Public Service Company of New Hampshire d/b/a Eversource Energy
Docket No. NH DOE SB 262 Investigation

Date Request Received: December 09, 2022 **Date of Response: February 01, 2023**
Data Request No. DOE 1-001 **Page 1 of 3**

Request from: Department of Energy

Request:

How to create transparent, consistent, and reasonable engineering standards for interconnection, with special consideration given to established best practices used by other states as set forth in the Interstate Renewable Energy Council's (IREC) 2019 Model Interconnection Procedures.

a. Please identify the applicable existing, and pending, interconnection codes, statutes, standards, and procedures that apply to the interconnection kW thresholds for various Distributed Energy Resource (DER) technologies (Battery, Wind, Solar, etc.). Include Federal, State, and Local requirements.

b. Please provide feedback on the IREC 2019 Model Interconnection Procedures. Include responses to the following questions:

   i. Have any entities adopted this model?

   ii. Is there interest in adopting this model in the future?

   111. If there is interest, are there any procedures that need to be addressed to respond to directives or goals of SB 262?

   iv. Are there other preferred model interconnection procedures and, if so, what are they?

Response:

a. It is Eversource's understanding that the New Hampshire electric utilities (Eversource, Unitil, NHEC, and Liberty) follow the Interconnection Standards for Inverters sized up to 100 kVA, per each distribution company's filed tariff.

Eversource also follows Eversource's Information and Technical Requirements for the Interconnection of Distributed Energy Resources (DER) published on Eversource's Interconnection Webpage. For additional technical requirements, the Institute of Electrical and Electronic Engineers (IEEE) Std 1547, "Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces," is referenced by most states and utilities. Underwriters Laboratories (UL) Standards 1741, UL 1741 – SA, and UL 1741 - SB testing procedures are also used to certify DER compliance to IEEE 1547. The IEEE 1547 and UL 1741 standards are applicable to DER regardless of kW size.

The Company is not aware of any relevant specific local requirements other than local building and electrical codes, which typically do not address interconnection requirements.

b.

i. The Company is not aware of any state jurisdictions that have adopted the IREC 2019 model without modifications. The Federal Energy Regulatory Commission's (FERC) Small Generation Interconnection Procedures (SGIP) is a model procedure that applies to all DER technologies and is similar to the IREC-2019 Model Interconnection Procedures. Many states have adopted interconnection procedures based on these two models with variations. In essence, both models are very similar in that they are designed to screen projects quickly by size. Each model has a "simplified" process for small size systems, an "expedited" or fast track process for medium size systems and a "standard" process for large size systems. Both model procedures are technology agnostic, and include standard terms and conditions.

ii. Eversource would need to comparatively analyze the IREC 2019 Interconnection model with other state interconnection processes and best practices and review the Company's current interconnection process including any available feedback on that process and possible areas of improvement from other stakeholders in NH before being able to take a position on adopting the IREC model. Eversource recommends taking this sort of comprehensive approach if the Department of Energy wants to develop a statewide interconnection process.
Eversource is currently reviewing the IREC 2019 model to address the following main topics for DER interconnection: 1) Applicability & Eligibility 2) System Size & Review Process, 3) Timelines, 4) Dispute Resolution, and 5) Information Sharing & Transparency.

Eversource believes that the electric utilities could collaborate and together, with stakeholder input, put forward a proposed standard which could be benchmarked against the IREC 2019 model and the FERC Small Generator Interconnection Procedures with the aim of developing a statewide interconnection standard.

iii. Eversource is working towards incorporating certain aspects of the IREC 2019 model into its NH interconnection process for DER, but it is too soon to assess whether the IREC model standard addresses directives of SB 262.

iv. The NH electric utilities have started to meet in order to draft a modified DER interconnection process for New Hampshire. The proposed interconnection process could then be reviewed, discussed, and modified by the Interconnection Working Group, once the group is established. The draft interconnection process will review the IREC 2019 model, best practices from the other states, and known stakeholder concerns. Eversource supports an Interconnection Working Group (see Question 5) to consider a joint utility-proposed standard and compare it against the IREC model and consider other states′ best practices to determine which of those recommendations may be best suited for adoption for NH DER interconnections. In a similar process conducted in Connecticut, there were some areas of the IREC recommendations that were pursued, some areas that the utilities and solar industry did not find necessary, some areas where the current practice already met or exceeded the requirement, and some areas of needed improvements that IREC did not specifically address. Eversource supports an inclusive and dynamic working group process to take on these considerations. Eversource supports the general principles embodied in the IREC recommendations, which are mainly concerned with transparency, improved communication of important information, lowest cost and optimal timing for all interconnections. The Company has aligned its processes to focus on these same areas with an eye towards continuous improvement to meet evolving interconnection needs.

