STATE OF MAINE
PUBLIC UTILITIES COMMISSION

MAINE PUBLIC UTILITIES COMMISSION Inquiry Regarding Improving Resiliency and Addressing Escalating Storm Costs Docket No. 2024-00191	**JOINT RESPONSE OF ACADIA CENTER, CONSERVATION LAW FOUNDATION, MAINE CONSERVATION VOTERS, NATURAL RESOURCES COUNCIL OF MAINE, SIERRA CLUB MAINE, THE NATURE CONSERVANCY IN MAINE, AND THE UNION OF CONCERNED SCIENTISTS TO NOTICE OF INQUIRY** September 4, 2024

On July 25, 2024, the Public Utilities Commission (Commission) issued a Notice of Inquiry initiating the above-captioned inquiry "to obtain information related to improving resiliency in the near-term and addressing escalating storm costs" pursuant to 35-A M.R.S. § 1303(1). Acadia Center, Conservation Law Foundation, Maine Conservation Voters, the Natural Resources Council of Maine, Sierra Club Maine, The Nature Conservancy in Maine, and the Union of Concerned Scientists submit the following comments in response to the notice.

First, the Commission and Maine's electric utilities should take a holistic and sufficiently broad approach to improving resilience. True resilience cannot be accomplished through grid hardening and tree trimming alone, but must also include the use of technologies like grid-enhancing technologies (GETs), distributed energy resources (DERs) and non-wires alternatives (NWAs).

Second, the Commission and Maine's electric utilities should conduct comprehensive cost-benefit analyses to understand the economic and environmental impacts of the various

methods for improving resiliency.[1] A fuller understanding of the costs and benefits associated with improving resilience will better equip the Commission and the electric utilities as they make decisions about how, when and where resiliency investments are made.

Third, the effects of climate change are being experienced across Maine now and will increase in the future.[2] These effects include powerful storms that are directly impacting Maine's electric grid and its resiliency.[3] The Commission and the electric utilities should take immediate action to improve resiliency and address escalating storm costs, and should incorporate long-term climate modeling and weather predictions when weighing grid investments.

1. **What technologies are Maine's utilities, or utilities in other states, using or exploring to reduce outages, restoration times, and restoration costs?**

Grid hardening (e.g. replacing older poles, vegetation management, and undergrounding lines) will play a crucial role in improving resiliency in Maine and avoiding future expenses. The increased use of tree wire in Maine is an example of an effective form of grid hardening that has improved resiliency by nearly 80% in some communities. However, there is a wide set of alternative solutions outside the traditional "grid hardening" umbrella that Maine's utilities and the Commission should also consider as a way to make the state's electric grid more resilient, as highlighted in several documents circulated by LBNL at the August 6 workshop.[4] For example,

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[1] NREL, "Valuing Resilience in Electricity Systems," September 2022, https://www.nrel.gov/docs/fy19osti/74673.pdf; LBNL, "Strategies for Valuing and Prioritizing Resilience Investments and Measuring Progress," November 2023, https://eta-publications.lbl.gov/sites/default/files/larsen_20231130.pdf.

[2] Maine Climate Council, Scientific and Technical Subcommittee, "Scientific Assessment of Climate Change and Its Effects in Maine - 2024 Update" (June 2024), https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/STS_2024_digital.pdf; Maine Climate Council, "Impacts of Climate Change Across Maine," https://www.maine.gov/climateplan/climate-impacts.

[3] Maine Monitor, "Weather-related power outages on the rise," April 26, 2024, https://themainemonitor.org/weather-related-power-outages-on-the-rise/.

