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January 11, 2021

By electronic mail

Debra A. Howland, Executive Director
N.H. Public Utilities Commission
21 South Fruit Street, Suite 10
Concord, NH 03301

Re: Docket No. IR 20-166 (Investigation into Compensation of Energy Storage Projects for Avoided Transmission and Distribution Costs)

Dear Ms. Howland:

Conservation Law Foundation (CLF) appreciates the opportunity to participate in the above-referenced investigatory docket regarding compensation of energy projects for avoided transmission and distribution costs. Pursuant to the Public Utilities Commission's (Commission) October 12, 2020 order, CLF submits the following comments.

1. The Avoided Transmission & Distribution Costs of Energy Storage Should be Comprehensively and Holistically Evaluated by the Commission

When evaluating the avoided transmission and distribution costs associated with energy storage, the Commission should take a holistic and comprehensive approach to evaluating the overall benefits of energy storage. In addition to delaying or deferring the need for upgrades to transmission and distribution systems through the indisputable benefits of peak shaving and congestion relief, energy storage results in grid reliability benefits, including improved frequency and voltage regulation, and increases resiliency, by helping to reduce distribution outages during severe weather events.[1] Energy storage also increases distributed energy resources' hosting capacity, reduces reverse power flows from distributed energy resources, and facilitates the use of intermittent renewable generation.[2] Moreover, by reducing the time that fossil-fueled generators

[1] *Final Report of the Commission to Study the Economic, Environmental and Energy Benefits of Energy Storage to the Maine Electrical Industry*, ME. LEG. OFFICE OF POLICY & LEGAL ANALYSIS, December 2019, at 5-6, *available at* https://legislature.maine.gov/doc/3710; Madison Condon, Richard L. Revesz and Burcin Unel, Ph.D., *Managing the Future of Energy Storage*, INSTITUTE FOR POLICY INTEGRITY: N.Y. UNIV. SCHOOL OF LAW, at 6, April 2018, *available at* https://policyintegrity.org/files/publications/Managing_the_Future_of_Energy_Storage.pdf.

[2] *State of Charge: Massachusetts Energy Storage Initiative*, MASS. DEP'T OF ENERGY RES. & MASS. CLEAN ENERGY CTR., at 37, 44-45, 48, September 2016, *available at* https://www.mass.gov/media/6441/download.

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are utilized to meet peak load, energy storage results in significant criteria pollutant and greenhouse gas emissions reductions benefits.[3] Further, energy storage can avoid many of the environmental and community siting concerns resulting from the construction of new transmission and distribution lines.[4]

Accordingly, when analyzing the avoided transmission and distribution costs of energy storage, the Commission should adopt a comprehensive approach that places a value on all the foregoing identified benefits. Because avoided transmission and distribution costs will vary depending on location,[5] it is also crucial that the Commission place a locational value on potential energy storage projects.

2. New Hampshire's Least Cost Integrated Resource Plan (LCIRP) Statutes Should be Amended to Require Consideration of Energy Storage as an Alternative to Transmission and Distribution Upgrades

In order to encourage investments in energy storage and full consideration of the costs and benefits of energy storage, New Hampshire's electric utilities should be required to evaluate energy storage alternatives when proposing traditional transmission and distribution investments and upgrades as part of integrated resource planning. In many instances, energy storage alternatives will be less expensive than and can replace traditional wires solutions.[6] Thus, increased analysis of energy storage during integrated resource planning would increase investments in and enable a full valuation of the benefits of energy storage.

Currently, New Hampshire's Least Cost Integrated Resource Planning statutes, RSA 378:37 through RSA 378:40, do not explicitly require New Hampshire's electric utilities to

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[3] *Id.* at 40, 95.

[4] *Id.* at 63; Sashwat Roy, *Battery Energy Storage Systems for Transmission & Distribution Upgrade Deferral*, UNIVERSITY OF DELAWARE, BIDEN SCHOOL JOURNAL OF PUBLIC POLICY, at 6, *available at*: https://cpb-us-w2.wpmucdn.com/sites.udel.edu/dist/4/10696/files/2020/06/Biden-school-journal_Energy_Storage_Sashwat_2020.pdf.

