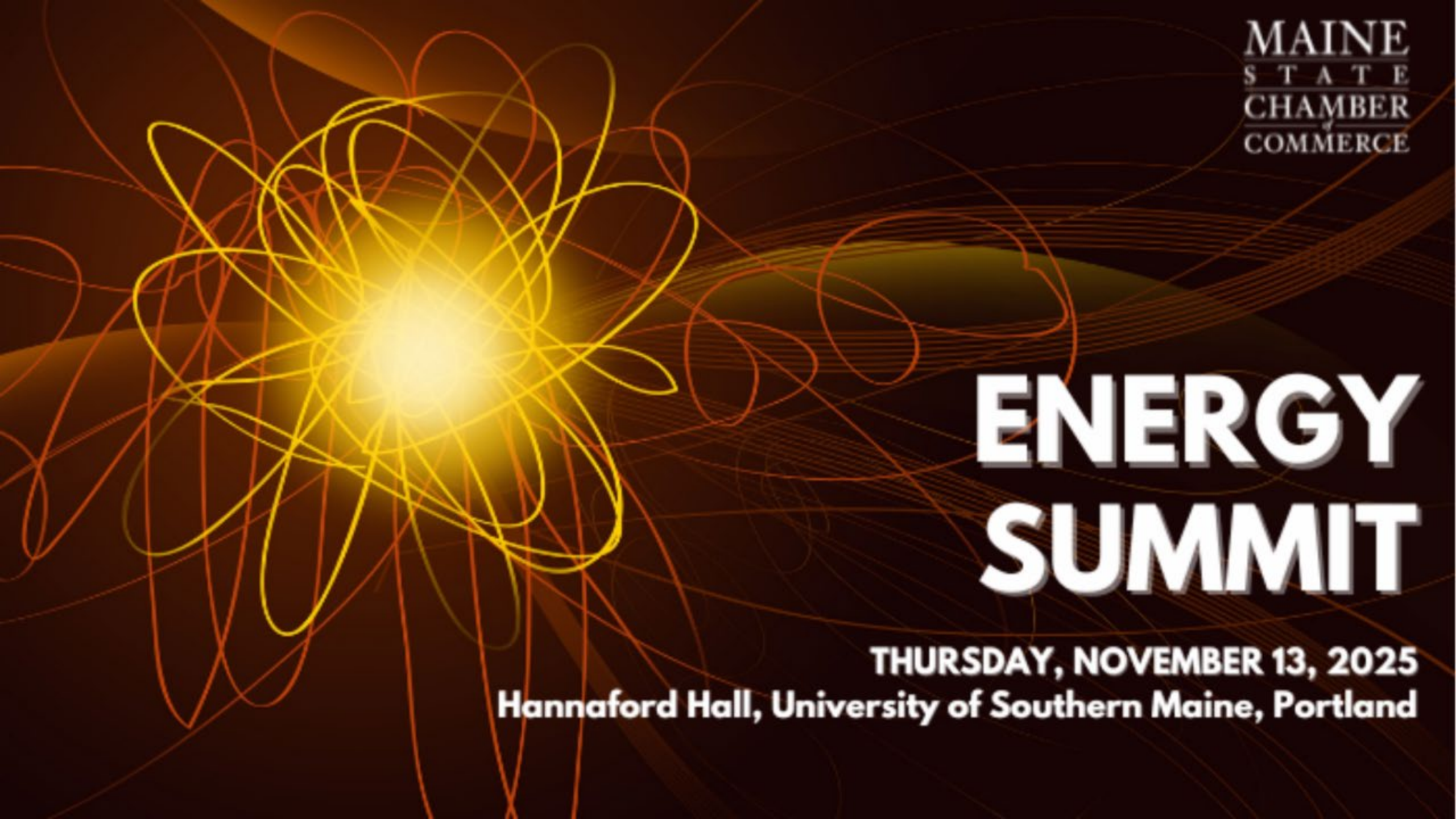
MAINE
STATE
CHAMBER
of COMMERCE
ENERGY
SUMMIT
THURSDAY, NOVEMBER 13, 2025
Hannaford Hall, University of Southern Maine, Portland

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Welcome!

