Evaluation of the role of existing and potential tax incentives in achieving Maine's energy storage policy goals

Submitted by the Governor's Energy Office to the Joint Standing Committee on Energy, Utilities and Technology, Pursuant to LD 2030: An Act to Provide for Reimbursement of the Sales Tax Paid on Certain Battery Energy Storage Systems

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Abbreviations

E3	Energy & Environmental Economics, Inc.
EMT	Efficiency Maine Trust
ESMA	Maine Energy Storage Market Assessment
EUT	Joint Standing Committee on Energy, Utilities and Technology
FCA	Forward capacity auction
GEO	Governor's Energy Office
IRA	Inflation Reduction Act of 2022
IREC	Interstate Renewable Energy Council
ISO-NE	ISO New England
ITC	Investment Tax Credit
kWh	Kilowatt hour
MW	Megawatt
NREL	National Renewable Energy Laboratory
PTC	Production Tax Credit
PUC	Maine Public Utilities Commission
RTO	Regional Transmission Organization
SMART	Solar Massachusetts Renewable Target Program

Introduction

In the 130th Maine Legislature, a refund of sales and use tax was established on the purchase of qualifying battery energy storage systems with passage of LD 2030. Pursuant to the law, battery energy storage systems with a capacity of 50 megawatts (MW) or greater purchased between January 1, 2023 and December 31, 2025 will be eligible to submit a claim for tax reimbursement beginning July 1, 2023.

This legislation additionally requires the Governor's Energy Office (GEO) to examine the role of existing and potential tax incentives in achieving the state's energy storage goals as established in the Maine Revised Statutes, Title 35-A, Section 3145 and to provide a report on these matters to the Joint Standing Committee on Energy, Utilities and Technology (EUT) of the Legislature. This report includes a review of tax incentives for energy storage available from the Federal Government and in other states, and was made available to a wide range of stakeholders for comment prior to submission.

Background

Under Maine law, an energy storage system is defined as "a commercially available technology that uses mechanical, chemical or thermal processes for absorbing energy and storing it for a period of time for use at a later date."[1] Energy storage systems are flexible resources with the ability to provide many valuable services to the electric grid and to customers such as helping to integrate renewable resources, relieving transmission congestion and curtailment of renewables, deferring transmission and distribution upgrades, lowering peak demand, and providing backup power during outages, among others.

In 2019, legislation signed by Governor Janet Mills set Maine on a path toward 100 percent clean energy and 80 percent emission reductions below 1990 levels by 2050. Soon after, the Maine Climate Council was established to identify strategies to meet these goals. In 2020, the state's four-year climate action plan, *Maine Won't Wait*,[2] identified storage as an important factor in achieving emissions reduction goals and maximizing the value of renewable energy on the grid. The climate action plan underlines energy storage as a vital complement to the state's broader climate and clean energy targets, particularly as Maine increases its use of renewable energy generation and electrifies transportation and buildings to support its decarbonization goals.

Additionally, the legislatively directed 2019 bipartisan *Commission to Study the Economic, Environmental and Energy Benefits of Energy Storage to the Maine Electricity Industry*,[3] put forth four key findings:

1. Energy storage has the potential to reduce costs and improve reliability;

[1] https://www.mainelegislature.org/legis/bills/bills_129th/chapters/PUBLIC477.asp
[2] https://www.maine.gov/climateplan/the-plan
[3] https://legislature.maine.gov/energy-storage-commission

2. Energy storage complements and supports renewable energy;
3. Energy storage technology is dynamic and evolving and presents cost-effective options; and
4. Energy storage development may be inhibited by market barriers or a lack of clear regulatory signals.

Observing that energy storage has the potential to play an important and valuable role in Maine's energy future through its potential to increase grid reliability, reduce inefficiencies, complement renewable energy generation, and create cost savings for electric ratepayers, the Commission Report also made several recommendations:

1. Establish state targets for energy storage development;
2. Encourage energy storage paired with renewable and distributed generation resources;
3. Advance energy storage as an energy efficiency resource;
4. Address electricity rate design issues relating to time variation in costs;
5. Clarify utility ownership of energy storage;
6. Advocate for energy storage consideration in regional wholesale markets; and
7. Conduct an in-depth Maine-specific analysis of energy storage costs, benefits and opportunities.

Since the completion of the Commission Report, Maine has acted on several of the recommendations it set forth to promote energy storage deployment in the state.

In June 2021, Governor Mills signed LD 528. This legislation set goals for energy storage in Maine and directs multiple important steps to advance its deployment to the benefit of Maine. The legislation set goals of:

- 300 MW of installed capacity within the state by the end of 2025; and
- 400 MW installed by the end of 2030.

