STATE OF NEW HAMPSHIRE

BEFORE THE

PUBLIC UTILITIES COMMISSION

Granite State Electric Corp. d/b/a Liberty Utilities

Petition to Approve Battery Storage Pilot Program

Docket No. DE 17-189

Post-Hearing Memorandum of the Office of the Consumer Advocate

I. Introduction

The Office of the Consumer Advocate (OCA) hereby provides the following written argumentation in support of the settlement agreement pending in this docket, which calls for approval by the Commission pursuant to RSA 374-G:5 of a proposal from Granite State Electric Corp. d/b/a Liberty Utilities (Liberty or Liberty Utilities) to conduct a pilot program involving the purchase of up to 500 Tesla PowerWall batteries, their deployment in pairs on the premises of agreeable residential customers, the payment of a specified monthly or lump-sum fee by those customers, the placement of the remaining program investment costs in rate base, the payment by participating customers of time-of-use (TOU) rates, the future creation a "bring your own battery" (BYOB) component to the pilot to allow for third-party battery suppliers and demand aggregators to participate, and the dispatch of the participating batteries so as to reduce Liberty's monthly coincident

peak demand and thus the transmission costs it passes along to customers pursuant to applicable federally approved tariffs.

The Commission conducted an evidentiary hearing on November 29, 2018. During the hearing, the Commission requested that following the completion of the hearing transcript the parties submit memoranda of law addressing the record evidence in support of the specific approval criteria set forth in RSA 374-G:5. *See* Transcript of November 29, 2018 hearing (Transcript or Tr.) at 88 lines 8-24 (requesting a "comprehensive tie-back of the evidence in the record to the statute"), 89 at lines 1-14, and 90 at lines 4-10. Accordingly, this memorandum focuses on those criteria and uses them as the means of organizing the OCA's argument presented in favor of granting the Liberty petition as conditioned by the settlement agreement.

II. The Applicable Standard

RSA 374-G:5 authorizes a public utility to "seek rate recovery for its portion of investments in distributed energy resources." *See also* RSA 374-G:2, I(b) (including "energy storage" in definition of "distributed energy resources"). Paragraph I of RSA 374-G:5 sets forth seven elements a utility must include in its filing seeking such rate recovery. Paragraph II states that the Commission must review such a proposal for consistency with the "public interest" and provides a list of nine factors to which the Commission must give "balanced consideration and proportional weight" in making its public interest determination.

Each of these standards is discussed below. However, the Commission should consider two general principles as it evaluates the proposal for compliance with RSA 374-G:5.

First, according to its terms, Paragraph I does not set forth the standard for Commission approval but, rather, is essentially a set of guidelines the Commission must apply in determining whether to allow a proposal to progress through the RSA 541-A contested case process to hearing and eventual decision. The Paragraph I requirements do not provide an independent basis for rejection of the Liberty proposal, nor do they inform the Commission's "public interest" determination under Paragraph II and the factors set forth therein.

Although the General Court originally adopted RSA 374-G a decade ago, this is only the second time it has been invoked by a utility. The previous determination, in Docket No. DE 09-137, concerned a proposal by Unitil Energy Systems to make investments in various projects involving solar water heating, solar photovoltaic panels, solar voltaic panels in combination with a micro-turbine, and TOU rates. *See* Order No. 125,111 (June 11, 2010) at 1-2. The Commission ultimately approved some elements of the Unitil proposal but not others. In so ruling, the Commission noted certain deficiencies in the original Unitil filing pursuant to RSA 374-G:5, I but the Commission did not use these inadequacies as the basis of its determination. *See id.* at 29-32. Moreover, unlike the instant docket there was no settlement agreement in DE 09-137, the proposed initatives faced varying degrees of opposition from the OCA and other parties, and "Staff argued

that the original filing omitted important details about the proposed projects and generally raised more questions than it answered." *Id.* at 18. The proposal presently before the Commission enjoys widespread support and is subject to no opposition. In these circumstances, the Commission can and should give effect to its longstanding policy of favoring settlements because they provide "an opportunity for creative problem solving" and "allow[] parties to reach a result in line with their expectations" in a manner that is "often a better alternative to litigation." *Pennichuck East Utility, Inc.*, Order No. 26,179 (Oct. 4, 2018) at 13 (citation omitted).

III. RSA 374-G:5, I Filing Requirements

Liberty has met the requirements of RSA 374-G:5, I and the Commission should so determine.