[5] Judy Chang et. al., *The Value of Distributed Electricity Storage in Texas: Proposed Policy for Enabling Grid-Integrated Storage Investments*, THE BRATTLE GROUP, at 9-10, November 2014, *available at* https://brattlefiles.blob.core.windows.net/system/news/pdfs/000/000/749/original/the_value_of_distributed_electricity_storage_in_texas.pdf; Madison Condon, et. al, *Managing the Future of Energy Storage*, *supra* note 1, at 6, 15.

[6] Sashwat Roy, *Battery Energy Storage Systems for Transmission & Distribution Upgrade Deferral*, UNIVERSITY OF DELAWARE, BIDEN SCHOOL JOURNAL OF PUBLIC POLICY, *supra* note 4, at 6; Garrett Fitzgerald, James Mandel, Jesse Morris, and Hervé Touatl, *The Economics of Battery Energy Storage*, ROCKY MOUNTAIN INSTITUTE, at 10 , October 2015, *available at* https://rmi.org/wp-content/uploads/2017/03/RMI-TheEconomicsOfBatteryEnergyStorage-FullReport- FINAL.pdf.

consider energy storage when conducting integrated resource planning. Although RSA 378:38 mandates that electric utilities assess distributed energy resources during planning and RSA 378:39 directs the Commission to prioritize renewable energy sources over other energy sources when evaluating plans,[7] the statutes do not require a comparison of transmission and distribution upgrade and/or investment costs to electric storage during integrated resource planning.

The LCIRP statutes do not define "distributed energy resources." However, "distributed energy resources" are defined elsewhere in a separate statute, RSA 374-G:2, as "electric generation equipment, including clean and renewable generation, energy storage, energy efficiency" and "technologies or devices located on or interconnected to the local electric distribution system for purposes including but not limited to reducing line losses, supporting voltage regulation, or peak load shaving, as part of a strategy for minimizing transmission and distribution costs."[8] Yet, this definition excludes "electric generation equipment interconnected with the local electric distribution system at a single point or through a customer's own electric wiring that is ***in excess of 5 megawatts***."[9]

Because the LCIRP statutes already require an assessment of distributed energy resources, the Commission likely has the authority to promulgate a rule explicitly requiring consideration of energy storage as part of integrated resource planning; however, the language of RSA 374-G:2 could potentially hinder consideration of energy storage projects exceeding five megawatts. Accordingly, because it is uncertain whether the Commission would have the authority to promulgate regulations requiring electric utilities to consider energy storage projects that exceed five megawatts, CLF recommends that the LCIRP statutes be amended to require utilities to assess electric storage alternatives, regardless of size, when conducting LCIRP planning. Requiring electric utilities to consider energy storage as part of integrated resource planning would allow a complete assessment of the avoided transmission and distribution cost benefits of energy storage and ensure that ratepayers are able to fully take advantage of lower-cost energy storage alternatives.

3. New Hampshire's Renewable Portfolio Standard Statute Should be Amended to Include a New/Separate Category for Energy Storage Paired with Renewables

Where energy storage is not owned by electric utilities, it can be difficult for storage developers to monetize the system benefits attributable to storage, including avoided transmission and distribution costs, that ultimately flow to ratepayers in the form of lower rates.[10] This is

[7] RSA 378:38-39.
[8] RSA 374-G:2.
[9] *Id.* (emphasis added).
[10] *State of Charge: Massachusetts Energy Storage Initiative*, *supra* note 3, at 157; Sky Stanfield, Joseph "Seph" Petta and Sara Baldwin Auck, *Charging Ahead: An Energy Storage*

because transmission and distribution benefits will typically not be captured by storage developers through wholesale market participation alone.[11, 12] However, including energy storage in the Renewable Portfolio Standard (RPS) creates an additional revenue stream for storage developers and allows developers to monetize more of the system benefits that result from storage.[13] In other words, allowing storage developers to earn renewable energy certificates (RECs) provides a means for developers to receive compensation for more of the overall system benefits resulting from storage and, thus, provides additional incentives for investment in storage.