These targets established Maine as the ninth U.S. state with codified energy storage targets, targets that are some of the most ambitious in the country given the relative size of the state's electricity load with 400 megawatts representing nearly 20 percent of Maine's peak demand in 2021.

In addition to establishing these goals, the law required the GEO to conduct an energy storage market assessment, to include in-depth analysis and review of the opportunities and potential challenges faced by the state in achieving the energy storage goals.

The GEO retained Energy & Environmental Economics (E3) to develop this assessment. To aid in the development of this assessment, the GEO and E3 engaged with interested stakeholders representing a range of key perspectives through virtual webinars to provide insight into relevant market and policy dynamics, and to provide feedback on preliminary results of the assessment. More than 180 individuals representing 70 organizations participated in the

stakeholder process, providing thoughtful, detailed feedback through verbal comments at stakeholder sessions, online forms, and direct email submissions and conversations. The GEO submitted the final Maine Energy Storage Market Assessment (ESMA) to EUT in March of 2022.

Cost-benefit analysis conducted by the consultants shows that grid-connected storage has the potential to provide many benefits to Maine's electric grid and customers, particularly through the ability to shift electricity from when it is generated to when customers need it most. Wholesale, grid-connected storage is cost-effective (benefits outweigh the costs) from 2024 through the end of the study period in 2030 with continued cost declines projected each year. Storage can help lower wholesale electricity costs, lower utility infrastructure costs, and lower electricity bills while increasing resiliency and helping integrate more renewable energy.

However, the market assessment also recognizes that several barriers exist to storage deployment today including supply chain constraints and material price increases, uncertainty over interconnection timelines and costs, challenges in identifying the best sites for locating storage to maximize system benefits, and downward pressure on capacity markets as well as general uncertainty regarding access to revenue streams as markets for energy storage evolve rapidly.

The Maine Public Utilities Commission (PUC) currently has an open docket (No. 2022-00345) to gather input from interested parties on potential changes to Chapter 324 which establishes procedures and protocols for interconnection to transmission and distribution systems for small generators not subject to the jurisdiction of the Federal Energy Regulatory Commission. In a prior docket, the PUC engaged the Interstate Renewable Energy Council (IREC) to evaluate Maine's interconnection processes for solar and storage projects in response to LD 1100, "An Act To Support the Continued Access to Solar Energy and Battery Storage by Maine Homes and Businesses." In doing so, IREC conducted an evaluation of the efficiency, cost, and transparency of the state's interconnection procedures and practices, and delivered a report containing its recommendations.[4]

The GEO is closely monitoring Docket No. 2022-00345 and submitted comments in response to the Notice of Inquiry encouraging the PUC to make explicit storage-related interconnection rule changes in the upcoming rulemaking. Specifically, the GEO supports enhancing dispute resolution processes particularly for small and on-site interconnecting customers, adoption of a table-based screening approach for expedited interconnection applications, and adoption of IEEE 1547-2018 standards. Additionally, the GEO encourages the PUC to use this Chapter 324 Inquiry to solicit specific interconnection related performance metrics, as required by P.L. 2021, Chapter 702 (LD 1959).

The PUC has additionally considered or is considering several other dockets regarding energy storage rate jurisdiction and rate design. Docket No. 2021-00325 was opened to consider

[4] A copy of the report can be found as an attachment to the Corrected Notice of Inquiry in Docket No. 2022-00071 issued on March 14, 2022.

transmission and distribution utility rate design, specifically rates for energy storage technologies, residential electric vehicles, and heat pumps.[5] It resulted in multiple new rates from both Central Maine Power and Versant Power for multiple customer classes. Docket No. 2021-00273, a request for approval of electric delivery rate schedule for energy storage facilities filed by Central Maine Power, was opened for reconsideration in February of 2023. The GEO continues to monitor ongoing efforts of the PUC such as these that could impact the advancement of Maine's energy storage goals.

More broadly, the GEO works to engage stakeholders and interested parties on energy storage policy on a regular basis. In October 2022, the GEO hosted its first Maine Quarterly Energy Storage Forum[6] in response to a recommendation of the Energy Storage Market Assessment. The Forum is intended to leverage the GEO's role as a convenor by organizing and hosting an ongoing venue for information sharing and policy discussion focused on the development of energy storage in Maine and across New England. Convenings bring together policymakers, storage developers, utilities, municipalities, consumers, environmental groups, and other interested parties to facilitate discussion on how to encourage energy storage development and meet the state's energy storage goals in both an equitable and cost-effective manner. Each forum will seek out information, case studies, and best practices from neighboring jurisdictions that may inform the development of storage policy in Maine. The GEO hosted its second forum in February 2023.

