

3/1/2021

Via Email

Mark D. Marini, Secretary
Department of Public Utilities
One South Station
Boston, MA 02110
dpu.efiling@state.ma.us

Re: Petition Requesting Rulemaking on Climate Vulnerability and Adaptation Planning

Dear Chair Nelson, Commissioner Hayden, and Commissioner Fraser:

Please accept this petition on behalf of Conservation Law Foundation (“CLF”) requesting that the Department of Public Utilities (“DPU”) commence a rulemaking proceeding on climate vulnerability and adaptation planning and use its regulatory authority to require all utility companies within its jurisdiction to consider the impacts of extreme weather and sea level rise on their infrastructure and service delivery, assess current and future vulnerabilities, and plan to mitigate those risks.

Climate change poses a severe and increasing threat to the health and safety of Massachusetts residents and to the economy, with increasingly warmer temperatures, intense storms, and extreme heat and precipitation events, as well as rising sea levels, expected over the next century and beyond. Though the state has ramped up its climate mitigation and climate adaptation efforts in recognition of this growing threat, much of the Commonwealth’s energy infrastructure is ill-prepared for climate impacts. Though utility providers are required to plan for emergencies, adapting to climate change requires long-term planning efforts that account for the myriad intersecting climate impacts. Unlike climate mitigation, climate resilience and adaptation planning are focused on maintaining safety and reliability in the face of anticipated climate impacts, core DPU functions.

To fulfil its mission to ensure the safe and reliable operation of the Commonwealth’s utility infrastructure, we urge the DPU to use its authority to commence a rulemaking proceeding and convene a one or more technical conferences to consider strategies for utilities to adapt to current and anticipated impacts of climate change and engage in long-term adaptation planning.

Sincerely,

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Petition Requesting Rulemaking on Climate Vulnerability and Adaptation Planning

Climate change poses a severe and increasing threat to the health and safety of Massachusetts residents and our economy. The Commonwealth is already experiencing warmer temperatures, increased storm intensity, rising sea levels, and more extreme precipitation events, all of which are projected to get worse over the next century.¹ In recognition of the growing threat that climate change poses, the state has ramped up its climate adaptation efforts. This includes Governor Baker's recent Executive Order 569 (EO 569), which requires, among other things, that all state agencies assess the vulnerability, adaptive capacity, and resiliency of infrastructure and other assets.

The winter storm in Texas this year and hurricanes in Texas and the southeast in recent years have demonstrated the vulnerability of utility systems, particularly electric utilities, to extreme weather.² Another dramatic—and tragic—illustration of the need to adapt to a changing climate came in the form of Hurricane Maria, which wreaked havoc on Puerto Rico in 2017. Maria caused the largest³ blackout ever recorded in the U.S.⁴ It took nearly a year for Puerto Rico's only electric utility to restore power to 1.5 million residents, costing over \$3 billion dollars and forcing the utility's bankruptcy.⁵ A Harvard study found that Puerto Rican households were without power an average of 84 days and thousands of people were displaced from their homes.⁶ According to another study conducted by George Washington University, Hurricane Maria and its aftermath

¹ EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS AND THE ADAPTATION ADVISORY COMMITTEE, *Massachusetts Climate Change Adaptation Report* (Sept. 2011), <http://www.mass.gov/eea/docs/eea/energy/cca/eea-climate-adaptation-report.pdf>.

² In 2017, Hurricane Harvey left 350,000 Texans without power and flooded many substations that had not been flooded before, raising new resiliency concerns for the state's utilities. HOUSTON PUBLIC MEDIA, *Though Power Outages Were Limited, Harvey Revealed New Challenges For The Grid* (Nov. 2, 2017), <https://www.houstonpublicmedia.org/articles/news/energy-environment/2017/11/02/248175/though-power-outages-were-limited-harvey-revealed-new-challenges-for-the-grid/>. In 2018, Hurricane Michael damaged substations and knocked over transmission line towers, leaving about 2.5 million customers without power in its path, with over 100,000 Floridians still without power two weeks after the storm. ENERGY MANAGER TODAY, *Hurricane Michael Causes Widespread Power Outages, Damage in Southeast* (Oct. 15, 2018), <https://www.energymanagertoday.com/hurricane-michael-outages-damage-0179581/>; INSURANCE JOURNAL, *Power Outages Still Plague Florida Panhandle Nearly 2 Weeks After Michael* (Oct. 22, 2018), <https://www.insurancejournal.com/news/southeast/2018/10/22/505288.htm>.

³ In terms of lost customer-hours of electricity.

⁴ CNN, *Puerto Rico's power outage is now the second-largest blackout on record* (Apr. 16, 2018), <https://www.cnn.com/2018/04/16/us/puerto-rico-blackout-second-largest-globally-trnd/index.html>; NPR, *Nearly A Year After Maria, Puerto Rico Officials Claim Power Is Totally Restored* (Aug. 15, 2018), <https://www.npr.org/2018/08/15/638739819/nearly-a-year-after-maria-puerto-rico-officials-claim-power-totally-restored>.

⁵ NPR, *Nearly A Year After Maria, Puerto Rico Officials Claim Power Is Totally Restored* (Aug. 15, 2018), <https://www.npr.org/2018/08/15/638739819/nearly-a-year-after-maria-puerto-rico-officials-claim-power-totally-restored>.

⁶ Nishant Kishore *et al.*, *Mortality in Puerto Rico after Hurricane Maria*, THE NEW ENGLAND JOURNAL OF MEDICINE, (July 12, 2018), <https://www.nejm.org/doi/full/10.1056/NEJMSa1803972>.

caused over 3,000 deaths, with many other residents suffering health consequences caused by limited access to medical equipment and power.⁷

Much of the energy infrastructure in the United States, including in Massachusetts, is ill-prepared for climate impacts like extreme heat, sea level rise, storm surge, and extreme precipitation,⁸ and will become increasingly vulnerable as the climate continues to change over the next century. While utility providers in Massachusetts are required to engage in emergency response planning, these plans only cover short-term responses to storms or other disasters after they occur; they are not currently required to engage in long-term planning efforts that take climate change impacts into consideration.

In light of this reality, CLF petitions the Department of Public Utilities (“DPU”) to commence a rulemaking proceeding pursuant to G.L. c. 30A, § 2 on climate vulnerability and adaptation planning and use its regulatory authority to require all utility companies within its jurisdiction to consider the long-term impacts of extreme weather on their infrastructure and service delivery, assess current and future vulnerabilities, and plan for how to mitigate those risks. Pursuant to DPU regulations, “[a]ny interested person or his attorney may at any time file with the Secretary of the Department a petition to adopt, amend, or repeal any regulation.” 220 CMR 2.02. DPU regulations require the complete text of the proposed regulation. 220 CMR 2.02(e). Accordingly, CLF petitions DPU to adopt new regulations set forth in Appendix A and amend several regulations set forth in Appendix B.

Founded in 1966, CLF is a non-profit, member-supported advocacy organization with nearly 3,000 members in Massachusetts that works to solve the environmental problems threatening the people, natural resources, and communities of New England. CLF’s advocates use law, economics and science to design and implement strategies that conserve natural resources, protect public health, and promote vital communities in our region. CLF, by and through its more than 5,000 members, including more than 2,900 in Massachusetts, has a substantial interest in utility resilience, and has a long history of participation in Department proceedings.⁹

1. The DPU’s Jurisdiction with Respect to Climate Adaptation

The DPU has the legal authority and obligation to require utilities to assess vulnerabilities and adapt to climate change. As the primary regulator of the state’s investor-owned electric, gas, and water utilities, the DPU is charged with ensuring that safe and reliable service is provided by

⁷ The Washington Post, *Study: Hurricane Maria and its aftermath caused a spike in Puerto Rico deaths, with nearly 3,000 more than normal* (Aug. 28, 2018), https://www.washingtonpost.com/national/study-hurricane-maria-and-its-aftermath-caused-a-spike-in-puerto-rico-deaths-with-nearly-3000-more-than-normal/2018/08/28/57d6d2d6-aa43-11e8-b1da-ff7faa680710_story.html?noredirect=on&utm_term=.c95ddf93c279.

⁸ Climate Change: Energy Infrastructure Risks and Adaptation Efforts, *United States Government Accountability Office* (Jan. 2014), <https://www.gao.gov/assets/670/660558.pdf>.

⁹ Due to its unique interests and expertise regarding the Commonwealth’s energy system and utilities, CLF has been regularly granted intervenor status by the Department in a variety of dockets, including: D.P.U. 20-59 (Eversource / Columbia Gas asset transfer); D.P.U. 15-34, 15-39, 15-48 (reviewing precedent agreements associated with the proposed Northeast Direct natural gas pipeline); D.P.U. 15-181 and 16-05, among others.

Massachusetts utilities. Specifically, the DPU has general supervision authority with regard to public safety:

The department shall have the general supervision of all gas and electric companies and shall make all necessary examination and inquires and keep itself informed as to the condition of the respective properties owned by such corporations and the manner in which they are conducted with reference to the safety and convenience of the public, and as to their compliance with the provisions of law and the orders, directions, and requirements of the department . . .

G.L. c. 164, § 76.