At present, New Hampshire's RPS does not include energy storage as an eligible renewable energy class.[14] However, because energy storage can reduce peak load and, hence, reduce the time that polluting peak fossil-fueled generators are utilized to meet peak load, energy storage has the potential to play a significant role in reducing carbon and other air pollutant emissions from electric generation.[15] Consequently, energy storage shares many of the same attributes of the energy resources already included in the RPS.

Guide for Policymakers, INTERSTATE RENEWABLE ENERGY COUNCIL (IREC), at 22, April 2017, *available at* https://irecusa.org/2017/04/irec-releases-energy-storage-guide-for-policymakers/.

[11] *State of Charge: Massachusetts Energy Storage Initiative*, *supra* note 3, at 157; *Charging Ahead: An Energy Storage Guide for Policymakers*, *supra* note 3 at 22; Judy Chang et. al., *The Value of Distributed Electricity Storage in Texas: Proposed Policy for Enabling Grid-Integrated Storage Investments*, *supra* note 5, at 17.

[12] Moreover, even though the Federal Energy Regulatory Commission's Order 841 (March 6, 2018), requires Independent Service Operators (ISO), such as ISO-NE, to revise their market rules to allow energy storage participation in capacity, energy, and ancillary service markets operated by ISOs, the market participation enhancements afforded by Order 841 are not expected to result in energy storage developers receiving compensation for the full value of storage, including the benefits from transmission and distribution avoided costs. *See* Sashwat Roy, *Battery Energy Storage Systems for Transmission & Distribution Upgrade Deferral*, UNIVERSITY OF DELAWARE, BIDEN SCHOOL JOURNAL OF PUBLIC POLICY, *supra* note 4, at 8, 16; Roger Lueken, et. al, *Getting to 50 GW: The Role of FERC Order 841, RTOs, States and Utilities in Unlocking Storage's Potential*, THE BRATTLE GROUP, at 9, 11, 19, February 22, 2018, *available at* http://files.brattle.com/files/13366_getting_to_50_gw_study_2.22.18.pdf.

[13] *State of Charge: Massachusetts Energy Storage Initiative*, *supra* note 3, at 157; *Charging Ahead: An Energy Storage Guide for Policymakers*, *supra* note 3 at 22; Judy Chang et. al., *The Value of Distributed Electricity Storage in Texas: Proposed Policy for Enabling Grid-Integrated Storage Investments*, *supra* note 5, at 17.

[14] *See* RSA 362-F:4.

[15] *State of Charge: Massachusetts Energy Storage Initiative*, *supra* note 2, at 30-41; *N.Y. State Energy Storage Roadmap: N.Y. City Technical Conference*, N.Y. STATE ENERGY RESEARCH & DEV. & N.Y. STATE DEP'T OF PUB. SERV., at 21, July 31, 2018, *available at*

By way of example only, in Massachusetts, certain renewable energy resources, including qualified energy storage systems, can earn "clean peak certificates" for generating, dispatching, or discharging electricity to the electric distribution system during seasonal peak periods or for reducing load on the distribution system.[16] An energy storage system is eligible to earn clean peak certificates when it operates primarily to store and discharge renewable energy as demonstrated by one or more of the following factors: (1) co-location with a qualified RPS resource that has a nameplate capacity of at least 75% of the nameplate capacity of the energy storage; (2) contractual pairing with a qualified RPS resource that that operates primarily to store and discharge renewable energy; (3) charging coincident with periods of typically high renewable energy production as a percent of the grid generation mix; or (4) inclusion of an operation schedule in the energy storage system's interconnection service agreement demonstrating that the energy system serves to resolve load flow or power quality concerns otherwise associated with intermittent renewable energy resources.[17]

