

Maine Public Utilities Commission

Report on Utility Control or Ownership of Energy Storage (Public Law 2023, chapter 374)



**Submitted to the Joint Standing Committee on
Energy, Utility and Technology**

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I. Background

A. The Statute

On June 30, 2023, Public Law 2023, chapter 374 (Act)¹ was enacted into law. Section 5 of the Act directs the Public Utilities Commission (the Commission) to:

solicit stakeholder input on whether and, if so, at what cost and under what conditions, including commission approval on a case-by-case basis, an investor-owned transmission and distribution utility may own, have a financial interest in or otherwise control an energy storage system, as defined in the Maine Revised Statutes, Title 35-A, section 3481, subsection 6, in order to perform its obligations as a transmission and distribution utility in an effective, prudent an efficient manner.

The Act requires the Commission to consider, in addition to the input received from stakeholders, the impact of investor-owned transmission and distribution utility (T&D Utility) financial interest in, or control of energy storage systems may have on the achievement of a number of specific state environmental and energy policies. Finally, the statute requires the Commission to consider whether the competitive market for energy storage can meet the energy needs of T&D Utilities at reasonable cost.

The Act requires that the Commission provide a report containing any recommendations to the Joint Standing Committee on Energy, Utilities, and Technology no later than February 15, 2024.

B. Inquiry

On December 6, 2023, the Commission initiated an Inquiry to seek public comment related to this report. *Maine Public Utilities Commission Inquiry Regarding Utility Control or Ownership of Energy Storage*, Docket No. 2023-00316, Notice of Inquiry (December 6, 2023) (Inquiry).

Initial comments regarding the report were due January 17, 2024. The Commission received comments from stakeholders including T&D Utilities, advocates for ratepayers, environmental interest groups, renewable energy developers, and consumer advocates. Through these comments, the Commission noted a few areas of consensus related to the benefits of energy storage, and a few shared areas of concern.

C. Current State of Energy Storage in Maine

Maine currently has 63 MW in nameplate capacity of energy storage systems connected and operating in front of the meter.² These 63 MW are distributed among six projects, with the

¹ LD 1850, An Act Relating to Energy Storage and the State's Energy Goals

² 2023 CELT Report, ISO New England Inc. System Planning, May 1, 2023.

largest battery facilities located in Millinocket (20.9 MW) and Yarmouth (16.7 MW), situated in Versant Power and Central Maine Power's service territories, respectively.

Section 3145 of Title 35-A establishes a goal of deploying at least 300 MW of energy storage by the end of 2025 and at least 400 MW by the end of 2030. Section 3145 does not specify the uses, benefits, or configurations of energy storage systems required to meet the energy storage goal.

According to ISO-New England (ISO-NE's) interconnection queue, there are four stand-alone battery projects, netting approximately 215 MW, planned for future development in Maine. Of these projects, the largest is the 175 MW Cross Town Energy Storage Facility,³ situated in Gorham.

In addition to the four stand-alone battery storage projects, there are also 19 co-located storage and generation projects netting approximately 799 MW in the ISO-NE queue for Maine. For co-located projects, it is unclear how MWs are divided between the battery and generator, so it is difficult to estimate the precise number of MWs that will be apportioned to the energy storage portion of these projects. CMP's small generator interconnection queue currently lists 1000 MW of projects that include energy storage, and Versant's distribution interconnection queue currently lists 1.9 MW of projects that include co-located generation and energy storage. Some of these projects may also be listed in ISO-NE's queue, but the sums of these queues demonstrate planned private investment in energy storage that exceeds the amounts set forth in section 3145.

³ <https://www.crosstownenergystorage.com/about>.

D. Benefits and Uses of Energy Storage

Energy storage can provide several benefits to the distribution system depending on the application of the storage. According to the National Renewable Energy Laboratory, some of those benefits have more value in U.S. electricity markets than others, as set forth in Table 1 below.

