

Maine State Energy Security Plan



MAINE GOVERNOR'S
Energy Office

Contents

Introduction.....	6
State Energy Security Plan Framework.....	6
Preface & Acknowledgements.....	8
Acronyms	10
Section 1: State Energy Profile	12
State Energy Profile: Overview of energy supply, demand, import/export, and infrastructure	13
Electricity.....	13
Liquid Fuels	28
Delivered (liquid) fuels	28
Petroleum Products Demand	31
Petroleum Products Supply	33
Natural Gas	38
Section 2: Risk Profile	43
Threat and Vulnerabilities Overview.....	43
Natural Hazards.....	44
Physical Hazards.....	49
Cybersecurity.....	50
Risk Assessment	62
Vulnerabilities	65
Consequences	68
Risk Tables.....	71
Out-of-State Risks to Energy Supply in Maine	84
Interdependencies	90
Section 3: Authorities, Doctrines, and Guiding Statutes.....	97
Relevant Authorities, Doctrines, and Guiding Statutes	97
Introduction	97
Authorities	97
Requirement to have a State Energy Security Plan	97
Relevant Federal Authorities & Organization Structure.....	98
Overview.....	98

Emergency Response Function-12 (Energy).....	98
Summary of Federal Energy Security and Emergency Response Roles	99
Relevant State Authorities	106
State Emergency Response Laws and authorities related to energy resources.....	106
Relevant local and tribal authorities (e.g., home rule)	108
Energy Security Planning & Preparedness	108
Other State Agencies involved in independent activities related to emergency response.....	108
State Energy Office Roles and Responsibilities	110
Annual Review	113
Roles of Other State Entities Relating to Energy Security	114
Governor’s Office	114
Public Utility Commission (PUC).....	114
Maine Emergency Management Agency.....	114
Maine Department of Public Safety.....	116
State Fusion Center (Maine Information and Analysis Center, or MIAC)	116
Regional Coordination	116
Coordination with Northeast Region.....	116
Tribal Coordination	117
Section 4: Energy Security Response	118
Information-Gathering/Situational Awareness	120
Industry, Peer, And Regional Outreach	124
Weather Threat Monitoring Tools.....	124
Consequence Assessment	125
Response Actions	131
Section 5: Energy Resiliency and Hazard Mitigation	161
Risk Mitigation Goals.....	161
Existing Risk Mitigation Strategies.....	163
Integrated Grid Planning	163
Climate Change Resilience Plan	164
Grid Resilience and Innovation Partnerships (GRIP) Program.....	167
40101(d) Grid Resilience Awards.....	167
Community Resilience Partnership	168
Infrastructure Adaptation Fund	169
NOAA Climate Resilience	170
ISO NE Specific Energy Risk Mitigation Strategies	170

Process Used to Evaluate and Prioritize Mitigation Measures.....	184
<i>Most appendices are redacted</i>	
Appendix A: Risk Assessment – Exposure Maps [redacted]	185
Infrastructure	186
Electricity.....	186
Natural Gas	187
Petroleum.....	188
Flood	189
Electricity.....	189
Natural Gas	190
Petroleum	191
Storm Surge.....	192
Electricity.....	192
Natural Gas	193
Petroleum.....	194
Winter Storm.....	195
Electricity.....	195
Natural Gas	196
Petroleum.....	197
Tropical Storm	198
Electricity.....	198
Natural Gas	199
Petroleum.....	200
Strong Wind	201
Electricity.....	201
Natural Gas	202
Petroleum.....	203
Appendix B: Critical Energy Infrastructure Study for Maine [redacted]	204
Appendix C: Limitations on Gubernatorial Power in an Energy Emergency	221
Appendix D: Energy Emergency Assurance Coordinators (EEAC) Program	225
Purpose	225
Designation.....	225
Examples Of Products Doe Has Shared with Maine.....	227
Examples Of Energy Emergency Situations Maine Has Shared with DOE	227

Appendix E: Information-Sharing Contact List [redacted]	229
County Emergency Management Agency Contacts	249
Appendix F: New England and Mid-Atlantic Regional Liquid Fuels Supply Shortage Coordination Process [redacted]	251
Background	251
Proposed Framework – Two Phases	252
Normal (blue sky)	252
Energy Disruption Events	252
Process in Summary	253
Northeast States Liquid Fuels Disruption Coordination Process	254
Additional Considerations	254
Proposed Next Steps	255
Appendix G: Mutual Assistance	256
Introduction	256
Industry Mutual Assistance Overview	256
Electric Investor-Owned Utilities Mutual Assistance	256
Natural Gas Industry Mutual Assistance	257
Public Power Mutual Assistance	257
Electric Cooperative Mutual Assistance	257
Cyber Mutual Assistance	258
State Emergency Management Assistance Compact	258
Regional Mutual Assistance Groups and Contact Lists	259
Appendix H: Hours of Service (HOS) Waiver Request Process [redacted]	260
Appendix I: Communications Messaging During Energy Emergencies	261
Sample Press Release	261
Maine Emergency Management Agency (MEMA) Warns of Dangerously Cold Temperatures	261
Appendix J: Federal and State Resiliency Policies and Programs	268
Federal Policies	268
Federal Tax Credits/Financial Incentives	271
Federal Programs	274
State Tax Credits/Financial Incentives	301

State Programs.....	304
Endnotes.....	306

Introduction

The State Energy Security Plan (SESP) is a living blueprint designed to address a potential or actual energy emergency caused by supply disruptions, a rapid and unsustainable increase in energy prices, or other energy emergencies. It is an action-oriented manual for state government leaders charged with the responsibility of ensuring the health, welfare, and safety of Maine citizens during these emergency events. It also serves as an informational resource to build support, improve communications, and develop capacity for energy emergency response goals and actions.

SESPs are an essential part of energy security planning and describe the state's energy landscape, people, processes, and the state's strategy to build energy resilience. More specifically, plans detail how a state, working with energy partners, can secure its energy infrastructure against all physical and cybersecurity threats; mitigate the risk of energy supply disruptions to the state; enhance the response to, and recovery from, energy disruptions; and ensure that the state has secure, reliable, and resilient energy infrastructure. The information described above is contained within six distinct sections, which are listed below.

Navigating the Document

Per IJIA requirements, a complete SESP will:

1. Address all energy sources and regulated and unregulated energy providers;
2. Provide a [State Energy Profile](#) including an assessment of energy production, transmission, distribution, and end-use;
3. Address [potential hazards to each energy sector or system](#), including
 - a. [physical threats and vulnerabilities](#), and
 - b. [cybersecurity threats and vulnerabilities](#)
4. Provide a [risk assessment](#) of energy infrastructure and [cross-sector interdependencies](#)
5. Provide a [risk mitigation approach](#) to enhance reliability and end-use resilience and
6. Address
 - a. [multi-State and regional coordination, planning and response](#), and
 - b. [coordination with Native Tribes](#) with respect to planning and response, and
 - c. to the extent practicable, encourage [mutual assistance](#) in cyber and physical response plans

State Energy Security Plan Framework

The framework below is taken directly from [U.S. DOE guidance](#) for state energy security plans.¹ The first section provides a framework for the state's energy security plan. Section 2, Energy Landscape and Risk Profiles, provides a State Energy Profile, addresses threats, and

vulnerabilities to the state energy sector and provides a risk assessment of cross-sector interdependencies and critical infrastructure. The third section, Energy Security and Emergency Response Authorities, provides information on the relevant authorities, doctrines, and guiding statutes for energy security and emergency response activities. The fourth substantive section, Energy Security Planning & Preparedness, provides an overview of the role of the Governor's Energy Office's (GEO) role and responsibilities, along with the role of other state entities, including coordination with Tribal entities and planning and response activities with neighboring states and the region. Section 5, Energy Emergency Response, describes the response actions and authorities for energy emergencies. The final section, Energy Resiliency & Hazard Mitigation, details the state's mitigation strategy to strengthen sector reliability, enhance energy supply resilience for end-users, and secure critical energy infrastructure. Together, these sections provide a thorough overview of the status of the energy sector, potential risks and threats, and the comprehensive response in the event of an energy emergency.

The United States Department of Energy (U.S. DOE), through the State Energy Program, requires all states to develop and maintain an energy security/emergency plan. Maine's most recent emergency response plan was completed in 2012. In 2019, in coordination with the Maine Emergency Management Agency (MEMA), the GEO initiated the update process. With the technical and facilitation assistance of energy consultant TRC, the GEO conducted a robust stakeholder process consisting of participation by relevant state agencies, local emergency responders, and private industry members from Maine and the Northeast region, representative of electricity, natural gas, and delivered fuels sectors. Completion of the final plan was put on hold during 2020, as staff resources were shifted to COVID-19 response activities. Work resumed in 2021 to complete the plan. In late 2021, the U.S. Congress passed the federal Infrastructure Investment and Jobs Act (IIJA). Subsequently, the U.S. DOE issued guidance for all states to develop a comprehensive energy security plan (the six required elements are listed on the previous page). Maine submitted drafts of the plan in 2022 and 2023, with the final report submitted and approved by DOE in 2024.

Preface & Acknowledgements

The State of Maine and its citizens are highly dependent upon energy resources to power our daily lives. A serious energy supply or delivery disruption, a rapid and unsustainable increase in energy prices, or other energy emergency could bring substantial injury to commercial and industrial activity and to the personal health, safety, and welfare of Maine's citizens. The Governor's Energy Office (GEO) develops the state's plan related to energy emergencies in coordination with the Maine Emergency Management Agency (MEMA) and other stakeholders under U.S. Public Law 94-163, Section 362 (1975), Energy Policy and Conservation Act of 1975, last updated November 15, 2021, and as described in 10 C.F.R. § 420.13(b)(9). The plan is aligned with the Maine Comprehensive Emergency Management Plan (CEMP), managed by MEMA.

This plan outlines the state processes and communication pathways to respond to an energy shortage. The information in this plan is informed by prior stakeholder meetings and conversations, including state agency representatives, local emergency responders, members of electric and gas utilities, delivered fuel industry representatives, and other interested entities that have worked with the GEO to provide critical information and recommendations to plan for and mitigate energy supply and delivery disruptions. The GEO thanks all who participated in prior stakeholder processes and continue to engage in these important conversations:

Exhibit 1: Stakeholder Counties

Androscoggin County	Aroostook County	Cumberland County
Franklin County	Hancock County	Kennebec County
Knox County	Lincoln County	Oxford County
Penobscot County	Piscataquis County	Sagadahoc County
Somerset County	Waldo County	Washington County
York County		
Avangrid	Central Maine Power	Central Maine and Quebec Railway
Department of Homeland Security	Eastern Maine Railway	Emera Maine
Enbridge, Inc.	Hart Public Policy	The Island Institute
ISO New England	Maine Air National Guard	Maine Army National Guard
Maine Department of Environmental Protection	Maine Department of Transportation	Maine Emergency Management Agency
Maine Energy Marketers Association	Maine Natural Gas	Maine Motor Transport Association

Maine Pellet Fuels Association	Maine Office of Information Technology	Maritimes and Northeast Pipeline
NBM Railways	Northeast Gas	Pan Am Railways
Portland Natural Gas Transmission System (PNGTS)	Propane Gas Association of New England (PGANE)	Repsol
Saint Lawrence & Atlantic Railroad	Sea-3 LLC	Summit Natural Gas
Trans Canada Energy	United States Coast Guard – Sector Northern New England	Unitil

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Acronyms

The table below provides a list of most acronyms provided in this report. For additional information about terms used in the report, please utilize EIA's glossary.

Exhibit 2: Acronym Table

Acronym/Term	Description
ANL	U.S. DOE Argonne National Laboratory
CEMP	Comprehensive Emergency Management Plan (state)
CESER	U.S. DOE Office of Cybersecurity, Energy Security, and Emergency Response
CISA	U.S. Cybersecurity and Infrastructure Security Agency
CPC	U.S. Climate Prediction Center
DHS	U.S. Department of Homeland Security
DOE	U.S. Department of Energy
EAGLE-I	Environment for Analysis of Geo-Located Energy Information
EEA	Energy Emergency Alert
EEAC	Energy Emergency Assurance Coordinator
EERT	Energy Emergency Response Team (state)
EIA	U.S. Energy Information Administration
E-ISAC	Electricity Information Sharing and Analysis Center
EOC	Emergency Operations Center (state)
ERC	Emergency Response Center
ESF	Emergency Support Function
ERT	Energy Response Team (members of state EOC during emergency activations)
ETR	Estimated time of restoration
FEMA	Federal Emergency Management Agency
FIRMS	Fire Information for Resource Management System
GEO	Governor's Energy Office (state)
HIFLD	Homeland Infrastructure Foundation-Level Data
HOS	Hours of Service (in context of fuel transport)
ISO-NE	Independent System Operator of New England
LDC	Local distribution company (natural gas)
LMP	Locational marginal pricing (electricity)
MEMA	Maine Emergency Management Agency
MIAC	Maine Information and Analysis Center (state fusion center)
MSIB	Marine Safety Information Bulletins

MS-IAC	Multi-State Information
MW	Megawatt
NARUC	National Association of Regulatory Utility Commissioners
NASA	National Aeronautics and Space Administration
NASEO	National Association of State Energy Officials
NB Power	New Brunswick Power
NBSO	New Brunswick System Operator
NERC	North America Electric Reliability Corporation
NHC	National Hurricane Center
NMISA	Northern Maine Independent System Administrator
NOAA	National Oceanic and Atmospheric Administration
NPMS	National Pipeline Mapping System
NWS	National Weather Service
OFO	Operational Flow Order
PADD	Petroleum Administration for Defense Districts
PIMMA	Pipeline Information Management and Mapping Application
MPUC	Maine Public Utilities Commission
RRAP	Regional Resiliency Assessment Program (under CISA)
RTO	Regional Transmission Operators
SHOPP	State Heating Oil and Propane Program
SLTT	State, Local, Tribal, and Territorial
T&D	Transmission and distribution (of energy, such as natural gas and electricity)
USDA	U.S. Department of Agriculture

Section 1: State Energy Profile

Overall, Maine's energy generation includes electricity generation in amounts approximating demand, though Maine was a slight net energy importer in 2021. Energy consumed across Maine includes renewables (hydroelectric dams, wind turbines, wood, and wood-derived fuels, and solar), electricity, petroleum natural gas, and coal. There are no extracted sources of coal, crude oil, or natural gas in the state, so Maine must import all the fossil fuels it consumes.

EIA source for infrastructure data

<https://atlas.eia.gov/apps/all-energy-infrastructure-and-resources/explore>

The State of Maine possesses several unique characteristics that have energy security implications. In 2010 it was determined to be the most rural state in the country, according to U.S. Census Bureau data, with 61.3% of its population residing in communities with less than 2,500 residents. It shares over 600 miles of land border with Canada, including 24 border crossing sites. Approximately 90% of the state's land is forested. Maine has almost 3,500 miles of tidal coastline, over 4,000 islands (15 of which are unbridged and inhabited year-round), and a relatively populated coastline. The economy is driven by agriculture, commercial fishing, forest products, shipbuilding, energy, tourism, outdoor recreation, and shipping, among other industries. Part of the state's electric grid has no direct ties with the rest of the country. The state has limited natural gas infrastructure and is highly reliant on heating oil and propane for residential heating.

In cooperation with other public institutions and the private sector, the state's primary goals in managing an energy emergency shall be to:

- Ensure essential public services are provided during an energy shortage
- Work with industries to reduce inequities in fuel distribution, including petroleum-derived fuels, such as diesel, gasoline, and heating oil

Assist in alleviating economic hardships caused by an energy shortage

- Solicit and obtain business and public support and participation in the implementation of the plan
- Ensure timely gathering and dissemination of accurate information during an energy shortage to guide state actions in responding to an emergency.

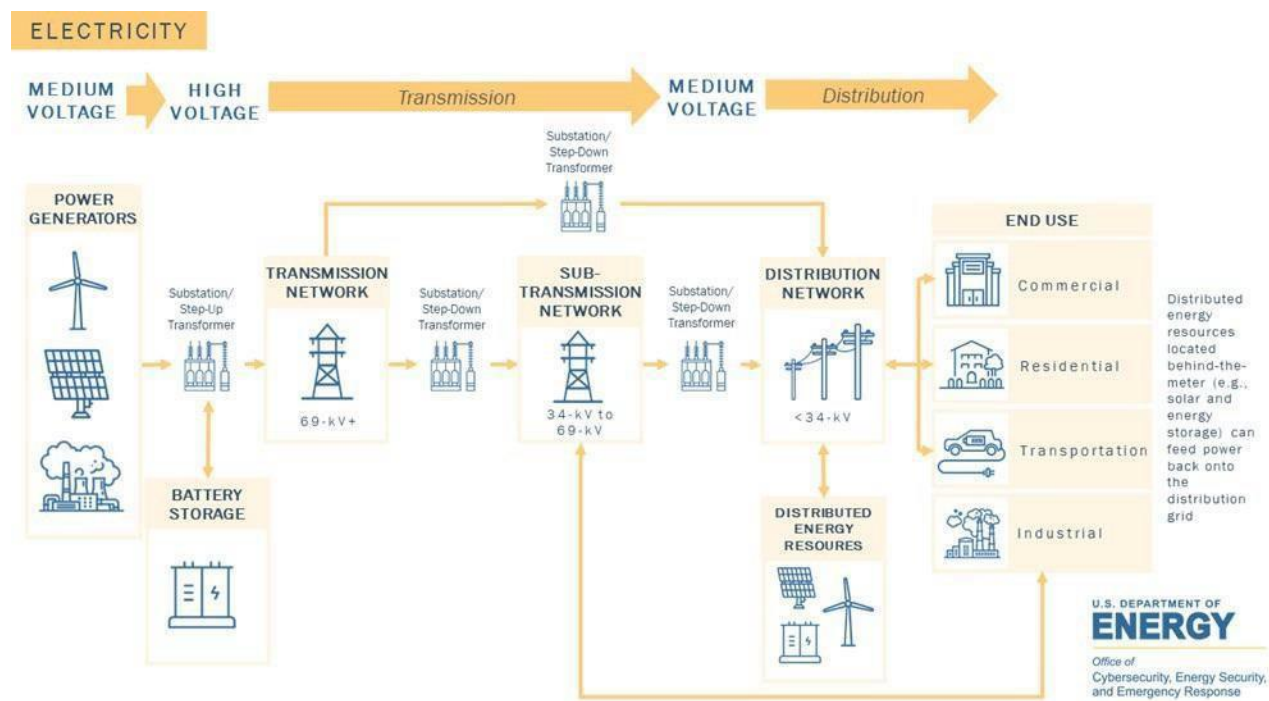
State Energy Profile: Overview of energy supply, demand, import/export, and infrastructure

The graphs and charts below list key energy infrastructure and service providers. With limited exceptions (e.g., electric utility service territories), Maine has used EIA data sources provided by U.S. DOE CESER guidance.

Electricity

Most electricity is produced at large-scale power plants and transported to end users via transmission and distribution lines with substations stepping the voltage up or down. In recent years, however, electricity has been increasingly generated at distribution-level generators and at consumer sites with behind-the-meter devices, in part due to growing small-scale renewable generation. In both utility-scale generation and distributed generation, energy storage may be connected to the electric grid, storing electricity when there is a supply surplus and later discharging it onto the grid as needed. Please refer to the State Energy Profile section on electricity above for specific details in Maine.

Exhibit 3: Electricity Supply Chain Graphic (Courtesy of U.S. DOE, CESER)



Winter storms and downed electrical wires due to fallen trees are the main causes of electrical outages in Maine and continue to be threats going forward, especially as the severity and frequency of storms increase.

For the New England region, the makeup of the regional grid is rapidly changing due to the increasing use of natural gas to generate power as the region shifts away from coal- and oil-fired power plants.

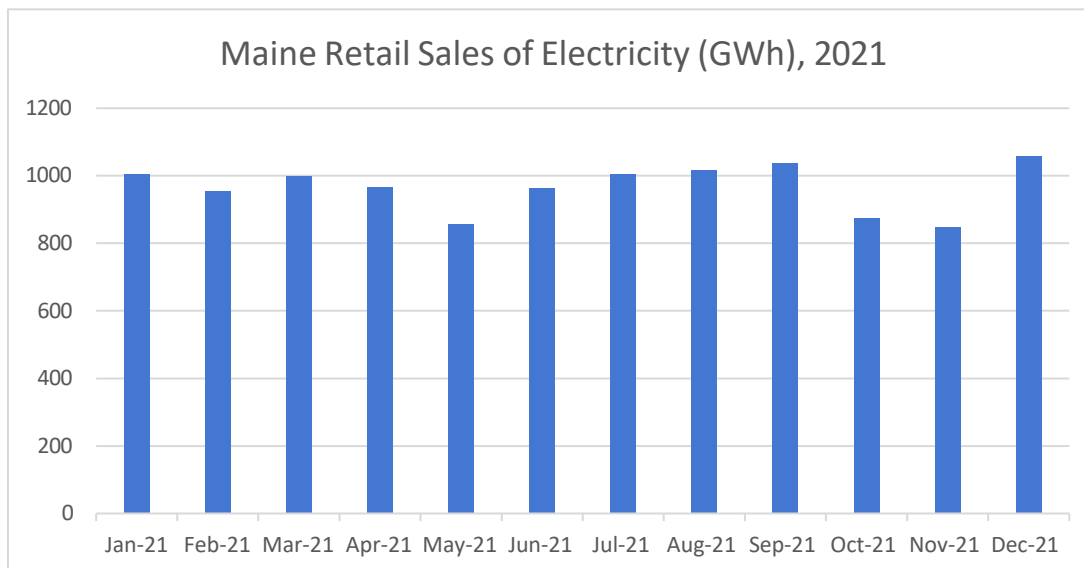
However, the capacity of the region's natural gas infrastructure (pipelines, storage) is not always adequate to deliver all the gas needed to address the increasing demands of both power generation and heating during winter; natural gas is the fuel of choice for most new power plant proposals. Natural gas pipelines can be constrained any time of year, but cold-weather conditions and the subsequent heavy demand for natural-gas-fueled space heating can exacerbate regional fuel-security issues when electric power imports from neighboring regions may not be as readily available.

The region's coal, oil, and nuclear power plants— which store fuel onsite and are essential for reliability when natural gas is in short supply—are retiring. Furthermore, the region has limited dual-fuel generating capability (i.e., generators that can use either natural gas or oil), and emissions restrictions on burning oil are increasing (ISO-NE 2018). In addition, LNG deliveries to New England are influenced by economics and logistics, and timing can be uncertain. This combination of constrained natural gas pipeline capacity during winter, indeterminate LNG and fuel oil deliveries, and the planned retirements of nuclear and non-natural-gas-fired generation represents pressing operational fuel security challenges in New England. (*RRAP Region 1 Canada Cross-Border Electric Grid RRAP, 2021*).

In addition, this situation causes regional prices to be vulnerable to price fluctuations and susceptible to fuel shortages if there are any supply chain issues with importing. Moving away from natural gas will require an increase in dispatchable renewable energy, which, in turn, has numerous vulnerabilities that need to be addressed, including transmission capacity and long-term storage. Unlike heating oil and petroleum, there is no reserve for electricity.

Electricity Consumption

Exhibit 4: Retail Sales of Electricity



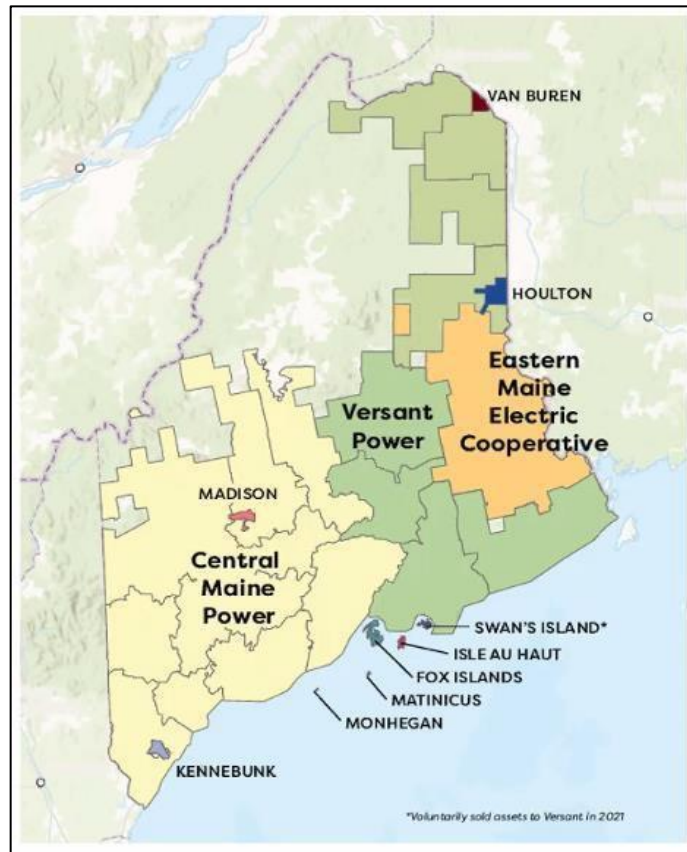
Source: EIA Electricity Data Browser "Retail sales of electricity"

Maine has two primary investor-owned utilities (IOUs) that service the vast majority of the state's customers. Central Maine Power (CMP) has an 11,000-mile service territory in southern and central Maine, servicing approximately 646,000 customers. Versant Power's territory covers almost as much land (10,400 sq. miles) but is much more rural and services approximately 159,000 customers in northern and Downeast Maine.

Versant's customer base lies in two distinct territories: Bangor Hydro District and Northern Maine District. The Bangor Hydro District (Hancock, Piscataquis, Washington, and most of Penobscot Counties) is part of the ISO-NE grid, while the Northern Maine District (Aroostook and a small part of Penobscot County) is connected directly to the grid in New Brunswick, Canada. The Northern Maine District is governed by the Northern Maine Independent System Administrator (NMISA). Northern Maine is only indirectly connected to the ISO-NE grid through tie lines in New Brunswick.

The state also has several municipal and cooperative utilities that serve small numbers of customers.

Exhibit 5: Map of Electric Utilities



Source: Maine Chamber of Commerce presentation, September 11, 2023 – [GIS Link](#)

Exhibit 6: Residential Electricity Rates

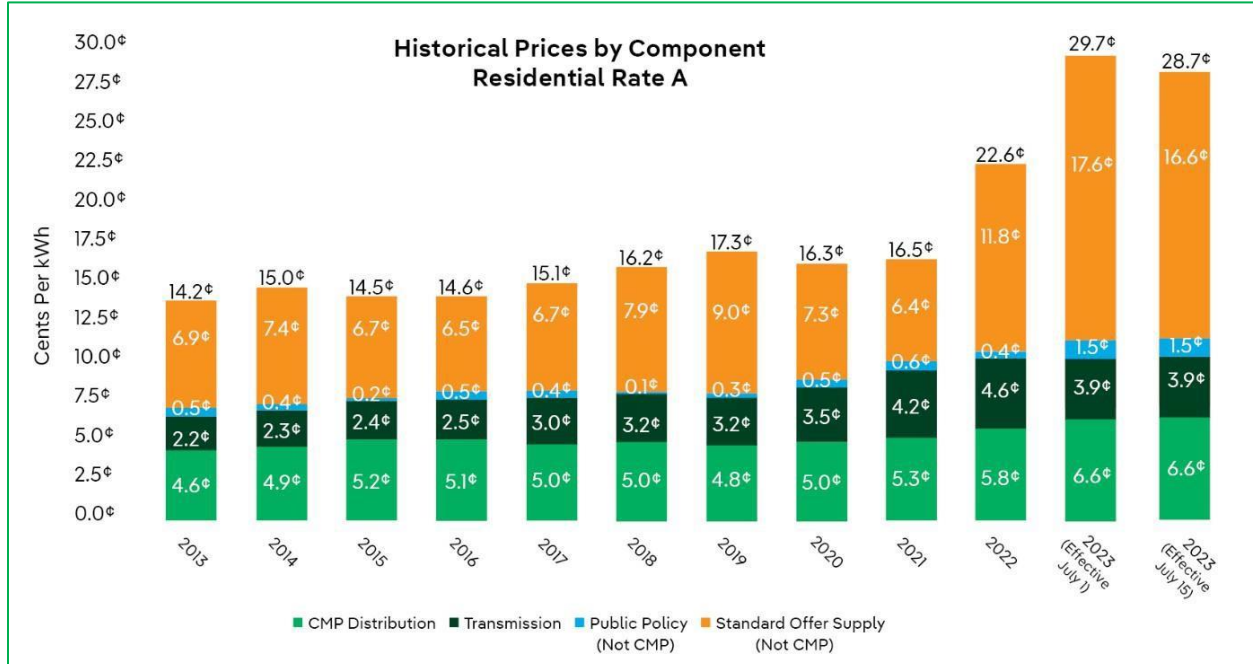
RESIDENTIAL ELECTRICITY RATES IN MAINE											
As of July 1, 2024											
Utility	% of State Residential Load	Annual kWh	Charge Type	Delivery Rate				Supply Rate (3)	Total Rate	Units	Deferrals
				Distribution (1)	Transmission	Stranded Cost	Total Delivery				
INVESTOR-OWNED UTILITIES											
Central Maine Power	78.0%	3,708,209,911	Fixed	16.02	1.51	9.07	26.60	-	26.60	\$/month	For detailed information related to CMP's deferrals as of 10/13/23, see Item No. 5.
			Volumetric	0.073525	0.031442	0.004013	0.108980	0.106363	0.215343	\$/kWh	
Versant Power - BHD	13.9%	661,362,068	Fixed	9.53	-	11.64	21.17	-	21.17	\$/month	For detailed information related to Versant - BHD's deferrals as of 10/13/23, see Item No. 4.
			Volumetric	0.101730	0.045440	(0.001720)	0.145450	0.102630	0.248080	\$/kWh	
Versant Power - MPD	4.1%	196,161,350	Fixed	9.34	-	13.85	23.19	-	23.19	\$/month	For detailed information related to Versant - MPD's deferrals as of 10/13/23, see Item No. 4.
			Volumetric	0.099821	0.024567	0.000017	0.124405	0.112850	0.237255	\$/kWh	

COOPERATIVES & MUNICIPAL-OWNED UTILITIES (2)											
Brunswick Landing	0.0%	798,398	Fixed	-	-		-	-	-	\$/month	Information not available at this time.
			Volumetric	0.087983	0.033258		0.121241	0.073312	0.194553	\$/kWh	
Eastern Maine Electric Cooperative	1.3%	59,746,338	Fixed				10.96	-	10.96	\$/month	For detailed information related to FMEC's deferrals as of 11/1/23, see Item No. 9.
			Volumetric				0.080551	0.059000	0.139551	\$/kWh	
Houlton	0.7%	33,699,240	Fixed				11.50	-	11.50	\$/month	For detailed information related to Houlton's deferrals as of 11/2/23 see Item No. 11.
			Volumetric				0.035850	0.062000	0.097850	\$/kWh	
Van Buren	0.2%	8,154,636	Fixed				5.00	-	5.00	\$/month	As of 11/6/23, Van Buren reports no deferrals. See Item No. 12.
			Volumetric				0.039490	0.062000	0.101490	\$/kWh	
Kennebunk Light & Power	1.2%	57,650,925	Fixed	6.00	-		6.00	-	6.00	\$/month	As of 10/31/23, Kennebunk Light & Power reports no deferrals. See Item No. 8.
			Volumetric	0.026928	0.005604		0.032532	0.119164	0.151696	\$/kWh	
Madison Electric Works	0.4%	19,987,136	Fixed				12.00	-	12.00	\$/month	Information not available at this time.
			Volumetric				0.043030	0.149630	0.192660	\$/kWh	

Matinicus	0.0%	192,818	Fixed				25.00	-	25.00	\$/month	Information not available at this time.
			Volumetric				0.304500	NA (4)	0.304500	\$/kWh	
Monhegan	0.0%	405,813	Fixed				15.00	-	15.00	\$/month	Information not available at this time.
			Volumetric				0.780000	NA (4)	0.780000	\$/kWh	
Fox Island	0.2%	7,330,195	Fixed				15.00	-	15.00	\$/month	As of 10/31/23, Fox Islands reports no deferrals. See Item No. 7.
			Volumetric				0.137080	0.170847	0.307927	\$/kWh	
Isle au Haut	0.0%	189,987	Fixed				35.00	-	35.00	\$/month	As of 11/1/23, Isle au Haut reports no deferrals. See Item No. 10.
			Volumetric				0.200000	0.167700	0.367700	\$/kWh	
STATE AVERAGE	100%	4,753,888,815									
1) Includes applicable conservation and low income program assessments. 2) Information sourced from most recent Annual Report filings and latest approved tariffs. 3) Supply rate shown is the current Standard Offer Service rate. 4) Exempt from Standard Offer requirements. General Note: Beginning July 1, 2024 this table reflects ACTUAL residential tariffed rates. Tables from prior years show average rates, which blended the fixed and volumetric charges into a \$/kWh rate.											

Source: *Maine Public Utilities Commission*

Exhibit 7: Historical Residential Electricity Rates



2023 rates reflect Distribution rates in effect July 1, 2023, Transmission rates in effect January 1, 2023 and Supply rates in effect January 1, 2023 and then July 15, 2023. The customer charge is incorporated into the average Transmission and Distribution rates.

Source: Public Utilities Commission

Exhibit 8: Table of Electric Utilities

Utility Name	Ownership Type	Total Customer Count	% of State's Customers	Total Sales (MWh)
Central Maine Power Co.	Investor Owned	654,808	77%	9,260,469
Versant Power	Investor Owned	163,676	19.2%	1,626,738
Eastern Maine Electric Coop (EMEC)	Cooperative	13,007	1.5%	99,851
Kennebunk Light & Power	Municipal	7,326	1%	96,873
Houlton Water Co.	Municipal	5,570	0.6%	115,025
Town of Madison	Municipal	2,626	0.3%	72,186
Van Buren Light & Power	Municipal	1,415	0.1%	14,562
Fox Island	Cooperative	2,104*	0.2%	10,489
Monhegan Plantation Power District	Quasi-Municipal	162*	0.0%	390
Matinicus Plantation Electric Co.	Municipal	135*	0.0%	192
Isle au Haut	Cooperative	124*	0.0%	182

Source: Maine PUC, 2022 utility annual financial reports

*includes seasonal customers

Exhibit 9: Competitive Electricity Suppliers

Electricity Supplier Name	Ownership Type	Total Customer Count	% of State's Customers	Total Sales (MWH)
Electricity Maine, LLC	Retail Power Marketer	38,800	4%	424,856
Constellation NewEnergy, Inc.	Retail Power Marketer	12,011	1%	1,478,029
Ambit Energy Holdings, LLC	Retail Power Marketer	7,673	1%	69,919
FairPoint Energy, LLC	Retail Power Marketer	7,462	1%	78,999
North American Power and Gas, LLC	Retail Power Marketer	4,138	0%	31,713
C.N. Brown Electricity, LLC	Retail Power Marketer	3,862	0%	52,711
ENGIE Retail, LLC	Retail Power Marketer	3,337	0%	33,529
Clearview Electric Inc.	Retail Power Marketer	2,168	0%	10,612
SmartEnergy Holdings, LLC	Retail Power Marketer	2,040	0%	10,200
Town Square Energy	Retail Power Marketer	1,854	0%	10,884
XOOM Energy Maine, LLC	Retail Power Marketer	1,205	0%	9,738
First Point Power, LLC	Retail Power Marketer	1,134	0%	147,367
Direct Energy Business	Retail Power Marketer	822	0%	510,106
ENGIE Resources, LLC	Retail Power Marketer	654	0%	565,102
Algonquin Energy Services	Retail Power Marketer	424	0%	141,408
NextEra Energy Services, LLC	Retail Power Marketer	191	0%	344,985

Liberty Power Corp.	Retail Power Marketer	114	0%	51,669
Champion Energy Services	Retail Power Marketer	60	0%	45,136
Texas Retail Energy, LLC	Retail Power Marketer	32	0%	81,772
EDF Energy Services, LLC	Retail Power Marketer	25	0%	180,512
Calpine Energy Solutions, LLC	Retail Power Marketer	9	0%	397,333
Agera Energy, LLC	Retail Power Marketer	7	0%	1
Mega Energy of Maine, LLC	Retail Power Marketer	5	0%	75
MP2Energy, LLC	Retail Power Marketer	5	0%	2,993
SolarCity Corp.	Behind the Meter	4	0%	1,313
New Brunswick Power Generation Corp.	Retail Power Marketer	4	0%	84,933
Freedom Energy	Retail Power Marketer	3	0%	8,583
American PowerNet	Retail Power Marketer	2	0%	73,989
Messer Energy Services, Inc.	Retail Power Marketer	1	0%	87,949
Calpine Power America, LLC	Retail Power Marketer	1	0%	15,956
Greenskies Renewable Energy, LLC	Behind the meter	1	0%	2.421

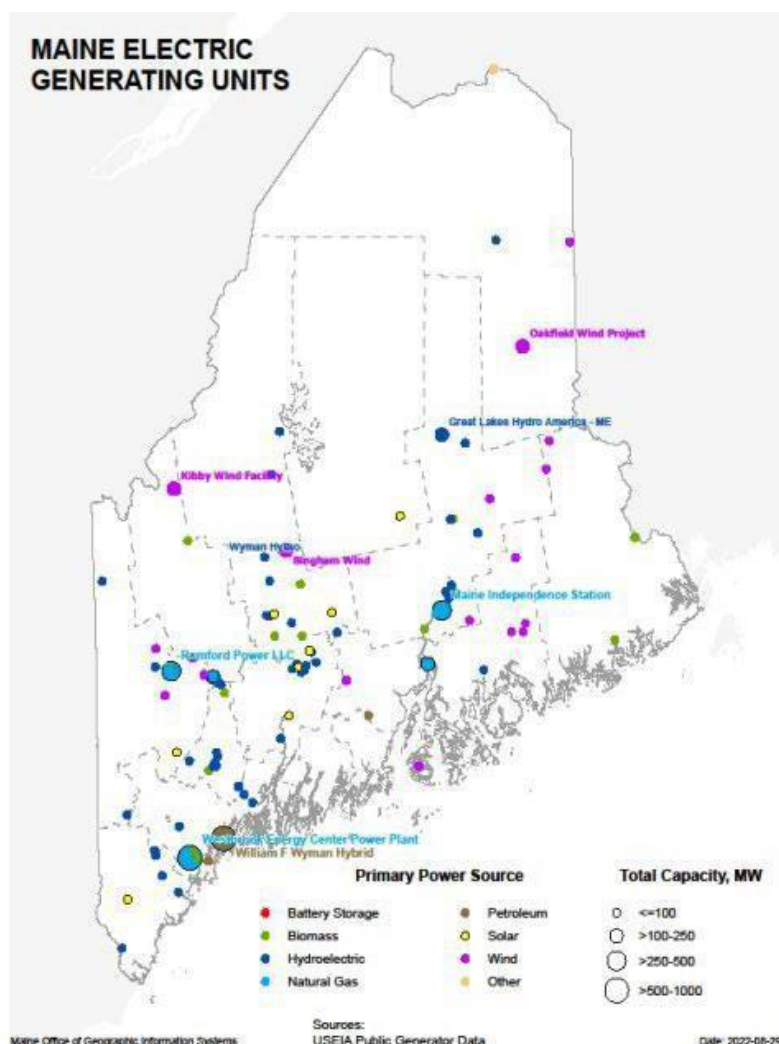
Source: [EIA-861](#) Annual Electric Power Industry Report

Electricity Supply

Electricity consumption comprises approximately 25% of energy use statewide. In 2021, almost three-quarters of Maine's electricity was generated from renewable sources –hydroelectric dams, wind turbines, and wood and wood-derived fuels. Most of the state's generation is connected to the regional transmission grid, administered by the Independent System Operator of New England (ISO-NE). There is a small part of the state, in northern and Downeast Maine,

that is connected to the grid in New Brunswick, Canada, and is administered by the Northern Maine Independent System Operator (NMISA).

Exhibit 10: Map of Electric Generating Units



Maine’s largest electricity-generating plant by capacity is petroleum-fired but is typically only used to meet peak electricity demand in the winter months. In 2020, natural gas-fired power plants fueled about one-sixth of the state’s net generation, with an additional 3% provided by facilities that can switch between a variety of fuel sources. In 2022, there were 51 licensed hydroelectric power plants in the state with about 726MW of capacity. The state leads New England in wind power and ranks sixth in the nation in the share of its electricity generated from wind. Biomass fuels make up one-fifth of Maine’s net generation, the largest share of any state. Almost all biomass used in Maine for electrical generation is wood and wood waste-derived fuels. Maine’s wood pellet manufacturing produces about 235,000 tons of pellets

annually, and approximately 1 in 10 Maine households use wood as their primary fuel for space heating ([EIA, 2022](#)).

Exhibit 11: Table of Largest Generators by Capacity

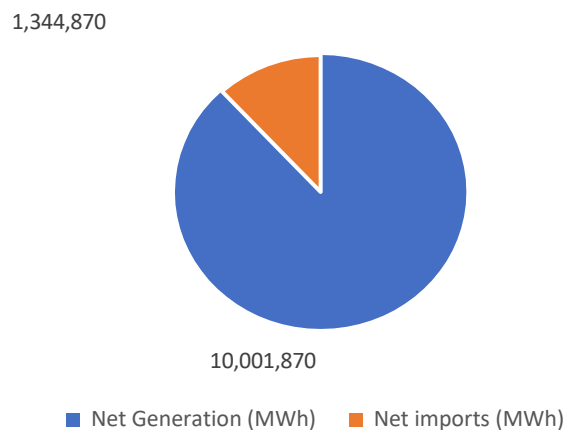
Generator Name	Owner	County	Summer Net Capacity (MW)	Type	2021 Annual Generation (GWh)	% of State Consumption
William F Wyman Hybrid	FL Energy Wyman LLC	Cumberland	810.9	Petroleum Liquids	8	0%
Westbrook Energy Center Power Plant	Westbrook Energy Center	Cumberland	534.8	Natural Gas-Fired Combined Cycle	1,876	17%
Maine Independence Station	Casco Bay Energy Co LLC	Penobscot	494.0	Natural Gas-Fired Combined Cycle	535	5%
Rumford Power LLC	Rumford Power	Oxford	260.5	Natural Gas-Fired Combined Cycle	325	3%
Bingham Wind	Onward Energy	Somerset	186.0	Onshore Wind Turbine	498	4%
Bucksport Generation LLC	Bucksport Generation LLC	Hancock	178.0	Natural Gas-Fired Combustion Turbine	5	0%
Oakfield Wind Project	Onward Energy	Aroostook	148.0	Onshore Wind Turbine	343	3%
Great Lakes Hydro America - ME	Great Lakes Hydro America LLC	Penobscot	134.3	Conventional Hydroelectric	547	5%
Kibby Wind Facility	Helix Maine Wind Development LLC	Franklin	132.0	Onshore Wind Turbine	306	3%

Androscoggin Energy Center	Pixelle Androscoggin LLC	Franklin	130.2	Natural Gas-Fired Combustion Turbine	382	3%
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Historically, Maine has been a net exporter of electricity. However, over the last few years, Maine has fluctuated between being a net importer and a net exporter. In 2021, Maine was a net importer of electricity.

Exhibit 12: Assessment of Net Importer or Exporter of Electricity

Maine was a Net Importer in 2021

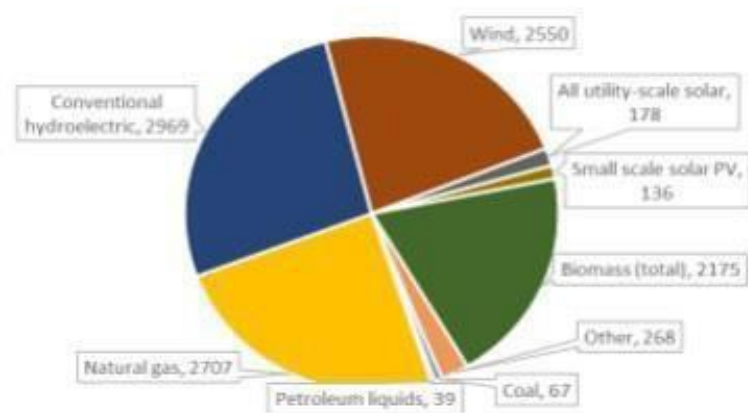


Source: EIA State Electricity Profiles

Maine's electricity generation is largely from renewable resources – hydroelectric power, wind, biomass, and solar. In 2021, the state generated most of its electricity (72%) from renewable sources.

Exhibit 13: Generation by Fuel Type

Net Generation for all sectors in 2021 (thousand MWh)

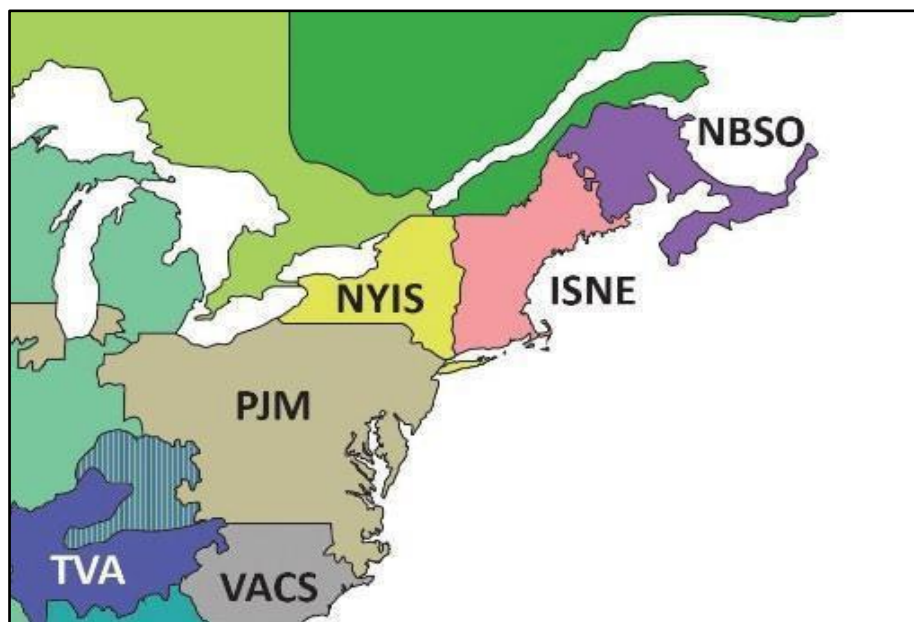


Source: EIA Electricity Data Browser

Key Balancing Authorities

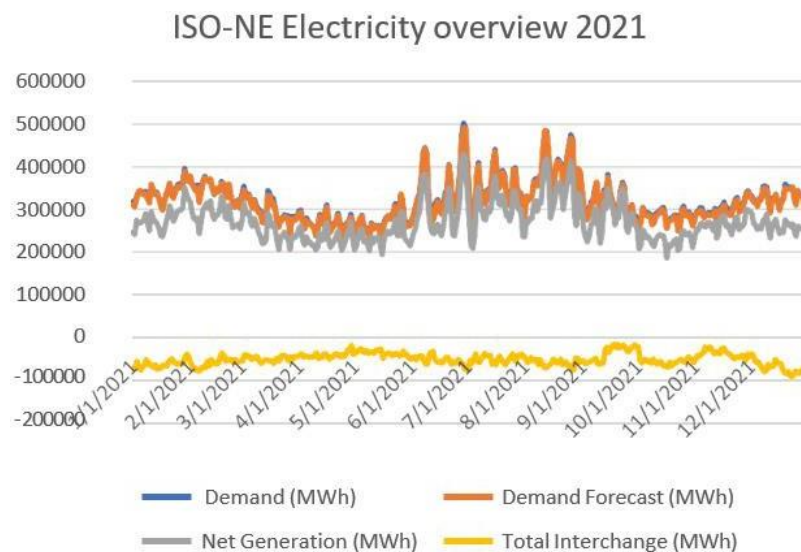
Maine has the distinction of being governed by two electricity grid balancing authorities, the independent system operator, ISO-NE, and New Brunswick Power Corporation. The New Brunswick system operator oversees the reliable operation of the Maritimes Area (New Brunswick, Nova Scotia, Prince Edward Island, and Northern Maine). They are delineated on the map below as ISNE for ISO-NE, and NBSO for the Maritimes area.

Exhibit 14: Balancing Authority Electricity Overview Graph



Source: NERC 2022

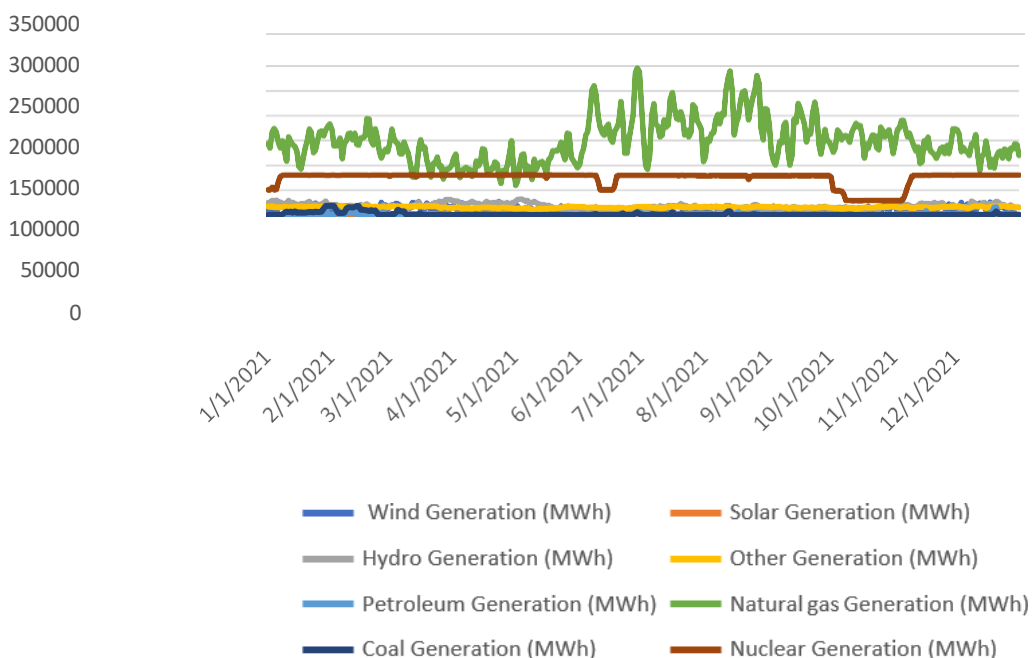
Exhibit 15: ISO-NE Electricity Overview 2021



Source: EIA Hourly Grid Monitor

Exhibit 16: Electricity Generation by Energy Source

ISO-NE electricity generation by source 2021



Source: EIA Hourly Grid Monitor

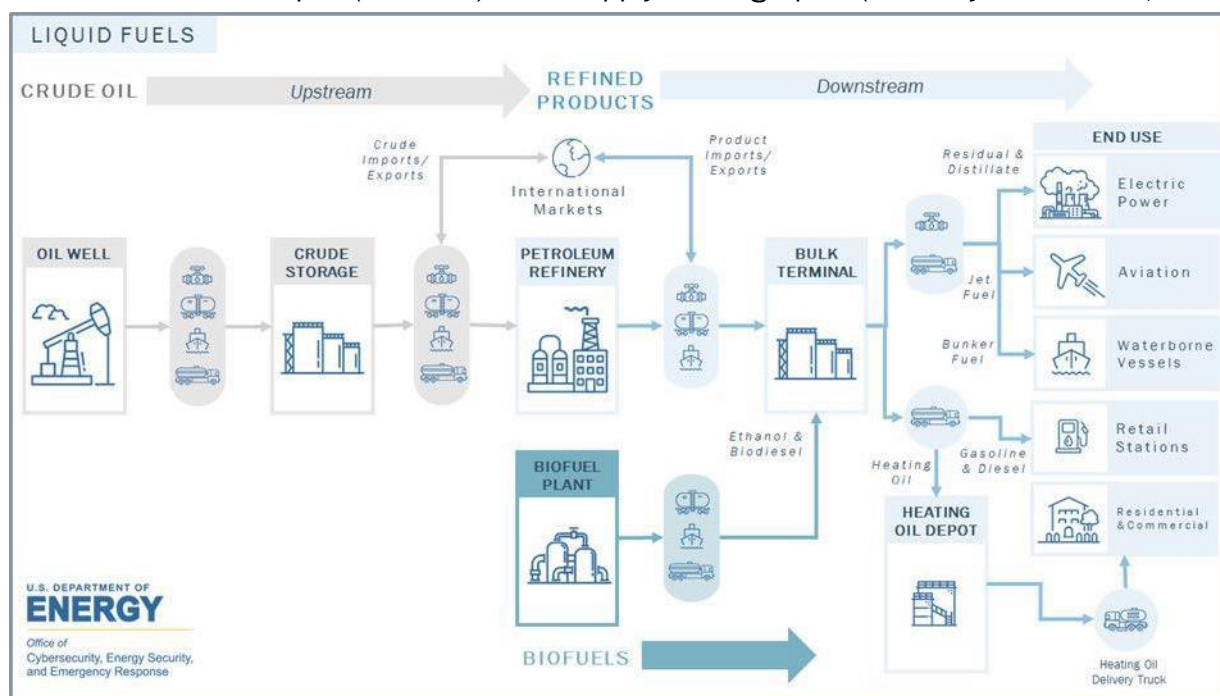
Liquid Fuels

Delivered (liquid) fuels

Petroleum products and propane are derived from crude oil. Crude oil is produced from underground reservoirs. Once transported to refineries, crude oil is refined into finished petroleum products, such as gasoline, diesel, jet fuel, residual fuel oil, and propane. Fuels are delivered to bulk terminals by pipeline, marine vessel, or ground transportation such as rail or road, and stored in large tanks before being loaded onto distribution trucks (with appropriate blending of ethanol and additives for gasoline) for delivery to retail stations, heating oil distributor storage depots, and other end users. Most U.S. propane is produced from natural gas liquids, or NGLs, which are liquid components recovered during natural gas processing. NGLs are separated into purity products, including propane, ethane, and butane, at fractionation facilities. After fractionation, propane (also called liquefied petroleum gas or LPG) is compressed and stored as a liquid and moved by pipeline, truck, rail, or barge to bulk propane terminals or directly to distributor storage depots.