DPU also requires electric distribution companies to:

file an annual electric distribution system resiliency report with the department, which shall include heat maps that: (i) show the electric load on the electric distribution system, including electric loads during peak electricity demand time periods; (ii) highlight the most congested or constrained areas of the electric distribution system; and (iii) identify areas of the electric distribution system most vulnerable to outages due to high electricity demand, lack of local electric generating resources and extreme weather events.

G.L. c. 164, § 146.

The DPU has acknowledged that “[t]here is a fundamental evolution taking place in the way electricity is produced and consumed in Massachusetts . . . driven, in large part, by a number of legislative and administration policy initiatives designed to address climate change and foster a clean energy economy” and that “this evolution is changing the operating environment for electric distribution companies in Massachusetts.”¹⁰ As part of this evolution, and consistent with its general supervisory authority, the DPU has the ability—and obligation—to require utility companies to address the anticipated effects of climate change.

In the past, the DPU has imposed fines on utilities for inadequate responses to storms and other extreme weather events. However, fining utilities for failing to prepare for climate change is a short-sighted and incomplete approach to the issue. To truly prepare and respond to storms in a safe, efficient, and timely manner, utility companies must assess and plan for their current and future vulnerabilities. Adequately planning for storms requires long-term assessment of risks and adaptation planning, in addition to short-term emergency response planning. Storm-related expenditures made by utility companies must take climate conditions and vulnerabilities into account.

Climate adaptation is critical to the DPU’s ability to fulfill its mission of ensuring the provision of reliable utility services to consumers.¹¹ This implicates both rate setting, in which

¹⁰ D.P.U. 17-05, *Order Establishing Eversource’s Revenue Requirement* at 374 (Nov. 30, 2017).

¹¹ G.L. c. 25, § 1; G.L. c. 164, § 94. See MASS.GOV, Dep’t of Pub. Utils., *About the DPU*, <https://www.mass.gov/about-the-dpu>.

utilities must act “prudently,”¹² and storm response, in which utilities must act “reasonably.”¹³ The “prudent” analysis “determines whether ratepayers or shareholders will bear the burden of paying for certain investments and expenditures,” while the “reasonable” analysis “determines whether a company fulfilled its obligation to consumers and the general public to restore service where a major storm or other event produces massive power outages.”¹⁴ The Supreme Judicial Court has held, in emergency situations, that it is “logical for the department to impose a higher [reasonableness] standard on the utilities than simply determining whether, from a business perspective, the companies acted prudently” because “[w]here a company during an emergency event must respond to priority ‘wires-down’ calls or restore service to critical facilities, among other responsibilities, the consequences of any deficiency in the company’s performance are potentially catastrophic.”¹⁵

Evaluating risks to existing infrastructure and taking future climate predictions into account are essential to ensuring reliable access to utility services for Massachusetts residents and businesses. Failure to engage in climate adaptation planning would be both imprudent and unreasonable, as it will lead to increasing frequency of service outages in the future, a significant degradation of utility reliability in certain areas, and unnecessarily higher overall costs for ratepayers. As detailed in this petition, outages due to extreme weather events are already increasing in frequency in the Commonwealth, making the need for action to mitigate risks all the more urgent.

2. Background

A. *The Need for Utilities to Adapt to Climate Change*

Rising temperatures, increased frequency and intensity of extreme wind and precipitation events, and rising seas all pose threats to the safety and reliability of Massachusetts water, gas, and electric utilities. Utilities must therefore adapt to current climate conditions as well as future anticipated changes to ensure continued safe and reliable service.

¹² “Under the prudence standard, ‘the department determines whether a utility’s actions, based on all that it knew or should have known at the time, were reasonable and prudent in light of the circumstances which then existed.’” *Mass. Elec. Co. v. Dep’t of Pub. Utils.*, 469 Mass. 553, 559 (2014) (quoting *Fitchburg Gas & Elec. Light Co. v. Dep’t of Pub. Utils.*, 460 Mass. 800, 802–803 (2011)). “The prudence standard is limited to rate setting, where utilities may charge rates which are compensatory of the full cost incurred by efficient management, [but] may not recover costs which are excessive, unwarranted, or incurred in bad faith.” *Mass. Elec. Co.* at 560 (citations and quotations omitted). The prudence standard comes from G.L. c. 164, § 94G, which provides that utilities must make “reasonable or prudent efforts consistent with accepted management practices, safety and reliability of electric service and reasonable regional power exchange requirements to achieve the lowest possible overall costs to the customers of the company for the procurement and use of fuel and purchased power included in the fuel charge.”

¹³ The “reasonableness” standard is derived from “the regulatory standard of whether the utility restored service to its customers ‘in a safe and reasonably prompt manner.’” *Mass. Elec. Co.* at 559. “Under the reasonableness standard, a practice followed by every utility may still be unreasonable where it fails adequately to restore service following a storm in a safe and reasonably prompt manner.” *Id.* (citation omitted).

¹⁴ *Mass. Elec. Co.* at 559.

¹⁵ *Id.* at 561–62.

Higher temperatures result in increased electricity demand, which increases the need for transmission capacity. During a heat wave, the electricity sector can suffer problems with generation, transmission, and distribution, potentially causing blackouts or brownouts, which have detrimental effects on human health and the economy.¹⁶ Rising temperatures and increased frequency and duration of heat waves will likely render current industry design standards for infrastructure resilience to heat inadequate.

Temperatures in Massachusetts have increased almost 3°F since the beginning of the 20th century and are expected to continue increasing over the next century. While urban areas will be hardest hit by heat impacts due to urban heat island effect, all of Massachusetts will be affected. Extreme heat and heat waves are becoming more frequent as well.¹⁷ Between 2010 and 2014, Massachusetts experienced the highest number of “hot days” (temperature above 90°F) since 1950.¹⁸ In late August 2018, communities in northeastern Massachusetts suffered power outages affecting almost 18,000 customers when heat indices during the day reached up to 105°F in Boston and 106°F in Springfield and Lawrence.¹⁹ Temperatures are predicted to continue rising, even if we take rapid action to reduce emissions, but especially if we take slow action or no action.²⁰ We expect that by mid-century we will experience between 4.7 and 16 additional “extremely hot” days per year (temperature above 95°F), up from the current number of about 2.6 days per year.²¹

Climate change is also causing cold-weather impacts to utility services—during a record cold snap in February 2016, sub-zero temperatures across the Commonwealth, along with wind chills in some areas down to -40°F or more, left more than 14,000 utility customers in Lynn and Saugus without power overnight.²²

Over the past few decades, we have also seen an uptick in the frequency and intensity of storms and other extreme weather events. In the past few years alone, the Commonwealth has endured devastating flood impacts during Tropical Storm Irene in 2011, massive snowfall and blizzard conditions during the severe winter storms of 2015, and unprecedented nor’easters in

¹⁶ <http://columbiaclimatelaw.com/files/2016/06/Aivalioti-2015-01-Electricity-Sector-Adaptation-to-Heat-Waves.pdf> (Page 2).

¹⁷ BOSTON RESEARCH ADVISORY GROUP, *Climate Ready Boston: Climate Change and Sea Level Rise Projections for Boston*, *The Boston Research Advisory Group Report* (2016), https://www.boston.gov/sites/default/files/document-file-12-2016/brag_report_-_final.pdf.

¹⁸ Runkle, J., K. Kunkel, R. Frankson, D. Easterling, A.T. DeGaetano, B. Stewart, and W. Sweet, 2017: Massachusetts State Summary. NOAA Technical Report NESDIS 149-MA, 4 pp: <https://statesummaries.ncics.org/ma>.

¹⁹ MASSLIVE.COM, *Thousands in Massachusetts lose power during extreme heat* (Aug. 29, 2018), <https://expo.masslive.com/news/erry-2018/08/2648d86c127337/sizable-power-outages-occur-in.html>

²⁰ “Days that feel like 100 degrees (or higher), which rarely happen in Massachusetts now, will occur 26 times each year by the end of the century if no action is taken to cut greenhouse gas emissions, the report finds. Ninety degree temperatures will likely occur in the state about one month a year by 2050 and more than two months a year by 2100. Currently, the average is seven to 10 days.”

Report: By 2100, Mass. Could Have 26 Days A Year That Feel Hotter Than 100 Degrees; <https://www.wbur.org/earthwhile/2019/07/16/boston-heat-wave-climate-change>

²¹ <https://riskybusiness.org/report/national/>.

²² BOSTON GLOBE, *Record cold put the deep freeze on Valentine’s Day* (Feb. 14, 2016), <https://www.bostonglobe.com/metro/2016/02/14/boston-breaks-valentine-day-cold-weather-record/aLJKvKjOLYRescV6mq5y1O/story.html>.

2018.^{23,24} Extreme precipitation events, including both rain and snowfall, are projected to increase in nearly every part of the globe by the end of this century, and the increase in intensity and frequency is already evident.²⁵ The recent winter storm and polar vortex in Texas illustrate electric utility vulnerability when insufficiently prepared for extreme weather and temperature, and the associated risks to people and stability of the grid. With recovery efforts ongoing and the full extent of the devastation yet known, the lack of preparedness was deadly, and the full financial cost of recovery will be substantial.