Table 1: Applications of Utility-Scale Energy Storage			
Application	Description	Duration of Service Provision	Typically Valued in U.S. Electricity Markets?
Arbitrage	Purchasing low-cost off-peak energy and selling it during periods of high prices.	Hours	Yes
Firm Capacity	Provide reliable capacity to meet peak system demand.	4+ hours	Yes, via scarcity pricing and capacity markets, or through resource adequacy payments.
Operating Reserves			
• Primary Frequency Response	Very fast response to unpredictable variations in demand and generation.	Seconds	Yes, but only in a limited number of markets.
• Regulation	Fast response to random, unpredictable variations in demand and generation.	15 minutes to 1 hour	Yes
• Contingency Spinning	Fast response to a contingency such as a generator failure.	30 minutes to 2 hours	Yes
• Replacement/ Supplemental	Units brought online to replace spinning units.	Hours	Yes, but values are very low.
• Ramping/Load Following	Follow longer-term (hourly) changes in electricity demand.	30 minutes to hours	Yes, but only in a limited number of markets.
Transmission and Distribution Replacement and Deferral	Reduce loading on T&D system during peak times.	Hours	Only partially, via congestion prices.
Black-Start	Units brought online to start system after a system-wide failure (blackout).	Hours	No, typically compensated through cost-of-service mechanisms.

Source: *Greening the Grid: Grid Integration Toolkit, Grid-Scale Battery Storage Frequently Asked Questions*, Table 1: Applications of Utility-Scale Energy Storage, National Renewable Energy Laboratory, July 11, 2023, pg. 4.

In addition to the specific utility-scale uses cited by the National Renewable Energy Laboratories, stakeholders who submitted comments in response to the Inquiry cited the following benefits and uses for energy storage:

- Co-location of energy storage at existing thermal generation facilities
- Non-Wires Alternatives (NWAs)
- Co-location with Distributed Energy Resources (DERs)

- Microgrids
- Reduce demand for peak generation
- Substitute or defer investment in transmission or distribution assets
- Improve distribution system reliability and/or resilience
- Pilot studies
- Perform market functions
- Small residential scale BTM batteries

Section II of the report provides additional information on the Act. Section III of the report contains a summary of stakeholder comments, with an emphasis on areas of consensus and common concerns. Section IV of the report contains the Commission’s recommendations.

II. Specific Information Required in the Act

The Act specified that the Commission consider in the report: 1) whether and if so when T&D Utilities should be permitted to own or control energy storage; 2) potential effects of utility energy storage on state energy and climate policies; and 3) whether the competitive market can meet the energy needs of the T&D Utilities at a reasonable cost.

A. Whether T&D Utilities Should Own or Control Energy Storage

The Act specified that the Commission should solicit input on utility ownership or control of energy storage systems. The Act also specified that the Commission should consider recommending conditions on when a T&D Utility may have ownership or control of energy storage systems. The Act specified that the conditions could apply to ownership, financial interest in, or any other type of control of an energy storage system.

In soliciting input on this factor, the Commission asked for additional input on T&D Utility ownership or control of storage. In the interest of understanding the types of conditions that may be applied to ownership or control of energy storage systems, the Commission sought specific information on the following:

- How T&D Utilities can benefit from the addition of energy storage to the distribution system;
- What size of energy storage systems, what location of energy storage systems, and what configuration of energy storage systems with respect to the meter would best benefit ratepayers and the distribution system;
- How best to procure energy storage to maximize benefits to ratepayers and the distribution system at a minimum cost to ratepayers; and
- What concerns stakeholders may have about utility control or ownership of energy storage including:
 - potential risks to ratepayers; and
 - suggestions for mitigating risks to ratepayers.

B. The role of T&D Utility Ownership or Control of Energy Storage in the Achievement of State Energy and Climate Goals

The Act specified that the Commission should consider the impact of T&D Utility ownership or control of energy storage on state energy and climate goals. The Act required the Commission to consider at a minimum the effect T&D Utility ownership or control of energy storage on the following codified policies:

- State energy storage goals, including programs to encourage investment in energy storage (35-A M.R.S. § 3145);
- Electric industry restructuring (38 M.R.S. § 576-A);
- Meeting the timelines and greenhouse gas emissions reduction requirements (38 M.R.S. § 576-A);
- Increasing generation of electricity from renewable resources (35-A M.R.S. § 3210);
- Achieving the renewable energy deployment goals of the state (*i.e.*, solar deployment goals set forth in chapter 34-B, and wind deployment goals set forth in chapter 34 of Title 35-A); and
- Ensuring the prudent procurement of NWAs when NWAs are found appropriate (35-A M.R.S. § 3132-D).

In addition, the Act required the Commission to consider, at a minimum, the effect of T&D Utility ownership or control of energy storage on the achievement of lower electricity costs for ratepayers.

C. The Competitive Market for Storage

Finally, the Act specified that the Commission should consider whether the competitive market for energy storage can meet the energy needs of T&D Utilities at a reasonable cost. The same questions the Commission used to clarify whether there were conditions under which T&D Utility ownership or control would be beneficial also helped clarify when the competitive market could meet the energy storage needs of T&D Utilities.