From distributor sites, the propane is transported by smaller trucks, known as bobtail trucks, to end users like residential and commercial customers.

Exhibit 17: Liquid (distillate) fuels Supply Chain graphic (courtesy of U.S. DOE, CESER)

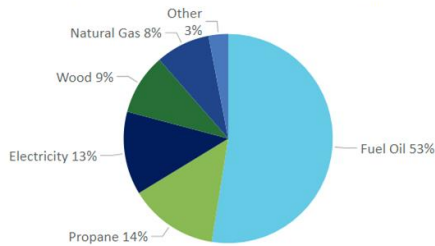


Apart from a small amount of biofuel, Maine imports its entire supply of delivered fuels from waterborne tankers at the Portland and Searsport terminals. Delivered fuels include heating oil, kerosene, propane, diesel, gasoline, and aviation fuel. The price and supply of these products are driven not only by the market forces of supply and demand, but also by U.S. domestic and foreign policy decisions in combination with the policies of the producing nations. Prices can be volatile, and the availability of petroleum products is largely determined by events occurring outside of the state. Added to this are state, regional, and national forces that impact product availability, such as product seasonality, curtailments (such as refinery outages), geopolitical issues, and acts of nature, with their subsequent impacts on the delivery infrastructure (ports, transports, rail). Both railroads and marine deliveries have very limited flexibility when a disruption occurs because vessels/rail transports are typically scheduled weeks or months in advance. The state also lacks visibility regarding the adequacy of delivered fuel inventories statewide. The GEO receives only limited information regarding the storage of delivered fuels at marine terminals and distribution plants. No state agency tracks rail deliveries of fuel in deep detail.

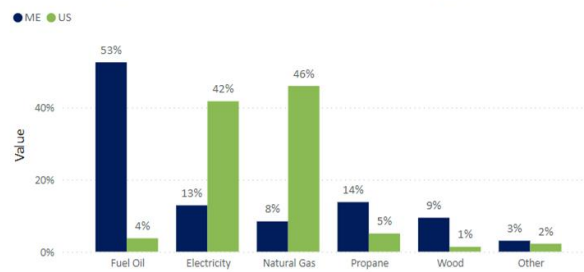
Maine's resource adequacy vulnerability is exacerbated by the fact that Maine is the most heating oil-dependent state in the country. Between heating oil, k-1, and propane, over 70% of Maine households depend on distillate fuels to heat their homes. Therefore, any disruption in the supply or delivery of these fuels, as well as significant increases in the price of these fuels, puts Maine households at increased risk of energy insecurity. This is even more true given the limited storage capacity and just-in-time inventories.

Exhibit 18: Home Heating by Energy Source

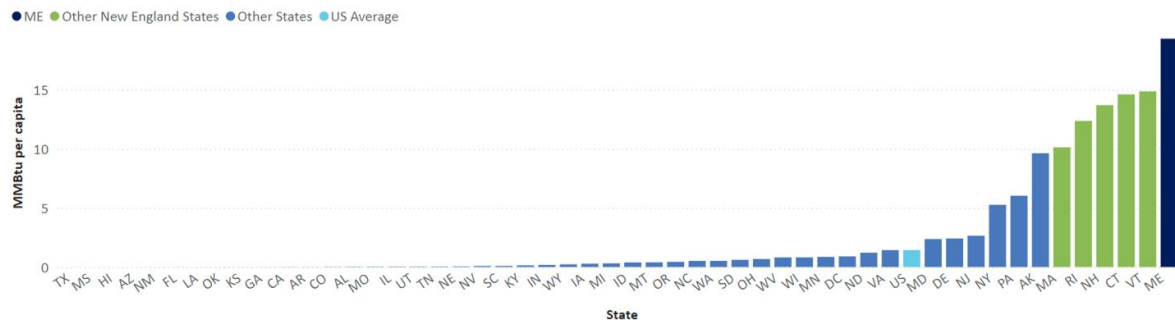
Share of Energy Sources Consumed for Residential Heating, Maine (2023)



Share of Energy Sources Consumed for Residential Heating (2023)

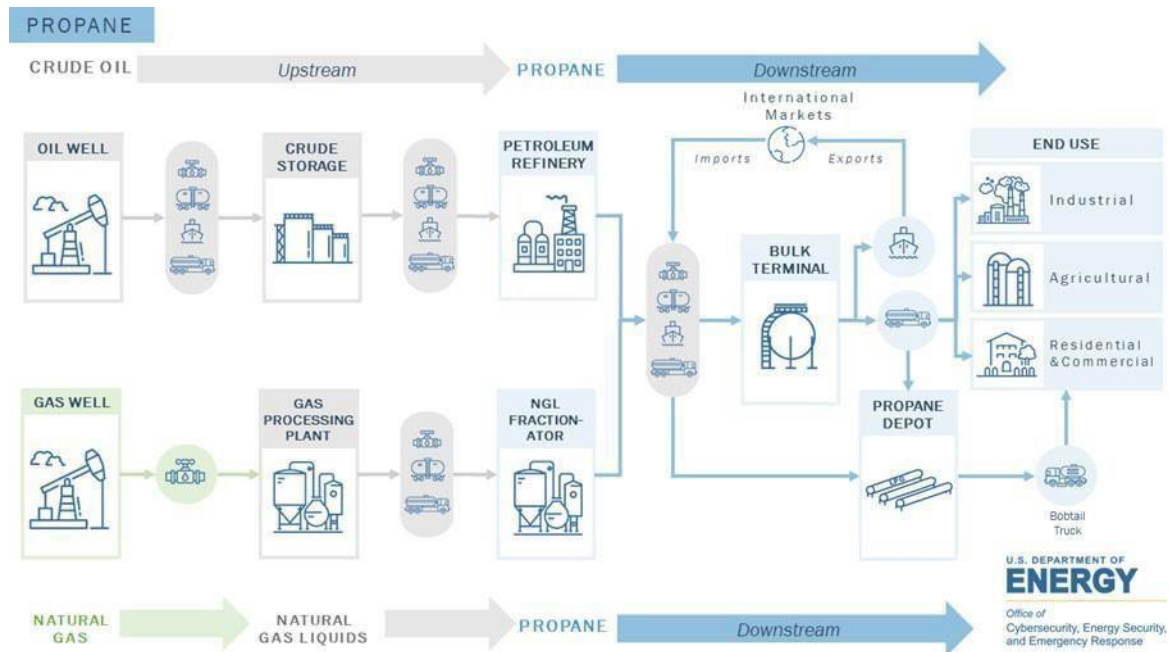


Distillate fuel oil consumed by the residential sector (2022)



Source: Governor's Energy Office

Exhibit 19: Propane Supply Chain graphic (courtesy of U.S. DOE, CESER)



Maine does not produce any propane, nor does the finished product travel to the state along pipelines. The state imports all the propane it consumes via railroad from western Canada (along Canadian railroads), and some from railways in Southern New England. In addition, the state can obtain propane from the import terminal Sea-3 in New Hampshire. As this product is

imported from other countries, it is generally more expensive than rail-delivered fuel. However, it is available to distributors and retailers in the event of rail disruptions or otherwise constrained supplies.

Petroleum Products Demand

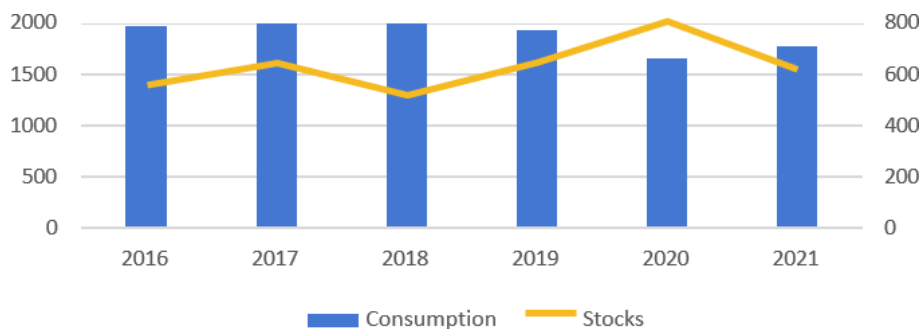
Petroleum accounts for the largest share (almost half) of energy consumed in Maine. A majority of that is used in the transportation sector, and a quarter in the residential sector, primarily for home heating. 7 out of every 10 Maine households use petroleum products, primarily fuel oil, as their primary energy source for home heating. This is a larger share than in any other state.

Maine state fuel specifications allow for the sale of conventional gasoline statewide. Previously, reformulated gasoline (RFG) was sold in the southern 7 counties; however, as of September 30, 2021, the sale of reformulated gasoline is no longer required. RFG can still be sold in the state, as it meets Reid Vapor Pressure (RVP) requirements for summer fuel. As a result, the permitted use of RFG provides an alternative, should the supply of conventional fuel be constrained or the supply chain disrupted.

Data for the graphs below comes from EIA Prime Supplier Sales volumes and EIA Refinery Bulk Terminal, and Natural Gas Plant Stocks by State.

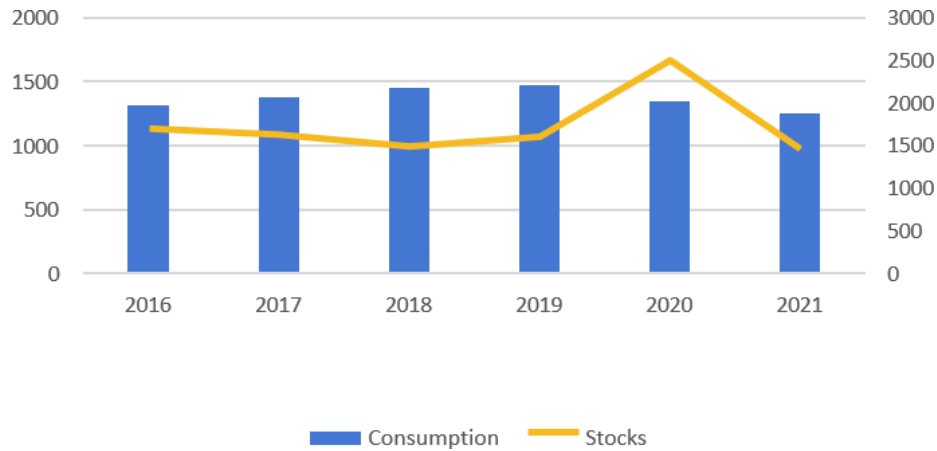
Gasoline: Maine Prime Supplier Sales (Thousand Gallons per Day) & Refinery, Bulk Terminal, and Natural Gas Plant Stocks (Thousand Barrels per Year)

Exhibit 20: Gasoline Prime Supplier Sells



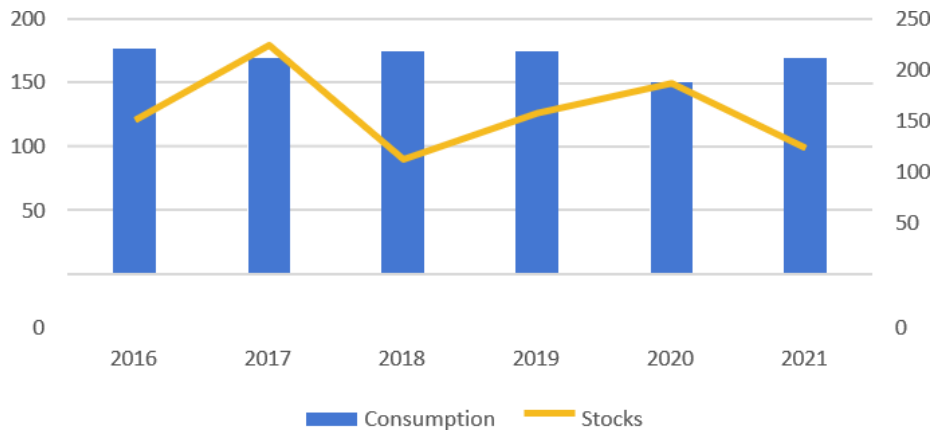
Distillate: Maine Prime Supplier Sales (Thousand Gallons per Day) & Refinery, Bulk Terminal, and Natural Gas Plant Stocks (Thousand Barrels per Year)

Exhibit 21: Distillate (consumption below limited to heating oil)



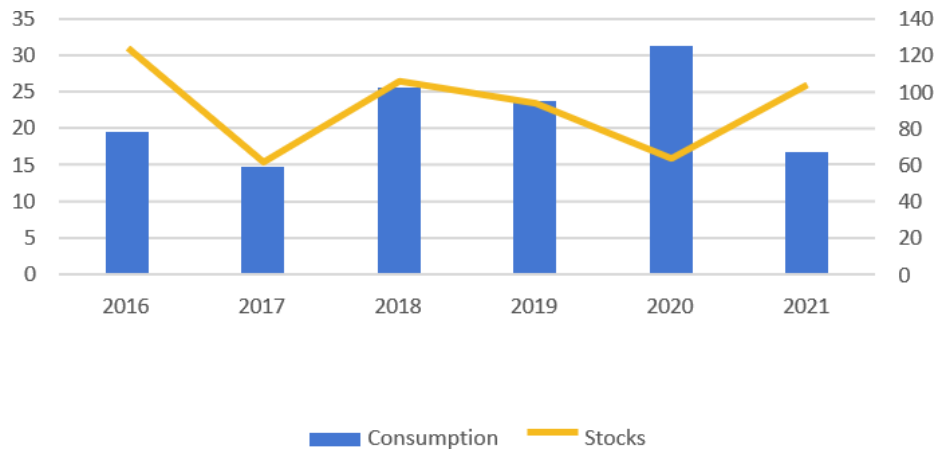
Jet Fuel/Kerosene: Maine Prime Supplier Sales (Thousand Gallons per Day) & Refinery, Bulk Terminal, and Natural Gas Plant Stocks (Thousand Barrels per Year)

Exhibit 22: Jet Fuel / Kerosene Prime Supplier Sales



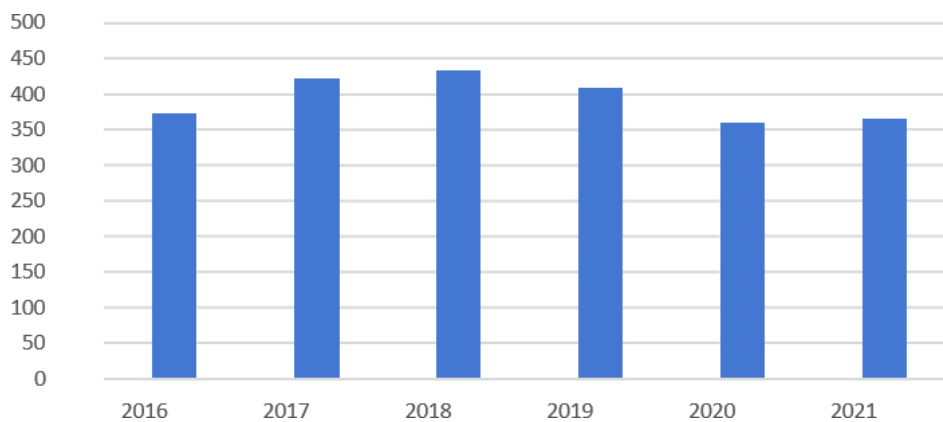
Residual Fuel Oil: Maine Prime Supplier Sales (Thousand Gallons per Day) & Refinery, Bulk Terminal, and Natural Gas Plant Stocks (Thousand Barrels per Year)

Exhibit 23: Residual Fuel Oil Prime Supplier Sales



Propane: Maine Prime Supplier Sales (Thousand Gallons per Day)

Exhibit 24: Propane Prime Supplier Sales



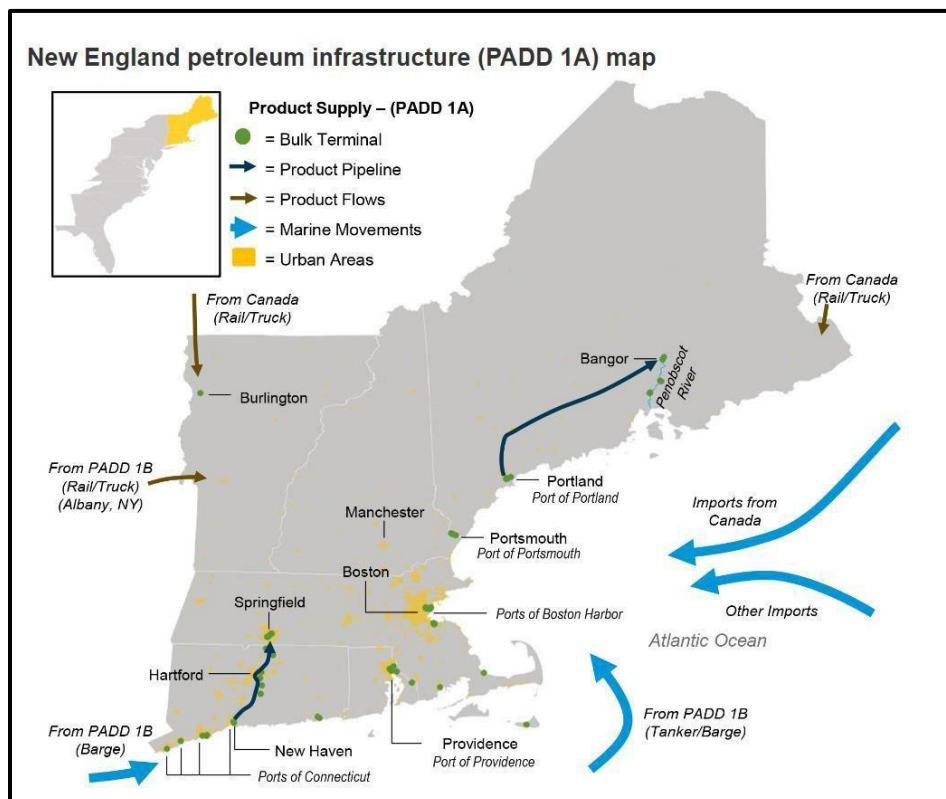
The MPUC does not regulate propane rates but is responsible for conducting safety inspections on all “jurisdictional” propane facilities. Jurisdictional propane systems are those serving ten or more residential customers, or two or more customers served in a public place, from a single or manifolded-tank system.

Petroleum Products Supply

Maine does not have any crude oil production or reserves, nor does it have any oil refineries. Refined petroleum products arrive in the state at several marine points of entry, including the Ports of Portland, Searsport, and Bucksport, as well as from several Canadian (rail) border crossings. Propane is also imported for the Northeast market, arriving at the Sea-3 facility in Newington, New Hampshire. This product is then distributed regionally, including distributors and retailers in Maine. Canada is the dominant supplier of the petroleum products that arrive at all of Maine’s ports and border crossings. Most distillates (heating oil, diesel, gasoline)

consumed in Maine arrive from the 320,000 bpd Irving Refinery in Saint John, New Brunswick. Some distillate products (including kerosene and some heating oil) arrive via barge from New York Harbor. Below is a diagram of the petroleum supply infrastructure for PADD1A, New England.

Exhibit 25: New England Petroleum Infrastructure

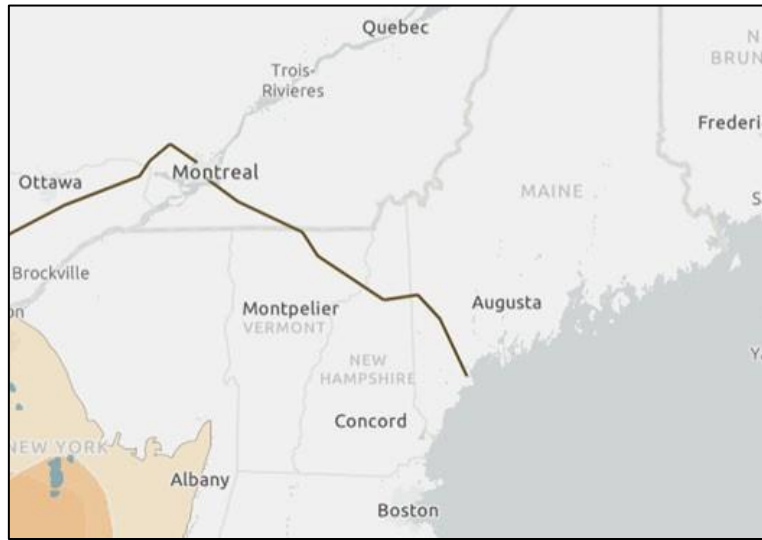


Source: Energy Information Administration, New England dashboard

Crude Oil

The state of Maine imports all its oil and petroleum distillates. As no crude oil is produced in the state, there are no production wells or associated infrastructure. There's one crude oil pipeline in the state, the Portland- Montreal Pipeline, originating in South Portland and terminating in Montreal, Quebec. For 75 years, the pipeline carried crude oil from tankers delivered to South Portland to refineries in Montreal. With the change in flow of a Canadian pipeline, the Portland Pipeline became a stranded asset. Discussion regarding reversing the flow to carry Canadian tar sands oil to South Portland for export was halted when the city of South Portland established a ban on the use of the pipeline for such purposes. The pipeline, owned by the Portland Pipeline Corporation, presently stands unused.

Exhibit 26: Map of Portland Pipeline (Crude Oil Transport)



South Portland, Maine, was home to one of three storage sites that made up the 1-million-barrel federal Northeast Gasoline Supply Reserve, which was created to counter motor fuel supply disruptions caused by hurricanes, winter storms, and other events. The Reserve can store 100,000 barrels of motor gasoline. In 2024, Congress passed the Consolidated Appropriations Act, which included language requiring the closure of the NGSR. The gasoline reserve was sold in May 2024. The U.S. DOE maintains a Northeast Home Heating Oil Reserve, which was created in 2000 to protect consumers in the northeastern U.S. from supply disruptions. It holds 1 million barrels of ultra-low sulfur diesel (ULSD) at storage sites in Massachusetts, Connecticut, and New Jersey.

Exhibit 27: Map of Maine Petroleum Fuel Infrastructure

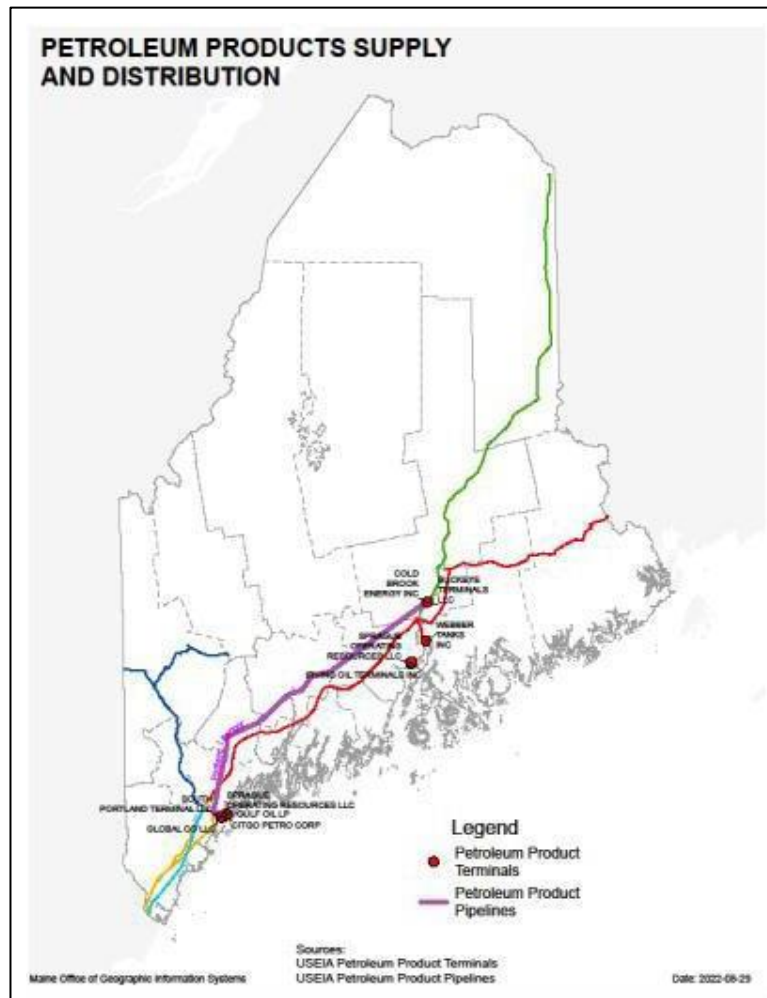
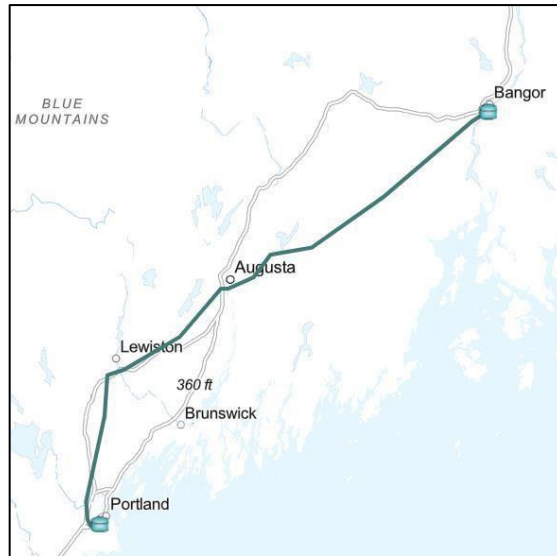


Exhibit 28: Key Refined Product Pipelines Serving Maine



The only petroleum refined product pipeline in Maine is the Portland-to-Bangor Buckeye pipeline. The pipeline and refined products flowing through it are co-owned by Buckeye Partners and Irving.

Exhibit 29: Table of Relevant Ports

Port	Total Crude and Distillates Imported, 2023 (number of barrels)
South Portland	27,521,410
Bucksport	1,895,137
Searsport	5,027,626

Products imported: crude oil, kerosene, #2 heating oil, #6 residual oil, gasoline, diesel, ethanol, jet fuel, other (asphalt, av gas)

Source: Maine Dept. of Environmental Protection

Exhibit 30: Petroleum Terminals in Maine [redacted]

Biofuels

There is only one biofuel production facility in Maine, Maine Bio-Fuel, Inc, and the facility is in Portland. The product is transported by truck to customers in the southern part of the state.

Exhibit 31: Maine Ethanol and Biodiesel Production Plants

Company Name	Location	Capacity (million gallons/yr.)	Capacity (Barrels/day)
Maine Bio-Fuel Inc.	Portland	1	Less than 0.5 Mb/day

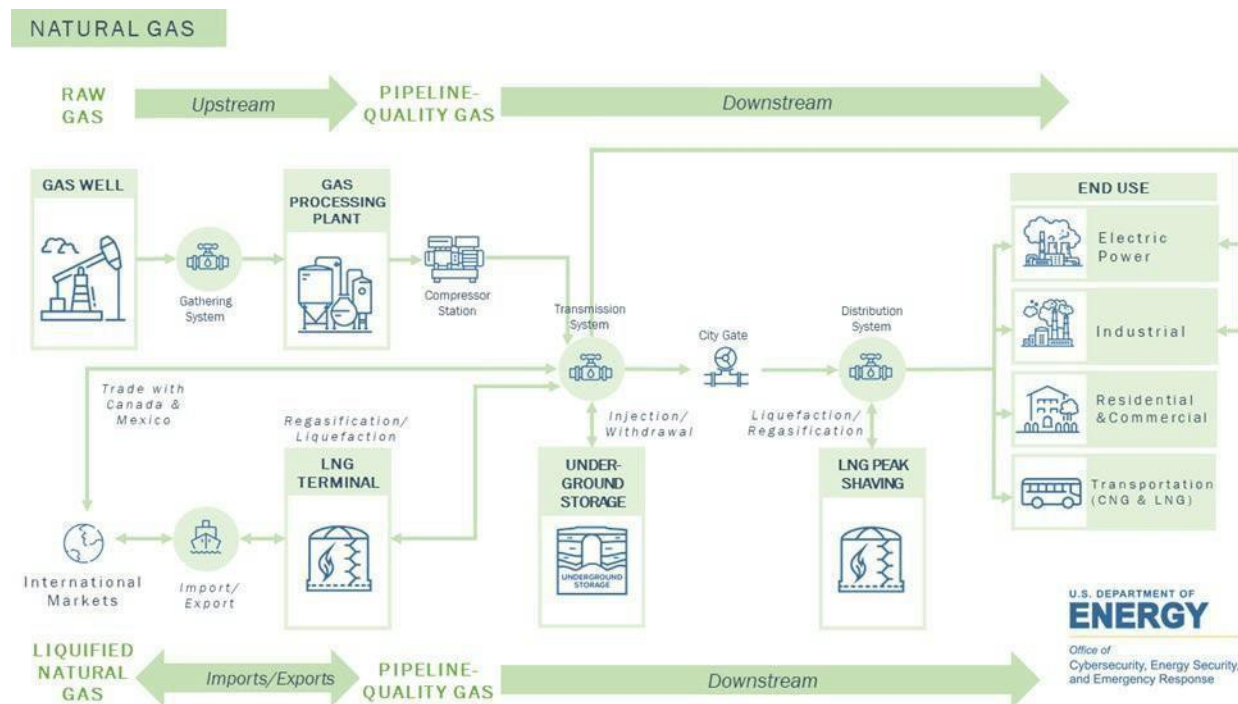
Source: EIA Ethanol Plant Production and EIA U.S. Biodiesel Plant Production

Natural Gas

Maine does not have any natural gas reserves and does not produce or process natural gas. The state depends on natural gas deliveries from other states and countries, which can become constrained during winter peak season or prolonged cold weather snaps. Natural gas enters

Maine via pipelines from New Hampshire and Canada. Saint John LNG, a liquified natural gas (LNG) terminal at St. John, New Brunswick, Canada, receives LNG from overseas and sends it by pipeline to markets that include Maine, New Hampshire, and Massachusetts. Another interstate pipeline, the Portland Natural Gas Transmission System, delivers natural gas from Canada and the United States to southern Maine. The three pipelines service approximately 50,000 residential and commercial customers statewide, and a limited number of large industrial customers.

Exhibit 32: Natural Gas Supply Chain graphic (courtesy of U.S. DOE, CESER)

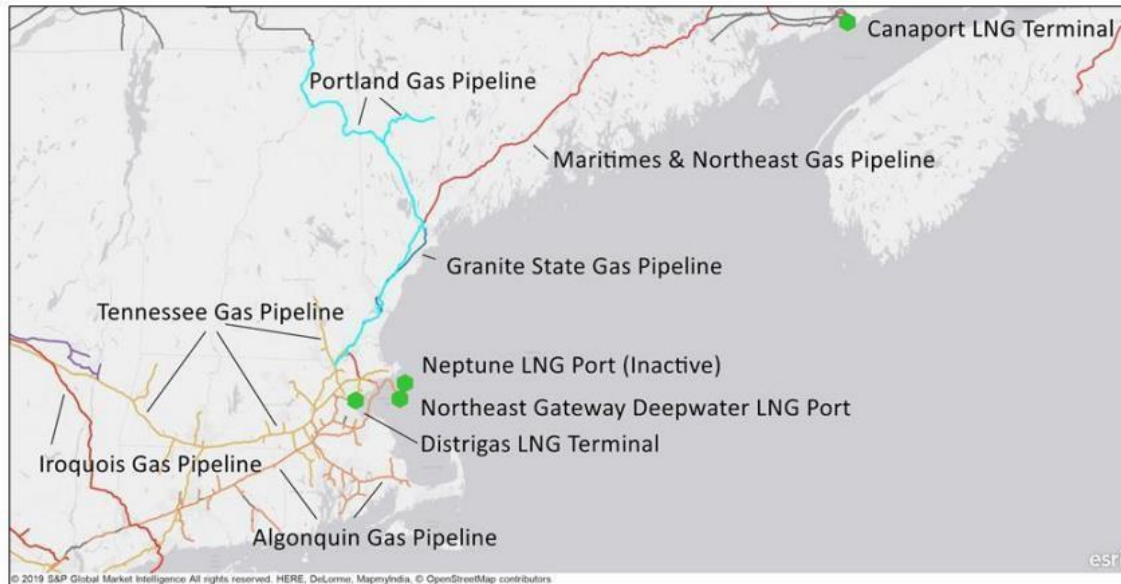


Natural gas is produced either on its own or as associated gas in crude oil production. Natural gas is then separated from NGLs in natural gas processing plants. Gas is typically transported by transmission lines to city gate meters, where gas then moves onto local distribution companies' distribution systems, which deliver gas to power plants and other end-use customers. Gas can be stored at various levels of the supply chain in underground storage caverns for use during high-demand times. It can also be converted into a liquid form, called liquified natural gas or LNG, which can be transported via marine vessels and either imported into the transmission system or its excess supply exported.

To a large degree, the region's generating fleet relies on fuels imported by ship, truck, pipeline, or barge from elsewhere in the United States or abroad. This makes regional prices prone to volatile price fluctuations on the global market, as well as susceptible to fuel shortages. Deliveries of LNG and fuel oil can take several days to weeks to arrive at regional facilities, or

longer in extreme weather conditions. During cold weather, the increased consumption of both natural gas and fuel oil for heating also reduces the availability of these fuels for electric generation.

Exhibit 33: Natural Gas Infrastructure in New England



Source: ISO NE/2019 S&P Global Market Intelligence

Exhibit 34: Key Natural Gas Pipelines - Maine

Owner	Line Name	Products	Origin	Destination
Spectra Energy Partners (77.53%), Emera Inc. (12.92%), and ExxonMobil (9.55%)	Maritimes & Northeast Pipeline LLC	Natural Gas	Goldboro, Nova Scotia	Westbrook, Maine
Portland Natural Gas Transmission System (TC Energy owns 61.7%, Northern New England Investment Company owns 38.3%) & Maritimes & Northeast Pipelines LLC	Portland Natural Gas Pipeline	Natural Gas	Westbrook, Maine	Pittsburg, New Hampshire
Portland Natural Gas Transmission System (TC Energy owns 61.7%, Northern New England Investment Company owns 38.3%) & Maritimes & Northeast Pipelines LLC	Portland Natural Gas Transmission System	Natural Gas	Westbrook, Maine	Dracut, Massachusetts

Source: EIA Energy Atlas and Federal Energy Regulatory Commission's (FERC) Tariff List

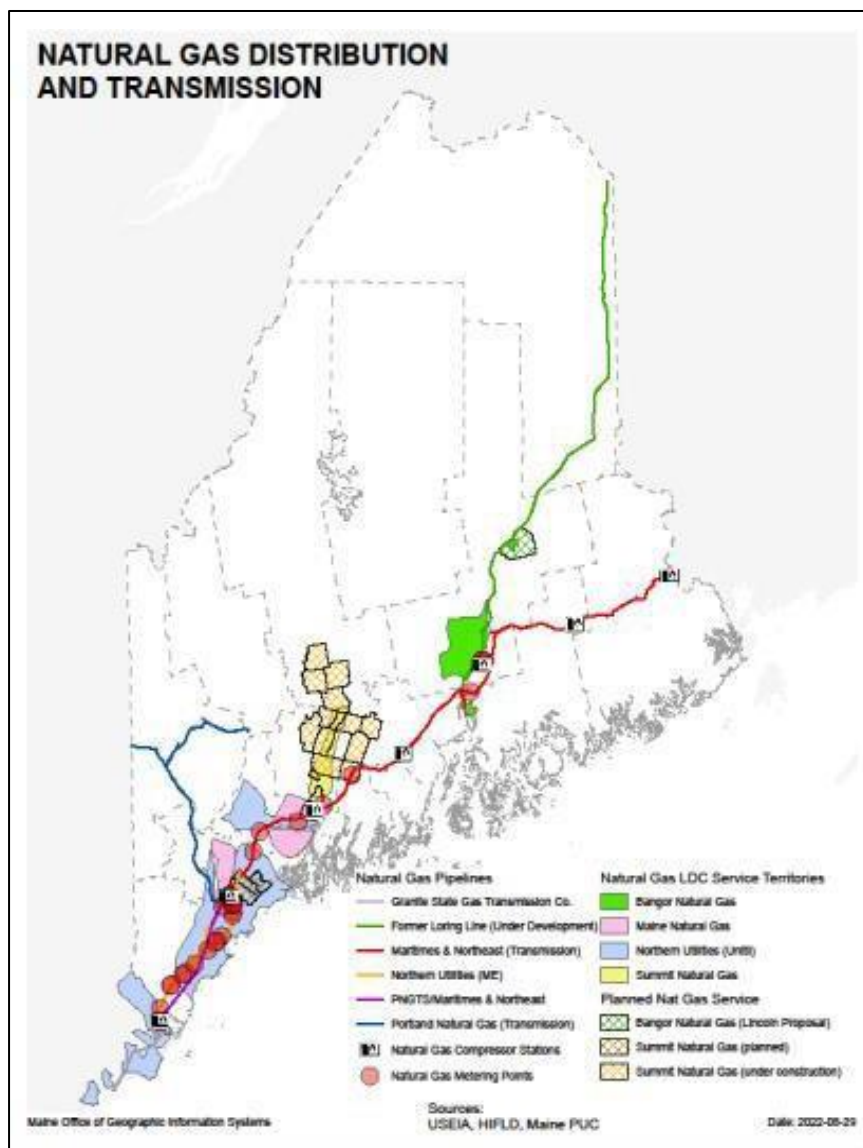
Exhibit 35: Natural Gas Distribution Companies, Sales

Name of Company	Number of customers	Locations served	Sales (2022)
<u>Northern Utilities, d/b/a Unitil</u>	32,647	Greater Portland, Lewiston/Auburn, and selected southern Maine communities, including Saco/Biddeford and Sanford.	\$115,121,477
<u>Maine Natural Gas Corporation (MNG)</u> (subsidiary of AVANGRID, Inc.)	5,738	12 mid-coast (incl. Brunswick) and central Maine communities.	\$30,748,523
<u>Summit Natural Gas of Maine, Inc.</u> , a subsidiary of Summit Natural Gas. Summit is the newest natural gas LDC	5,193	Kennebec County and selected communities just north of Portland.	\$21,909,478

to operate in Maine (since 2013).			
Bangor Gas Company, L.L.C. (subsidiary of Energy West). Transportation-only service to all commercial and industrial customers.	7,885	Bangor, Brewer, Veazie, Orono, and Old Town	\$32,104,645

Source: Maine Public Utilities Commission, utility annual financial reports

Exhibit 36: Map of Natural Gas Distribution Company Territories



Section 2: Risk Profile

Threat and Vulnerabilities Overview

The identification and understanding of vulnerabilities regarding critical energy-related infrastructure assets and threats to these assets is situation-specific and requires communication across federal, state, and local agencies in Maine. Both government and private-sector energy providers strive to ensure that production, transmission, and distribution systems are secure and reliable. This assurance, however, is becoming increasingly difficult as the interdependency of energy networks increases within Maine, as well as the Northeast region.

The state's extensive international border requires building relationships with our Canadian Provincial partners. Maine's vast coastline necessitates an integrated focus on Maine's maritime sector, where thousands of fishing boats, cargo freighters, fuel tankers, pleasure boats, large cruise ships, and their crews pass through year-round.

Natural risks such as flooding, snow and ice storms, and hurricanes pose significant threats to critical infrastructure and surrounding communities. Adverse human-caused events, such as cyber and physical security attacks, hazardous material releases, explosions, and shooting and bombing incidents also have lasting and dramatic effects. In Maine, the most prevalent threats to energy infrastructure and energy delivery to date are natural events – severe summer and winter storms, and the flooding and coastal damage resulting from these weather events.

Identification and understanding of the critical nodes allow providers to establish a more robust system by lowering vulnerabilities, deterring threats, minimizing the consequences of an attack, lessening natural disasters, and improving recovery times. Since one cannot protect or eliminate the risk of all hazards, good emergency plans need to ensure an effective and rapid response that reduces the negative outcomes of any given event.

Maine works within the guidelines of the Department of Homeland Security's Presidential Directive (PDD-22). The PDD-22 identifies 16 sectors of critical infrastructure and key resources:

- Chemical
- Commercial Facilities
- Communications
- Critical Manufacturing
- Dams
- Defense Industrial Base
- Emergency Services
- Energy
- Financial Services

- Food and Agriculture
- Government Facilities
- Healthcare and Public Health
- Information Technology
- Nuclear Reactors, Materials, and Waste
- Transportation Systems
- Water and Wastewater Systems

The state has private and public assets in each of the 16 sectors, and is focused on building partnerships across all 16, including both public officials and private sector representatives. The State and its partners support this initiative through the Department of Homeland Security's [Critical Infrastructure Protection Program \(CIPP\)](#). The CIPP efforts extend beyond vulnerability assessments and improved physical security at key facilities in Maine. Through partnerships and information exchange, Maine provides homeland security alerts and warnings, security assessments and advisories, and other critical information to sector leadership. The results of CIPP will be better-informed and better-prepared public and private sectors, leading to increased protection of Maine's critical assets. Maine embodies this goal to improve the protection of critical infrastructure through [Maine's hazard mitigation plan](#) and the [2023 Maine Homeland Security Strategy](#).

The DOE-assembled [Energy Sector Risk Profile for the State of Maine](#) is another starting point for information regarding Maine's energy threats and vulnerabilities.

Natural Hazards

Maine is exposed to various natural hazards that can cause significant damage to life, property, and critical infrastructure. The SESP has leveraged Maine's 2023 Natural Hazard Mitigation plan (NHMP) to help identify and analyze the most relevant threats to the State and its energy infrastructure. The following threats are categorized as the most significant threats to the State, including:

- 1) [Flooding](#)
- 2) [Severe Summer Weather](#)
- 3) [Hurricanes/Tropical Storms](#)
- 4) [Severe Fall/Winter Weather](#)
- 5) [Wildfire](#)
- 6) [Drought](#)

Flooding

Flooding is the most frequent and costly natural hazard in Maine, impacting both coastal and inland areas.² Flooding results from a variety of factors, including heavy rainfall, snowmelt, ice

jams, storm surge, or dam failures. Flooding can cause damage to buildings, infrastructure, crops, and natural resources, as well as pose risks to public health and safety. Flooding can also trigger secondary hazards, such as erosion, landslides, and contamination.

Five types of flooding can occur in Maine: Inland Flooding, Coastal Flooding and Storm Surge, Flash Flooding, and Urban / Surface Water Flooding.

1. **Inland Flooding:** Occurs for several reasons, including moderate, consistent precipitation, intense precipitation that falls over a short period of time, an abundance of runoff from snowmelt, etc., and even a combination of these factors.
2. **Coastal Flooding and Storm Surge:** Coastal flooding occurs when water levels rise above the normal tidal range, inundating low-lying areas along the coast. Storm surge is a temporary rise in sea level caused by strong winds and low atmospheric pressure associated with storms, such as hurricanes and nor'easters. Storm surge can exacerbate coastal flooding, especially during high tides. Coastal flooding and storm surge can cause erosion, damage to structures and infrastructure, and displacement of people and wildlife. Maine's 3,478 miles of coastline are vulnerable to coastal flooding and storm surge, especially in areas with high population density, development, and exposure to wave action.
3. **Flash Flooding:** Flash flooding is a rapid and localized rise in water levels, usually caused by intense rainfall over a short period of time. Flash flooding can occur in any area, but it is more common in urban areas, where impervious surfaces reduce infiltration and increase runoff. Flash flooding can also occur in hilly or mountainous areas, where steep slopes and narrow valleys enhance runoff and channel flow. Flash flooding can cause severe damage to structures, infrastructure, and vehicles, as well as endanger lives and property. Flash flooding can also trigger landslides, debris flows, and erosion.
4. **Urban / Surface Water Flooding:** Surface water floods occur when an urban drainage system is overwhelmed, and water flows out into streets and nearby structures. It creates no immediate threat to lives but may cause significant economic damage. The combined sanitary and stormwater systems that some urban areas installed years ago cause flooding of sanitary sewage when riparian or coastal floods occur.³

According to the NHMP, flooding has occurred in all 16 counties of Maine, affecting over 500 municipalities. Between 1953 and 2020, Maine experienced 29 federally declared flood disasters, resulting in over \$250 million in damages and 19 fatalities. Examples of severe flood events in Maine's history include the 1987 Coastwide Flood, the 1996-1997 Statewide Flood, the 2003 Statewide Flood, the 2006-2007 Statewide Flood, and the 2019 Aroostook County Flood.

With 5 major rivers, more than 5,000 streams and brooks, 6,000 ponds, and 3,500 miles of coastline, water abundance/flooding is the state's primary hazard.⁴

Sea level rise poses significant and potentially catastrophic risks to coastal communities, causing inundation in previously dry areas and exacerbating other flood hazards. As sea levels rise, so do the impacts of coastal flooding and storm surge. Local sea level rise rates vary due to factors like Gulf Stream water movement and land subsidence. 0.21% of Maine's area is subject to impacts from rising sea levels.

Future Outlook

The NHMP projects that flooding will become more frequent and severe in Maine due to climate change and land use changes. Climate change is expected to increase the intensity and variability of precipitation, as well as the frequency and intensity of storms, such as hurricanes and nor'easters. Climate change is also expected to increase the rate of sea level rise, which will amplify coastal flooding and storm surge, especially during high tides and storm events. Land use changes, such as urbanization, deforestation, and wetland loss, can increase runoff and reduce infiltration, exacerbating flooding in both coastal and inland areas.

Severe Summer Weather

Severe summer weather refers to thunderstorms, hail, lightning, and high winds that occur during the warm season, typically from May to September. Severe summer weather can cause damage to buildings, infrastructure, crops, and natural resources, as well as pose risks to public health and safety. Severe summer weather can also trigger secondary hazards, such as flooding, landslides, wildfires, and power outages. Severe summer weather includes thunderstorms, hail, lightning, and high winds – conditions consistent with tornadoes and extreme heat.

According to the NHMP, severe summer weather has occurred in all 16 counties of Maine, affecting over 400 municipalities. Between 1950 and 2019, Maine experienced over 2,000 severe thunderstorm events, over 500 hail events, over 200 high wind events, and over 100 lightning events, resulting in over \$100 million in damages and 16 fatalities. Examples of severe summer weather events in Maine's history include the 1977 windstorm, the 1995 hailstorm, the 1998 tornado outbreak, and the 2015 microburst.

Future Outlook

The NHMP projects that severe summer weather will become more frequent and severe in Maine, due to climate change and land use changes. Climate change is expected to increase the temperature and moisture content of the air, creating more unstable and energetic conditions for thunderstorm development and intensification. Climate change is also expected to increase the frequency and intensity of storms, such as hurricanes and nor'easters, which can produce high winds and heavy rainfall. Land use changes, such as urbanization, deforestation, and

wetland loss can alter the local climate and terrain, affecting the formation and behavior of thunderstorms and winds. The NHMP recommends various mitigation strategies to reduce the risk and impact of severe summer weather, such as improving weather monitoring and forecasting, enhancing emergency preparedness and response, implementing building codes and standards, and increasing public awareness and education.

Hurricanes / Tropical Storms

According to the National Oceanic Administration (NOAA), a tropical cyclone is a rotating low-pressure weather system that has organized thunderstorms but no fronts. Tropical cyclones with maximum sustained surface winds of less than 39 miles per hour (mph) are called tropical depressions. Those with maximum sustained winds of 39 mph or higher are called tropical storms. When a storm's maximum sustained winds reach 74 mph, it is called a hurricane. Most hurricanes form in the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico between June and November.

Tropical cyclones are a cause of several natural hazards, including inland flooding, coastal floods, straight-line winds, and tornadoes. Land areas within enclosed bays or at the heads of rivers can be especially susceptible to storm surges, though they may be several miles from the open coastline. Along the open coast, an additional factor is coastal waves that form during tropical systems. As storm winds blow across the surface of the ocean, the continual disturbance creates waves. When storm winds blow for extended periods of time and over large distances, wave heights increase. Tropical systems that stay well out to sea can produce large swells with long periods (time between wave crests), but these typically don't cause much damage. However, as systems approach the coastline, these waves can batter the coastline, resulting in erosion, overtopping, flooding, and damage to infrastructure.

Especially threatening tropical cyclones that can impact Maine originate in the Atlantic Basin, which track to move north of the Gulf of Mexico and into the coastal New England region. Hurricanes typically weaken before reaching Maine's borders, but since 1851, 65 tropical systems have passed through Maine's borders. Tropical systems, however, do not need to make landfall in Maine to have significant impacts due to coastal and inland flooding. All of Maine is susceptible to high winds and inland flooding associated with hurricanes. Between York and Washington Counties, there are 152 local jurisdictions within ten counties that are vulnerable to inundation from storm surge.

Severe Fall / Winter Weather – Nor'easter

Severe fall/winter weather refers to snow, ice, freezing rain, and extreme cold that occur during the cold season, typically from October to April. Severe fall/winter weather can cause damage to buildings, infrastructure, crops, and natural resources, as well as pose risks to public health and safety. Severe fall/winter weather can also trigger secondary hazards such as flooding,

landslides, power outages, and transportation disruptions. The major types of severe fall/winter weather that occur in Maine are heavy snow, ice, freezing rain, and extreme cold.

Heavy snow is generally defined as snowfall of 6"-8" or more within 24 hours, and significantly impacts the northern part of Maine. Total seasonal snowfall ranges between 50" to 80" in the Coastal Division, 60" to 90" in the Southern Interior, and 90" to 110+" in the Northern Division.

According to the MSHMP, severe fall/winter weather has occurred in all 16 counties of Maine, affecting over 500 municipalities. Between 1953 and 2020, Maine experienced 28 federally declared winter storm disasters, resulting in over \$50 million in damages and 11 fatalities. Examples of severe fall/winter weather events in Maine's history include the 1969 Blizzard, the 1978 Blizzard, the 1998 Ice Storm, the 2008 Ice Storm, the 2013 Blizzard, the 2015 Blizzard, and the December 2023/January 2024 storms.

The impact of extratropical cyclones on the northeastern United States, focusing on ice storms, heavy rainfall, and high-wind events, is a relatively new threat, developing within the past decade due to rising impacts from climate change. These storms pose significant risks, including property damage, power outages, and transportation disruptions. Mitigation measures include improving infrastructure resilience, such as reinforcing power lines and buildings, enhancing early warning systems, and promoting community preparedness through education and emergency planning. Understanding the link between climate patterns and storm frequency can also aid in developing long-term strategies to reduce the impact of these severe weather events.