Tropical Storm Irene, which brought intense rainfall and caused inland flood impacts, resulted in power outages for as many as 600,000 residents statewide.²⁶ Massachusetts also experienced significant power outages as a result of Winter Storm Stella in March 2017, with reports of 60,000 to 70,000 power outages statewide.²⁷ Also in 2017, a tornado caused severe damage to Eversource Energy infrastructure in Conway.²⁸ In late February 2019, ferocious winds across parts of Massachusetts—including gusts approaching 70 miles an hour in Cambridge and near the Blue Hills—left more than 50,000 customers without power, with the most severe outages in western Massachusetts. Just last April an extreme storm left more than 112,000 people without power statewide, and then later in the year more than 3,300 customers were without power on Christmas Day due to high winds.^{29,30} In addition to causing dangerous outages, these storms also

²³ <https://resilientma.org/changes/extreme-weather>

²⁴ <https://www.climate.gov/news-features/event-tracker/nor%E2%80%99eastern-pummel-us-northeast-late-winter-2018>

²⁵ <https://www.carbonbrief.org/explainer-what-climate-models-tell-us-about-future-rainfall>

²⁶ WBUR, *Irene Brings Widespread Outages, Flooding To Mass.* (Aug. 28, 2011), <http://legacy.wbur.org/2011/08/28/hurricane-irene-outages>.

²⁷ http://www.masslive.com/weather/index.ssf/2017/03/60000_power_outages_reported_a.html; <https://patch.com/massachusetts/boston/massachusetts-weather-forecast-final-look-very-treacherous-storm>;

http://www.masslive.com/weather/index.ssf/2017/03/how_much_snow_did_we_get_durin.html.

²⁸ See Eversource Energy, D.P.U. 19-SQ-14, Appendix 7

<https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/11892540> page 25

²⁹ Patriot Ledger, *Heavy rain, high winds cut power in Quincy and most South Shore towns* (April 13, 2020)

<https://www.patriotledger.com/entertainmentlife/20200413/heavy-rain-high-winds-cut-power-in-quincy-and-most-south-shore-towns>

³⁰ WBUR, *High Winds Cause Power Outages Across Mass.* (Dec. 25, 2020).

<https://www.wbur.org/news/2020/12/25/weather-christmas-storm>

cost utilities and customers millions of dollars every year above and beyond storm costs embedded in base rates.^{31,32}

The effects of storms along the coastline, which is already highly vulnerable to damage from nor'easters and tropical storms, will be exacerbated by sea level rise. Sea levels rose about nine inches over the entire 20th century. New projection data suggests we may see another nine inches of sea level rise by 2030 over 2013 levels, more than three times faster.³³ By 2070, it could be three feet higher.³⁴ Storm surge damage from extreme events is only expected to increase in the future as sea levels rise.

Sea level rise and storm surge put low-lying infrastructure at risk, which can lead not only to infrastructure damage, but to other consequences like power outages and the associated human impacts. Although Hurricane Sandy in 2012 was largely considered to have missed the Commonwealth, it still caused a peak of nearly 400,000 power outages in Massachusetts—damage that was minimal in comparison to cities like New York.³⁵ More recently, in March 2018, Massachusetts was hit by 3 nor'easters in 11 days. According to MEMA, the first nor'easter left over 451,000 homes and businesses without power, with wind gusts up to 93 mph in parts of the state followed by astronomical high tides.³⁶ Some residents in Scituate were urged to evacuate

³¹ See National Grid, D.P.U. 18-150 at

<https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/11262053> page 398:

a. Above and beyond storm costs embedded in base rates, between March 2017 and April 2018, there were eight storms that qualified for cost recovery under the storm fund, and three storms (Winter Storms Riley and Quinn and Tropical Storm Philippe) that exceeded the \$30.0 million cap for recovery through the storm fund (Exhs. NG-RRP-1, at 57-60; AG 36-7, Att.). The Company calculates incremental storm costs of approximately \$144.2 million (net of the \$1.5 million per storm deductible) for these eleven storms.

³² See Eversource, D.P.U. 17-05 at

<https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/9171660> page 551-555:

a. In aggregate, in 2017, Eversource collected \$5.075 million per year in annual base distribution rate contributions to the storm fund. Eversource received approval to increase the aggregate annual base distribution rate contribution to the storm fund by \$4.925 million to \$10.0 million (Exhs. ES-DPH-1, at 112, 116-118). Eversource states that the current annual storm fund contribution of \$5.075 million is insufficient as compared to actual storm cost experienced for 21 storms in the six-year period since 2010 (Exh. ES-DPH-1, at 115-116).

³³ “Climate Ready Boston projections indicate that Boston’s sea levels are likely to rise (from 2013 levels) by 9 inches as early as 2030 if emissions continue at their current pace, 21 inches as soon as 2050, and 36 inches as soon as 2070.” Coastal Resilience Solutions for East Boston and Charlestown, Final Report, September 2020;

https://www.boston.gov/sites/default/files/file/2020/10/Final_North%20End%20Downtown%20Final_EMBARGO_0.pdf

³⁴ Climate Change and Sea Level Rise Projections for Boston, The Boston Research Advisory Group (BRAG) Report 2016, https://www.boston.gov/sites/default/files/document-file-12-2016/brag_report_-_final.pdf.

³⁵ MASSLIVE.COM, *Western Massachusetts escapes Hurricane Sandy's wrath, but impact elsewhere still being felt* (Oct. 31, 2012),

http://www.masslive.com/news/index.ssf/2012/10/western_massachusetts_escapes.html.

³⁶ CBS BOSTON, *More Than 450K Without Power As Nor'easter Slams Massachusetts* (Mar. 2, 2018), <https://boston.cbslocal.com/2018/03/02/march-noreaster-power-outages-mema/>.

before the high tide arrived,³⁷ while Boston experienced its third-highest tide on record at 14.67 feet and flooding reached a depth of 3 feet in some coastal areas, leaving parts of the North End, Downtown, Seaport, and East Boston severely flooded. The second nor'easter brought more coastal flooding and left over 300,000 MA customers without power.³⁸ According to an Eversource representative, the damage to the system was so severe that in some cases, it necessitated rebuilding entire sections of the local electric system.³⁹ The third nor'easter hit hardest in Barnstable County, where heavy, wet snow knocked down trees and power lines⁴⁰ and over 190,000 customers lost power across the state.⁴¹

B. *The Commonwealth's Efforts on Climate Adaptation*

As we begin to experience the effects of climate change, and as certainty about future impacts grows, so too has the Commonwealth's commitment to adapt. We can no longer rely on historical trends to inform our decision-making, especially where it concerns critical infrastructure that has implications for public health and safety. Indeed, according to the *Massachusetts Climate Change Adaptation Report*, "key infrastructure resources were sited and designed based on historic weather, sea level, and flooding patterns. Climate change impacts are predicted to result in significant changes to these variables making many infrastructure assets in Massachusetts vulnerable to future damage."⁴²

Various expert reports which project future climate conditions are readily available, and updated predictions are being developed on a continual basis. A few examples are:

- City of Boston, *Climate Change and Sea Level Rise Projections for Boston: the Boston Research Advisory Group Report* (June 1, 2016);⁴³
- U.S. Department of Energy, *Climate Change and the Electricity Sector: Guide for Climate Change Resilience Planning* (Sept. 2016);⁴⁴

³⁷ BOSTON.COM, *The latest reports, photos, video, and info on Saturday's nor'easter in Massachusetts* (Mar. 3, 2018), <https://www.boston.com/news/weather/2018/03/02/live-blog-boston-massachusetts-friday-noreaster-storm-photos-videos-march-2-3-2018>

³⁸ WBUR, *Widespread Power Outages After Latest Nor'easter Moves Through* (Mar. 08, 2018), <https://www.wbur.org/news/2018/03/08/second-noreaster-march>.

³⁹ WBUR, *Widespread Power Outages After Latest Nor'easter Moves Through* (Mar. 08, 2018), <https://www.wbur.org/news/2018/03/08/second-noreaster-march>.

⁴⁰ BOSTON GLOBE, *Thousands are without power as Mass. cleans up from nor'easter* (Mar. 14, 2018), <https://www2.bostonglobe.com/metro/2018/03/14/nearly-customers-without-power-mass-cleans-from-nor-easter/HgAbT4tb7xdOyKVdlWOzJL/story.html>.

⁴¹ WBUR, *Mass. Gets Whacked By 3rd Nor'easter In Less Than 2 Weeks* (Mar. 13, 2018), <https://www.wbur.org/news/2018/03/13/noreaster-part-three>.

⁴² EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS AND THE ADAPTATION ADVISORY COMMITTEE, *Massachusetts Climate Change Adaptation Report* at 53 (Sept. 2011), <http://www.mass.gov/eea/docs/eea/energy/cca/eea-climate-adaptation-report.pdf>.

⁴³ https://www.boston.gov/sites/default/files/document-file-12-2016/brag_report_-_final.pdf.

⁴⁴ https://www.energy.gov/sites/prod/files/2016/10/f33/Climate%20Change%20and%20the%20Electricity%20Sector%20Guide%20for%20Climate%20Change%20Resilience%20Planning%20September%202016_0.pdf.