III. Stakeholder Comments

The Commission received comments from the following list of stakeholders representing a diverse range of interests and perspectives:

- Renewable energy and environmental advocates:
 - Conservation Law Foundation (CLF)
 - Natural Resources Council of Maine (NRCM)
 - Sierra Club
 - Maine Grid Works (MGW)
- Ratepayer advocates:
 - Industrial Energy Consumer Group (IECG)
 - Office of the Public Advocate (OPA)
- Representatives of the renewable energy development industry:

- Elevate Renewables (Elevate)
- Maine Renewable Energy Associate (MREA)
- Northeast Clean Energy Council (NECEC)
- Ocean Renewable Power Company (ORPC)
- RENEW Northeast (RENEW)
- ReVision Energy (ReVision)
- Competitive Energy Services (CES)
- T&D Utilities:
 - Central Maine Power Company (CMP)
 - Versant Power (Versant)
- Government Agencies:
 - Efficiency Maine Trust (EMT)
 - Governor’s Energy Office (GEO)
- Representatives of Generators
 - New England Power Generators Association, Inc. (NEPGA)

While the stakeholders were somewhat responsive to the specific questions posed in the Notice of Inquiry, they also raised additional issues. In general, the stakeholders expressed strong views on topics including whether the Commission should define energy storage as generation, the benefits and applications of storage, whether the competitive market could adequately provide for the energy needs of the T&D Utilities, how storage should be considered with respect to NWAs, and how best to procure the state’s storage needs. This section of the report summarizes the comments made in response to the Act and identifies shared concerns.

A. Comments on Whether T&D Utilities Should Own or Control Energy Storage

In response to whether T&D Utilities should be allowed to own or control energy storage, the majority of commenters urged the Commission to recommend that T&D Utilities should only be allowed to own or control energy storage under the same circumstances in which T&D Utilities are allowed to own or control generation assets. The majority of commenters referenced Section 3204(6) of Title 35-A, which states:

On or after March 1, 2000, notwithstanding any other provision in this chapter, the commission may allow an investor-owned transmission and distribution utility to own, have a financial interest in or otherwise control generation and generation-related assets to the extent that the commission finds that ownership, interest, or control is necessary for the utility to perform its obligations as a transmission and distribution utility in an efficient manner.

The Commission has interpreted this provision in previous dockets. The OPA, in its comments, cited the one case in which the Commission denied a utility’s request to own generation, and urged the Commission to apply the holding in that case to energy storage systems, specifically that utilities be allowed to own and use storage “to provide support in weak areas of the T&D

system when doing so would be less costly and more efficient than system upgrades.”⁴

In general, commenters agreed that there would be some scenarios in which T&D ownership or control of energy storage would be necessary, but they disagreed about whether that option should extend beyond the exceptions granted to utilities for ownership and control of generation assets. Most commenters agreed that T&D Utilities should only be allowed a narrow pathway in which to own and control energy storage. Commenters also largely agreed that if T&D Utility ownership or control of energy storage were to be allowed, it should only be in circumstances where the T&D Utility could demonstrate that its ownership and control would offer widespread value. Some commenters spoke only of value to ratepayers, while other commenters spoke of the potential value to the grid or to the environment.

Both CMP and Versant submitted comments in support of T&D Utility ownership or control of energy storage. They pointed out that control of storage would be especially important for the purpose of maintaining stability and reliability of the grid. CMP specifically noted that utility ownership or control of energy storage sited in front of the meter in areas of network constraints would provide the most value to the greatest number of customers. CMP also advocated for cost-benefit analysis of all storage projects and potential ratepayer funded incentive programs.

Versant similarly expressed that T&D Utility ownership and control of energy storage systems in front of the meter configurations to support T&D Utility functions and reliability functions would be the best option for ratepayers and grid operation. Versant added that there are several other configurations for storage, both in front of and behind the meter, that would present opportunities for ownership and operation by non-utility operators. ORPC cited to a pilot program involving energy storage in which a private partnership with the utility led to a potentially beneficial solution for renewable energy and energy storage in a unique location on Versant’s distribution system. In general, CMP and Versant seemed to agree that T&D Utility ownership of energy storage made the most sense in front-of-the-meter configurations.

In their analyses of whether T&D Utilities should be allowed to own or control energy storage systems, commenters cited three specific avenues of exploration, the resolution of which would better inform any pathway designed to determine, on a case-by-case basis, the appropriateness of T&D Utility ownership or control of energy storage systems. These are: whether storage is defined as generation; the availability and transparency of data; and ownership versus control of storage by T&D Utilities. These issues are addressed in turn.

