Before the Massachusetts Senate
Committee on Global Warming and Climate Change

Climate Resilience of Transportation and Electric Infrastructure

Climate Resilience Planning

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Tentative Oral Testimony in Highlight
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Chair Creem, Vice Chair Barrett, Ranking Member O'Connor, and distinguished members of the committee, thank you for the invitation to participate in today's hearing.

My name is Michael Panfil. I serve as Lead Counsel and Director of Climate Risk Strategies at Environmental Defense Fund, where I focus on the development and implementation of climate risk management and resilience strategies. I am a co-author on the joint Sabin Center and EDF report, *Climate Risk in the Electricity Sector*, which will be the basis for much of my testimony today.[1]

My remarks are intended to demonstrate that well-designed climate resilience planning is feasible using data and tools available today. The same is true with respect to existing legal authority; the Massachusetts Department of Public Utilities can and should require climate resilience planning to ensure reliable electric service at just and reasonable rates.

Recent work required by the New York Public Service Commission and conducted by Consolidated Edison serves as a leading example. In December 2019, the New York utility published a comprehensive climate vulnerability assessment, which included a detailed analysis of climate-related risks to its assets and operations through 2080. The analysis was based on downscaled climate projections, showing anticipated changes in temperature, humidity, precipitation, sea level, and extreme weather events for three sub-areas within Consolidated Edison's service territory. Consolidated Edison compared anticipated future conditions against existing asset design and operating parameters to identify vulnerabilities within its system and developed flexible resilience pathways for mitigating and managing those vulnerabilities.

Based on the findings of its vulnerability assessment, in December 2020, Consolidated Edison published a climate change implementation plan that identifies concrete changes to its planning, engineering, operations, and emergency response practices to manage climate-related risks.

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[1] ROMANY M. WEBB ET AL., CLIMATE RISK IN THE ELECTRICITY SECTOR: LEGAL OBLIGATIONS TO ADVANCE CLIMATE RESILIENCE PLANNING BY UTILITIES (2020), https://climate.law.columbia.edu/sites/default/files/content/Full%20Report%20-%20Climate%20Risk%20in%20the%20Electricity%20Sector%20-%20Webb%20et%20al_0.pdf.

Consolidated Edison's work provides a model that other utilities can follow but is not the only instance where climate resilience planning is underway. The U.S. Department of Energy and other federal and state bodies have also published guidelines and recommended best practices for effective climate resilience planning. Several government and independent bodies have made available downscaled climate projections that can be used in climate resilience planning.

Well-established modeling techniques can be used to generate sophisticated projections of likely future conditions based on historic and anticipated future emissions. Most models produce fairly coarse resolution projections, but downscaling techniques can be used to refine those projections to estimate climate impacts at finer geographic scales. Probability distributions can be attached to the projections, enabling an assessment of the relative likelihood of different climate outcomes. That provides electric utilities with decision-useful information that they can use in planning.

The Massachusetts Department of Public Utilities has authority to require electric utilities to engage in climate resilience planning. The Massachusetts DPU is tasked with regulating electric utilities to ensure they deliver reliable services at just and reasonable rates. Well-designed climate resilience planning accomplishes these aims. Put simply, as climate change intensifies, and the frequency and intensity of extreme weather events increases, the electric sector will face mounting risks. Proactively identifying and managing these risks improves electric reliability and minimizes avoidable cost to the end-use customer.

For this same reason, and because both the costs associated with grid outages and the costs of recovery are typically borne by the customer, climate resilience planning must be conducted with the end-user in mind. Well-designed climate resilience planning should consider, for instance, activities to effectuate outcomes through least costly alternatives, such as by elevating a new substation at risk from future sea level rise during its initial construction, rather than when the risk materializes.

Likewise, climate resilience planning should not lose sight of the connection between climate change mitigation efforts and risk reduction activities. At minimum, planning should avoid maladaptive outcomes, where the symptom of climate change (such as increased heat) is treated through activities that concurrently exacerbate the underlying cause (such as increased fossil generation).

Requiring electric utilities to engage in climate resilience planning furthers the goal of reducing electricity costs and improving service reliability for consumers. A customer-centric approach is critical. Well-designed climate resilience planning should not result in excess cost and ensure benefit by identifying and managing climate risks to relevant assets and systems. For this same reason, climate resilience planning should also be designed in the context of energy transition, where the simultaneous need to contract the natural gas system and expand electrification may weigh in favor of certain alternatives (such as increased renewable distributed generation) over others.

Enhancing the climate resilience of electricity systems may require investments in asset hardening and relocation—projects that typically have long-lead times and must therefore be

planned now to avoid future reliability issues. Electric utilities must also begin planning now for the impacts of climate change on new assets, many of which will remain in operation for several decades, during which time climate impacts will intensify. Considering those impacts now enables utilities to design assets and systems that are resilient from the start, thereby lessening the need for costly retrofits in the future, as well as the potential for future outages.

Thank you – I stand available to answer any questions of the Committee.