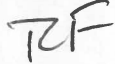


**STATE OF NEW HAMPSHIRE****Intra-Department Communication****DATE:** February 13, 2020**AT (OFFICE):** NHPUC

**FROM:** Thomas C. Frantz, Director, Electric Division   
Elizabeth R. Nixon, Utility Analyst, Electric Division  
Kurt Demmer, Utility Analyst, Electric Division

**SUBJECT:** DE 17-189 Liberty Battery Storage Pilot Program  
Request for Extension of Phase I Installation Deadline  
Staff Recommendation Regarding Deadline Extension

**TO:** Commissioners  
Debra A. Howland, Executive Director

**CC:** Randall S. Knepper, Director, Safety Division  
David K. Wiesner, Director, Legal Division

Recommendation Summary

Commission Staff (Staff) recommends that the deadline for installation of customer-sited batteries in Phase 1 of the battery storage pilot program proposed by Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities (Liberty) and conditionally approved by the Commission in Order No. 26,209 (January 17, 2019) (Order) be extended until June 30, 2020, subject to the following additional conditions (as described in more detail below):

1. Filing of Liberty's supporting documentation for its cybersecurity evaluation, subject to appropriate claims for confidential treatment;
2. Completion of analyses based on actual Phase 1 experience to include all relevant program changes and updates to accurately reflect the actual benefits obtained and costs incurred in initial program implementation;
3. Modification of customer marketing, disclosure, educational, and contractual materials to reflect lack of advance notice to customers of projected dispatch events, and availability of those revised materials for Staff review prior to use with customers; and
4. Collection of pre-installation electricity usage data from participating customers to be completed as provided for in section II.C of the approved settlement agreement; in addition, load research meter load data for similar intervals also to be collected and provided as part of the baseline study, as proposed by Liberty and its consultant.

Staff makes that recommendation based on its review of Liberty's request for extension of the battery installation deadline until February 28, 2020, and the status update and

summary of program changes provided in Liberty's recently-filed supporting technical statement, all in the context of the settlement agreement signed by Liberty, Staff, and others, which was conditionally approved by the Commission in the Order.

### Background Information

In the Order, the Commission conditionally approved a settlement agreement providing for Liberty's implementation of its battery storage pilot program with the goal of achieving customer savings through peak load reductions. The pilot program will be implemented in two phases: Phase 1 involves the installation of up to 200 Tesla Powerwall 2 batteries behind the meter at up to 100 customers' premises; Phase 2, which is conditional on the demonstrated success of Phase 1, would involve installation of up to an additional 300 batteries at customers' premises. The Commission's approval of the pilot program described in the settlement agreement was based in part on its review of the benefit-cost analyses submitted together with the settlement.

The approved settlement agreement (at page 7) included the express conditions that

Within nine (9) months following Commission approval of this settlement, at least 100 batteries shall have been installed and become fully operational and available for Liberty to control and dispatch. No batteries shall be installed in Phase 1 of the program later than twelve (12) months following Commission approval of this settlement.

The specified nine-month period expired in October 2019 and Liberty has not yet installed any batteries at customers' premises. On October 17, 2019, Liberty filed a Motion to Extend until February 28, 2020 the Deadline to Install the First 100 Batteries. In that motion, Liberty cited the required cybersecurity review and evaluation process with Tesla as the primary reason for the delay.

In the Order, the Commission expressed concern about the "potential cybersecurity risks implicated by the integration of utility-owned equipment and systems installed behind-the-meter at customers' premises," and required that,

before Phase 1 of the pilot is implemented, Liberty complete a comprehensive evaluation of the cybersecurity risks raised by the battery storage pilot program, including both firmware and software elements, and confirm there are no cybersecurity risks for manipulation of electrical usage, access to customer personal protected information, or unauthorized alteration of equipment performance or settings. In addition, an evaluation of the relevant vendors' practices must be completed by Liberty and deemed to be sufficient. Liberty's Cybersecurity Plan must also clearly outline the measures, detection methods, and mitigation strategies that it plans to implement regarding integration of utility-owned equipment and systems installed behind-the-meter at customers' premises prior to program implementation. Liberty must file a written certification signed by [Shawn Eck, Senior Manager, IT Security, Risk and Compliance], and also by

a senior executive responsible for cybersecurity initiatives, confirming that such evaluations have been completed and conclusions reached, together with documentation describing in reasonable detail the supporting methodologies used in such determinations and include with a copy of its amended Cybersecurity Plan. The filing of Liberty's Cybersecurity Plan may be submitted confidentially pursuant to Puc 201.06(a)(16). A similar certification and filing must be submitted each year during the full-term of the pilot program.