Energy Storage Cost Trends

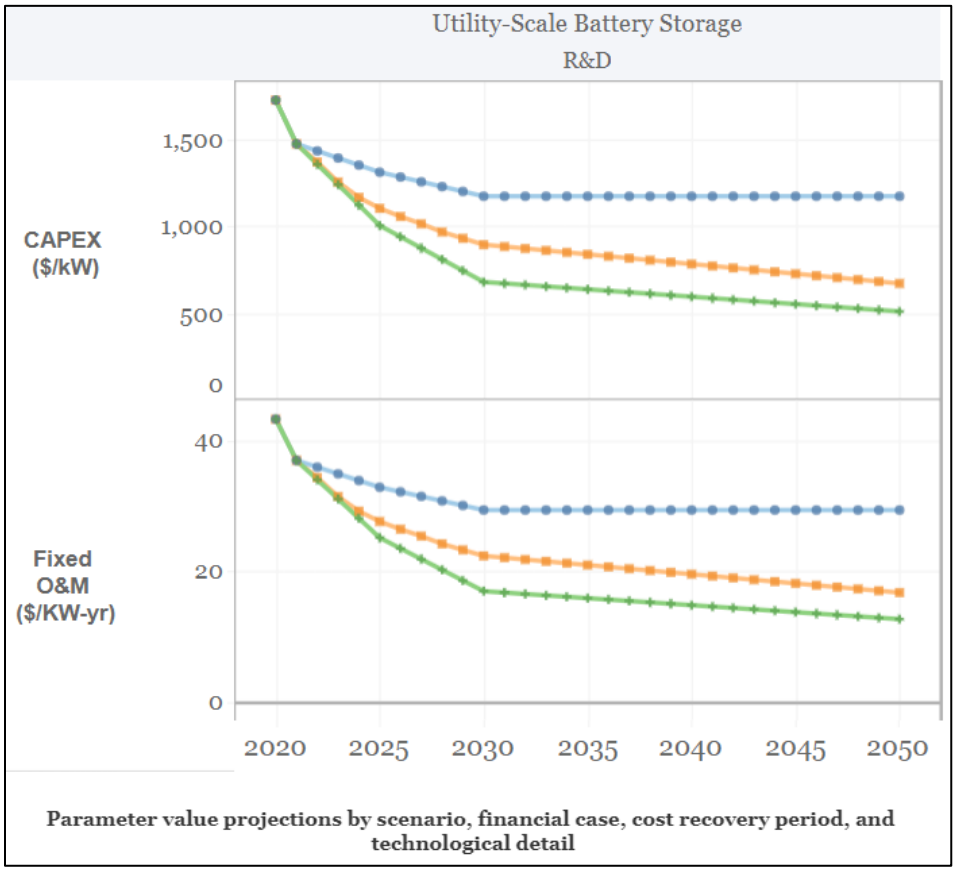
As described in the National Renewable Energy Laboratory's (NREL) 2022 Storage Futures Study,[7] energy storage technologies (batteries in particular) have seen significant cost declines in recent years. Over the past decade, lithium-ion battery costs have decreased by more than 80 percent, largely as a result of increased demand driven by a growing global electric vehicle industry. NREL's modeling, in addition to its projections from the 2022 Annual Technology Baseline (ATB), suggest that energy storage costs will continue to decline and deployment will increase significantly in the coming decades as the grid integrates more renewable generation, projecting deployment five time greater than existing capacity as of 2022 by 2050. The U.S. Energy Information Administration (EIA) also predicts continued growth in the battery storage sector, saying U.S. battery capacity will likely more than double in 2023.[8]

While several long-term forecasts for energy storage project continued cost declines over the next several decades, costs for lithium-ion batteries did increase significantly between 2021 and 2022 largely due to raw material and component price hikes related to supply chain constraints resulting from the Coronavirus pandemic and a rise in inflation. Lithium-ion batteries saw an

[5] https://mpuc-cms.maine.gov/CQM.Public.WebUI/Common/CaseMaster.aspx?CaseNumber=2021-00325
[6] https://www.maine.gov/energy/quarterlystorageforum
[7] https://www.nrel.gov/analysis/storage-futures.html
[8] https://www.eia.gov/todayinenergy/detail.php?id=55419&src=email

average price increase of 7 percent during this period. Despite price increases, battery demand is expected to break records in 2023.[9] As was noted by some stakeholders, many of these cost projections were completed prior to the passage of the Inflation Reduction Act (IRA). Some stakeholders suggest that the battery programs included in the IRA will additionally increase demand and thus keep energy storage costs higher than initial trend lines had forecast for several years. NREL's 2022 Standard Scenarios, released in November 2022, does show that the federal tax credits for storage in the IRA could more than quadruple the deployment of energy storage capacity by 2023 as compared to a scenario without the IRA.[10]