[4] LBNL, "How Microgrids Can Help Communities Adapt to Wildfires," June 15, 2023, https://live-etabiblio.pantheonsite.io/sites/default/files/hanus_mitigation_20240115.pdf. https://newscenter.lbl.gov/2023/06/15/how-microgrids-can-help-communities-adapt-to-wildfires/.https://gridintegration.lbl.gov/risk-controlled-expansion-planning-distributed-resources-repair; LBNL, "Solar + Storage for Household Back-up Power," November 2023, https://emp.lbl.gov/publications/solarstorage-

customer-sited energy projects, such as behind the meter solar, battery storage, microgrids, demand response programs, and aggregated distributed energy resources in the form of virtual power plants (VPPs) and load flexibility programs, can all play an important role in improving resiliency outcomes. They can also be more cost-effective than many grid hardening solutions and have the added benefit of reducing emissions and providing energy even when the grid is not experiencing outages.

Microgrids can enable customers to island themselves from the grid during storms, allowing them to maintain power during outages. Microgrids with onsite generation can be an important solution for police, fire, hospitals, wastewater treatment facilities, and other critical infrastructure that need power at all times to provide vital services. Demand response programs and VPPs can help to shift demand throughout the day, reducing congestion and peak loads, and making power restoration easier in the case of outages. Demand management and energy efficiency also enable the limiting of non-critical loads and allow the most efficient demand required by critical loads. They can also reduce the size of rooftop solar and storage systems and other distributed energy resources that are providing on site power for critical loads during outages, as highlighted in recent LBNL reports.[5] In addition, they can help avoid outages by reducing the need for new poles, wires, and other grid infrastructure, while reducing emissions and saving customers money in many cases. For example, Maine's 2022 Energy Storage Market Assessment shows that the monetary value of the resiliency benefits of avoided outages from

household-back-power; LBNL, "Backup Power Performance of Solar-plus-Storage Systems during Routine Power Interruptions," October 2023, https://emp.lbl.gov/publications/backup-power-performance-solar-plus.

[5] LBNL, "Solar + Storage for Household Back-up Power," November 2023, https://emp.lbl.gov/publications/solarstorage-household-back-power; LBNL, "Backup Power Performance of Solar-plus-Storage Systems during Routine Power Interruptions," October 2023, https://emp.lbl.gov/publications/backup-power-performance-solar-plus.

behind the meter storage can be significant and greatly improves the benefit-cost ratio for all customers, but especially commercial and industrial customers.[6]

CMP and Versant have specific reporting requirements for DER deployment and are required to develop a high DER penetration and electrification forecast in their 10-year integrated grid plans. Under the grid plan's first priority "Reliability and resilience improvements," the Commission identified reducing barriers to promote cost-effective NWA solutions as one of three ways to accomplish this.[7] They also identified "Promote flexible management of consumers' resources and energy consumption" as one of the priorities and included "Support integration and utilization of DERS to enable load flexibility and resilience" as one of three ways to meet that priority. Thus, the Commission has sent a clear signal that the utilities should be including DERs and NWAs as important solutions to improve resilience in addition to grid hardening. The utilities should work closely with Efficiency Maine, the Governor's Energy Office, and others that are implementing programs to increase DER deployment to maximize the resilience and reliability benefits of these solutions to the grid.

At the same time, network and system platform investments, such as Volt/Var optimization technologies, distributed energy resource management systems (DERMS), early fault detection technologies, as well as comprehensive use of Advanced Metering Infrastructure data to track outages and restoration, can all improve resiliency. In areas where distribution circuits are tied, Maine utilities have found success in the utilization of supervisory control and data acquisition (SCADA) technologies, allowing outage detection and restoration to be achieved

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[6] E3 on behalf of Maine Governor's Energy Office, "Maine Energy Storage Market Assessment," 2022, https://www.maine.gov/energy/studies-reports-working-groups/current-studies-working-groups/energy-storage-assessment.

[7] Maine Public Utilities Commission, Docket No. 2022-00322, Order, July 12, 2024, at 2, 22, https://mpuc-cms.maine.gov/CQM.Public.WebUI/Common/ViewDoc.aspx?DocRefId={E0F4A790-0000-C41D-A4B4-93D007E98F0D}&DocExt=pdf&DocName={E0F4A790-0000-C41D-A4B4-93D007E98F0D}.pdf.

more rapidly. Maine utilities should continue to prioritize the deployment of these technologies in tied circuits whenever possible.