- U.S. Department of Energy, *Quadrennial Energy Review, Chapter 4: Ensuring Electricity System Reliability, Security and Resilience* (2017);⁴⁵
- Rhodium Group, prepared for the U.S. Department of Energy, *Assessing the Effect of Rising Temperatures: The Cost of Climate Change to the U.S. Power Sector* (Jan. 2017);⁴⁶
- Commonwealth of Massachusetts, *Massachusetts State Hazard Mitigation and Climate Adaptation Plan* (Sept. 2018);⁴⁷
- U.S. Global Change Research Program, *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* (2018),⁴⁸ including *Chapter 4: Energy Supply, Delivery and Demand*;⁴⁹ and
- Intergovernmental Panel on Climate Change, *Summary for Policymakers of IPCC Special Report on Global Warming of 1.5C* (2018)⁵⁰ and *Assessment Report 5 Chapter 7: Energy Systems*.⁵¹
- Intergovernmental Panel on Climate Change, *Long-term Climate Change: Projections, Commitments and Irreversibility* (2018)⁵²

With respect to the vulnerability of utilities and infrastructure to climate change, the *Massachusetts State Hazard Mitigation and Climate Adaptation Plan* states the following: “[s]evere weather can cause power outages from trees that fall during heavy snow and strong wind events. Severe ice events can take down transmission and distribution lines. The severe weather can impair a utility’s ability to rapidly repair and recover the system.”⁵³ Further:

The most common problem associated with severe weather is loss of utilities. Severe windstorms causing downed trees can create serious impacts on power and aboveground communication lines. High winds caused one of the 24 NERC-reported electric transmission outages between 1992 and 2009, resulting in disruption of service to 225,000 electric customers in the Commonwealth . . .

⁴⁵ <https://www.energy.gov/sites/prod/files/2017/02/f34/Chapter%20IV--Ensuring%20Electricity%20System%20Reliability%2C%20Security%2C%20and%20Resilience.pdf>.

⁴⁶ https://rhg.com/wp-content/uploads/2017/01/RHG_PowerSectorImpactsOfClimateChange_Jan2017-1.pdf.

⁴⁷ <https://www.mass.gov/files/documents/2018/10/26/SHMCAP-September2018-Full-Plan-web.pdf>.

⁴⁸ <https://nca2018.globalchange.gov/downloads/>.

⁴⁹ https://nca2018.globalchange.gov/downloads/NCA4_Ch04_Energy_Full.pdf.

⁵⁰ https://www.ipcc.ch/site/assets/uploads/2018/10/SR15_SPM_version_stand_alone_LR.pdf.

⁵¹ https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter7.pdf.

⁵² https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter12_FINAL.pdf

⁵³ COMMONWEALTH OF MASSACHUSETTS, *Massachusetts State Hazard Mitigation and Climate Adaptation Plan* at 337 (Sept. 2018).

During this period, lightning caused nearly 25,000 disruptions . . . Downed power lines can cause blackouts, leaving large areas isolated. Loss of electricity and phone connections would leave certain populations isolated because residents would be unable to call for assistance. Additionally, the loss of power can impact heating or cooling provision to citizens (including the young and elderly, who are particularly vulnerable to temperature-related health impacts). Utility infrastructure (power lines, gas lines, electrical systems) could suffer damage, and impacts can result in the loss of power, which can impact business operations. After an event, there is a risk of fire, electrocution, or an explosion.⁵⁴

There are currently climate adaptation planning efforts taking place across the Commonwealth at both the state and local level. In 2008, then-governor Deval Patrick signed into law the Global Warming Solutions Act (“GWSA”),⁵⁵ which established statewide greenhouse gas emissions reduction targets, including a 25 percent reduction from all sectors of the economy below the 1990 baseline emission level by 2020 and at least an 80 percent reduction by 2050. The GWSA also amended the Massachusetts Environmental Policy Act (“MEPA”) to require that in issuing permits, licenses, and other administrative approvals and decisions, the respective agency, department, board, commission, or authority must consider reasonably foreseeable climate change impacts such as predicted sea level rise.

In 2016, Governor Charlie Baker signed Executive Order No. 569 (“EO 569”), which established an integrated climate change strategy for the Commonwealth requiring, among other things, the promulgation of regulations to implement the GWSA, as well as coordination and consistency among new and existing efforts to mitigate and reduce greenhouse gas emissions and build resilience and adapt to the impacts of climate change.⁵⁶ With respect to climate adaptation, EO 569 requires the state to develop a climate adaptation plan, a technical assistance program for municipalities to assess local climate vulnerabilities, and a state agency directive to evaluate how their policies, programs, and assets may be vulnerable to predicted climate change impacts.

The Massachusetts Legislature subsequently passed the 2018 “Environmental Bond Bill,” signed into law as chapter 209 of the Acts of 2018, which codified many of the provisions of EO 569, including the requirement to develop a climate adaptation plan, among other provisions.⁵⁷ In September 2018, the state released its climate adaptation plan, which “accounts for projected changes in precipitation, temperature, sea level rise, and extreme weather events to position the Commonwealth to effectively reduce the risks associated with natural hazards and the effects of

⁵⁴ COMMONWEALTH OF MASSACHUSETTS, *Massachusetts State Hazard Mitigation and Climate Adaptation Plan* at 370 (Sept. 2018).

⁵⁵ 2008 Mass. Acts 298.

⁵⁶ Mass. Exec. Order No. 569 (Sept. 16, 2016).

⁵⁷ 2018 Mass. Acts 209.

climate change.”⁵⁸ Further bills filed in the 2019-2020 session sought to address the issue of utility adaptation, with one bill being favorably reported out of committee.⁵⁹

Climate vulnerability assessments are essential for helping government entities prioritize limited resources and identify climate adaptation measures. However, utilities are often left out of these assessments because state and local governments rarely have access to the necessary data and information, leaving a critical gap in the Commonwealth’s ongoing adaptation efforts. To protect the public from the catastrophic impacts of climate change on gas, electric, and water utilities, utility providers need to undertake vulnerability assessments and adaptation planning, a fact that has been recognized since at least 2011.⁶⁰

The scientific predictions around climate change, which are already used in other state planning contexts, must be incorporated in utility company plans. This is particularly timely given the state’s ongoing efforts under EO 569 to develop and release statewide projection data on climate impacts including increases in precipitation, heat, and sea level rise. A consistent, statewide dataset will be integral for establishing a climate adaptation framework for energy infrastructure.

C. Utility Efforts on Climate Adaptation

We know that infrastructure that has historically been safe from extreme weather events cannot be assumed to be safe from future events. The Commonwealth’s utility providers have already incurred significant costs associated with climate change. National Grid reported that between February 2010 and February 2016, storms in Massachusetts resulted in approximately \$252 million in incremental storm costs.⁶¹ For their financial year ending in March 2018, National Grid reported incurring about \$184 million in storm-related costs in the U.S., including in Florida, New York and the Northeastern states.⁶² Similarly, in 2018, storms resulted in storm restoration costs of approximately \$94 million in Massachusetts for Eversource.⁶³ In 2019, several major

⁵⁸ COMMONWEALTH OF MASSACHUSETTS, *Massachusetts State Hazard Mitigation and Climate Adaptation Plan* at 2 (Sept. 2018).

⁵⁹ An Act establishing the commission for a climate-ready Commonwealth, H.B. 825, 190th Gen. Ct. of Mass. (2019)

⁶⁰ EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS AND THE ADAPTATION ADVISORY COMMITTEE, *Massachusetts Climate Change Adaptation Report* at 57 (Sept. 2011) (identifying an understanding of climate-related threats to utilities as one of the Commonwealth’s long-term strategies for climate adaptation and noting that such climate vulnerability assessments are especially important “given the size of capital and operational investments in utilities infrastructure, and support facilities with long life-spans.”).

⁶¹ NATIONAL GRID, Annual Report 2016 at 179, http://investors.nationalgrid.com/~/_media/Files/N/National-Grid-IR/reports/2016/national-grid-plc-annual-report-and-accounts-2015-16.pdf.

⁶² NATIONAL GRID, Annual Report and Accounts 2017/18 at 113, <https://www.nationalgrid.com/document/116181/download>.

⁶³ EVERSOURCE ENERGY, 2018 Annual Report at 79, <https://www.eversource.com/content/docs/default-source/Investors/annual-report.pdf>.

storms caused extensive damage to NSTAR's distribution infrastructure, resulting in \$126 million in deferred storm restoration costs.⁶⁴

As climate change continues, extreme weather events are predicted to become more frequent and more severe. National Grid acknowledges that "[t]he most significant climate-related exposure we face in the short term is in relation to winter storms in the US,"⁶⁵ while Eversource states that

The effects of climate change, including severe storms, could cause significant damage to any of our facilities requiring extensive expenditures, the recovery for which is subject to approval by regulators. Climate change creates physical and financial risks. Physical risks from climate change may include an increase in sea levels and changes in weather conditions, such as changes in precipitation and extreme weather events including drought. Customers' energy needs vary with weather conditions, primarily temperature and humidity.⁶⁶

Fortunately, the costs of extreme weather events can be reduced through smart planning. Some utility providers, including Consolidated Edison, have already begun to consider how climate change will impact service reliability, infrastructure, and operations. Such planning first requires an understanding how climate change effects, including temperature change and variability, precipitation, humidity, sea level rise and extreme weather events, will impact utility assets, service demand and operations. Then a utility can identify and implement measures such as load relief planning, grid modernization, network redundancy, cooling system upgrades, best practices for vegetation management, sustainable and storm-resistant design, among others. By taking climate change into account when making plans for the future, communities will be better prepared to invest in cost-effective, proactive hazard mitigation strategies.