Figure 1: Utility-scale battery energy storage cost projections. Source: NREL 2022 Annual Technology Baseline (ATB)



Energy Storage Deployment in Maine

The first grid-scale energy storage system in Maine became operational in 2015. Today, there are about 50 megawatts of energy storage operating in the state and over 510 MW of standalone storage in the ISO-NE interconnection queue plus an additional 759 MW of combined energy storage co-located with solar, wind, or hydro power in Maine. Three of the

[9] https://about.bnef.com/blog/lithium-ion-battery-pack-prices-rise-for-first-time-to-an-average-of-151-kwh/
[10] https://www.nrel.gov/docs/fy23osti/84327.pdf

standalone storage projects currently in the development queue are 50 MW or greater, thus could potentially take advantage of the sales and use tax refund.[11]

While the capacity of the storage projects currently in the development queue is greater than the state's 2030 storage goal, it is highly unlikely that all projects will ultimately reach construction and operation.

Table 1: Examples of Planned and Operating Storage Projects in Maine. Source: Maine Energy Storage Market Assessment.

Plant Name	County	Unit Status	Expected Online Date	Grid Connected (Y/N)	Capacity (MW)
Boothbay Storage Project	Lincoln	Operating	5/5/2015	Y	0.5
William F Wyman	Cumberland	Operating	12/31/2016	Y	16.7
Madison BESS	Somerset	Operating	5/30/2019	Y	4.7
Madison BTM	Somerset	Operating	3/31/2020	Y	1.5
Great Lakes Millinocket Battery	Penobscot	Operating	12/31/2020	Y	20.9
Industrial Drive Rumford BESS Project	Oxford	Operating	7/1/2021	Y	4.9
Middlesex Road Topsham Solar	Sagadahoc	Planned	3/1/2022	Y	4.99
CED Denmark Solar Hybrid	Oxford	Planned	11/1/2022	Y	2.3
Manchester BESS	Kennebec	Planned	1/1/2023	Y	14
Sanford ESS	York	Planned	1/31/2023	Y	5
South Portland ESS LLC	Cumberland	Planned	1/31/2023	Y	10
Cross Town Energy Battery Energy Storage	Cumberland	Planned	4/1/2023	Y	175
Bonny Eagle Renewable BES	Cumberland	Planned	1/1/2025	Y	7.8
Rumford Renewable BES	Oxford	Planned	1/1/2025	Y	6.9

Maine generators, including energy storage generators, are able to participate in wholesale energy markets through ISO New England (ISO-NE), the region's independent, non-profit Regional Transmission Organization (RTO). ISO-NE operates a 3-year auction-based forward capacity market. In 2022, forward capacity auction (FCA) 16 which covers power system resources for 2025-2026, more than 700 MW of new and existing energy storage resources cleared the auction and secured obligations, including more than 200 MW in Maine.

Efficiency Maine Trust (EMT), an independent, quasi-state agency established to plan and implement energy efficiency programs in Maine, has additionally started to offer demand response programs with the goal of installing and dispatching energy storage systems to reduce load during ISO-NE peak load conditions. This includes a performance-based incentive of $200 per kW for 5 years to resources that can deliver reductions behind the meter or reductions in grid supplied power. It is open to all demand metered customers with an upper size limitation of 3 MW.[12] EMT will soon launch a small battery program similar to the "Bring Your Own Device" program in Vermont which will make performance payments available for both residential and small commercial battery dispatch. These types of pilots will help inform

[11] ISO New England Interconnection Queue. Accessed January 4, 2023.
[12] https://www.efficiencymaine.com/docs/Energy_Storage_System_Pilot_Program_PON-EM-023-2022.pdf

incentive structure and rate design to optimize the usage of energy storage for uses like demand response.

Maine Tax Law

As of April 2020, Maine law has allowed for a local property tax exemption for solar and wind energy equipment that generates heat or electricity if all energy generated is either used on the site where the equipment is located, or is connected to the electrical grid and the customer receives a net energy billing credit.[13] With passage of this exemption, Maine became one of 36 states to offer property tax exemptions for solar energy. This exemption allows owners of solar and wind to exclude the incremental value of the system from the value of their property for tax purposes. Under this law, energy equipment does include batteries for storing only electricity generated by solar panels. This policy applies to distributed or behind-the-meter applications and does not apply to larger grid-scale projects.