Liberty filed with its extension motion a "Tesla Energy Cybersecurity Memorandum" signed by Mr. Eck and by John Lowson, Vice President, Transition Management and IT, which is intended to meet the written certification requirement. In connection with that filing, Liberty indicated that it would "make available to appropriate parties, on request," the "documentation describing in reasonable detail the supporting methodologies used in [its cybersecurity] determinations," and also represented that it would file its amended Cybersecurity Plan "before program implementation."

On November 26, 2019, Liberty filed a technical statement prepared by Heather Tebbetts, which described the cybersecurity review process, updated time-of-use rates, changes in program implementation details and related costs, benefit-cost analysis adjustments, customer notification changes, and baseline customer data collection issues.

Staff has reviewed the status of Liberty's compliance with the cybersecurity evaluation requirements, as well as the changes to the pilot program design and implementation and the effects of such changes on the relevant benefit-cost analyses for Phase 1 alone and for both Phases together. Staff's analysis and recommendations regarding those matters is summarized below.

#### Cybersecurity Evaluation Compliance

Liberty has satisfied the requirement to submit a written certification confirming that a cybersecurity evaluation involving Tesla and its Powerwall 2 batteries and related Gateway have been completed and stating the conclusions reached with respect to that evaluation. Liberty has submitted a copy of its amended Cybersecurity Plan that outlines the measures, detection methods, and mitigation strategies it plans to implement regarding integration of utility-owned equipment and systems installed behind-the-meter at customers' premises.

Liberty has not yet filed documentation describing in reasonable detail the supporting methodologies used in the determinations covered in its written certification. Instead, Liberty has indicated that it will make that filing once it has determined, in consultation with Tesla, what portions of the documentation should be subject to a request for confidential treatment.

Liberty has, however, made the supporting documentation available for review by Safety Division Director Randall Knepper, who recently reviewed that documentation as well as the company's amended Cybersecurity Plan and found that the documentation and plan

are sufficient to meet the requirements described in the Order. See attached Memorandum of Randall S. Knepper dated February 10, 2020.

Based on that review, Staff believes that, pending its filing of the supporting documentation, Liberty has satisfied the conditions related to cybersecurity as specified in the Order.

### Time-of-Use Rates

Liberty provided information regarding its updated time-of-use rates for pilot program participants, based on recent changes in default service rates. The technical statement listed the applicable time-of-use periods and illustrative rates at the beginning of the pilot program, as effective November 1, 2019, through April 30, 2020. Liberty confirmed that it had worked with consultant Lon Huber to review the model update to ensure that the rates were calculated correctly. Liberty should ensure that the time-of-use rates are updated whenever its transmission, distribution, or default service rates change.

### Benefit/Cost Analysis Issues

In the technical statement, Liberty described several changes in pilot implementation details which affect projected program costs. In addition, Liberty identified a number of corrections and updates to other cost items included in its revenue requirement and benefit-cost analyses. These changes, corrections, and updates include the following:

1. Liberty has selected Tesla to perform the battery installation work, and the total price of battery procurement decreased by \$200 per battery; however, the total cost of procurement and installation has increased by \$400 per customer in Liberty's analyses, an overall increase that has not been adequately explained;
2. Liberty has contracted with Tesla to use its "AutoBidder" software to dispatch the batteries during peak hours, rather than Liberty predicting peak events itself, as contemplated by the approved settlement agreement; the additional costs for that service are projected to be \$14,000 per year for the first 10 years of Phase 1 of the program;
3. The property tax rate used in the benefit-cost analyses included with the settlement agreement were based on Liberty's previous FERC Form 1 filing based on the timeframe that the settlement was filed, and the property tax rate in the most recent analyses has been updated with a more recent FERC Form 1 filing to reflect more current tax obligations;
4. The rate of return used in the benefit-cost analyses has also been revised by Liberty to "correct a minor error" in the analyses included with the settlement agreement (i.e., the rate was changed from 7.69% to 7.64%) but a detailed explanation of the correction was not provided; and