Wildfire

Wildfire is an uncontrolled fire that occurs in a natural area, such as a forest, grassland, or wetland. Wildfire can be ignited by natural causes, such as lightning, or by human causes, such as arson, campfires, or debris burning. Wildfire can spread rapidly, depending on the weather, fuel, and topography. Wildfire can cause damage to buildings, infrastructure, crops, and natural resources, as well as pose risks to public health and safety. Wildfire can also trigger secondary hazards, such as smoke, ash, erosion, and flooding.

Maine's forest, which covers about 90% of the state's land area, is composed of various types of trees, such as spruce, fir, pine, birch, maple, and oak. These trees have different flammability and resilience to fire, depending on their age, density, and health. Maine's grasslands and wetlands, which cover about 10% of the state's land area, are also susceptible to fire, especially during dry periods. Maine has had a long history of wildfires, dating back to the state's origin.

According to the MSHMP, wildfires have occurred in all 16 counties of Maine, affecting over 400 municipalities. Between 1999 and 2019, Maine experienced over 8,000 wildfires, burning over 100,000 acres of land, resulting in over \$10 million in damages and 3 fatalities. Examples

of severe wildfires in Maine's history include the 1825 Miramichi Fire, the 1903 Fire, the 1947 Fire, the 1977 Fire, and the 2016 Fire.

Future Outlook

The NHMP projects that wildfires will become more frequent and severe in Maine due to climate change and land use changes. Climate change is expected to increase the temperature and variability of precipitation, creating more drought and heat stress conditions for vegetation. Climate change is also expected to increase the frequency and intensity of storms, such as thunderstorms and nor'easters, which can produce lightning and high winds. Land use changes, such as urbanization, deforestation, and development, can increase the exposure and vulnerability of people and assets to wildfire, as well as reduce the natural fire regime and fuel management.

Drought

Drought is a period of unusually persistent dry weather resulting in prolonged shortages in water supply, with many associated impacts. Drought severity is measured by spatial extent, magnitude, and duration. These factors, along with what part of the state the drought occurs, make drought very difficult to predict, quantify, or put into historical context.

The primary types of droughts that can impact Maine are meteorological drought, hydrologic drought, agricultural drought, and socioeconomic drought.

The NHMP projects that drought will become more frequent and severe in Maine, due to climate change and land use changes. Climate change is expected to reduce the amount and reliability of precipitation, especially in the summer and fall seasons, and increase the temperature and evapotranspiration, creating more water deficit and soil moisture stress. Climate change is also expected to alter the timing and magnitude of snowmelt and runoff, reducing the availability of surface water and groundwater. Land use changes, such as urbanization, agriculture, and development, can increase water demand and consumption, as well as reduce water storage and recharge capacity. The MSHMP recommends various mitigation strategies to reduce the risk and impact of drought, such as improving water conservation and efficiency, enhancing water monitoring and forecasting, implementing drought contingency planning, and increasing public awareness and education.

Physical Hazards

Physical Attacks

Intentional attacks on energy infrastructure are an increasing concern, especially after the December 2022 attacks on electricity substations in Washington state and North Carolina. Energy infrastructure is a target for domestic and foreign terrorists, activists, disgruntled employees, vandals, and thieves (e.g., stealing copper wire). Energy operators and law

enforcement are not always able to connect a motive to infrastructure damage, such as attributing gunshot damage to equipment as intentional or incidental.

Pandemics

Pandemics can cause significant disruption to the energy sector workforce availability. Additionally, a global pandemic can disrupt international supply chains for energy equipment, such as transformers. As of 2023, the energy industry still reports issues sourcing transformers and lengthy delays in acquiring new transformers from foreign manufacturers.

Maintenance Issues/Faulty Equipment

Poorly maintained or older infrastructure is more prone to line arcing, power surges, corrosion, shifting, leaks, or other failures. For example, pipeline integrity issues have caused problems on Colonial Pipeline; an example is a major leak in Hendersonville, NC, and explosions and leaks in Alabama in 2016. Control systems can also potentially disrupt energy supply, even without underlying infrastructure damage.

Human Error

Accidents due to human error that impact energy infrastructure are relatively common and can occur at any level of the supply chain.

Cybersecurity

Cybersecurity is a critical component of Energy Security, and encompasses all sectors – electricity, delivered fuels, and natural gas. Before the widespread deployment of internet-connected devices within energy systems, operators relied on computer software to assist system operators in managing the complex system.

However, with expanded integration of remote sensing and direct communications to the software, the vulnerability to malicious cyber-attacks has multiplied. This is primarily due to the increased number of entry points and greater reliance on automation. Modern energy systems' reliance on data movement and information transfer expands and magnifies the possible threats to and vulnerabilities in the system.

Cybersecurity plans are essential for the physical security of energy generation, transmission, and distribution infrastructure.

Cyber Within Energy

Energy systems (electric, delivered fuels, and natural gas) within Maine use computing technologies to manage business systems and to control and monitor the processes and transportation of energy from production/generation to end use. The energy sector relies heavily on both information technology (IT) systems and operational technology (OT) systems.

OT systems include industrial control systems (ICS) that consist of purpose-built hardware, software, and data networks developed specifically for industrial customers. These systems were designed and built using tools and technology created before the Internet and the technology boom of the late 90s. While these older systems are still in use, they have evolved and adopted newer technologies, including IT technologies built to allow internet connections.

Today, the energy sector is increasingly technology-driven, and these changes have resulted in many benefits, including improvements to efficiency, resiliency, and flexibility. However, cybersecurity vulnerabilities and the capabilities of malicious actors have also changed over the past twenty years. Cyber threats are not limited to personally motivated individuals. Threats also come from well-financed criminal and nation-state groups focused on profit, political gain, or power. The skill level and ability of these groups to compromise internet-connected, internet-adjacent, or even traditional ICS assets that were never designed to connect to the internet continues to grow.

Technologies

OT systems interact with the physical environment or manage devices that interact with the physical environment. These systems monitor or control physical devices, processes, and events. Examples include:

- Energy Management Systems and Supervisory Control and Data Acquisition (SCADA)
- Oil refinery, gas processing, and electricity generation distributed control systems (DCS)
- Pipeline pump/compressor stations and electrical substations
- General industrial control systems used in energy processes

A key area of distinction between IT and OT systems is that a cyber incident within energy OT systems can result in a physical consequence in addition to potential losses of data or damage to an organization's reputation. Some differences in the possible consequences/impact of an attack on an IT system compared with an OT system are described below.

Exhibit 37: Potential Impacts of a Cyber-attack on Energy Infrastructure

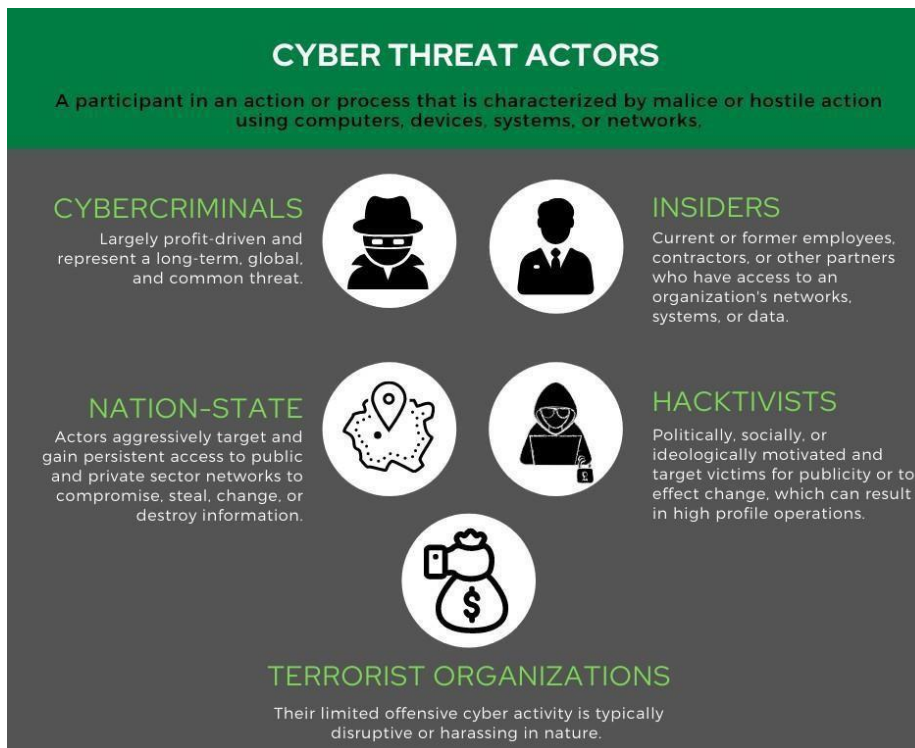
	Information Technology	Operational Technology
Impacts	• Brand damage/ loss of confidence in the company • Loss of personally identifiable information (PII) • Loss of business data • Customer/supplier payment issues	• Operator loses visibility into operations • Operator forced to switch to manual operations mode • Supply fails to meet demand • Disruption to basic daily activities – loss of power or access to fuel. • Health, safety, and economic impacts • Impacts from prolonged disruptions can cascade into larger consequences

A cyber-physical event can cause loss of power or access to fuel, initiate prolonged cascading impacts, create potential risks to health and safety, and result in economic impacts to not just the company but to the people and businesses that rely on that energy. For cybersecurity best practices for industrial control systems, CISA and DOE created an [infographic](#) outlining key areas of consideration.

Cybersecurity Threats

The Annual Threat Assessment that the Office of the Director of National Intelligence (ODNI) released in 2022 emphasizes, as it has in the past, that cyber threats from nation-states remain acute. ODNI's concerns are focused on Russia, China, Iran, and North Korea, all of whom currently possess the ability to remotely damage infrastructure in the U.S. or compromise supply chains. We know that adversaries – whether politically, socially, or financially motivated – are targeting our nation's energy infrastructure and the digital supply chain. The graphic below illustrates the different kinds of threat actors.

Exhibit 38: Cyber Threat Actors



Source: DOE CESER, [State Energy Security Plan Optional Drop-In: IT/OT and Cyber Threat Overview](#)

The energy sector is uniquely critical because all other critical infrastructure sectors depend on power and fuel to operate. Unfortunately, this makes energy infrastructure a target for cyberattacks. All energy systems have vulnerabilities to cyber threats; 100% security is not possible. But many steps can be taken to harden OT systems to mitigate these threats.

Understanding the current and evolving threat landscape, as well as the possible consequences of a cyber-physical event, can help state officials and energy owners, and operators understand risks. Knowledge about risks can then be used to prioritize investments, such as purchases, staff resources, and training, based on the kinds of threats and vulnerabilities that pose the greatest risks to an organization.

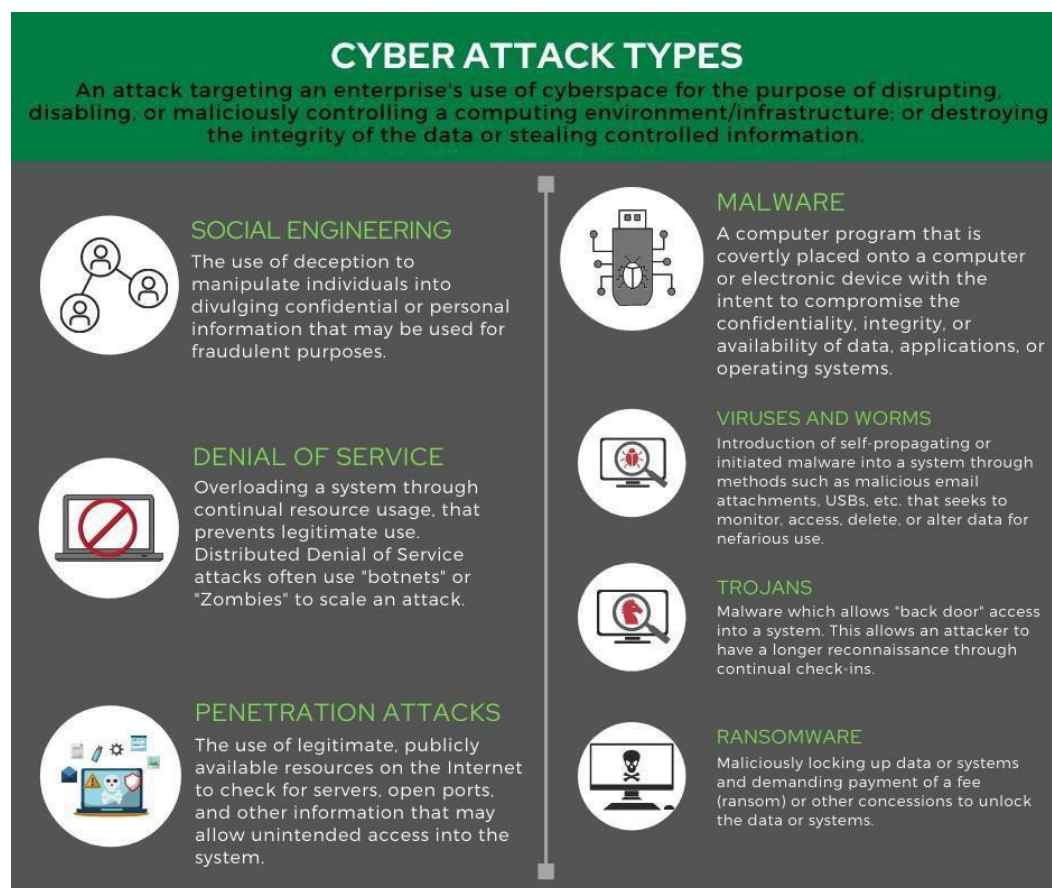
Investments can be focused on areas that can mitigate the highest risks. Because much of the nation's critical infrastructure is owned and operated by private companies, both the government and private sector have a common incentive to reduce the risks of disruptions to critical infrastructure. The [National Infrastructure Protection Plan](#) (NIPP) recognizes that public-private partnerships are vital to keeping critical infrastructure safe and secure, including from cyber-attacks.

Cyber Attack Types

In addition to understanding who cyber threat actors are, it is also important to understand the different methods those actors may use to compromise important systems, networks, and infrastructure.

Common types of cyber-attacks are listed below.

Exhibit 39: Cyber Attack Types



Source: DOE CESER, [State Energy Security Plan Optional Drop-In: IT/OT and Cyber Threat Overview](#)

Federal and State Cyber Information Sharing

Cybersecurity information sharing is vital and ideally is bi-directional. This includes sharing cybersecurity best practices, guidance, and trends; information on emerging cyber threats and vulnerabilities affecting energy sector stakeholders; and real-time information sharing during the response and recovery stages following a cyber event. Robust, timely, actionable information is crucial to all partners because each has a unique role to play in protecting critical infrastructure against cybersecurity threats, as well as participating in a coordinated response should a cyber incident occur.

The State of Maine engages in information sharing through a variety of mechanisms whereby the state receives, analyzes, and/or shares information with energy and emergency officials and energy industry partners. This may include, but is not limited to, the following:

- Actively monitoring announcements and alerts from Information Sharing and Analysis Centers, or “ISACs”
- Facilitate or attend threat briefings (unclassified or classified)
- Fusion center practices may include bi-directional information sharing with the sector, briefings, or other outreach
- Public utility commission assesses cybersecurity strategies, plans, and challenges of regulated utilities
- State meets in formal settings to review cybersecurity issues and challenges
- Distributes actionable indicators or detection signatures of malicious activity, vulnerability information, courses of action (to proactively defend or to stop and remediate an attack), and cyber threat intelligence
- Encourages industry participation in federal cyber information sharing programs

Federal and State Roles Regarding Cybersecurity Planning, Preparedness, and Response in the Energy Sector

Federal Energy Cybersecurity Planning, Preparedness, and Response [Cybersecurity and Infrastructure Security Agency \(CISA\)](#)

The Cybersecurity and Infrastructure Security Agency (CISA) is the Nation’s risk advisor, working with partners to defend against today’s threats and collaborating to build more secure and resilient infrastructure for the future. CISA regions lead and support public and private sector partners in developing and maintaining secure and resilient infrastructure. Region 1 covers approximately 72,000 square miles that span the six New England states, with 137,000 miles of coastline. Regional personnel work with critical infrastructure partners and communities in the region to build resilience and readiness, mitigate risk, and provide response support by:

- improving situational awareness of cybersecurity risks and incidents
- supporting preparation, response, and recovery efforts for hazards impacting critical infrastructure
- safeguarding soft targets and crowded places
- conducting and integrating infrastructure assessments and analysis, including dependencies and cascading effects, on critical infrastructure

to influence decision-making at all phases of emergency management

- facilitating information sharing between public and private sector critical infrastructure partners
- enhancing election infrastructure security and other critical infrastructure

CISA's mission encompasses three primary areas: cybersecurity, infrastructure security, and emergency communications. CISA's cybersecurity mission is to defend and secure cyberspace by leading national efforts to drive and enable effective national cyber defense, resilience of national critical functions, and a robust technology ecosystem.

Selected CISA cybersecurity resources available to Maine include:

[Assessments: Cyber Resilience Review \(CRR\)](#)

The CRR is a no-cost, voluntary, non-technical assessment to evaluate an organization's operational resilience and cybersecurity practices. CISA can provide this assessment to any public or private infrastructure organization that requests assistance.

Information Sharing with Relevant State Agencies

CISA can provide real-time technical assistance to state emergency operations center (EOC) personnel during emergency events, including cyber events. CISA utilizes several sources, including HIFLD data, to identify the most critical local assets so state mitigation and restoration resources can be most effectively targeted.

[North American Electric Reliability Corporation \(NERC\)](#)

For more than a decade, electric utilities have been tasked with meeting standards from the North American Electric Reliability Corporation (NERC) and mandated by the Federal Energy Regulatory Commission (FERC). NERC Standards provide a cybersecurity framework for the identification and protection of Critical Cyber Assets to support the reliable operation of the Bulk Electric System. These standards recognize the differing roles of each entity in the operation of the Bulk Electric System, the criticality and vulnerability of the assets needed to manage Bulk Electric System reliability, and the risks to which they are exposed. The U.S. Department of Homeland Security created the Pipeline Cybersecurity Initiative (PCI) and has charged the Cybersecurity and Infrastructure Security Agency (CISA) and the Transportation Security Administration (TSA) with assessing cybersecurity risks to the Nation's pipeline infrastructure, with a focus on Oil and Natural Gas (ONG) pipelines. This effort aligns with CISA's cybersecurity resources, the TSA's pipeline security relationships and authorities, and the Department of Energy's (DOE) energy sector expertise with industry knowledge and experience to identify cybersecurity risks and develop risk strategies to prepare for, respond to, and mitigate major cyber events, as well as strengthen the security and resilience of the Nation's pipeline infrastructure.

U.S. Department of Energy's Office of Cybersecurity, Energy Security, and Emergency Response (CESER)

CESER-supported cybersecurity resources are listed in the table below.

Exhibit 40: CESER Supported Cybersecurity Resources

Resource	Members	Description
<u>Multi-State Information Sharing and Analysis Center (MS-ISAC)</u>	State agencies that are involved in situational awareness and information sharing, such as the PUC, MEMA, and the MIAC.	The MS-ISAC is a CISA-supported collaboration with the Center for Internet Security designed to serve as the central cybersecurity resource for the nation's state, local, tribal, and territorial (SLTT) governments. It is a resource for information on cyber threats to critical infrastructure. Maine members of the MS-ISAC can share threat information with the energy sector when appropriate. The MS-ISAC is a membership-based collaborative that is open to SLTT entities of all types. Members receive direct access to a suite of services and informational products, including cybersecurity advisories and alerts, vulnerability assessments, incident response support, secure information sharing, tabletop exercises, a weekly malicious domains/IP report, and more.
<u>Electricity Information Sharing and Analysis Center (E-ISAC)</u>	Electricity owners and operators in North America Approved individuals in states with energy emergency response roles	The E-ISAC provides information and resources to help the North American electricity industry prepare for and defend against both cyber and physical security threats.
<u>Oil and Natural Gas Information Sharing and Analysis Center (ONG-ISAC)</u>	Natural Gas Utility Companies	The ONG-ISAC is a public/private partnership that serves as a central point of coordination and communication to aid in the protection of exploration and production, transportation refining, and delivery systems of the oil and natural gas (ONG) industry, through the analysis and sharing of trusted and timely cyber threat information, including vulnerability and threat activity specific to ICS and SCADA systems.
<u>Downstream Natural Gas Information Sharing and Analysis Center (DNG-ISAC)</u>		The DNG ISAC serves natural gas utility (distribution) companies by facilitating communications between participants, the federal government, and other critical infrastructures. Update calls 2x/yr.
<u>Maine Information and Analysis Center (MIAC)</u>		The MIAC is Maine's designated "fusion center". It is a program within the Maine Department of Public Safety. The MIAC's mission is to collect, analyze, and appropriately share intelligence between the federal government and the State of Maine. The MIAC also provides analytical and investigative support for crimes of a complex, organized, or statewide

		nature. The energy sector is part of their responsibility.
U.S. Coast Guard, sector Northern New England – cybersecurity subcommittee	State agency members include MEMA and GEO.	Subcommittee meets periodically to receive situational awareness regarding cybersecurity of Maine’s ports.

There are also some CESER-supported resources available for states to assess the maturity of their cyber capabilities/programs. These include the following:

- The Department of Energy’s [Cybersecurity Capability Maturity Model \(C2M2\)](#) enables organizations to voluntarily measure the maturity of their cybersecurity capabilities consistently through a publicly available tool.
- The American Public Power Association (APPA) developed the [Public Power Cybersecurity Scorecard](#), an online self-assessment tool for municipal utilities to evaluate their cybersecurity programs and overall posture. This tool is based on C2M2 and builds upon the assessment with additional resources.
- The National Rural Electric Cooperative Association (NRECA) developed the [RC3 Cybersecurity Self-Assessment](#). The assessment, available either in hardcopy or online, is designed to help cooperatives understand their cybersecurity posture and is part of the larger [Rural Cooperative Cybersecurity Capabilities \(RC3\) Program](#). The RC3 program develops and provides tools and resources focused on improving the cybersecurity capabilities of cooperatives. The program also provides opportunities for collaboration, education, and training.
- The National Association of Regulatory Utility Commissioners (NARUC) has developed a suite of cybersecurity resources for public utility commissions (PUCs), including [Understanding Cybersecurity Preparedness: Questions for Utilities](#) to help Public Utility Commissions (PUCs) gather and evaluate information from utilities about their cybersecurity risk management and preparedness.
- The National Association of State Energy Officials has developed a guide to assist states in enhancing cybersecurity, called [Enhancing Energy Sector Cybersecurity: Pathways for State and Territory Energy Offices](#).

Exhibit 41: State Agency Roles in Energy-related Cybersecurity Planning, Preparedness, and Response.

Agency	Role in Energy-Related Cybersecurity Planning, Preparedness, and Response
Governor’s Energy Office (GEO)	The GEO is the designated State Energy Office (SEO) but has no regulatory authority or other formal role in cybersecurity planning or response. The GEO participates in the Coast Guard, Sector Northern New England’s cybersecurity subcommittee for situational awareness and information coordination purposes. The GEO also participates as a member of the Emergency Operations Team (ERT) in the state Emergency Operations Center when activated during an emergency.
Maine Dept. of Defense, Veterans and Emergency Management	Within the Dept of Defense, Veterans and Emergency Management is the Homeland Security Advisory Council (MRSA Title 37-B, §708). The Council was established by Executive Order and subsequently adopted by the state legislature in 2006. The Council is a commissioner-level group, comprised of the following members: • The Director of Maine Emergency Management Agency (chair of council) • The Commissioner of Defense, Veterans, and Emergency Management (designated Homeland Security Advisor) • The Commissioner of Public Safety • The Director of the Maine Center for Disease Control, within the Department of Health and Human Services • The Chief of the Maine State Police within the Department of Public Safety • A representative of the Governor • The Commissioner of the Department of Inland Fisheries and Wildlife • The Commissioner of the Department of Marine Resources • The Commissioner of the Department of Agriculture, Conservation, and Forestry The Council advises the Governor on all matters related to Homeland Security, including cybersecurity. The Council provides a forum for the top officials in the State to collaborate, share essential information, and develop a unified strategy to address Homeland Security issues in Maine. The group is obligated to meet at least once/year and as specific needs arise.
Maine Emergency Management Agency (MEMA)	The goal of MEMA’s cybersecurity effort is to lessen the impact of a cyber incident on the communities of Maine. Malicious cyber activity represents a serious and ever-increasing threat to our state’s computer systems and critical infrastructure networks. MEMA has certain obligations regarding cybersecurity. MEMA chairs the Homeland Security Council; it is responsible for developing and updating the state’s Homeland Security Strategy; it monitors the state’s critical infrastructure, and assists communities through educational outreach, information

sharing, coordination, and response. MEMA also convenes the Cybersecurity Advisory Council, established by Executive Order in 2021.

The Council is appointed by the Governor and includes the state Chief Information Officer (CIO), the Chief Information Security Officer (CISO), and designees from the Departments of Administrative and Financial Services; Defense, Veterans and Emergency Management and Public Safety; Maine National Guard; the University of Maine System; and the Office of the Governor. The responsibilities of the Council, delineated in the Executive Order, are to:

- Formalize strategic cybersecurity partnerships at the federal and state levels to synchronize defenses and cybersecurity planning strategies, as well as strengthen communication and coordination of information-sharing efforts
- Regularly examine threats and vulnerabilities of State information assets
- Support the development of statewide policies and procedures that bolster and align the State's cybersecurity framework and governance structure with national best practices, including those developed by the National Institute of Standards and Technology
- Develop and sustain the State's capability to identify, mitigate, and detect cybersecurity risks, as well as respond to and recover from cybersecurity-related incidents
- Participate in activities coordinated by the Chief Information Officer to better understand and address security incidents and critical cybersecurity threats to the State, including proven cyber defense measures for government services, critical infrastructure, vulnerability identification, prioritization strategies, and operational response and mitigation tools
- Provide recommendations focused on narrowing the cybersecurity workforce gap and developing a talent pipeline in fields involving cybersecurity
- Provide advice and recommendations for opportunities to align and integrate cybersecurity strategies within the State's overall strategic planning efforts
- Work collaboratively with the Homeland Security Advisory Council, as established in Title 37-B MRSA § 708, to identify cyber threats and align emergency and cyber response and recovery operations; and
- Present recommendations to the Governor and Cabinet as needed.

Also in 2023, Maine established a Cybersecurity Planning Committee that is coordinating, developing, and approving a strategic Cybersecurity Plan. This plan will guide the development of cybersecurity capabilities across Maine in the coming years. Most importantly, this plan will enable Maine to receive subsequent allocations of federal funding to implement its goals and individual projects in communities across the state.

Finally, MEMA administers the State and Local Cybersecurity Grant Program (SLCGP) to improve Maine's cybersecurity posture in accordance with the grant goals set forth by the Cybersecurity and Infrastructure Security Agency (CISA) and the Federal Emergency Management Agency (FEMA):

- Implement cyber governance and planning

	• Assess and evaluate systems and capabilities • Mitigate prioritized issues; and • Build a cybersecurity workforce Currently, states and territories are the only eligible entities for this grant, and local and tribal governments are eligible sub-recipients.
Office of Information Technology (OIT)	The state's Office of Information Technology houses the state Chief Information Officer (CIO) and the Chief Information Security Officer (CISO). The CIO and CISO monitor for signs of security breaches or attacks within state systems. They maintain contacts for operators of privately owned energy infrastructure. The CIO also chairs the Cybersecurity Advisory Committee. The CISO assists the Maine PUC with assessing the cybersecurity preparedness and plans of the state's regulated utilities.
Maine Public Utilities Commission (MPUC)	The PUC is responsible for monitoring and assessing the cyber capabilities of regulated utilities. It has the authority to ask for, review, and approve cybersecurity plans and IT spending levels. The PUC, with the assistance of the CISO and a cybersecurity consultant, reviews spending levels and descriptions of protection strategies for their assets, called assessments, annually. Due to the sensitive nature of cybersecurity planning and preparedness, the PUC permits the utilities to keep the details of their procedures confidential. The PUC alerts the MS-ISAC in the event of any cyber breach or attack. The PUC also provides technical support to smaller utilities regarding their cybersecurity preparedness.
Maine National Guard	The Maine National Guard (part of the Department of Defense, Veterans, and Emergency Management) has a cyber office that can be a resource in the event of a cyber incident. The Governor must declare a state of emergency to activate this unit.
Maine Information and Analysis Center (MIAC)	MIAC is Maine's designated "fusion center". It is a program within the Maine Department of Public Safety. The MIAC's mission is to collect, analyze, and appropriately share intelligence between the federal government and the State of Maine. MIAC accomplishes this task through processes of intelligence collection, contextual analysis, and dissemination to federal, state, county, municipal, and relevant private partners. The MIAC also provides analytical and investigative support for crimes of a complex, organized, or statewide nature. The energy sector is part of their responsibility.

Risk Assessment

This risk assessment of Maine’s critical energy infrastructure is informed by a variety of sources, including the [Maine Hazard Mitigation Plan](#); [“Maine Won’t Wait”](#) (Maine’s climate action plan), energy industry stakeholder interviews, as well as state and federal resources. The Maine Hazard Mitigation Plan reviews natural hazards in detail, but doesn’t include consequences related to energy infrastructure impacts, which have been added to the table below to help craft risk problem statements and aid in the ranking of risks.

Hazard likelihood, reflected in the hazard-infrastructure maps in Appendix A: Risk Assessment – Exposure Maps, is based on historical data or generally accepted probabilistic models. While the past is not always a perfect predictor of the future, and climate and weather patterns are changing rapidly, Maine’s risk assessment is rooted in the latest available information and will be updated as necessary and appropriate, with a keen understanding that many of the top risks detailed below are likely to be exacerbated by our changing climate.

Key Stakeholders

- Maine Emergency Management Agency (MEMA)
- Maine Public Utilities Commission (MPUC)
- American Petroleum Institute (API)
- Propane Association of New England
- Central Maine Power
- Versant Power

Exhibit 42: Top Energy Sector Risks Identified for Maine

INFRASTRUCTURE	THREAT	RISK PROBLEM STATEMENT
High Voltage Transmission Lines	High winds, Hurricane winds	If high winds cause transmission towers to collapse, lines to break, or damage from vegetation, there can be widespread power outages for days or up to two weeks, which can impact daily life, safety, and economics when communities, businesses, and critical infrastructure (hospitals, emergency services, etc.) lose access to electricity. A lack of redundancy on these lines across the state (i.e., northern Maine from New Brunswick) results in most customers being without power for a prolonged period. This can especially impact rural, more vulnerable customers.
	Winter weather, ice storms	If severe winter weather is experienced, especially ice events along coastal Maine, high voltage transmission lines can sag and contact trees, structures, etc., and lead to line faults and line outages. Additionally, ice buildup on transmission lines can cause galloping, a wind-induced vibration that can cause line outages. Ice buildup on transmission towers can cause structural damage and tower failure. These effects can all cause customer power outages ranging from hours to weeks, and transportation and other access issues during these events can prolong the restoration times.

INFRASTRUCTURE	THREAT	RISK PROBLEM STATEMENT
Substations	Flood, storm surge (especially with sea level rise impacts)	If a riverine flood or storm surge impacts substations in Maine, the substations may be damaged by water entering electrical equipment. This has been seen in recent years more in inland Maine, although significant risk exists along the coast as well. The number of customers impacted depends on the voltage/purpose of the substation. Lower voltage substations may directly serve a smaller number of customers and have little redundancy, but higher voltage substations may serve greater numbers of customers and hence have greater potential consequences if damaged.
	Physical attack	With an increasing trend of substations being targeted for physical attacks (with varying motives from theft to terrorism), a substation attack in Maine could result in power outages for hours to days. The number of customers impacted depends on the voltage/purpose of the substation. Lower voltage substations may directly serve customers and have little redundancy, but higher voltage substations may serve greater numbers of customers and hence have greater potential consequences if damaged.
Electric System	Cyberattack	A large-scale cyberattack across either the CMP or Versant transmission systems could have severe consequences for grid reliability and may result in significant customer power outages across the state, including customers directly served by cooperatives or municipal utilities for hours to days.
	Climate change and the increased frequency and severity of extreme weather	The predicted increase in frequency and severity of extreme weather events, including hurricane winds, storm surge, winter storms, and extreme heat waves, puts additional stress on the aging electric grid. More storms mean more potential for damage to grid infrastructure, which can cause decreased grid reliability, blackouts, and extended customer outages.
	Generation Shutdowns	Short-term or permanent closures of generators of any kind impacting the ISO-NE system can lead to decreased grid reliability and should be reviewed in advance for potential impacts. See section ISO-NE Regional Issues for more information.
Portland Petroleum Terminals	Hurricane wind, storm surge (especially	If a hurricane or tropical storm comes into the Portland area, strong winds and flooding from storm surge may cause damage to the Portland petroleum terminals or an inability to access the terminals due to flooding. This could shut them down for days to a week. An outage at these terminals will necessitate

INFRASTRUCTURE	THREAT	RISK PROBLEM STATEMENT
	in the future with sea level rise impacts)	longer haul trucking to resupply retail stations in the area, causing possible shortages of retail fuel and the need to implement HOS waivers.
Liquid Fuel Distribution Supply Chain	Winter weather	If winter weather causes blocked roadways due to downed trees/wires, trucks that deliver liquid fuels may be unable to travel between their terminal pick-up points and retail station delivery points. There may be significant delays in the truck distribution process while widespread roadway closures are in effect until they are able to be cleared. Additionally, rail movement of propane could experience similar delays during winter weather blockages of the rail system, significantly impacting the ability to supply residential customers with propane during high-demand periods.
All Maine Petroleum Terminals	Multiple, especially those causing a power outage	If any extreme weather event or physical attack causes a power outage at Maine petroleum terminals, most do not have adequate backup power capabilities and would be unable to load trucks with fuel, which could result in retail gas station shortages/home heating fuel shortages if the terminal outages lasted more than a day or two.
	Port Closure	In any event that causes closure to the petroleum ports in Maine (i.e., icing, strike, cyberattack, etc.), the inability to bring more petroleum products into the terminals by marine vessels would quickly draw down the stored products within the tanks. This could shut terminals down for the duration of the port closures and would necessitate longer-haul trucking to resupply retail stations in the area, causing possible shortages of retail fuel and the need to implement hours-of-service waivers.
Natural Gas Pipelines (M&NP and PNGTS)	Flood Risk	If natural gas pipelines are inundated by floodwaters, several critical risks emerge. Structural supports may be undermined, causing pipeline sagging or breakage. Additionally, debris carried by floodwaters can impact the pipeline, potentially disrupting energy supply. If the pipeline is ruptured, customers along the system may not receive the natural gas needed for heating, power production, or other industrial uses.

After identifying the most significant energy sector risks, an overall energy risk assessment is built on the following three components, leveraging assessment methodology from the DOE CESER's Risk Assessment Essentials for State Energy Security Plans⁵:

- **Exposure:** The exposure element represents the magnitude and likelihood of a threat or hazard occurring in the same location as an energy asset.

- **Vulnerability:** This factor represents the susceptibility of the energy asset or system to be disrupted by the given hazard and the most likely duration of an outage.
- **Consequence:** This factor represents the importance of the asset to energy supply and customers in the State and therefore the consequence to the State if the asset were to be offline due to a hazard.

Conceptually, the risk formula is:

$$Risk_{Asset} = Threat_{Asset\ Location} \times Vulnerability_{Asset\ Type} \times Consequence_{Asset}$$

Although this risk analysis does not quantitatively assess scores for the three factors, each was considered for this qualitative, stakeholder-based analysis. As any one of the risk factors increases, the resulting risk will similarly increase.

The following tables highlight risks from the most relevant threats and hazards to Maine energy infrastructure in more detail. The hazard mitigation plan discusses other hazards (drought, wildfire, erosion, earthquake), which could impact energy infrastructure, but that have not had a significant impact in the recent past. Additionally, detailed natural hazard annual frequency versus Maine’s energy infrastructure is mapped in GIS and shown in Appendix A: Risk Assessment – Exposure Maps

Vulnerabilities

Vulnerability to hazards refers to the susceptibility of a system or asset to the damaging effects of a hazard. The following table highlights how individual elements of the energy supply chain can be susceptible to harm from various hazards.

Exhibit 43: Vulnerabilities by Energy Sector to Relevant Hazards in Maine

Hazard	Power	Liquid Fuels	Natural Gas
• Cyber Incident	• Informational technology and operational technology systems can be impacted; this can include company data, payment, and scheduling systems, sensors, and control systems.		
• Drought	• Reduced hydroelectric generation due to low water levels. • Reduced efficiency at thermoelectric generation facilities if there are constraints on steam or cooling.	• Impacts to biofuel feedstocks from low moisture in soil. • Low water levels can prevent barge traffic on inland waterways.	• Negligible

• Dam Failure	• Damage to downstream infrastructure due to flooding and debris. • Hydroelectric power generation may be disrupted, which may also reduce black start capabilities. • Damage to infrastructure.	• Unearthing and rupturing of pipelines and possibly bulk storage downstream.	• Unearthing and rupturing of pipelines.
• Earthquake	• Examples of damage include power generation facilities, transmission poles, etc.	• Examples of damage includes pipeline rupture, out-of-state refineries, and pumping stations.	• Examples of damage includes pipeline rupture, compressor stations.
• Equipment Malfunction	• Line arcing, power surges, corrosion, or moisture on equipment can cause equipment to malfunction or go offline.	• Corrosion, material failure, excess pressure buildup, or control malfunctions can cause supply disruptions.	• Corrosion, Material failure, excess pressure buildup, or control malfunctions can cause supply disruptions.
• Extreme Heat	• Increased demand for cooling. Depending on available capacity, this can cause ISOs to operate below reserve margins. • Increased risks of wildfires from power lines. • Examples of Infrastructure damage can include power generation equipment, control center buildings, and transmission lines.	• Can decrease efficiencies at out-of-state refineries. • Examples of infrastructure damage include refinery process units, tanks, and underground pipelines.	• Examples of infrastructure damage include underground pipelines.

• Landslide	• Damage to nearby infrastructure due to debris or foundation impacts.		
• Manmade damage	• Deliberate physical attacks on or takeovers of infrastructure. Human error can cause facilities to run outside of the designed parameters.		
•	• Transmission lines may be impacted by individuals hitting power lines, cutting trees down, or striking underground wires.	• Third-party strikes on pipelines can rupture lines.	• Third-party strikes on pipelines can rupture lines.
• Pandemic	• Shifts in demand and reduced worker availability.		
• Tropical Cyclone	• Damage to infrastructure from high winds, debris, and flooding. • Examples of Infrastructure damage can include power generation facilities, transmission poles, etc.	• Examples of Infrastructure damage include pipeline pumps and tanks. • Shoaling in ports can prevent ship and barge traffic to terminals.	• Examples of infrastructure damage include pipeline pumps and tanks.
• Thunderstorm and Lightning	• Blown transformers and downed trees may impact power lines.	• Power outages may impact refinery, terminal, or pumping operations.	• Power outages may impact selected electric compressor operations.
• Tornado	• High winds can cause damage to power lines and power generation facilities.	• High winds can cause damage to terminals and other above-ground facilities.	• High winds can cause damage to compressor stations, metering and regulating stations, and other aboveground facilities.
• Wildfire	• Damage to power lines and power generation facilities. • Utilities may shut off power to prevent wildfires (e.g.,	• Combustible Material if exposed, primarily impacting aboveground infrastructure.	• Combustible Material if exposed, primarily impacting aboveground infrastructure.

	high temperatures and high winds).		
• Winter Storm and Extreme Cold	• Freezing in cooling towers prevents electric generation. • Rail freezing impacting feedstock to power generation (e.g., coal). • Increased demand for heating can add strain to available capacity, causing ISO-NE to operate below reserve margins.	• Freezing for non-weatherized equipment, including frozen product within the piping system, and malfunctioning control equipment. • Increased back-up generator demand. • Freezing of rail, potentially impacting the delivery of propane.	• Freezing may impact non-weatherized equipment • Increased demand for heating can strain capacity. • Certain electric generators may not be able to obtain fuel (natural gas) during certain weather and market conditions, and will need to switch to alternate fuel supplies (LNG or distillates).

Consequences

Consequence in the context of energy infrastructure systems or assets refers to the impact resulting from their loss or degradation. These consequences can be categorized as direct and indirect:

- **Direct Consequences:** These involve the immediate effects of an energy infrastructure system or asset outage, the loss of energy supply, or services provided by the asset. These losses can be quantified in terms of energy units (e.g., megawatt-hours of electricity, barrels of petroleum products, cubic feet of natural gas) or the number of affected customers.
- **Indirect Consequences:** These are more complex and challenging to quantify. They encompass broader societal impacts resulting from the energy supply loss. Examples include economic losses, threats to human health, disruptions in dependent infrastructure functionality, and compromised customer services. The severity of indirect consequences varies based on factors like regional and seasonal energy consumption patterns and use case, redundancies in supply or transportation systems, and the availability of energy storage or alternative resources to offset the loss. It should consider impacts on critical energy users, like critical infrastructure and specific vulnerable communities that are impacted.

Sector-level consequences are discussed in the following three subsections, but it is important to note that consequences may extend to other critical lifeline sectors as described in the subsequent interdependencies section.

Electricity Sector Consequences

It is very difficult to quantify how many electric customers, and which specific customers, are directly served by specific substations and transmission lines without detailed power flow analysis. Generally, the higher voltage substations have fewer directly supplied customers but have greater quantities of electricity flowing through them, and a loss of a single high voltage substation or transmission line may degrade or isolate multiple downstream substations, which directly serve customers. These are more likely to disrupt power to a larger number of customers, although grid networking and redundancy at this level may lead to little or no customer impact. Northern Maine, only indirectly connected to the rest of Maine's grid, has less redundancy, which can mean single-node outages are more likely to cause customer outages.

Individual distribution system outages typically impact a small number of customers and can be restored fairly quickly with established crews. Larger, widespread natural hazard events may impact many distribution circuits at once, which can lead to higher consequences of large numbers of customer outages.

Since power generators in Maine are connected to the larger ISO-NE-managed grid, a single power plant outage, even with a very large capacity, can typically be managed by grid operators through redistribution to other operational plants on reserve to compensate for the lost capacity. This can depend on the power plant's location, system demand, and transmission constraints at the time of the disruption. When multiple power plants go offline due to a common-cause event like severe weather conditions, the availability of electricity supply can decline to a level that can cause grid instability, forcing operators to implement rolling blackouts, which can have widespread impacts on critical infrastructure, vulnerable communities, and human life. This has not yet happened in the ISO-NE managed transmission system, but under certain circumstances (market, weather, and asset conditions), this situation could occur.

[redacted paragraph]

Liquid Fuels Sector Consequences

Nearly all liquid fuels enter Maine through one of its marine ports. The consequence of the closure of any ports, whether due to a natural hazard like icing or a physical security event,

would have a significant impact on getting fuels into the state, especially at the Port of Portland, where the majority of liquid fuels are received.

The consequence of a single liquid fuel terminal outage in the state is unlikely to significantly disrupt supply to retail stations. Terminals are mostly clustered together within the ports or at pipeline destination points, so a common cause issue, such as a local power disruption, could impact multiple or all terminals in a cluster. This situation could substantially impact deliveries to retail stations. Depending on the event, longer haul trucking from other regions/terminal clusters can be used to mitigate some of the impact, but the time delays of this method may still result in some spot outages. For example, if a flooding event damaged the terminals in the Port of Seaside, sellers would shift to sourcing trucks out of the Portland terminal cluster and the Bangor terminals. This would bring some fuel into the area, albeit at a reduced rate. Trucks will be on the road longer, and the increased traffic will cause longer lines at terminals in South Portland.

While gasoline or on-road diesel fuel outages at retail stations can be disruptive to transportation in the state, the bigger threat of a liquid fuel disruption in Maine is for heating fuels (propane, heating oil, or kerosene), which are used in more than half of homes in the state.

All fuel shortages can cause elevated prices, which disproportionately affect low- and moderate-income Mainers. The *“Maine Won’t Wait”* climate plan outlines the importance of increasing opportunities for low- and moderate-income residents to install electric-powered heat pumps and distributed energy resources, such as solar panels and batteries, to reduce dependence on price-volatile delivered fuels.

Natural Gas Sector Consequences

The consequence of a disruption in service of a natural gas pipeline in Maine can vary significantly based on the location of the issue and where the points of isolation are. A disruption causing an outage on the mainline of a natural gas pipeline could disrupt natural gas deliveries downstream of the disruption point. Most meter stations are only served by a single pipeline system, so if all flows are disrupted, there is likely no redundancy. If a spur line off the mainline of a natural gas pipeline in Maine is disrupted, impacts are likely only felt by the customers located along the spur line.

Compressor station outages along the system may reduce flows along the pipeline system, but in most cases, these will not cause flows along the line to halt entirely.

There can also be scenarios where production is reduced in natural gas supply basins outside the state that could impact natural gas availability in Maine. In this case, interruptible customers, such as power plants and some industrial customers, will lose supply first. This could stress the power generation sector, which in New England is dependent on natural gas

generation, especially for peak demand. In severe cases, natural gas may need to be curtailed to LDCs, who will need to put out requests for conservation to their customers to attempt to reduce load.

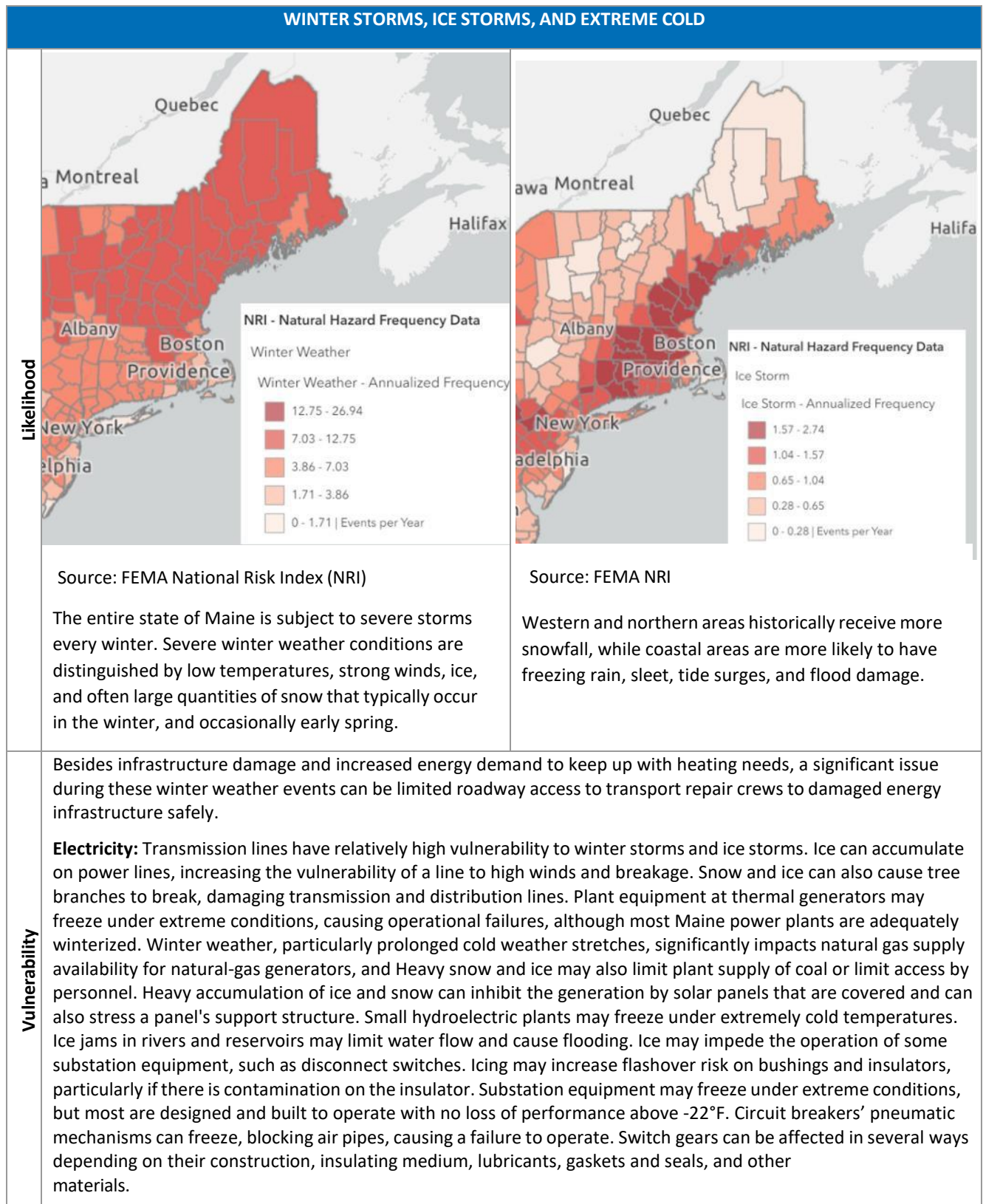
LDCs can mitigate very small volume outages by bringing in trucked compressed natural gas (CNG). If the pressure in natural gas pipelines drops too far, gas suppliers may have to shut off gas to homes for safety reasons.

The most concerning consequence of LDC curtailment of natural gas is the loss of heating during winter weather and the associated health risks, especially for vulnerable populations such as the elderly, the chronically ill, and young children. This is a smaller subset of customers in Maine, as less than 10% of homes heat with natural gas.

[Risk Tables](#)

The following tables provide a detailed analysis of the potential risks to energy sector infrastructure from different hazards, highlighting the nature and likelihood of each risk and its potential impact on different infrastructure elements relevant in Maine.

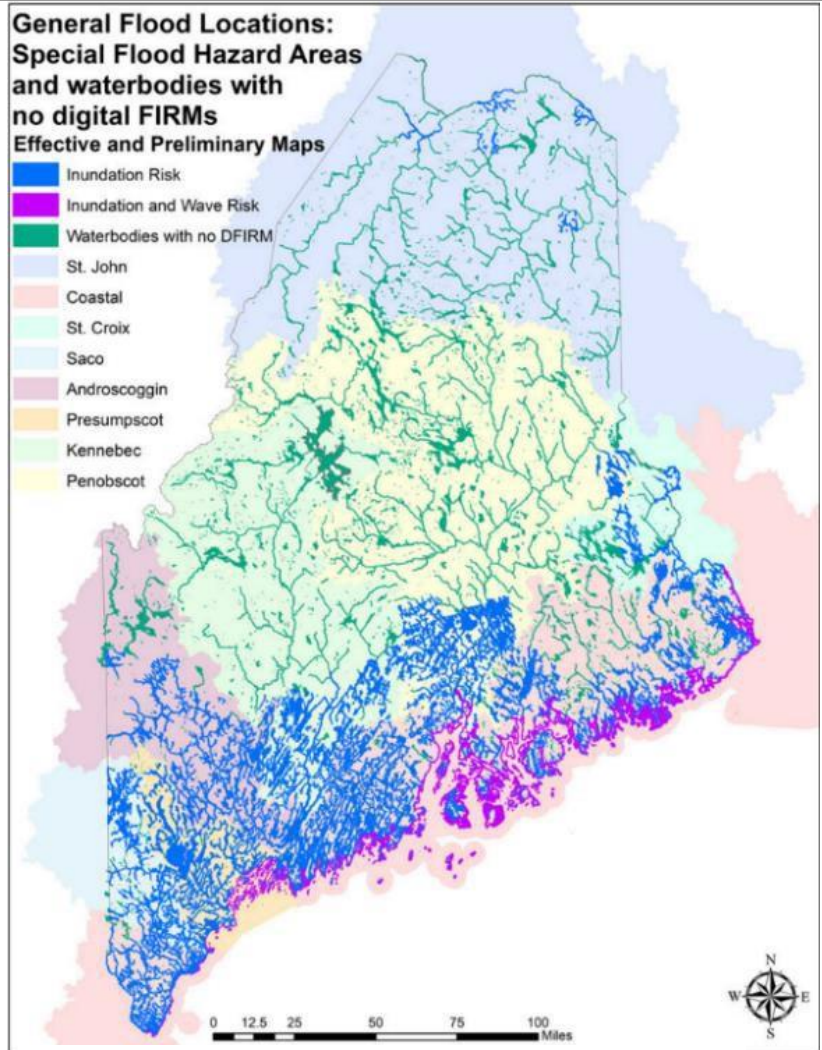
Exhibit 44: Risk Assessment for Winter Storms, Ice Storms, and Extreme Cold



Liquid Fuels: Pipelines may experience freezing, disrupting product flow, or pipeline operation could be stalled due to cold-related failures at supporting pump stations and plants. Equipment and instrumentation at liquid fuel terminals may freeze under extreme conditions, causing operational failures. Accumulation of ice and snow can limit access to facilities, feedstocks, and storage equipment, as well as impair rail movements to final markets.