In 2022, the Maine Legislature passed LD 2030, "An Act To Provide for Reimbursement of the Sales Tax Paid on Certain Battery Energy Storage Systems." This is not a sales tax exemption, but rather provides a reimbursement for a sales or use tax to owners of qualifying battery storage systems of 50 MW or greater located at a single site in the state. Equipment integral to the battery energy storage system is also eligible under this legislation. This incentive is available for a limited time period, applying only to qualified energy storage systems purchased between January 1, 2023 and December 31, 2025. Eligible entities may submit a claim for tax reimbursement beginning July 1, 2023. The GEO anticipates this reimbursement will help offset a portion of increased supply chain costs that developers have experienced over the last couple years. Some stakeholders have supported lowering the eligibility threshold for the sales and use tax reimbursement to allow smaller projects to access tax relief. Some stakeholders have additionally advocated for the inclusion of battery energy storage systems as eligible equipment qualifying for the Business Equipment Tax Exemption (BETE).

State Incentives for Energy Storage

A review of existing incentives for energy storage systems across the northeast region and the country shows that very few states offer tax incentives for energy storage, especially compared to solar offerings. Some states have expanded property tax exemption programs or Payment-In-Lieu-Of-Taxes (PILOT) agreements to energy storage—typically when co-located with solar or wind, not standalone storage—in recent years in recognition of the benefits of storage technology in advancing clean energy goals.

[13] https://www.maine.gov/revenue/taxes/tax-relief-credits-programs/property-tax-relief-programs/property-tax-exemptions

Other states provide a range of other incentive types for energy storage resources including rebates and payments or credits for performance typically for smaller projects, and competitive solicitations for long-term contracts geared toward larger projects.

Tax Incentives

Maryland

The Maryland Energy Administration operated an Energy Storage Income Tax Credit Program designed to encourage deployment of residential and commercial energy storage systems in the state. In Tax Year 2021, Maryland issued 164 tax credit certificates for a total of 1.99 megawatts of energy storage capacity. Credits are issued for 30 percent of the installation costs for energy storage systems with a cap of $5,000 for residential systems and $150,000 for commercial systems. Credits are available on a first-come, first-serve basis with a total of $750,000 available for the program.[14] The State of Maryland has reauthorized the program for 2023 and 2024 with another $720,000 in credits available this year.

New York

New York State offers the Energy Conservation Improvements Property Tax Exemption. 2017 legislation amended this exemption to add electric energy storage systems and storage equipment as eligible for property tax exemption for a period of fifteen years. This program is available for projects installed in single-family up to four-family units that begin construction between January 2018 and January 2025. Municipalities, however, can choose to opt out of this exemption within their jurisdiction.[15]

Pay-For-Performance

ConnectedSolutions is a demand response program applicable to customer-owned distributed energy resources, including energy storage resources, with the goal of peak demand reduction and emission reductions by avoiding the use of fossil-powered peaker plants. Customers can earn incentive payments by enrolling their battery system in the program which allows the electric grid to call upon the stored energy in their battery at times of peak demand to balance the grid. Program operators set a limit on the number of times a customer's resource can be called and for how long. In the event of extreme weather, system operators avoid calling on customer storage to allow the customer to take advantage of their storage system as backup power. This type of incentive helps customers seeking access to backup power finance their storage system. ConnectedSolutions is available to certain utility customers in Connecticut, Massachusetts, and Rhode Island. A similar program called the "Bring Your Own Device Program" operates in Vermont as well. Vermont's program offers a performance payment in

[14] https://news.maryland.gov/mea/2022/03/28/maryland-launches-tax-year-2022-energy-storage-income-tax-credit/

[15] https://programs.dsireusa.org/system/program/detail/22072/energy-conservation-improvements-property-tax-exemption

the form of a bill credit in addition to an upfront incentive. By the middle of 2022, Vermont's program had deployed at least 4,000 Tesla Powerwall units through the program.[16]

Clean Peak

The Massachusetts Clean Peak Standard requires Load Serving Entities in the state to meet a specified share of retail sales with clean resources. Credits can be generated by renewables, demand response, and battery storage. Storage can generate credits by discharging during designated discharge periods which vary by season. At the beginning of 2022, about 60 MW of energy storage projects were participating in the program.[17]

SMART

Massachusetts offers a solar-focused incentive program called the Solar Massachusetts Renewable Target or SMART. The program includes an adder for energy storage paired with a solar system which provides a per kwh incentive based on the size and duration of the battery. Additionally, batteries in the program have requirements for annual discharge cycling. As of January 2023, there were more than 300 MW of approved solar projects utilizing the storage adder.[18]

Grid-scale Policies

The previously discussed policies generally target small-scale distributed or behind-the-meter energy storage projects. Some states have policies specifically designed to support larger grid-scale storage. In the northeast region, New York and Connecticut each offer a suite of policies to incentivize grid-scale storage, including the inclusion of energy storage in renewable energy solicitations for long-term contracts to help achieve their 6,000 MW and 1,000 MW targets, respectively.