RSA 374-G:5, I(a) requires "a detailed description of the economic and environmental evaluation of the propose investment." The direct testimony of Liberty witness Healther M. Tebbetts submitted on November 30, 2017 describes a key economic benefit – the reduction in Liberty's coincident monthly peak demand and thus transmission costs paid by all Liberty customers. Exh. 1 at Bates 8-9, 11, 13-14 (providing an estimate of "immediate savings" in transmission costs). Ms. Tebbetts filed supplemental direct testimony on February 9, 2018 which, for present purposes, can and should be considered a part of Liberty's original filing. She stated therein that the proposed pilot project would not result in any increased air

emissions and would actually reduce air pollution by allowing participating customers to substitute battery power for diesel backup generation during outages. Exh. 4 at Bates 8.

RSA 374-G:5, I(b) requires "[a] discussion of the costs, benefits, and risks of the proposal with specific reference to the factors listed in paragraph II, including an analysis of the costs, benefits, and rate implications to the participating customers, to the company's default service customers, and to the utility's distribution customers." Ms. Tebbetts addresses this requirement specifically in her February supplemental testimony. *See* Exh. 4 at Bates 8-11. Since then, as the result of roughly nine months of discovery and settlement negotiations, the project described in Ms. Tebbetts' original and supplemental testimony has metamorphosed significantly. Accordingly, with respect to the RSA 374-G:5, II factors and the question of costs, benefits and rate implications, the focus can and should shift away from the Company's initial filing and toward the extensive record adduced at hearing, which will be discussed *infra*.

RSA 374-G:5, I(c) requires "[a] description of any equipment or installation specifications, solicitations, and procurements" the petitioner "has or intends to implement." In her original testimony filed in November 2017,, Ms. Tebbetts indicated that these determinations were then still in the works. *See* exh. 1 at Bates 14. Her February testimony included a detailed discussion of Liberty's choice of Tesla as its source for batteries and the associated software platform. *See* exh. 4

at Bates 6 and attachment B thereto (providing technical specifications of Tesla PowerWall batteries).

RSA 374-G:5, I(d) requires "[a] showing that [the petitioner] has used a competitive bidding process to reasonably minimize the costs of the project to its customers." The supplemental testimony filed by Ms. Tebbetts in February describes Liberty's efforts in this regard. *See* exh. 4 at bates 11-12. Liberty did not use a formal RFP process but, rather, used a consultant to request pricing and specifications from multiple battery vendors, which yielded four responses. Liberty selected the lowest bidder. Ms. Tebbetts also referenced plans to seek proposals from local authorized installers of Tesla batteries at the appropriate juncture. *Id.* at Bates 12 lines 10-11.

RSA 374-G:5, I(e) requires "[a] showing that [the petitioner] has made reasonable efforts to involve local businesses in the program." The record does not suggest there are any New Hampshire-based manufacturers of suitable batteries. The supplemental testimony of Ms. Tebbets describes plans to provide opportunities for local installers to participate in the project, including one (ReVision Energy) that is a party to the instant proceeding. Exh. 4 at 12-13.

RSA 374-G:5, I(f) requires "[e]vidence of compliance with any applicable emissions limitations." No such limitations are applicable to batteries, which produce no emissions.

RSA 374-G:5, I(g) requires the submission of "[a] copy of any customer contracts or agreements to be executed as part of the program." Attachment D to

exhibit 4 is a tentative copy of the agreement Liberty plans to require participating customers to sign. The settlement requires the final version of the contract to be submitted to the Commission for its approval. Tr. 111 lines 6-14.

In light of the above, Liberty has met the RSA 374-G:5, I filing requirements and the Commission should so determine in its order approving the settlement agreement.

IV. The RSA 374-G:5, II Requirements

RSA 374-G:4, II requires the Commission to approve a utility's proposed investment, and the recovery of the investment in rates, upon a finding that the proposal is "in the public interest." The statute then lists nine issues for the Commission to review by giving them "balanced consideration and proportional weight." Thus, the plain meaning of the statute is to the effect that the list is not exhaustive nor is any specific criterion – indeed, even the failure to meet one or more criteria – outcome-determinative.

