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Subject: Comments on Transmission Planning

RENEW Northeast, Inc.[1] enthusiastically endorses the States' goal established in their October 2020 Vision Statement for establishing a transmission planning process to realize New England's clean energy and climate policies efficiently while preserving system reliability. The time has come for New England to advance its transmission planning and development to incorporate multiple values like environmental quality and justice and economic development in addition to reliability.

RENEW is a non-profit association uniting environmental advocates and the renewable energy industry whose mission involves coordinating the ideas and resources of its members with the goal of increasing environmentally sustainable energy generation in the Northeast from the region's abundant, indigenous renewable resources. RENEW members own and/or are developing large-scale renewable energy projects, energy storage resources and high-voltage transmission facilities across the Northeast. They are supported by members providing engineering and procurement and construction services in the development of these projects and members that supply them with multi-megawatt class wind turbines.

I. Planning Transmission for the Future

The New England States in the 2020 Vision Statement made a commitment to pursuing regional transmission upgrades to deliver clean energy resources to the grid. New transmission infrastructure can unlock New England's renewable energy potential and significantly reduce curtailment of renewable energy resources. With reduced curtailment, less clean energy will be wasted, thus reducing the overbuild needed to meet reliability and emissions requirements. Minimizing transmission constraints could reduce overall consumer costs while unlocking access to the region's lowest cost renewable resources. New England's failure over a decade ago to plan and develop onshore transmission upgrades that would have allowed for the interconnection of Maine land-based wind, in addition to meeting system reliability needs, through the Maine Power Reliability Project (MPRP) has significantly curbed development of that low-cost renewable resource for the entire region and serves as a cautionary tale.

[1] The comments expressed herein represent the views of RENEW and not necessarily those of any particular member of RENEW.

According to a report by the Brattle Group, "Achieving 80 Percent GHG Reduction in New England by 2050" (2019), "Merely maintaining the current rate of clean energy resource deployment will cause the region to fall far short of its emissions targets. Currently planned clean energy resource generation for 2019–2030 in New England amounts to approximately 830 MW per year. This represents a significant increase from the historical generation of 280 MW per year from 2010–2018. However, to achieve the 2050 targets, New England will need to accelerate clean energy resource additions to between 4 and 7 GW per year on average between 2021 and 2050." Based on this projection, achieving the greenhouse gas reduction goals set by New England states will require significantly accelerating clean energy resource deployment and ensuring the transmission investments are made *ahead* of the generation buildout.

New England does not have the luxury of time before upgrades to the transmission system are needed. Existing renewables in Northern New England especially in Maine are facing higher levels of curtailment due to transmission limitations and new development is limited today due to those constraints. To the south, ISO New England ("ISO-NE" of "ISO") has concluded that 5,800 megawatts of offshore wind can be interconnected along the southern New England coast without significant upgrades to the onshore transmission network. However, significant local upgrades may still be required, as evidenced by ISO-NE's recently initiated Cape Cod Cluster study and the increasing upgrade costs for individual projects. Further, contracts are already in place for half of the 5,800 megawatts of offshore wind connections to southeast New England that ISO has determined would trigger major upgrades. Offshore wind procurements that have concluded or are already planned wind will exceed 5,800 megawatts. As transmission and some generation have long lead-times for development, the states do not have much time to change the Tariff to implement new approaches to transmission planning and cost allocation and get those projects designed and constructed.

A new approach for planning future transmission to deliver gigawatts of renewable energy to load centers should start with a comprehensive, periodic analysis for grid planning decisions. Planning will need to consider how to deliver this clean energy while avoiding bottlenecks that could cause congestion and potential curtailment. Any analysis should consider the long-term benefits and costs, and not merely short-term factors. Information that can assist this analysis includes existing economic studies and interconnection studies produced by the ISO and previous bids having been provided in response to renewable energy procurements. This available information can help inform grid planning decisions that could lead to state supported network upgrades. As a considerable amount of information is already available, a "fast" first round of transmission planning is technically possible and should be pursued to ensure compliance with state deadlines to reach climate and renewable energy goals.