1. Whether Storage is Generation

Some commenters (CLF, Elevate, IECG, NECEC, GEO, RENEW, Versant, CMP, CES) raised the issue of whether energy storage is generation. According to some of these

⁴ *Maine Public Utilities Commission Investigation into the Request for Approval of CMP to Offer Backup Generation Equipment as “Special Facilities” Under Section 13 of its Terms and Conditions*, Docket No. 2004-00021, Order at 5 (May 4, 2004). In this case the Commission concluded that the provision of backup generation is not a T&D service, and therefore CMP was not permitted to own backup generators. The order distinguished between “equipment used to generate electricity” and equipment that acts “to transmit or deliver power.”

commenters, if owning an energy storage system is the same as owning a generation asset, then T&D Utility ownership of energy storage systems is restricted by 35-A M.R.S. § 3204(6).⁵ If, however, an energy storage system is not a generation asset, then T&D Utility ownership of energy storage is not restricted under the existing statute.

Because energy storage systems can be dispatched in a manner similar to generation assets, the interconnection of energy storage systems to the T&D System is regulated by the same rules that monitor the interconnection of generators.⁶ ISO-New England (ISO-NE) defines energy storage as generation in most circumstances, except for notable carve-outs for Storage as Transmission-Only Assets (SATOAs).⁷ ISO-NE's definitions about generation have not proven to be decisive for other states. For example, ISO-NE defines synchronous condensers as generators, but T&D Utilities are allowed to own and operate synchronous condensers. Similarly, many New England and neighboring states treating energy storage systems differently from generation assets in a variety of circumstances.

Energy storage systems do not generate energy. Energy storage systems store energy provided by a generator and later dispatch that energy into the grid. It is this combination of functions, both in capturing generated energy and in dispatching it at a later time, that makes energy storage a valuable resource for a wide variety of functions, including those described by commenters in this Inquiry. Not all functions are similar to functions performed by generators. Defining all energy storage systems as generation may preclude the adoption at lowest cost of energy storage systems in as many configurations and methods as necessary to provide benefits to the distribution system and to ratepayers.

The Commission acknowledges that this is a complicated question and one that, for distribution level systems, may require a clear answer, which would most likely come from legislation or from a judicial determination. The Legislature did not direct the Commission to make a recommendation with respect to whether energy storage meets the definition of generation and therefore the Commission declines to provide such a recommendation. The Commission would note, however, that the important question may not be whether storage is

⁵ Utility ownership of generation assets has previously come before the Commission in the following dockets: 1998-00820, 2004-00021, and 2017-00027. In each instance, the Commission based its decision on whether the project was prohibited under the provisions of 35-A M.R.S. § 3204(5) or allowed under Section 3204(5) or Section 3204(6). The Commission based its findings on the facts specific to each case and according to the narrow provisions in the statute. In docket 1998-00820 the Commission approved a divestiture and sale process that maximized what was then Bangor Hydro Electric's flexibility with respect to the sale of its generation assets. In Docket 2004-00021 the Commission concluded that CMP did not have the authority to own or provide backup generators on the premises of retail customers; and in Docket 2017-00027 the Commission concluded it needed more extensive litigation before determining if it was appropriate for what was then Emera Maine to own a microgrid project in Hampden. Emera Maine eventually withdrew the petition before any final analysis was concluded.

⁶ *See, for example*, Chapter 324 of the Commission's Rules, titled "Small generator interconnection procedures" which includes energy storage systems in the assets to be regulated for interconnection.

⁷ *See, for example*, 185 FERC ¶ 61,044 *United States of America Federal Energy Regulatory Commission*, Order Accepting Tariff Revision (Oct. 19, 2023), approving ISO-NE's proposal to enable energy storage systems to be planned and operated as transmission-only assets. The FERC and ISO-NE noted that these assets would not be participating in the wholesale energy markets. ISO-NE distinguishes SATOAs from other energy storage systems because these assets are built only to ensure a reliable transmission system and will not compete in electricity markets.

generation, but rather whether and under what circumstances a utility should be allowed to own or operate energy storage facilities. The Commission recommends further study of this issue, as discussed in the recommendations section of this report.