In that regard, the Commission should bear in mind that in some respects the public interest determination to be made here is related to the Commission's resolution of the net metering docket (DE 16-576) opened in 2016 at the direction of the General Court. In Order No. 26,029 (June 23, 2017), the Commission approved new terms for net metering, established several working groups whose collective purpose is to address on a more longterm basis the issues raised by the proliferation of behind-the-meter distributed energy resources, and made clear the Commission

looks with favor on TOU initiatives. The Commission specifically directed Eversource and Unitil to create TOU pilot programs, declining to issue such an order to Liberty only because Liberty had already been working with the City of Lebanon to develop such an initiative. *Id.* at 63 (noting that "a well-designed TOU pilot program should generate detailed data regarding customer behavior and utility cost and rate impacts related to time-varying rates, and that data can inform future net metering and general rate designs, including a potential transition to TOU rate alternatives for all customer rate classes). The process of developing the Lebanon municipal TOU pilot is ongoing, *see* tr. at 254 (noting that the City of Lebanon supports the proposed settlement and hopes the battery storage pilot "will be complimentary to what the city's working on" with Liberty), so the pilot project at issue here will, if approved, be the first TOU initiative to move forward under the policy rubric adopted in DE 16-576. The point is not that this settlement should be reviewed exclusively or even predominantly for its consistency with the objectives the Commission adopted in DE 16-576. Rather, the point is that the Commission should consider the DE 16-576 policy imperatives as a factor in its public interest determination here, in a manner that supplements and provides context for the "balanced consideration and proportional weight" given the RSA 374-G:5, II factors.

A. RSA 374-G:5, II(a)

The first of those factors is "the effect on the reliability, safety, and efficiency of electric service." The Liberty proposal as conditioned by the settlement agreement clearly enhances all of these things.

At hearing, OCA witness Lon Huber referred to the positive reliability impact of having "a fleet of batteries that [are] operating on peak reliably," tr. 73, lines 19-20 – i.e., the utility's plan to dispatch the batteries at times of anticipated monthly coincident peak demand will tend to make the electricity grid less likely to fail at the very times it is in its most precarious state. Ms. Tebbetts testified that customers tend to view reliability issues through the lens of relatively brief outages – the "I lost power for two hours and I've got to reset my clocks" problem that customers find "annoying," tr. 146, lines 15-21 – which, of course, the utility-sponsored Tesla PowerWalls will be especially effective at addressing.

No record evidence suggests the proposed pilot program will raise safety issues. It is, of course, difficult to prove a negative. However, Ms. Tebbetts indicated that safety was among the criteria the Company used in choosing Tesla as its battery vendor. Exh. 5 at 6. She also stressed in her supplemental prefiled testimony that, "[f]or safety, the battery cells are physically and electrically isolated from contact by maintenance personnel and homeowners" and when it backup power mode the batteries are isolated from the grid. *Id.* at Bates 20-21.

With respect to the efficiency of electric service, at this point it is a matter of common sense and accepted wisdom that shifting demand from peak and critical peak hours, when marginal production costs are by far at their highest, to off-peak hours when production costs are at their lowest (and in some instances are actually negative) is among the most efficiency-promoting initiatives a utility can undertake. Moreover, as Mr. Huber testified, "as more renewable energy gets on line in the

system, it's actually quite beneficial for the grid to soak up excess renewables, usually, you know, at night, if it's wind, and then deploy it during peak times." Tr. at 63 lines 12-16. Mr. Huber, Ms. Tebbetts and Councilor Below made the key point succinctly in their detailed technical statement concerning the TOU rates they jointly and creatively designed: "The development and application of TOU rates can be thought of as a progression from a very rough justice of allocating costs equally across all hours to a more granular and refined justice of allocating costs to blocks of time in each day, week, and season that reflect strong underlying temporal differences in cost drivers and result in more appropriate and *economically efficient* price signals to electric customers." Exh.20 at Bates 1 (emphasis added).

B. RSA 374-G:5, II(b)

The second factor for Commission consideration is "[t]he efficient and cost-effective realization of the purposes of the renewable portfolio standards of RSA 362-F and the restructuring policy principles of RSA 374-F:3."