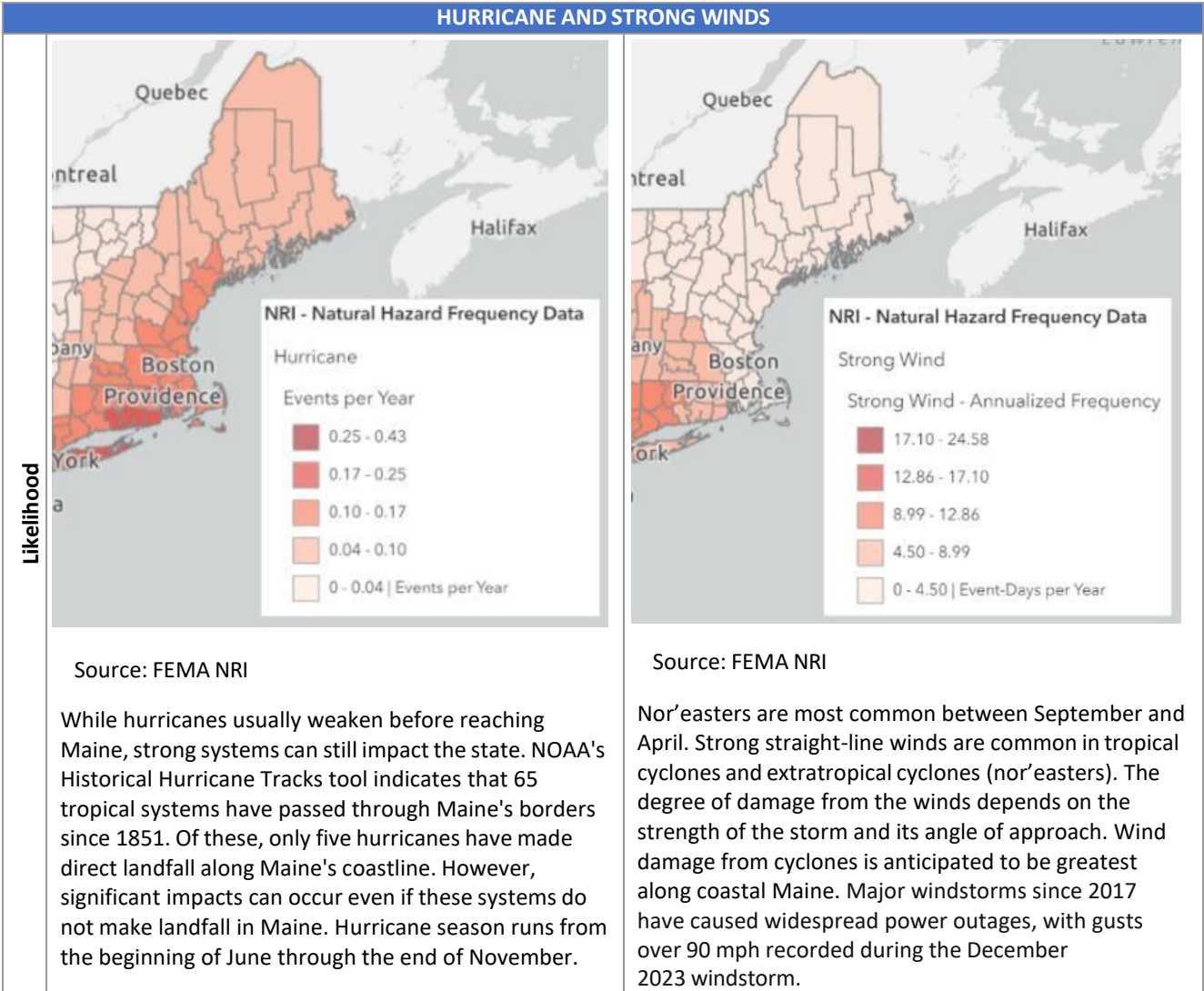
Natural Gas: Utilities in Maine bury pipelines well below frozen ground. Pipeline operation may stall due to cold-related failures at supporting stations and plants.

Exhibit 45: Risk Assessment for Flooding

FLOODING (INLAND AND COASTAL)	
Likelihood	Throughout Maine, there are locations that are susceptible to flooding. Notable locations of potential flooding by flood type are shown in the image to the right. Because of Maine's geographic features, many of its rivers descend steeply from the mountains toward the sea. In mountainous areas, rivers tend to rise rapidly after heavy rainfall due to the steep slopes of riverbeds and drainage regions. The state receives substantial precipitation, averaging around 42.6 inches annually, which heightens the risk of flooding. Additionally, low-pressure systems along the coast and the frequent occurrence of storms in quick succession result in heavy, combined moisture. Consequently, Maine's geographical, geological, and hydrological characteristics lead to floods that rise quickly, but typically, they are short-lived.
	 General Flood Locations: Special Flood Hazard Areas and waterbodies with no digital FIRMs Effective and Preliminary Maps - Inundation Risk - Inundation and Wave Risk - Waterbodies with no DFIRM - St. John - Coastal - St. Croix - Saco - Androscoggin - Presumpscot - Kennebec - Penobscot Source: 2023 Maine State Hazard Mitigation Plan
	Electricity: Substations contain electrical equipment that can be very sensitive to water damage. Since Transformer tanks are hermetically sealed, so flooding is unlikely to affect the transformer windings and other internal components; however, flooding can still impact auxiliary equipment, such as pumps, fans, and external wiring. Flood waters can also carry potentially damaging debris, and storm surge may also physically

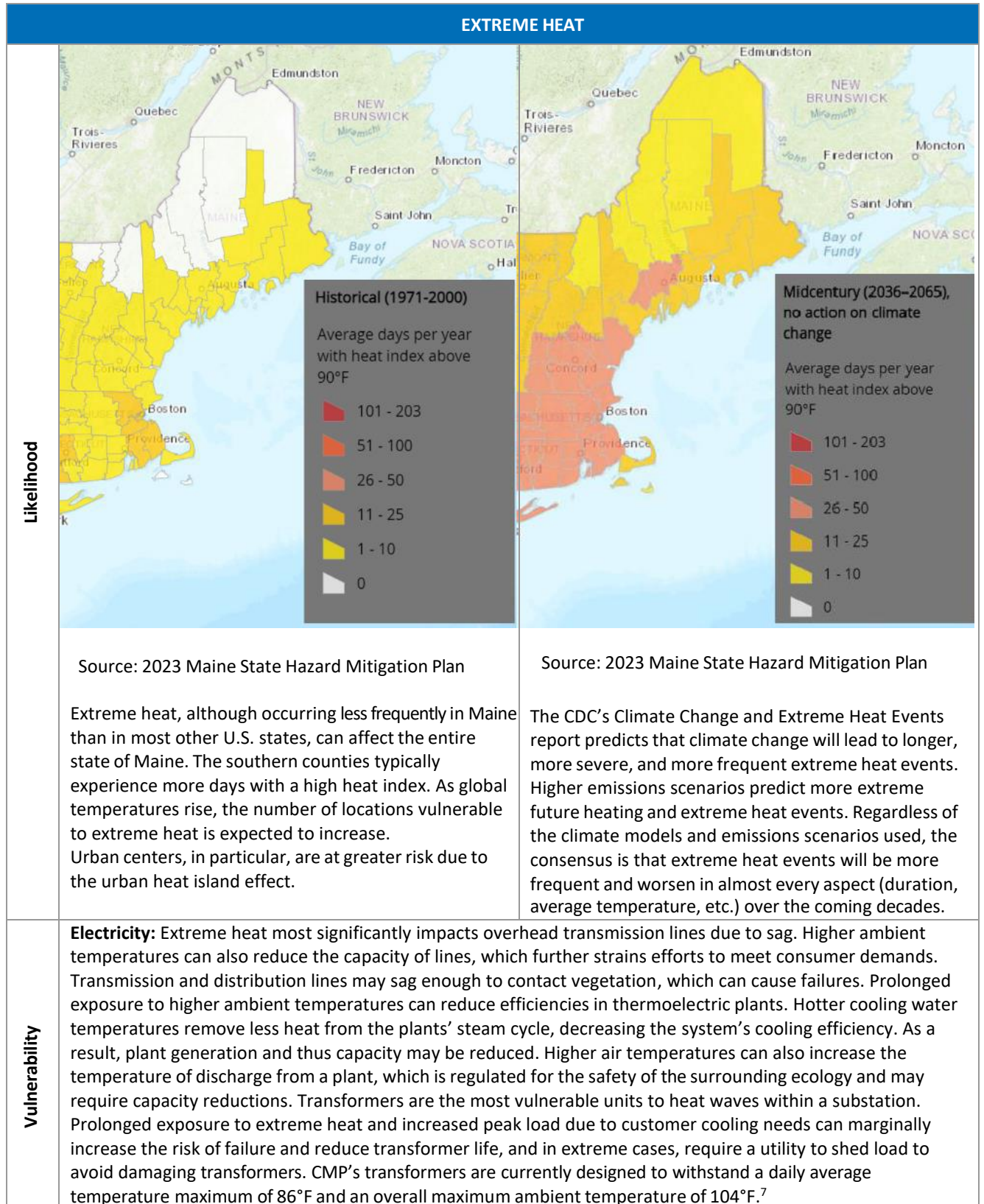
Vulnerability	displace equipment, causing damage. Flooding can cause hydroelectric plant walls to be breached, and increased flows can cause disruptions to production. Since batteries are sealed, flooding is unlikely to impact interior components, but external wiring connections can be susceptible to water damage and corrosion. Wind turbines are typically designed to withstand high loading and thus have low sensitivity to damage from floodwater movement. Solar panels are generally positioned on elevated bases that raise them several feet above ground, so the panels themselves may not be sensitive to shallow flooding. However, solar arrays may suffer direct damage to electrical equipment near ground level or see erosion to module support structures due to flooding and erosion. Overhead assets like transmission lines typically have low sensitivity to flooding unless floodwaters compromise the structural integrity of poles or towers, caused by moving water. Liquid Fuels: Flooding can result in water entry into electrical components at pump stations and terminals, which may cause electrical faults and/or displace equipment. If pipelines experience flooding at river or stream crossings, the pipeline's integrity could be compromised, leading to leaks and failure, although many are designed to be resilient to flooding and water inundation. Natural Gas: If natural gas pipelines are inundated by floodwaters, structural supports may be undermined by shifting soil, causing pipeline sagging or breakage. Additionally, debris carried by floodwaters can damage the pipeline. Some low-pressure distribution piping can have an elevated risk of water intrusion, but this is less of a concern in the transmission pipelines. Pipelines located in storm surge waters are especially vulnerable, and buried pipes can be unearthed. Flooding can result in water entry into electrical components, which may cause electrical faults and/or displace equipment.
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Exhibit 46: Risk Assessment for Wind Events



Vulnerability	Widespread power outages are generally expected with extreme winds from a hurricane or tropical storm and can be common from extreme straight-line high wind events. These power outage events can shut down operations within the liquid fuel and natural gas sectors, including terminals and pipelines. Electricity: While transmission towers and conductors are typically designed to withstand some high wind threshold, extremely high winds above that can result in tower failure. Hurricane winds can also cause surrounding vegetation to fall and damage transmission lines. If the strongest wind impacts are assumed to occur within 25 miles of the Maine coastline, approximately 1,906 miles of transmission lines could be exposed to hurricane-strength winds. This accounts for nearly half of all transmission lines in Maine. Additionally, 50 power plants are located within this 25-mile coastal buffer, including 22 hydropower projects, eight biomass plants, four natural gas plants, three petroleum plants, seven solar projects, and six wind turbine projects.⁶ Turbines generally shut off in winds greater than 55 mph and may sustain damage at extreme wind speeds. Substation assets typically have low sensitivity to extreme high winds or are housed within facilities that limit exposure. In rare cases, wind-driven debris has caused damage to unprotected assets (i.e., the bus system, which includes the exposed transformers and feeders). Substations are also often located within fences or walls, which provides some level of protection from flying debris. Most power plant structures are generally designed to withstand high winds and are unlikely to sustain significant damage, but some components, such as transmission connections on the plant site, may also be damaged directly by extreme winds or wind-driven debris. Extremely high winds from hurricanes can cause damage to solar panels, and in the worst case, can cause them to disassemble if fasteners loosen and fall out, although most commercial PV systems are designed to withstand winds of up to 140 mph. Additionally, debris can strike solar panels, causing damage. Liquid Fuels: Storage tanks at terminals can be subject to collapse and leakage under heavy precipitation and winds associated with hurricanes. High wind speeds may damage tank exteriors and production equipment, and debris from high winds could cause damage to unprotected equipment. The Buckeye Partners Portland – Bangor petroleum product pipeline is located underground and protected from high winds, although aboveground pump stations can experience damage from debris. Natural Gas: One of Maine’s primary pipelines, the Maritimes and Northeast system runs along most of the state’s coastline. The other primary pipeline system, the Portland Natural Gas Transmission System, traverses through some of Maine’s southeast coastline. However, natural gas pipelines are located below ground and protected from high winds. In extreme cases, hurricane winds can expose underground piping, possibly causing leaks. Aboveground equipment, such as compressor stations, which support underground storage, can be damaged by hurricane winds and heavy rain.
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Exhibit 47: Risk Assessment for Extreme Heat



Extreme heat can lower the efficiency of solar cells and the capacity of conductors. Higher air temperatures can result in higher water temperatures and rates of evaporation, causing water sources contained in wide, flat reservoirs to evaporate faster. Snowmelt occurs earlier in the year and leaves less water available for hydropower generation during the summer. Reduced water availability can impact generation production levels. High-pressure systems resulting in heat waves suppress wind speeds and, in turn, reduce wind energy generation. Electrical components and machinery within a turbine are at risk of damage during extreme heat events. Lubrication oil in the gearbox can change viscosity with the heat and cause grinding of gears.

Liquid Fuels: As most liquid fuel pipelines are located underground, they are generally protected from extreme heat events due to the cooling of the earth. Although commonly designed to withstand, aboveground petroleum storage tanks can experience increased stress on tank walls from expansion/higher internal pressures and also increased emissions.

Natural Gas: As most pipelines and natural gas storage are located underground, they are similarly protected from extreme heat events.

Exhibit 48: Risk Assessment for Cyberattacks

CYBERATTACKS	
	Although there have been no publicly reported cyberattacks specifically targeting energy infrastructure in Maine, the state, as well as much of the United States' energy infrastructure, faces an increasing trend toward automated and remotely controlled equipment and monitoring technologies, which can give hackers access to entire networks. Grid modernization and network-based technologies open vulnerabilities to cyber intrusion as energy systems become more reliant on communications and operation through connected networks. Distributed energy solutions can be more vulnerable than traditional utilities because of the variety and decentralized nature of the "smart" technologies built into them for efficient operations. Each of these individual entry points can give hackers access to entire networks.
	Due to the lack of or limited information surrounding current cybersecurity mitigation efforts for Maine asset owners and operators, it is difficult to specifically assess the vulnerability of individual infrastructure assets. Cyberattacks may target SCADA system elements, such as: RTUs, computers that wirelessly communicate with equipment, typically in remote situations, Programmable Logic Controllers (PLCs), computers that control and automate asset processes usually in conjunction with SCADA systems, and Human-Machine Interfaces (HMIs), an interface that is used to display SCADA system information to an operator to adjust the system. Electricity and gas utilities, pipeline companies, terminal companies, retail stations, and others may have business and operational data stolen or held for ransom. Companies may also experience attacks that cause them to lose visibility into their own operations, as well as issues with their payment systems or other business operations. For instance, a utility website may be inaccessible to customers due to a DDoS attack, disrupting payment services. There are a variety of electricity, liquid fuels, and natural gas sector assets with vulnerabilities to cyber threats. Electricity: Breakers, transformers, switches, and sensors at substations and other transmission-level assets and power plant generation equipment can all be targeted by cyber threat actors and experience damage or disruption. Distributed generators, battery storage, and smart meters typically use software to communicate with grid networks and remotely monitor grid performance, which can provide an entry point for threat actors. Liquid Fuels: Pipeline pump stations may be damaged or disrupted via SCADA system hacks, causing leaks or affecting product flow rates. At terminals, SCADA systems may be manipulated to alter product deliveries into storage, bypass remote valve operations, threaten tank overflows, and impede trucks' ability to load product, or affect operating systems aboard marine vessels. The Colonial Pipeline cyberattack in 2021 illustrates how widespread impacts can be. Natural Gas: Compressor station controls could be targeted, affecting the rate of gas flow in transmission lines, or even causing ruptures or explosions.

Exhibit 49: Risk Assessment for Physical Attacks

PHYSICAL ATTACKS/SABOTAGE	
Likelihood	The likelihood of physical attacks on individual energy assets is difficult to predict; however, the frequency of attacks has been increasing. Physical attacks may include sabotage and terrorism, theft resulting in equipment damage, vandalism, or disgruntled employees. Electricity: Several high-profile attacks in 2022 on substations in North Carolina and Washington State highlighted the increasing likelihood of attacks on electricity infrastructure. DOE OE-417 (electric disturbance event reporting) archives show increased reports of physical events in 2022 and 2023. Liquid Fuels: Assets may be the target of a physical attack. The likelihood of an attack may increase in conjunction with political unrest or media coverage of petroleum company profit levels, as the fuel transition may cause more price spikes. Petroleum assets, especially project construction activities, are typically very visible. Natural Gas: Natural gas assets have historically proved to be a less frequent target compared to electricity and liquid fuels assets. Much of the infrastructure is underground and less visible.
Vulnerability	Assets that do not have robust security measures or deterrents in place may be more vulnerable to attacks. These deterrents include perimeter fencing, alarm systems, locks, security cameras, security guards, etc. However, those deterrents may not be feasible to protect some infrastructure, like transmission lines and gas and liquid fuel pipelines. Electricity: These assets are arguably more vulnerable to physical attack than liquid fuel and natural gas assets, because they are located above ground and are readily identifiable. Only a portion of critical electric power infrastructure in Maine is subject to physical security minimum standards via NERC's CIP-014 (physical protection standards). Substations are attractive targets because they are relatively easy to disrupt, typically unmanned, and are often unsecured beyond simple fencing. Some may not have cameras. Control rooms are locked but can be broken into. It is possible to attack substations from outside the asset perimeter, without entering the premises (via gunshot, materials thrown over the fence, drone, etc.) Remote substations may be attractive targets due to their isolation but are likely only identifiable by knowledgeable perpetrators. Damage at remote substations that do not cause operational impacts may go unnoticed for some time. Substations in populated areas are more obvious targets to less experienced individuals, although their location may also deter more elaborate attacks. Transmission infrastructure can and has been attacked, such as by attempting to bring down a transmission tower. However, this is generally an uncommon occurrence because it is relatively difficult and more dangerous to the perpetrator. Power plants typically are well-secured, and the presence of personnel makes them a less attractive target, although renewable energy generation typically does not have personnel and is less secure. Equipment supporting power-related construction and maintenance projects is also typically an attractive target for vandalism. Liquid Fuels: Liquid fuels infrastructure is somewhat less exposed than electricity infrastructure and is thus less susceptible to physical attack. Liquid fuels pipelines are generally buried underground, but fuel pump stations are above ground and have been targets for shootings. Additionally, actors have sometimes closed valves at these locations, which can be very dangerous. Terminals are somewhat more exposed than buried pipelines, but terminal operators typically secure access to the facilities, employ security guards, or have cameras on-site. Service stations and tanker trucks are very vulnerable but have not historically been the target of attacks in the U.S. Natural Gas: Like liquid fuels assets, key natural gas assets, like transmission lines, are typically underground and thus less vulnerable to attack (except for aboveground compressor stations). Rural energy infrastructure may face increased risk of physical attack. Some infrastructure may be located along main roadways or in highly populated areas and is thus both visible and accessible to potential bad actors. Rural communities' infrastructure is vulnerable to vandalism.

Exhibit 50: Risk Assessment for Human Error or Accidents

HUMAN ERROR OR ACCIDENT	
Likelihood	It is difficult to predict where and when accidents will occur, but they occur fairly frequently with varying magnitudes. Human error includes actual infrastructure operators and passersby who may inadvertently damage or disrupt infrastructure, such as third-party backhoe strikes of buried pipelines. Damage to underground natural gas facilities due to excavation activity is one of the leading causes of natural gas pipeline failures and accidents, both statewide and nationally, although primarily at the distribution level. ⁸ Maine's limited natural gas infrastructure makes the likelihood of these events lower than in other states. Third-party strikes on underground pipelines are possible, although relatively uncommon, for major natural gas, product, and crude lines due to the buried depth of these pipelines.
Vulnerability	It is also difficult to assess the vulnerability of infrastructure to human error or accident. Electricity: Infrastructure is relatively less vulnerable to error and accidents than liquid fuels and natural gas, due to the distributed nature of systems and higher levels of redundancy in infrastructure. Human error-caused outages that occur on the Bulk Electric System are closely tracked by NERC through their annual State of Reliability Report, but human error-caused outages at distribution levels, if tracked at all, would be captured at the individual utility level. Liquid Pipelines: Buried transmission pipelines are located deep underground and are rarely hit accidentally. Maine has only one distillate pipeline, so any impact of a malfunction would be limited. However, incidents and accidents at out-of-state processing facilities, like ethanol plants and refineries, are common, including during maintenance activities and transition periods (shutdown and startup) around planned turnarounds. Natural Gas: Natural gas' extremely combustible nature means that incidents can have catastrophic and dangerous effects. The Freeport, TX LNG facility suffered an explosion in June 2022 that took the entire facility offline for months. Regulators determined the blast was caused by inadequate operating and testing procedures, human error, and fatigue.⁹ Maine's vulnerability would be a downstream effect of a malfunction outside the state.

Exhibit 51: Risk Assessment for Equipment Malfunction and Maintenance Issues

EQUIPMENT MALFUNCTION/MAINTENANCE ISSUES	
Likelihood	[redacted]

Vulnerability	Electricity: [redacted] Liquid Fuels: Equipment malfunctions, such as valve failures or pipeline ruptures, can lead to significant leaks, spills, and operational downtime for critical assets. Most are highly flammable liquids, which means that faulty equipment or poor maintenance can result in fires or explosions with significant damage to infrastructure. Natural Gas: With the transition away from natural gas as part of Maine’s Renewable Portfolio Standard (RPS) targets, there may be less economic incentive for Maine natural gas asset owners to replace aging infrastructure, with the likelihood of stranding the assets.
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Exhibit 52: Risk Assessment for Pandemics

PANDEMICS	
Likelihood	The COVID-19 pandemic has highlighted the potential for global pandemics, while Ebola, bird flu, and the H1N1 swine flu are all examples of more localized epidemics in recent years. The Duke Global Health Institute found that the probability of a pandemic with a similar impact to COVID-19 is about 2% in any year, and the probability is growing.¹⁰

Vulnerability	The potential impact on energy infrastructure and demands may vary significantly based on the global scope and required protocols to mitigate the health risks. Although specific infrastructure assets are not susceptible to a pandemic, energy supply chains broadly may be vulnerable to issues such as: • Stay-at-home orders • Social distancing requirements • Energy staff unable to work due to illness Equipment shortages for energy assets, as well as personal protective equipment requirements, may impact energy markets. The COVID-19 pandemic exemplifies the potential of these events to have an extended duration impact. The COVID-19 response caused rapid vaccine development, people quickly adapting to work from home, massive production of PPE, and other responses. The impacts greatly strained the operation of energy infrastructure—because work-from-home was not an option for many roles—and industry had to retool processes, adjust operations, and find ways to sustain the energy supply chain. Future pandemics are likely to require similar responses, which may need to vary based on the spread and deadliness of the prevailing pandemic. Electricity: The electricity sector is vulnerable to a pandemic from a workforce perspective. Staff working in control rooms and bucket trucks may be hindered by social distancing requirements and absences. Communal housing of crews during large-scale restoration activities may be inadvisable, necessitating hotels or other private lodgings, potentially slowing restoration, and cascading to power outage impacts of critical health care and other functions. Demand patterns changed dramatically with the shift in stay-at-home orders and the work-from-home movement, which caused challenges for balancing authorities to forecast and manage the balance of supply and demand. Electricity equipment supply chains may experience shortages, such as with transformers. Liquid Fuels: Fuel demand dropped off considerably during the initial months of the COVID-19 pandemic, as people stayed home. Fuel demand decreases had ripple effects in the refining sector (where refineries ramped down or closed entirely, creating long-term consequences for markets), and for fuel storage (in which states received Environmental Protection Agency (EPA) waivers to continue to sell winter-grade gasoline into the summer months, due to reduced demand). However, the general issues regarding staffing listed above did adversely affect deliveries of liquid fuels during the COVID-19 pandemic. HOS waivers were in place for an extended period of time. Natural Gas: The natural gas industry may have both workforce and supply chain concerns due to a pandemic. For example, natural gas crews often need access to residential homes to check meters and fix problems, which may be inadvisable or dangerous during pandemics. And the crews themselves will be impacted by illness and social distancing, so restorations may take longer.
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Exhibit 53: Risk Assessment for the Energy Transition

ENERGY TRANSITION	
Likelihood	Although the completion of the energy transition is a number of years out, progress has already begun, and complexities associated with the energy transition have already started to alter the traditional risk profile. Understanding the policy drivers like Maine’s Renewable Portfolio Standard (RPS) goals and the impacts on the generation, transmission, and load components of the bulk electric system, is critical to understanding the challenges to reliable electric service in the coming years.
Vulnerability	Reliability margins and transmission security margins are expected to shrink in upcoming years due to a combination of extreme weather, the clean energy transition, and rising electricity consumption.^{11 12} Below are some of the primary challenges of the energy transition: • ISO-New England expects electricity consumption to rise by 30% in Maine by 2033, compared to a 17% rise in consumption for the entire New England region.¹³ • The primary drivers of this significant increase in Maine electricity load are the forecasted increased demand to power heat pumps and the growing number of electric vehicles (EVs) in the state. • Concurrently, Maine’s RPS requires 80% of the state’s electricity to come from renewable sources by 2030, and 100% of electricity to come from renewables by 2050.¹⁴ In 2022, 64% of Maine’s total electricity net-generation was from renewable sources.¹⁵ • Many new renewable generators are primarily intermittent and limited-duration resources. Given the operating characteristics, more megawatts of these resources are necessary to replace the retiring thermal generation. Battery storage resources help to fill in the voids in renewable resources output, but extended high-demand periods rapidly deplete storage capabilities. • Substantial zero-emission dispatchable resources will be required to fully replace fossil generation to overcome the cycles of reduced renewable output, which will require the development of new technology. • Distributed generation is an increasing resource that brings new challenges. CMP reports there have already been reverse flow issues to distributed generation installations on lines that are not designed for it. In Versant’s service territory, DER resources in the connection queue are significant compared to peak load (approximately 40%), and this needs to be planned for. • Heavy precipitation, high tides, storm surge, and extreme weather are all projected to increase in frequency over the next 20 years and beyond.¹⁶ An increase in adverse weather conditions will strain the State’s grid and require continued investment in reliability and resiliency measures.

Out-of-State Risks to Energy Supply in Maine

The risks to energy infrastructure in Maine are not limited to impacts on assets within the state. Maine's energy supply chains rely on natural gas and petroleum imports from other states, and the Maine power grid is integrated with other Northeast states as part of the Northeast ISO-NE region and with Canada.

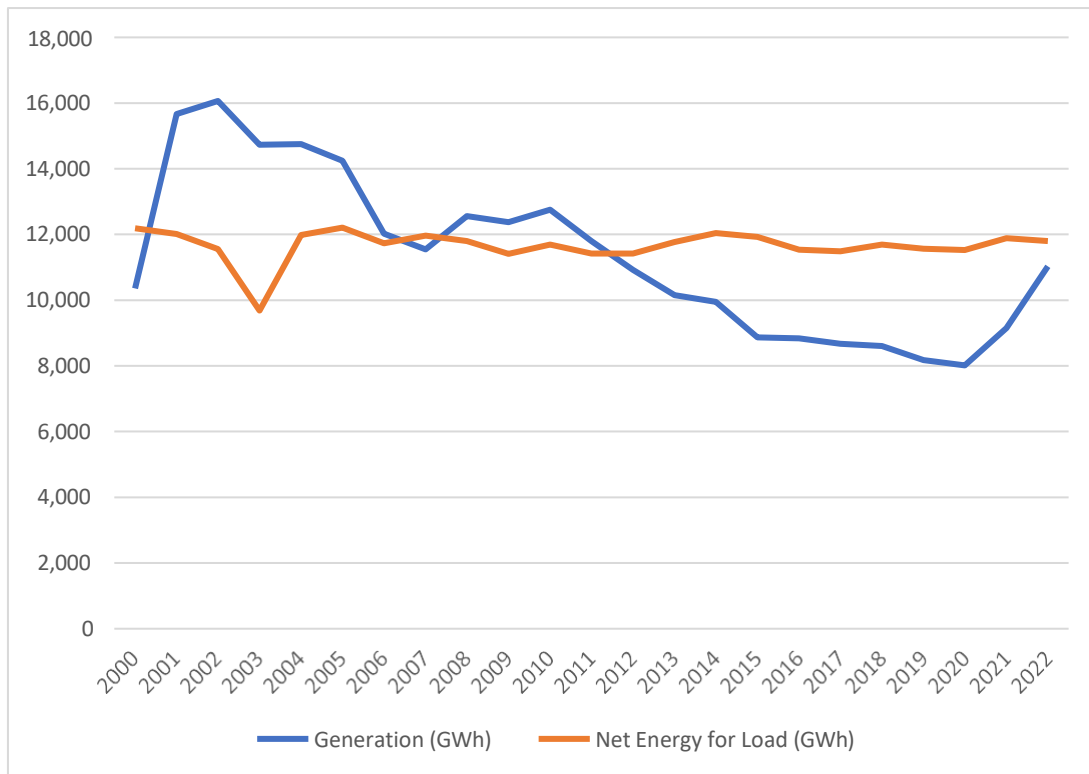
Maine must be alert to issues impacting energy assets outside the state and be prepared to contact asset owners/operators involved in a shortage-triggering event, as well as stakeholders who may have their energy supply disrupted within Maine.

Exhibit 54: Liquid Fuel Supply Chain [redacted]

Exhibit 55: Natural Gas Supply Chain [redacted]

Exhibit 56: Electric Supply Chain [redacted]

Exhibit 57: Maine Generation vs. Net Energy for Load (GWh), 2000-2022



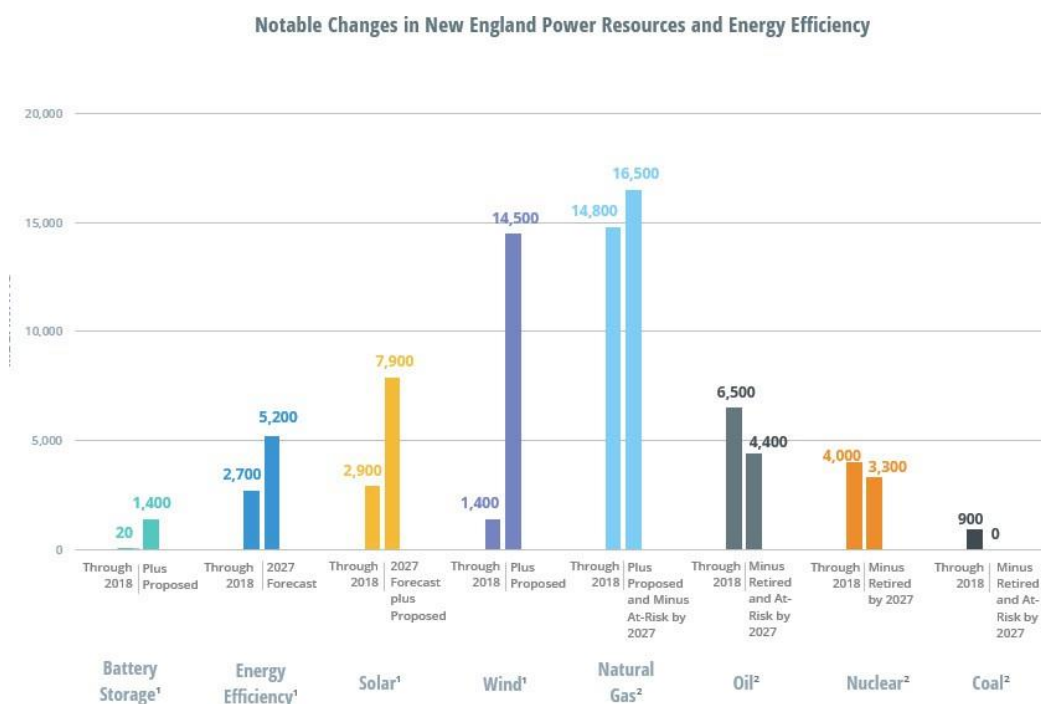
Source: [ISO New England - Energy, Load, and Demand Reports \(iso-ne.com\)](https://iso-ne.com)

ISO-NE Regional Issues

ISO NE is a summer-peaking system with high electricity demand in the summer for cooling. However, in the coming decades, ISO NE is expected to transition to a winter peaking system. As “natural gas pipeline constraints lead the region to rely more heavily on electricity generation from stored fuels, primarily imported liquefied natural gas (LNG) and oil, during cold weather¹⁷, the natural gas used to heat homes exceeds the capacity of the pipelines and results in increasing reliance on electric heating. During winter storm and cold spell events, the electricity demand is greatly increased to the point where peak winter electricity demand can exceed summer electricity demand. In New England, the impact of cold-weather events can be mitigated by the installation of dual-fuel generators, which can burn oil or imported LNG during peak periods. Prolonged use of these generators, particularly for burning oil, is restricted by state and federal air emission standards, and the generators typically need waivers to operate for multiple days. ISO-NE England has many tools to aid in reliability and utilizes these, along with communication protocols (OP-4, OP-7, Energy Alert, Energy Emergency), to aid in electric reliability. During these events, restoration teams are in high demand and required to have contracts signed in advance of major events to guarantee the teams’ services throughout New England.

Longer-term planned retirements of oil and coal generators in New England will limit dispatchable resources and increase reliance on natural gas and renewable generation. Up to 3,700 MW of non-natural gas dispatchable power is expected to retire by 2027. These retirements are being replaced by an increase of 1,700 MW of proposed natural gas projects and 1,380 MW of proposed battery storage projects. Renewable generation is growing significantly, but delays in these facilities coming online can lead to gaps in available capacity. Increased intermittent renewable generation also poses challenges for grid reliability. Exhibit 58 below shows the planned retirements and additions for ISO-NE.

Exhibit 58: Forecasted Generation



<https://www.iso-ne.com/about/what-we-do/in-depth/power-plant-retirements>

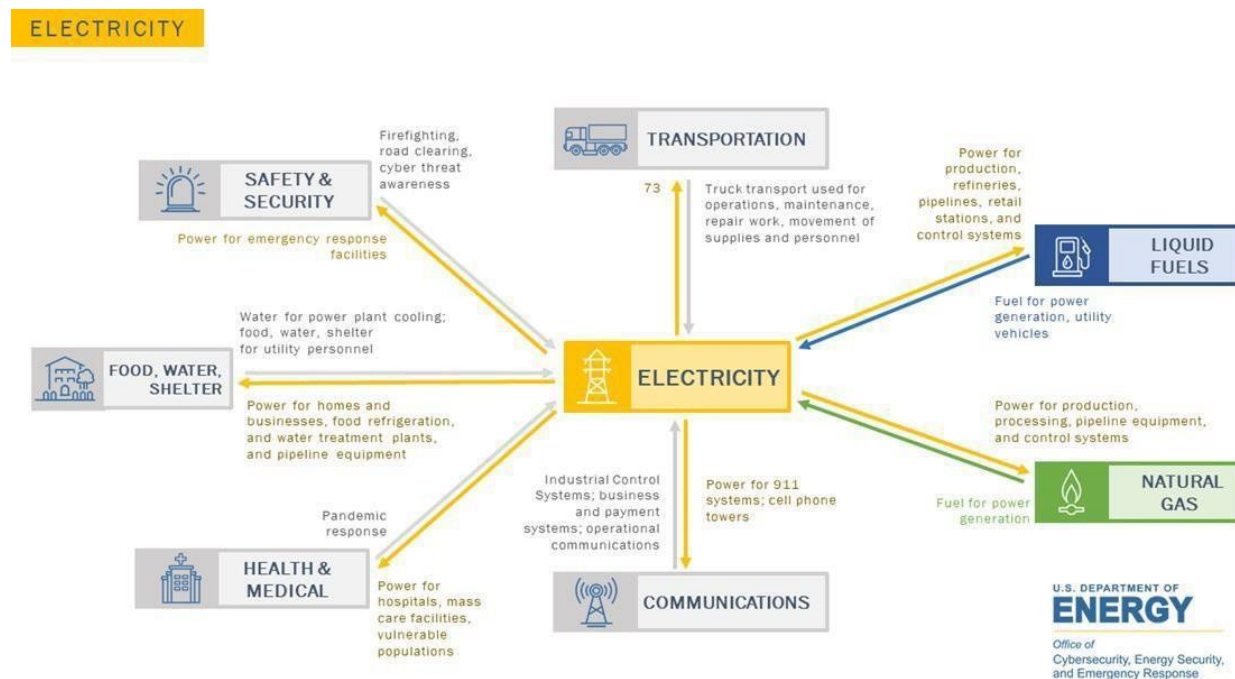
Another major issue for the New England region is transmission line overload. According to a study conducted by ISO-NE, for the year 2050, titled the [2050 Transmission Study](#), just over 90 transformers are expected to be overloaded, as well as approximately half of the total pooled transmission facility (PTF) line miles in New England.¹⁸ This issue mainly affects the north-to-south lines in ISO-NE. In 2050, the limits of these lines are forecasted to be exceeded by 6,393 MWs during the summer daytime peak. During the winter peak in a 2022 transmission study conducted by ISO-NE, 6 out of 9 of the modeled scenarios exceeded the transmission line limits.¹⁹ When transmission line capacities are exceeded, this can lead to blackouts. The ISO is currently working on solutions to address the predicted transmission issues.

Interdependencies

Interdependencies and connections between critical infrastructure elements and sectors exist, affecting overall risk to energy systems. Identifying and understanding interdependencies (two-way) or dependencies (one-way) between infrastructure assets and sectors is important for assessing risks and vulnerabilities, as well as resilience planning.

The Department of Homeland Security (DHS) has defined 16 [critical infrastructure sectors](#), including energy. All other critical infrastructure sectors depend on power and/or fuel to operate. Also, the Federal Emergency Management Agency (FEMA) defines [community lifeline sectors](#), many of which overlap with DHS's critical infrastructure sectors. A disruption or loss of the services provided by the energy sector can directly affect the security and resilience within and across numerous sectors. The energy sector also depends on other sectors to help provide its services. There are also interdependencies within the energy sector itself. A comprehensive understanding of such interdependencies enables the sector to mitigate potential vulnerabilities and helps ensure that the nation's and Maine's economy continues to deliver goods and services during extraordinary events.

Exhibit 59: Electricity Interdependencies



Source: U.S. DOE Office of Cybersecurity, Energy Security, and Emergency Response (CESER) State Energy Security Plan: Cross-Sector Interdependencies, May 2022

The electricity system in Maine and New England is highly dependent on natural gas, which is often constrained during cold winter months due to high demand and limited pipeline capacity. Electricity generators, unlike local natural gas distribution companies, do not purchase reserved

delivery space on the limited natural gas pipeline entering the region. Some generators in the region are dual fuel, meaning they can use natural gas or distillate fuel to generate electricity. However, during prolonged cold periods/inclement weather conditions, replenishing distillate supplies can be difficult, as all stocks must be imported from outside the region, and enter through ports primarily in New York, Boston, Portland, and Searsport. Added to this vulnerability can be global LNG market conditions that result in fewer deliveries to the New England region for injection into pipelines in Boston or at the New Brunswick-Maine border. ISO-NE has established several programs to address this vulnerability, but it is an ongoing concern as older generators retire.

As shown in the diagram above, the electricity sector has significant interdependencies with other critical infrastructure sectors. The safety and security sector relies on electricity to provide power for emergency response facilities like police stations, fire stations, and emergency operations centers. One recent example of this criticality was during the winter storms in late 2023 and early 2024. Electricity was critical to local emergency management agencies. The safety and security sector is also essential for the protection of electricity infrastructure and responding to emergencies that disrupt electricity. This includes law enforcement's support of electricity infrastructure security, firefighting during electrical infrastructure fires, wildfire fighting to prevent electric infrastructure damage, and clearing debris from roads to aid in power restoration after storms. Additionally, government agencies support the electric sector by sharing information on cyber threats and assisting in response efforts during cyberattacks.

The FEMA food, water, and shelter lifelines rely on electricity to provide power for homes and businesses, food refrigeration and production, and water and wastewater treatment plants and pipeline equipment. Electricity is used in homes and businesses for water heating, cooking, at-home medical equipment, internet use, and other critical functions. Residential space heating and cooling require a steady supply of electricity and heating fuels, and a power outage or fuel shortage during extreme temperatures can be life-threatening. Concurrently, the electricity sector requires food, water, and shelter for utility personnel, especially mutual aid crews assisting with power restoration. The water sector also plays an essential role in power plant cooling. Natural gas-generated electricity (which accounted for 32% of Maine's electricity generation in 2022) requires water for steam turbines and for cooling.

The health and medical lifeline sectors depend on electricity to power lifesaving medical equipment at hospitals and mass care facilities, refrigerate vaccines and medications, and provide critical medical services to vulnerable populations. The COVID-19 pandemic illustrated how public health emergencies can impact energy sector operations. Electric utility personnel contracting COVID-19 or subject to social distancing requirements disrupted operations, and

the electricity sector was generally reliant on the health and medical sector to support a healthy workforce.

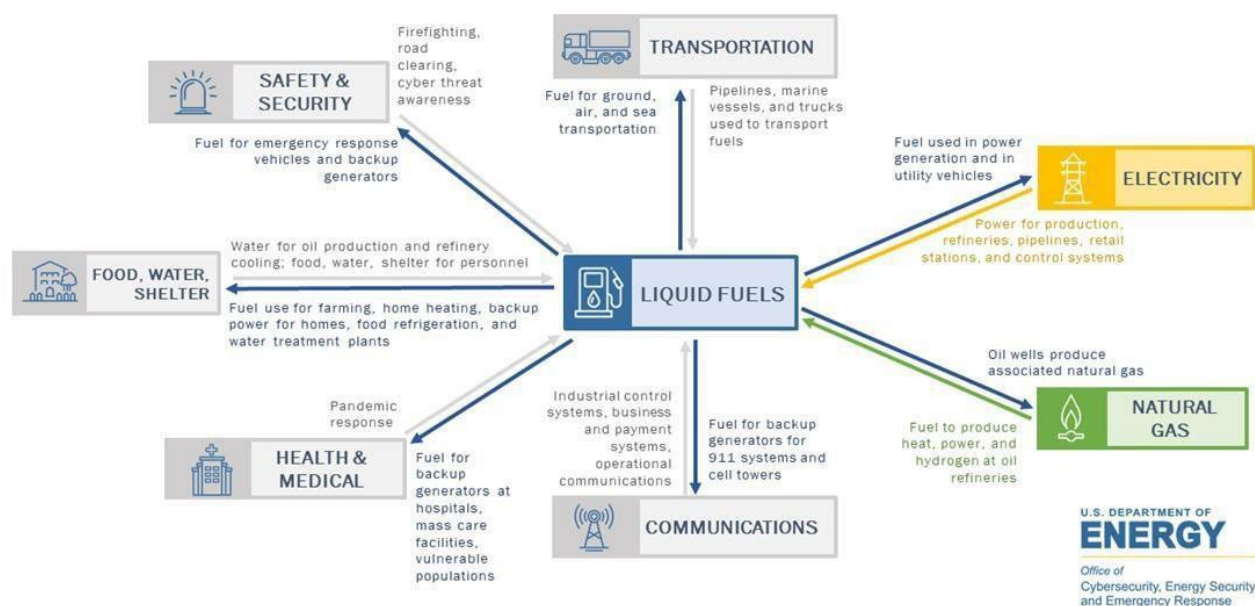
The communications sector relies on electricity to power 911 systems and other emergency response communications networks, internet services, and cell-phone towers. Meanwhile, the electricity sector uses communications services to run industrial control systems, provide platforms for business and payment systems, and for operational communications.

Communications and data collection networks are essential to monitoring grid conditions and making sure operations are running smoothly and efficiently. Supervisory control and data acquisition (SCADA) systems comprising various sensors and smart devices are placed on electricity grids to communicate information on the status and performance of electricity assets. These communications technologies are important for utilities, regional transmission operators (RTOs), and electricity markets generally in maintaining the appropriate balance between electricity supply and demand.

The transportation sector depends on electricity to power airports, seaports, electric-powered trains, and public transportation buses used by the Maine Department of Transportation (MDOT), electric-vehicle charging stations, and retail fuel stations. Airports rely on electricity for cooling, lighting, and ventilation, as well as communications systems and scheduling software. Electricity is also used at seaports to support business operations, offload distillate fuels, as well as to power cranes, forklifts, and other equipment used to lift cargo onto and off of marine vessels. Meanwhile, trucks and reliable road systems are essential for the operation and maintenance of electricity infrastructure. Trucks transport supplies and personnel, and they are used for infrastructure repair work. Seaports are also used by the electricity sector to bring in replacement parts from further distances. Finally, the rail system is utilized as well for the transportation of equipment and fuel.

Exhibit 60: Liquid Fuels Interdependencies

LIQUID FUELS



Source: U.S. DOE Office of Cybersecurity, Energy Security, and Emergency Response (CESER) State Energy Security Plan: Cross-Sector Interdependencies, May 2022

Interdependencies of liquid fuels with electricity in New England and Maine are described above. For heating and transportation, and despite progress made toward electrification of the heating sector, Maine is still very dependent on liquid fuels for heating, transportation, and as a backup supply for electric generators (including an increasing number of household generators fueled by propane).

The transportation sector is heavily reliant on liquid fuels as fuel for ground, air, and sea transportation. The liquid fuels sector, meanwhile, is reliant on the transportation sector for the operations of its supply chain. As the state imports all its liquid fuels (gasoline, diesel, heating oil, kerosene, and propane) by marine vessel from the Irving Oil Refinery in New Brunswick, by barge from New York, or by rail from Canada (propane), interruptions in the final delivery of these fuels can be interrupted by weather, unanticipated refinery shutdowns, or other market conditions affecting marine and rail deliveries. Some heating oil distributors store fuel at local depots that receive railcars or trucks. Heating oil is then transported on smaller trucks to end users like residential and commercial customers. Jet fuel is typically stored on-site in storage tanks at airports (typically called airport fuel farms), although additional jet fuel can also be stored at nearby bulk terminals. Most propane delivered into Maine comes by rail from Western Canada, and some from other U.S. sources. These deliveries are often interrupted by extreme weather, the Thanksgiving and Christmas holidays, and scenarios affecting rail

operations, such as striking workers. Maine has a backup supply available to retailers at the Sea-3 import facility in New Hampshire, but accessing this supply requires additional trucking in order to get the fuel distributed.

The safety and security sectors rely on the liquid fuels sector to fuel emergency response vehicles, such as police cars, fire trucks, and ambulances, and backup generators for emergency response facilities. Meanwhile, the liquid fuels sector depends on the safety and security sectors to protect against and respond to a variety of potential hazards. This includes law enforcement's protection and investigation of liquid fuels infrastructure security, firefighting during liquid fuels infrastructure fires, wildfire fighting to prevent liquid fuels infrastructure damage, and clearing debris from roads to aid crews in equipment restoration after storms or other events that hinder accessibility to liquid fuels infrastructure. Additionally, government agencies support the liquid fuels sector by sharing information on cyber threats and assisting in response efforts during cyberattacks.

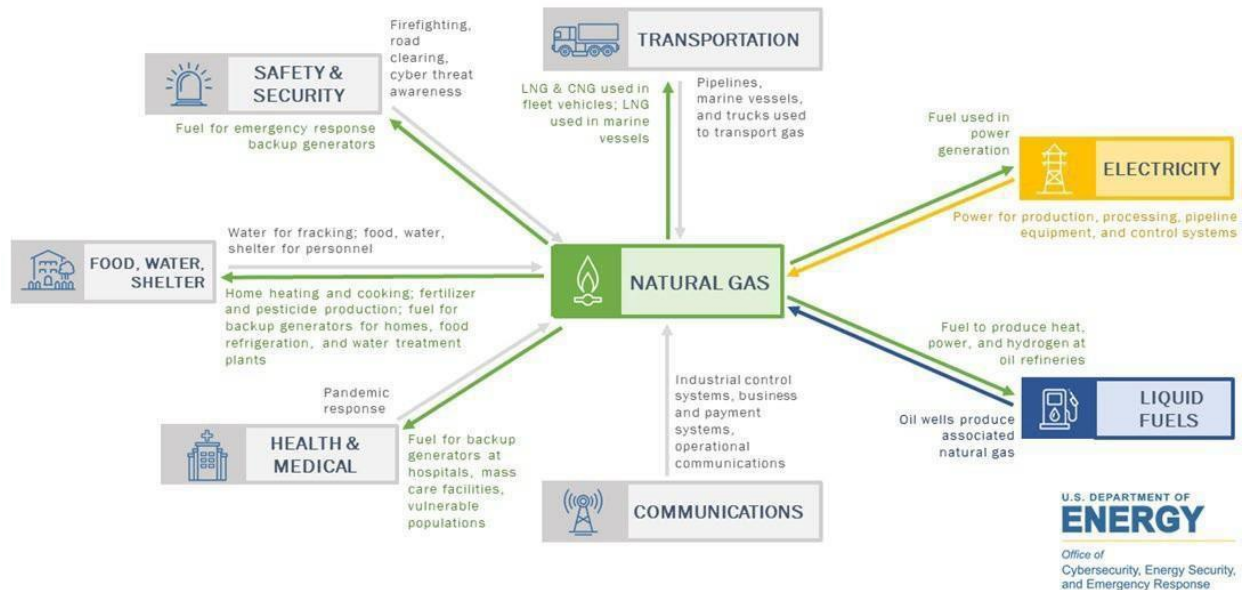
The food, water, and shelter sectors may rely on liquid fuels (i.e., diesel, propane, etc.) for home heating and cooking, fuel for backup generators powering homes, community emergency shelters, food refrigeration, and water treatment plants. The liquid fuels sector requires food, water, and shelter for employees.

The health and medical sectors depend on liquid fuels to fuel backup generators for hospitals, mass care facilities, and to provide services to vulnerable populations. Across the energy sectors, there is a reliance on the health and medical sectors to support a healthy workforce for continued operations.

The communications sector relies on liquid fuels to fuel backup generators for 911 systems, other emergency-response communications networks, and cell-phone towers. Meanwhile, the liquid fuels sector utilizes communications services to run industrial control systems, provide platforms for business and payment systems, and for operational communications. The liquid fuels industry often uses its own privately owned telecommunications networks to manage day-to-day operations and coordinate emergency responses during crises. It is critical for these systems to be reliable and have minimal processing delays ("low latency") to maintain smooth operations.

Exhibit 61: Natural Gas Interdependencies

NATURAL GAS



Source: U.S. DOE Office of Cybersecurity, Energy Security, and Emergency Response (CESER) State Energy Security Plan: Cross-Sector Interdependencies, May 2022

Interdependencies between the natural gas and electricity generation sectors are described above. Maine has very limited natural gas distribution infrastructure (fewer than 50,000 households use natural gas for heating purposes) and is clustered around more populated areas – Biddeford/Saco; Lewiston/Auburn; greater Portland; and some customers in the mid-coast and greater Augusta areas. Local distribution companies (LDCs) reserve pipeline capacity for their customers. Most commercial and industrial customers contract separately for their supply. Due to the limited natural gas penetration in the state, cascading impacts of a loss in supply would have less impact than a loss in electricity or distillate deliveries.