5. The rates for Regional Network Service (RNS) Local Network Service (LNS) have been updated because the batteries will not be installed until 2020; the applicable rates in the analyses have been changed to start in 2020, rather than 2019, as was shown in the settlement agreement analyses; the analyses now provide updated estimated RNS rates from ISO New England for years 2020 through 2023, with an assumed increase of 4.66% for the remaining years; the estimated LNS rates are based on historic bills from National Grid to Liberty; according to Liberty, related administrative costs have been added to the RNS and LNS amount estimates, but supporting data was not provided.

Staff notes that Liberty's benefit-cost analyses assume that the installed batteries will be dispatched four times each month in an attempt to target peak demand hours. However, Staff has received information from Liberty implying that Green Mountain Power, in implementing a similar battery pilot program in Vermont, has dispatched the batteries under its control approximately *ten* times in targeting the annual peak demand hour. That discrepancy suggests that Liberty's assumed number of dispatch events may be low and should be higher. Increasing the number of monthly dispatch events (e.g., from four to ten times per month) would increase the cost of crediting customers for exports to the grid during projected peak hours over the duration of the pilot program.

In the technical statement, Liberty also described what it characterized as a "misunderstanding" regarding the "net energy metering credit" provided to participating customers without distributed generation when their batteries are dispatched for export to the grid during projected peak demand hours. According to Liberty, those customers "will essentially receive a net of kilowatt-hours on their bill, not a monetary credit, for those kilowatt-hours that are exported, unless the customer has a solar installation and they net export for the month." Liberty accordingly updated its analyses to *remove* the net metering monetary credit as a program cost, "because there will not be a monetary credit provided to customers." Staff believes that credit mechanism described by Liberty is inconsistent with the approved settlement agreement, which provides as follows (at page 13):

Participating customers who do not have net-metered [distributed generation] shall receive a monetary credit for all energy exported to the grid when Liberty takes control of batteries that is equivalent to the monetary credit provided under the Alternative Net Metering Tariff based on the [time-of-use] rates.

The Commission's approval order similarly referenced the credit provided to such customers as "the net metering-equivalent monetary credits for energy exports during forecasted peak hours." Order at 38.

Staff understands the settlement and order language quoted above to mean that the monetary credits provided to participating non-DG customers will be "equivalent" to that provided under the alternative net metering tariff, not that those customers will be billed as if they were net metering under the alternative net metering tariff. In effect, allowing those customers to net kilowatt-hours on a monthly basis provides them with a non-

monetary credit nearly equivalent to the full retail rate, rather than a monetary credit equivalent to the alternative net metering tariff rate for any electricity exports (i.e., 25% of distribution, 100% transmission, and 100% default service, with no credit for non-bypassable charges).

In the analyses submitted with the settlement agreement, Liberty included only the transmission-related and summer-months forward capacity market values as cost items associated with the monetary credits to participating customers. In its most recent analyses, Liberty has included no cost items related to the customer credits. Staff believes that, at the very least, the Liberty analyses should have included the original costs used in the benefit/cost analysis provided with the settlement, but a better approach would have been to include the higher value provided to participating customers as well as an assumption of at least ten events per month.

Staff notes other discrepancies in the values used by Liberty in its most recent benefit-cost analyses. For example, the price per meter has been increased without explanation from \$426 to \$439 and the decreased state tax rate of 7.5% in effect starting in 2022 has not been taken into account. Staff also points out that Liberty revised the property tax rate used by the company in calculating its revenue requirement related to the program.

The effect of many of these changes and updates would be to increase the costs resulting from implementation of the pilot program, without any commensurate increase in the benefits expected to be received by Liberty and its ratepayers as a whole. Staff has not produced a definitive revision of the benefit-cost analyses reflecting all of those changes and updates. Since the next step is implementation of only Phase 1 of the pilot, Staff believes the program can proceed despite that level of uncertainty as to the relevant benefits and costs.