In adopting RSA 362-F, the General Court explicitly described the objectives of the state's renewable portfolio standard as "displac[ing] and thereby lower[ing] regional dependence on fossil fuels," which "has the potential to lower and stabilize future energy costs by reducing exposure to rising and volatile fossil fuel prices." RSA 362-F:1. The General Court also referenced a need to "keep energy and investment dollars in the state to benefit our own economy" and "improving air quality and public health" while mitigating against the risks of climate change." While the battery and TOU pilot program described in the settlement agreement

does not have any direct impact on the renewable portfolio standard (RPS) enshrined in RSA 362-F, the pilot should be viewed as a means to the same ends of the RPS as set forth in RSA 362-F:1. As noted, *supra*, the inevitable effect of the pilot program is to shift demand away from critical peak hours, which are more reliant on expensive and carbon-producing fossil generation facilities, in favor of off-peak hours which are more reliant on renewable technologies. Moreover, the pilot allows for customers with behind-the-meter photovoltaic panels to participate, which will inevitably have the effect of displacing some amount of non-renewable electricity with electricity produced by the solar panels.

With respect to the restructuring policy principles, codified at RSA 374-F:3, several are clearly advanced by the proposal now before the commission: customer choice (RSA 374-F:3, II), benefits for all consumers (RSA 374-F:3, VI), full and fair competition (RSA 374-F:3, VII), environmental improvement (RSA 374-F:3, VIII), renewable energy resources (RSA 374-F:3, IX), energy efficiency (RSA 374-F:3, X), near-term rate relief (RSA 374-F:3, XI), and regionalism (RSA 374-F:3, XIII, particularly the referenced need to "assert maximum state authority over the entire electric industry restructuring process"). The pilot program is to be offered to Liberty customers on an opt-in, voluntary basis – the very essence of customer choice – in the hope that the program will succeed and can ultimately be scaled up further. The existence of benefits to all consumers is confirmed by the benefit/cost analysis appended to the settlement (exhibit 18) as Attachment 1. The provisions of the settlement agreement that allow for the development of a BYOD component of

the pilot, as discussed by the witness panel at pages 216 to 223 of the hearing transcript, provide ample evidence that the proposal before the Commission enhances full and fair competition as a key force in the restructured electric industry. The environmental improvement and energy efficiency implications of the pilot are discussed *supra*. With respect to near-term rate relief, the record is replete with evidence that the pilot proceeds from the reasonable hypothesis that both participating and non-participating customers will save money on their electric bills, *see, e.g.*, tr. at 217 (Mr. Huber noting that "customers can save a lot of money potentially"), in circumstances where a failure to confirm that hypothesis in the initial phase of the pilot will allow for course corrections or even discontinuance prior to the advent of the second phase. With respect to regionalism, when the General Court referenced that policy imperative in RSA 374-F, it was acknowledging the fact that to a significant extent the fate of New Hampshire's electric customers is driven by what happens in the regional markets superintended pursuant to federal law by the regional transmission organization ISO New England. As Mr. Huber noted, the advent of this particular pilot will mean that Liberty's customers will leapfrog over participants in a somewhat similar but more limited program offered to customers of Vermont's major electric utility, which has bragged about how its program reduces its share of regionalized transmission costs. *See* tr. at 63-64. The Commission therefore can and should find that the pilot program proposed here is in complete harmony with the interdependent restructuring policy principles enshrined in RSA 374-F. *See Appeal of Algonquin*

Gas Transmission LLC, 170 N.H. 763, ___, 186 A.3d 865, 875 (N.H. 2018) (discussing the policy principles and concluding that the "primary intent" of the Restructuring Act is to "reduce electric costs to all consumers" rather than "to introduce competition").

C. RSA 374-G:5, II(c)

The third criterion the Commission must consider is "[t]he energy security benefits of the investment to the state of New Hampshire." The OCA assumes that by "energy security" the General Court meant the development of a statewide electric system that is less at the mercy of influences outside the state borders, be they the energy policy of other states, fuel produced elsewhere, or federal policy. As noted, *supra*, because a key objective of the pilot program is reducing Liberty's contribution to system coincident monthly peak demand, thereby reducing the share Liberty's customers pay of regional transmission costs, the proposal enhances energy security. The reduced reliance on fossil fuels, produced by shifting demand to off-peak hours, likewise furthers the objective of energy security.

D. RSA 374-G:5, II(d)

Next is the criterion of "environmental benefits of the investment to the state of New Hampshire." As already noted, the principal, quantifiable environmental benefits will arise out of shifting demand to the overnight hours which will mean drawing power from the grid at times when the resource mix is relatively more renewable than it is during peak and critical peak hours. As Councilor Below noted, shifting demand to overnight hours is helpful to producers with power to

spare during those hours (e.g., wind turbines) which sometimes confront negative prices during those hours. *See* tr. at 93 lines 12-22.