These solutions can help deliver better resiliency outcomes, often in a cheaper and less-polluting way. While rising storm costs are one driver of escalating electricity prices in Maine, a primary driver is an overreliance on natural gas as a generation resource in wholesale electricity markets.[8] Use of expensive and inefficient oil-fired generation during extreme heat and cold events also contributes to higher costs and emissions. By reducing demand for fossil fuel generation resources, non-wires solutions and distributed energy resources can help lower costs for ratepayers.

While the instant docket refers specifically to "escalating storm costs," it is vital to recognize the fact that the increasing severity and frequency of storms (both in the summer and winter) are not the only climate impacts that necessitate proactive resiliency planning and pursuit of alternative solutions. Rising temperatures and sea levels, as well as other effects of climate change, all threaten grid reliability. Moreover, it is important to note that the vast majority of outages are caused by distribution-level disruptions (compared to transmission failures or fuel supply shortages).

From a system-wide perspective and particularly at the transmission level, grid-enhancing technologies (GETs) such as Dynamic Line Ratings (DLR) could also play a role in reducing outages by unlocking more capacity on power lines.[9] By using both sensor and weather

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[8] For more information on the relationship between gas and electricity prices, see: https://www.eia.gov/todayinenergy/detail.php?id=51158 and https://www.sciencedirect.com/science/article/pii/S2589004223028031#bib36.

[9] US Department of Energy, *Grid-Enhancing Technologies: A Case Study on Ratepayer Impact*, February 2022, https://www.energy.gov/sites/default/files/2022-04/Grid%20Enhancing%20Technologies%20-%20A%20Case%20Study%20on%20Ratepayer%20Impact%20-%20February%202022%20CLEAN%20as%20of%20032322.pdf.

data, DLR provides significantly more accurate line ratings—which can be reported in intervals as brief as every five minutes—compared to traditional static line ratings, which are adjusted seasonally. DLR can help to avoid unnecessarily limiting power flow on lines during periods of congestion, which can enable greater system flexibility during extreme weather events.

2. **Should Maine explore targeted undergrounding or overgrounding of transmission and/or distribution lines in certain areas (e.g., areas with an expected vulnerability to frequent and intense storms)? Are there particular pilots or programs in other states that would be helpful to consider? Cost concerns have been raised in the past regarding undergrounding but with the increasing severity and frequency of storms, does it make sense to underground in targeted areas now? What current studies or information are available regarding the costs and benefits of undergrounding?**

As the Commission, utilities and stakeholders examine these questions, they should consider a number of factors. First, undergrounding and overgrounding costs are highly location-specific and depend on, among other things, population density, labor costs, terrain and geology. Second, there are differences in costs of undergrounding transmission lines versus distribution lines, and differences between undergrounding new lines versus converting existing overground lines to underground lines.[10] Third, undergrounding poses numerous challenges, including: longer construction time frames relative to overhead lines; longer fault location and restoration timeframes and, in turn, risk for longer power outages; increased susceptibility to flooding; and higher maintenance and repair costs, stemming in part from the need to manage vegetation to preserve access to the line.[11]

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[10] *See, e.g.,* CPUC, "CPUC Launches New Undergrounding Program to Expedite System Hardening and Enhance Climate Resilience," March 7, 2024, https://www.cpuc.ca.gov/news-and-updates/all-news/cpuc-launches-new-undergrounding-program-2024.

[11] *See, e.g.,* IEC (prepared for New York Public Service Commission and New York State Energy Research and Development Authority), "The Benefits, Costs, and Economic Impacts of Undergrounding New York's Electric Grid," June 27, 2023, https://dps.ny.gov/system/files/documents/2023/09/final-report-ny-undergrounding-2023-06-27.pdf.