The safety and security sector relies on the natural gas sector to heat many emergency response facilities like police stations, fire stations, and emergency response operations centers. Meanwhile, the natural gas sector depends on the safety and security sectors to mitigate against and respond to a variety of potential hazards. This includes law enforcement's protection and investigation of natural gas infrastructure security, firefighting response during natural gas infrastructure fires, wildfire fighting to prevent natural gas infrastructure damage, and clearing debris from roads to aid utility personnel in equipment restoration after storms or other events that hinder accessibility to natural gas infrastructure. Additionally, government agencies support the natural gas sector by sharing information on cyber threats and assisting in response efforts during cyberattacks.

The food, water, and shelter sectors may rely on natural gas for home heating and cooking, and fuel for backup generators powering homes, community emergency shelters, food refrigeration, and water treatment plants. The natural gas sector requires food, water, and shelter for utility personnel.

The health and medical sectors may depend on natural gas to fuel backup generators, hot water systems, and laundry equipment for hospitals and mass care facilities. Widespread illness affecting the natural gas utility workforce can hinder operations, so the natural gas sector is also reliant on the health and medical sectors to support a healthy workforce.

The natural gas sector uses communications services to run industrial control systems, provide platforms for business and payment systems, and facilitate operational communications. The natural gas industry often uses its own privately owned telecommunications networks to manage day-to-day operations and coordinate emergency responses during crises. It is critical for these systems to be reliable and have minimal processing delays (“low latency”) to maintain smooth operations of natural gas assets. Devices used to measure and report the status of pipeline natural gas flows are important for quickly identifying and responding to any natural gas supply disruptions.

The transportation sector is supported by the natural gas sector mainly through liquified natural gas (LNG) and compressed natural gas (CNG). In Maine, CNG is sometimes used in fleet vehicles, such as delivery trucks and buses. LNG is also used by marine vessels. Natural gas in Maine is primarily transported via the Maritimes and Northeast (MNE) Pipeline and the Portland Natural Gas Transmission System (PNGTS). Iso-tanker trucks are used to carry LNG from storage facilities to supply critical customers in the event of disruptions and during peak demand seasons when pipelines are not able to fully meet customer needs. More generally, the entire natural gas sector is reliant on trucks to operate, maintain, and repair infrastructure

Section 3: Authorities, Doctrines, and Guiding Statutes

Relevant Authorities, Doctrines, and Guiding Statutes

Introduction

The Governor's Energy Office (GEO) develops the state's plan related to energy emergencies in coordination with the Maine Emergency Management Agency and other stakeholders under U.S. Public Law 94-163, Section 362 (1975), Energy Policy and Conservation Act of 1975, last updated November 15, 2021, and as described in 10 C.F.R. § 420.13(b)(9). This law provides for the development of standby state energy conservation plans to reduce energy demand by regulating the public and private consumption of energy during a severe energy supply interruption. These statutes and guiding authorities are listed in more detail below.

As this plan is the principal source of documentation for the State of Maine's energy emergency response activities, it must be maintained and updated on a regular basis to reflect changes in energy markets, supply, or distribution. Overall coordination will be carried out by GEO in close coordination with MEMA. The SESP will be circulated to public and private sector stakeholders at least every two years for review and recommendations for updates.

The State of Maine is vulnerable to a host of natural, technological, and human-caused hazards, from winter storms, tornadoes, and hurricanes to pandemics, hazardous materials spills, and acts of terrorism. State government has the responsibility to safeguard the public by anticipating events and maintaining tailored response plans.

Authorities

Requirement to have a State Energy Security Plan

Requirement to develop a state energy security plan. Federal law (42 USC §6326, modified in 2021 by the Infrastructure Investment and Jobs Act) requires states to develop, maintain, and enhance energy security plans. Plans are to describe the energy landscape, and to detail how, working with energy partners, states can secure energy infrastructure against physical and cybersecurity threats; mitigate the risk of energy supply disruptions; and enhance the state response to, and recovery from, energy disruptions.

Use of State Energy Program funds for state energy security plans. Section 366(b) of the Energy Policy and Conservation Act (EPCA) provides that financial assistance made available by the SEP may be used for the development, implementation, review, and revision of a State energy security plan. All grant awards made under this program shall comply with applicable law, including regulations contained in 2 CFR Part 200 as amended by 2 CFR Part 910, 10 CFR Part 420, and other procedures applicable to this regulation

Relevant Federal Authorities & Organization Structure

Information for this section is from the U.S. DOE Office of Cybersecurity, Energy Security, and Emergency Response: Federal Authorities, May 2022

Overview

Multiple agencies within the federal government are involved in energy security, playing a variety of roles, including setting standards and regulations related to energy sector safety and security, providing baseline energy information and situational awareness during emergencies, and assisting energy system operators and state, local, tribal, and territorial (SLTT) officials in emergency preparedness and response activities.

These federal roles are exercised before and during energy emergency events.

- Before emergency events, the federal government publishes energy data and market information, analyzes and shares information on threats to the energy sector, conducts research and develops new technologies, assists SLTT partners with hazard assessment and mitigation, provides support for SLTT planning and preparedness activities, funds energy resilience projects, and convenes government and non-government stakeholders for energy emergency exercises.
- During emergency events, the federal government provides assistance to industry and SLTT governments, convenes stakeholders for information sharing and situational awareness, distributes energy resources (generators, fuel, etc.) as needed, and grants relief from energy-related federal regulations to facilitate response and recovery. A full list of the policies authorizing federal planning and response roles can be found below.

Emergency Response Function-12 (Energy)

As defined in the [National Response Framework](#), Emergency Support Functions (ESFs) are the primary response coordinating structure at the federal level. A department or agency is designated as the coordinator for each ESF, along with a number of primary and support agencies. ESFs provide the structure for coordinating federal interagency response during an incident and group together the functions most frequently used to provide federal support to states and other federal agencies. DOE is the lead agency for ESF-12 (Energy) and the Sector Risk Management Agency (SRMA), and the Sector Specific Agency (SSA) for the energy sector. The [Office of Cybersecurity, Energy Security, and Emergency Response \(CESER\)](#) manages DOE's SRMA and ESF-12 responsibilities. During events requiring a federal response, CESER activates its Energy Response Organization to manage response activities, including deploying ESF-12 responders; sharing situational awareness products; and coordinating with and providing technical assistance to federal, SLTT, and industry partners.

Summary of Federal Energy Security and Emergency Response Roles

The following tables provide an overview of the many federal departments and agencies that play a role in energy security. Many of these agencies have roles and responsibilities that extend beyond the energy sector. Each agency's energy-related activities have been categorized as applying to electricity, liquid fuels, or natural gas. Agencies that safeguard the cybersecurity and physical security of energy infrastructure are also indicated.

Agencies' energy security activities may involve:

- Energy emergency preparedness and response, including hosting and participating in preparedness planning and exercises, and deploying responders or resources during an emergency event.
- Information sharing and situational awareness, including publishing data and threat information and issuing situation reports during emergency events.
- Development and enforcement of standards and regulations for energy industry safety and security. During emergency events, some of these standards and regulations may be waived to facilitate faster response and restoration.

Exhibit 62: Summary of Federal Emergency Response Roles

Department or Agency		Sector	Preparedness & Response	Situational Awareness	Standards & Regulations
White House		   	✓	✓	
DHS	FEMA	  	✓	✓	
	CISA		✓	✓	
	Coast Guard	 	✓		✓
	TSA	  	✓		✓
	CBP	  			✓
DOE	CESER	   	✓	✓	
	OE			✓	✓
	EIA	  		✓	
	FERC	  			✓
DOT	FMCSA	 			✓
	PHMSA	 	✓		✓
EPA		  			✓
IRS					✓
DOD	USACE	  	✓		✓
NRC			✓	✓	✓
DOJ	FBI		✓		
DOI	DOI BSEE	 		✓	✓

 Electricity
  Liquid Fuel
  Natural Gas
  Cyber and physical security

Exhibit 63: Descriptions of Federal Emergency Response Roles

Department or Agency		Energy Security/Emergency Response Role
White House		The White House—particularly the National Security Council —participates in public briefings and interagency situational awareness activities. The President also has the authority to declare a national state of emergency.
Dept of Homeland Security (DHS)	Federal Emergency Management Agency (FEMA)	FEMA coordinates federal incident response and recovery activities. FEMA’s duties during an event include assisting the President in carrying out the Stafford Act , operating the National Response Coordination Center (NRCC), supporting all Emergency Support Functions (ESFs) and Recovery Support Functions (RSFs). FEMA's mission assigns the Defense Logistics Agency (DLA) to provide fuel support to federal responders and, if requested, SLTT responders and critical infrastructure. FEMA funds Public Assistance (PA) disaster funds, hazard mitigation projects through the Building Resilient Infrastructure and Communities (BRIC) Program, Hazard Mitigation Grant Program (HMGP) , and others .
	Cybersecurity and Infrastructure Agency (CISA)	CISA leads the national effort to understand, manage, and reduce risk to cyber and physical infrastructure. CISA manages the Pipeline Cybersecurity Initiative , leveraging expertise from government and private partners to identify and address cybersecurity risks to pipeline infrastructure. CISA publishes best practices for cybersecurity protection. During a cyber incident, CISA assists impacted infrastructure, helps investigate the responsible actors, and coordinates the national response to significant cyber events.
	U.S. Coast Guard	The U.S. Coast Guard is the principal federal agency responsible for maritime safety, security, and environmental stewardship in U.S. ports and inland waterways used for the movement of energy products, including petroleum, natural gas, and coal. The Coast Guard reviews and approves security assessments and security plans developed by vessel owners and terminal operators, and inspects terminals for compliance with security requirements. The Coast Guard’s role is particularly important during hurricanes and other severe weather that can disrupt energy supplies (primarily liquid fuels) into and out of U.S. ports.
Dept. or Agency	Energy Security/Emergency Response Role	

	Transportation Security Administration (TSA)	TSA oversees the physical security and cybersecurity of all U.S. pipelines. TSA issues directives for owners and operators of pipelines to better secure pipelines against cyberattacks. TSA also oversees security at marine ports, where oil and gas marine terminals, petroleum refineries, and other energy infrastructure may be located. TSA conducts background checks and issues federal identification cards (called TWIC® cards) to workers accessing secure areas within port boundaries, including fuel truck drivers, refinery workers, and other energy industry workers. TSA may waive TWIC requirements during energy emergencies to facilitate energy restoration and response activities.
	U.S. Customs & Border Protection (CBP)	CBP is the primary federal agency tasked with ensuring the security of the nation's borders. CBP is responsible for enforcing and administering laws and regulations to control and oversee vessel movements into, out of, and between U.S. ports. CBP enforces the Merchant Marine Act of 1920, also called the Jones Act, which generally prohibits the transportation of merchandise between two U.S. ports in any vessel not built in, documented under the laws of, and owned by citizens of the United States. Applications may be made to CBP for the Secretary of Homeland Security to grant a Jones Act waiver, which can help facilitate the delivery of fuel and equipment during energy shortages.

	Office of Cybersecurity, Energy Security, and Emergency Response (CESER) SLTT = State, local, Tribal, and Territorial Government	CESER’s mission is to enhance the security of U.S. critical energy infrastructure against all hazards, mitigate the impacts of disruptive events and risk to the sector overall through preparedness and innovation, and respond to and facilitate recovery from energy disruptions in collaboration with other federal agencies, the private sector, and State, local, tribal, and territorial governments. CESER’s preparedness and response activities include SLTT capacity building, energy security and resilience planning, hosting energy emergency exercises, and deploying ESF-12 responders to impacted regions during emergencies. CESER facilitates interagency coordination, shares situational awareness products, and provides emergency response support to SLTT governments. The agency’s energy security resource hub can be found here. SLTT resource library, which provides resources to advance and inform state, local, tribal, and territorial governments’ energy security planning, risk awareness, policy, and investment decisions, mitigation strategies, and emergency response efforts. CESER partners with SLTT organizations and DOE National Laboratories to develop a suite of tools, analyses, trainings, and guides. The resources below are tagged according to their Project Partner, Topic Area, and Resource Type. CESER also advances research, development, and deployment of technologies, tools, and techniques to reduce risks to the Nation’s critical energy infrastructure posed by cyber and other emerging threats. CESER administers programs that can be used to mitigate impacts to energy infrastructure and energy supply, and to provide resources during energy emergencies: The Federal Power Act Section 202(c) grants DOE the power to temporarily order connections of facilities, and generation, delivery, interchange, or transmission of electricity during grid emergencies. The Strategic Petroleum Reserve is a federally owned emergency supply of crude oil. Volumes can be released to mitigate the impact of crude supply disruptions. The Northeast Home Heating Oil Reserve and Northeast Gasoline Supply Reserve provide emergency supplies of heating oil and gasoline, respectively.
	Office of Electricity (OE)	OE provides national leadership to ensure that the Nation’s energy delivery system is secure, resilient, and reliable. Through research and development, OE develops new technologies to improve electric infrastructure. OE also oversees the Federal and state electricity policies and programs that shape electricity system planning and market operations.

	Office of Enterprise Assessments	The Office of Enterprise Assessments oversees four federal Power Marketing Administrations (PMAs) - Bonneville Power Administration (BPA), Southeastern Power Administration (SEPA), Southwestern Power Administration (SWPA), and Western Area Power Administration (WAPA) – that operate electric systems and sell the electrical output of federally owned and operated hydroelectric dams in 34 states.
	U.S. Energy Information Administration (EIA)	EIA collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment. EIA's data can be used in energy security planning and energy emergency response activities. EIA publishes state energy profiles , data products related to energy supply, demand, infrastructure, and prices, as well as GIS maps .
	Federal Energy Regulatory Commission (FERC)	FERC is an independent agency that regulates the interstate transmission of electricity, natural gas, and oil. FERC's role includes oversight of the transmission and wholesale sale of electricity in interstate commerce, transportation of oil by pipeline in interstate commerce, and proposals to build liquefied natural gas (LNG) terminals and interstate natural gas pipelines, as well as licensing hydropower projects. During energy emergencies, FERC also has emergency authority under the Interstate Commerce Act to direct companies to provide preference or priority in transportation, embargoes, or movement of traffic. This authority can be used to direct responders to assist in disasters and provide situational awareness.
U.S. Nuclear Regulatory Commission (NRC)		The NRC is involved in emergency preparedness and response involving nuclear facilities or materials. The NRC also publishes a daily status report on all nuclear power reactors.
U.S. Dept of Justice (DOJ)	Federal Bureau of Investigation (FBI)	The FBI leads investigations into cyber attacks and intrusions . The FBI collects and shares intelligence and engages with victims while working to unmask those committing malicious cyber activities.
U.S. Dept of the Interior (DOI)	Bureau of Safety and Environmental Enforcement (BSEE)	BSEE has responsibility for the safety of the environment and conservation of offshore resources. BSEE administers the Oil Spill Preparedness Program and provides support for oil spill response efforts . During hurricanes and other inclement weather in the Gulf of Mexico, BSEE publishes data on the offshore oil and gas rigs that have been evacuated, as well as the amount of production that has been temporarily shut in. BSEE also leads the development of workplace safety and environmental compliance strategies for offshore renewable energy projects on the Federal Outer Continental Shelf.

Other Information Resources

- CESER Energy Waivers Library
 - CESER's [Energy Waivers Library](#) provides additional detail on regulatory relief granted by federal agencies during energy disruptions. The library also lists contact information for each agency and provides examples of past uses of each waiver.
- CESER Roles and Authorities
 - CESER's [Roles and Authorities](#) webpage outlines the various executive branch and DOE authorities that establish CESER's role in securing the nation's energy infrastructure, maintaining situational awareness, discovering and mitigating cyber threats, and orchestrating response and recovery operations.
- Power Outage Incident Annex (2017)
 - For more detailed descriptions of federal agency roles during a long-term power outage, refer to Table 10: Roles and Responsibilities in a Long-Term Power Outage Incident in FEMA's [Power Outage Incident Annex](#) (2017).
- National Incident Management System (2017)
 - FEMA's [National Incident Management System \(NIMS\)](#) provides a consistent nationwide template that guides all levels of government, nongovernmental organizations, and the private sector through the command and coordination of incidents, resource management, and information management. This framework applies to emergency responders and other emergency management personnel, NGOs, the private sector, and elected and appointed officials responsible for making decisions regarding incidents.

Relevant State Authorities

State Emergency Response Laws and authorities related to energy resources

The state of Maine’s authority for preparing a state energy security plan is found in Maine Revised Statutes, Title 2, Chapter 1, §9; and Title 37-B, Chapter 13, Subchapter 5 § 852. Below is a list of applicable state authorities that may be used or guide a response during an energy emergency.

- Me. Rev. Stat. tit. 2, § 9 (2011)
- Me. Rev. Stat. tit. 37-B, § 742 (2001)
- Me. Rev. Stat. tit. 10, § 1105 (2021),
- Me. Rev. Stat. tit. 5, § 205 – 214 (1987)
- Me. Rev. Stat. tit. 35-A § 1702-A (1997)

Legal Constraints in an Energy Emergency:

- The Governor’s powers to handle an emergency are provided by Title 37-B of the Maine Revised Statutes and Amendments Chapter 13, Subchapter 2, §741 (37-B MRSA 741). Specifically, this statute describes the powers granted to the Governor “in the event of disaster beyond local control . . .”, and states “the Governor may assume direct operational control over all or any part of the emergency management and public safety functions within the State.”
- In accordance with 37 MRSA 742.2, the Governor has specific authority to proclaim an energy emergency and, in cases of an energy emergency, is granted powers to implement or waive certain programs, standards, priorities, and quotas. An example of this is the Hours of Service (HOS) waiver for heating fuel deliveries. This action waives safety regulations (including limits on the number of hours a delivery driver can operate each week), so heating fuel can continue to be delivered during emergencies. More details on this process can be found in Section 4, Energy Security Response.

It should be noted that there are limitations on the powers given to the Governor in an energy emergency, which are described in the memorandum from the Office of the Attorney General, dated January 6, 2022. A copy of this memorandum is presented in Appendix C: Limitations on Gubernatorial Power in an Energy Emergency

- When an emergency has ended, 37 MRSA 743 states that the Governor will issue another proclamation to officially terminate the State of Emergency. A termination proclamation may be for all or some of the parts of Maine the original emergency proclamation was

applied to; however, this statute states a Governor's emergency proclamation automatically expires in 30 days if the Governor does not renew it. Additionally, a joint resolution by the Maine Legislature may terminate a state of emergency.

At the state level, Maine's [Emergency Support Function 12, Energy](#) (ESF-12) provides a framework for coordination of emergency response measures used by MEMA, PUC, GEO, other state agencies, non- government organizations, and private utilities in responding to and recovering from fuel shortages, power outages, and capacity shortages caused by an emergency incident, major disaster, acts of war, terrorism (physical or cyber), or civil disturbance in the State of Maine.

Emergency Support Functions (ESFs) describe coordinating structures that group resources and capabilities into functional areas most frequently needed in response to an incident. As described above, ESFs are a part of the [National Response Framework](#), which is a guide on how federal, state, and local governments respond to all types of disasters and emergencies. It is built on scalable, flexible, and adaptable concepts identified in the [National Incident Management System](#).

The lead state agencies for ESF-12 are the GEO (delivered fuels) and the PUC (electricity and natural gas), with the Maine National Guard (MNG) as a supporting agency.

In accordance with Maine Revised Statutes, Title 37-B, § 704 MEMA has developed the Comprehensive Emergency Management Plan (CEMP) to provide a framework for state-level emergency management activities and to define how state government interfaces with other emergency management stakeholders, including local, county, and tribal governments, non-governmental organizations (NGOs), other states, the federal government, and the private sector. This plan includes all supporting annexes, including ESF-12. State agencies within ESF-12 will work collaboratively to provide coordination and support to local jurisdictions based on their agencies' or organizations' unique areas of expertise, resources, and authorities. MEMA uses the HAN network (Health Alert Network) to share information and coordinate response actions at both the state and local levels.

As published in the CEMP, ESF-12 Energy Annex, state assistance will be prioritized in the following manner:

- Coordinate the supply of fuel to emergency response organizations, critical infrastructure, and in areas along evacuation routes.
- Coordinate the supplying of technical personnel, equipment, materials, and supplies, support of efforts by Emergency Operations Centers (EOCs) and ESFs to repair or restore essential operating facilities and infrastructure.
- Update emergency shelter power status and unmet needs in coordination with the American Red Cross (ARC) and ESF-6, "Mass Care, Emergency Assistance, Housing, and Human Services". Assist in providing resources for emergency

power generation.

- In coordination with and led by ISO New England (ISO-NE), provide emergency planning, data analysis, forecasting of the energy situation, and implementation of energy conservation measures.
- ESF-12 agencies will coordinate with other state, local, and federal agencies, private utilities, industry, and through the State Emergency Operations Center (SEOC) Joint Information Center (JIC) and Public Information Officer (PIO) in carrying out their responsibilities.

Relevant local and tribal authorities (e.g., home rule)

Maine is a home rule state, which means local governments have the right to govern on issues of local concern. The parameters surrounding home rule originate in Article VIII of the Maine Constitution and are codified in M.R.S. Title 30A, Chapter 111. Tribal authorities in Maine (Aroostook Band of Micmac Indians; Houlton Band of Maliseet Indians; Passamaquoddy Tribe; and Penobscot Nation) are not sovereign nations under state law but possess home rule protections like other local governments in the state.

Energy Security Planning & Preparedness

The SESP describes the way the state would respond if an energy shortage of a substantial nature occurs or appears imminent. It delineates levels of monitoring, communication, decision making, and response that may occur for shortages of each energy type, with potential voluntary and/or mandatory measures appropriate for the level of shortage.

Planning for these emergency response efforts provides three principal benefits:

- It allows jurisdictions to influence the course of events in an emergency by determining in advance the actions, policies, and processes to follow;
- It guides other preparedness activities; and
- It contributes to unity of effort by providing a common blueprint for response activities.

If the energy shortage is severe, or a severe shortage appears imminent, the GEO, the PUC, MEMA, and the Department of Public Safety, as core members of the Energy Emergency Response Team (see below), may recommend to the Governor that an energy emergency be declared for one or more fuel sources. The Governor may then, under authorities granted in Me. Rev. Stat. tit. 37-B, § 742 (2001) declares a state of emergency, and calls for response by various agencies of state government, representatives of local governments, and non-governmental organizations.

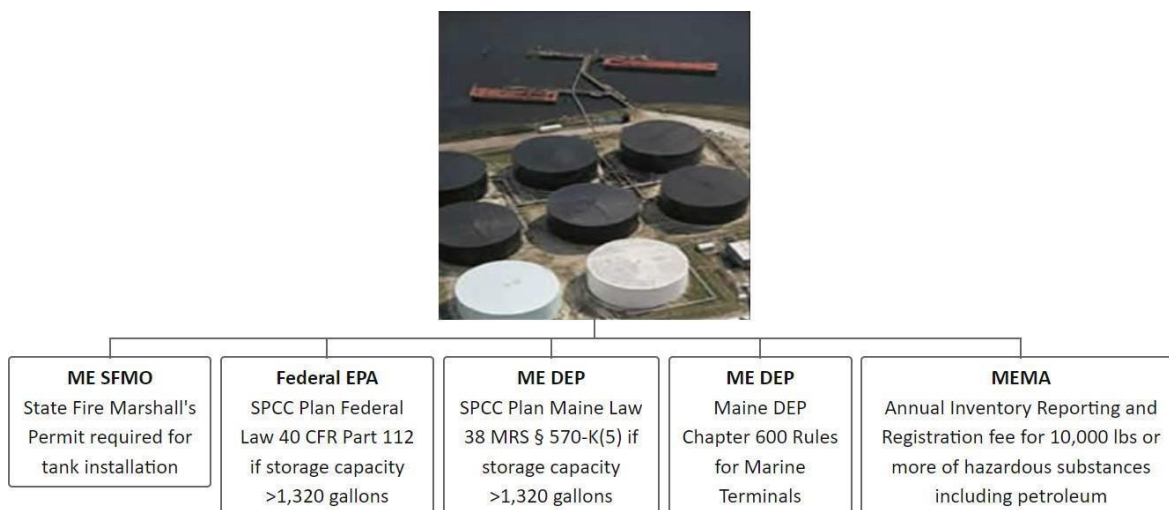
Other State Agencies involved in independent activities related to emergency response

State Fire Marshall, Department of Environmental Protection

Marine Oil Terminals

- Marine oil terminals are large facilities engaged in the transferring, processing, refining, and storing of oils. As the name implies, marine oil terminals conduct the transfer of oil to or from the terminal by means of navigable waters. In Maine, the regulatory decision tree impacting emergency response is below.
- Any oil storage tank larger than 60 gallons and not connected directly to an oil-burning appliance must be permitted by the State Fire Marshal's Office.
- If the oil storage is larger than 1,320 gallons or the facility owner has multiple tanks exceeding 1,320 gallons at their facility, then they are required to implement a [Spill Prevention, Control, and Countermeasure](#) (SPCC) Plan in accordance with state and federal laws.
- Chapter 600 sets forth the minimum design and operating requirements for marine oil terminals and intrastate pipelines. Separate sections are included for siting requirements, design and construction requirements for new and existing marine oil terminal facilities, staff training and safety, and closure of tanks and facilities.
- The Maine Emergency Management Agency (MEMA) requires annual inventory reporting, in accordance with federal Emergency Planning and Community Right-to-Know Act (EPCRA) laws.

Exhibit 64: Maine State Authorities



Note that any or all of these requirements may apply

State Energy Office Roles and Responsibilities

The GEO is charged with developing policies, plans, and programs to advance energy solutions for Maine, growing Maine's clean energy economy, engaging in the important fight against climate change, and ensuring Mainers have a reliable and affordable energy supply.

1. Advise the Governor on Energy Policy
 - This is the overarching statutory responsibility of the Governor's Energy Office (M.R.S. Title 2, §9).
2. Monitor Energy Markets
 - Monitor and analyze market and supply data
 - Review DOE CESER communications on threats/events
 - Collect data on energy costs in the state; maintain a database of energy prices, with a focus on delivered fuels, and make this information available to the public
3. In the event of an expected or actual energy disruption (primarily delivered fuels issues; regulated utility disruptions fall to the PUC as part of the emergency operations center, or EOC, activation), activate the Energy Emergency Response Team (EERT) to assess mitigation, impact, and response actions (e.g., conservation, regulatory waivers, consumer protection, supply acquisition, subsidies).

Energy Emergency Response Team Members

- Governor's Energy Office (GEO)
- Maine Emergency Management Agency (MEMA)
- Public Utilities Commission (PUC)
- Department of Public Safety
- Public Information Officer Staff from MEMA, PUC, DPS, and GEO as necessary

See graphic below for EERT process. The GEO activates the core members of the EERT and may call upon other federal, state, local, or private entity partners to provide situational awareness and recommendations for response actions.

Partners include the following:

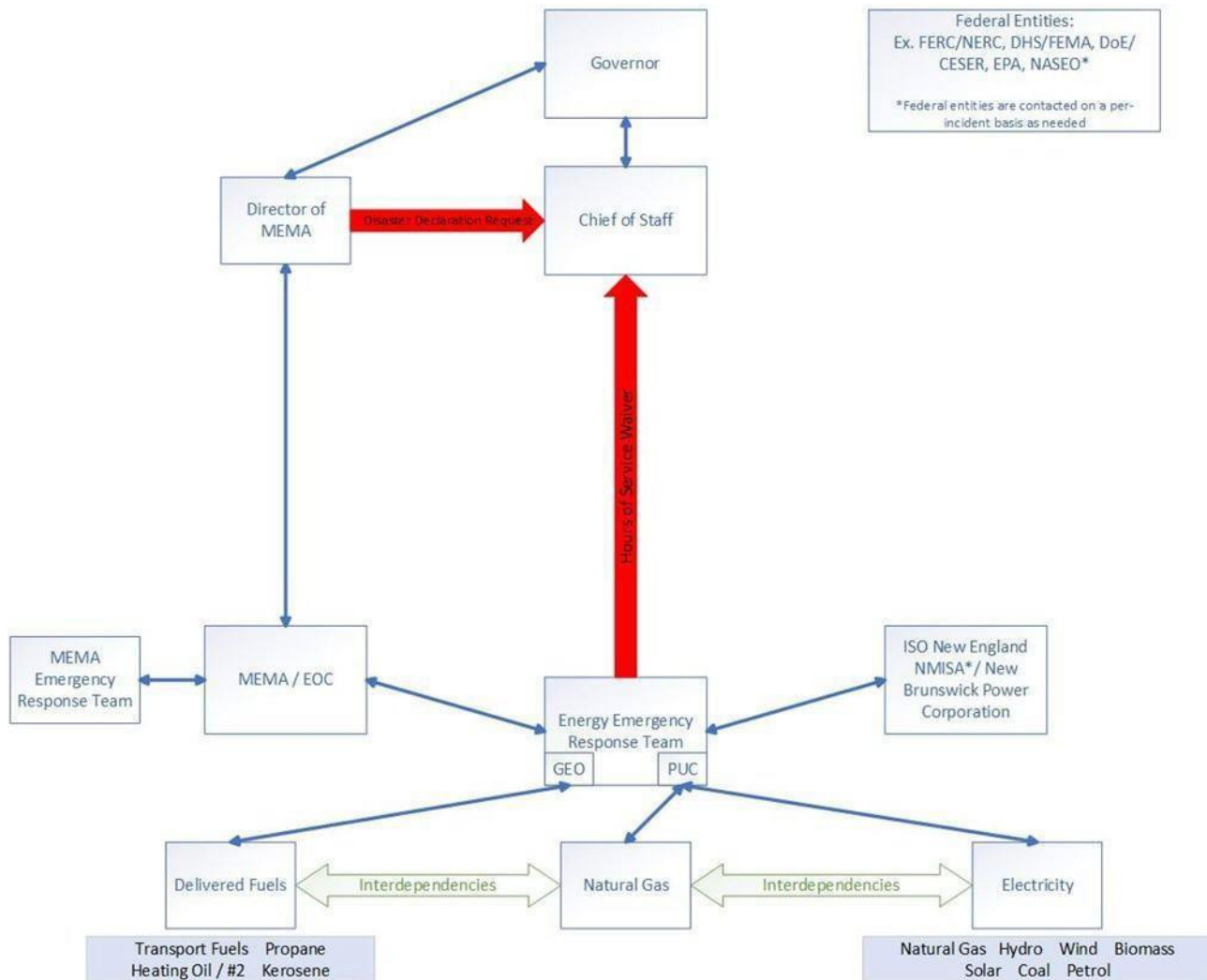
- Federal, State, Local, or Private Entity Partners
- Maine Office of Information Technology
- Other local, state, and federal agencies
- Energy Emergency Assurance Coordinators Program,

U.S. DOE (EEAC)

- Cybersecurity, Energy Security, and Emergency Response, U.S. DOE (CESER)
- ISO New England/ Northern Maine Independent System Operator (NMISA)
- Canadian energy partners
- Private utilities
- Private energy suppliers, distributors, and organizations
- Non-governmental organizations

The EERT is typically activated during requests for delivered fuels hours-of-service waivers. It can be activated as an initial planning step for all energy shortages and other emergencies.

Exhibit 65: Maine Emergency Response Team – Communication Flow Chart



Communicate with federal partners, state agency personnel, and stakeholders, including through the State Energy Emergency Assurance Coordinators (EEAC) Program (see Appendix D: Energy Emergency Assurance Coordinator Program). The GEO, along with the PUC, staffs the state's Department of Energy's Energy Emergency Assurance Coordinator roles.

4. Engage Stakeholders

- Sustain relationships with public and private energy suppliers and key stakeholders.
- Maintain stakeholder contact lists (see Appendix E: Information-Sharing Contact List)

5. Staff Training and Exercises (in conjunction with Maine Emergency Management Agency)

6. After Action Reporting, Evaluation, and Continuous Improvement (in conjunction with MEMA and other state partners)

7. State Emergency Response Responsibilities

See Section 5, Emergency Response. Includes annual review of plan, described below.

Annual Review

The Maine Energy Security Plan is a living document that will need periodic review and update. Below is a table documenting these periodic updates and improvements. These will include reference to response cycle changes (Section 5), summarized in the box below.

Updates and changes will include the three response components listed and described sequentially below.

- **Information-Gathering/Situational Awareness:** Additional resources utilized during energy emergencies will be added. Organization/company information will be documented, as well as specific individuals with whom the GEO will share any relevant information.
- **Consequence Assessment:** The assessment will align with the GEO's and Maine's state operations plan.
- **Response:** Responses will align with GEO's energy emergency response flow chart, as well as the overall state operations plan/hazard mitigation plans.

Exhibit 66: Annual Review Process

Section	Date of Review	Individual(s) Conducting Review	Email Address

Roles of Other State Entities Relating to Energy Security

Governor's Office

The Governor has the ultimate responsibility of declaring state emergencies, including energy emergencies. The Governor's powers to handle an emergency are provided by Title 37-B of the Maine Revised Statutes and Amendments Chapter 13, Subchapter 2, §741 (37-B MRSA 741).

Specifically, this statute describes the powers granted to the Governor "in the event of disaster beyond local control . . .", and states "the Governor may assume direct operational control over all or any part of the emergency management and public safety functions within the State."

Public Utility Commission (PUC)

The PUC regulates electric, gas, telephone, and water utilities to ensure that Maine residents have access to safe and reliable utility services at rates that are just and reasonable for all ratepayers. The Commission regulates approximately 430 electric, telephone, water, and gas utility companies and districts. For these companies and districts, the Commission establishes rates, grants utility operating authority, regulates utility service standards, and monitors utility operations for safety and reliability. It also has limited authority over water transportation into Casco Bay. The commission responds to customer questions and complaints and provides information to the public and policymakers. The Commission is divided into six operating divisions: Telephone and Water; Electric and Gas; Consumer Assistance and Safety Division (CASD); Legal; Emergency Services Communication Bureau; and Administrative. The PUC's internal Emergency Response Team and the CASD will likely play the largest part in any energy emergency response activity. The PUC is also the certified agent for the Pipeline and Hazardous Materials Safety Administration (PHMSA). In this role, the PUC ensures that intrastate natural gas transmission and distribution systems comply with federal pipeline safety standards and corresponding state regulations through operator inspections.

Maine Emergency Management Agency

MEMA is a bureau within the Department of Defense, Veterans, and Emergency Management. At the state level, MEMA utilizes an all-hazards approach in coordinating the mitigation or risk reduction, preparedness, response, and recovery activities to threats and hazards affecting the State of Maine.

MEMA also provides guidance and assistance to county and local governments, local emergency responders, businesses, and nonprofit organizations in their efforts to provide protection to citizens and property and increase resiliency in the face of disaster. MEMA

uses strategies such as planning, training, exercise, and public education to carry out its mission. Since 2001, MEMA has been the designated agency for implementing programs regarding Homeland Security, integrating these concerns into its all-hazard mission.

The Maine HAN is a secure, web-based communication system used by the Maine Center for Disease Control and Prevention and its partners to exchange information within and between their respective agencies.

Members include physicians, nurses, hospital staff, clinicians, public health workers, emergency preparedness and management personnel, first responders, and many others. MEMA uses this platform for its emergency operations.

MEMA develops and updates the State Emergency Operations Plan (EOP), in which energy emergencies are one component. The State EOP is Volume II of the Comprehensive Emergency Management Plan (CEMP), and it consists of a Base Plan, supplemented with Emergency Support Function (ESF) annexes, incident annexes (IA), and supporting annexes (SA). The Base Plan forms the overall framework for emergency response in the State of Maine, while the ESF annexes provide additional detail on essential discipline-specific functions.

The EOP is intended to accomplish the following objectives:

- Assign responsibilities to agencies, organizations, and individuals for carrying out specific actions during an emergency.
- Detail the methods and procedures to be used by emergency management personnel to assess emergencies and take appropriate actions to save lives and reduce injuries, prevent or minimize damage to public and private property, and protect the environment.
- Identify the responsibilities of local, state, non-governmental, volunteer, private sector, and federal agencies during emergencies or disasters.
- Identify lines of authority and coordination for the management of an emergency or disaster. Communications are facilitated through the HAN network.
- Coordinate mutual aid and federal assistance to supplement state resources. The complete EOP is available at:

https://www.maine.gov/mema/sites/maine.gov/mema/files/inline-files/maine_emergency_operations_plan.pdf

This Energy Security Plan is a supplemental and procedural document associated with the ESF-12 annex to the EOP.

Maine Department of Public Safety

The Department of Public Safety oversees the State of Maine’s public safety bureaus to ensure efficient delivery of the services those agencies provide. These public safety bureaus include the following: Capitol Police; Consolidated Emergency Communications; Maine Criminal Justice Academy; Drug Enforcement; Emergency Medical Services; Fire Marshal’s Office; Gambling Control; Highway Safety; and Maine State Police. The Department of Public Safety also consists of the Management Office and Legal personnel. The advisory Maine Justice Assistance Council was established to provide comprehensive strategic planning and policy direction and to obtain regular guidance and advice from knowledgeable criminal justice practitioners, victim services providers, key stakeholders, and advocates to the Department.

State Fusion Center (Maine Information and Analysis Center, or MIAC)

The MIAC is Maine’s designated “fusion center”. It is a program within the Maine Dept. of Public Safety. The MIAC collects, analyzes, and shares (with appropriate agencies) intelligence between the federal government and the State of Maine. The MIAC also provides analytical and investigative support for crimes of a complex, organized, or statewide nature. This includes the energy sector.

Regional Coordination

Coordination with the Northeast Region.

Maine engages in regional coordination activities with the other New England states and New York, as well as with federal partners, in matters of energy emergency planning, response, and resilience.

- Northeast Region winter fuels coordination calls. Maine participates with other northeast states (New England and New York) in regional situational awareness calls during the winter heating season. Currently hosted by the state of Massachusetts, over one hundred participants from state energy offices, ISO-NE, U.S. DOE, CISA, Dept. of Homeland Security, the U.S. Coast Guard, natural gas and liquid fuels industry representatives, and energy infrastructure owners/operators provide situational awareness information (e.g., fuel supplies, deliveries, weather conditions). This information exchange allows states to plan for and mitigate an impending energy shortage or other emergencies. This coordination/situational awareness effort has also been utilized outside of the heating season during severe weather events impacting the Northeast region. In Appendix F: New England and Mid-Atlantic Regional Liquid Fuels Supply Shortage Coordination Process, there is a draft proposal to formalize this process, as well as to initiate a response to an energy shortage or related emergency.

- National Association of State Energy Officials (NASEO) energy security committee and all-hazards calls. Maine participates in these nationwide monthly calls, hosted by NASEO, during which emerging energy security issues, both regional and national, are discussed.

Energy Emergency Assurance Coordinators Program (EEAC). Maine participates in this bi-directional communication effort, which is a cooperative effort between several national associations, the U.S. DOE, Office of Cybersecurity, Energy Security and Emergency Response, and the states. A further description of this program is located in Appendix D: Energy Emergency Assurance Coordinators (EEAC) Program

- Mutual assistance. When needed, industry will also seek support to respond to a disruption or disaster. Both government and industry can request support to help respond through “mutual assistance” or “mutual aid” programs. These programs provide a framework for the sharing of skilled personnel and/or equipment from unaffected areas to those in need to expedite the restoration process. See Appendix G for more information.
- Exercises.
 - Northeast Region Liquid Fuels Shortage Coordination Exercise. In July 2024, Maine participated in a formal tabletop exercise/workshop that modeled several extreme weather events resulting in a prolonged liquid fuels shortage and cascading effects on the region’s electricity and natural gas systems. The exercise provided an opportunity to identify areas where coordination and communication can be improved between the states, and to discuss further action to formalize a communication process.
 - Port of Portland Cybersecurity tabletop exercise. In April 2024, GEO participated in a Port of Portland cyber exercise – an information exchange between local, state, federal, and industry partners to raise awareness regarding the risk and consequences of cyberattacks to port operations.

Tribal Coordination

Maine has four federally recognized tribes – The Passamaquoddy (Washington County); the Penobscot Nation (Penobscot County); the Houlton Band of Maliseets (Aroostook County); and the Mi’kmaq of Presque Isle (Aroostook County). The Passamaquoddy and Penobscot tribes possess reservation lands. The tribes maintain their own governments.

Following the passage of the federal Maine Indian Land Claims Settlement Act of 1980 and its state-level counterpart, the Maine Implementing Act, tribal sovereignty was restricted for all Indian tribes in Maine (collectively called the Wabanaki Nation). As a result, federal tribal law does not automatically apply to Maine’s tribes; instead, they were placed under

state jurisdiction. This is a unique governing situation not found in any other state. The tribes are governed as municipalities.

Regarding energy emergency planning, response, and recovery, there isn't one consistent process required by the state or used by the tribes.

- Emergency planning - tribes are not required to submit emergency plans to the Maine Emergency Management Agency, as other local governments do. FEMA preparedness grants are available directly to the tribes, as they have the capacity to apply for them.
- Emergency response and disaster recovery – tribes have a choice to request resources directly from the federal government, the state, or the county. Under the Stafford Disaster Relief and Emergency Assistance Act, there isn't one path tribes use to request assistance; specific emergency/disaster circumstances often dictate whether it is more advantageous to request assistance as an individual tribe or add their damages to a state assistance request.

There are recent efforts to improve communication and coordination between the state and the tribes, including those relating to energy and emergency response. In 2021, the state Legislature passed the Tribal-State Collaboration Act (5 M.R.S. § § 11051). This law establishes a process for collaboration between selected state agencies and the Indian tribes regarding the agency programs, rules, and services that substantially and uniquely affect the Indian tribes or tribal members. In the context of emergency rulemaking pursuant to section 8054, the policy must require notice and collaboration to the extent practicable. Collaboration under this paragraph must be in addition to any process available to members of the public and must include additional outreach and consideration given to how programs, rules, and services affect the tribes before implementing programs or finalizing rules. Agencies are also required to document such efforts on an annual basis. Agencies included under this law relevant to energy and emergency response are the Public Utilities Commission, the Office of the Public Advocate, the Dept. of Public Safety, the Dept. of Environmental Protection, and the Dept. of Defense, Veterans, and Emergency Management. This process is currently in its initial stages of implementation.

Section 4: Energy Security Response

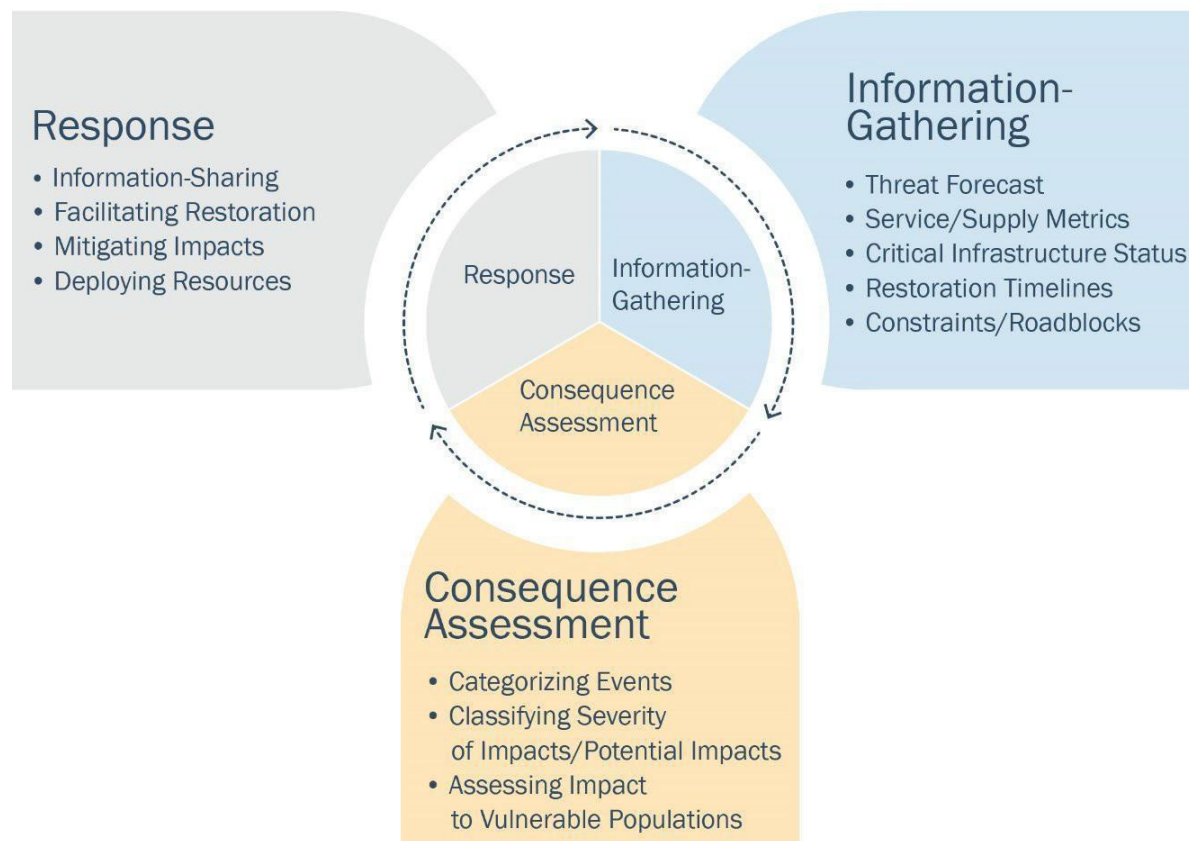
This section is adapted from the U.S. DOE, Office of Cybersecurity, Energy Security, and Emergency Response/National Association of State Energy Officials' State Energy Emergency Response Playbook, May 2022.

Response Cycle Overview

Emergency management is a continuous cycle of Preparedness-Response-Recovery-Mitigation. This response is part of the energy emergency cycle and is adapted from the U.S. DOE/NASEO Playbook.

Responding to energy emergencies involves an iterative process of gathering information, assessing the actual or potential consequences of the incident, and taking action to share critical information, facilitate system restoration, and mitigate impacts on dependent lifeline sectors and consumers. This process is repeated over the course of an emergency, with response actions adapting to changing conditions as the situation evolves. See graphic below.

Exhibit 67: Response Cycle Graphic



The U.S. DOE/NASEO Playbook, adapted by Maine and renamed Maine's Energy Response Framework, includes the following:

[Information-Gathering/Situational Awareness](#): a list of informational resources for monitoring energy supply, inventories, and markets, as well as weather-related threats. Maine also includes a state framework for conducting outreach to key stakeholders, including local, state, regional, and federal agencies; industry representatives, and infrastructure owners/operators. This information-gathering phase may include activation of the Energy Emergency Response Team (EERT).

[Consequence Assessment](#): guidance for categorizing and assessing the consequences of an event to inform a proportional response. This includes tiers of event consequences; threat to energy infrastructure; impacts to consumers and critical energy delivery systems, such as power plants; and bulk/wholesale energy markets, such as bulk fuel storage.

[Response Actions](#) identifies response measures by the event type (e.g., power outage, liquid fuels shortage, natural gas shortage, multi-system failure), actor, event consequence, and the time phase of the emergency event (e.g., pre-event, response, restoration). Responses will align with the state's overall emergency response plan and hazard mitigation plan, as well as the response structure outlined in this section.

The Energy Response Framework includes appendices with supplemental information for emergency response planning. These appendices are located at the end of the document.

- Appendix H: Hours of Service (HOS) Waiver Request Process provides the process that the state of Maine uses to gather information and issue an hours-of-service waiver for delivered fuels transportation during emergencies
- Appendix I: Communications Messaging During Energy Emergencies provides examples of public messaging during energy emergencies
- Appendix F: New England and Mid-Atlantic Regional Liquid Fuels Supply Shortage Coordination contains a draft straw proposal for communicating and coordinating actions regionally during liquid fuels shortages and delivery disruptions
- Appendix E: Information-Sharing Contact List contains a list of key energy emergency response contacts, and a list of County Emergency Management Agency contacts

Information-Gathering/Situational Awareness

The first stage in emergency response is to gather timely, accurate, and actionable information on threats and impacts to energy systems and services. This information provides the situational awareness needed to inform subsequent steps in the response

process (consequence assessment and response actions). The following table lists situational awareness resources by energy type and indicates the type of information available.

The resources in this table are linked to [Appendix H: Situational Awareness Tools](#), which describes each resource and provides a hyperlink to the resource.

Exhibit 68: U.S. Energy Information Administration (EIA) Tools

U.S. Energy Information Administration (EIA) Tools			
EIA Energy Atlas 	Electricity infrastructure: power plants, substations, transmission lines, electric retail service territories	Liquid fuels infrastructure: oil wells, platforms, pipelines, biofuel plants, terminals, refineries (locations and capacities)	Natural gas infrastructure: gas wells and platforms, pipelines, natural gas processing plants, underground storage
EIA Hourly Grid Monitor 	Hourly electricity generation by fuel type, interchange, and day-ahead demand forecasts	Hourly oil-fired generation	Hourly natural gas-fired generation
EIA Weekly Petroleum Status Report 	-	Weekly supply, demand, inventory, and import data	-
EIA Winter Heating Fuels 	Electric generation and prices	Propane and heating oil inventories and prices	Natural gas inventories and gas prices
EIA SHOPP 	-	State weekly residential heating oil and propane prices	-
EIA Natural Gas Storage Dashboard	-	-	Evaluate natural gas storage activity, consumption by sector, exports, and prices

EIA Daily Prices 	Daily electricity prices	Daily crude, gasoline, diesel, and propane prices	Daily natural gas spot prices
Other Government Agency Tools			
U.S. Coast Guard Homeport	-	Operational status of ports that import/export oil	Operational status of ports that import/export liquified natural gas (LNG)
NPMS PIMMA 	-	Crude oil and petroleum product pipeline locations	Natural gas pipeline and LNG plant locations
BSEE Activity Statistics Update 	-	Oil production shut-in and rig activity	Natural gas production shut-in and rig activity
HHS emPOWER Map 	Locations of electricity-dependent individuals with medical needs	-	-
Industry/Public Tools			
GasBuddy 	Power outages at gas stations	Gas station operational status (without fuel or without power) and real-time retail prices	-

Company Websites/ Social Media 	Estimated restoration timelines	Updates on infrastructure status, usually via press releases	Critical notices on natural gas company websites, daily gas flows to delivery points
RTO/ISO Websites RTO/ISO LMPs 	Power grid operational alerts, current and projected supply and demand, and locational marginal pricing (LMPs)	-	-
Trade Press 	Customer outages for small utilities and estimated restoration times	Refinery, pipeline, and terminal status updates	Natural gas pipeline and LNG terminal status updates
State-Specific Tools			
Maine Energy Emergency Response Team (EERT)	State Agency representatives, activated by GEO, gather information and assess the response. Activated primarily for Tier 3 and Tier 2 events. Applies across fuels, but agencies (initially) activate. Situation-dependent. Team may then call upon industry as part of the information gathering and assessment process. See section (3): Energy Security and Emergency Response Authorities. Always activated during Hours-of-Service Waiver (HOS) requests.		
ISO-NE	Maine's electric grid (except the northern part of the state) is part of the overall New England electric grid. The transmission system is managed by ISO-New England (ISO-NE), the region's independent system operator. ISO-NE's website contains information about the status of the grid; current generation (including the energy mix) and electricity demand; interchange with other grids; forecasts for the coming days and months; planning activities; and more. ISO-NE also posts any of the three Energy Emergency Alert (EEA) levels if the balancing authority experiences conditions requiring emergency operations.		
Northeast Regional Winter Fuels Calls	Maine participates in a series of winter heating season situational awareness calls with 100-150 participants from NE and NY. State energy offices; other state, federal agencies, including DOE; NASEO; private industry; Coast Guard; ISO-NE all participate. The group also meets as needed during other energy events (e.g., hurricanes, Colonial Pipeline cyberattack).		
ME State Agency Winter Outlook Meetings	A new situational awareness tool. State agencies meet periodically during times of sharp price increases/anticipated fuel shortages. Can be scheduled by participants.		