2. Data Availability and Transparency

Several commenters, including the T&D Utilities and several representatives of the renewable energy development industry, observed that T&D Utilities are often in the best position, due to their knowledge of the distribution system and its needs, to determine when, where, and at what configuration energy storage would be useful. Both CMP and Versant mentioned that this is especially true when it comes to front-of-the-meter configurations. In contrast, developers argued that this unique knowledge put the T&D Utilities in a position of suppressing competition. Renewable energy developers argued that, because they do not have the same information about the needs of the distribution system, they are not in a position to compete with T&D Utilities on proposals for energy storage systems that would provide the most benefit to the distribution system. The Commission is currently exploring greater transparency of data with respect to distribution system needs in a separate docket.⁸

CMP and Versant also identified a need for data about the energy storage systems that are interconnected to the distribution system. They observed that lack of transparency about behind-the-meter systems and their times of dispatch and charging can lead to uncertainty about distribution system needs. This uncertainty increases with the increased penetration of energy storage systems and DERs. CMP and Versant emphasize that all interconnected energy storage systems over which a T&D Utility has contractual control must provide the T&D Utility with adequate visibility.

Further study is needed to determine which data is needed from T&D Utilities and from interconnected energy storage systems to best enable the use of energy storage systems on the distribution system.

3. Ownership Versus Control

Some commenters (EMT, ReVision, GEO, OPA, NRCM, Versant, CMP) noted that there may be some circumstances in which T&D Utility *ownership* of energy storage systems does not make sense, but in which T&D Utility *control* of those systems does make sense. For example, ReVision suggested that, in the absence of a centralized distribution system operator, it may make the most sense for T&D Utilities to control energy storage systems that primarily serve the

⁸ The Commission has been conducting stakeholder proceedings in docket number 2022-00322, to identify priorities for grid plan filings to be made by CMP and Versant pursuant to legislation. Stakeholders have specifically requested that the T&D Utilities be directed to provide more information about forecasting and predicting future grid needs, which should include storage needs.

transmission and distribution system. This may be similar to ISO-NE's SATOAs,⁹ or in situations where an energy storage asset has been put in place as a non-wires alternative (NWA). Similarly, T&D Utility control may be necessary in situations in which energy storage systems are installed to prevent or postpone expensive upgrades to the T&D Utility system.

Ownership

Versant and CMP emphasized that the distribution system and ratepayers may benefit from T&D Utility ownership of front-of-the meter energy storage systems that were configured to promote reliability and resilience. Both T&D Utilities provided examples of potential uses of these configurations that could provide least-cost solutions to avoid more costly distribution upgrades. For example, energy storage systems could provide a T&D Utility with a solution that will help integrate more DERs and prevent other, more costly, investments in the distribution system. Similarly, as discussed below, one area in which CMP and Versant proposed that ownership of energy storage systems is when those systems serve as NWAs.

In contrast, many commenters noted that the purpose of the competitive market was to compete to provide grid services (CES, RENEW, REVISION, OPA, IECG, NEPGA). They advocated that competition could include services for reliability and resilience, as described by the T&D Utilities. They found no compelling reason for T&D Utilities to own energy storage systems that provide these services.

In the absence of a specific case study, there is insufficient information to determine if T&D Utility ownership of energy storage systems would ever provide benefits to ratepayers at the least cost. If the competitive market alone cannot provide a beneficial solution to the distribution grid, then there may be specific cases in which T&D Utilities can demonstrate that their ownership of energy storage systems will provide a beneficial service to ratepayers at least cost. This factual inquiry would require resolution on a case-by-case basis specific to the proposed energy storage system and its proposed uses.

Control

Commenters generally agreed that T&D Utility control of energy storage systems made sense in more scenarios than T&D Utility ownership of energy storage systems. CMP and Versant urge that, at a minimum, they need control over the deployment of energy storage systems that are providing specific grid services. Most commenters acknowledge that, if an energy storage system is primarily providing a grid service, then it may make sense for T&D Utilities to have some level of control over those assets.

⁹ ISO-NE defines a SATOA as “electric storage equipment that: (1) is connected to or to be connected to Pool Transmission Facilities in the New England Transmission System at a voltage level of 115 kV or higher; (2) the ISO approved to be included in the Regional System Plan and RSP Project List as a regulated transmission solution and Pool Transmission Facility pursuant to the regional system planning processes in Attachment K of the [Tariff]; and (3) is capable of receiving energy only from the Pool Transmission Facilities and storing the energy for later injection to the Pool Transmission Facilities.” Proposed Tariff, I.2 (148.1.0), § I.2.2. FERC accepted SATOA Revisions as filed, with a targeted effective date of July 1, 2024.