New York's Indexed Storage Credit proposal offers a mechanism for procurement of large-scale energy storage projects. The indexed credit allows for a fixed, up-front contract that awards payments based on the difference between a "strike price" and a "reference price" that represents expected wholesale market revenues.

Federal Tax Incentives for Energy Storage

In August 2022, Congress passed the Inflation Reduction Act (IRA),[19] legislation that directs nearly $370 billion to climate change related programs aimed at accelerating the deployment of clean energy technologies, reducing emissions, lowering energy prices, and building the resiliency of our energy system. This law, through both the creation of new programs and the extension of existing programs, will provide substantial opportunities to expand clean energy

[16] https://electrek.co/2022/08/22/small-vermont-utility-builds-fleet-4000-tesla-powerwalls/
[17] https://www.mass.gov/doc/cps-qualified-units-list
[18] https://www.mass.gov/doc/smart-solar-tariff-generation-units
[19] www.cleanenergy.gov

manufacturing, distributed generation, building modernization, and energy efficiency in Maine and across the country.

According to analysis conducted at Princeton University, the IRA puts the U.S. on a path to roughly 40% emissions reductions by 2030 while committing to delivering 40% of the overall benefits of these investments to marginalized, underserved, and overburdened communities.[20] Nearly three-quarters of IRA's funds will be delivered in the form of federal tax credits supporting the production of electricity from clean energy sources and investments in renewable energy technologies and energy efficiency upgrades including energy storage.

One significant change the IRA made to the investment tax credit (ITC) is accessibility to tax-exempt organizations—such as municipalities, Tribes, and electric cooperatives—through a direct pay option. This means an entity generally unable to access tax incentives now has the option to pursue clean energy investments independently from a financier by applying for a refund equivalent to the credit value.

Additionally, the IRA aims to boost domestic manufacturing of energy storage technologies, addressing supply chain constraints, through production tax credits (PTC).

Investment Tax Credit for Energy Property – Section 48

Section 48 of the IRA provides a tax credit for investment in renewable energy projects. Prior to the passage of the IRA, the Section 48 ITC for energy property excluded energy storage systems except when paired with a solar generation facility and charged at least 80% by that facility. The IRA reestablished a 30 percent tax credit and expanded the credit to standalone energy storage with a capacity of at least 5 kilowatt hours (kWh), regardless of whether it is charged from a renewable energy resource or the grid. The base credit amount begins at 6 percent of project costs, including interconnection and can reach 30 percent if prevailing wage and labor requirements are met. Additional bonus credits can be earned for projects that meet domestic content requirements or are located in an energy community as defined by the law.

Clean Electricity Investment Tax Credit – Section 48E

After December 31, 2024, the ITC for Energy Property will be replaced by a technology-neutral tax credit under Section 48E of the IRA. This credit will apply to electricity generating facilities with emission rates not greater than zero and energy storage systems. Base and bonus credits mirror those of the Section 48 ITC. A phasedown will begin once power sector emissions fall below 25 percent of 2022 levels, or in 2032—whichever is later.

Residential Clean Energy Credit – Section 25D

Section 25D provides a tax credit for the purchase of residential clean energy equipment and battery storage with a capacity of at least 3 kWh. The IRA extended this credit to 30 percent of

[20] https://repeatproject.org/docs/REPEAT_IRA_Prelminary_Report_2022-08-04.pdf

the cost of equipment through 2032 and added battery storage as eligible equipment. The credit will phasedown between 2033 and 2034.

Advanced Manufacturing Production Tax Credit – Section 45X

Section 45X provides a PTC to domestic manufacturers of components for solar and wind energy, inverters, battery components, and critical minerals essential for clean energy production.

Discussion of Federal ITC Assumptions Used in the Maine Energy Storage Market Assessment (ESMA)

The Maine Energy Storage Market Assessment was completed prior to the passage of the IRA. The assessment assumed federal ITC rates of 30% in 2023, 26% in 2024 to 2025, and 10% for all subsequent years through 2030. Due to the requirement that storage in a hybrid system must charge only from solar during the vesting period (first 5 years of operation) prior to the passage of the IRA, the model also assumed the charging limitation over the lifetime of the project to highlight the impact of this rule.