Industry, Peer, And Regional Outreach

As part of any overall state emergency response effort, Maine emergency planning and response officials, including the GEO and the EERT, monitor weather forecasts to understand the potential impacts on energy supply, demand, and infrastructure. The table below lists several key tools for monitoring weather-related threats.

Weather Threat Monitoring Tools

Exhibit 69: Weather Threat Monitoring Tools

Threat Forecasts	Description	Frequency of Updates
NOAA's National Weather Service	Weather warnings, watches, alerts, and advisories across the United States.	Every five minutes
NOAA 6- to 10-Day Outlook	Weather and precipitation forecast confidence intervals across the United States, looking out 6 to 10 days.	Daily
National Hurricane Center Tropical Weather Outlook	Identifies hurricanes, tropical storms, and tropical disturbances and their potential for development over the next five days.	Approximately 2:00 a.m., 8:00 a.m., 2:00 p.m., and 8:00 p.m. ET from May 15 to Nov. 30
EIA Energy Atlas disruptions	Weather threats (e.g., hurricanes, wildfires, flooding) mapped against selected energy infrastructure.	Layers vary
DOE EAGLE-I Mapper	Weather threats (e.g., hurricanes, wildfires, flooding, drought, earthquakes) mapped against selected energy infrastructure and/or state- or county-level electric customer outages.	Layers vary
NASA and USDA's Fire Information Resource Management System	Identify the location, extent, and intensity of wildfire activity using satellite monitoring.	Twice per day
NOAA's River Observations and Forecasts	Identifies current and forecast water levels at river gauges across the United States.	Every five minutes

NASEO and DOE CESER host calls leading up to and during large events to share and collect information. In addition, the Energy Emergency Assurance Coordinators Program (EEAC) is a primary source of state contacts, which can be found on the ISERnet. These contacts can provide a bi-directional flow of information between Maine and the DOE. Through this outreach, State Energy Offices can learn about energy infrastructure and market impacts that may not be available via monitoring tools.

The GEO will update the EEAC contact list annually, as part of an effort to maintain the state's list of energy-related emergency contacts. Section 5 Appendix E: Information-Sharing Contact List is the template that Maine will use to catalog key contacts for quick reference during energy emergencies. This list will be maintained separately, both for ease of updating and for confidentiality reasons.

Consequence Assessment

Throughout the course of an energy emergency, state energy and emergency response officials continually evaluate the consequences to inform the magnitude, duration, and geographic extent of required response actions. This involves assessing quantitative and qualitative data collected during the information-gathering/situational awareness stage.

Consequence assessments during response build on pre-event or “blue sky” day baselining activities. Baselining activities include developing state energy profiles that identify key energy infrastructure and standard volumes of energy supply and demand, as well as understanding typical market dynamics, energy prices, and other metrics to be used as a point of comparison during emergency events.

Information to consider during the consequence assessment includes, but is not limited to:

Threat information, including an assessment of how different types of threats impact energy systems. Section 5 Appendix 5-C: Threats and Potential Impacts to Energy provides a high-level summary of common threats and impacts.

Impacts to energy consumers (e.g., customer power outages, retail gas station outages), including their magnitude and anticipated duration of impacts (i.e., restoration timelines).

Impacts on lifeline sectors. The [FEMA Community Lifelines](#) (e.g., safety and security, health and medical, transportation) are fundamental community services. Lifelines enable all other aspects of society to function, and there are often interdependencies between lifeline sectors. Energy restoration to lifeline sectors is typically prioritized during response, both to facilitate additional energy restoration and to stabilize broader community services. Graphics of these interdependencies are located in **section 2(C): Risk Assessment**.

Considerations for remote areas of Maine. The challenges facing some of Maine’s remote and islanded parts of the state are similar to those listed as challenges of U.S. Territories, albeit on a smaller scale. Section 5 Appendix 5-D: Considerations for Territories and Remote Areas

Impacts on vulnerable populations, who are disproportionately affected by energy disruptions. Vulnerable communities may require more assistance to navigate energy events, including additional resources (e.g., backup generators, heating, and cooling centers) and targeted outreach. Section 5 [Appendix 5-F: Considerations for Vulnerable Populations](#) outlines how different vulnerable populations may be impacted during an energy emergency.

Impacts to critical energy delivery systems (e.g., critical power plants, pipelines, refineries), including an assessment of the impacts on supply chains and the availability of alternative supply options. These supply chains were discussed in **Section 2, Energy and Risk Profiles**.

Impacts to bulk/wholesale energy markets (e.g., bulk fuel stocks, electric balancing authority reserve margins), including impacts on prices.

Through the use of its EERT, the GEO considers the above factors and other available information when assessing the consequences of an energy emergency. While there are many frameworks for assessing consequences, this Response section utilizes a tiered approach that generally aligns with the [National Incident Management Systems \(NIMS\) Incident Complexity Guide](#) and DOE’s response activation guidance. Like the NIMS event types, this Response section uses a tiered approach with an inverted scale, i.e., lower numbers indicating greater event consequences. Tiers 3, 2, and 1 generally correspond to NIMS Types 3, 2, and 1. NIMS event Types 4 and 5 are generally assumed to be energy events requiring minimal involvement from State Energy Offices and thus are not addressed in this section.

Tier 3: Enhanced Watch events are characterized by impacts to energy supply chains and/or energy services that are largely remediated by industry with little to no need for support from the state or federal governments. State Energy Offices should enhance situational monitoring to understand circumstances for which greater response actions are needed. A tier 3 event may require an hours-of-service (HOS) waiver to assure delivery of liquid fuels to vulnerable populations and businesses.

Tier 2: Significant Events are significant disruptions to energy supply chains and/or energy services with longer timelines for restoration. Response to these events typically exceeds local government resources. Industry will also typically seek state government assistance in the form of waivers and resource management to expedite restoration of energy infrastructure or to mitigate impacts on affected populations or lifeline sectors. Most GEO-initiated energy emergency responses fall in this tier of events. This tier of events may or may not require activation of the state Emergency Operations Center, or EOC.

Tier 1: Major Events are characterized by extensive disruption to energy supply chains and/or energy services with extended or indefinite timelines for restoration. Tier 1 events require a massive response at every level of government to assist and expedite restoration and to mitigate the impact on affected populations and lifeline sectors. These events always involve

activation of the state EOC. The Maine Emergency Management Agency is the lead coordinator for this tier of event, drawing support from other sectors, energy being one of 16 (ESF-12).

Consequence assessment is an ongoing activity throughout an incident. For events with advance notice, such as hurricanes, the potential consequences of an event may be assessed using forecasts and any available predictive outage or impact-modeling tools. In the immediate aftermath of an event, damage and impact assessments may take time to conduct, and state officials may need to take action based on incomplete or imperfect information. During the restoration period, consequences should be continually reassessed as operators repair critical energy infrastructure and restore energy services to end users.

Consequence indicators and examples of recent emergencies for each tier are presented on the following pages.

During an emergency event, consequences may also vary by energy type. A disruption to a key liquid fuels pipeline, for example, may be rated as a Tier 2 event for liquid fuels but may not be rated on the scale for electric power or natural gas. The consequence tiers for each energy type relate directly to the response action matrices in the next section.

Power Outages/Electricity Shortage; Liquid Fuels Shortage; Natural Gas Shortage

Power Outage/Electricity Shortage Event

Electricity emergencies generally fall into two categories: (1) service disruptions caused by damage to the transmission and distribution (T&D) grid (e.g., from adverse weather events), or (2) electricity supply shortages due to generation or transmission outages during periods of high demand, which can result in rolling blackouts or grid collapse if not properly managed. Electric utilities are generally well-equipped to deal with common T&D-level outages through internal resources and mutual-aid agreements with other utilities, and ISO New England manages grid operations and generation-related outages for Maine and New England.

Exhibit 70: Power Outage Event

Tier	Consequences Indicators	Examples
Tier 3: Enhanced Watch	• Service Disruption: Localized power outages with short (less than 48 hours) restoration timelines • Restoration work largely involves repairing fallen or damaged distribution lines and poles. • Lifeline sectors are largely maintained with backup generators. • Electricity Shortage: Imbalance between supply and demand, and	• Common thunderstorms • Common winter and ice storms • Public Safety Power Shutoffs (PSPS) to prevent wildfires • Heat waves or cold

	elevated prices in some load areas. Grid operators issue a lower level communications (e.g., operating condition notices, conservation alerts, control room advisories)	snaps that drive high electricity demands
Tier 2: Significant Event	• Service Disruption: Widespread power outages with longer (more than 48 hours) restoration timelines.	• NE Halloween storm (2019)
	• Restoration work involves repairing damaged utility wires and structures across T&D systems. • Lifeline sectors experience temporary or intermittent disruptions, such as when the backup generator fuel is exhausted and awaits replenishment. • Vulnerable groups that rely on electricity moved to shelters or provided backup generators as needed.	• Maine Ice Storm (1998) • Hurricane Dorian (2019) • Puerto Rico Magnitude 6.4 earthquake (2020) • Dixie Fire in California (2021)
	• Electricity Shortage: Grid operators issue emergency alerts for critical conservation and to maximize generation and transmission resource availability. Sharp price spikes across balancing areas.	• California drought and hydroelectric shortfall (2021)
Tier 1: Major Event	• Service Disruption: Widespread power outages with extended or indefinite restoration timelines (a week or longer).	• Hurricane Sandy (2012)
	• Extensive damage to T&D systems, including damage to substations and other system components that require longer repairs. • Lifeline sectors, including Emergency Response, experience severe impacts from difficulty refueling vehicles and backup generators due to the impact of power outages on liquid fuel supply chains.	• Hurricane Maria (2017) • Hurricane Laura (2020) • Hurricane Ida (2021)
	• Electricity Shortage: Grid operators initiate rolling blackouts to preserve grid stability and communicate directly with the Governor's office and PUC during these events. Typically associated with large-scale loss of generation resources due to power plant operational outages or power plant fuel shortages.	• Texas extreme cold weather event (2021)

Liquid Fuels Shortage Event

Shortages of liquid fuels (e.g., gasoline, distillate fuel oil, jet fuel, propane) can be caused by sudden surges in fuel demands and/or by significant disruptions along the fuel supply chain. Demand-driven shortages may develop for gasoline during pre-hurricane evacuations and for heating fuels (distillate fuel oil and propane) during periods of prolonged cold weather. Supply-driven shortages can be caused by disruptions to crude oil production, oil refining, and/or refined fuel transportation and distribution. Severe shortages often involve both demand- and supply-driven factors. Fuel shortage and fuel accessibility issues may also occur during extended power outages when power-dependent fuel infrastructure (e.g., terminals, pumps, refineries) is rendered inoperable and when there may be a simultaneous spike in fuel demand for backup generators and emergency response vehicles.

Because liquid fuel is stored at every level of the supply chain—from bulk terminals to vehicle tanks—it typically takes several days for supply chain disruptions to cascade into widespread end-user shortages, although panic buying can expedite the effects.

Exhibit 71: Liquid Fuels Shortage Event

Tier	Consequence Indicators	Examples
Tier 3: Enhanced Watch	• Sporadic fuel outages and delivery delays are impacting end users (e.g., gas stations, heating customers) as supply and distribution infrastructure struggles to keep up with a sudden spike in demand. • Localized supply shortages at bulk terminals. Distributors begin loading trucks at terminals further away to meet customer needs. • Local or regional fuel inventories fall near or below the bottom of the previous five-year range. • Elevated price spreads versus U.S. benchmarks may indicate local or regional issues.	• Localized shortages for heating oil and propane in the Midwest and Northeast during the winter months • Canadian Railway strike(s) (propane 2018, 2022) • Driver shortage due to COVID-19 staff outages (2020-21)
Tier 2: Significant Event	• Widespread runouts and/or delivery delays for end users over a period of several days to weeks. • Widespread supply shortages at bulk terminals as suppliers cannot meet all demands. Typically associated with an extended outage of one or more critical supply assets. • Sharp declines in local or regional fuel inventories to well below previous five-year lows. • Sharp price spreads versus U.S. or international benchmarks may indicate significant regional issues.	• Northeast and Midwest propane shortage (2014) • Hurricane Irma evacuation (2017) • Colonial Pipeline cyberattack 2021

Tier 1: Major Event	• Fuel unavailable or inaccessible to most end users as widespread power outage or other common event renders retail outlets and critical supply infrastructure inoperable. • Lifeline sectors, including Emergency Response, have difficulty finding supplies, impacting the provision of essential services. • Vulnerable groups that rely on propane/heating oil moved to shelters.	• Hurricane Sandy (2012) • Hurricane Maria (2017)
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Natural Gas Shortage Event

Natural gas supply chains have significant redundancy and excess capacity during most of the year, and shortage events typically only occur during prolonged periods of high demand (e.g., extreme cold weather events) when natural gas transportation infrastructure is fully utilized.

However, natural gas demand has grown significantly in recent years due to increased demand from the power sector. Pipeline infrastructure has been unable to keep pace with demand increases in some regions, which increases the potential for shortage events during peak periods. Due to the greater dependence on natural gas for power generation, gas shortages are more likely to have cascading effects on bulk electric system reliability.

Exhibit 72: Natural Gas Shortage Event

Tier	Consequence Indicators	Examples
Tier 3: Enhanced Watch	• A major transmission pipeline has an extended unplanned outage during a peak demand period. • Some gas is rerouted into the region on alternate pipelines, but due to capacity constraints, supply is interrupted to power plants and other customers with non-firm contracts.	• Periods of winter peak demand in pipeline-constrained New England
	• A major transmission pipeline has an extended unplanned outage during a peak demand period. • Some gas is rerouted into the region on alternate pipelines, but due to capacity constraints, supply is interrupted to power plants and other customers with non-firm contracts.	• Bomb cyclone impacting New England (2018)

Tier 2: Significant Event	• Local distribution companies (LDCs) urge customers to conserve gas use. • Gas supply disruptions to power generators reduce available generation resources, forcing grid operators to issue emergency advisories or alerts. • Sharp spikes in local or regional prices versus U.S. benchmarks may indicate significant regional issues.	
Tier 1: Major Event	• Severe outage/damage or supply shortage forces transmission pipelines and LDCs to interrupt supply to firm customers. • Loss of pressure in the gas distribution system, causing gas to be shut off to firm customers (residential and commercial) • Restoring service is time-consuming, as the LDC must relight each customer's pilot light. • Vulnerable groups that rely on gas heating moved to shelters. • Loss of gas-fired generation would likely lead to severe regional electricity shortages. Grid operators would call on other generation, such as oil, or initiate rolling blackouts to preserve grid stability.	• Texas extreme cold weather event (2021)

Response Actions

This section is based on the U.S. DOE CESER energy emergency response playbook for states and territories (May 2022).

Various energy sector stakeholders must take actions throughout the course of an energy emergency to facilitate the restoration of energy systems and to mitigate the impact of energy disruptions to critical infrastructure, essential services, and vulnerable populations. As part of this response, representatives from the Governor's Energy Office (GEO) may be activated to staff the State Emergency Operations Center (SEOC) during Tier 2 and Tier 3 events. This section outlines possible energy emergency response actions of various state and private sector actors. These actions are categorized by:

- **Event Type:** Power outages/electricity shortages, liquid fuel shortages, and natural gas shortages.
- **Actor:** State ESF-12 responders (delivered fuels: GEO; electricity and natural gas: Public Utilities Commission), emergency management, other state agencies, and industry.
- Event Consequence: Tiers 3, 2, and 1
- Time-Phase of the Event
- **Pre-Event:** The hours or days immediately preceding an anticipated event, such as a hurricane or major winter storm, when stakeholders may have the ability to mobilize and

prepare for eventual response action. Some “no-notice” events, such as a sudden infrastructure failure, will not have a pre-event component.

- **Response/Restoration:** This period begins when impacts from the event (e.g., outage, shortage) are first felt until the time all impacts have been resolved.

The 12 matrices on the following pages provide response options —categorized by time, phase, and consequence tier—for each event type and actor. The links below can be used to jump to the appropriate matrix. **Note: the activities in each tier build on each other, so the response actions during a Tier 1 event would also be taken during Tier 2 and Tier 3 events.**

Exhibit 73: Response Actions

Power Outage/ Electricity Shortage	Liquid Fuels Shortage	Natural Gas Shortage
State ESF-12 Emergency Management Other State Government Utilities and Grid Operators	State ESF-12 Emergency Management Other State Government Liquid Fuel Industry	State ESF-12 Emergency Management Other State Government Natural Gas Industry

These response matrices provide a starting point for response planning. Authorities, roles, responsibilities, and statutes vary widely by state. Below are the matrices, adapted for use in Maine.

Power Outages/Electricity Shortages

Esf-12: Public Utilities Commission, Lead Agency Electricity

Tier 3: Enhanced Watch	• Situational Awareness and Information-Sharing: Monitor threat forecasts and predictive outage modeling • Situational Awareness and Information-Sharing: Identify risk factors that could exacerbate or prolong energy impacts or cause impacts to cascade into other sectors • Situational Awareness and Information- monitor regional, domestic, and international events • Situational Awareness and Information-Sharing: Report outages or other operational issues to DOE and ISO-NE as required and/or to enhance communication • Situational Awareness and Information-Sharing: Understand current demand for electricity within the state, including use by critical users, and how demand may change during the event • Resource Management: Participate in MEMA-led calls & meetings ahead of anticipated emergency events, such as storm preparation • Resource Management: Attend ongoing training, exercises, and other events to build monitoring and response capacity	• Situational Awareness and Information-Sharing: Leverage monitoring tools and stakeholder contacts to gather information on outage impacts and duration • Situational Awareness and Information-Sharing: Identify cascading impacts or interdependencies, including potential impacts to petroleum and natural gas systems • Situational Awareness and Information-Sharing: For cyber events¹, engage with the MS-ISAC to receive information about the incident and any additional cyber threats • Situational Awareness and Information-Sharing: For cyber events, coordinate with the state chief information officer and fusion center on messaging, response, and whether there are any threats to state systems • Resource Management: Assess staffing capabilities and resource adequacy of the state to respond to the event • Resource Management: Update and maintain a network of public and private sector contacts • Resource Management: Prepare communications materials (internal and external)
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¹ A cyberattack resulting in a physical consequence (i.e., a no-notice power outage) would likely immediately be categorized as a Major Event. Depending on the event and scale, traditional communication methods may not be available.

Power Outages/Electricity Shortages

Tier 2: Significant Event

All Tier 3 measures, plus:

- **Situational Awareness and Information-Sharing:** Participate in internal and external situational awareness activities (e.g., regional calls, federal calls, state emergency response calls, briefing state leadership, etc.)
- **Situational Awareness and Information Sharing:** Communicate information on predicted power outages to state ESF-12 stakeholders
- **Resource Management:** Coordinate with Maine Emergency Management Agency to inventory available state resources (e.g., generators, etc.) and identify any resource shortages or limitations that could affect event response
- **Situational Awareness and Information-Sharing:** For pre-event evacuations, coordinate with MEMA and GEO regarding operational status of EV charging and fueling stations along evacuation routes

All Tier 3 measures, plus:

- **Situational Awareness and Information-Sharing:** Develop situation reports and share with stakeholders, including information on the extent and duration of power outages
- **Situational Awareness and Information-Sharing:** Coordinate response actions and implementation with other states in the impacted region as conditions warrant
- **Resource Management:** Coordinate with industry and state partners (including MEMA and local emergency responders) to address access issues, including prioritizing road clearing for power restoration, emergency shelters, etc.
- **Resource Management:** Coordinate requests for state resources (generators, generator fuel, heavy equipment) with MEMA
- **Resource Management:** Coordinate with state and federal ESF-12 to receive federal support, including situational awareness products and other resources
- **Resource Management:** Communicate with state partners, such as MEMA, DHHS, MSHA, OPA, and GEO, on appropriate state and federal assistance programs to mitigate impacts to vulnerable communities

Power Outages/Electricity Shortages

Tier 1: Major Event

All Tier 3 and Tier 2 measures, plus:

- **Resource Management:** Coordinate with emergency managers to pre-deploy state resources (e.g., generators, temporary fuel sites, state ESF-12 responders, etc.) to areas of expected impact
- **Resource Management:** Proactively communicate anticipated needs for federal support (e.g., personnel, resources, etc.) to federal ESF-12
- **Resource Management:** Leverage Emergency Management Assistance Company (EMAC) agreements to arrange for support from other states
- **Resource Deployment:** Report to EOC

All Tier 3 and Tier 2 measures, plus:

- **Situational Awareness and Information-Sharing:** Gather information on system-level conditions and transmission-level damage from utilities and grid operators
 - **Resource Management:** Coordinate with the PUC about any needed exceptions to the utility's prescribed priorities for key energy assets for power restoration
 - **Resource Management:** As needed, coordinate with utilities and federal ESF-12 about lodging for utility crews
 - **Public Messaging:** Amplify utility calls for power conservation
-

Power Outages/Electricity Shortages

Maine Emergency Management Agency

	Pre-Event	Response
Tier 3: Enhanced Watch	• Situational Awareness and Information-Sharing: Monitor situation, including federal ESF-12 outage forecasts and situation reports • Situational Awareness and Information-Sharing: Hold initial pre-event call with local emergency managers, state government, and non-government (as appropriate) partners • _____	• Situational Awareness and Information-Sharing: Survey potential resource needs for industry and local emergency managers, including during state situational awareness calls. • Situational Awareness and Information-Sharing: Communicate with utilities and other private sector partners, as needed • _____
Tier 2: Significant Event	• Situational Awareness and Information-Sharing: Continue state situational awareness calls throughout the event. Situational Awareness and Information-Sharing: Monitor situation, including federal ESF-12 outage forecasts and situation reports • Situational Awareness and Information-Sharing: Establish contact with electric utilities, lifeline sectors, and local, state, and the federal government. • Resource Management: Survey potential resource needs for industry and local emergency managers • Resource Management: Prepare to request state and local media channels, government, and employers to implement electricity conservation measures, if a shortage exists and is expected to worsen • Resource Management: Notify all agencies, associations, and _____	• Situational Awareness and Information-Sharing: Work with local responders to identify vulnerable communities affected by power outages and coordinate mitigation. • Resource Deployment: Coordinate and execute resource requests • Resource Deployment: If the situation warrants, activate EOC on local/statewide level • Public Messaging: Activate the Joint Information Center for public messaging. • Public Messaging: Provide information on the event to consumers to include conservation measures, if needed

Situational Awareness and Information-Sharing: Hold initial pre-event

Power Outages/Electricity Shortages

call with local emergency managers, state government, and non-government (as appropriate) partner

-

Situational Awareness and Information-Sharing: Survey potential resource

Situational Awareness and Information-Sharing: Communicate with utilities and other private sector partners, as needed companies with roles in the ESF-12 plan of possible escalation to a Tier 1 emergency. Action dependent on situation – outage or shortage.

- **Public Messaging:** Implement public information program and issue appeals for voluntary conservation (situation dependent – e.g., supply shortage)

Tier1: Major Event

All Tier 3 and Tier 2 measures, plus:

- **Resource Management:** Proactively request federal resource support (e.g., personnel, resources) from the Federal Emergency Management Agency (FEMA) and other federal agencies.

Situational Awareness and Information-Sharing: Hold initial pre-event call with local emergency managers, state government, and non-government (as appropriate) partner

-

Situational Awareness and Information-Sharing: Survey potential resource

All Tier 3 and Tier 2 measures, plus:

- **Resource Management:** Engage federal partners for requests, regional situational awareness, etc.
- **Resource Management:** Implement the state emergency conservation program.
- **Public Messaging:** Implement public information program and issue appeals for voluntary conservation (situation-dependent – e.g., supply shortage)

Power Outages/Electricity Shortages

- **Resource Deployment: Activate EOC** (if not already activated)
- **Public Messaging:** Advise state departments to alter temperatures and operating conditions in state buildings. Advise the same to municipalities

Power Outages/Electricity Shortages

Other State Gov't: Governor's Energy Office, EERT, Governor's Office

	Pre-Event	Response
Tier 3: Enhanced Watch	• Situational Awareness and Information-Sharing: Monitor situation, including federal ESF-12 outage forecasts • Situational Awareness and Information Sharing: Activate EERT as an additional situational resource for the Governor	• Situational Awareness and Information Sharing: EERT provides situational awareness and status to the Governor, including requests for potential hours of service waivers for utility support
Tier 2: Significant Event	All Tier 3 measures, plus: • Situational Awareness and Information-Sharing: For pre-event evacuations, in coordination with MEMA, monitor the status of electric vehicle charging stations and along evacuation routes • Situational Awareness and Information-Sharing: EERT • Regulatory Relief: Governor may proactively declare a state of emergency; triggers hours-of-service waivers for drivers providing material support to utilities in impacted areas	All Tier 3 measures, plus: • Situational Awareness and Information-Sharing: In coordination with MEMA, monitor operational status of electric vehicle charging stations and fueling stations along evacuation routes • Regulatory Relief: Governor may declare a state of emergency or a state of energy emergency; triggers hours-of-service waivers for drivers providing material support to utilities • Regulatory Relief: The Governor may request waivers of federal regulations, including emissions, to maintain electricity supplies • Public Messaging: Governor holds press conferences, releases public statements about the event

Power Outages/Electricity Shortages

Tier 1: Major Event

All Tier 3 and Tier 2 measures, plus:

- **Situational Awareness and Information-Sharing:** Proactively coordinate with utilities, grid operators, and federal regulators about the anticipated event

- _____

All Tier 3 and Tier 2 measures, plus:

- **Resource Management:** In coordination with MEMA and other state partners, communicate priority assets for power restoration to utilities (hospitals, etc.)
- **Impact Mitigation:** During electricity shortages, and in concert with ISO-NE, direct utilities to rotate customer outages so that no single customer is out for more than a certain period of time
- **Regulatory Relief:** Request and coordinate any of the following:
 - 202(c) requests to the federal government
 - EPA generation emissions waivers
 - Other federal waivers to increase power availability

- _____

Power Outages/Electricity Shortages

Utilities And Grid Operators

	Pre-Event	Response
Tier 3: Enhanced Watch	• Public Messaging: Begin public messaging about the anticipated event and the possibility of outages • Resource Management: Conduct an inventory of resources available for response • _____	• Situational Awareness and Information-Sharing: Assess damage to the distribution system and restore outages as conditions permit • Public Messaging: Update utility outage map or other public information-sharing tools • Public Messaging: Develop, publish, and update estimated times of restoration • Restoration: Restore customers according to a set prioritization method
Tier 2: Significant Event	All Tier 3 measures, plus: • Resource Management: Stage equipment and crew near predicted impact areas • Resource Management: Begin coordination with other utilities and electric industry groups about anticipated mutual aid • _____ • _____	All Tier 3 measures, plus: • Resource Management: Crews may shelter in place during the event if conditions (e.g., high winds) do not permit damage assessment and restoration • Situational Awareness and Information-Sharing: Establish contact with local and state emergency managers, state ESF-12, or federal ESF-12, as needed • Resource Management: Activate mutual aid agreements, as needed • Resource Management: Individual utilities or industry groups coordinate with state partners on restoration challenges and requests for state resources • Public Messaging: During an electricity shortage, utilities may request voluntary electricity conservation from customers via public messaging • Situational Awareness and Information-Sharing: Report event to relevant federal authorities, if required (OE-417s, cyber event)

**Tier 1: Major
Event**

All Tier 3 and Tier 2 measures, plus:

All Tier 3 and Tier 2 measures, plus:

- **Resource Management:** Crews may be evacuated for their safety in advance of an anticipated disaster, and/or staging areas may be relocated away from the anticipated disaster area

All Tier 3 and Tier 2 measures, plus:

- **Resource Management:** Industry groups coordinate with federal ESF-12 on regional or large-scale issues, including challenges to restoration (debris, flooding), specialized restoration equipment, or generators for substations
- **Impact Mitigation:** Implement rolling blackouts to stabilize the grid
- **Situational Awareness and Information-Sharing:**
Assess damage
- **Impact Mitigation:** For cyber events, investigate the scope of the intrusion and its impact on infrastructure; take action to identify the source of the breach and prevent the situation from escalating
- **Regulatory Relief:** Request and coordinate 202(c) waiver or EPA emissions waivers from the federal government
-

Liquid Fuels Shortages

ESF-12: Governor's Energy Office, Lead Agency Delivered Fuels

Tier 3: Enhanced Watch

- **Situational Awareness and Information-Sharing:** Monitor Threat Forecast to understand potential concerns for Maine and the NE region's fuel supply and distribution infrastructure.
- **Situational Awareness and Information-Sharing:** Monitor impacts to the Maine, Canadian, and NE fuel supply and distribution infrastructure; identify any current or potential cascading impacts or interdependencies, including impacts to power generation
- **Situational Awareness and Information-Sharing:** Identify risk factors that could exacerbate or prolong energy impacts or cause impacts to cascade into other sectors
- **Situational Awareness and Information-Sharing:** Understand current demand for liquid fuels within the state, including use by sector, and consider any ongoing shortages, seasonal demands, pricing, and other contributing factors; consider how demands may change in the aftermath of the event
- **Situational Awareness and Information-Sharing:** Participate in NE Region Situational Awareness Calls to identify potential regional fuel supply and distribution issues, and provide state-specific information to the region
- **Situational Awareness and Information-Sharing:** Prepare to share information with other impacted states through EEAC contacts and NE regional calls (above), for events that affect
- **Situational Awareness and Information Sharing:** Monitor fuel availability and pricing at retail stations using GasBuddy or other fuel monitoring websites, and weekly data on heating fuels from the SHOPP report; follow up with emergency managers and industry for additional information on regional and state fuel availability.
- **Situational Awareness and Information-Sharing:** Monitor in-state fuel availability for first responders and other government users by leveraging information from state agencies, local emergency management agencies, industry partners, and public data
- **Situational Awareness and Information-Sharing:** For cyber events, engage with the MS-ISAC to receive information about the incident and any additional cyber threats; engage with the state cyber team to receive information
- **Situational Awareness and Information-Sharing:** For cyber events, coordinate with the state cyber office on messaging, response, and whether there are any threats to state systems
- **Situational Awareness and Information-Sharing:** Contact fuel industry representatives for states of fuel actions to be taken in advance of the event, including possible need for HOS waiver
- **Resource Management:** Assess staffing capabilities and resource adequacy of the state to respond to the event

Liquid Fuels Shortages

multiple states

- **Resource Management:** Communicate with state agencies regarding potential fuel supply disruptions in advance of the event, to coordinate communications on availability of appropriate state and federal assistance programs to mitigate impacts to vulnerable communities.
- **Public Messaging:** Coordinate across state agencies to ensure a consistent, unified public message.
- **Resource Management:** Possible activation of EERT to provide situational awareness to the Governor for an HOS waiver.
- **Public Messaging:** Issue situational awareness public messaging, as needed
- **Regulatory Relief:** If HOS or other waiver is issued, EERT to communicate with FMCSA, industry partners, and MEMA duty officer; MEMA to communicate with local EMAs; state police to communicate with transporters (consistent with HOS waiver process)

Liquid Fuels Shortages

Tier 2: Significant Event

All Tier 3 measures, plus:

- **Situational Awareness and Information-Sharing:** For pre-event evacuations, monitor fuel availability and pricing at retail stations using GasBuddy or other fuel monitoring websites; monitor operational status of EV charging stations along evacuation routes
- **Resource Management:** Communicate with fuel industry groups and contacts to assess current and anticipated needs; Relay this information to state and federal government partners as relevant
- **Resource Management:** Coordinate with emergency managers to assess the availability of state resources (e.g., fuel reserves, state fuel for first responders, and other critical fuel users) and identify any shortages or limitations that could affect event response
- **Resource Deployment:** Activate EERT to address industry waiver requests and submit to the Governor for approval
- **Public Messaging:** Coordinate public messaging with MEMA, PUC, and the Governor's Office to ensure consistency

All Tier 3 measures, plus:

- **Situational Awareness and Information Sharing:** Provide fuel sector situational reports to the Governor's office, state leadership, state agencies, local emergency management agencies, and tribes as needed
- **Situational Awareness and Information-Sharing:** Continue communication with industry groups or fuel industry contacts to assess regional fuel supply and distribution system impacts and fuel availability
- **Situational Awareness and Information-Sharing:** Communicate to stakeholders, as needed, any additional information received (e.g., terminal stock levels or outages, terminal wait times) from public data sources, state and federal ESF-12 responders, and local emergency offices via industry
- **Situational Awareness and Information-Sharing:** Participate in internal and external situational awareness briefings (e.g., regional calls, federal calls, briefing the governor) to provide state-specific fuel outlook and address potential regional fuel concerns
- **Resource Management:** Coordinate with MEMA, industry, and other state partners to address access issues, including prioritizing road clearing and port access; addressing infrastructure damage; and supplying fuel to critical users
- **Resource Management:** Coordinate resource needs (e.g., fuel shipments) at the state level, connecting industry and state

Liquid Fuels Shortages

Tier 1: Major Event

All Tier 3 and Tier 2 measures, plus:

- **Situational Awareness and Information-Sharing:** Initiate contact with key energy companies that may be affected by the predicted event and/or industry groups to assess pre-event needs and anticipated impacts
- **Resource Management:** Pre-deploy state resources (e.g., state ESF-12 responders); activate EERT and engage federal partners to coordinate fuel sector resource needs
- **Resource Management:** Leverage EMAC agreements and arrange for support from other states
- **Resource Deployment:** Assist MEMA upon activation of EOC

agencies, as needed

- **Regulatory Relief:** If HOS or other waiver is issued, EERT to communicate with FMCSA, industry partners, and MEMA duty officer; MEMA to communicate with local EMAs; state police to communicate with transporters (consistent with HOS waiver process)

All Tier 3 and Tier 2 measures, plus:

- **Situational Awareness and Information-Sharing:** If possible, establish and maintain communications with key energy companies (e.g., owners of affected infrastructure) and/or industry groups for situational awareness and to understand areas for potential state support
- **Situational Awareness and Information-Sharing:** Coordinate with federal ESF-12 partners as sources of information, especially for any information from private energy companies that may speak directly to DOE and other agencies
- **Situational Awareness and Information-Sharing:** Coordinate response actions and implementation with other states in the impacted region as conditions warrant.
- **Resource Management:** Relay and coordinate resource needs with federal partners
- **Resource Management:** In coordination with MEMA, establish temporary fuel distribution sites to support first responders and other critical fuel users
- **Resource Management:** Tap into state or regional fuel reserves, or leverage emergency clauses of state fuel contracts
- **Public Messaging:** Call for fuel conservation in public messaging, in coordination with MEMA and industry

Liquid Fuels Shortages

Maine Emergency Management Agency

Pre-Event

Response

Tier 3: Enhanced Watch

- **Situational Awareness and Information-Sharing:** Monitor ESF-12 fuel situation reports
- _____
- _____

- **Situational Awareness and Information-Sharing:** Provide ESF-12 situation reports to local and tribal emergency managers
- **Situational Awareness and Information-Sharing:** Survey potential fuel concerns of local and tribal emergency managers and communicate to ESF-12. Set up a coordination call between local and tribal emergency managers and ESF-12 to address fuel concerns as needed
- _____

Liquid Fuels Shortages

Tier 2: Significant Event

All Tier 3 measures, plus:

- **Situational Awareness and Information-Sharing:** Establish contact with local, tribal, state, and federal governments
- **Resource Management:** Survey potential fuel needs with local and tribal emergency managers

• _____

• _____

All Tier 3 measures, plus:

- **Situational Awareness and Information-Sharing:** Activate the emergency operations center to facilitate statewide coordination and response to a significant event
- **Situational Awareness and Information-Sharing:** Communicate with local emergency managers to confirm the extent of impacts, including impacts to vulnerable communities
- **Public Messaging:** Activate Joint Information Center for public messaging
- **Resource Management/Impact Mitigation:** Assist with distribution of resources to mitigate liquid fuels shortages, such as warming or cooling centers and fresh water, especially to vulnerable communities
- **Resource Management:** Assist local and tribal emergency managers in submitting fuel requests as needed

Tier 1: Major Event

All Tier 3 and Tier 2 measures, plus:

- **Situational Awareness and Information-Sharing:** Activate the emergency operations center to facilitate statewide coordination and response to a major event
- **Resource Management:** Monitor the status of local and tribal fuel requests submitted to ESF 12

All Tier 3 and Tier 2 measures, plus:

- **Resource Management/Impact Mitigation:** Support federal agencies and ESF 12 to administer fuel allocation, establish temporary fueling locations for emergency responders, and other state programs to mitigate fuel shortage as needed

Liquid Fuels Shortages

Other State Government: Governor's Office, Other State Agencies

	Pre-Event	Response
Tier 3: Enhanced Watch	• Situational Awareness and Information Sharing: Governor and state leadership may request an ESF-12 • Communication: Communicate with industry about reporting requirements, and state leadership may request a state briefing in advance of the event as needed •	• Communications: Communicate with industry about reporting requirements as needed
Tier 2: Significant Event	All Tier 3 measures, plus: • Regulatory Relief: The Governor may proactively declare a state of emergency, which allows ESF-12 to coordinate with appropriate state agencies to secure fuel, environmental, and worker safety waivers in response to the fuel event. • Regulatory Relief: Coordinate with federal agencies on HOS and fuel specification waivers • Impact mitigation: If fuel shortage is affecting backup generators, communicate special priority customers to the utility owner/operator for priority restoration	All Tier 3 measures, plus: • Regulatory Relief: Implement/grant federal EPA waivers and state hours-of-service waivers for drivers providing fuel deliveries

Liquid Fuels Shortages

Tier 1: Major
Event

All Tier 2 and 3 measures, plus:

- _____
- _____

All Tier 2 and 3 measures, plus:

Liquid Fuels Shortages

LIQUID FUEL INDUSTRY

	Pre-Event	Response
Tier 3: Enhanced Watch	• Situational Awareness/Impact Mitigation: Assess and secure infrastructure in advance of the event. Industry may notify state or federal ESF-12 (GEO) on precautionary actions taken • Resource Management: Assess staffing capabilities in advance of the event • _____	• Situational Awareness: Affected companies assess cause and extent of issue, as applicable. Perform damage assessment and estimates time for restart, if applicable • Restoration: Work to fix damage, if applicable • Impact Mitigation: For cyber events, investigate the scope of the intrusion and its impact on infrastructure; take action to identify the source of the breach and prevent the situation from escalating
Tier 2: Significant Event	All Tier 3 measures, plus: • Regulatory Relief: Industry groups request waivers from state ESF-12 (GEO) and other state agencies (primarily state hours-of-service waivers) and identify need or anticipated need for federal waivers (hours-of-service waivers, RVP/RFG waivers), if applicable • _____ • _____	All Tier 3 measures, plus: • Situational Awareness and Information-Sharing: Affected pipeline company may establish contact with local and state emergency managers, state ESF-12, or federal ESF-12, and share damage and restoration information as needed • Restoration: Affected companies take immediate remediation action, if applicable • Resource Management: Assess challenges to restoration (e.g., specialized equipment or materials, access issues) • Impact Mitigation: As terminal stocks lower, distributors work to identify alternate fuel sources • Resource Management: Fuel supplier may reduce or cut off supply to interruptible customers if the supplier cannot meet its contractual obligations due to low supply. If supply is still insufficient, equitably share the remaining available supply (referred to as "allocation") • Public Messaging: A pipeline or refinery company may

Liquid Fuels Shortages

- communicate status and restoration timelines with the public

Tier 1: Major Event

All Tier 3 and Tier 2 measures, plus:

- _____

All Tier 3 and Tier 2 measures, plus:

- **Regulatory Relief:** Companies request additional federal waivers, such as Jones Act waivers to facilitate fuel movement into the affected region (unlikely to be granted)
- _____

Natural Gas Shortages/Disruptions

ESF-12: PUBLIC UTILITIES COMMISSION, LEAD AGENCY NATURAL GAS

	Pre-Event	Response
Tier 3: Enhanced Watch	• Situational Awareness and Information-Sharing: Understanding current demand for natural gas within the state, including use by Sector, and considering any ongoing shortages, seasonal demand, and other contributing factors	• Situational Awareness and Information-Sharing: Identify cascading impacts or interdependencies, such as reliance on natural gas for heating or large critical users of gas, such as major power plants • Situational Awareness and Information-Sharing:

Natural Gas Shortages/Disruptions

- **Situational Awareness and Information-Sharing:** Understand current demand for natural gas within the state, cascading impacts or interdependencies, such as reliance on
- natural gas for heating, or including use by sector, and consider any ongoing
- shortages, seasonal demand, and other contributing factors
- Participate in internal and
- **Situational Awareness and Information-Sharing:** Assess regional calls, federal calls, regional natural gas storage levels, and prices using EIA and briefing the governor) other data sources; Identify any shortages or limitations that could affect event response
- **Sharing:** Communicate across information received from public data
- **Situational Awareness and Information-Sharing:** Identify cascading impacts or interdependencies, such as reliance on large critical users of gas, such as major power plants
- **Situational Awareness and Information-Sharing:** external situational awareness activities (e.g., using
- **Situational Awareness and Information-Sharing:** state and federal ESF-12 by sharing sources, ESF-12 responders, and local emergency offices via industry
- **Situational Awareness:** For cyber events, engage with the MS-ISAC to receive information about the incident and any additional cyber threats
- **Situational Awareness and Information-Sharing:** For cyber events, coordinate with state Chief Information Officer and Chief Information Security Officer or other state cyber office on messaging, response, and whether there are any threats to state systems
- _____

Natural Gas Shortages/Disruptions

Tier 2: Significant Event

All Tier 3 measures, plus:

- _____
- _____

All Tier 3 measures, plus:

- **Situational Awareness and Information-Sharing:** Develop situation reports and share with stakeholders, including information on the extent and duration of gas shortages
 - **Situational Awareness and Information-Sharing:** Establish contact with federal ESF-12 for information-sharing and situational awareness
 - **Situational Awareness and Information-Sharing:** Communicate with local emergency managers to confirm extent of impacts, including on vulnerable communities
 - **Situational Awareness and Information-Sharing:** Communicate with state human service agencies on appropriate state and federal assistance programs to mitigate impacts to vulnerable communities
-
- **Resource Management:** Coordinate resource needs at the state level
 - **Resource Management:** Coordinate access issues, including prioritizing key roads for addressing infrastructure damage
 - **Public Messaging:** Assure continuity of messaging by responsible agencies
 - _____

Natural Gas Shortages/Disruptions

Tier 1: Major Event

All Tier 3 and Tier 2 measures, plus:

- _____
owners of
- _____
with federal

All Tier 3 and Tier 2 measures, plus:

- **Situational Awareness and Information-Sharing:** If possible, establish and maintain communications with key energy companies (e.g., affected infrastructure) and/or industry groups for situational awareness and to understand areas for potential state support
- **Resource Management:** Relay and coordinate resource needs partners
- **Regulatory Relief:** Request federal waivers
- **Public Messaging/Impact Mitigation:** Issue or amplify calls for conservation
- _____

MAINE EMERGENCY MANAGEMENT AGENCY

	Pre-Event	Response
Tier 3: Enhanced Watch	• Resource Management: Refill heating fuels storage in advance of predicted cold weather event or other disruption • _____	• _____ • _____ • _____
Tier 2: Significant Event	All Tier 3 measures, plus: • Resource Management: Activate EOC for public messaging, including public appeals for voluntary conservation, if appropriate. • Impact Mitigation: Implement State Emergency Conservation Program (state agency working hours/bldg. temps, etc. • _____	All Tier 3 measures, plus: • Situational Awareness and Information-Sharing: Communicate with local emergency managers to confirm extent of impacts, including on vulnerable communities • Impact Mitigation: Assist with distribution of resources to mitigate natural gas shortages, such as generators and warming centers • Public Messaging: PIO to provide information via media outlets on how public can conserve natural gas
Tier 1: Major Event	All Tier 3 and Tier 2 measures, plus: • Resource Management: Pre-deploy state resources (e.g., state ESF-12 responders)	All Tier 3 and Tier 2 measures, plus: • _____

OTHER STATE GOVERNMENT: GOVERNOR'S OFFICE, EERT, OTHER

	Pre-Event	Response
Tier 3: Enhanced Watch	• Situational Awareness and Information-Sharing: EERT will increase monitoring and analysis of natural gas stocks, consumption patterns, prices, product delivery, including maintaining regular contact with suppliers and distributors regarding adequacy of natural gas product. Supply information to MEMA EOC. • Resource Management: Meet with suppliers/industry members regarding possible mitigation actions.	• Situational awareness and Information-Sharing: EERT to provide Governor with situational awareness reports. • _____
Tier 2: Significant Event	All Tier 3 measures, plus: • Impact Mitigation: If monitoring activities (EERT) indicate a possible sustained shortage of natural gas, determine causes, possible duration, and geographic extent of the shortage, and alerting providers of steps to alleviate or avert shortage. • _____	All Tier 3 measures, plus: • Impact Mitigation: Communicate special priority customers to gas utility owner/operators for priority restoration (e.g., hospitals) • Regulatory Relief: Request, coordinate, or provide information to federal agencies, as needed, regarding additional federal waivers, such as PHMSA emergency pipeline waivers, Jones Act requests, or FERC prioritization requests
Tier 1: Major Event	All Tier 3 and Tier 2 measures, plus: • _____ • _____	All Tier 3 and Tier 2 measures, plus: • _____ • _____

NATURAL GAS INDUSTRY

	Pre-Event	Response
Tier 3: Enhanced Watch	• Regulatory Relief: May proactively request waivers in advance of predicted event • _____	• Situational Awareness and Information-Sharing: Assess cause and extent of issue, as applicable • Situational Awareness and Information-Sharing: Perform damage assessment and estimates time for restart, if applicable • Restoration: Take immediate remediation action, if applicable • Restoration: Work to fix damage, if applicable
Tier 2: Significant Event	• _____ • _____ • _____	• Situational Awareness and Information-Sharing: Pipeline company may communicate with local and state emergency managers, state ESF-12, or federal ESF-12, as needed • Situational Awareness and Information-Sharing: Pipeline company may communicate with the public • Resource Management: Assess challenges to restoration (e.g., specialized equipment or materials, access issues) • Impact Mitigation: Local distribution company may require conservation from large customers with “interruptible” contracts • Public Messaging/Impact Mitigation: Local distribution company may request voluntary conservation measures from end users • Regulatory Relief: Industry groups request waivers from state agencies

**Tier 1:
Major
Event**

- _____
- _____

- **Regulatory Relief:** Companies request additional federal waivers, such as Jones Act waivers
- **Impact Mitigation:** Local distribution company will initiate emergency procedures which could include widespread curtailment of firm customers

Section 5: Energy Resiliency and Hazard Mitigation

Resilience is the ability of a system, community, or society exposed to hazards to resist, absorb, accommodate, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions. The resilience of energy systems is essential, as the reliability and recovery of many other critical infrastructure sectors to hazards or threats depend on functioning energy infrastructure. Examples of energy resilience in Maine include the ability of the electric transmission and distribution system to withstand severe winter storm conditions with fewer outages and timely restoration; the petroleum sector's ability to continue fuel deliveries to homes and businesses during a severe weather event; or the propane industry's planning for backup supply during a rail strike.

Hazard mitigation, as defined by the Maine Emergency Management Agency, is sustained actions taken to reduce or eliminate long-term risks to people and property caused by natural hazards. Maine has outlined risk in Section 2: Risk Profile. This section outlines hazard mitigation actions to improve a community's resilience and reduce risks from natural and man-made disasters. While hazard mitigation actions are beneficial and should be taken before a disaster occurs, hazard mitigation is critical following a disaster. By restoring structures to their pre-disaster conditions, they may remain vulnerable to future damage and are susceptible to the costly repetitive cycle of damage, reconstruction, and repeated damage. Actions to increase resilience reduce the cycle of damage and reconstruction by reducing vulnerability to future events. Imagine a bridge or a culvert that was recently washed out during a flood event and needs to be replaced. Rather than reconstructing the bridge or culvert to its pre-disaster conditions, hazard mitigation would upsize the structure to pass through more water during the next flood event, thus reducing its risk of washout. [According to the National Institute of Building Sciences' findings, every \\$1 spent on mitigation funding can save \\$6 in future disaster costs.](#)

Risk Mitigation Goals

Risk mitigation planning is a proactive strategy to enhance the state's energy reliability and end-use resilience through deploying risk mitigation measures. Maine's mitigation strategy consists of several overarching goals:

1. Strengthening energy sector reliability, so Mainers have consistent access to all forms of energy.
2. Securing, to the extent practical, critical energy infrastructure against both natural and man-made threats and hazards.

3. Increasing the response to and recovery from energy disruptions, thus increasing the resilience of energy systems and other critical infrastructure sectors dependent on reliable energy systems.

These energy security goals help achieve the state’s overarching mitigation objectives described in Maine’s 2023 State Hazard Mitigation Plan and shown in the table below.

Exhibit 74: State of Maine State Energy Security Goals

State of Maine State Energy Security Plan Goals		
	Strengthen energy sector reliability to ensure continuous access to secure energy	Secure critical energy infrastructure against man-made and natural hazards
State of Maine 2023 State Hazard Mitigation Goals	Enhance the response to, and recovery from, energy disruptions to improve energy supply resilience for end users	
	Protect lives, property, and the environment from all natural hazard risks and associated impacts of climate change now and in the future.	
	Enhance state natural hazard mitigation capabilities through greater coordination among federal, state, county, and local partners.	
	Improve hazard mitigation literacy and awareness among the public, business owners, academic institutions, and state, county, and local officials	
	Implement mitigation actions that preserve or restore the functions of natural systems and emphasize sustainable development.	

Maine’s energy security goals and mitigation approach are built on the risk assessment and are informed by several efforts. Gubernatorial priorities established by legislation and executive order includes the state’s climate action plan, [Maine Won’t Wait](#), and related efforts; the recently established [Infrastructure Rebuilding and Resilience Commission](#); and numerous statutory clean energy goals. Maine DOER’s combined expertise and the expertise of several state agencies, including the Maine Emergency Management Agency and the Public Utilities Commission, also informed the state’s strategy. Meetings with key stakeholders in the energy sector (electricity, delivered fuels, and natural gas) helped to identify risks and mitigation efforts, as well as identify the competing realities of financial and capacity limitations of local governments, emergency responders, small energy asset owners/operators, and ratepayers. Electricity-related regulatory efforts underway at the Public Utilities Commission - some established in legislation – include requirements for utilities to develop and execute Climate Change Protection Plans; develop and execute integrated grid plans; and, most recently, participate in a PUC-initiated effort to improve resiliency and reduce restoration costs after major outage events (occurring due to increasingly severe winter weather). These efforts are described below.

Existing Risk Mitigation Strategies

Energy infrastructure is typically constructed to safety, security, and reliability standards set by NERC, PHMSA, and other federal, state, and industry regulating bodies. To mitigate impacts from evolving threats, including climate change, states and energy infrastructure owners and operators may consider risk mitigation technologies and operational measures that enhance system resilience beyond the standards set by regulators.

The following section describes ongoing mitigation measures already happening in Maine to bolster energy reliability. This list is intended to highlight activities above and beyond the business-as-usual measures. These activities include the following:

- 1) [Integrated Grid Planning](#)
- 2) [Climate Change Resilience Plan](#)
- 3) [Grid Resilience and Innovation Partnership \(GRIP\) Program](#)
- 4) [40101\(d\) Grid Resilience Awards](#)
- 5) [Community Resilience Partnership](#)
- 6) [NOAA Climate Resilience](#)
- 7) [ISO NE Specific Energy Risk Mitigation Strategies](#)

Integrated Grid Planning

Title 35-A Section 3147 states that starting November 1, 2022, and every five years after, the commission will identify priorities through stakeholder input for a grid plan to transition the utility to a clean, affordable, and reliable electric grid. These priorities were released in July 2024 and are listed below.²⁰

- **Reliability and resilience improvements:** Make investments that cost-effectively maintain or improve reliability; reduce barriers to promote cost-effective non-wires alternatives (NWA) solutions; identify any process improvements/efficiencies; and build climate adaptation into the investment solution mix.
- **Improve data quality and integrity to maximize its use in distribution system planning:** Leverage investments in Advanced Metering Infrastructure (AMI); improve mapping of the distribution system and develop a governance policy or protocols for maintaining the integrity of the data on an ongoing basis; develop initial roadmap for advancing time-series planning models; and enhance hosting capacity maps to benefit stakeholder decision making by standardizing them across utilities.
- **Promote flexible management of consumers' resources and energy consumption:** Improve forecasting of electric vehicle (EV) load, distributed energy resources (DER) adoption, and climate parameters; support integration and utilization of DERs to enable

load flexibility and resilience; and adopt technologies or programs to shift load from system peak to reduce Maine's share of the Regional Network Service (RNS) charge.