E. RSA 374-G:5, II(e)

The fifth factor is "economic development benefits and liabilities of the investment to the state of New Hampshire." In her supplemental prefiled testimony, Ms. Tebbetts correctly and appropriately points to the potential use of local battery installers as a positive contribution to the economic development of the state. Exh. 5 at 12. Beyond that, as already noted, the ability of electric customers to save money on their electric bill has positive economic development consequences. The statute's reference to both economic benefits and liabilities suggests a legislative acknowledgement that any investment has a potential upside and a potential downside. Here, the record evidence, particularly the benefit cost analysis appended to the settlement agreement, suggests little or no economic development downside. The possibility of a BYOD component raises the prospect of savvy entrepreneurs figuring out how to make money for themselves and their customers by deploying and dispatching batteries in an insightful and creative fashion. The mere existence of such an opportunity, and the prospect of outsmarting Liberty even though Liberty is itself an adaptable and creative utility, is the sort of economic development opportunity the Legislature clearly had in mind.

F. RSA 374-G:5, II(f)

The Commission must next consider "[t]he effect on competition within the region's electricity markets and the state's energy services market." In her supplemental prefiled testimony, Ms. Tebbetts advanced the reasonable hypothesis that the TOU and battery storage pilot will help default energy service providers by shifting some of the load they must meet to cheaper, off-peak times. Exh. 5 at Bates 16-17. It must also be admitted that any time a legacy utility, with its captive rate base, is allowed to make investments and add them to rate base, the utility does so in circumstances that include advantages that competitive providers of the same service do not enjoy. However, the BYOD provisions of the settlement agreement exist precisely because the signatories understand the value of competitive alternatives to legacy utility services. *See, e.g.*, tr. 96 at lines 7-8 (Commissioner Below's reference to the BYOD component "potentially help[ing to] use competitive forces [and] processes"). The BYOD program is intended to meet Liberty's battery capacity kilowatt for kilowatt. *See* tr. at 46, lines 19-22. The aggregators deploying BYOD batteries and dispatching them will get the benefit of Liberty's marketing efforts. *Id.* at 48, lines 7-11.

G. RSA 374-G:5, II(g)

The Commission must next consider "[t]he costs and benefits to the utility's customers, including but not limited to a demonstration that the company has exercised competitive processes to reasonably minimize costs of the project to

ratepayers and to maximize private investment in the project." The record includes extensive evidence with respect to this factor.

Attachments 1 and 2 to the settlement agreement (exh. 18) provide an in-depth analysis of the projected costs and benefits of the pilot proposal. Exhibit 19 is a technical statement from Ms. Tebbetts whose purpose is in significant part to explain how the parties conducted their analysis. As she notes, the benefit-cost analysis relies on the utility cost test because it is "this test most accurately represents the costs and benefits of a distribution system investment from the perspective of the utility and its customers," *id.* at 4, as distinct from other tests that include costs and benefits external to that perspective. In other words, the parties adopted the utility cost test specifically to address RSA 374-G:5, II(g).

As Ms. Tebbetts further explained, the benefits relied upon by the settling parties include the avoided costs of regional and local transmission charges as well as charges incurred via the ISO New England capacity market. Exh. 18 at 4. Costs include the total costs to implement the program, including expenses associated with administration, marketing, and plant investment. *Id.* This approach is a conservative one; it does not, for example, assign any value to the benefits consumers derive from having backup power during outages. The analysis makes reasonable assumptions about the degradation of battery output over time, the frequency with which Liberty will dispatch the batteries to reduce coincident peak demand, and likely future changes in transmission rates. *Id.* at 4-5.

The record likewise confirms that Liberty has employed competitive processes to minimize in reasonable fashion the costs of the project to ratepayers and to maximize private investment in the project. Ms. Tebbetts describes the battery (and related software) procurement process that Liberty undertook in her supplemental direct testimony filed in February. *See* exh. 5 at Bates 6. She explained that Liberty worked with an outside consultant (Alectra Energy) to develop specifications, with an eye toward selecting a vendor with "a proven residential-scale battery storage system . . . capable of interacting with the grid, safely and reliably." *Id.* Liberty required an "end-to-end, turnkey solution, with a fixed price for deployment per house." *Id.* These are reasonable specifications. They resulted in four suppliers submitting information to Liberty, which chose Tesla because it offered the lowest price and because "its batteries and related GridLogic software platform . . . allows communications with the batteries" in a manner that advances the goals of the pilot. *Id.* at Bates 11 lines 17-21. At hearing, in response to questions from Commissioner Bailey, Ms. Tebbetts elaborated on why certain other manufacturers were not deemed suitable. *See* tr. at 94-95.