Department of Energy Resources Update & Priorities

Dan Burgess
Acting Commissioner, Maine Department of Energy Resources

CMP's Investing in Maine's Future Plan

Linda Ball
President and CEO, Central Maine Power

Fireside Chat: Federal Energy Outlook

Angus King
United States Senator

Patrick Woodcock
President & CEO, Maine State Chamber of Commerce

How we got here, what's ahead?

Barbara Alexander
Policy Consultant, AARP Maine

A Brief History and Explanation: Electricity Rates and Bills

Barbara Alexander
Barbara Alexander Consulting LLC
Consultant to AARP Maine
November 2025

WHY ARE ELECTRICITY BILLS SO IMPORTANT?

Electricity is essential to the health and safety for all consumers and has a vital impact as well on economic development.

Electricity rates are regressive because they require lower and fixed income customers to pay a higher percentage of their income to pay for essential electric service compared to higher income customers.

Contrast the regressive impact of electricity bills with more progressive income taxes that shield lower income from tax burdens and shift that burden to higher income households.

This aspect of electricity prices and bills means that care must be taken to ensure that rates and bills are affordable to those most vulnerable, particularly older and low- and moderate-income Mainers.

WHAT HAPPENED WITH RESTRUCTURING?

- In 1997 there was a push to “deregulate” the generation side of the electric business and rely on competition to build new generation resources and set prices based on the “market.”
- About 15 states adopted this model so electric utilities sold their generation assets
- CMP and Versant Power do not own or manage generation
- The costs of regional or interstate transmission and generation supply is subject to the Federal Energy Regulatory Commission (FERC) and the regional power markets (ISO New England)
- Maine only regulates the distribution service for CMP AND VERSANT: poles, wires, local distribution system; reliability; customer service; public policy mandates.
- The COUs did not divest and are responsible for building or contracting for generation supply

WHERE DOES OUR POWER COME FROM?

- Maine PUC buys Standard Offer via competitive bids from the ISO New England wholesale market for CMP. Some of Versant's power is from Canada.
- Standard Offer reflects the market price of electricity for residential and small commercial customers based on the RFP issued by the PUC.
- The PUC buys 100% of the residential and small commercial customer load annually and the rate is fixed but changes January 1.
- CMP and Versant Power bill and collect Standard Offer under threat of disconnection.

GENERATION BASED IN MAINE IS MOSTLY RENEWABLE

- In 2023, renewable resources fueled 67% of Maine's total electricity net generation, with hydropower accounting for about two-fifths of the state's total renewable generation.
- Solar is about 9% of output and has grown from 150 MW in 2020 to nearly 800 MW by 2023 and over 1,700 MW by the end of 2024.
- Maine uses less energy than 44 states, but Maine's economy uses significantly more energy per dollar of GDP than any other New England state and more than the national average.
- In 2022, Maine's natural gas use on a per capita basis was the fourth-lowest among the states, in large part because most of Maine lacks local natural gas distribution systems.
- Most Maine homeowners still use fuel oil for home heating, but electrically powered heat pumps are making significant inroads.
- NONE OF THESE GENERATION RESOURCES ARE OWNED BY OUR UTILITIES. THEY SELL THEIR POWER FOR AN UNREGULATED PROFIT.