The Maine PUC held technical conferences and workshops beginning in September 2022 to help develop the plan.²¹ After completion of the workshops, the PUC issued its final order in July 2024, requiring utilities to submit their plans by January 2026. Plans are to include an assessment of the utility's electric system, referencing the Efficiency Maine Trust triennial plan, including planning scenarios, and analyzing various factors like load forecasts, energy supply, hosting capacity, and environmental impacts. The PUC will make the plan available for public comment for at least 60 days and may require revisions. Utilities must provide accessible information and data related to the plan. The commission can hold additional proceedings if necessary.

Climate Change Resilience Plan

Through Title 35-A Section 3146, the commission has required Climate Change Resilience Plans from every transmission and distribution utility every three years beginning December 2023. These plans outline strategies to address climate change by reducing emissions, advancing clean energy, and protecting infrastructure and the environment from climate effects. Climate change has increased the intensity and frequency of hazards that can impact transmission and distribution (T&D) infrastructure, business operations, and communities.

Central Maine Power (CMP), Versant Power, Kennebunk Light and Power, Madison Electric, Matinicus Plantation Electric Company, Fox Islands Electric Cooperative, Eastern Maine Electric Cooperative, Houlton Water Company, Brunswick Landing Electric Utility, Van Buren Light and Power District, and Isle au Haut Electric Power have submitted their plan for their Climate Change Resilience Plan under PUC docket 2023-00282.

Exhibit 75: Climate Resilience Plan Measures

	Replace bare overhead conductors with Tree Wire	Replace old poles and crossarms with stronger infrastructure	Update asset specifications (e.g., transformer ambient temperature standard)	Vegetation Management	Automatic Metering and Circuits	Mutual Aid Agreements	Replacement Parts
Versant	X	X	X	X	X		
Central Maine Power	X	X	X		X		
Kennebunk Light and Power		X		X	X	X	
Madison Electric						X	X
Matinicus Plantation Electric Company				X			
Fox Islands Electric Cooperative					X	X	X
Eastern Maine Electric Cooperative		X		X		X	
Houlton Water Company						X	X
Brunswick Landing Electric Utility					X		
Van Buren Light and Power District					X		
Isle au Haut Electric Power				X		X	X

In addition to the measures above, Central Maine Power and Versant have listed more specific actions that they will take to secure their energy systems against climate change. CMP has planned the following actions:

- **Substations:** To protect substations from flooding, consider elevating assets, relocating sites, or constructing flood-resistant barriers. Upgrade or replace heavily loaded transformers that may be exposed to extreme temperatures. Reconfigure substations or circuits to reduce thermal demand. Assess at-risk substations in the upcoming Climate Change Resilience Plan against known risk areas to identify any gaps. Additionally, account for projected changes in flood frequency and severity.
- **Power Lines:** Enhance distribution circuit automation and connections to minimize outages caused by wind and ice-related climate hazards. Adjust transmission and distribution facility ratings to reflect temperature forecasts.
- **Storm Preparation:** Acquire temporary flood barriers and train staff to deploy them before extreme weather events like hurricanes and tropical storms. Increase inventory of portable power supply assets, such as backup generators and mobile substations, to ensure redundancy. Stockpile spare assets and parts to mitigate supply chain delays in replacing damaged or destroyed equipment.
- **Response and Recovery:** Enhance the capacity and training of emergency response teams to handle rare but high-impact events, such as extreme storms, climate hazards, or newly identified flood-prone substations. Assess resource allocation and storm resource staging based on climate change projections and extreme event scenarios from this study. Incorporate climate change risks into routine investment decisions and risk management tools. Periodically reassess climate risk vulnerability and related scenarios. Integrate climate considerations into operational processes, including load forecasting, asset management, vegetation management, capacity planning, reliability planning, and emergency response.

Versant has planned the following actions.

- **Power Lines:** Investigate new distribution system topologies using distribution automation. Develop new line designs and materials to prevent ignition and fire damage. Enhance transmission and distribution monitoring. Strategically place transmission and distribution lines underground in high-risk areas. Upgrade line and equipment ratings to endure higher ambient temperatures. Implement protection and control technologies to minimize transmission and distribution ignitions.
- **Storm Preparation:** Conduct a comprehensive assessment to identify vulnerabilities in transmission and distribution infrastructure. Modify conductor designs to minimize ice buildup and withstand wind loads.

Grid Resilience and Innovation Partnerships (GRIP) Program

The Grid Resilience and Innovation Partnerships Program (GRIP) was established by the Bipartisan Infrastructure Law. Administered by the U.S. Department of Energy, the program will invest approximately \$10.5 billion for the five years encompassing FY22 through FY26 to prevent outages and enhance the resilience of the electric grid, deploy technologies to enhance grid flexibility, and demonstrate innovative approaches to power sector infrastructure resilience and reliability.²² Two grants have been awarded to Maine:

- **Central Maine Power (Enhancing Utility Resilience in America's Most Forested State):**²³ In late 2023, Maine's largest transmission and distribution utility, Central Maine Power, was awarded \$30 million under this program to increase resilience in its service area, in which approximately 3 in every 4 of the state's electricity customers reside. The funds will permit CMP to accelerate the deployment of smart grid technologies to help reduce the frequency and impact of power outages. The new technology will include advanced grid restoration (AGR) and sequential reclosing (SR). These innovative, "self-healing" technologies are designed to reduce the frequency and impact of outages, thus mitigating the impacts of increasingly extreme weather events. The grant will also enable deployment of the distribution supervisory control and data acquisition (SCADA) switch program to help prevent system faults, particularly in disadvantaged communities.
- *Massachusetts Department of Energy Resources (Power Up New England):*²⁴
On August 6th of 2024, Governor Janet Mills, U.S. Senators Susan Collins and Angus King, and Congresswoman Chellie Pingree announced that the U.S. Department of Energy awarded a \$147 million grant to support a novel multi-day energy storage system in Lincoln, Maine, aimed at enhancing grid resilience and optimizing renewable energy delivery. This project, located at the former paper mill site in Lincoln, is the first of its kind in New England and the largest ever long-duration energy storage project. The Lincoln storage project is part of a \$389 million regional award to New England states known as *Power Up New England*, which aims to strengthen the regional electric grid and advance clean energy deployment. Governor Mills highlighted Maine's leadership in clean energy innovation, emphasizing the project's potential to stabilize energy costs, create jobs, and revitalize the town of Lincoln.

40101(d) Grid Resilience Awards

Maine has issued its first awardees from the Grid Resilience State and Tribal Formula Grant funding opportunities provided by BIL provision 40101(d), which focuses on grid resilience projects for electricity infrastructure owners and operators. Maine's specific goals for this program are to²⁵:

- Increase resilience of the electric grid and decrease the frequency and duration of outages, including within disadvantaged communities and areas experiencing a high frequency and/or long durations of outages.

- Improving community and economic resilience and empowering electric customers and communities to be resilient to disruptive events.
- Increasing clean energy workforce opportunities and ensuring alignment with existing state initiatives.
- Aligning with ongoing electric grid modernization and state policy climate goals while mitigating disproportionate energy burdens.

In 2024, Maine’s utilities were conditionally awarded \$6.6 million for upcoming grid resilience projects outlined in Exhibit 76.

Exhibit 76: 40101(d) Awards²⁶

Utility	Location	Award	Replacing/Upgrading Power Lines	Adding /Replacing Transformers	Replacing Poles	Upgrade and relocate the existing submersible cable	Replace Switching Equipment	Increase Vegetation Management	Create a Microgrid	Workforce development initiatives
Eastern Maine Electric Cooperative	Calais Region	2,000,000	X	X	X	X				
Central Maine Power	Sebago Region	1,628,257					X			
Fox Islands Electric Cooperative	Vinalhaven and North Haven	1,080,626				X				
Sunnova/Penobscot Nation	Indian Island	689,737							X	X
Van Buren Light and Power	Van Buren	561,750	X		X		X			X
Madison Electric Works	Madison Area	510,633	X					X		

Community Resilience Partnership

The Community Resilience Partnership provides grants and technical assistance to Maine communities to help them reduce greenhouse gas emissions, transition to clean energy, and become more resilient to climate effects like extreme storms, flooding, rising sea levels, and public

health threats.²⁷ Launched by Governor Janet Mills in December 2021 as part of the “Maine Won’t Wait” climate action plan, the Partnership initially aimed to assist 100 communities in its first year. The Partnership offers two types of grants: Community Action Grants and Service Provider Grants. Community Action Grants, which provide up to \$50,000 for individual projects or \$125,000 for joint community projects, require communities to enroll in the Partnership. Service Provider Grants support regional organizations in recruiting and assisting underserved communities to enroll and apply for their first Community Action Grant, with eligible providers requesting up to \$10,000 per community, plus additional funds for communities with high social vulnerability or smaller populations.

As of 2023, 174 communities are participating, with \$6.1 million awarded for 103 climate resilience and clean energy initiatives. During the summer of 2023, the Legislature authorized \$3 million annually for the Partnership to fund grants for enrolled communities and service providers. For 2023, the Partnership awarded \$2.75 million for 53 direct grants to communities and 25 service grants for technical assistance. Thirty-five percent of the supported communities have high social vulnerability and elevated climate risk.

In 2024, a new component was added to the Partnership to better support underserved communities. This new component, called Energy Efficiency Planning for Rural Communities Technical Assistance Program (EEPRC), has initial funding of 200,000 dollars to support 20 communities. EEPRC differs from the typical partnership by providing direct support to the community. A service provider conducts project scoping of 6 public buildings, which includes energy audits, data collection, and writing an application for funding to implement the identified energy improvements.

Infrastructure Adaptation Fund

An outcome of Maine’s 2021 Climate Action Plan, titled [*Maine Won’t Wait*](#), is the Infrastructure Adaptation Fund, a \$20 million program administered by the Maine Department of Transportation. This program provides direct funding to municipalities, tribes, and state agencies to adapt their critical infrastructure to reduce vulnerability to climate change resulting from extreme weather, sea level rise, inland and coastal flooding, severe heat, and other climate impacts. Climate-ready infrastructure increases day-to-day functional capacity and improves asset or network performance and survivability during an emergency. The Maine Infrastructure Adaptation Fund provides three types of support for applicants: 1) grants to support scoping (problem definition) of eligible adaptation projects, and 2) grants that support the design of eligible projects that were planned through the Community Resilience Partnership program or alternative route, and 3) grants that support the implementation and construction of eligible projects that have a complete design. This program has a minimal (5%) requirement for matching funds and builds on other available funding opportunities, including the capacity-building and planning efforts available through the Community Resilience Partnership program (described above).

To date, the program has provided funding for a variety of local infrastructure projects. Examples include designing larger road culverts to handle more significant rain events; upgrading stormwater

systems to reduce flooding; and upgrading sewage treatment plants to better withstand sea level rise and storm surge.

In 2024, as a direct result of three extreme weather events in December 2023 and January 2024 (all presidential disaster declarations), Governor Mills proposed, and the Maine Legislature authorized, an additional state appropriation of \$50 million to address impacts from these storms. Eligible projects may include working waterfront infrastructure, culverts, storm water systems, water system upgrades and other interventions that support reducing or eliminating climate impacts, especially coastal and inland flooding. Funds may be used to support project planning and provide federal matching funds. This funding is primarily for public infrastructure projects, but some private infrastructure upgrades with significant community benefits (e.g., working waterfronts) will also be eligible.

NOAA Climate Resilience

Maine received \$69,008,683 to focus on nature-based solutions, strengthening the resilience of working waterfronts, and building enduring capacity to prepare for and respond to climate change impacts. Specific activities include supporting underserved, rural, and tribal communities in developing and implementing climate adaptation strategies; expanding technical assistance tools and training focused on flood risk, saltwater intrusion, bluff stability, and living shorelines; updating the state's regulatory framework to support climate resilience; conducting demonstration projects that incentivize regional collaboration and nature-based solutions; and strengthening the climate resilience of vulnerable public infrastructure and working waterfronts.

Governor Mills has prioritized tackling climate change, advancing clean energy, and improving climate resilience, especially after recent severe storms and flooding caused \$90 million in damage to public infrastructure alone and resulted in the loss of four lives. With nearly 500 municipalities and tribal governments, many lack the capacity or expertise needed to adequately prepare. This project plan aims to bolster community-led projects that reduce risk, build enduring capacity, and support regulatory change. The award also funds engineering expertise to design public green infrastructure projects, support improvements to at-risk infrastructure, and fund 20 to 30 subgrants for projects designed to make communities safer from extreme weather, sea level rise, inland and coastal flooding, severe heat, and other climate impacts.

ISO NE Specific Energy Risk Mitigation Strategies

As weather becomes more severe and more intermittent energy sources are installed, ISO-NE is taking on a variety of measures to address the potential resulting grid challenges. These include several key projects, described below.

- **Capacity Auction Reforms:** ISO New England is proposing Capacity Auction Reforms (CAR) to shift the capacity market from an annual to a seasonal model with accreditation reforms. These reforms include a prompt auction, a seasonal capacity commitment period (CCP), and

updates to their generator accreditation process that guarantee each generator is up to the standards for the ISO-NE system. Instead of holding the capacity auction three years in advance, the action will occur shortly before the capacity commitment period, allowing for more accurate information about projected electricity supply and demand. The CCP will change from annual to seasonal periods, addressing the different challenges of winter and summer, and variations in resource performance. Starting in 2022, the ISO began a project studying accreditation reforms. This project aims to develop methodologies that better reflect resource contributions to resource adequacy.²⁸

- **Day-Ahead Ancillary Services:** The Day-Ahead Ancillary Services Initiative project aims to create a market design for procuring and transparently pricing the necessary ancillary services for a reliable, next-day operating plan with an evolving generation fleet. One component involves procuring a new day-ahead ancillary service to cover the “gap” when the day-ahead market’s physical energy supply awards are below the ISO’s forecast real-time load. The second component is to procure day-ahead flexible response services to ensure the system is prepared to recover from sudden source-loss contingencies and can respond quickly to fluctuations in net load during the operating day.²⁹
- **Participation of Distributed Energy Resource (DER) Aggregations in Wholesale Markets:** FERC order no. 2222 mandates that RTOs/ISO allow distributed energy resources (DERs) to provide all wholesale market services that they are technically capable of providing through an aggregation of resources. ISO-NE has enabled thousands of megawatts of DERs to participate in its markets through the development of multiple participation options. However, as technologies advance and small DERs increase, some of these resources may be unable to meet minimum size and performance requirements. Order No. 2222 suggests that aggregation could help more of these resources meet the requirements, allowing them to participate in wholesale markets alongside traditional resources to provide flexible services to the power grid.³⁰
- **New England’s Future Grid Initiative:** ISO New England is collaborating with market participants and state entities, including the New England States Committee on Electricity (NESCOE), to assess the future of the regional power system in the context of state energy and environmental laws. They aim to ensure a reliable, efficient, and sustainable clean energy grid. To achieve this, the ISO is conducting the Future Grid Reliability Study and has released a report titled Pathways to a Future Grid. The Future Grid Reliability Study is a stakeholder-led assessment of the future state of New England’s power system that includes defining scenarios, studying whether the ISO can operate the grid reliably under status-quo market mechanisms, considering what products and attributes are missing (through gap analysis), and discussing what market changes could be developed in response to any identified gaps in reliability or resource needs. The Pathways to a Future Grid explores potential policy solutions that States could adopt to promote renewable energy use.³¹
- **Operational Impacts of Extreme Weather:** In 2022 and 2023, the ISO worked with the Electric Power Research Institute (EPRI) to conduct a probabilistic energy-security study for the New England region under extreme weather conditions. They developed the Probabilistic Energy Adequacy Tool (PEAT) to assess operational energy-security risks. Using PEAT results, the ISO is working with regional stakeholders in 2024 to establish a Regional

Energy Shortfall Threshold (REST) that determines the acceptable level of reliability risk. Once REST is established, the ISO can evaluate if specific regional solutions are needed, which could range from market designs, infrastructure investments, dynamic retail pricing, and responsiveness by end-use consumers. In 2025, they will analyze the scope, timing, and feasibility of these regional solutions. This initiative is a collaborative opportunity for industry leaders and regional stakeholders to learn about how extreme weather events in the future may affect the evolving power system and prompt thinking about how best to prepare.³²

- **Improvements to Generator Interconnection Procedures and Agreements:** FERC established Order Nos. 2003, 2006, and 845 to address transmission interconnection queue backlogs, improve certainty, and prevent undue discrimination against new technologies. The Orders introduce a first-ready, first served cluster study process, replacing New England's current serial first-come, first-served study process. This has the aim of speeding up interconnection queue processing through improved processes and incorporating technological advancements into the interconnection process, including modeling and performance standards for inverter-based resources.³³

Proposed Risk Mitigation Strategies

In addition to the ongoing energy security initiatives as outlined above, this section proposes additional mitigation measures to further address risks identified in the Risk Assessment. These measures represent potential, priority investment areas in the medium-to-long term. Measures have been compiled from a variety of sources, shown in the Exhibit 78 below which represent existing mitigation commitments and industry best practices sourced from:

1. Plan research (e.g., State and local hazard mitigation plans, the State Energy Plan, etc.);
2. Stakeholder interviews; and
3. Open-source mitigation action repositories, including the DOE CESER State Energy Security Plan Optional Drop-In: Energy Sector Risk Mitigation Measures (2022) and the Federal Emergency Management Agency's Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards (2013).

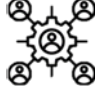
Exhibit 77: Source of Proposed Mitigation Measures

Source	Icon
Maine Won't Wait, 2019 Maine State Hazard Mitigation Plan, Maine PUC processes and dockets	
Local Mitigation Strategies (Androscoggin, Aroostook, Cumberland, Franklin, Lincoln, Hancock, Kennebec, Knox, Oxford, Penobscot, Piscataquis, Sagadahoc, Somerset, Waldo, Washington, York)	
Lessons learned, best practices, IJA requirements, or risk assessment outcomes	
Stakeholder feedback	

Exhibit 78: Proposed Mitigation Measures

Legend			
Electricity		Liquid Fuel	
		Natural Gas	

Mitigation Goals	
Goal 1 - Reliability	Strengthening energy sector reliability, so Mainers have consistent access to all forms of energy. Measures that achieve this goal include improvements to systems that have faced past issues and additions that guarantee a greater supply of energy resources.
Goal 2 – Hardening	Securing, to the extent practical, critical energy infrastructure against both natural and man-made threats and hazards. Measures that achieve this goal include physical upgrades to energy infrastructure from hazards.
Goal 3 - Response	Increasing the response to and recovery from energy disruptions, thus increasing the resilience of energy systems and other critical infrastructure sectors dependent on reliable energy systems. Measures that achieve this goal include improvements to communication processes, mobile energy assets, and planning efforts.

No.	Mitigation Measures (Proposed)	Source	Relevant Energy Sector	Participating Org(s) (Proposed)	State Action(s)	Hazard(s) Addressed	Threat	Vulnerability	Consequence	Advances Goal 1 - Reliability	Advances Goal 2 - Hardening	Advances Goal 3 - Response
1. If severe winter weather is experienced, especially ice events along coastal Maine, high voltage transmission lines can sag and contact trees, structures, etc., and lead to line faults and line outages. Ice accumulation can also impair operations of energy infrastructure.												
1.1	Redesign conductor configurations to reduce ice accumulation and wind load. ³⁴			Electric Utilities, GEO	Grants and Direct Funding	Winter Storm	✓	✓		✓	✓	
1.2	Wind turbine blades and lubricant housings can be fitted with heating elements that prevent ice accumulation that would otherwise impair operations. Wind turbines can also be configured to operate in winter ice operation mode, which changes the pitch of the blades to allow continued operation as they accumulate ice.			Electric Utilities	Grants and Direct Funding	Winter Storm	✓	✓			✓	
1.3	Fiberglass insulation used to enclose piping can protect against freezing. Additionally, an electrical heating element installed along the length of a pipe and covered by thermal insulation can be used to maintain or raise the			Industry	Grants and Direct Funding	Extreme Cold	✓	✓		✓	✓	

No.	Mitigation Measures (Proposed)	Source	Relevant Energy Sector	Participating Org(s) (Proposed)	State Action(s)	Hazard(s) Addressed	Threat	Vulnerability	Consequence	Advances Goal 1 - Reliability	Advances Goal 2 - Hardening	Advances Goal 3 - Response
	temperature of the pipe during cold weather.											
2. If high winds cause damage to transmission towers or lines, there can be widespread power outages for days or up to two weeks, which can impact daily life, safety, and economics when communities, businesses, and critical infrastructure (hospitals, emergency services, etc.) lose access to electricity.												
2.1	Increased partnership with utilities to mitigate trees falling on lines on dead-end roads. Example from the town of Pownal in Cumberland County. ³⁵			Electric Utilities, Local Gov't.	Coordination and Convening	Strong wind	✓			✓	✓	✓
3. Riverine flooding has the potential to disrupt both electric system assets and liquid fuel deliveries.												
3.1	Upgrade culverts across Maine to improve resiliency during flooding. ^{36,37,38,39,40}		 	Local Gov't., DOT, MDEP	Grants and Direct Funding	Flood	✓					✓
3.2	Reinforce transmission structures to increase physical load ratings and flood resistance. ⁴¹			Electric Utilities, PUC	Grants and Direct Funding	Flood	✓	✓		✓		

No.	Mitigation Measures (Proposed)	Source	Relevant Energy Sector	Participating Org(s) (Proposed)	State Action(s)	Hazard(s) Addressed	Threat	Vulnerability	Consequence	Advances Goal 1 - Reliability	Advances Goal 2 - Hardening	Advances Goal 3 - Response
3.3	Conduct a detailed floodplain analysis for Versant's infrastructure. ⁴²			Bureau of Resource Info and Land Use Planning (BRILUP), Electric Utilities, MDEP	Planning and Studies	Flood			✓			✓
3.4	Assess and improve dams across the state to prevent failure. ⁴³ Utilize incentives from DOE. ⁴⁴		  	Local Gov't., MDEP	Grants and Direct Funding	Flood	✓					✓
4. The predicted increase in frequency and severity of extreme weather events, including hurricane winds, storm surge, winter storms, and extreme heat waves, put additional stress on the aging electric grid. More storms mean more potential for damage to grid infrastructure, which can cause decreased grid reliability, blackouts, and extended customer outages.												
4.1	Emergency backup power generation for critical facilities and supply lines Examples include: Public Works Fuel Pumps and Dispatch at Canco Rd. in Portland.⁴⁵		  	Industry, Electric Utilities, Local Gov't., MEMA	Incentive Programs	All Hazards			✓			✓

No.	Mitigation Measures (Proposed)	Source	Relevant Energy Sector	Participating Org(s) (Proposed)	State Action(s)	Hazard(s) Addressed	Threat	Vulnerability	Consequence	Advances Goal 1 - Reliability	Advances Goal 2 - Hardening	Advances Goal 3 - Response
	Fire station/town. Example from the town of Clifton in Penobscot County. ⁴⁶											
4.2	Construct a Fuel Depot for all town vehicles, mitigation efforts against loss from severe winter and summer weather. Example from the town of Durham in Androscoggin County. ⁴⁷		  	Local Gov't., MEMA	Grants and Direct Funding	All Hazards			✓			✓
5. A large-scale cyberattack across either the CMP or Versant transmission could have severe consequences for grid reliability and may result in significant customer power outages across the state, including for customers directly served by cooperatives or municipal utilities for hours to days.												
5.1	Utilities should, where applicable, find ways to automate and reduce manual controls to ensure processes can be isolated and continue operation without access to networks.		  	Industry, Utilities, MEMA	Planning and Studies	All Hazards	✓			✓		

No.	Mitigation Measures (Proposed)	Source	Relevant Energy Sector	Participating Org(s) (Proposed)	State Action(s)	Hazard(s) Addressed	Threat	Vulnerability	Consequence	Advances Goal 1 - Reliability	Advances Goal 2 - Hardening	Advances Goal 3 - Response
5.2	Conduct a risk assessment of energy sector-dependent IT and OT assets. Develop plans to address specific asset vulnerabilities.		  	Industry, utilities, MEMA	Planning and Studies	All Hazards		✓				✓
5.3	Foster and maintain industry relationships to communicate threats and best practices.		  	Industry, utilities, MEMA	Coordination and Convening	All Hazards	✓	✓	✓			✓
5.4	Encourage federal and state cybersecurity best practices. As regulatory frameworks shift, industries should be prepared to implement new mitigation measures and prepare for potential attacks.		  	Industry, utilities, MEMA	Policy	All Hazards	✓	✓	✓	✓	✓	✓

No.	Mitigation Measures (Proposed)	Source	Relevant Energy Sector	Participating Org(s) (Proposed)	State Action(s)	Hazard(s) Addressed	Threat	Vulnerability	Consequence	Advances Goal 1 - Reliability	Advances Goal 2 - Hardening	Advances Goal 3 - Response
6. With an increasing trend of substations being targeted for physical attacks (with varying motives from theft to terrorism), a substation attack could result in power outages for hours to days.												
6.1	Monitor trends in physical attacks at substations. Where/when appropriate, encourage actions to enhance the monitoring of substation control centers and critical substations.			Industry, utilities, MEMA	Incentive Programs	Physical Attack	✓	✓			✓	
7. Wildfires exacerbated by drought have the potential to cause lasting damage to energy infrastructure across the state												

No.	Mitigation Measures (Proposed)	Source	Relevant Energy Sector	Participating Org(s) (Proposed)	State Action(s)	Hazard(s) Addressed	Threat	Vulnerability	Consequence	Advances Goal 1 - Reliability	Advances Goal 2 - Hardening	Advances Goal 3 - Response
7.1	Roadside vegetation management for wildfire and utilities mitigation. Example from Aurora City in Hancock County for a 15-mile stretch of municipal roadway. ⁴⁸			DACF	Grants and Direct Funding	Wildfire	✓			✓		✓
7.2	Explore new structure designs and materials to resist ignition and fire damage. ⁴⁹		  	Industry, MDEP	Planning and Studies	Wildfire		✓			✓	
7.3	Develop plans for fire breaks. ⁵⁰			Electric Utilities, DACF	Planning and Studies	Wildfire			✓			✓
7.4	Complete a contingency study of the transmission system to evaluate wildfire impacts on grid reliability. ⁵¹			Electric Utilities, GEO	Planning and Studies	Wildfire	✓	✓	✓	✓		✓
8. A lack of capacity at the county level hinders grant applications, detailed planning initiatives, and execution of projects												

No.	Mitigation Measures (Proposed)	Source	Relevant Energy Sector	Participating Org(s) (Proposed)	State Action(s)	Hazard(s) Addressed	Threat	Vulnerability	Consequence	Advances Goal 1 - Reliability	Advances Goal 2 - Hardening	Advances Goal 3 - Response
8.1	Increase funding for County EMAs so that more staff can be hired.		  	MEMA GEO	Grants and Direct Funding	All Hazards		✓	✓			✓
8.2	Expand technical assistance programs to be available to all communities across Maine. ⁵²		  	MEMA GEO	Coordination and Convening	All Hazards		✓	✓		✓	✓
8.3	Work with municipalities and the Unorganized Territory to maximize the use of Community Resilience Partnership Community Action grant funding to support hazard mitigation. Example from Franklin County. ⁵³		  	MEMA GEO	Coordination and Convening	All Hazards		✓	✓		✓	✓
9. Storm surge flooding impacts substations in Maine; more likely for coastal Maine, the substations may be damaged by water entering electrical equipment.												

No.	Mitigation Measures (Proposed)	Source	Relevant Energy Sector	Participating Org(s) (Proposed)	State Action(s)	Hazard(s) Addressed	Threat	Vulnerability	Consequence	Advances Goal 1 - Reliability	Advances Goal 2 - Hardening	Advances Goal 3 - Response
9.1	Upgrade Town Sea Wall. Example from Cranberry Isles in Hancock County. ⁵⁴		 	Local Gov't., MDEP, MEMA	Grants and Direct Funding	Flood	✓		✓		✓	
9.2	Continue to track changes in sea level and evaluate future projections and: Recommend priorities to FEMA for updating inundation maps (e.g., FIRMS, hurricane surge: tidal rise scenarios), giving priority to the areas most vulnerable to storm surge flooding and hurricane surge inundation; provide information to municipalities, utilities, and the public on the implications of sea level rise. ⁵⁵		  	MEMA, MDEP, Local Gov't.	Planning and Studies	Flood	✓	✓	✓			✓

9.3	Assess energy assets risk from storm surge and consider measures to protect equipment from water inundation.		  	Industry, Local Gov't., MEMA	Planning and Studies	Flood						
10. Critical infrastructure and hazard data gaps can make planning for and responding to hazards less effective. Other information gaps can reduce the ability to maximize mitigation efforts.												

No.	Mitigation Measures (Proposed)	Source	Relevant Energy Sector	Participating Org(s) (Proposed)	State Action(s)	Hazard(s) Addressed	Threat	Vulnerability	Consequence	Advances Goal 1 - Reliability	Advances Goal 2 - Hardening	Advances Goal 3 - Response
10.1	Conduct baseline assessments of outage data for all utilities to better inform the vulnerability prioritization.			Electric Utilities, GEO	Planning and Studies	All Hazards		✓		✓		
10.2	Create and maintain a database of critical infrastructure, including energy assets as well as potential vulnerabilities. Use the database to identify potential mitigation projects for each hazard type. 56, 57, 58, 59		  	BRILUP, MEMA, Industry	Planning and Studies	All Hazards	✓	✓	✓		✓	✓
10.3	Enact plans to restore the functionality of priority infrastructure. 60		  	MEMA, Local Gov't.	Planning and Studies	All Hazards			✓			✓
10.4	Inform local officials of training exercises, technical assistance, and potential funding opportunities aimed at infrastructure protection. 61		  	GEO, MEMA, DEP, DOT	Coordination and Convening	All Hazards		✓				✓

No.	Mitigation Measures (Proposed)	Source	Relevant Energy Sector	Participating Org(s) (Proposed)	State Action(s)	Hazard(s) Addressed	Threat	Vulnerability	Consequence	Advances Goal 1 - Reliability	Advances Goal 2 - Hardening	Advances Goal 3 - Response
10.5	Update and institute Hazard Mitigation Planning programs. Example: Bangor and other municipalities in Penobscot County. ⁶²		  	MEMA, Local Gov't.	Planning and Studies	All Hazards		✓				✓
10.6	Work with Local EMA directors to map social vulnerability with the intent of directing mitigation toward those areas as needed. ⁶³		  	MEMA, GEO, Local Gov't.	Coordination and Convening	All Hazards		✓	✓			✓
10.7	Continue monitoring community wildfire risk to better inform land use planning as a mitigation action. Example from Arundel City in York County. ⁶⁴		  	DACF, MEMA	Planning and Studies	Wildfire	✓					✓
10.8	Improve visibility of fuel and propane stocks at marine terminals and distribution facilities to improve response during shortage events			Industry, GEO	Regulation	Winter Storm			✓			✓

Process Used to Evaluate and Prioritize Mitigation Measures

To evaluate and determine the feasibility of the proposed measures, the state will utilize the Maine State Hazard Mitigation Criteria, which assesses each mitigation project based on the five criteria outlined in Exhibit 79. This criterion is used to determine the impact and feasibility of implementation.

Exhibit 79: Prioritization Criteria

Criteria Category	3 Points	2 Points	1 Point
Population Benefited	Over 1 Million	500,000 to 999,999	Up to 500,000
Environmental Soundness	Improvement to the environment	Neutral impact on the environment	May require environmental accommodations
Probability of Funding	Funds are already available	Grants with matching funds	No existing funding source
Technical Feasibility	Able to implement immediately	Can be implemented with effort	Not feasible under existing regulations and statutes
Cost Effectiveness	Highly Cost-Effective	Moderately Cost-Effective	Somewhat Cost-Effective
Vulnerability Reduction	Greatly reduces vulnerability	Mostly reduces vulnerability	Minimally reduces vulnerability

Appendix A: Risk Assessment – Exposure Maps

[redacted]

Appendix B: Critical Energy Infrastructure Study for Maine

[redacted]

Appendix C: Limitations on Gubernatorial Power in an Energy Emergency

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Memorandum

To: Lisa J. Smith, Senior Planner, Governor's Energy Office
From: Emily Atkins Assistant Attorney General
Christina Moylan, Assistant Attorney General

Date: January 6, 2022

Subject: Limitations on state remedial powers in energy emergency

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In the context of your compilation of a draft revised Energy Emergency Plan for the State, you have asked that I address the scope of and limitations on the remedial powers available to the State in an energy emergency. This memorandum responds to your request.

Proclamation of energy emergency. An “energy emergency” is defined by law as “an actual or impending shortage in energy resources” that “threatens the health, safety or welfare of citizens.” When such an emergency arises, the Governor is required to issue a proclamation declaring its existence in the State or any section of the State. Upon issuance of the proclamation, the Governor may exercise the emergency powers enumerated in 37-B MRSA sec. 742 (2) (B).

At least two of the powers listed in the cited provision are subject to limitations affecting the scope of the Governor’s remedial options.

Limitation on emergency electricity regulation. In particular, the Governor’s ability to “regulate the generation, distribution and consumption of electricity” (subsection [4] of the cited provision) is circumscribed by the preemptive effect of the Federal Power Act, 16 USC sec. 824 *et seq.*, which reserves the power to regulate generation facilities in interstate commerce to the FERC. FERC jurisdiction does not, however, extend to facilities that produce power solely for the intrastate market. 16 USC

sec. 824 (b)(1).

In practice, this means that the Governor's regulatory power under the statute would extend only to facilities not connected to the New England grid. This would include: (a) facilities in northern Maine (which is not currently connected to the New England grid except indirectly through New Brunswick; (b) private facilities not connected to the New England grid; and (c) facilities situated on any portion of the grid that becomes temporarily disconnected from the New England grid.

Limitation on emergency regulation of home heating oil storage, distribution.

A similar analysis applies with respect to the Governor's power to regulate the storage and distribution of home heating oil (subsection [8] of sec. 742 [2] [B]). Here, the limits are set by the dormant Commerce Clause, which has been interpreted to confer the power to regulate interstate commerce exclusively upon Congress. Under this doctrine, the Governor may not validly regulate the storage or distribution of home heating oil in the stream of interstate commerce, *i.e.*, when it is destined for interstate shipment. *See, e.g., Ben Oehrleins & Sons & Daughter v. Hennepin County*, 115 F3rd 1372 (8th Cir. 1997), *cert. denied*, 522 US 1029 (1997). However, he may validly regulate storage and distribution that is confined to the State, and does not accommodate or displace product destined for out-of-state shipment.

Price controls as a remedial option. Under existing law, the Governor does not possess the power to address price spikes or volatility in petroleum markets by imposing price controls. Without discussing either the need or the advisability of endowing the State's chief executive with this power, I pause only to note that if such a power were provided, it would be subject to the same limitations discussed above.

Applicability of antitrust provisions. Although energy prices in Maine, as elsewhere in the United States, are generally unregulated, this does not mean that anything goes in the State's energy markets. The Attorney General possesses the ability to initiate enforcement action against any party engaging in collusive price-fixing, market allocation or any other "unreasonable restraint of trade." He may also prosecute a party possessing monopoly or quasi-monopoly market power for abuse of that power, or for oppressive or exclusionary practices. 10 MRSA sec. 1101, 1102. These provisions apply regardless of whether an emergency exists.

Profiteering or price-gouging provisions. Finally, under the newly refurbished Profiteering in Necessities law, 10 MRSA sec 1105, the Governor may determine that a natural catastrophe or man-made event has interrupted the operation of normal competitive forces in a given market, causing an "abnormal market disruption". If the Governor proceeds to issue a declaration to this effect, the Attorney General may initiate appropriate enforcement.

Maine's profiteering law allows the Attorney General to prosecute so-called "price-gouging" only when (a) the Governor has declared an abnormal market disruption; and (b) the price of an affected good or service has increased by at least 15% over the sum of the prior price and any increased costs. Accordingly, it is important for the Governor and the Attorney General to remain in close contact and to coordinate decision-making under the profiteering law in an incipient energy emergency

AG as market monitor. Finally, regardless of whether an emergency exists, the Attorney General plays a role as monitor of home heating oil and motor fuel markets under the Petroleum Market Share Act, 10 MRSA sec. 1671 *et seq.* This requires him to remain in contact with market participants to ensure that he receives current information. As a result of this monitoring function, the Attorney General can help maintain lines of communication between the public and private sectors, while continuing to fulfill his constitutional role as the State's chief law enforcement officer.

Please let me know if you have any further questions.

Appendix D: Energy Emergency Assurance Coordinators (EEAC) Program

<https://www.naseo.org/eeac>

The language in this appendix is modified from the U.S. DOE, Office of Cybersecurity, Energy Security, and Emergency Response guidance on the Energy Emergency Assurance Coordinators (EEAC) Program, May 2022.

The Energy Emergency Assurance Coordinators (EEAC) Program is a cooperative effort between the U.S. Department of Energy's (DOE) Office of Cybersecurity, Energy Security, and Emergency Response (CESER), the National Association of State Energy Officials (NASEO), the National Association of Regulatory Utility Commissioners (NARUC), the National Governors Association (NGA), and the National Emergency Management Association (NEMA).

Purpose

The EEAC Program provides states with a means of sharing and receiving credible, accurate, and timely information with other states and DOE leading up to and during energy emergencies. Structured communications are essential for understanding the severity, magnitude, and consequences of energy disruptions regardless of the causes.

Designation

EEACs serve as contact points for DOE in an energy emergency. Membership is made up of representatives from state energy offices, public utility commissions, state ESF-12 responders, emergency management agencies, homeland security agencies, local governments, and governors' offices. Additional guidance can be found [here](#).

Maine has designated a primary and secondary EEAC contact, who have planning and/or response roles during energy emergencies. These individuals are registered on ISERNet, a federal communications platform that DOE hosts. States should review and update their EEAC contacts annually.

[contact information redacted]

Examples Of Products Doe Has Shared with Maine

DOE leverages the EEAC network to communicate important notices, such as situation reports, and outage estimate reports. DOE distributes [TLP:AMBER](#) information (situational awareness/analysis, alerts, etc.) to EEAC email listservs leading up to and during energy emergencies. For example, during the COVID-19 pandemic, CESER disseminated weekly COVID-19 situation reports to all states in addition to situation reports for emergency events like hurricanes.

States can also share information with other states or directly with DOE.

Examples Of Energy Emergency Situations Maine Has Shared with DOE

Maine has not yet utilized the EEAC system to its full potential. Maine Energy Office staff have worked directly with DOE and NASEO, and other federal agency staff such as the Federal Motor Carrier Safety Administration (FMCSA), the Energy Information Administration (EIA), and the National Weather Service during times of constrained energy supplies. For example, in addition to working closely with state agency personnel, energy infrastructure owners/operators, and energy suppliers, the GEO was in close contact with NASEO and DOE during the propane supply crisis in 2013-14. This included participation in meetings during the NASEO winter policy meeting to provide situational awareness and discuss possible mitigation actions available to states. More recently, in 2021, the GEO provided situational awareness to NASEO, DOE, and the FMCSA during a significant delivered fuels driver shortage due to a combination of severe winter weather and temporary COVID-related driver attrition. Also, in 2022, the GEO provided federal agencies situational awareness about delayed k-1 deliveries due to extraordinary market disruptions brought on by Russia's invasion of Ukraine.

With the new heightened focus on state energy security plan content and communications, the GEO will include using the EEAC system to communicate with federal energy officials, in addition to historical communications methods.

Background Resources

- The EEAC Program was established in 1996 by DOE and NASEO through a memorandum of understanding. The [agreement](#) has been expanded to include NARUC, NEMA, and NGA. The first page of the agreement is below.

Agreement for Enhanced Federal and State Energy Emergency Coordination, Communications, and Information Sharing

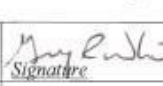
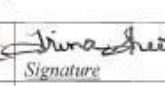
The U.S. Department of Energy (DOE), the National Association of State Energy Officials (NASEO), the National Association of Regulatory Utility Commissioners (NARUC), the National Governor's Association (NGA), and the National Emergency Management Association (NEMA) do hereby agree to implement the following actions as further explained in the attached titled "Terms of Reference to the Agreement on Federal and State Energy Emergency Coordination, Communications, and Information Sharing", dated: June 24, 2015.

1. DOE's Office of Electricity Delivery and Energy Reliability, Infrastructure Security and Energy Restoration Division (OE/ISER), NASEO, NARUC, NGA, and NEMA will work with the states to encourage voluntary participation to develop, maintain, and distribute the contact lists of state and federal officials responsible for energy market monitoring, consequence assessments, and energy emergency response. States and DOE OE/ISER will update the list at least annually with names, titles, organizations, work addresses, phone numbers, and email addresses as well as other government contact information as may be relevant. States will be responsible for updating the list any time there is a change or turnover in staff designated as points of contact. The list will be accessible through a restricted website maintained by DOE OE and will be accessible by those officials whose names appear on the list.

2. NASEO, NARUC, NGA, and NEMA will support participating states in the implementation of this agreement. Participating states will agree to provide timely situational assessments in the event of a disruption to energy supplies to facilitate effective coordination, communications, and information sharing. States will share their assessments of energy disruptions with surrounding states and DOE using (1) a restricted website maintained by DOE OE/ISER, (2) email, and (3) conference calls and other means as appropriate. States should consult the websites of the U.S. Energy Information Administration and OE to access publicly-available energy data, information and analysis, emergency situation reports, and other available information. State should compile information on impacts and consequences in their state including input from energy suppliers.

3. DOE will provide in a timely manner to states information about the risk of significant regional, multi-state, or state-level energy market disruptions as it becomes available to DOE. When an event that could have or has had a significant impact on energy infrastructure and/or supply occurs, DOE OE/ISER will share with affected states and regions situational assessments that provide details about the consequences of the disruption, its severity, geographic scope, and duration and federal action taken. These assessments will draw upon information gathered by states as well as other information, data, or analysis available to DOE.

4. The communication system shall be tested and evaluated by DOE and states every two years.

				
Ernest J. Moniz	David Terry	Scott D. Pattison	Greg R. White	Trina Sheets
Secretary	Executive Director	Executive Director/CEO	Executive Director	Executive Director
U.S. Department of Energy	National Association of State Energy Officials	National Governors Association	National Association of Regulatory Utility Commissioners	National Emergency Management Association

- NASEO [background](#) on the Energy Emergency Assurance Coordinators (EEAC) Program.

To sign-up with the EEAC, Register for an ISERNET account [here](#).

- Username should be your first initial and (partial) last name – there is a limit of eight characters.
- Briefly note your role and if you are an ESF #12 responder in the comments section.
- Once your account is approved, your email will be added to the appropriate listserv for your FEMA region.

Appendix E: Information-Sharing Contact List

[redacted]

Appendix F: New England and Mid-Atlantic Regional Liquid Fuels Supply Shortage Coordination Process

[redacted]

Appendix G: Mutual Assistance

Introduction

Emergency response starts at the local level – for both the public and private sector. Local government emergency managers engage first, and if local resources are exhausted or constrained, support is requested from the state. If a disaster depletes a state’s resources, aid from the federal government is requested. Similarly, the local electric utility or energy infrastructure operator impacted by an event or hazard is the first to respond. When needed, industry will also seek support to respond to a disruption or disaster. Both government and industry can request support to help respond through “mutual assistance” or “mutual aid” programs. These programs provide a framework for the sharing of skilled personnel and/or equipment from unaffected areas to those in need to expedite the restoration process.

Industry Mutual Assistance Overview

During major, widespread outage events, affected electricity and natural gas or petroleum companies may require additional resources to expedite service restoration given the scale and severity of infrastructure damage. Industry addresses these resource constraints by using mutual assistance programs — voluntary partnerships among utilities to provide personnel, equipment, and materials to expedite restoration during emergencies. Mutual assistance programs are designed to be scalable, with the ability to respond to resource demands from a localized event or a large regional disaster. These programs provide a formal yet flexible process for the sector to request assistance from one another, including the sharing and deployment of:

- Electricity line worker crews and bucket trucks;
- Gas utility crews with appropriate equipment for inspection and restoration activities;
- Distribution and transmission equipment, including electric transformers and substations; and
- Cybersecurity technical assistance.

Mutual assistance programs typically involve standing agreements between utilities that define the roles and reimbursement rates. These agreements can differ in content and format – some are

contracts and others are memorandums of understanding (MOU) between utilities.

Electric Investor-Owned Utilities Mutual Assistance

Historically, most electric investor-owned utilities (IOUs) mutual assistance programs were established through bilateral agreements between utilities from neighboring or nearby locations. Although bilateral agreements still exist, IOUs represented by the Edison Electric Institute (EEI) participate in EEI's [Mutual Assistance Program](#). EEI members have expanded their mutual assistance networks to form Regional Mutual Assistance Groups (RMAGs) as power systems have become more interconnected and emergencies have become broader in scale. RMAGs are groups of utilities in a state or region that have agreements to offer mutual assistance when a request is made. RMAGs facilitate the process of identifying available restoration workers and help utilities coordinate logistics and personnel to assist with restoration efforts when the affected area is regional in scope. There are seven RMAGs in the United States (see Regional Mutual Assistance Groups).

Natural Gas Industry Mutual Assistance

Each Segment of the natural gas industry approaches emergency preparedness and response/recovery differently. For example, natural gas distribution companies generally participate in mutual assistance programs with other gas utilities and contractors, while upstream natural gas production and transmission companies have assistance programs that are more contractor-based, taking into consideration different business models and antitrust laws. Depending upon the segment of the value chain, the policies and practices may differ to best match the needs of, and regulatory restrictions on, the segment of interest.

The American Gas Association (AGA) offers a voluntary, no-fee [mutual assistance program](#) designed to suit the wide variation of needs of its member companies across the United States and Canada. The program is based on a coalition of AGA member companies that agree to a set of baseline provisions that govern mutual assistance and populate/maintain the AGA Mutual Assistance Database with company-specific emergency contact information, field capabilities, and other key resources available for mutual assistance. The purpose of the program is to supplement local, state, and regional mutual assistance programs and is intended for those unprecedented man-made or natural disasters requiring the dedication of response, recovery, and restoration resources outside the limits of existing mutual aid programs.

Natural gas distribution mutual assistance depends upon the extent of damage to the distribution system. If response and recovery can be managed using regional resources, the natural gas association in the region where the crisis occurs takes the lead to help coordinate the activities of neighboring utilities. AGA monitors response and recovery efforts and offers a channel of communication to the federal government (e.g., requesting waivers for Operator Qualification requirements to be instituted) as appropriate. If needs exceed the capacity of regional resources, the regional association may call on AGA for additional mutual assistance support.

Public Power Mutual Assistance

The American Public Power Association's (APPA's) [Mutual Aid Network](#) provides a nationwide network for public power utilities to provide or receive assistance from other utilities. Over 2,000 public power or municipal utilities are part of the Network. The Network defines mutual aid roles and responsibilities for public power utilities at the local/state, regional, and national levels. The Network is built on a scalable framework able to respond to events of any size, including multiple concurrent events. As needed, APPA serves as a liaison between federal authorities and impacted utilities during widespread power outages. APPA also provides members with the [Mutual Aid Playbook](#), which provides utilities with a process for coordinating activities, information, and resources across the Network.

[Electric Cooperative Mutual Assistance](#)

The National Rural Electric Cooperative Association (NRECA) member statewide organizations ("Statewides") provide traditional [mutual assistance coordination](#) for electric cooperatives during incidents that impact the physical infrastructure of a cooperative's system. Statewides manage the coordination between states and cooperatives in need of assistance, and states and cooperatives provide personnel and equipment. NRECA makes available a model mutual assistance agreement, serves as a repository for signed agreements, and maintains a list of signatories. The Statewide Storm Coordinators are responsible for administering mutual assistance for physical incidents and hold an annual mutual assistance meeting that discusses issues in mutual assistance and plans prior to storm season.

[Cyber Mutual Assistance](#)

The [Cyber Mutual Assistance](#) (CMA) Program is an industry framework developed at the direction of the Electricity Subsector Coordinating Council (ESCC) to provide emergency cyber assistance within the electric power and natural gas industries. The CMA Program is composed of industry cyber experts who can provide voluntary assistance to other participating entities in advance of, or in the event of, a disruption of electric or natural gas service, systems, and/or IT infrastructure due to a cyber emergency. Participation in the program also establishes a voluntary information-sharing agreement between CMA participants to improve the cybersecurity posture of all participants. In the event of a cyber emergency, any participating entity may make a direct request for assistance from other participating entities, including services, personnel, and/or equipment. Entities representing electric and natural gas investor-owned companies, public power utilities, electric cooperatives, Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs), and Canadian energy companies participate in the CMA Program.

[State Emergency Management Assistance Compact](#)

The [Emergency Management Assistance Compact](#) (EMAC) is an all-hazards/all-disciplines national disaster mutual assistance compact that facilitates the sharing of resources, personnel, and equipment across state lines. The EMAC was enacted into federal law in 1996 and establishes a firm legal foundation for sharing resources between states. The EMAC legislation solves the problems of liability and responsibilities of cost, and allows for credentials, licenses, and certifications to be honored across state lines. Fifty states, the District of Columbia, Guam, Puerto Rico, the U.S. Virgin Islands, and the Commonwealth of the Northern Mariana Islands have enacted legislation to become EMAC members.

To use the EMAC, a state’s Governor must declare an emergency or disaster that authorizes funds for response and recovery and activates the EMAC.

To accelerate the mutual assistance process, the EMAC uses Mission Ready Packages (MRPs) that clearly identify all the elements needed to conduct a mission (personnel, equipment, commodities, travel, lodging, meals, and more) outside the home jurisdiction for a set period, including the associated costs. Resource providers develop and maintain their MRPs in the Mutual Aid Support System (MASS), which is a GIS-based inventory of MRPs.

NEMA administers EMAC, and the State EMA implements the framework within the state on behalf of the Governor. This provides a consistent and coordinated response across the nation. The state EMA is responsible for coordinating with resource providers from all jurisdictions (state, county, local, or private sector) to develop internal procedures for EMAC implementation, incorporate planning and lessons learned, resource allocation with neighboring states, conduct EMAC training and exercises, and develop MRPs.

Regional Mutual Assistance Groups and Contact Lists



Source: Edison Electric Institute

[contact list redacted]

Appendix H: Hours of Service (HOS) Waiver Request Process

[redacted]

Appendix I: Communications Messaging During Energy Emergencies

Sample Press Release

MEMA press releases are published via the MEMA Public Information Officer's established communication network with local news partners and publicized via state social media channels. Press releases are also published to the MEMA website, found here:
<https://www.maine.gov/mema/ema-community/newsroom>.

Maine Emergency Management Agency (MEMA) Warns of Dangerously Cold Temperatures

January 14, 2022

AUGUSTA, MAINE - Plummeting temperatures combined with gusty winds will create very cold to dangerously cold wind chills as low as -40°F across sections of Maine this evening into tomorrow morning. The Maine Emergency Management Agency (MEMA) is urging people to use caution during these extreme temperatures. The National Weather Service in Caribou expects to see snow and blowing snow in far eastern Washington County beginning this afternoon. Aroostook County is also concerned about white-out conditions.

"We are looking at another round of dangerously cold temperatures. I again urge Mainers to use extreme caution, look in on your neighbors, and stay safe," said MEMA Director Peter Rogers.

"Please take every precaution to stay warm and safe and be sure to check on your friends, family, and neighbors," said Governor Janet Mills. "Support is available by calling 2-1-1, with warming centers opening in communities across the state."

Citizens are encouraged to stay tuned to alerts and warnings through media or by downloading the free FEMA app on their smartphone, which provides targeted preparedness information, alerts, and warnings for specific areas.