However, the analyses to be completed based on the actual Phase 1 experience should include all of such relevant changes, updates, and corrections, in order to accurately reflect all of the actual benefits obtained and costs incurred in the initial program implementation. Phase 2 should remain conditional and “proceed only if positive net benefits are demonstrated through a new benefit-cost analysis that incorporates updated assumptions as well as the actual experience of Liberty and its customers during Phase 1.” Order at 33.

### Notification to Customers

In its recent technical statement, Liberty indicated that, based on the use of Tesla’s AutoBidder to predict peak demand hours, as well as “anecdotal information that when customers know there may be a peak day coming they become irritated for potentially changing their behavior when that peak day doesn’t come to fruition,” it would not be notifying customers 24 hours in advance of a planned dispatch event. Liberty’s original proposal, as confirmed in the approved settlement agreement, provided that customers would receive notice the night before any planned battery dispatch on the following day.

Liberty now proposes instead that customers will see only a “Grid Services” icon on their smart phone app “when the battery is being commanded to do something other than its local mode.” According to Liberty, customers will be able to tell if their batteries are doing normal time-based control dispatch either by looking at that app or through “observing the behavior of” the batteries.

Staff believes that Liberty should ensure that its form of customer participation agreement, and all related marketing, disclosure, and educational materials, clearly inform potential participating customers of the limited information they will receive from Liberty and/or Tesla with respect to battery dispatch, which information will not involve day-ahead notice of predicted peak demand hours. The revised materials should be made available for Staff review prior to their use with customers.

### Baseline Data Collection

The approved settlement agreement provides that there will be an opportunity to collect baseline electricity usage data from some number of participating customers before their batteries are installed:

Liberty shall not proceed with the installation of any batteries under Phase 1 until it has received binding commitments from customers for the installation of at least 100 batteries and all customer premises have been inspected and confirmed to be suitable for battery installation, *provided that Liberty shall begin installing metering equipment and collecting customer usage data from participating customers prior to that time.*

Settlement Agreement Section II.C at pages 6-7 (emphasis added). Liberty now proposes that no such pre-installation baseline load data be collected. Instead, based in part on the recommendation of its evaluation, monitoring, and verification consultant, Navigant Consulting, Liberty proposes to capture load data from its approximately 100 existing residential load research customers at the same time its participating Phase 1 pilot program customers are utilizing their batteries.

According to Liberty and Navigant, that approach represents “a far better means of collecting data for some of the following reasons:

- The use of a true control group is the only way to compare the variability of usage for the customers with batteries;
- The comparison will be of a customer without [time-of-use] rates versus a customer with [time-of-use] rates during the same period;
- Since weather affects usage, by gathering data at the same time from both the control group and the test group, the data will allow [Liberty] to better compare the difference in usage at each hourly interval during extreme events,

such as a heat wave, a comparison that would not be possible if the comparison was of pre- and post-installation usage by the same customer.”

In addition, Liberty supports that alternative approach to load data collection and analysis because it would “provide for a control group and avoid delays in installation of the batteries.”

Staff is not persuaded that the collection of pre-installation load data from participating customers should be foregone. Staff continues to believe that Liberty should comply with the approved settlement agreement provision quoted above during the extended Phase 1 implementation period, instead of, or in addition to, the concurrent collection of load research customer usage data during the Phase 1 operational period. Staff believes that Liberty should be directed to begin installing the meters at all 100 prospective customer locations within one week of the issuance of an order extending the Phase 1 battery installation deadline, so that participating customer baseline data is available.