For example, it may make sense for T&D Utilities to have some level of control over energy storage systems that provide reliability and improve power quality. CMP emphasized that centralized ownership and control over energy storage systems that are not market participants would allow the T&D Utility the most flexibility in how to use the energy storage system. CMP and Versant advocated for the ability to own, or, at a minimum, control energy storage systems to provide distribution system reliability and resilience. In contrast, if the energy storage system is built to participate in the ancillary and wholesale markets, then T&D Utility may require a different level of control over that system.

Commentors disputed the role that contractual arrangements can play in providing T&D Utilities with effective means of controlling energy storage systems. CMP and Versant argued that contracts are unwieldy and not sufficiently responsive to changing grid needs and demands. Renewable energy developers were more optimistic in their comments about the ability of contracts to provide T&D Utilities with adequate control of energy storage systems. As with many other aspects of energy storage systems, the ability of a contractual relationship to serve as an adequate level of control most likely depends on the design of the system and the purposes for which it is intended to be used.

Further study is needed to determine first, if there are specific cases in which it is appropriate for T&D Utilities to own energy storage systems, and second, the types of services provided by energy storage systems over which T&D Utilities should have some sort of operational control, including information about how that control would be established.

B. Comments on the role of T&D Utility Ownership or Control of Energy Storage in the Achievement of State Energy and Climate Goals

1. State energy storage goals, including programs to encourage investment in energy storage (35-A M.R.S. § 3145)

Commentors did not specifically address whether T&D Utility ownership or control of energy storage systems would prevent the State from meeting its state energy storage goals.

2. Electric industry restructuring (35-A M.R.S. § 576-A)

Most commenters addressed the Act's concerns about honoring the principles that guided electric restructuring at the beginning of the millennium. (CLF, GEO, OPA, MREA, CES, RENEW, NECEC, NEPGA). These commenters emphasized the importance of promoting effective competition, insulating ratepayers from project risk, and increasing participation in the wholesale and retail electricity markets. This perspective is premised on the view that energy storage is not a natural monopoly and therefore should be provided by the market and not by a regulated monopoly.

Commenters disagreed on the extent to which T&D Utility ownership of storage assets would negate the principles of restructuring. Some said that any T&D Utility ownership of energy storage would be a step backwards from the goals behind restructuring. (MREA, CES, RENEW, NEPGA). Those commenters urged treating storage as generation and applying the

same restrictions on T&D Utility ownership of energy storage as statute currently apply to T&D Utility ownership of generation assets.

Other commenters similarly advocated for interpreting any restrictions on T&D Utility ownership of energy storage in a way that would promote competition. (GEO, CLF, NECEC, OPA). These commenters expressed a concern that T&D Utility ownership of energy storage would pass investment risk to ratepayers that is more appropriately borne by private investors. These commenters did note that there are some circumstances when the competitive market may not be able to invest in the State's energy storage without some sort of incentive or subsidy. The Commission presumes these commenters understand that this incentive or subsidy would be paid for by ratepayers or taxpayers, depending on the design of the incentive or subsidy.

Commenters generally agreed that, when energy storage is participating in energy markets, it makes sense for private investors, and not for T&D Utilities, to be the persons responsible for any market decisions of the energy storage resources. Keeping this role in the hands of third parties seems to be in line with the principles in the Electric Restructuring Act.

As discussed in the recommendations below, the Commission needs further study to determine the guidelines for approving the use of ratepayer funds to invest in energy storage systems.

3. Meeting the timelines and greenhouse gas emissions reduction requirements (38 M.R.S. § 576-A)

Most commentors did not specifically discuss this climate goal. While they acknowledged that energy storage systems could provide benefits, including the reduction of greenhouse gases, commenters did not specifically address whether T&D Utility ownership or control of energy storage systems would impact this policy.

4. Increasing generation of electricity from renewable and efficient sources (35-A M.R.S. § 3210)

While most commentors agreed that the addition of energy storage systems to the T&D distribution system would increase the penetration of DERs, most refrained from commenting specifically on whether T&D Utility ownership or control of those systems would help increase investment in all renewable energy resources. CMP and Versant both commented that their ability to own or control energy storage systems could enable them to connect more renewable energy generators safely, which would in turn lead to increased generation of electricity from renewable and efficient sources.

5. Achieving the renewable energy deployment goals of the state (solar deployment goals in Title 35-A, chapter 34-B and wind deployment goals in Title 35-A, chapter 34)

Comments related to this topic were similar to comments related to increasing generation from renewable energy. Most commenters expressed some concern that T&D Utility ownership

or control of energy storage systems would stifle competition to construct energy storage systems that may benefit renewable energy deployment. In contrast, Versant and CMP argued that T&D Utility ownership or control of energy storage systems could help T&D Utilities safely interconnect more renewable generation than the distribution system can currently support.