With strong winds also in the forecast, Mainers should also remove objects in their yard that could become airborne, such as leftover holiday decorations or shovels and garbage cans on decks and porches.

Mainers are reminded to ensure that alternate heat and power sources are in proper working condition, properly installed, and that they follow the manufacturer's guidelines. If you are using a portable space heater, please keep the following safety tips in mind:

- Keep combustible objects at least three feet away from portable heating devices.
- Only buy heaters evaluated by a nationally recognized laboratory, such as Underwriters Laboratories (UL).
- Check to make sure the portable heater has a thermostat control mechanism and will switch off automatically if the heater falls over.
- Only use crystal clear K-1 kerosene in kerosene heaters. Never overfill it. Use the heater in a well-ventilated room away from curtains and other flammable items.

For further tips or resources on heating during the winter months, visit [this Winter Heating Guide](#) produced by the Governor's Energy Office.

Warming Centers are also opening in several Maine counties. Please visit MEMA's website to

find a location near you: www.maine.gov/mema/response-recovery/mass-care. You may also dial 2-1-1 or visit their website for a list of locations. Warming Centers follow COVID-19 health and safety guidelines to protect those utilizing their facilities.

The State Emergency Operations Center remains in partial operation while responding to resource needs of the county emergency management agencies related to COVID-19, as well as storm events.

CONTACT:

Vanessa Corson 207-592-6201

Sample Email Messaging

Maine.gov allows any person to sign up for automated email notifications and subscriptions. Subscriptions range from state-wide communications to more agency-specific communications. When the GEO is communicating via email to Maine people, it should be done in such a way that the messaging reaches as many people as possible, and not an agency-specific distribution roster, if possible. Individuals can sign up for email and text alerts here: <https://www.maine.gov/portal/subscriptions/email.html>.



PRESS RELEASES

You are subscribed to Maine.gov Press Releases. This information has recently been updated and is now available.

Maine Emergency Management Agency (MEMA) Urges Caution During Extreme Cold Temperatures

01/10/2022 03:50 PM EST

AUGUSTA, MAINE -The Maine Emergency Management Agency (MEMA) is urging residents and visitors to use caution during extreme cold temperatures. The National Weather Service in Gray

forecasts temperatures below zero this evening and Tuesday night, with wind chills between 15-30 below zero tomorrow morning. Wind chill warnings and wind chill advisories have been issued for late this evening through tomorrow morning. Snow squalls are also predicted across southwest Maine that may impact this evening's commute.

"With extreme cold temperatures coming to Maine this week, I encourage Maine people to take every precaution to stay warm and to check on friends, family and neighbors to ensure they are safe," said Governor Janet Mills. "For those who are concerned about their ability to stay warm, support is available by calling 2-1-1, with warming centers now opening in communities across the state. Please be safe and stay warm."

MEMA recommends that Maine people ensure that alternate heat sources are in proper working condition, properly installed, and that the user follows the manufacturers' guidelines. Keep heaters at least 3 feet away from anything that can catch fire. Never use your oven to heat your home because it can be a fire hazard. For further tips or resources on heating during the winter months, "><https://www.maine.gov/energy/winter-heating-resources>"> visit this Winter Heating Guide produced by the Governor's Energy Office.

Warming Centers are also opening in several Maine counties. Please visit MEMA's website to find a location near you: "><https://www.maine.gov/mema/response-recovery/mass-care>"> www.maine.gov/mema/response-recovery/mass-care . You may also dial 211 or visit their website for a list of locations. Please be aware that Warming Centers are following COVID-19 health and safety guidelines to protect those utilizing their facilities.

When exposed to extremely cold temperatures and high winds, the body loses heat faster than it can generate heat, which leads to health emergencies like hypothermia and frostbite. Hypothermia can affect anyone, but the most frequent victims include those who are -

- Elderly with inadequate clothing, food, or heat sources - Very young in cold bedrooms - Outside for too long, such as the homeless, lost hikers, and hunters - People with substance use disorders - Chronically ill who cannot regulate body temperature

Frostbite occurs when the skin is exposed to frigid temperatures, causing the tissues to freeze. It most often impacts the nose, ears, cheeks, chin, fingers, and toes, and causes a loss of feeling

and color. Its mild form, called frostnip, causes the skin to turn bright red and creates an ache.

When severe, the loss of color and numbness of frostbite can become permanent. In the worst cases, amputation is sometimes necessary. Although frostbite can impact anyone, those with poor circulation have the highest risk.

It's also important not to leave children or pets in cars and not to leave pets out overnight.

The State Emergency Operations Center remains in partial operation while responding to resource needs of the county emergency management agencies related to COVID-19, as well as any cold weather events.

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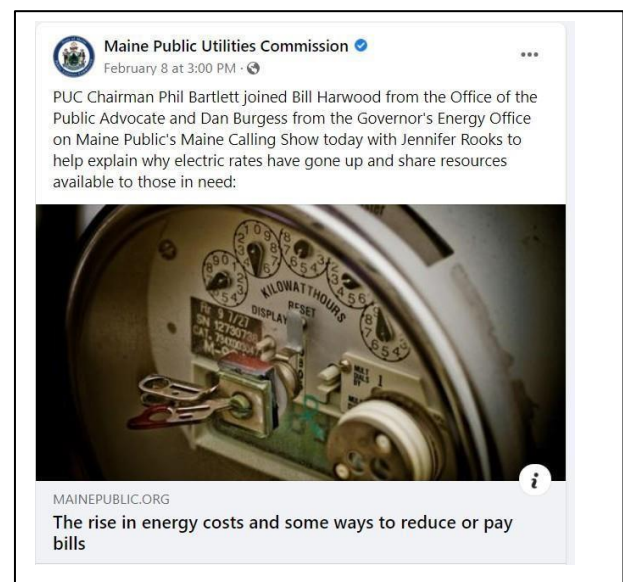
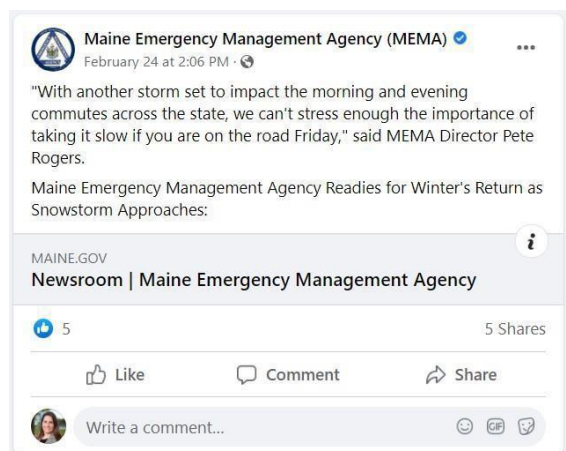
This service is provided to you at no charge by



Questions for Maine.gov? [Contact Us](#)

Sample Social Media Messaging

The GEO does not maintain an active social media profile on major platforms such as Facebook or Twitter. It relies on other state agencies, such as MEMA or the Maine Public Utilities Commission, to share messages related to its mission. These social media posts are either original content, highlights of news articles from reputable sources of information, or reshared content from other stakeholders or community partners such as county EMAs or peer agencies.



Appendix J: Federal and State Resiliency Policies and Programs

This section provides information on energy sector-specific federal and state policies and programs aimed at promoting demand for reduction, energy storage, smart grids, and other resilience measures. This list is not all-inclusive and may need to be amended to integrate new or revised policies and programs.

Federal Policies

Federal Power Act - 16 U.S.C. §791 et seq. (1920)

This statute was originally developed as the Federal Water Power Act, and the Act authorized the then Federal Power Commission (now Federal Energy Regulatory Commission) to issue licenses to non-federal projects that affected navigable waters, occupied federal lands, affected the interests of interstate commerce, or used water or water power from government-operated dams. Congress amended the statute in 1935 to charge the agency with the responsibility to oversee all interstate transmission and sale rates of electric power and hydropower.

Energy Standards and Goals for Federal Government:

The federal Energy Policy Act of 2005 (EPA 2005) established several goals and standards to reduce energy use in existing and new federal buildings. Executive Order 13423, signed in January 2007, expanded on those goals and standards and was later reaffirmed by congress with the Energy Independence and Security Act of 2007 (EISA 2007). EISA 2007 extended an existing federal energy reduction goal to 30% by fiscal year 2015; directed federal agencies to purchase Energy Star and Federal Energy Management Program (FEMP)-designated products; and required new federal buildings to be built 30% below American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) standards or the International Energy Conservation Code (IECC)¹.

Several Executive Orders, signed under previous administrations created certain requirements aimed at increasing the sustainability of all federal agencies. An Executive Order signed in March 2015 ([13693](#)) revoked the prior Executive Orders, and an Executive Order signed in May 2018 ([13834](#)) revoked that Executive Order. The May 2018 Executive Order references the statutory requirements and directs Federal agencies to manage their buildings, vehicles, and overall operations to optimize energy and environmental performance, reduce waste, and cut costs.

Interconnection Standards for Small Generators:

¹ [PUBL140.PS \(congress.gov\)](#)

Through its Orders 792 and 792-A, the Federal Energy Regulatory Commission (FERC) adopted new ["small generator" interconnection standards](#) for distributed energy resources up to 20 megawatts (MW) in capacity in November 2013 and September 2014, respectively. These standards made revisions to those promulgated by FERC in May 2005 through its Order 2006. The FERC's standards apply only to facilities subject to the jurisdiction of the commission; these facilities mostly include those that interconnect at the transmission level.

Given that purely intra-state distribution grids are generally considered to not be in "interstate commerce", the FERC's standards generally do not apply to distribution-level interconnection, which is regulated by state public utilities commissions. However, FERC's standard tends to serve as a guidepost for a number of state-level standards.

Natural Gas Act - 15 U.S.C. §717 et seq. (1938):

This statute gave the Federal Power Commission (now FERC) the authority to set 'just and reasonable rates' for the sale or transmission of natural gas in interstate commerce. The statute gave the agency the authority to grant certificates allowing construction and operation of facilities used in interstate gas transmission, to authorize the provision of services, and to allow pipeline companies to charge customers for some of the expenses incurred in pipeline construction and operation. The statute also required the agency to approve abandonment of any pipeline facility or services.

Clean Air Act - 42 U.S.C. §7401 et seq. (1970):

This statute authorizes the EPA to establish national air quality standards to protect public health and public welfare and allows the EPA to regulate air emissions from stationary and mobile sources. Specifically, Section 112 regulates emissions of hazardous air pollutants and establishes emission standards that require the maximum degree of reduction in emissions of hazardous air pollutants (Maximum Achievable Control Technology standards).

National Environmental Policy Act - 42 U.S.C. §4332 et seq. (1969):

This statute requires federal agencies to incorporate environmental considerations in the planning and decision-making process of the agency. As a result of this statute, all federal agencies are required to prepare detailed statements that assess the environmental impact of, and alternatives to, any major federal measures that significantly affect the environment.

Coastal Zone Management Act - 16 U.S.C. §1451 et seq. (1972):

This statute is administered by the National Oceanic and Atmospheric Administration, and the statute provides for the management of the nation's coastal resources, including the Great Lakes. The statutory goal is to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."

Federal Energy Regulatory Commission - 42 U.S.C. §7171 et seq. (1977):

The Department of Energy Reorganization Act of 1977 created and defined the FERC, which regulates the interstate transmission of electricity, natural gas, and oil. FERC also reviews proposals to build liquefied natural gas terminals and interstate natural gas pipelines as well as licensing of hydropower projects.

Nuclear Regulatory Commission - 42 U.S.C. §5801 et seq. (1974):

The Energy Reorganization Act of 1974 established the NRC that is responsible for formulating policies and regulations governing nuclear reactors and materials safety, issuing orders to licensees, and adjudicating legal matters. As part of this regulatory process, the NRC has four regional offices that conduct inspection, enforcement, and emergency response programs for licensees within their region.

National Energy Conservation Policy Act – 42 U.S.C. §8251 et seq. (1978):

Originally, this Act directed the DOE to set minimum energy performance standards to replace the standards set by the Energy Policy and Conservation Act in 1975. An amendment to this Act changed the standards from voluntary to mandatory, and these standards preempted state standards. Under this Act, DOE issues notices and rules related to federal energy management including new federal, commercial, and residential buildings; federal procurement of energy efficient products; and federal fleet management.

Energy Independence and Security Act of 2007 addressed key energy issues including clean, renewable fuels; energy efficiency of products, buildings, and vehicles; and vehicle-fuel economy.

Energy Policy Act of 2005 addressed key energy issues including energy efficiency; renewable energy; oil and gas; coal; tribal energy; nuclear matters and security; vehicles and motor fuels, including ethanol; hydrogen; electricity; energy tax incentives; hydropower and geothermal energy.

Energy Policy Act of 1992 addressed key issues including clean and renewable energy incentives; EE; and alternative-fuel vehicles.

Natural Gas Policy Act of 1978 addressed key issues including 1) setting maximum prices for wellhead sale of natural gas and 2) approving the transportation of natural gas by an interstate pipeline on behalf of intrastate pipelines and local distribution companies.

Public Utility Regulatory Policies Act of 1978 addressed key issues including conservation of electric energy, wholesale distribution of electric energy, and reliability of electric service.

Federal Tax Credits/Financial Incentives

Name	Policy / Inventive Type	Summary	More Information
Business Energy Investment Tax Credit (ITC)	Corporate Tax Credit	The federal Business Energy Investment Tax Credit (ITC) has been amended several times, most recently in December 2015. The table in the link shows the value of the investment tax credit for each technology by year. The expiration date for solar technologies and wind is based on when construction begins. For all other technologies, the expiration date is based on when the system is placed in service (fully installed and being used for its intended purpose).	https://programs.dsireusa.org/system/program/detail/658
Federal Renewable Electricity Production Tax Credit (PTC)	Corporate Tax Credit	The federal renewable electricity production tax credit (PTC) is an inflation-adjusted per-kilowatt-hour (kWh) tax credit for electricity generated by qualified energy resources and sold by the taxpayer to an unrelated person during the taxable year. The duration of the credit is 10 years after the date the facility is placed in service.	https://programs.dsireusa.org/system/program/detail/734
Energy Efficient Commercial Buildings Tax Deduction	Corporate Tax Credit	A tax deduction of \$1.80 per square foot is available to owners of new or existing buildings who install: (1) interior lighting; (2) building envelope; or (3) heating, cooling, ventilation, or hot water systems that reduce the building's total energy and power cost by 50% or more in comparison to a building meeting minimum requirements set by ASHRAE Standard 90.1-2007. Energy savings must be calculated using qualified computer software approved by the IRS. Deductions of \$0.60 per square foot are available to owners of buildings in which individual lighting, building envelope, or heating and cooling systems	https://www.energy.gov/eere/buildings/179d-commercial-buildings-energy-efficiency-tax-deduction

Name	Policy / Inventive Type	Summary	More Information
		meet target levels that would reasonably contribute to an overall building savings of 50% if additional systems were installed.	
Renewable Electricity Production Tax Credit (PTC)	Corporate Tax Credit	The tax credit amount is \$0.015 per kWh in 1993 dollars for some technologies and half of that amount for others. The amount is adjusted for inflation by multiplying the tax credit amount by the inflation adjustment factor for the calendar year in which the sale occurs, rounded to the nearest 0.1 cents. The Internal Revenue Service (IRS) publishes the inflation adjustment factor no later than April 1 each year in the Federal Register. For 2015, the inflation adjustment factor used by the IRS is 1.5336. Applying the inflation adjustment factor for the 2014 calendar year, as published in the IRS Notice 2015-20, the production tax credit amount is as follows: \$0.023/kWh for wind, closed-loop biomass, and geothermal energy resources; \$0.012/kWh for open loop biomass, landfill gas, municipal solid waste, qualified hydroelectric, and marine and hydrokinetic energy resources.	https://programs.dsireusa.org/system/program/detail/734
Federal Energy Policy Act of 2005	Corporate Tax deduction	The federal Energy Policy Act of 2005 established a tax deduction for energy-efficient commercial buildings applicable to qualifying systems and buildings placed in service from January 1, 2006, through December 31, 2007. This deduction was subsequently extended several times, and is now permanent.	https://www.energy.gov/articles/energy-policy-act-2005
USDA High Energy Cost Grant	Grant Program	The USDA offers an ongoing grant program for the improvement of energy generation, transmission, and distribution facilities in rural communities.	http://www.rd.usda.gov/programs-services/high-energy-cost-grants

Federal Programs

Department of Energy – Grid Resilience and Innovation Partnership Program	
Funding	
Program Funding	\$5 billion
Applicant Funding	\$1 billion per year annually 2022 - 2026
Match Required	At least 50% from applicants
Schedule	
Notice of Funding	Fall 2024 (Anticipated)
Submission Due	Spring 2025 (Anticipated)
Required Coordination	None
Eligibility	
Applicant	Eligible applicants defined by the statute include electric grid operators, electricity generators, electricity storage operators, transmission owners or operators, distribution providers, fuel suppliers, and other relevant entities, as determined by the Secretary.
Project	To coordinate and collaborate with electric sector owners and operators—(A) to demonstrate innovative approaches to transmission, storage, and distribution infrastructure to harden and enhance resilience and reliability; and (B) to demonstrate new approaches to enhance regional grid resilience, implemented through States by public and rural electric cooperative entities on a cost-shared basis.
More Information	https://www.energy.gov/gdo/grid-innovation-program

Department of Energy – Grid Resilience Utility and Industry Grants (GRIP Topic Area 1)	
Funding	
Program Funding	\$2.5 billion
Applicant Funding	\$500 Million per year FY 22 - 26
Match Required	Funding is capped at the amount the eligible entity has spent in the previous three years on hardening efforts. There is a 100% cost match for this program.
Schedule	
Notice of Funding	Fall 2024 (Anticipated)
Submission Due	Spring 2025 (Anticipated)
Required Coordination	None
Eligibility	
Applicant	Eligible applicants are: electric grid operators, electricity storage operators, electricity generators, transmission owners or operators, distribution providers and fuel suppliers.
Project	Grid Resilience Utility and Industry Grants support activities that will modernize the electric grid to reduce impacts from extreme weather and natural disasters. This grant program will fund comprehensive transformational transmission and distribution technology solutions that will mitigate weather hazards across a region or within a community including wildfires, floods, hurricanes, extreme heat, extreme cold, and extreme weather events that can cause a disruption to the power system
More Information	https://www.energy.gov/gdo/grid-resilience-utility-and-industry-grants

Department of Energy – Smart Grid Grants (DOE GRIP Topic Area 2)	
Funding	
Program Funding	\$3 billion
Applicant Funding	\$600 million/year for Fiscal Years 2022-2026
Match Required	Recipients must provide a cost-share of at least 50% of the grant.
Schedule	
Notice of Funding	Fall 2024 (Anticipated)
Submission Due	Spring 2025 (Anticipated)
Required Coordination	None
Eligibility	
Applicant	Eligible applicants are: For-profit entities, Non-profit entities, State and local governmental entities, Tribal nations, and Institutions of higher education
Project	The Smart Grid Grants (40107) are designed to increase the flexibility, efficiency, and reliability of the electric power system, with particular focus on: increasing capacity of the transmission system, preventing faults that may lead to wildfires or other system disturbances, integrating renewable energy at the transmission and distribution levels, and facilitating the integration of increasing electrified vehicles, buildings, and other grid-edge devices.
More Information	https://www.energy.gov/gdo/smart-grid-grants

Department of Energy – Grid Innovation Program (DOE GRIP Topic Area 3)	
Funding	
Program Funding	\$5 billion
Applicant Funding	\$1 billion/year for Fiscal Years 2022-2026
Match Required	Recipients must provide a cost-share of at least 50% of the grant.
Schedule	
Notice of Funding	Fall 2024 (Anticipated)
Submission Due	Spring 2025 (Anticipated)
Required Coordination	None; however, DOE encourages eligible entities to collaborate with electric sector owners and operators to deploy projects.
Eligibility	
Applicant	Eligible applicants are: States (individual or combined), Tribes and Territories, Local governments, and Public utility commissions
Project	The Grid Innovation Program supports projects that use innovative approaches to transmission, storage, and distribution infrastructure to enhance grid resilience and reliability. Projects selected under this program will include interregional transmission projects, investments that accelerate interconnection of clean energy generation, and utilization of distribution grid assets to provide backup power and reduce transmission requirements. Innovative approaches can range from use of advanced technologies to innovative partnerships to the deployment of projects identified by innovative planning processes.
More Information	https://www.energy.gov/gdo/grid-innovation-program

Department of Energy – Carbon Dioxide Transportation Infrastructure – Department of Energy	
Funding	
Program Funding	\$2.1 billion
Applicant Funding	\$2.1 billion will be appropriated to DOE in annual increments between 2022 - 2026
Match Required	At least 20% from applicants
Eligibility	
Applicant	Commercial, Industrial, Local Government, Nonprofit, Schools, State Government, Agricultural, Institutional
Project	An eligible project must be a large-capacity common carrier CO2 transportation infrastructure project over \$100 million in project costs that transports CO2 captured from anthropogenic sources and/or ambient air by pipeline, shipping, rail, or other methods for storage and/or use.
More Information	CARBON DIOXIDE TRANSPORTATION INFRASTRUCTURE Department of Energy

Department of Energy Loan Guarantee Programs	
Funding	
Program Funding	\$40 Billion
Applicant Funding:	\$5 Billion for Energy Infrastructure Reinvestment through September 30, 2026 \$3 Billion for Advanced Tech Vehicle Manufacturing through September 30, 2028 \$75 Million for Tribal Energy Projects through September 30, 2028

Department of Energy Loan Guarantee Programs	
Match Required	None - Eligible for all Title 17 Innovative Clean Energy technology categories
Schedule	
Notice of Funding	N/A
Submission Due	N/A
Required Coordination	Authority to issue Loan Guarantees under the old Section 1703 Program
Eligibility	
Applicant	Commercial, Industrial, Local Government, Nonprofit, Schools, State Government, Agricultural, Institutional
Project	Projects that retool, repower, repurpose, or replace energy infrastructure that has ceased operations, or enable operating energy infrastructure to avoid, reduce, utilize, or sequester air pollutants or anthropogenic emissions of greenhouse gases. Projects that support the manufacture of eligible light-duty vehicles and qualifying components under the Advanced Technology Vehicles Manufacturing Loan Program (ATVM).
More Information	https://www.energy.gov/lpo/loan-programs-office

Department of Energy Preventing Outages and Enhancing the Resilience of the Electric Grid	
Funding	
Program Funding	\$5B
Applicant Funding	<i>To be determined</i>
Match Required	<i>To be determined</i>
Schedule	
Notice of Funding	November 2024 (Anticipated)
Submission Due	March 2025 (Anticipated)
Required Coordination	State Coordination
Eligibility	
Applicant	Electric Grid Operators, Electricity Storage Operators, Electricity Generators, Transmission Owners and Operators, Distribution Providers, Fuel Suppliers, States, Tribes
Project	Formula program for eligible entities, States, and Tribes to prevent outages and enhance the resilience of the electric grid. To carry out activities that are supplemental to existing hardening efforts and reduce the risk of power lines causing a wildfire; or reduce the likelihood and consequences of disruptive events.
More Information	https://www.energy.gov/gdo/preventing-outages-and-enhancing-resilience-electric-grid-grants

Department of Energy Program Upgrading Our Electric Grid and Ensuring Reliability and Resiliency	
Funding	
Program Funding	\$5B
Applicant Funding	<i>To be determined</i>
Match Required	20% - 50%
Schedule	
Notice of Funding	Fall 2023 (Anticipated)
Submission Due	Summer 2024 (Anticipated)
Required Coordination	State Coordination
Eligibility	
Applicant	State, combination of 2 or more States; Native American Tribes; units of local government, and/or public utility commissions.
Project	To provide Federal financial assistance to demonstrate innovative approaches to transmission, storage, and distribution infrastructure to harden and enhance resilience and reliability; and to demonstrate new approaches to enhance regional grid resilience.
More Information	https://www.energy.gov/bil/program-upgrading-our-electric-grid-and-ensuring-reliability-and-resiliency

Department of Energy– Inflation Reduction Act (IRA): Transmission Facility Siting	
Funding	
Program Funding	\$760M
Applicant Funding	<i>To be determined</i>
Match Required	50%
Schedule	
Notice of Funding	<i>To be determined</i>
Submission Due	<i>To be determined</i>
Required Coordination	<i>To be determined</i>
Eligibility	
Applicant	Siting authorities, or other state, local, or tribal governmental entities, for economic development activities in communities that may be affected by the construction and operation of these transmission projects.
Project	Award grants to siting authorities and local governments related to a covered transmission project, which is one that is a high-voltage interstate or offshore electricity transmission line that is expected to be constructed or operated. This includes a minimum of 275 kVs of either alternating current or direct-current electric energy, or offshore and a minimum of 200 kV.
More Information	Transmission Siting and Economic Development Grants Program Department of Energy https://www.energy.gov/sites/default/files/2023-01/IRA%2050152%20Transmission%20Siting%20and%20Economic%20Development%20Grants%20RFI.pdf

Department of Energy – Energy Efficiency and Conservation Block Grant Program	
Funding	
Program Funding	\$550B
Applicant Funding	\$110M
Match Required	<i>To be determined</i>
Schedule	
Notice of Funding	July 2024 (Anticipated)
Submission Due	October 2024 (Local Governments) May 2025 (Tribes)
Required Coordination	<i>To be determined</i>
Eligibility	
Applicant	States, local governments, and tribes. Cities must have a population of at least 35,000 to apply directly to DOE.
Project	Development and implementation of an energy efficiency and conservation strategy; conducting residential and commercial building energy audits; establishing financial incentive programs for energy efficiency; provide grants for retrofits; conservation of energy in transportation, including development of bike/ped infrastructure and traffic signal improvements.
More Information	https://www.energy.gov/scep/energy-efficiency-and-conservation-block-grant-program

Department of Energy – Energy Transitions Initiative Partnership Project (ETIPP) Community Technical Assistance

Funding	
Program Funding	Does not provide any funding.
Applicant Funding	\$1 billion per year annually 2022 - 2026
Match Required	At least 50% from applicants
Schedule	
Notice of Funding	Fall 2024 (Anticipated)
Submission Due	Spring 2025 (Anticipated)
Required Coordination	None
Eligibility	
Applicant	Must be a remote community and go through a competitive selection process.
Project	The experts that are partnered with the community design and execute a 12 to 18 month technical assistance project that helps to achieve the community's energy resilience goals.
More Information	https://www.energy.gov/eere/about-energy-transitions-initiative-partnership-project

Department of Energy – Energy Storage Demonstration and Pilot Grant Program	
Funding	
Program Funding	\$355M
Applicant Funding	Available until expended
Match Required	None determined
Schedule	
Notice of Funding	<i>To be determined</i>
Submission Due	Spring 2024 (Anticipated)
Required Coordination	<i>To be determined</i>
Eligibility	
Applicant	Technology developers and industry, state, local, and tribal governments, community organizations, national laboratories, universities, and utilities
Project	Funding will go toward three energy storage projects that: Improve energy security and emergency response, improve distribution and transmission system reliability and operations, supply energy during peak demand periods, reduce peak loads of end-users, improve advanced power conversion systems, provide ancillary services for grid stability, integrate renewable energy production, increase microgrid feasibility, support stored energy for natural gas systems and other industrial processes besides electricity, integrate electric vehicle charging, improve energy efficiency.
More Information	https://www.energy.gov/oced/energy-storage-demonstration-and-pilot-grant-program

Department of Energy – Energy Improvements in Rural or Remote Areas (ERA)	
Funding	
Program Funding	\$1B
Applicant Funding	\$200M annual from 2022 through 2026 until expended.
Match Required	None
Schedule	
Notice of Funding	<i>To be determined</i>
Submission Due	Deadline for \$50M grant funding issued May 2023: October 2023 Deadline for \$300M funding issued March 2023: August 2023
Required Coordination	Grant terms and conditions; federal requirements under 2 CFR Part 200 and 910 .
Eligibility	
Applicant	Higher education institutes, non-profit and for-profit organizations, state, local, and tribal governments, and incorporated or unincorporated consortia. Funding should be used in communities with 10,000 people or fewer.
Project	Projects that seek to improve the reliability, resilience, and affordability of energy systems. This includes: siting and upgrading transmission and distribution lines, reducing greenhouse gas emissions by energy generation in rural areas, modernizing or providing electricity generation, microgrid development, and energy efficiency improvements.
More Information	https://www.energy.gov/oced/energy-improvements-rural-or-remote-areas-0

Federal Emergency Management Agency Building Resilient Infrastructure and Communities	
Funding	
Program Funding	\$2.295B
Applicant Funding	N/A, program is for technical assistance, not monetary
Match Required	N/A
Schedule	
Notice of Funding	To be determined
Submission Due	To be determined
Required Coordination	Upon selection, communities will work with FEMA to develop technical assistance plans.
Eligibility	
Applicant	Cities, towns/townships, parishes, boroughs, counties, special district governments, and federally recognized tribal governments. Groups of at least two communities that fit these descriptions are also eligible.
Project	Assistance must be for climate resilience planning and can include: community engagement, partnership development, grant writing, environmental review, and budget development a examples. Communities must at least be noted in Executive Order 14008, have a CDC Social Vulnerability Index of at least 0.6, qualify as an economically disadvantaged rural community, show a compelling need, or not have received BRIC, HMGP, FMA, or PDM funding in the last five years.

Federal Emergency Management Agency Building Resilient Infrastructure and Communities

More
Information

<https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities/direct-technical-assistance>

Federal Emergency Management Agency Flood Mitigation Assistance

Funding

Program Funding

\$400 million

Applicant Funding

The updated values for use of pre-calculated benefits to determine cost effectiveness of elevations and acquisitions in the SFHA are \$323,000 per structure for acquisitions and \$205,000 per structure for Elevations (and Mitigation Reconstruction).

FEMA has determined that the acquisition of a structure designated as Repetitive Loss or Severe Repetitive Loss, regardless of location within or outside of the Special Flood Hazard Area, with total project costs less than or equal to \$323,000 is considered cost-effective. As such, FEMA has expanded the use of pre-calculated benefits to include acquisition projects of RL and SRL properties outside the Special Flood Hazard Area with a project cost less than or equal to the existing calculated threshold of \$323,000.

Match Required

Generally, federal cost share funding is available for up to 75% of the eligible activity costs. However, based on Flood Mitigation Assistance funding allocated from the BIL, FEMA may contribute up to 90% federal cost share for eligible costs for a property that has National Flood Insurance Program insurance and is located within a census tract with a Centers for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI) not less than 0.5001.

Schedule

Notice of Funding

October 2024 (Anticipated)

Submission Due

January 2025 (Anticipated)

Federal Emergency Management Agency Flood Mitigation Assistance	
Required Coordination	N/A
Eligibility	
Applicant	States, local communities, federally recognized tribes and territories.
Project	Individual Flood Mitigation Projects are one of three program priorities for the Fiscal Year 2022 grant application cycle. These projects mitigate the risk of flooding to individual National Flood Insurance Program (NFIP) insured buildings. Out of \$800 million in total funding for Fiscal Year 2022, FEMA will select at least \$400 million for the federal cost share funding of Individual Flood Mitigation Projects.
More Information	https://www.fema.gov/grants/mitigation/floods

Federal Emergency Management Agency Hazard Mitigation Grant Program	
Funding	
Program Funding	A Presidential major disaster declaration makes HMGP funds available.
Applicant Funding	Funding is based on the estimated total or aggregate cost of disaster assistance: Up to 15% of the first \$2 billion Up to 10% for amounts between \$2 billion and \$10 billion Up to 7.5% for amounts between \$10 billion and \$35.333 billion States with enhanced mitigation plans: up to 20%, not to exceed \$35.333 billion.

Federal Emergency Management Agency Hazard Mitigation Grant Program	
Match Required	Generally, the cost share is 75% federal and 25% non-federal funding. The 25% can come from the state or local government, an individual, construction labor, Increased Cost of Compliance (ICC) funds from a flood insurance policy, or Small Business Administration loans. Check with your respective community, state, or tribe to determine your specific cost-share requirements.
Schedule	
Notice of Funding	N/A
Submission Due	N/A
Required Coordination	Following a hazard event, states, local governments, federally recognized tribes and territories are required to perform a joint preliminary disaster assessment of the impacted area with FEMA. This helps determine if a major disaster declaration is warranted and the amount and type of federal assistance needed. The PDA also helps to identify potential mitigation opportunities for FEMA funding.
Eligibility	
Applicant	All state, local, tribal, and territorial governments must develop and adopt hazard mitigation plans to receive funding for their hazard mitigation projects.
Project	FEMA's Hazard Mitigation Grant Program provides funding to state, local, tribal and territorial governments so they can develop hazard mitigation plans and rebuild in a way that reduces, or mitigates, future disaster losses in their communities. When requested by an authorized representative, this grant funding is available after a presidentially declared disaster.
More Information	https://www.fema.gov/grants/mitigation/hazard-mitigation#reduce-risk

Federal Emergency Management Agency Safeguarding Tomorrow Revolving Loan Program	
Funding	

Federal Emergency Management Agency Safeguarding Tomorrow Revolving Loan Program	
Program Funding	\$500 million over five years
Applicant Funding	FEMA is making \$50 million available to eligible entities to establish revolving loan funds. FEMA has considered the administrative burden on entities and anticipates making available no less than \$5.1 million per capitalization grant application selected for funding with this first funding opportunity.
Match Required	Capitalization grant recipients must deposit an amount that is at least 10% of the amount of the grant into the loan fund, as a condition of receiving funding. On or before the date on which the capitalization grant is received, entities must contribute to the entity loan fund an amount equal to at least 10% of the capitalization grant. If an entity contributes less than 10%, FEMA will reduce the amount of the capitalization grant to whatever amount is 10 times that of what the entity contributes.
Schedule	
Notice of Funding	February 2025 (Anticipated)
Submission Due	April 2025 (Anticipated)
Required Coordination	N/A
Eligibility	
Applicant	States Federally recognized tribes that received a major disaster declaration pursuant to Section 401 of the Stafford Act Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and the District of Columbia
Project	The Safeguarding Tomorrow through Ongoing Risk Mitigation (STORM) Act became law on Jan. 1, 2021 and authorizes FEMA to provide capitalization grants to states, eligible federally recognized tribes, territories and the District of Columbia to establish revolving loan funds

Federal Emergency Management Agency Safeguarding Tomorrow Revolving Loan Program

	that provide hazard mitigation assistance for local governments to reduce risks from natural hazards and disasters. The Act amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act. These low interest loans will allow jurisdictions to reduce vulnerability to natural disasters, foster greater community resilience and reduce disaster suffering.
More Information	https://www.fema.gov/grants/mitigation/storm-rlf

Federal Emergency Management Agency Homeland Security Grant Program

Funding	
Program Funding	\$1.12B State Homeland Security Program: \$415 million Urban Area Security Initiative: \$615 million Operation Stonegarden: \$90 million
Applicant Funding	State Administrative Agencies (SAAs) are required to pass-through at least 80% of SHSP and UASI funding to local or tribal units of government.
Match Required	None
Schedule	
Notice of Funding	May 2025 (Anticipated)
Submission Due	June 2025 (Anticipated)

Federal Emergency Management Agency Homeland Security Grant Program	
Required Coordination	Local governments must apply through their state
Eligibility	
Applicant	The State Administrative Agency is the only entity eligible to submit HSGP applications to FEMA, including those applications submitted on behalf of UASI and OPSG applicants. All 56 states and territories, which includes any state of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands, are eligible to apply for SHSP funds.
Project	In FY22, there are three components of the HSGP: State Homeland Security Program to support state and local governments to build, sustain, and deliver capabilities necessary to prevent, prepare for, protect against, and respond to acts of terrorism; Urban Area Security Initiative for pre identified high-threat, high density urban areas; and Operation Stonegarden for border protection.
More Information	https://www.fema.gov/grants/preparedness/homeland-security

Department of Homeland Security State and Local Cybersecurity Grant Program	
Funding	
Program Funding	National program appropriations through FY25 FY2022: \$200,000,000 FY2023: \$400,000,000 FY2024: \$300,000,000 FY2025: \$100,000,000
Applicant Funding	Allocations for states and territories include a base funding level as defined for each entity: 1% for each state, the District of Columbia, and Puerto Rico; and 0.25% for American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and the U.S. Virgin Islands.

Department of Homeland Security State and Local Cybersecurity Grant Program	
	State allocations include additional funds based on a combination of state population and rural population totals. 80% of total state allocations must support local entities, while 25% of the total state allocations must support rural entities; these amounts may overlap.
Match Required	Eligible entities applying as a single entity must meet a 10% non-federal cost-share requirement for the FY 2022 SLCGP. The recipient contribution can be cash (hard match) or third-party in-kind (soft match). Eligible applicants shall agree to make available non-federal funds to carry out an SLCGP award in an amount not less than 10% of the total project cost. In other words, the federal share applied toward the SLCGP budget at the project/activity level shall not exceed 90% of the total budget as submitted in the application and approved in the award. If the total project ends up costing more, the recipient is responsible for any additional costs. If the total project ends up costing less, the recipient may owe FEMA an amount required to ensure that the federal cost share is not in excess of 90%.
Schedule	
Notice of Funding	September 2024 (Anticipated)
Submission Due	November 202 (Anticipated)
Required Coordination	States must pass down at least 80 percent of the funds they receive to local governments within their jurisdiction. 25 percent of funds must go to projects in rural areas.
Eligibility	
Applicant	All 56 states and territories, including any state of the United States, the District of Columbia Puerto Rico, American Samoa, and the Commonwealth of the Northern Mariana Islands, Guam, and the U.S. Virgin Islands, are eligible to apply for SLCGP funds. The designated State Administrative Agency (SAA) for each state and territory is the only entity eligible to apply for SLCGP funding.
Project	The goal of the State and Local Cybersecurity Grant Program (SLCGP) is to help states, local governments, rural areas, and territories address cybersecurity risks and cybersecurity threats to information systems. The program enables DHS to make targeted cybersecurity investments in state, local and territorial government agencies, thus improving the security of critical infrastructure and resilience of the services that state, local, and territorial governments provide to their communities.

Department of Homeland Security State and Local Cybersecurity Grant Program

More Information

<https://www.fema.gov/fact-sheet/fiscal-year-2022-state-and-local-cybersecurity-grant-program-fact-sheet>

U.S. Department of Agriculture High Energy Cost Grant

Funding

Program Funding \$10 Million

Applicant Funding: \$100,000 - \$3,000,000

Match Required None

Schedule

Notice of Funding May 2024 (Anticipated)

Submission Due July 2024 (Anticipated)

Required Coordination N/A

Eligibility

Applicant Commercial, Industrial, Local Government, Nonprofit, Residential, Schools, State Government, Tribal Government, Institutional

Project Electric generation, transmission, and distribution facilities; Natural gas or petroleum storage or distribution facilities

U.S. Department of Agriculture High Energy Cost Grant

	Renewable energy facilities used for on-grid or off-grid electric power generation, water or space heating, or process heating and power; Backup up or emergency power generation or energy storage equipment; and Weatherization of residential and community property, or other energy efficiency or conservation programs.
More Information	https://www.rd.usda.gov/programs-services/electric-programs/high-energy-cost-grants

Environmental Protection Agency Methane Emissions Reduction Program

Funding	
Program Funding	\$850M
Applicant Funding	<i>To be determined</i>
Match Required	None
Schedule	
Notice of Funding	<i>To be determined</i>
Submission Due	<i>To be determined</i>
Required Coordination	<i>To be determined</i>
Eligibility	

Environmental Protection Agency Methane Emissions Reduction Program	
Applicant	Eligible recipients for these funds include but are not limited to air pollution control agencies, other public or nonprofit private agencies, institutions, organizations, and individuals.
Project	Financial assistance is available for the following project types: - Reducing methane and other greenhouse gas emissions from petroleum and natural gas systems - Mitigating legacy air pollution from petroleum and natural gas systems - Improving climate resiliency of communities and petroleum and natural gas systems - Improving and deploying industrial equipment and processes that reduce methane and other greenhouse gas emissions and waste - Supporting innovation in reducing methane and other greenhouse gas emissions and waste from petroleum and natural gas - Shutting in and plugging wells on non-Federal lands permanently - Mitigating health effects of methane and other gas emissions - Supporting environmental restoration
More Information	https://www.epa.gov/inflation-reduction-act/methane-emissions-reduction-program

State Policies

H.P 810 - L.D. 1147 Maine Renewable Portfolio Standard

Maine's original Renewable Resource Portfolio Requirement, part of the 1997 electric utility restructuring law, mandated that 30% of electricity sales come from eligible renewable and energy efficiency resources. In 2019, Governor Mills increased the RPS to 80% by 2030 and set a goal of 100% by 2050, requiring the MPUC to procure long-term contracts for new clean energy generation. Eligible technologies include fuel cells, tidal, solar, wind, geothermal, hydro, biomass, and municipal solid waste, with specific criteria for Class I and Class II renewables. The RPS has been amended several times, with the latest increase in 2019 (LD 1494, 129th Legislature) extending the requirements for new renewable installations.

Energy – Efficient Building Standards for State Facilities

In November 2019, Governor Mills signed Executive Order 13, mandating state agencies to create sustainability plans that meet or exceed renewable energy and greenhouse gas reduction targets. The order also requires the procurement of environmentally preferable products, encourages waste reduction practices, and considers climate change projections in new facility designs. Maine Statutes Title 5, Section 1764-A mandates that new or renovated state buildings must consider energy efficiency, set energy use targets 20% above standard, and conduct a 30-year life-cycle cost analysis. Approval for construction or renovation is contingent on demonstrating the consideration of the most energy-efficient and environmentally efficient designs

Maine Fuel Mix and Emissions Disclosure

In March of 200 Maine passed legislation directed by the state's Public Utility Commission (PUC) to establish environmental disclosure rules for retail electric billing. The PUC rules require utilities to disclose to residential and small commercial customers details regarding the fuel mix and emissions of electric generation. Such information is provided to customers four times a year in the form of a standard label and upon request. In addition, competitive electricity providers must refer to the disclosure label in all written marketing materials promoting available generation service.

Maine Uniform Building and Energy Code

The Maine Uniform Building and Energy Code sets the minimum statewide requirements for all new construction and additions to existing buildings. Exceptions include:

- Log homes
- Manufactured housing
- Post and beam or timber frame construction
- Warehouses or silos used for crop storage

The commercial requirements apply to all new commercial and institutional construction.

In April 2008, legislation (H.B. 1619) established the Technical Building Codes and Standards Board, mandating the adoption of the Maine Uniform Building and Energy Code. This new energy code for buildings incorporates the 2009 versions of:

- International Energy Conservation Code (IECC)
- International Building Code (IBC)
- International Residential Code (IRC)
- International Existing Building Code (IEBC)
- ASHRAE 90.1, 62.1, and 62.2

These standards are mandatory for residential and commercial buildings statewide and are enforced in cities and towns with populations over 4,000. On July 1, 2010, the Maine Uniform Building and Energy Code replaced the state's model energy code. Chapters 1-6 of the Maine code were updated as of January 2015.

Net Energy Billing

The Maine Public Utilities Commission's Net Energy Billing (NEB) programs allow customers to offset their electricity bills using output from small renewable generators. Customers can either own their own project or share in a project with others. The generation facility can be located on the customer's property or elsewhere within the same utility service territory.

There are two NEB programs:

1. **NEB kWh Credit Program:** Available to all electric utility customers, providing kWh credits on electricity bills.
2. **NEB Tariff Rate Program:** Available to non-residential customers, providing dollar credits on electricity bills. Rates are determined annually by the PUC.

Projects must be renewable generators less than 5 MW in size. Unused credits expire after 12 months. Entities marketing projects to residential and small commercial customers must be registered with the PUC and provide an NEB Disclosure.

Energy Storage Goal

The Maine Governor's Energy Office outlines the state's energy storage initiatives, emphasizing the importance of energy storage for grid resiliency and renewable energy integration. Maine aims to achieve 300 MW of energy storage by 2025 and 400 MW by 2030, supported by Public Law 2021 Chapter 298 (LD 528), which mandates updates to align with emissions reduction and renewable portfolio standards. The Energy & Environmental Economics (E3) market assessment identifies opportunities and challenges, evaluates storage technologies, and includes stakeholder input, highlighting energy storage's role in backup power, load management, and enhancing renewable energy availability.

Appliance Efficiency Standards

Maine's Appliance Efficiency Standards, effective November 3, 2022, set essential requirements for residential and commercial products to maintain performance and quality while reducing energy and water consumption. These standards, outlined in Chapter 180, aim to prevent inefficient and wasteful products from entering the supply chain, thereby protecting consumers from higher utility costs. The standards cover various products, including general service lamps, computers, commercial hot food holding cabinets, plumbing fittings, fixtures, portable electric spas, spray sprinkler bodies, and water dispensers. The rule applies to products

manufactured after January 1, 2023, and excludes the sale of used products. These measures support Maine’s greenhouse gas reduction goals established in 38 M.R.S. § 576-A and align with efforts in other states.

Offshore Wind Energy Target

The Maine Offshore Wind Initiative, launched in June 2019 by Governor Janet Mills, aims to explore opportunities for developing offshore wind energy in the Gulf of Maine, balancing industry growth with the state’s maritime heritage and existing marine uses. The initiative seeks to create long-term job opportunities, economic development, and investments in supply chain and port infrastructure while providing renewable power to meet Maine’s clean energy and climate goals. The state collaborates with neighboring states and the federal government to evaluate regional opportunities, particularly in partnership with the fishing industry. The initiative includes the Maine Offshore Wind Roadmap, the Gulf of Maine Research Array, and the Maine Offshore Wind Research Consortium, with public engagement facilitated through a dedicated website and regular updates.

State Tax Credits/Financial Incentives

Name	Policy/ Incentive Type	Summary	More Information
Efficiency Maine Trust	Public Benefit Fund	Maine’s public benefits fund for renewable energy, established in 1997, allows customers to voluntarily contribute to a fund supporting renewable energy projects, now managed by the Efficiency Maine Trust. The fund, supported by customer contributions and the state’s renewable portfolio standard, provides grants for renewable energy projects to non profits and consumer owned utilities across Maine.	http://www.energymaine.com/

Name	Policy/ Incentive Type	Summary	More Information
Net Energy Billing	Net Metering	Maine offers two compensation options for customer generators and community solar project subscribers: the Net Energy Billing kWh Credit Program for all customers and the Net Energy Billing Tariff Rate Program for non-residential customers. The kWh Credit Program provides monthly kWh credits for excess production, while the Tariff Rate Program offers dollar credits based on system production and utility-specific rates.	https://www.maine.gov/mpuc/regulated-utilities/electricity/neb
Efficiency Maine Commercial and Industrial	Rebate Program	- Heat Pump (Air-to-Air; Retrofit): \$500 to \$2,400 - Heat Pump Rooftop Units: \$720 – \$15,600 - Packaged Terminal Heat Pumps: \$430- \$480/unit Packaged Terminal Heat Pumps (New Construction): \$380/unit - Vertical Packaged Terminal Heat Pumps: \$380 - \$480/unit - Variable Refrigerant Flow (VRF) Systems: \$4.00/sq.ft. - \$15.00/sq.ft. - Water Source Heat Pumps: \$100 per ton for ducted units with a capacity less than 135,000 Btu/h	https://www.efficiencymaine.com/at-work/

Name	Policy/ Incentive Type	Summary	More Information
		• Demand Control Ventilation: \$500 - \$1,000 • ECM Circulator Pumps: \$75 - \$250 • Energy Recovery Ventilator (ERV) Systems: \$1.50/CFM - \$2.25/CFM • Variable-Frequency Drive (VFD) Systems: \$400 - \$2,300 • Biomass Boilers and Furnaces: Varies	
Solar and Wind Energy Property Tax Exemption	Tax Exemption	This program exempts renewable energy equipment, such as solar panels, from property tax beginning April 1, 2020. Taxpayers must apply for the credit by April 1 of the first year the exemption is requested.	

State Programs

C-PACE Efficiency Maine	
Eligibility	
Applicant	Commercial property owners in participating municipalities can apply for C-PACE financing to undertake energy efficiency and clean energy improvements on their buildings. The program is designed to help these property owners access the necessary capital to make significant upgrades that reduce energy consumption and improve sustainability.
Project	The C-PACE program provides financing secured by a property tax assessment, allowing for longer-term repayment and transferability of obligations to subsequent property owners. This financing mechanism supports deeper building retrofits and longer payback periods, making it a viable option for extensive energy efficiency projects.
More Information	https://www.energymaine.com/c-pace/

Small Battery Management Program	
Eligibility	
Applicant	Homeowners and small businesses in Maine can apply for the Small Battery Management program. To participate, they need to install an eligible battery system and maintain its connectivity. Enrollment for the 2024 season is closed, but interested applicants can join the waiting list for the next season starting October 1, 2024.
Project	The program incentivizes participants to use their battery systems to support the electric grid during peak demand periods. Batteries are charged to full capacity before demand response events and discharge 85% of stored electricity during these events. Participants receive an annual incentive of \$100 per kW of average discharge.
More Information	https://www.energymaine.com/demand-management/small-battery-management/

Home Energy Loan Program

Eligibility

Applicant

Efficiency Maine offers home energy loans to income-eligible Maine homeowners to help pay for energy upgrades. Applicants must be Maine residents, not businesses, with a minimum credit score of 580 and a maximum debt-to-income ratio of 70%. They must complete an income eligibility verification and have no recent bankruptcies, foreclosures, or repossessions.

Project

The project involves energy upgrades eligible for Efficiency Maine residential rebates, such as insulation, heat pumps, and moisture mitigation. Upgrades must be installed by an Efficiency Maine Residential Registered Vendor. Loans can cover up to \$7,500 for unsecured loans, with interest rates as low as 5.99%.

More Information

<https://www.efficiencymaine.com/at-home/energy-loans/>

ENDNOTES

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- ² <https://www.maine.gov/dacf/flood/mapping.shtml>
- ³ [SHMP2023 Risk Assessment TIER 1 & TIER 2.pdf \(maine.gov\)](#)
- ⁴ https://www.maine.gov/mema/sites/maine.gov.mema/files/inline-files/Maine_SHMP2023_Final_full.pdf
- ⁵ <https://www.energy.gov/sites/default/files/2024-04/DOE%20CESER-Risk%20Assessment%20Essentials%20Guide%20for%20State%20Energy%20Security%20Plans.pdf>
- ⁶ [Maine_SHMP2023_Final_full.pdf](#)
- ⁷ CMP's Climate Change Resilience Plan
- ⁸ [How States Protect Pipelines from Excavation Damage \(ncsl.org\)](#)
- ⁹ [U.S. regulator releases report blaming Freeport LNG blast on inadequate processes \(Reuters\)](#)
- ¹⁰ [Statistics Say Large Pandemics Are More Likely Than We Thought \(duke.edu\)](#)
- ¹¹ [Report \(nerc.com\)](#)
- ¹² [Northern Maine Report_09MAR2022.pdf](#)
- ¹³ [New England's electricity use to increase steadily over next decade, according to 2024 CELT Report - ISO Newswire](#)
- ¹⁴ [Renewable Portfolio Standard | Governor's Energy Office \(maine.gov\)](#)
- ¹⁵ [U.S. Energy Information Administration - EIA - Independent Statistics and Analysis](#)
- ¹⁶ [Maine Climate Office \(umaine.edu\)](#)
- ¹⁷ <https://www.iso-ne.com/static-assets/documents/2022/10/2022-strategic-plan-vision-in-action.pdf>
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- ²⁰ <https://www.maine.gov/tools/whatsnew/index.php?topic=puc-pressreleases&id=12895749&v=article088>
- ²¹ <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>
- ²² <https://www.energy.gov/gdo/grid-resilience-and-innovation-partnerships-grip-program-projects>
- ²³ <https://www.energy.gov/sites/default/files/2023-11/DOE GRIP 2078 Central%20Maine%20Power v5 RELEASE 508.pdf>
- ²⁴ <https://www.maine.gov/governor/mills/news/governor-mills-senators-collins-king-and-congresswoman-pingree-announce-nearly-150-million>

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- ²⁵https://www.energy.gov/sites/default/files/2023-08/082123_Grid%20Resilience%20State%20and%20Tribal%20Formula%20Grants%20Fact%20Sheet_Maine.pdf
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