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Date Request Received: December 09, 2022 **Date of Response: February 01, 2023**
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Request from: Department of Energy

Request:

How to ensure timely, consistent, and reasonably-priced interconnection studies.

a. Please identify issues, concerns, and impediments to completing timely interconnection evaluations/studies.

b. To the extent possible, please identify the issues and kW thresholds that impact the level of effort, and therefore the schedule and cost of completing interconnection evaluations/ studies.

Response:

There have been several factors that impacted DER Interconnection processing times for various kW thresholds in recent years. The number of DER interconnection applications received in the past two years has increased by approximately a factor of four. Paired with the recent FERC order directing all projects requesting to interconnect to the distribution system regardless of size to the state interconnection process, this has increased both DER interconnection activity, and the resource intensiveness of that activity in the state. Additionally, Eversource has begun to receive a noticeable number of applications for medium to large systems requesting to interconnect to circuits and substations with existing projects under study, which could extend the study process for such applications; this was a rare or nonexistent occurrence from previous years. All of these factors cumulatively contributed to increased processing times for DER interconnections. As the level of DER penetration (number and size) increases, the Company's DER planning and interconnection study methodologies need to evolve to continue to ensure safe, reliable operation of the system, and maintain system integrity at the higher levels of DER penetration. As a result, interconnection evaluations and studies have become more detailed and complicated. Some interconnection studies may involve transmission analyses as required by ISO-NE, analysis under alternate system configurations (N-1) or EMT (electromagnetic transient) studies, which may result in the identification of significant upgrades to the electrical infrastructure. These types of

complex studies and commensurate engineering design activities for significant upgrades create additional but necessary delays in the interconnection process to ensure safe, reliable service for all customers.

To address the backlog and ensure continued excellent customer service, the Company is taking several steps, including adjusting internal processes to streamline interconnection activities between various groups, implementing a new state-of-the art application processing and data archival system (PowerClerk from Clean Power Research), publishing hosting capacity maps to help developers make informed decisions (currently available on the Eversource website), creating a dedicated tri-state team to create/update/maintain system models, and onboarding new employees in the NH DER Planning team.

a. Currently there is an Eversource standard in New Hampshire for interconnection of inverter-based DER sized up to 100 kW. For inverter-based systems 10 kW or smaller, a fast pass pilot screening process is being tested. This screening process requires approximately 20 business days (from date the application is received) to approve the installation or identify required system modifications. If the application does not "pass" the required screens (or is larger than 10 kW), a supplemental study is required.

Currently, Eversource charges the following costs for the supplemental study of inverter-based DER greater than 10 kW and less than or equal to100 kW. The supplemental study is performed in the sequence of the application deemed complete date (first-come first-served). The interconnection agreement is submitted to the customer within 10 business days of completion of the technical review.

kW	Amount
10-30	$125
30-50	$500
50-100	$1,000

For systems larger than 100 kW, a System Impact Study (SIS) is required. The estimated study cost and timeline are generated on a case-by-case basis. However, in general, most SIS's for applications that are less than 500 kW are typically completed within 40-50

business days and the interconnection agreement (IA) is sent to the applicant at the end of the study period with the SIS report.

For applications that are greater than 500 kW, the SIS report and IA are issued to the customer within 65-75 business days. However, the study process may be extended if any one of the following conditions arise: 1) a transmission system analysis is required, 2) the SIS calls for additional dynamic analysis, 3) the study identifies significant system upgrades that require additional time and effort to develop a cost estimate, or 4) the proposed project is requesting to interconnect to a circuit or station with previously queued projects already under study. The provided time ranges start from the date Eversource receives the executed SIS Agreement and required payment, assuming the customer has provided all required technical documentation as part of the submitted Interconnection Request, and there are no delays in the customer's response to additional data requests or need to clarify data relative to the project.

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Date Request Received: December 09, 2022 **Date of Response: February 01, 2023**
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Request from: Department of Energy

Request:

How to ensure just and reasonable pricing of grid modernization upgrades mandated by the distribution utility for interconnection of distributed energy resources, including transparency and consistency in pricing guidelines and appropriate cost-sharing among parties benefitting from such upgrades.

a. Please identify issues and concerns, if any, regarding the transparency of interconnection cost estimates and schedules.

b. Please identify options for appropriate cost-sharing as well as issues and concerns.