One challenge is a lack of consistent effort among utility providers to date, highlighting the need for a comprehensive and uniform framework for climate vulnerability and adaptation that provides clarity and certainty to utility providers and customers alike. Utilities raise uncertainty in climate change forecasts as a challenge in adaptation planning, on the theory that one cannot adapt to sea level rise, for example, if we don't know how fast it will rise. However, we do know what kinds of impacts climate change will cause, if not the exact scope and timing of those impacts; we know we will see the seas rise several feet, we just don't know how long it will take. Knowing that, utilities can create flexible resilience pathways with trigger points to help mitigate some of that uncertainty while still creating a plan. Flexible resilience pathways identify several possible future climate scenarios and create plans to adapt to each, using predetermined trigger points to initiate implementation of a plan.

⁶⁴ NSTAR, Annual Report, 2019, at page 123.14
<https://www.mass.gov/doc/nstar-ar-2019/download>

⁶⁵ National Grid, Annual Report and Accounts 2017/18 at 194,
<https://www.nationalgrid.com/document/116181/download>.

⁶⁶ EVERSOURCE ENERGY, 2018 Annual Report at 29, <https://www.eversource.com/content/docs/default-source/Investors/annual-report.pdf>.

The Climate Change Vulnerability Study completed by Consolidated Edison in December 2019 is one such example of planning that acknowledges the uncertainties and is nevertheless able to navigate a flexible path forward.⁶⁷ ConEdison’s flexible approach relies on monitoring indicators related to climate conditions and predetermined thresholds to determine when to change approaches. This allows ConEdison to neither put off addressing inevitable risk, nor commit to unnecessarily safe and expensive strategies.

D. Past DPU Actions Related to Climate Adaptation

The DPU should take a leadership role in requiring utilities to assess climate vulnerability and necessary adaptation, and has previously exercised its regulatory authority for similar purposes. In 2014, the DPU issued an order requiring electric distribution companies to develop and implement ten-year grid modernization plans, which among other benefits, increases the reliability and resiliency of electricity service in the face of extreme weather and addresses climate change by meeting clean energy requirements.⁶⁸

More recently, the DPU required Eversource to take concrete steps towards identifying climate vulnerabilities and necessary adaptation measures. Determining that, “consistent with [its] regulatory objectives,” it was appropriate to establish performance metrics in several categories, including “strategic planning for climate adaptation,” to measure the full range of benefits that accruing under Eversource’s Performance Based Ratemaking system, the DPU required that Eversource “shall develop metrics and appropriate benchmarks to measure progress towards climate adaptation and greenhouse gas reductions.”⁶⁹

Specifically, consistent with their obligation to provide a safe and reliable electric system, the DPU required Eversource to “conduct their own climate adaptation study to identify those areas under [Eversource’s] control that are most vulnerable to climate change and could jeopardize system reliability.”⁷⁰ The DPU found that requiring Eversource to develop a climate adaptation plan was “within [Eversource’s] control, in line with current emergency response planning, and in the public interest,” and that the process would “help guide future infrastructure investments and advance the Commonwealth’s clean energy goals.”⁷¹ The DPU also found that the “establishment of metrics to measure progress towards climate adaptation and greenhouse gas reductions is reasonable and appropriate” because “[Eversource] [is] obligated to make progress towards climate adaptation and greenhouse gas reductions” under both G.L. c. 30, § 61 and EO 569.⁷²

⁶⁷ CONEDISON, INC., Climate Change Vulnerability Study, December 2019, <https://www.coned.com/-/media/files/coned/documents/our-energy-future/our-energy-projects/climate-change-resiliency-plan/climate-change-vulnerability-study.pdf?la=en>

⁶⁸ See D.P.U. 12-76-B (June 12, 2014),

<https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/9235208> (“It is essential that electric distribution companies maximize their use of technologies to reduce outages and speed restoration, especially after major weather events. Companies should prioritize technologies that will: (1) make further progress in meeting the Department’s service quality goals; (2) reduce the numbers and duration of outages due to extreme weather . . . and (3) enhance resiliency in the face of climate change.”).

⁶⁹ D.P.U. 17-05, *Order Establishing Eversource’s Revenue Requirement* at 407 (Nov. 30, 2017).

⁷⁰ *Id.* at 411.

⁷¹ *Id.* at 411.

⁷² *Id.* at 411.

Therefore, the DPU directed Eversource “to develop a climate adaptation plan for their assets, including an assessment of the potential risk to these assets from climate change (e.g., risks to the underground system from sea level rise, emergency response plans for severe weather, etc.).”⁷³ Within 90 days of the DPU’s order, Eversource was required to submit “a proposed climate adaptation plan designed to inventory and address [Eversource’s] at risk assets and the emissions from those assets,” the results of which “will be used to develop future metrics and benchmarks to measure [Eversource’s] progress towards climate adaptation and greenhouse gas reductions.”⁷⁴

Notably, in requiring Eversource to develop a climate adaptation plan, the DPU acknowledged that “activities and commitments that advance clean energy development and address climate change are important components” of the analysis of the Section 96 factor regarding long-term strategies to provide a reliable, cost-effective energy delivery system.⁷⁵ The DPU noted the “number of legislative and administration policy initiatives designed to address climate change and foster a clean energy economy,” including the Green Communities Act; the Global Warming Solutions Act; the Green Communities Act Expansion; § 83 of the Global Warming Solutions Act; § 83A of the Green Communities Expansion Act; and Executive Order No. 569 (Establishing an Integrated Climate Change Strategy for the Commonwealth).⁷⁶

Climate adaptation requires a holistic approach and cannot be successfully achieved on an ad hoc basis.⁷⁷ A statewide climate adaptation policy developed and implemented by the DPU, rather than individual orders, is necessary to ensure that requirements are clear and consistently applied, allow utilities to operate on a level playing field, and adequately safeguard public safety and reliability of service.

3. Request for Climate Adaptation Planning

Recognizing the need for comprehensive utility adaptation planning, the DPU should exercise its authority to adopt and amend regulations to ensure resilient, safe and reliable utility service in the face of a changing climate.⁷⁸ CLF offers the new and amended regulations attached below as Appendices A and B as a regulatory scheme for a more climate resilient utility system by requiring utility companies to create and follow climate adaptation and hazard mitigation plans.

CLF recommends that the DPU convene one or more technical conferences with the electric distribution companies, local distribution companies, the Attorney General of the Commonwealth of Massachusetts, and other stakeholders to discuss the content of new and amended regulations. Through one or more rulemaking proceedings, the DPU can and should assess climate vulnerability and require utilities to compile existing information on and predictions of future natural hazards; prepare plans to ensure infrastructure is built, operated, and maintained to cope with future hazards; and implement those plans to ensure safe and reliable provision of

⁷³ *Id.* at 411-412.

⁷⁴ *Id.* at 412.

⁷⁵ *Id.* at 40.

⁷⁶ *Id.* at 374.

⁷⁷ Though Eversource did comply with the order and created a climate adaptation plan, that plan lacked the breadth, specificity, and commitments necessary to adequately adapt Eversource’s assets and operations for climate change.

⁷⁸ M.G.L. c. 30A, §4; 220 CMR 2.00.

service. Specifically, each utility should be required to develop and implement a hazard mitigation and climate adaptation plan detailing their plans to modify operations, prioritize upgrades, relocate or protect infrastructure to withstand extreme weather events, and to prepare a corresponding disaster response plan to account for future climate predictions. These plans should form the basis for a larger effort by utility companies to incorporate climate change considerations into their infrastructure investment decisions. As discussed above, failure to engage in climate adaptation planning would be both imprudent and unreasonable, in violation of applicable DPU standards.

Utilities are already required to have Emergency Response Plans, which set out how that utility would respond to storms or similar events.⁷⁹ While these plans are extremely important, emergency preparedness requires mitigation of storm impacts in addition to plans for responding when a storm occurs. These plans have so far only focused on short-term emergency response, rather than long-term measures to proactively address threats to utility infrastructure, including threats posed by climate change, because DPU has failed to require utilities to include such information. DPU should require that utilities separately prepare Hazard Mitigation and Climate Adaptation Plans that include an evaluation of climate risks to existing utility infrastructure, and be based on studies that incorporate future natural hazards to inform infrastructure development, operation, and maintenance decisions to ensure the greatest possible future reliability.