Councilor Below corroborated the characterization offered by the Liberty witness concerning the competitive nature of the battery procurement process. Mr. Below testified that he reviewed the confidential materials Liberty used to assess the various proposals from battery manufacturers. Liberty, he testified, "was

looking competitively at the different features and capabilities relative to price" and was definitely "selecting the best value in that sense." Tr. at 95, lines 16-24.

The Lebanon city councilor also explained why the BYOD component of the pilot proposal is consistent with the objective of RSA 374-G:5, II(g). According to Councilor Below, the BYOD component is "a valuable aspect that does potentially help use competitive forces [and] processes to potentially minimize costs, by comparison, that could be compared with what Liberty does with its share of the program. *Id.* at 96, lines 6-11. In other words, this is a utility that has taken the laudably bold step of volunteering to create a pilot program in which it will compete on a head-to-head basis with non-regulated providers of the same service, and the results will not necessarily confirm that the legacy utility is best suited to deliver this type of value to its customers. The Commission can and should reward this degree of initiative and adaptability.

H. RSA 374-G:5, II(h)

RSA 374-G:5, II(h) overlaps substantially with the preceding criterion in that both focus on benefit-cost analysis. The emphasis in criterion (h) is on the longterm effects on all customers, as distinct from pilot participants. Key aspects of the record evidence with respect to these effects is discussed *infra*.

In assessing the likelihood that the actual costs and benefits will correspond to the projections, thus assuring that over the life of the pilot there will be net benefits to the utility's ratepayers, the Commission should keep two things firmly in mind. The first is the phased nature of the pilot; if Liberty is unable to demonstrate

success in Phase 1 then the second phase will not occur. Perhaps more importantly, the return on equity the Company may earn on its investment in the program is tied to the extent to which it correctly predicts critical peak events, since Liberty must determine on a day-ahead basis when it will assume control of the batteries for purposes of assuring they are fully charged and then discharging them during the peak event. As Ms. Tebbetts succinctly explained at hearing, "[t]he better we do, the more opportunity we have on our ROE. And if we don't make it, then we lose on our ROE." Tr. 43 at 9-11.

The project is expected to provide nominal net benefits to all customers of more than $800,000, with a net present value estimated at $8,470, not including the money saved by individual customers who take advantage of the TOU rates. Exh. 19 at 7. While this is hardly a monumental development from the standpoint of New Hampshire electric customers overall, who have suffered through literally billions of dollars in stranded costs over the last tortured half-century and its unheavals, this is a pilot program and, as such, is properly regarded as a baby step toward a future in which new technologies and new rate designs deliver long-awaited payoffs to consumers.

I. RSA 374-G:5, II(i)

The final criterion is "costs and benefits to any participating customer or customers." The costs are not insubstantial, particularly given that Tesla has apparently insisted that the batteries be deployed in pairs. *See* tr. 32, lines 3-5. Each battery requires a lump-sum customer contribution of $2,433 or the payment

of $25 per month for ten years. Exh. 18 at 7. That means each participant will pay $4,866 at the outset or $5,000 in monthly payments over a decade. For this price, they acquire 10 kilowatts of storage capacity, *see* tr. at 35, line 17, for use in TOU arbitrage and/or backup power. The two-battery requirement is reasonable in light of Tesla's experience showing that one battery only provides partial backup capacity for most residential customers. *See* tr. at 104, lines 20-24 and 105, lines 1-8 (referencing difficulties in reconfiguring one-battery installations when required by customers who discover they really needed two batteries). A customer withdrawing from the program before the ten years has run confronts a $900 battery removal fee, tr. 106, line 1, which is properly viewed as neither a cost nor a benefit but, rather, as an incentive to persuade any successor homeowner to continue to participate in the program.

The record does not quantify, via the benefit-cost analysis or otherwise, the value to customers of access to backup power during outages. But the Commission should assume there is at least some value in connection with applying criterion (i). Beyond that, OCA witness Huber testified that some consumers will save money via TOU arbitrage – i.e., buying cheap power, storing it, and using it in lieu of more expensive power during peak and (especially) critical peak periods. Tr. 230, lines 17-24. He stressed that the "beauty" of energy storage is that "technically, the customer doesn't have to know anything" because the battery will automatically perform the arbitrage for him or her, thus attenuating the need to rely on behavioral change to achieve program benefits. Tr. 241, lines 5-13. Customers with

solar panels, when using them to charge the batteries, can additionally benefit from a federally available investment tax credit. Tr. 242, lines 18-23. However, the record further reflects that customers can (and should) improve their results through behavioral change. Tr. at 241, lines 14-16.