Response:

a. For projects sized up to 100 kW, interconnection cost estimates are determined following a similar process used to connect a load customer. When upgrades are required, the customer is responsible for the upgrade cost, utilizing existing processes and workflows.

In previous years, for projects larger than 100 Kw, the interconnection cost estimates were generally determined during the System Impact Study (SIS) stage and included in the SIS report. The cost estimates were determined based on conceptual desktop designs and historical actual costs of completed projects with similar scopes. This process was sufficient when the system was at a lower level of DER penetration and most DER projects were 1 MW or less in export capacity. Therefore, no major system upgrades were required.

As the level of DER penetration (number and size) increases at specific circuits, substations and the system as a whole, more detailed and complex studies are required to be performed. This often results in identifying significant system upgrades to the electrical infrastructure to allow more DER to interconnect. This is in addition to the observed inflation and price volatility in recent years, which makes historical actual costs of completed projects no longer an accurate indication of future project cost estimates. This results in challenges to balancing the competing priorities of a timely interconnection process, lower study costs, and the

desired interconnection cost certainty and accuracy. Projects requiring major system upgrades would require a more detailed level of engineering design than that of a quick desktop design to develop any type of cost estimate, and if more cost certainty is desired by the customer to mitigate risks to the interconnection budget, more detailed engineering and cost estimating effort would be required, which may extend the study process and increase the cost.

Eversource recommends the Interconnection Working Group as a suitable forum to discuss the recent years′ challenges of the cost estimating process with all stakeholders. The objective would be to reach consensus and a satisfactory balance of the process′ competing priorities of a timely interconnection process, keeping costs low, and the desired interconnection cost certainty and accuracy.

b. Currently, the Company assesses interconnection costs during the interconnection process based on the cost-causation principle, assigning the full cost of system upgrades to the project that triggers the upgrades. This means that the next DER in queue would be responsible for the cost of applicable station upgrades, risking stagnation of development in certain areas. While these infrastructure upgrades might provide benefits to distribution customers (ratepayers) as well as future DER developers, there is currently no mechanism in place in New Hampshire to equitably allocate costs to current or future beneficiaries. Such a mechanism would provide cost-certainty, resolve the free-rider issue and facilitate more DER connections in congested areas. Considering these issues, alternate cost allocation methodologies have been explored in other jurisdictions where the Company operates.

In Massachusetts, the Department of Public Utilities (DPU) opened Docket D.P.U. 20-75 (*"Investigation by the Department of Public Utilities on Its Own Motion into Electric Distribution Companies' (1) Distributed Energy Resource Planning and (2) Assignment and Recovery of Costs for the Interconnection of Distributed Generation"*), which led to a Provisional Program Order (20-75-B) approving a provisional framework that allowed the electric distribution companies (EDCs) to file Capital Investment Project (CIP) infrastructure upgrade proposals with the Department that equitably allocate the interconnection costs between DER developers and distribution customers in proportion to benefits accrued. Recently, the CIP proposal for the Marion-Fairhaven DER group was approved under docket D.P.U. 22-47 and CIPs for five (5) other DER groups are being adjudicated in dockets 22-51 to 22-55.

Similarly, in Connecticut, cost allocation methodologies are being explored by the Public Utilities Regulatory Authority (PURA) in docket 22-06-29RE01 ("*PURA Investigation into Distributed Energy Resource Interconnection Cost Allocation – Non-residential Interconnection Upgrades*"). This is partially due to the high number of DER applications at several stations that are already saturated with DER, leading to the high likelihood of major infrastructure upgrades at these stations and/or stations that are inter-dependent with these stations. PURA is considering cost allocation approaches similar to Massachusetts to provide a pathway for more clean energy development in the state of Connecticut.

It should be noted that in most situations where DER can connect without paying for system upgrades (because there is sufficient hosting capacity), the costs of the existing system hosting capacity was borne entirely by ratepayers or a previous DER project that proceeded with an interconnection upgrade.

As detailed above, the Company is working with regulators and stakeholders in other jurisdictions to explore alternative cost allocation mechanisms and has already received an order approving a beneficiary-pays methodology for a set of DER-driven upgrades in Massachusetts. The Company is open to working with New Hampshire stakeholders, including DOE, OCA, Clean Energy New Hampshire and others to explore similar mechanisms that could support DER development, especially in congested areas. Any cost allocation mechanism must allow the Company to maintain safe, reliable service for all customers.

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Request from: Department of Energy

Request:

How to ensure distribution system upgrades paid for by customer-generators are not claimed as part of the utility rate-base.

a. Identify methods for ensuring transparency of how system upgrade costs are applied.