One of the cost-benefit analysis scenarios, as shown in Figure 2, looked at wholesale storage paired with solar. While this scenario was shown to be cost effective from the owner perspective by the mid-2020s, largely driven by federal incentives, it did see reduced wholesale market participation relative to modeled standalone storage due to the previously discussed charging limitations. Additionally, Figure 2 illustrates the value of the ITC diminishes over the study period. If the expanded ITC from the IRA had been modeled, projects would be able to access a larger credit through the entire study period and beyond, contributing to an even greater benefit cost ratio.

Figure 2: Wholesale storage + solar levelized benefits and costs from participant perspective by storage installation year. [Source: Maine Energy Storage Market Assessment]

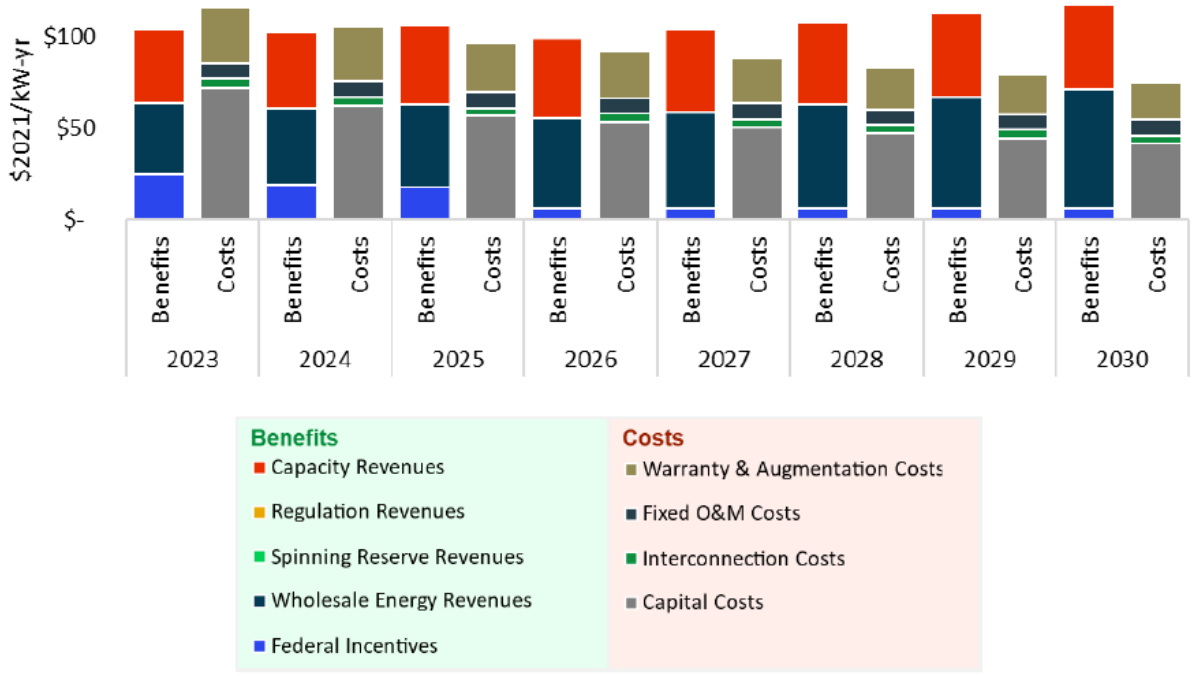
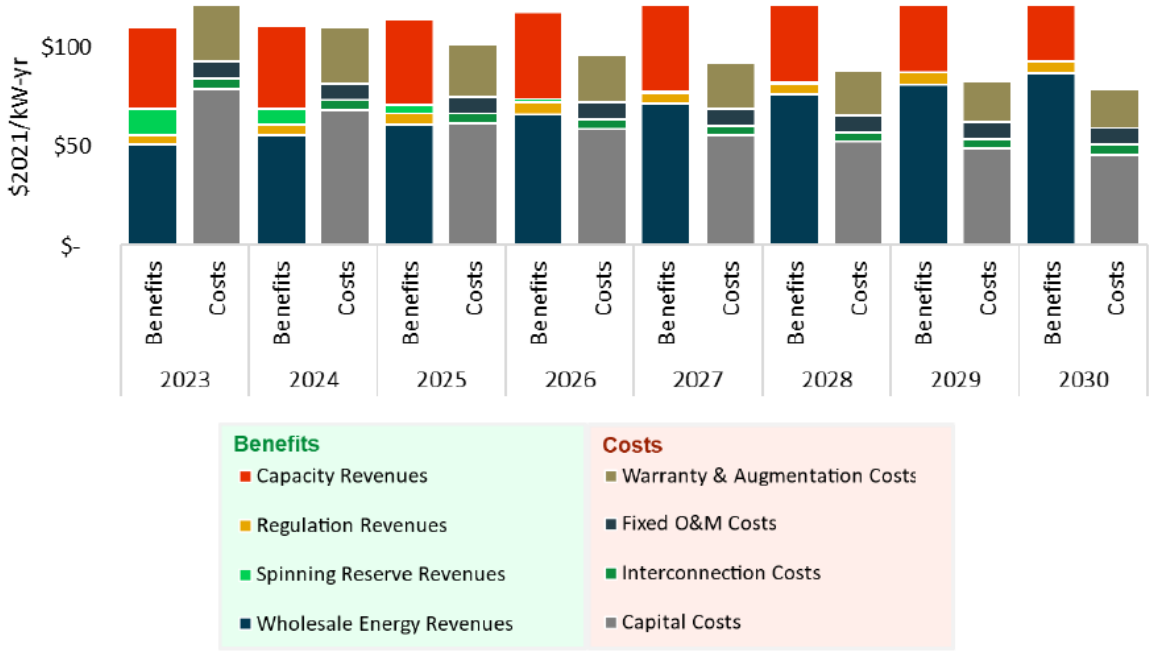