Likewise, in Vermont, energy transformation projects, which includes "infrastructure for the storage of renewable energy on the electric grid," are included as a category within Vermont's Renewable Energy Standard if certain criteria are met.[18] Such criteria include, *inter alia*, (1) the project results in a net reduction in fossil fuel consumption and greenhouse gas emissions; (2) the project "meets the need for its goods or services at the lowest present value life cycle cost, including environmental and economic costs;" and (3) the project costs the utility "less per MWh than the applicable alternative compliance payment rate."[19]

Here, CLF recommends legislation amending New Hampshire's RPS to create a new class for energy storage. In order to advance the renewable energy objectives of the RPS, inclusion of energy storage in the RPS should be limited to those storage projects that are contractually paired with other renewable energy resources. By including certain energy storage projects in the RPS, storage developers receiving RECs would be able to receive compensation for more of the overall system benefits resulting from energy system that are difficult to monetize, such as avoided transmission and distribution costs. Once a baseline of energy storage is determined, the energy storage RPS should be increased annually by 0.25 percent. In the alternative, rather than including energy storage tied to renewable energy in the RPS, the Commission should also explore establishing energy storage procurements and/or installed storage targets.

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http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BF796E0D8-5474-4DFC-86C1-3FEA53325708%7D.

[16] Mass. Gen. Laws Ann. ch. 25A, §3.

[17] 225 Mass. Code Regs. 21.05(1)(a). Massachusetts also includes certain types of storage, including flywheel energy storage, in its Alternative Energy Portfolio Standard. *See* Mass. Gen. Laws Ann. ch. 25A, §11F ½.

[18] Vt. Stat. Ann. tit. 30, §8002.

[19] Vt. Stat. Ann. tit. 30, § 8005.

Because Massachusetts' clean peak program has proven to be opaque and unnecessarily complicated, CLF does not, at this time, recommend creating a portfolio standard in New Hampshire for energy storage that is not directly tied to renewable energy resources; however, the Commission may wish to consider the advantages and disadvantages of creating a transparent and easy to administer portfolio standard for energy storage that is not directly paired with renewables as a means of incentivizing storage development.

4. The Commission Should Consider the Possibility of Amending New Hampshire's Utility Restructuring and Distributed Energy Resources Statutes to Clarify when Utility Ownership of Energy Storage is Permissible

Since utilities are best positioned to take advantage of the benefits of energy storage used for transmission and distribution cost avoidance, and pass off those benefits to ratepayers, it may be beneficial to allow utilities to own storage, that is primarily used to minimize transmission and distribution costs, in certain instances. Yet, currently, the degree to which utility ownership of energy storage is permitted under New Hampshire law remains unsettled. RSA 374-F:3(III), which unbundles generation services from transmission and distribution services, also provides that "distribution service companies should not be absolutely precluded from owning ***small scale*** distributed generation resources as part of a strategy for minimizing transmission and distribution costs."[20] However, because this statute neither defines "small scale" nor "distributed generation resources," and energy storage combines elements of generation, transmission, and distribution, it is unclear the extent to which the statute allows utility ownership of energy storage. Further, although energy storage used primarily for transmission and distribution purposes should not be viewed as generation and, therefore, does not violate the "functional separation principle" of RSA 374-F:3, the New Hampshire Supreme Court's interpretation and application of the restructuring statute introduces some uncertainty. *See Appeal of Algonquin Gas Transmission, LLC*, 186 A.3d 865 (N.H. 2018) (discussing interdependence of the fifteen policy principles in New Hampshire's restructuring statute), *abrogated on other grounds by* RSA 374-F:9.

Additionally, RSA 374-G:1 through RSA 374-G:7 permit utility ownership of "distributed energy resources,"[21] which are defined as including "energy storage . . . and technologies or devices located on or interconnected to the local electric distribution system for purposes including but not limited to reducing line losses, supporting voltage regulation, or peak load shaving, as part of a strategy for minimizing transmission and distribution costs."[22] However, the definition of "distributed energy resources" excludes "electric generation equipment interconnected with the local electric distribution system at a single point or through a customer's own electrical wiring

[20] RSA 374-F:3(III) (emphasis added).
[21] RSA 374-G:1-G:7.
[22] RSA 374-G:2.

that is in excess of 5 megawatts."[23] Moreover, distributed energy resources owned by electric utilities are "limited to a cumulative maximum in megawatts of 6 percent of the utility's total distribution peak load in megawatts."[24] In sum, current New Hampshire statutory law creates uncertainty with respect to utility ownership of large scale energy storage.

