residential	WORCESTER		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	5.12	7.6
272270		SUNRUN INC	MA Smart			Conditional Approval	Residential	BROCKTON		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	9.22	7.6
193373		SUNRUN INC	MA Smart			Completion Documents	Residential	NORTHAMPTON		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	6.09	7.6
204063		SUNRUN INC	MA Smart			Conditional Approval	Residential	METHUEN		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	6.27	7.6
243363		SUNRUN INC	MA Smart			Conditional Approval	Residential	BELLINGHAM		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	6.27	7.6
266718		SUNRUN INC	MA Smart			Completion Documents	Residential	NORTHBRIDGE		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	6.27	7.6
266698		SUNRUN INC	MA Smart			Conditional Approval	Residential	WINCHENDON		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	8.57	7.6
273790		SUNRUN INC	MA Smart			Application	Residential	WORCESTER		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	6.71	7.6
260988		SUNRUN INC	MA Smart			Meter Installation	Residential	MARLBOROUGH		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	6.93	7.6
243137		SUNRUN INC	MA Smart			Conditional Approval	Residential	STOUGHTON		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	6.96	7.6
272248		SUNRUN INC	MA Smart			Conditional Approval	Residential	AUBURN		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	7.25	7.6
273793		SUNRUN INC	MA Smart			Conditional Approval	Residential	SOUTHBRIDGE		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	7.44	7.6
241658		SUNRUN INC	MA Smart			Application	Residential	BROCKTON		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	7.59	7.6
266514		SUNRUN INC	MA Smart			Conditional Approval	Residential - Heat	WESTBOROUGH		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	7.59	7.6
266298		SUNRUN INC	MA Smart			Conditional Approval	Residential	ATHOL		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	7.83	7.6
265481		SUNRUN INC	MA Smart			Conditional Approval	Residential	GARDNER		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	8.12	7.6
266708		SUNRUN INC	MA Smart			Conditional Approval	Residential	LOWELL		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	9.24	7.6
231917		SUNRUN INC	MA Smart			Application	Residential	BRIDGEWATER		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	9.28	7.6
266711		SUNRUN INC	MA Smart			Completion Documents	Residential	SEKONK		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	9.49	7.6
268884		SUNRUN INC	MA Smart			Conditional Approval	Residential	SALEM		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	9.57	7.6
274183		SUNRUN INC	MA Smart			Conditional Approval	Residential	WORCESTER		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	9.66	7.6
273446		SUNRUN INC	MA Smart			Conditional Approval	Residential	BARRE		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	9.76	7.6
266499		SUNRUN INC	MA Smart			Conditional Approval	Residential	NORTON		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	9.86	7.6
266881		SUNRUN INC	MA Smart			Conditional Approval	Residential	BROCKTON		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar	9.86	7.6
207697		SUNRUN INC	MA Smart			Application	Residential	WESTMINSTER		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar		7.6
240162		SUNRUN INC	MA Smart			Application	Residential	ATTLEBORO		Lithium Ion		LG Chem	9.3			7.6	BTM						Yes	DC Coupled	Solar		7.6
267176		Rayah Power Integration Corporation	MA Smart			Conditional Approval	Residential	FALL RIVER		Lithium Ion		LG Chem	9.3			3.8	BTM						Yes	DC Coupled	Solar		3.8
240916		Rayah Power Integration Corporation	MA Smart			Conditional Approval	Residential	WESTPORT		Lithium Ion		LG Chem	9.3			3.8	BTM						Yes	DC Coupled	Solar		9.8
264282		SUNRUN INC	MA Smart			Conditional Approval	Residential - Heat	WILMINGTON		Lithium Ion		LG Chem	9.3			3.8	BTM						Yes	DC Coupled	Solar	3.19	3.8
266704		SUNRUN INC	MA Smart			Conditional Approval	Residential	WOLLASTON		Lithium Ion		LG Chem	9.3			3.8	BTM						Yes	DC Coupled	Solar	4.06	3.8
262246		SUNRUN INC	MA Smart			Meter Installation	Residential - Heat	ESSEX		Lithium Ion		LG Chem	9.3			3.8	BTM						Yes	DC Coupled	Solar	4.93	3.8
253485		SUNRUN INC	MA Smart			Conditional Approval	Residential	MARLBOROUGH		Lithium Ion		LG Chem	9.3			3.8	BTM						Yes	DC Coupled	Solar	4.93	3.8
266675		SUNRUN INC	MA Smart			Conditional Approval	Residential	BOXFORD		Lithium Ion		LG Chem	9.3			3.8	BTM						Yes	DC Coupled	Solar	12.47	9.8