Maine should explore all options for improving resiliency, including undergrounding and overgrounding. Acknowledging the differences in geography and climate change impacts between Maine and other states, Maine should consider assessments concerning undergrounding versus overgrounding in other states, including California[12] and Texas.[13] As mentioned in response to question one, the majority of outages are caused by distribution-level disruptions. In distribution system locations where outages are frequent and require repairs often, it is appropriate to explore undergrounding as an option to decrease the costs of storm recovery. A cost benefit analysis of whether storm recovery costs outweigh the costs of undergrounding distribution would be beneficial to help better understand the issue.

In Massachusetts, Eversource has developed an approach and prioritization system for determining whether undergrounding or overgrounding may be appropriate that may be useful to consider in Maine.[14] Impacted zones are placed into the following three different categories or tiers of criticality, with different rules that apply to category:

1. Impacted zones with 300,000 customer minutes of interruption (CMI) per event on average or more where undergrounding might make sense.
2. Impacted zones with 150,000 CMI per event on average or more (but less than 300,000 CMI per event) where aerial cables might be appropriate.
3. Impacted zones with less than 150,000 average CMI per event where bare wire to reconductoring with tree wire or insulated wire with resilience vegetation work could be applied.

The improvements in the System Average Interruption Duration Index (SAIDI) and per mile cost of these mitigation options are shown in the table below from the Eversource plan. The

[12] CPUC, "CPUC Launches New Undergrounding Program to Expedite System Hardening and Enhance Climate Resilience," March 7, 2024, https://www.cpuc.ca.gov/news-and-updates/all-news/cpuc-launches-new-undergrounding-program-2024; CPUC, "CPUC Undergrounding Programs Description," https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/electric-reliability/undergrounding-program-description.

[13] LBNL, "A Method to Estimate the Costs and Benefits of Undergrounding Electricity Transmission and Distribution lines," October 2016, https://live-lbl-eta-publications.pantheonsite.io/sites/default/files/lbnl-1006394_pre-publication.pdf.

[14] https://www.eversource.com/content/docs/default-source/default-document-library/eversource-esmp%20.pdf

company's plan also prioritizes investments in resilience projects in environmental justice communities and will incorporate a quantitative assessment of the impacts of resilience projects to customers in those communities. In addition, the company is proposing to expand the eligibility criteria that focuses on highly impacted zones to also focus on circuits serving a high percentage of EJ customers. Zones with more than two events in the past four years or 1,000,000 CMI per event or in circuits serving 85% or more EJ customers would be eligible for mitigative projects.

Table 10-4: Percent SAIDI Improvements and Per Mile Costs of Resilience Mitigations

Measure	All-in SAIDI Improvement	Cost ($M/mile)
Undergrounding	98%	4.0
Aerial Cable	82%	2.2
Bare wire to tree wire conversion	50%	1.1
Resilience Tree Work (RTW)	35%	0.1

National Grid in New York also proposed a Distribution Targeted Undergrounding Program of $138 million over a 10-year period that was based on the following four criteria:

- Feeder has been identified as a Worst Performing Feeder (WPF) in the past five calendar years.
- SAIFI impact of tree and wind gust events on those feeders in the last five calendar years
- Located in an area with projected wind gusts in excess of 50 miles per hour
- Located in an area with projected 0.75 inches of ice accumulation.[15]

3. What innovative customer-oriented programs exist in other states that could potentially be explored in Maine (e.g., Green Mountain Power's program involving use of Tesla Powerwall batteries during power outages in Vermont, virtual power plants)?

Customer-oriented programs can be a useful tool in grid climate resilience, as discussed above and highlighted in materials provided by LBNL at the August 6 workshop. The

[15] National Grid, "Climate Change Resilience Plan," NY PSC Docket No. 22-E-0222, November 21, 2023, https://www.nationalgridus.com/media/pdfs/our-company/national-grid-climate-change-resilience-plan_2023.pdf.

Commission should ensure that such programs are available to all customers, including low-income customers and renters.[16] Customer-oriented programs should include funding for projects that make clean, resilient energy solutions available to populations most vulnerable to the impacts of power outages today. Significant funding is available from Efficiency Maine Trust and the federal Inflation Reduction Act to invest in these solutions without increasing costs to ratepayers through rebates for energy efficiency and weatherization, Green Bank financing, the Solar for All Program, storage procurements in disadvantaged communities, and other programs. The Non-Wires Alternative program can also be used to advance these solutions.