6. Ensuring the prudent procurement of NWAs when NWAs are found appropriate (35-A M.R.S. § 3132-D)

Several commentors (GEO, EMT, CMP, Versant, CES, CLF, NECEC, OPA, RENEW) discussed the NWA process as a space in which an energy storage system may replace a utility-owned wires reliability solution. Other commentors observed that the NWA process may need some changes to maximize the benefits to ratepayers of energy storage systems as NWAs. These commentors observed that T&D Utility ownership or control of energy storage systems functioning as NWAs would be an instance that would not conflict with the state policies and goals specified in the Act. According to these commentors, T&D Utility ownership or control of energy storage systems serving as NWAs may help the State get closer to achieving the climate goals in the Act and would not compromise the goals enumerated in the Restructuring Act. Again, the Commission would distinguish utility control of storage assets from ownership. While utility control of storage assets might enhance the ability of NWAs to function effectively, it is less clear that utility ownership would be necessary.

ReVision observed that there could be instances with paired renewable generation and storage where a third party owns the energy storage assets and contracts with the T&D Utility to provide system relief functions. This is potentially an example of T&D Utility control. Other commentors expressed the need to avoid inadvertent consequences to the NWA process with respect to any restrictions place on T&D Utility ownership or control of energy storage assets.

EMT specified that the NWA investigation process could be tailored to determine if T&D Utility ownership, control, or procurement is appropriate for specific energy storage systems not subject to ISO-NE transmission jurisdiction. EMT suggested that maximizing benefits from this type of NWA investigation would require a streamlining of existing Commission, OPA, and EMT procedures. EMT commented that transparency and consistency with respect to T&D Utility processing of energy storage system applications for interconnection under Chapter 324 could lead to more positive outcomes that would increase the implementation of energy storage systems.¹⁰

As discussed in the recommendations, further study is needed to best determine how to ensure that energy storage systems remain or become a viable NWA solution.

¹⁰ The Commission addressed this in a recent rulemaking in which it adopted amendments to Chapter 324, which governs interconnection of small generating facilities. Specifically, the Commission stated that it “relied on current nationwide best practices when it refrained from requiring operating profiles for ESS in the proposed rule. As IREC observed in the BATTRIES Toolkit, there are no established standards for operating profiles with respect to interconnecting ESS. The amended rule does not require T&D Utilities to consider ESS operating profiles when interconnecting ESS. The Commission notes that nothing in the rule prohibits developers and T&D Utilities from agreeing to specific operating profiles on a case-by-case basis when developing an IA for ICGFS that include ESS.” *Maine Public Utilities Commission Amendments to Small Generator Interconnection Procedures (Chapter 324)*, Docket No. 2023-00103, Order Adopting Rule and Statement of Factual and Policy Basis at 14 (Nov. 3, 2023).

C. Comments on the Role of T&D Utility Ownership or Control of Energy Storage on Lowering Ratepayer Electricity Costs

Commenters almost all agreed that energy storage systems could provide benefits to ratepayers, including as NWAs, in the form of postponing or avoiding more expensive investments in upgrading the distribution system.

Commenters disagreed on how best to ensure that energy storage systems lower costs for ratepayers. Some argued that the competitive market alone was sufficient to procure all energy storage systems, no matter what benefit the energy storage system is designed to provide. (CES, RENEW, ReVision). These commentors argued that ratepayers would benefit because private companies would bear all the risk associated with investing in energy storage systems.

Other commenters noted that sometimes the competitive market alone would not be sufficient incentive for investors to build energy storage systems. (CLF, OPA, GEO, MREA). These commenters noted that ratepayer funds would be necessary to provide financial incentives for investors to develop energy storage systems. These commentors noted that a variety of incentives could be offered using ratepayer funds. Suggested incentives included long-term contracts, index storage credit mechanisms, and temporary performance-based incentives. These commentors did not state how these incentives would result in lower costs to ratepayers. To understand this more fully would require an analysis comparing any necessary incentives to market participants with the costs and risks to ratepayers of utility ownership.

Commentors also expressed that risks to ratepayers from T&D Utility ownership or control of energy storage systems include unknowns about rate recovery, ensuring equitable rate treatment, and protecting ratepayers from project risks. (OPA, CES, ReVision, MREA). These commentors observed that T&D Utility shareholders could experience financial benefits from investment in energy storage systems. These commentors worried that those financial benefits would come at the expense of Maine ratepayers.