Overall, the extent to which participating customers save money via the combination of battery storage and TOU rates. It is not necessary, for purposes of approving the settlement, that the Commission affirmatively and definitively find that customers will save money – rather, the Commission can and should determine that customers may achieve significant savings and a key objective of the pilot is to test this hypothesis.

V. CONCLUSION

In his prefiled direct testimony, OCA witness Huber – a recognized national expert in the deployment of new technologies and rate structures -- praised Liberty utilities for proposing what he regarded as "one of the leading examples of residential storage deployment in the U.S." Exh. 11 at 3, lines 20-21. He noted that the combination of storage and TOU rates makes this proposal "among the most promising in the country." *Id.* at 4, lines 1-2.

To some extent, the program before you is less ambitious than the one originally proposed by Liberty. It is at a smaller scale, to the consternation of the General Court's leading proponent of battery storage. *See* tr. at 247-249. The non-wires alternative (NWI) component to the original proposal, in which Liberty would

have targeted battery installation to a particular circuit in Lebanon to defer or avoid a needed circuit upgrade there, has disappeared (in the interest of reducing complexity) in favor of a commitment by Liberty to include a "grid needs assessment" in its next least-cost-integrated resource plan filed pursuant to RSA 378:38. *See* exh. 18 at 16. On the other hand, the program has been significantly enhanced by the subsequent addition of the BYOD component, whereby Liberty will both test its own capabilities and make possible one or more parallel experiments conducted by unregulated firms.

Mr. Huber's observations early in this proceeding remain just as valid today in the wake of the hearing. "The OCA strongly believes that broader embrace of NWAs and TOU rates have the potential to provide significant ratepayer benefits moving forward. In this context, the OCA considers the indirect benefits that will flow from this project in the form of data and shared learnings, for both regulators and the regulated, to also be significant." Exh. 11 at 10, lines 1-4. Mr. Huber quoted the Commission's net metering order – in particular its observation that the data obtained via pilot programs arising out of the net metering inquiry "may also be useful in other relevant contexts, such as the development of projects or initiatives in connection with the Grid Mod Docket," and that "utilities should have the opportunity to recover their prudently incurred costs of development and implementation of all approved pilot programs." *Id.*, lines 4-8 (citation omitted).

For the reasons discussed above, approval of the Liberty proposal as conditioned by the settlement agreement comports fully with RSA 374-G, when that

question is considered in light of the statute's detailed filing standards and review critiria but also, most importantly, when the required "public interest" inquiry is conducted in light of the statute's stated purposes.

For more than a decade, it has been the public policy of this state that utilities should be encouraged to make investments in distributed energy resources, yet no project has yet to come to fruition in the wake of the enactment of RSA 374-G. Should this unopposed pilot fail to merit Commission approval, after a year of analysis and negotiation whose purpose was to refine program design and thereby protect consumers from undue risk, utilities and other stakeholders will reasonably conclude that no project can ever gain a regulatory imprimatur under RSA 374-G. That would almost certainly cause the state's utilities to revert to deploying their capital – an irrepressible quest for any profit-maximizing firm -- according to the outdated assumptions of the previous century. *See Appeal of Algonquin Gas Transmission*, *supra* (describing, and failing to rule out as inconsistent with statutory industry restructuring, a New Hampshire electric utility's bid to invest in interstate natural gas pipeline capacity).

The proposed battery storage and TOU experiment of Liberty Utilities is both modest in scale and innovative in scope. It warrants the Commission's enthusiastic endorsement.

WHEREFORE, the OCA respectfully request that this honorable Commission:

A. Approve the pending settlement agreement, thereby determining that the proposed battery storage pilot program of Granite State Electric Corp. d/b/a Liberty utilities is in the public interest pursuant to RSA 374-G:5, II, and

B. Grant any other such relief as it deems appropriate.

Sincerely,

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December 13, 2018

Certificate of Service

I hereby certify that a copy of this memorandum was provided via electronic mail to the individuals included on the Commission's service list for this docket.

D. Maurice Kreis