II. Maximizing the Benefits of Past and Future Investments

The scale of investment needed to meet the region's decarbonization goals for development of new resources to supply carbon-free energy and the transmission facilities needed to deliver that energy is enormous. While significant attention is given to the (in)efficiency of the markets, somewhat less attention is given to the efficient use of the region's investment in its transmission facilities. In addition to the excellent observations and suggestions

made by Rebecca Tepper of the Office of the Massachusetts Attorney General on the importance of maximizing the use of the existing network by using advanced technologies, more opportunities exist to maximize the benefits of the region's transmission system.

a. Study Raising the 1,200-megawatts Single Contingency Limit on New Interconnections

ISO restricts new interconnections to a 1,200-megawatt single contingency limit to protect neighboring control areas from the impact of losing too much supply at once.[2] Given the scale at which development will be taking place, the region should explore all options to enabling developers to build fewer, larger projects more cost effectively while reducing environmental impacts. Respecting the 1,200-megawatt limit would, for example, require at least seven separate undersea circuits to interconnect 8,000 megawatts of offshore wind to southeast New England. If the 1,200-megawatt limit on new interconnections were raised to 1,600 megawatts, which is the size of the upcoming Massachusetts procurement, offshore wind projects could capture further economies of scale. In her presentation at this forum, Dr. Biljana Stojkovska from National Grid showed that optimized transmission planning in the United Kingdom would in some cases utilize 1,500 to 1,800 megawatt HVDC circuits to interconnect offshore wind. Utilizing these larger circuits in certain situations resulted in lower costs and reduced environmental impact by reducing the sheer number of circuits needed.

Despite the restrictions on new interconnections, three existing resources are regularly allowed to supply more than 1,200 megawatts of energy to New England, in some cases well over 1,200 megawatts, as ISO can coordinate its operating plan with its neighboring regions to maximize their use. Given the increasing frequency with which ISO allows these resources to operate above 1,200 megawatts, the region should revisit the need to restrict new interconnections to 1,200 megawatts. ISO-NE and its neighboring regions should determine what upgrades would be required to raise the 1,200-megawatt limit. If more cost-effective development of new offshore wind, imports, and onshore wind and solar resources can be achieved by raising this limit, investments that would allow raising the limit may lower overall costs for the region.

b. When Making Reliability or Asset Condition Upgrades, Consider Cost-Effective Options for Improving Transmission System Performance

When asset condition upgrades to address aging infrastructure and reliability upgrades to address specific reliability needs are planned, the process is focused on resolving only the identified needs. Often it would be possible to modify the planned upgrades slightly, at a relatively modest increased initial cost, to improve system operability and long-term cost effectiveness. This increased initial cost is frequently far less than the cost of achieving those

[2] For example, when ISO performed a cluster study for interconnecting Northern Maine wind generation, the cluster size was limited to 1,200 megawatts despite approximately 2,000 megawatts of wind being the queue. When ISO evaluated the transmission needs for interconnecting offshore wind as part of the NESCOE 2019 offshore wind economic study each undersea circuit bringing power to shore was limited to a maximum of 1,200 megawatts.

same benefits through a subsequent system upgrade. Examples include utilizing a larger conductor, building a line to a higher voltage standard, or installing a synchronous condenser rather than a STATCOM. Benefits could include increasing transfer limits on the system, reducing congestion and curtailment, reducing the cost of future generator interconnections, reducing land-use impacts by minimizing the number of transmission facilities needed, and reducing long-term operations and maintenance costs. Nevertheless, as ISO made clear in a presentation to the Planning Advisory Committee on February 17, 2021, it currently feels constrained in its ability to consider the best long-term solutions. It is seeking input on whether it should take a longer-term view of selecting the best upgrade option which appears to align with the States' Vision Statement. RENEW encourages the States to provide positive feedback on this approach and look systemically at other opportunities for similarly taking a longer-term view of planning when it comes to reliability or asset condition upgrades planned by either ISO or the New England transmission owners.

c. Consider Building at a Higher Voltage

The backbone of New England's AC transmission system is operated at 345 kV, a lower voltage than in many other parts of the country. Higher voltage lines can move more power over longer distances. Consequently, New England is able to move less power over long distances than if a higher voltage were used. Though higher voltages have in the past raised concerns over siting impacts due to taller structures and higher up-front costs, the options before us to achieve the States' goals are either going to a higher voltage or significantly increasing the number of new transmission lines needed which also raises visual impact concerns. For lower overall cost and siting impact a higher voltage may now be the least cost and lowest-impact option and should be fully considered.

d. Address Jurisdictional Issues That Result in Inefficient, Costly Interconnections

When generators interconnect to the transmission system, they are required to make upgrades as needed to ensure the new generator does not degrade system reliability when it operates. However, the generator is not required to upgrade the transmission system to enable it to operate under all circumstances, which would be very costly. Rather, if in a particular system condition, it would be problematic to have the new generator operating at full output, the ISO can often plan to instruct the generator to reduce its output should that condition arise. This avoids the need to make costly upgrades for a system condition that does not occur frequently.