### Conclusion and Recommendation

Based on Staff’s review of Liberty’s extension request, status update, program changes, and supporting documentation for the cybersecurity evaluation, Staff recommends that the Phase 1 battery installation deadline be extended until June 30, 2020, subject to the following conditions in addition to those as conditionally approved in Order No. 26,209:

1. Liberty must file with the Commission the supporting documentation for its cybersecurity evaluation, subject to any appropriate claims for confidential treatment;
2. Benefit-cost analyses for both Phase 1 and Phase 1 and 2 combined must be completed based on the actual Phase 1 experience, including all relevant pilot program changes and updates and all actual benefits obtained and costs incurred in initial program implementation, as contemplated by the approved settlement agreement;
3. Liberty’s customer marketing, disclosure, educational, and contractual materials must be modified to reflect the fact that customers will not receive advance notice of projected dispatch events, but instead only have a real-time smart phone app icon informing them that a dispatch event is in progress, and those revised materials should be made available for Staff’s review prior to their use with customers; and
4. Baseline electricity usage interval data, utilizing the installed meters, must be collected from a substantial number of participating customers prior to battery installation, as provided for in section II.C of the approved settlement agreement. In addition, load research meter load data for similar intervals must also be collected and provided as part of the baseline study, as proposed by Liberty and Navigant. The baseline study must justify why and how the



customer research load data is representative of the customers with batteries, including those who also have solar distributed generation.

# STATE OF NEW HAMPSHIRE

## Intra-Department Communication

**DATE:** February 7, 2020

**AT (OFFICE):** NHPUC

**FROM:** Randall S. Knepper, Director, Safety Division

**SUBJECT:** DE 17-189 Liberty Battery Storage Pilot Program  
Review of Liberty's Cybersecurity Certification, Supporting  
Documentation, and amended Cybersecurity Plan

**TO:** Thomas C. Frantz, Director, Electric Division

**CC:** David K. Wiesner, Director, Legal Division

In Order No. 26,209 (January 17, 2019) (Order), the Commission conditionally approved a settlement agreement providing for the implementation by Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities (Liberty) of its proposed two-phase battery storage pilot program intended to achieve customer savings through peak load reductions.

In the Order, the Commission expressed concern about the "potential cybersecurity risks implicated by the integration of utility-owned equipment and systems installed behind-the-meter at customers' premises," and required that,

before Phase 1 of the pilot is implemented, Liberty complete a comprehensive evaluation of the cybersecurity risks raised by the battery storage pilot program, including both firmware and software elements, and confirm there are no cybersecurity risks for manipulation of electrical usage, access to customer personal protected information, or unauthorized alteration of equipment performance or settings. In addition, an evaluation of the relevant vendors' practices must be completed by Liberty and deemed to be sufficient. Liberty's Cybersecurity Plan must also clearly outline the measures, detection methods, and mitigation strategies that it plans to implement regarding integration of utility-owned equipment and systems installed behind-the-meter at customers' premises prior to program implementation. Liberty must file a written certification signed by [Shawn Eck, Senior Manager, IT Security, Risk and Compliance], and also by a senior executive responsible for cybersecurity initiatives, confirming that such evaluations have been completed and conclusions reached, together with documentation describing in reasonable detail the supporting methodologies used in such determinations and include with a copy of its amended Cybersecurity Plan. The filing of Liberty's Cybersecurity Plan may be submitted confidentially pursuant to Puc 201.06(a)(16). A similar certification and filing must be submitted each year during the full-term of the pilot program.

Liberty filed with its recent Phase 1 deadline extension motion a “Tesla Energy Cybersecurity Memorandum” signed by Mr. Eck and by John Lawson, Vice President, Transition Management and IT, which is intended to meet the written certification requirement. Liberty therefore has satisfied the requirement to submit a written certification confirming that a cybersecurity evaluation involving Tesla and its Powerwall 2 batteries and related Gateway have been completed and stating the conclusions reached with respect to that evaluation.

Liberty has also submitted a copy of its amended Cybersecurity Plan that outlines the measures, detection methods, and mitigation strategies it plans to implement regarding integration of utility-owned equipment and systems installed behind-the-meter at customers’ premises. Liberty has not yet filed documentation describing in reasonable detail the supporting methodologies used in the determinations covered in its written certification. Instead, Liberty has indicated that it will make that filing once it has determined, in consultation with Tesla, what portions of the documentation should be subject to a request for confidential treatment.

Liberty has, however, made the supporting documentation available at its offices for Commission Staff review. I recently reviewed that documentation as well as the company’s amended Cybersecurity Plan and found that the certification, documentation, and amended plan are sufficient to meet the requirements described in the Order.

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