CMP and Versant commented that ratepayers could experience financial and service benefits from T&D Utility ownership and control of energy storage when the T&D Utilities used those energy storage systems to make the distribution system more resilient, more reliable, and in place of more costly upgrades.

As discussed in the recommendations, further study is needed to determine when the use of ratepayer funds, either through subsidies to private companies for the construction of energy storage systems or through permitting T&D Utility ownership of energy storage systems, could lower costs to ratepayers.

D. Comments on Whether the Competitive Market for Storage can Meet the Needs of T&D Utilities at a Reasonable Cost

As demonstrated by the current queues for energy storage at amounts in excess of 1,000 MW, the competitive market alone seems well positioned to meet the state's 400 MW goal of

energy storage procurement. Nevertheless, commentors observed that energy storage systems can provide many benefits to the grid. Commentors also noted specific grid needs that could reduce costs to ratepayers, such as NWAs and reliability services. It is not clear that the proposed queued projects will meet all those needs.

Commenters expressed a range of opinions about when and how the competitive market can meet the needs of the T&D Utility System. Fewer commenters spoke directly about ratepayer impacts, but those that did recognized that T&D Utility ownership and control *may*, in some circumstances, lead to ratepayer benefits that cannot be achieved through the competitive market. (OPA, CLF, GEO, T&D Utilities, NECEC). MREA observed that some Maine service territories, such as the Maine Power District, do not have market structures that would support private investment in energy storage systems. It will require further analysis to determine whether or not the competitive market can provide for all T&D Utility needs at lowest cost.

Commentors, including the GEO, OPA, MREA, and EMT all observed that some beneficial energy storage systems would require some form of ratepayer subsidy to support the construction of energy storage projects to meet some specific forms of distribution need.

As discussed in the recommendations, further study is needed to determine when the competitive market for energy storage systems can meet the needs of T&D Utilities at reasonable cost.

IV. Recommendations

In light of the comments, and in response to the directive of the Act, the Commission recommends the following:

- With respect to any statutory directive to procure energy storage through the award of long-term contracts or similar subsidies to incentivize private investment in energy storage, any use of ratepayer funds should be limited to specific cases, locations, and deployment times that demonstrate actual benefits to ratepayers and to the distribution system.
- There may be limited circumstances where it benefits ratepayers for T&D Utilities to own energy storage systems. These are likely to be instances where the energy storage system is the least cost solution to a distribution system need that competitive markets are not sufficient to incentivize.
- T&D Utility ownership of energy storage systems should only be allowed when T&D Utilities can demonstrate that the investment in the energy storage system is:
 - Prudent;
 - A least-cost alternative to serve a distribution system need; and
 - Will benefit ratepayers.
- T&D Utilities may need the ability to control energy storage systems that are providing

specific grid services such as reliability and resilience.

- Applying tools such as Efficiency Maine Trust’s benefit cost test and methodologies and assumptions may help ensure that any investment of ratepayer funds in energy storage systems is done in a way to maximize cost effective development.
- The Commission plans to conduct further study on the issues raised in the preliminary investigation. Through further study, the Commission plans to determine:
 - What data is needed from T&D Utilities and from interconnected energy storage systems to best integrate energy storage systems into the distribution system at lowest cost to ratepayers;
 - The circumstances in which T&D Utility ownership or control of energy storage systems would benefit ratepayers and further the goals articulated in the Act;
 - Guidelines for approving, on a case-by-case basis, whether it is appropriate for T&D Utilities to own or control energy storage systems;
 - Guidelines, for approving, on a case-by-case basis, the use of ratepayer funds to procure energy storage from third party developers through subsidies or incentives, including location and timing limits on any procurement;
 - Based on the above guidelines, a recommended definition for ownership of energy storage systems that, similar to the current restrictions on generation assets, generally prevents the ability of T&D Utilities to own energy storage systems but:
 - permits ownership of energy storage systems in situations when T&D Utilities can demonstrate that the competitive market alone will not provide the service and that T&D Utility ownership will provide a beneficial distribution service at the least cost to ratepayers; and
 - provides parameters for T&D Utilities to exert control over energy storage systems when the energy storage systems are providing specific grid services;
 - How to maximize energy storage systems’ ability to serve as NWA’s; and
 - Which T&D Utility system needs the competitive market can meet at a reasonable cost. Through this portion of the study the Commission intends to reach a greater understanding of categories of T&D Utility system needs and a better definition of what makes a cost “reasonable.”