By contrast, under very specific circumstances where a transmission-connected generator could cause an overload of a *distribution* facility that is not monitored by ISO, the ISO is not able to instruct the generator to reduce its output to protect the distribution system. Instead, the generator for its interconnection must pay to upgrade the distribution system and ensure that under no circumstances could it pose a reliability concern to the distribution system even if operating at full output. If ISO were instead able to monitor the interface between the transmission and distribution system and instruct the generator to reduce its output under the

specific conditions that could cause problems for the distribution system, more generators would be able to interconnect at lower cost without compromising system reliability.

As more clean energy generators attempt to interconnect to more locations on the transmission system, these situations are becoming more common, causing unnecessary costs and inefficiencies that create a barrier to clean energy development. While easy technical solutions exist to this problem, jurisdictional issues prevent them from being pursued.

III. A New Process for Long-Term Transmission Planning and Development

RENEW shares in the frustration that the States' design for the Federal Energy Regulatory Commission ("FERC") Order No. 1000 process for planning and development of public policy transmission projects (PPTU) was not approved as they intended but believes that the process has merit. For transmission development to serve multiple projects associated with different developers being constructed at different points in time, the PPTU concept, if it can be made workable for the states, has the potential to enable transmission development to unlock renewables. Planning transmission under the PPTU to serve multiple large-scale renewable energy projects may lower the all-in delivered cost of remote renewables. California, New York, and Texas and other multi-state regional transmission organizations like the Southwest Power Pool and Midcontinent ISO ("MISO") are good examples of where this has worked. MISO's approach in its Regional Generation Outlet Study and Multi-Value Projects rested upon co-optimizing transmission investments with generation expansion planning. Reform of the PPTU might therefore be the best pathway for transmission planning and development, so long as it is able to respect the States wish to maintain control over implementing their individual laws and how to allocate costs amongst them.

In 2017, ISO-NE adopted a mechanism in its Interconnection Procedures that allows, under specific conditions, for two or more Interconnection Requests to be analyzed in the same System Impact Study, known as a cluster, rather than sequentially for the purpose of identifying potential Cluster Enabling Transmission Upgrades (CETU). An identified CETU would meet the minimum interconnection requirements to connect the backlogged Interconnection Requests. The cluster study would identify the approximate cost of those upgrades, the volume of megawatts that could interconnect using the upgrades, the volume of megawatts that would have a chance at passing the FCM overlapping impact test for deliverability, and the set of queue positions that are eligible to join the cluster.

During the stakeholder discussions in which the cluster interconnection process was created, RENEW developed a detailed alternative to the current participant funded model to work around the limitations of Order 1000 by aligning state renewable energy procurements with the cluster interconnection process so that network upgrades would be sized as close as possible to needs of renewable generation winning state directed contracts. The RENEW proposal provided for the ability of one or more EDCs in consultation with state energy regulators to opt into funding one or more CETUs (or Elective Transmission Upgrades in place of the CETUs) and associated network upgrades involving generation facilities with power purchase agreements

awarded under a state RFP for clean energy. This approach to circumvent Order 1000, however, has a shortcoming that favors a reformed PPTU approach. Transmission planning based on discrete clusters of projects limited to winning RFP bidders will not minimize the total cost of generation plus transmission. By contrast, transmission planning based on the long-term clean energy goals of the States could reveal the transmission needed in the region to integrate all the energy resources to meet state policy requirements over the long term at the lowest cost.[3]

While the States have agreed to postpone discussing how to allocate costs between them until a new transmission process is developed and costs are better understood, RENEW urges the states to start having preliminary conversations on cost allocation to minimize the delay in acting on transmission development. The States might consider the current principle of "beneficiaries pay" and whether FERC should implement reforms that could allow the States the ability to develop methodologies unique to specific circumstances in New England.

RENEW appreciates the States giving environmental justice considerations time on the agenda. RENEW also urges the States to consider how to overcome the significant siting challenges that transmission like all energy infrastructure faces while also ensuring broad-based stakeholder involvement on siting issues.

IV. Conclusion

Scenario analysis can help inform states about the transmission needs, but analytical rigor must be balanced against the need to act expeditiously to procure, permit, and build transmission to enable achievement of state goals. The need for transmission upgrades has been around in Maine for years and is quickly becoming apparent in southern New England. RENEW encourages states to prioritize solutions to meet these needs expeditiously even as the planning to address longer-term needs continues.

Thank you for the opportunity to offer these comments.

Sincerely,

Francis E Pullaro

Francis Pullaro
Executive Director

[3] Maine's February 2021 Renewable Energy Goals Market Assessment, for example, concluded that "coordination of Maine with neighboring states can mitigate the "lumpiness" challenge of new transmission investment—that transmission projects are generally large in size, are expensive, and the full project has to be developed before any benefits can be realized."