Response:

Distribution system upgrades paid for by customer-generators are an offset to a utility's capital investment, a component used in developing a utility's net book value (thereby reducing book depreciation expense) and included in the calculation of a utility's rate base.

The customer-generator payment will flow through the accounting capital project work order (AWO) established to track all costs and credits associated with the distribution system upgrade in order to comply with the accounting requirements of both the Federal Energy Regulatory Commission (FERC) and the New Hampshire Public Utilities Commission (NHPUC) to calculate a utility's rate base. When a customer-generator payment is received from the customer-generator, a credit is recorded to the AWO. When the costs are incurred by the utility company, a debit is recorded to the AWO. Once the system upgrade project is placed in service and becomes part of the net book value included in the calculation of rate base, the impact of the customer-generator payment, assuming the entirety of the system upgrade project costs were reimbursed through the customer-generator payment, results in a zero capital project value in the Company's rate base.

In addition, in accordance with DF 87-113, Order No. 19,055 issued on April 8, 1988, the New Hampshire Public Utilities Commission found that utilities cannot charge customers for the utilities' increase in tax obligations associated with customer payments, where those customer payments are treated as taxable income in the year in which the cash payments are received, pursuant to 26 U.S.C. §118. In such cases, utilities that use the normalization method of accounting will recover this tax obligation over the life of the related plant addition (tax basis asset value). This temporary book/tax basis difference results in an accumulated deferred income tax (ADIT) asset, created as a result of the Company paying the tax obligation up front when the customer payment is received. The ADIT asset will earn a return by increasing the Company's rate base, compensating the utility for the prepayment of the tax obligation. The

ADIT asset will 'unwind' over time as the tax basis asset value is depreciated for income tax return purposes.

Additional information:

ADIT asset - A temporary book/tax basis difference that arises from a contribution in aid of construction (CIAC) cash payment received by a utility that is considered taxable income to the utility in the year of receipt. Because the tax rules concerning CIAC also allow utilities to depreciate the tax basis asset value of the project paid for with CIAC, this book/tax difference is temporary in nature, therefore giving rise to ADIT, in accordance with GAAP. Under the existing tax rules, CIAC-related ADIT assets generally turn around over twenty years.

Impact to Rate Base – The ADIT asset included in rate base allows for the Company to recover certain costs of paying the CIAC tax liability in year one, while receiving the tax depreciation deductions over twenty years. Due to the temporary nature of the CIAC book/tax basis difference, at the end of the twenty-year period, the Company will have essentially recovered the CIAC tax liability. However, because the Company pays the CIAC tax liability in year one and in effect receives the refund (from the depreciation deduction) over twenty years, the dollars received back over twenty years are worth far less than the dollars paid in year one. As such, the ADIT asset included in rate base allows the Company to earn a return, compensating the Company for the prepayment of the tax expense.

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Date Request Received: December 09, 2022 **Date of Response: February 01, 2023**
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Request from: Department of Energy

Request:

Whether it is appropriate to establish an ••interconnection Working Group" convened at the Department to regularly assess if interconnection standards need modification.

a. Identify potential benefits, issues, and concerns on the concept of an ••interconnection Working Group."

Response:

Eversource supports an Interconnection Working Group approach. Based on the Company's experience in other jurisdictions, it would provide a valuable forum for collaboration and consensus-building during these early stages of standard development. Eversource recommends a DOE facilitator to steer the process, to ensure that the regulators remain central to the development of an interconnection standard. The New Hampshire electric utilities can begin working to develop a proposed interconnection standard which could serve as an achor for comparison and analysis with the IREC model as well as any other state models or best practices. Once this proposal is ready for stakeholder consideration, the DOE could convene the Interconnection Working Group.

For informational purposes, Eversource provides the following information about a similar and successful working group that was convened in Connecticut.

Connecticut Distributed Generation Policy Working Group

Goal / Mission Statement

To accelerate safe, reliable and economical interconnections of distributed energy resources in Connecticut, through a transparent and informal public forum where technical and policy stakeholders openly share their experience, knowledge and challenges, on common ground, where solutions and recommendations to policy makers strive for consensus, so that renewable energy in Connecticut can flourish, while leading the nation through an example of mutual respect and collaboration.

For reference, more information can be found here on the CT Working Groups. CT decided to have two working groups, each with their own website - one for technical issues, one for program/policy issues. Occasionally the two Working Groups meet together when certain issues overlap:

https://portal.ct.gov/PURA/Electric/Interconnection-Policy-Working-Group

https://portal.ct.gov/PURA/Electric/Interconnection-Technical-Working-Group