Figure 3: Wholesale standalone storage levelized benefits and costs from participant perspective by storage installation year. [Source: Maine Energy Storage Market Assessment]



Recent analysis conducted for New York's Energy Storage Roadmap, which was also done by consultants at E3, further illustrates the value of new ITC rules included in the IRA and their

potential impact on storage markets and the pace of deployment. New York modeled storage deployment to meet their energy storage and carbon neutrality goals and saw that resources needed by 2040 were pulled forward into the early-to-mid 2030's to capture the ITC, taking advantage of lower costs to build early with the ITC rather than to wait for further technology cost reductions expected later in the decade.[21]

Takeaways

As a complement to Maine's clean energy and decarbonization policies, the state's legislatively directed storage goals send a clear signal to energy storage developers of interest in long term investment in the state. The services that energy storage can provide to the electric grid will be crucial, particularly as more intermittent renewable resources are connected, and buildings and transportation are electrified.

The above review of tax incentives for energy storage available from the Federal Government and in other states, and the evaluation of the role of existing and potential tax incentives in achieving Maine's energy storage policy goals is not intended to be exhaustive, but rather present Maine and regional trends and factors contributing to the growth in both smaller scale distributed storage and the deployment of larger, utility-scale storage, each of which have a role to play.

It is clear that as of 2023, the demand for energy storage is growing and will continue to do so for the foreseeable future, particularly with the support of programs in the IRA. Several factors including long term cost declines, technology improvements, and public policy goals focused on energy storage, electric vehicles, and decarbonization are driving factors despite cost and material challenges experienced by the industry over the last couple years.

There are many ways to support the deployment of energy storage. Program design and incentives may differ depending on state policy goals or what attributes and benefits of storage are most highly valued. In a review of storage policies in place in other states, storage deployment targets or mandates in addition to performance-based incentive programs or long-term contracts are much more common than state level tax-based incentive programs.

High value federal tax incentives made available to energy storage technologies through the passage of the Inflation Reduction Act of 2022 are expected to drive deployment of energy storage across the country between now and the mid-2030s. The extension and expansion of federal credits will also likely spur new investment in technology development and domestic manufacturing could drive additional cost reductions going forward.

[21] https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Energy-Storage/ny-6-gw-energy-storage-roadmap.pdf

Furthermore, the expansion of ITC eligibility to standalone storage projects will expand access to the benefits of these resources, enhancing the value and utilization of storage for reliability, resiliency, and grid flexibility. The IRA has provided valuable certainty to the storage industry.

In meeting the state's current energy storage policy goals, the GEO sees ongoing challenges with interconnection and rate design as notable hurdles to timely deployment of energy storage in Maine that can deliver the highest value services to the grid. As previously mentioned, the GEO is engaged in ongoing proceedings at the PUC regarding rate design and potential changes to procedures for interconnection of energy storage to the transmission and distribution system and will continue to monitor upcoming rulemakings on these topics.

The GEO encourages any future energy storage program to align with the opportunities of the IRA to support the deployment of cost-effective energy storage in locations most beneficial to the electric grid. Storage policy should complement the state's clean energy and decarbonization goals. Finally, the GEO should evaluate the state's energy storage goals on a regular basis to ensure continued alignment with state policy and storage markets.