Vermont's Green Mountain Power (GMP) provides upfront financial incentives for customers to install behind-the-meter batteries as part of its Bring-Your-Own-Device (BYOD) program. Customers can receive up to $10,500 towards their home battery purchase. By enrolling in GMP's BYOD program, customers receive an upfront payment of $850 per kW of storage enrolled for three-hour discharge and $950 per kW for four-hour discharge.[17] Enrolled batteries are then called upon by GMP to discharge power during periods of strain on the grid. GMP also oversees a Tesla Powerwall pilot program, which allows customers to lease Powerwall battery systems that can provide both power to the grid and backup power for the customer during outages. GMP provides the leased Powerwalls for either $55/month over ten years or a single $5,500 payment.[18] (GMP is a vertically integrated utility and owns and maintains the batteries enrolled in the Powerwall program). Both the BYOD and Powerwall programs are fully

[16] Individual home resilience measures can raise equity concerns as they are often structured as rebates or other incentive mechanisms which only benefit those who can afford them, and particularly usually function to exclude renters from such benefits.
[17] Green Mountain Power, "Bring Your Own Device," https://greenmountainpower.com/rebates-programs/home-energy-storage/bring-your-own-device/#:~:text=You%20save%20money%20by%20joining,kW%20for%20four%20hour%20discharge.
[18] Green Mountain Power, "Tesla Powerwall," https://greenmountainpower.com/rebates-programs/home-energy-storage/powerwall/

subscribed, with significant waiting lists to enroll, and as of 2023 the programs had saved GMP customers over $3 million per year.[19]

Connecticut's Energy Storage Solutions program also provides residential and commercial customers with incentives to install battery energy storage systems at their home or business.[20] By connecting storage systems to the electric distribution system, the program is designed to provide multiple benefits to the grid, including ancillary services, peak shaving, support for deploying DERs, and customer and community resilience. The goal is to deploy 580 MW of electric storage to the grid by 2030. Program administrators include Eversource, The United Illuminating Company, and the Connecticut Green Bank.

Rocky Mountain Power's Wattsmart Battery program offers another example of leveraging aggregated customer-owned solar and backup battery storage to provide multiple grid services including frequency response, peak reduction, contingency reserve, and backup power. The program offers upfront rebates and ongoing bill credits to participants, with over 3,200 customer batteries (20MW of load) available for real-time dispatch by the utility.[21] With an estimated customer attrition rate of only 1%-6%, the Wattsmart Battery program was deemed cost-effective by the Utah Public Service Commission when considering accrued benefits over the program's 4-year contract commitment.[22]

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[19] Green Mountain Power, "GMP's Request to Expand Customer Access to Cost-Effective Home Energy Storage Through Popular Powerwall and BYOD Battery Programs is Approved," August 18, 2023, https://greenmountainpower.com/news/gmps-request-to-expand-customer-access-to-cost-effective-home-energy-storage-is-approved/.

[20] Connecticut Energy Storage Solutions Program Manual. January 19, 2024. https://portal.ct.gov/-/media/pura/electric/tra/energy-storage-solutions-program-manual-2024.pdf

[21] Rocky Mountain Power, "Wattsmart Batteries," https://www.rockymountainpower.net/savings-energy-choices/wattsmart-battery-program.html.