Such studies and plans should include these main elements: (1) they should incorporate both hazard mitigation and disaster response planning efforts, which should include an evaluation of operations and infrastructure and a timeline for modifying operations and upgrading infrastructure to meet resiliency standards;⁸⁰ (2) they should be based on future predictions of climate, including temperature, humidity, precipitation, sea level rise, and extreme weather, rather than historic observations; (3) they should be created in coordination with other utility companies, state and city officials and impacted environmental justice communities, and with opportunity for input by all impacted stakeholders, so as to form a coherent overarching plan for utility security in the Commonwealth; and (4) they should incorporate a review at regular intervals to reflect new information on climate predictions as it becomes available and to assess the adequacy of mitigation planning.

The hazard mitigation planning and evaluation of such plans listed above as element 1 should include, for each climate change impact listed above in element 2, the following: (1) screening and prioritization of operations, planning and asset types, (2) identification of adaptation options, (3) costs and benefits analysis of adaption options for a range of possible climate futures, and (4) a plan for implementation of adaption options over time. Such plans for adaptation implementation can be flexible and incorporate adaptive implementation pathways to account for future uncertainty without further deferring needed planning now.

Hazard Mitigation and Climate Adaptation Plans should be made public to inform customers how the utility company plans to prioritize its resources and what its contingency plans

⁷⁹ G.L. c. 164, § 85B(a) (“Each electric distribution, transmission and natural gas distribution company conducting business in the commonwealth shall annually . . . submit to the department an emergency response plan . . . designed for the reasonably prompt restoration of service in the case of an emergency event, which is an event where widespread outages have occurred in the service area of the company due to storms or other causes beyond the control of the company.”).

⁸⁰ see i.e. CONEDISON, INC., Climate Change Vulnerability Study, December 2019, *supra*

are. This would encourage collaboration between companies and ensure the implementation of best practices. The plans should also be reviewed on a periodic basis to incorporate new scientific information, updated predictions, and an evaluation of the success of adaptation and hazard mitigation strategies. Finally, plans, while preparing for future climate conditions and doing so in a timely manner, should not be allowed to degrade the existing environment without due consideration of alternatives. Hazard mitigation and adaptation measures should be evaluated not only on their lifecycle cost-effectiveness and ability to withstand future weather events but also on their impact on the current environment.

Hazard Mitigation and Climate Adaptation Plans should also be created in collaboration with communities most impacted by the effects of climate change, including environmental justice communities. The DPU should require utility companies to periodically develop and file community engagement plans for how they will commit to such engagement, including assessments of effectiveness of past engagement and any corresponding improvements. Such community engagement plans must be comprehensive, enforceable, and iterative, as laid out in Appendix A.

Without long-term hazard mitigation and climate adaptation planning that considers future projections, the DPU cannot adequately evaluate service reliability and prudence of expenditures or rates. The DPU must therefore take Hazard Mitigation and Climate Adaptation Plans, and adherence thereto, into consideration when adjudicating ratemaking proceedings, approving contracts, and engaging in other review in which reliability or prudence of expenditures or rates related to resilience are at issue. The proposed regulations in Appendices below additionally restrict the ability of an electric distribution company or local distribution company to obtain contract approval and rate increase requests without first showing that the approval will result in resilient infrastructure. Finally, the regulations create new standards for tariffs, Gas Adjustment Factors, long term contracts for renewable energy, standards of performance for emergency preparation and restoration of service for electric distribution and gas companies, and others, as they relate to climate adaptation planning.

4. Exposure to Liability if Utilities Fail to Adapt

Given that the threats posed by climate change to utility infrastructure are well known and reasonably foreseeable, failure to adapt to these threats exposes utility companies to legal liability if problems arise or disasters occur. Utilities increasingly owe a duty of care with respect to adapting infrastructure and operations to climate change to ensure continued service and safety as the threats become more foreseeable.

An example of utility liability for failure to adapt to known threats is the case of PG&E in California. In 2018, the Camp Fire in Northern California burned more than 153,000 acres, destroying almost 14,000 homes and taking 85 lives.⁸¹ The company has admitted its equipment likely sparked the destructive wildfire, stating that “the company believes it is probable that its

⁸¹ LOS ANGELES TIMES, *PG&E admits its equipment likely sparked California’s most destructive wildfire* (Feb. 28. 2019), <https://www.latimes.com/local/lanow/la-me-pge-paradise-fire-20190228-story.html>.

equipment will be determined to be an ignition point of the 2018 Camp fire.”⁸² Numerous lawsuits have been filed accusing the utility of failing to properly maintain its equipment, resulting in loss of life and property.⁸³ The company has filed for bankruptcy due to the losses from the fire, a move the company says was necessary to allow it to continue operating while it comes up with a plan to pay its debts—it was the “only way to deal with billions of dollars in potential liabilities from the series of deadly wildfires.”⁸⁴ PG&E has blamed its wildfire costs in part on climate change, which scientists say is contributing to bigger and hotter fires in California and across the Western United States.⁸⁵

As climate change risks become better understood and more foreseeable, utilities will become increasingly liable for failing to adapt. Especially as other utilities engage in climate resilience planning, demonstrating that it is feasible and setting a new industry standard, those that do not may be found in breach of industry custom.

5. Useful Examples from Other States

Massachusetts can look to other states for examples of proactive climate adaptation planning for utilities. These models may be useful as the DPU moves through the rulemaking process, as it can leverage the research and guidance that have been developed through those processes. New York and California provide particularly useful examples, and are discussed briefly below.

New York

After Superstorm Sandy, Con Edison—the largest utility provider in New York State—brought a rate case before the New York Public Service Commission (“PSC”) calling for a \$2.4 billion spending increase, including \$1 billion in storm hardening in response to the damage caused by Superstorm Sandy and other extreme weather events. A Storm Hardening and Resiliency Collaborative, which considered, among other things, appropriate design standards for Con Edison’s resiliency and storm-hardening projects, was formed during the proceedings to negotiate and implement the terms of a settlement agreement. The PSC’s final order required Con Edison to implement state-of-the-art measures to plan for and protect its electric, gas, and steam systems from the effects of climate change and called for the continuation of the Collaborative to finalize recommendations. The PSC’s order confirmed Con Edison’s commitment to conduct a Climate Change Vulnerability Study to examine how to prepare for rising sea levels, more intense storms, heat waves, and other potential climate impacts.

Importantly, the PSC broadened the obligation to address these considerations to all utilities under its authority, stating that “we expect the utilities to consult the most current data to

⁸² LOS ANGELES TIMES, *PG&E admits its equipment likely sparked California’s most destructive wildfire* (Feb. 28. 2019), <https://www.latimes.com/local/lanow/la-me-pge-paradise-fire-20190228-story.html>.

⁸³ LOS ANGELES TIMES, *PG&E admits its equipment likely sparked California’s most destructive wildfire* (Feb. 28. 2019), <https://www.latimes.com/local/lanow/la-me-pge-paradise-fire-20190228-story.html>.

⁸⁴ LOS ANGELES TIMES, *PG&E admits its equipment likely sparked California’s most destructive wildfire* (Feb. 28. 2019), <https://www.latimes.com/local/lanow/la-me-pge-paradise-fire-20190228-story.html>.

⁸⁵ LOS ANGELES TIMES, *PG&E admits its equipment likely sparked California’s most destructive wildfire* (Feb. 28. 2019), <https://www.latimes.com/local/lanow/la-me-pge-paradise-fire-20190228-story.html>.

evaluate the climate impacts anticipated in their regions over the next years and decades, and to integrate these considerations into their system planning and construction forecasts and budgets.”⁸⁶

Con Edison released their Climate Change Vulnerability Study in December, 2019, with the goals of better understanding the climate science and predictions, analyze potential impacts on operations, planning, and assets, and review options to address those impacts. The study also announced the anticipated release of the following Climate Change Implementation Plan in 2020. The study reviews future scenarios through 2080, and recommends a flexible adaptation pathways approach to manage the uncertainty and maintain tolerable levels of risk.⁸⁷

The study includes detailed analysis of threats and associated adaptation options for how the utility may prepare for climate change impacts in five appendices: temperature, humidity, precipitation, sea level rise, and extreme weather. For each threat, ConEd used the approach recommended above of screening and prioritizing operations and assets, identifying adaptation options, performing cost-benefit analyses for a range of climate futures, and creating a flexible plan to implement such adaption measures to correspond with evolving climate predictions.

California

The California Public Utilities Commission (CPUC) is currently engaged in rulemaking for climate vulnerability and adaptation measures that DPU could look to as a model for a comprehensive, inclusive, phased approach.

In April 2015, then-California Governor Jerry Brown issued an Executive Order, EO B-30-15, mandating that all state agencies factor climate change into planning and investment decisions.⁸⁸ E.O. B-30-15 also called for an update to the state’s “Safeguarding California Plan,” which included a series of recommendations targeted at the energy sector and called for leadership by the California Energy Commission (“CEC”) and the California Public Utilities Commission (“CPUC”) on energy sector climate adaptation.

CPUC issued an Order Instituting Rulemaking (R.18-04-019) on May 7, 2018, to “consider[] strategies to integrate climate change adaptation matters in relevant Commission proceedings,” recognizing that “[r]obust climate adaptation planning in a time of worsening climate impacts is a prudent next step to ensure the safety and reliability of all investor-owned public utilities.”⁸⁹ The order began a phased process that is now addressing electricity and natural gas utilities, and will address water and telecommunications in later phases. Two decisions have been issued in this phase, the first on definitions, sources of data, and planning and operational standards, and the second requiring utilities to file vulnerability assessments every four years.