267446		SUNRUN INC	MA Smart			Conditional Approval	Residential	WESTMINSTER		Lithium Ion		LG Chem	9.3			3	BTM						Yes	DC Coupled	Solar	11.02	8
250818		SUNRAISE DEVELOPEMENT LLC	MA Smart			Study	Commercial	WINCHENDON									Standalone						Yes	AC Coupled	Solar		
195724		Schneider Electric				Screening	Commercial	ANDOVER				Schneider Electric	100											AC Coupled	Natural Gas		400
178611	25522243	LOCKHEED MARTIN				Completion Documents	Commercial	CHELSESFORD		Lithium Ion		EPC Power	990									25522243	AC Coupled	Natural Gas		450	
207611		Nexamp	MA Smart			Study	Commercial	WEBSTER		Lithium Ion		Ingecon Sun Storage	1000				BTM	Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)				AC Coupled	Solar		500	
205008		Nexamp	MA Smart			Study	Commercial	WINCHENDON		Lithium Ion		Dynapower	1000				BTM	Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)				AC Coupled	Solar		500	
205568		Nexamp	MA Smart			Study	Commercial	WINCHENDON		Lithium Ion		Dynapower	1000				BTM	Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)				AC Coupled	Solar		984	
191399		MELINK SOLAR DEVELOPMENT				Study	Residential	WARE				Solertia												AC Coupled	Solar		996
200895		Cypress Creek Renewables LLC				Study	Commercial	HARDWICK		Lithium Ion		IH-Solar Partner	6000				BTM	Renewable Energy Integration (e.g., Ramping, Smoothing)				Yes	DC Coupled	Solar		1660	
185564		Nexamp Energy	MA Smart			Conditional Approval	Commercial	NORTON		Lithium Ion		Power Electronics	568				BTM	Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)			Yes	DC Coupled	Solar		2080	
202001		Nexamp	MA Smart			Study	Commercial	CHARLTON		Lithium Ion		Power Electronics	2000				BTM	Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)				AC Coupled	Solar		2393	
256705		Zero Point Development	MA Smart			Application	Commercial	WARREN				Green Power Technologies					Standalone							AC Coupled	Solar		3000
188158		PACIFIC ENERGY NA, LLC				Conditional Approval	Commercial	ATTLEBORO		Lithium Ion		Power Electronics	6000				BTM					Yes	DC Coupled	Solar		4500	
184597		AMP Solar Development				Study	Commercial	SHUTESBURY		Lithium Ion		Power Electronics	30000									Yes	DC Coupled	Solar		4998	
184598		AMP Solar Development				Study	Commercial	SHUTESBURY		Lithium Ion		Power Electronics	30000											DC Coupled	Solar		4998
184599		AMP Solar Development				Study	Commercial	SHUTESBURY		Lithium Ion		Power Electronics	30000											DC Coupled	Solar		4998
184600		AMP Solar Development	MA Smart			Study	Commercial	SHUTESBURY		Lithium Ion		Power Electronics	30000				BTM	Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)				DC Coupled	Solar		4998	
255867		Kearsarge Solar LLC	MA Smart			Study	Commercial	LEICESTER		Lithium Ion			21600				FTM	Wholesale Market (i.e., Energy, Capacity, Ancillary Services)						DC Coupled	Solar		5000
255873		Kearsarge Solar LLC	MA Smart			Study	Commercial	LEICESTER		Lithium Ion			26400				FTM	Wholesale Market (i.e., Energy, Capacity, Ancillary Services)						DC Coupled	Solar		5000
227274		Nextera Energy Resources	MA Smart			Study	Commercial	PALMER				Samsung	12000				Standalone							DC Coupled	Solar		5000
202003		Nexamp	MA Smart			Study	Commercial	FRANKLIN									Standalone							DC Coupled	Solar		7490
272668		SUNRUN INC	MA Smart			Application	Residential	HAMPDEN		Lithium Ion		LG CHEM	9.3				BTM					Yes	DC Coupled	Solar	6.93	7.6	
274351		SUNRUN INC	MA Smart			Conditional Approval	Residential	WORCESTER		Lithium Ion		LG CHEM	9.3				BTM					Yes	DC Coupled	Solar	8.97	7.6	
274347		SUNRUN INC	MA Smart			Conditional Approval	Residential	WILLIAMSTOWN		Lithium Ion		LG CHEM	9.3				BTM					Yes	DC Coupled	Solar	11.29	8.8	
178712	26107239	AMP Solar Development	MA Smart			Construction	Commercial	DOUGLAS		Lithium Ion		Power Electronics					BTM	Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)			26107239	DC Coupled	Solar	2750	4998	
271016		Next Grid Inc.	MA Smart			Screening	Commercial	SOMERSET		Lithium Ion		TBA	7000				Standalone	Peak Shaving/ Load Leveling	Renewable Energy Integration (e.g., Ramping, Smoothing)	Other - Please elaborate	DC clipping recapture		DC Coupled	Solar	2784.75	999	
205269		Nexamp	MA Smart			Study	Commercial	METHUEN		Lithium Ion			2000				FTM	Wholesale Market (i.e., Energy, Capacity, Ancillary Services)	Renewable Energy Integration (e.g., Ramping, Smoothing)				DC Coupled	Solar	2828.52	2090	
198058		Clean Focus Renewables				Study	Commercial	ROYASTON				Powin Energy	2100									Yes	DC Coupled	Solar	3130.4	2400	