[22] https://rmi.org/wp-content/uploads/dlm_uploads/2024/06/VP3_flipbook_v1.1.pdf

4. **Should Maine investigate different ways to build and repair utility infrastructure, particularly in areas that have experienced repeated outages?**

While finding different ways to build and repair existing infrastructure is important, Maine should also consider relocation, where feasible and cost-effective, especially when considering the projected increase in coastal and inland flooding from sea level rise, storm surge, and heavy rainfall events. A recent UCS report found that the number of critical infrastructure assets at risk of disruptive flooding at least two times per year in Maine from sea level rise alone would triple from 16 facilities in 2030 to 48 by 2100 under a medium sea level rise scenario and 89 facilities by 2100 under a high scenario.[23] Critical infrastructure assets included public safety and health facilities, industrial contamination sites, government and educational facilities, subsidized housing, and energy infrastructure (power plants and substations). While the report only showed up to five power plants and substations at risk of twice annual flooding from sea level rise through 2100 in Maine, the impacts on energy and other critical infrastructure should be considered conservative because the analysis did not specifically include storm surge or heavy rainfall events, both of which can cause more extensive and severe coastal flooding.

The Commission should require utilities to publish interconnection maps that make it clear where future generation should be sited to limit the need for unnecessary grid expansion. With this information, developers can assess whether it makes sense to continue developing in areas that have experienced repeated outages or if their projects would be better sited elsewhere. Ultimately, this will benefit developers as their energy generation will face less curtailment, and Maine ratepayers as they will have access to more resilient and lower-cost electricity supply.

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[23] Dahl, K., J. Declet-Barreto, R. Cleetus, E. Spanger, B. Vitale, S. Udvardy, P. Thompson, P. Worth, and A. Caldis. *Looming Deadlines for Coastal Resilience: Rising Seas, Disruptive Tides, and Risks to Coastal Infrastructure*. 2024, Union of Concerned Scientists: Cambridge MA, https://www.ucsusa.org/resources/looming-deadlines-coastal-resilience#read-online-content.

5. **Are other states requesting proposals for pilots in this area or conducting such pilots?**

Con Edison in New York included an undergrounding pilot program in their 2022 rate case. The areas selected for the pilot program were based on:

- Prior large or recurring outages
- Critical customers, such as hospitals and emergency facilities
- Customers in designated disadvantaged communities
- High risk of tree damage
- Cost-effectiveness of undergrounding in comparison to other solutions

6. **How are other states assigning value to these types of investments when looking at Operations and Maintenance (O&M) Plans?**

The 2022 E3 Maine Storage Market Assessment for GEO calculated the resiliency benefit by multiplying the value of lost load (VOLL), by the outage probability and the available power in each hour.[24] They used an estimate of the VOLL from the DOE-funded Interruption Cost Estimate (ICE) calculator for Maine of $2.71 /kWh and $58.85/kWh of underserved energy for residential and medium to large C&I customers, respectively.[25]

7. **What metrics are reported to Commissions in other states to measure the effectiveness of resiliency efforts?**

We recommend that the Commission consider expanding the set of traditional reliability metrics (e.g. System Average Interruption Duration Index, System Average Interruption Frequency Index, and Customer Average Interruption Duration Index) to more comprehensively measure reliability and resilience and the varied experiences between and within different communities throughout Maine. More comprehensive resiliency metrics could include Customers Experiencing Multiple Interruptions (CEMI) to track those customers experiencing

[24] E3 on behalf of Maine Governor's Energy Office, "Maine Energy Storage Market Assessment," 2022, https://www.maine.gov/energy/studies-reports-working-groups/current-studies-working-groups/energy-storage-assessment.
[25] ICE, https://icecalculator.com/interruption-cost.

more than a certain number of outages per year; Customers Experiencing Long Interruption Duration (CELID) to track customers experiencing outages lasting more than a certain number of hours; and reliability improvements targeted specifically in communities designated as an environmental justice community.

Beyond the metrics to measure past performance, it is also important to consider reviewing the criteria used to inform new investments and compare across solutions. For example, when evaluating solutions to improve reliability, it is worth considering the extent to which a solution can reduce not only the number and duration of outages, but also whether it can make outages more survivable (e.g. does a solution include resources for community shelters or backup power?). Will the measure perform through a broad set of potential risks? Does it offer additional benefits (e.g. emissions reductions, jobs, health benefits, bill reductions, DER integration, improving equity outcomes) even under blue-sky conditions without a disruption?

8. What are the most effective ways to harden the grid while balancing affordability as storms grow more frequent and intense?