⁸⁶ <https://www.post-gazette.com/business/powersource/2014/02/25/NY-State-Expects-All-Utilities-to-Prep-for-Climate-Change-2/stories/201402250158>

⁸⁷ CONEDISON, INC., Climate Change Vulnerability Study, December 2019, *supra*

⁸⁸ CA Executive Order B-30-15 (Apr. 29, 2015), <https://www.gov.ca.gov/news.php?id=18938>.

⁸⁹ CALIFORNIA PUBLIC UTILITIES COMMISSION, Draft *Order Instituting Rulemaking to Consider Strategies and Guidance for Climate Change Adaptation*, Agenda ID #16425 (Rev. 1) (April 26, 2018), <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M213/K503/213503721.PDF>

The decision requires the vulnerability assessments to focus on several timeframes up to 50 years out and examine climate risks to utility operations, services, and assets, and provide a range of options for how to address those vulnerabilities.⁹⁰ The assessments decision also requires utilities to file Community Engagement Plans for how they will engage with Disadvantaged Vulnerable Communities in creating their vulnerability assessments. CPUC’s robust community engagement requirements were created in collaboration with state environmental justice organizations and advocates.

6. Conclusion

In the battle against climate change, Massachusetts must be proactive, not reactive, to the impacts we know are coming. California and New York have started to set standards, but DPU has an opportunity to be a regional—and even national—model for climate resilient energy infrastructure. Utility providers in Massachusetts are in need of regulatory guidance and oversight for preparing for and adapting to climate impacts. Strong leadership from the DPU on this issue would address the current gap in utility climate adaptation efforts and complement the Baker-Polito Administration’s strong climate change leadership. CLF urges the DPU to open a rulemaking proceeding on climate vulnerability and adaptation planning.

Respectfully submitted,

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⁹⁰ CALIFORNIA PUBLIC UTILITIES COMMISSION, Rulemaking 18-04-019, *Decision on Energy Utility Climate Change Vulnerability Assessments and Climate Adaptation in Disadvantaged Communities*, Decision 20-08-046 (August 27, 2020).
<https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M346/K285/346285534.PDF>

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC UTILITIES

RULEMAKING ON UTILITY)	
CLIMATE VUNERABILITY AND)	
ADAPTATION PLANNING)	D.P.U. 21-XX
)	

APPEARANCES OF COUNSEL

Please enter our appearances on behalf of Conservation Law Foundation in the above-captioned proceeding.

Respectfully submitted,

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COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC UTILITIES

RULEMAKING ON UTILITY)	
CLIMATE VUNERABILITY AND)	
ADAPTATION PLANNING)	D.P.U. 21-XX
)	

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing documents upon the Department in accordance with the requirements of 220 CMR 1.05(1).

Respectfully submitted,

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COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF PUBLIC UTILITIES

RULEMAKING ON UTILITY)
CLIMATE VUNERABILITY AND) D.P.U. 21-XX
ADAPTATION PLANNING)
_____)

MOTION FOR ADMISSION PRO HAC VICE

The undersigned counsel for Conservation Law Foundation (“CLF”), Johannes Epke, respectfully moves for admission *pro hac vice* in the above-captioned proceedings before the Department of Public Utilities (“the Department”). In support of this motion, Mr. Epke states as follows:

1. Mr. Epke is a staff attorney with the Conservation Law Foundation. His business address is 62 Summer St., Boston, MA 02110.
2. As shown in the attached affidavit, Mr. Epke is duly licensed to practice law in the State of California and is a member of the bar in good standing of every jurisdiction where he has been admitted to practice.
3. Mr. Epke is not suspended and has never been disbarred in any jurisdiction and has not been the subject of any prior or pending disciplinary proceedings in any jurisdiction.
4. He is familiar with, and will follow, the Department’s rules, procedures, timetables, and all Massachusetts laws.

Wherefore, Mr. Epke respectfully requests that the Department permit he be admitted *pro hac vice* to appear on behalf of and act as counsel of CLF in these proceedings.

Respectfully submitted,



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Dated: March 1, 2021

APPENDIX A
Proposed New Regulations

220 CMR XX: Hazard Mitigation and Climate Adaptation Plans (DPU)

(1) Investor-owned utilities, including gas, electric, and water utilities, shall file a Hazard Mitigation and Climate Adaptation Plan (“HMCAP”) by June 1, 2022 and every five years thereafter

(2) Such HMCAPs shall include hazard mitigation and disaster response planning efforts, including an evaluation of operations and infrastructure with respect to their ability to withstand future climate impacts, and a timeline for modifying operations and upgrading infrastructure to meet resiliency standards;

(a) Any future modeling and climate impact predictions shall be based on the newest science and future predictions of climate rather than historic observations;

(b) Hazard mitigation and climate adaptation measures shall be considered for current and predicted climate impacts on temperature, humidity, precipitation, sea level rise, and extreme weather;

(c) Evaluation of hazard mitigation and climate adaptation measures shall be based on their relative cost effectiveness, ability to withstand future weather events, and impact on the current environment;

(d) Evaluation and selection of measures to mitigate hazards and adapt to climate impacts shall, to the maximum extent practicable, prioritize measures that (i) promote the preservation, protection, restoration and enhancement of the commonwealth’s natural infrastructure through nature-based solutions, (ii) account for the existing natural, built, and economic characteristics of the commonwealth’s most vulnerable areas and human populations. Adaptation measures that include the use of hard-engineered, hardscape, or gray infrastructure features shall be supported by evidence the measures will not cause or exacerbate negative environmental impacts and that alternative green or green and gray hybrid solutions are not feasible.

(3) Investor-owned utilities shall create HMCAPs in coordination with other utility companies, state and city officials and impacted environmental justice communities, with full opportunity for input by all stakeholders, so as to form a coherent overarching plan for utility security in the Commonwealth;

(a) Investor-owned utilities shall lead a community engagement process to ensure that all environmental justice populations in the Commonwealth have an opportunity to participate, and shall create and file with the Department a Community Engagement Plan at least eighteen (18) months before filing any HMCAP, which shall include: a description of all outreach efforts, including public meetings, notices thereof, and language access accommodations for low-English proficiency populations; narrative and numerical outreach goals and targets; past Community Engagement

Plans with associated evaluation and identification of measures to correct past engagement goal shortfalls or deficiencies.

(b) Within 90 days of filing of a Community Engagement Plan, the Department may require an IOU to amend their Community Engagement Plan to ensure adequate community engagement.

(c) IOUs shall include in each HMCAP a copy of the preceding Community Engagement Plan, a description of community engagement efforts undertaken according to that engagement plan and the resulting engagement, and an evaluation of such engagement measures and goals. The Department shall only accept such HMCAP upon finding that the IOU has followed the Community Engagement Plan to the extent practicable and made a good faith effort to adjust the plan as necessary to meet goals and targets. Upon finding by the Department that the IOU did not follow the Community Engagement Plan to the extent practicable or did not make good faith efforts to adjust the plan as necessary to meet goals and targets, the Department shall require the IOU to perform such community engagement necessary to meet those standards before refileing their HMCAP.

(4) The Department shall take into consideration an electric distribution company's HMCAP and compliance therewith in reviewing any request by the company that relates to the company's ability to adapt and respond to climate change, including ratemaking proceedings, requests for contract approval or rate increase, Emergency Response Plan submissions, among others.

(5) The Department shall deny all electric distribution company and local distribution company contract approval and rate increase requests absent a Department finding that such approval will result in infrastructure that is resilient to a changing climate based on best available climate science.

220 CMR XX: Electric Vehicles

The Department shall not approve installation of electric vehicle charging stations by electric distribution companies in any location absent a Department finding that such location will continue to be appropriate and will withstand impacts of climate change, including weather and flooding stressors, based on the most recent climate science.

APPENDIX B
Proposed Amended Regulations

220 CMR 5: Tariffs

5.02: Format of Tariffs, Schedules, and Contracts

(1) Form. All tariffs, schedules, and contracts shall be typewritten, printed, or otherwise legibly duplicated on paper cut or folded to letter size, eight inches to 8½ inches by 10½ inches to 11 inches. However, tariffs or schedules of express companies may be on 9½ inch x 11½ inch paper. The impression shall be on only one side of the paper, unless printed and bound. Tariffs filed pursuant to the Department's Electronic Filing Guidelines satisfy 220 CMR 5.00.

(2) Filing.

(a) Two copies of all tariffs or schedules and two copies of all contracts will be filed with the Department, unless electronically filed pursuant to 220 CMR 5.02(2)(a). One copy of all tariffs, schedules or contracts subject to the jurisdiction of the Federal Energy Regulatory Commission shall be filed for the information of the Department. Electronic Filing. Papers may be filed and signed by electronic means pursuant to the Department's Electronic Filing Guidelines. A paper filed electronically in compliance with the Guidelines is a written paper or document for purposes of 220 CMR 5.00. Letters pursuant to 220 CMR 5.03(1) or (3) may be filed electronically.