Because electric utilities have direct access to information on their distribution systems and cost structures and are more readily able to capture the value of avoided transmission and distribution costs resulting from storage than non-utility entities, electric utilities can often maximize the transmission and distribution benefits from energy storage more cost effectively than other entities.[25] In both Maine and Massachusetts, stakeholder groups have identified uncertainties in the law regarding utility ownership of energy storage as obstacles to investment by utilities.[26] Similarly, here, the ambiguities under New Hampshire law involving utility-owned energy storage create potential barriers to investments in energy storage by New Hampshire's electric utilities. Accordingly, as part of this investigatory docket, CLF recommends that the Commission study whether current law deters utility investments in energy storage.

In the event that the Commission concludes that current law limits utilities' investments, the statutes governing energy storage could be amended to clarify when utility-owned energy storage is permissible. Specifically, RSA 374-F:3(III) could be amended to include language stating that "distribution service companies shall not be precluded from owning energy storage resources as part of a strategy for minimizing and/or avoiding transmission and distribution costs." Limiting utility ownership to energy storage as it relates to minimizing and avoiding transmission and distribution costs would ensure that investments in energy storage for other purposes by non-utilities are not crowded out. Additionally, it is worth considering the possibility of eliminating the five MW and six percent limitations on utility ownership of energy storage in RSA 374-G:2, G:4, if the energy storage is "primarily used for purposes of reducing line losses, supporting voltage regulation, peak load shaving, or as part of a strategy for minimizing transmission and distribution costs." If energy storage paired with renewables were also included in the RPS or energy storage procurements were established, investments in storage by non-utilities could be encouraged by placing at least a 50 percent cap on the total percentage of the RPS energy storage class or procurements that could be owned by electric utilities.

Moreover, the Commission should explore the possibility of shared ownership or operational control of energy storage between utilities and third-party developers and/or the possibility of utilities contracting with third-party owners of energy storage for transmission and distribution functions and other services as an alternative to utility ownership of storage. Such a

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[23] *Id.*

[24] RSA 374-G:4.

[25] *See Charging Ahead: An Energy Storage Guide for Policymakers*, *supra* note 3, at 30.

[26] *See Final Report of the Commission to Study the Economic, Environmental and Energy Benefits of Energy Storage to the Maine Electrical Industry*, *supra* note 1, at 8-9; *State of Charge: Massachusetts Energy Storage Initiative*, *supra* note 2, at 62.

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hybrid model would maintain limitations on utility ownership of energy storage, encourage investments in energy storage by third-party developers, and prevent the utilities from monopolizing the New Hampshire energy storage market.

5. More Widespread Time of Use Rates Would Encourage Increased Adoption of Behind-the-Meter Energy Storage

Finally, time varying electricity rates provide important signals to consumers about the cost of electricity at different times and encourage consumers to adjust consumption to periods of lower demand.[27] Time-of-use rates can bolster storage by incentivizing consumers to store excess generation during non-peak periods when prices are lower and to discharge that energy during peak periods when prices are higher.[28] Accordingly, as part of this docket, the Commission should consider how increased application of time-of-use rates in New Hampshire could result in further investments in behind-the-meter energy storage.

CLF appreciates the Commission's consideration of its comments and looks forward to participating in this docket going forward.

Sincerely,

/s/ Nick Krakoff

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[27] *Final Report of the Commission to Study the Economic, Environmental and Energy Benefits of Energy Storage to the Maine Electrical Industry*, *supra* note 1, at 12; *Charging Ahead: An Energy Storage Guide for Policymakers*, *supra* note 3 at 32.

[28] *Id.*