In order to accurately balance costs and benefits of resilience and grid hardening measures, the Commission and utilities must consider the combined impacts of future climate conditions, including increased storm intensity, wind speed, precipitation type and timing, temperature, sea level rise, among others. For example, when considering whether to upgrade wood poles, only considering anticipated increases in wind speed would be insufficient to assess the increased risk that climate change poses to that infrastructure; only by considering the combined impacts of increased wind speed, intense rain, and winter ground thaw can the likely vulnerability of wood poles be assessed.

An additional consideration when assessing the most effective ways of hardening the grid is forest cover. During Maine's December 2023 storm, downed trees impacting utility

infrastructure accounted for upwards of 55% of outages in Central Maine Power's service areas. The frequency of outages, particularly in more heavily forested rural areas of Maine, can greatly be reduced by prioritizing the use of tree wire when possible, replacing wood poles with steel when appropriate, and improving vegetation management practices.

Further, when considering affordability, it is important to assess the costs of grid hardening now compared to the additional costs of delayed or no action, including increased costs of supplies and labor and increased costs from extended and more frequent outages. The Commission and utilities should also consider other affordability measures, programs and investments, rather than avoiding needed investments on resiliency.

9. How can utilities leverage data systems to prioritize areas that are most susceptible to repeated storm damage?

Utilities should consider demographic data to assess community resilience as a consideration for where to prioritize investments; environmental justice communities are not only more likely to experience outages but are also least able to cope with outages (least able to evacuate, less likely to have backup power options, etc.).

Utilities should also prioritize resilience investments in reducing or avoiding outages for critical infrastructure (e.g. police, fire, hospitals, emergency services, nursing homes, wastewater treatment plants, etc) and vulnerable populations. UCS' recent report analyzing the impacts of sea level rise on critical infrastructure assets in Maine and other coastal states includes a list of public safety and health facilities, industrial contamination sites, government and educational facilities, subsidized housing, and energy infrastructure (power plants and substations) based on publicly available data.[26]

[26] Dahl, K., J. Declet-Barreto, R. Cleetus, E. Spanger, B. Vitale, S. Udvardy, P. Thompson, P. Worth, and A. Caldis. *Looming Deadlines for Coastal Resilience: Rising Seas, Disruptive Tides, and Risks to Coastal Infrastructure*, 2024,

10. Should Maine alter cost recovery mechanisms for these types of investments to reduce the ongoing spike in storm recovery costs?

The Commission should allow cost recovery for prudent investments that support near- and long-term resilience through rate setting. The Commission should require utilities to take actions that factor in a long-term perspective on system performance, while subsequently providing room for rate relief for low-income customers.

Further, proactively anticipating big storms and setting aside adequate funds to pay for recovery is essential to manage costs. However, allowing utilities to recover carrying costs for an amortization period can increase the cost passed on to customers by 30%.[27] Though there will always be outliers and unexpected intense storms, the intense storms that were once outliers and unexpected have become the norm and must be expected and anticipated. Increasing storm recovery reserves could help keep customer costs down by minimizing the chances of having to assess carrying charges.

11. Should Maine change utilities' vegetation management programs, which may be less expensive than other options (e.g., ways to accommodate a wider clearing)?

The Commission should seek to apply a variety of vegetation management options based on location and circumstances. While wider clearings help to reduce the number of outages caused by fallings, tree cover is also an essential climate resilience measure in urban and suburban settings to mitigate extreme temperature. Scarcity of tree cover is of particular concern in environmental justice neighborhoods, so the Commission should incorporate consideration of location and demographics into vegetation management planning and decision making.

Union of Concerned Scientists: Cambridge MA, https://www.ucsusa.org/resources/looming-deadlines-coastal-resilience#read-online-content.

[27] For example, in one docket in Massachusetts last year, Eversource Energy was granted permission to recover $338 million for three storms, $86 million of which was for carrying charges over a five-year amortization recovery period. Massachusetts Department of Public Utilities Docket No. 22-143.

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