(b) The filing of a tariff, rate schedule or terms, conditions or regulations in connection therewith shall not be considered the adoption of a regulation under 220 CMR 2.00: Rules for Adopting, Amending, or Repealing

(3) Contents.

(a) Each tariff or schedule shall show prominently the name of the company, firm, association or individual responsible, together with the name of any independent agency filing the tariff or schedule and its, his, or her address.

(b) Tariffs and schedules shall show plainly all requisite detail fully to explain the basis of all charges to be made and all rules and regulations governing the same. In the case of tariffs or schedules filed by common carriers, this information shall include that required by and customarily filed with the United States Department of Transportation, Federal Energy Regulatory Commission, or the Federal Aviation Administration, whichever is appropriate. Schedules relating to gas, electric, and water companies shall show not only the price or unit upon which based, but any and all meter rentals, service charges, basis for determining demand, discounts, and other detail necessary for a complete understanding of the charges contemplated. All tariffs shall explain in plain language how rates reflect resilient infrastructure

that is built, operated, and maintained to cope with current and future projected climate based on the best available climate science.

220 CMR 6: Standard Cost of Gas Adjustment Clause

220 CMR 6.06: Gas Adjustment Factor Formulas

The GAFs incorporate on a seasonal basis changes in costs, refunds, etc., such that when a seasonal GAF (\$/therm or \$/CCF) is added to a base rate, a proper seasonal charge results. The GAFs shall be computed on a semi-annual basis using forecasts of seasonal gas costs, carrying charges, sendout volumes, and sales volumes. The GAFs shall be computed to account for natural hazards and gas infrastructure maintenance to cope with current and future hazards based on the best available climate science. Forecasts may be based on either historical data or company projections, but must be weather-normalized. Any projections must be documented in full with each filing.

220 CMR 6.11: Information Required to be Filed with Department

Information pertaining to the cost of gas adjustment shall be filed with the Department in accordance with the standardized forms provided by the Department. Required filings include a monthly report which shall be submitted to the Department on the 20th of each month, and a semi-annual GAF filing which shall be submitted to the Department at least 45 days before the date on which a new GAF is to be effective. Additionally, each company shall file with the Department a complete list by (sub)account of all gas costs claimed as recoverable through the CGAC over the previous year, as included in the annual reconciliation. This information shall be submitted with each winter season GAF filing, along with complete documentation of the reconciliation adjustment calculations, as well as additional information about hazard mitigation and climate adaptation measures.

220 CMR 17.00 Long-Term Contracts for Renewable Energy

17.05: General Criteria for Long-term Contracts and Renewable Energy Generation Sources

- (1) Long-term contracts must be with renewable energy generation sources that:
 - (a) Have a commercial operation date, as verified by DOER, on or after January 1, 2008;
 - (b) Be qualified by DOER as eligible to participate in the Renewable Portfolio Standards (RPS) program, and to sell RECs under the program, pursuant to M.G.L. c. 25A, § 11F;
 - (c) Be determined by the Department to:
 1. Provide enhanced electricity reliability within the Commonwealth of Massachusetts;
 2. Contribute to moderating system peak load requirements;

3. Be cost-effective to Massachusetts electric ratepayers over the term of the contract; and
 4. Create additional employment where feasible; ~~and~~
- (d) Be a cost-effective mechanism for procuring renewable energy on a long-term basis; ~~and~~
- (e) Be resilient to current and future climate hazards and include plans to ensure infrastructure is built, operated, and maintained to cope with current and future projected climate hazards based on best available climate science.

220 CMR 19.00 Standards of performance for emergency preparation and restoration of service for electric distribution and gas companies

19.02: Definitions

Hazard Mitigation and Climate Adaptation Plan (HMCAP) means a Company's plan to mitigate hazards and adapt to climate change, including an evaluation of operations and infrastructure with respect to their ability to withstand future climate impacts, and a timeline for modifying operations and upgrading infrastructure, as is required by 220 CMR XX.

19.03: Performance Standards for Emergency Preparation and Restoration of Service

(2) Emergency Preparation.

Each Company shall ensure that it is adequately and sufficiently prepared to prevent service outages and damage to infrastructure, and to restore service to its customers in a safe and reasonably prompt manner during an Emergency Event.

(a) For electric distribution companies, this shall include at a minimum, but not be limited to: 1. implementing all applicable components of the electric distribution company's ERP and HMCAP and related to planning and preparation for Emergency Events; 2. conducting the following on at least an annual basis: a. meetings with state and local officials to ensure effective and efficient flow of information and substantial and frequent coordination between the Company and local public safety officials, including coordination with local officials with respect to vegetation management, hazard mitigation, climate resilience planning and vulnerability assessment; and b. training and drills/exercises to ensure effective and efficient performance of personnel during Emergency Events, and to ensure that each Company has the ability to continue to provide service to the extent possible and restore service to its customers in a safe and reasonably prompt manner. 3. maintaining updated lists of local elected and appointed officials, state and local public safety officials, Life Support Customers, and all internal personnel and external entities involved in the Company's restoration efforts.

(b) For gas companies, this shall include at a minimum preparing and following written procedures consistent with those required by 49 U.S.C. §§ 60101 through 60125; 49 CFR Part 192: Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards; M.G.L. c. 164, §§ 85B and 105A; 220 CMR 69.00: Procedures for the Determination of Violations of Codes Adopted by the Department of Public Utilities Pertaining to the Safety of Pipeline Facilities and the Transportation of Gas and for Enforcement of Said Codes; Minimum Safety Standards for Liquefied Natural Gas Facilities; Minimum Safety Standards for Gas Piping Systems and 220 CMR 100.00 through 113.00. Each gas company shall include these written procedures in their respective manuals for conducting operations and maintenance activities and for emergency response, and, where appropriate, in their manuals of written procedures to minimize hazards resulting from gas pipeline emergencies, as required by 49 CFR Part 192; 220 CMR 69.00 and 220 CMR 100.00 through 113.00.

19.04: Emergency Response Plans

(1) Each Company shall submit to the Department an ERP that shall be designed to achieve safe and reasonably prompt restoration of service associated with an Emergency Event. The ERP shall include, but not be limited to, the following:

(a) identification of management staff responsible for Company operations, including a description of their specific duties; identification of the number of workers available to respond within 24 hours of an Emergency Event; and an estimation of the number of crews and full-time equivalents available to respond within 24 hours of an Emergency Event;

(b) a communications process with customers that provides continuous access to staff assistance. A Company shall provide estimated times of restoration on a website. Such information shall be prominently displayed and updated at least three times per day. A Company shall also provide estimated times of restoration at least three times per day through at least one other form of media outreach, and when requested by customers via telephone.

(c) for electric distribution companies, procedures for maintaining an updated list of Life Support Customers, including a process to immediately update a Company's Life Support Customer list when a customer notifies the Company of a medical need for electric service, communicating with Life Support Customers before, during and after an Emergency Event, providing information to public safety officials regarding the status of electric service to Life Support Customers' homes, and procedures for prioritizing power restoration to Life Support Customers;

(d) designation of staff to communicate with local officials, including public safety officials, relevant regulatory agencies, and designated Municipal Liaisons, and designation of staff to be posted at the Massachusetts Emergency Management Agency's emergency operations center;

(e) provisions regarding how the Company will assure the safety of its employees, contractors and the public;

(f) procedures for deploying Company and contractor crews, and crews acquired through Mutual Assistance Agreements to work assignment areas;

(g) identification of additional supplies and equipment needed during an emergency and the means of obtaining additional supplies and equipment; ~~and~~

(h) designation of a continuously staffed call center in the Commonwealth of Massachusetts that is sufficiently staffed to handle all customer calls for service assistance for the duration of an Emergency Event or until full service is restored, whichever occurs first. A Company with a call center within 50 miles of its service area, in operation as of January 1, 2012, shall not be required to designate an additional call center as long as the call center continues in operation. If the call center is unable to operate during an Emergency Event, the Company shall use a call center within 50 miles of the Commonwealth of Massachusetts; ~~and~~

(i): identification of applicable components of the Company's most recent HMCAP, and an explanation of how the ERP takes into account the most recent climate science in making hazard predictions and response plans.

19.05: Department Investigation into Company Performance; Remedies

(3): Recovery of Service Restoration Costs. If after investigation the Department finds that, as a result of the failure of the Company to implement its ERP ~~or HMCAP~~, the length of the Service Interruptions or outages was materially longer than they would have been but for the Company's failure, . . .

220 CMR 112.00: Design, construction, operation & maintenance and safety of liquefied natural gas plants and facilities.

112.11: Plans and Procedures

(1) At each LNG plant, the operator shall prepare, adhere to, and maintain in promptly updated form the plans and procedures required by 220 CMR 112.00 and by 49 CFR Part 193 for that plant. Such plans and procedures shall be updated at least every five years to ensure that safety and emergency planning take into consideration the latest climate science, including sea level rise and extreme weather event predictions. The plans and procedures shall be made available on request by the Department for review and inspection. In addition, each change to the plans or procedures shall be available at the LNG plant for review and inspection within 20 days after the change is made.