Source: EIA: https://www.eia.gov/state/?sid=ME

CMP Standard Offer Resource Mix January 2025

Natural Gas:	29.2%
Nuclear Power:	10.9%
Solar:	8.7%
Hydro:	18.4%
Wind:	10.8%

Versant Power Standard Offer Resource Mix: Bangor Hydro District January 2025

- Natural Gas: 39.2%
- Nuclear: 15.1%
- Hydro: 15.3%
- Wind: 6.3%
- Solar: 7.6%

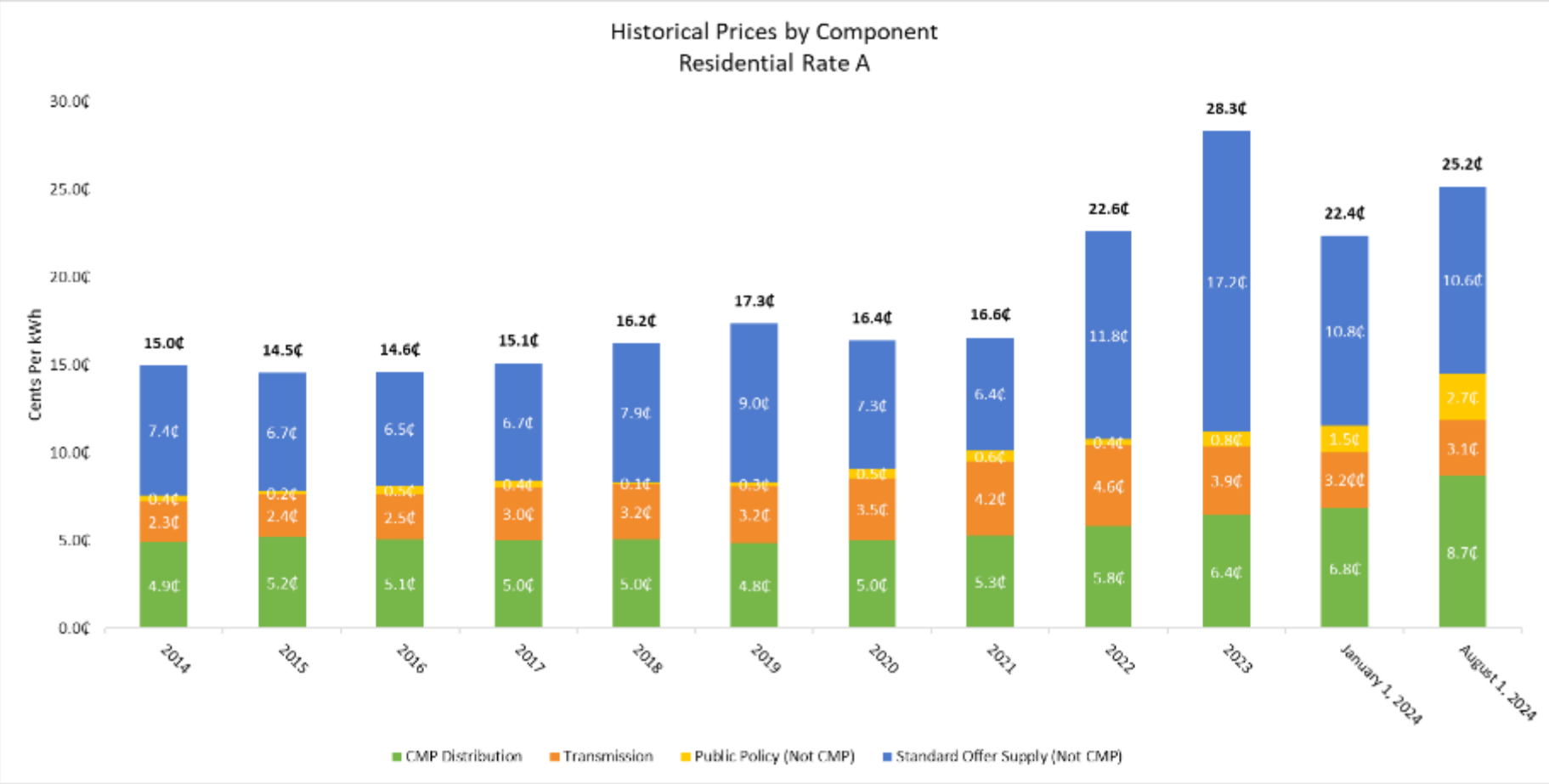
Versant Power Standard Offer Resource Mix: Maine Public District January 2025

Hydro:	78.4%
Wind:	13.5%
Solar:	5.4%

CMP AND VERSANT ISSUE BILLS THAT INCLUDE COSTS THEY DON'T CONTROL

- **Standard Offer** prices reflect the wholesale market. This price changes every year on January 1. There is no profit to CMP or Versant for Standard Offer.
- The PUC includes federally regulated **transmission costs** set by ISO New England in the "delivery" part of the bill. This part of the CMP and Versant Power bills pay for new transmission investments throughout New England. The earnings or profits for transmission owners (private or utilities) are set by ISO New England and not the Maine PUC.
- The Maine Legislature has mandated certain **public policy costs** to be paid for in distribution rates for CMP and Versant Power Customers:
  - Net Energy Billing: subsidies for community and rooftop solar programs
  - Renewable energy contracts obtained via competitive bids by the PUC
  - Efficiency Maine Trust
  - Low Income Assistance Program
- Public policy costs are passed through by the PUC to customers without any profits for utilities.

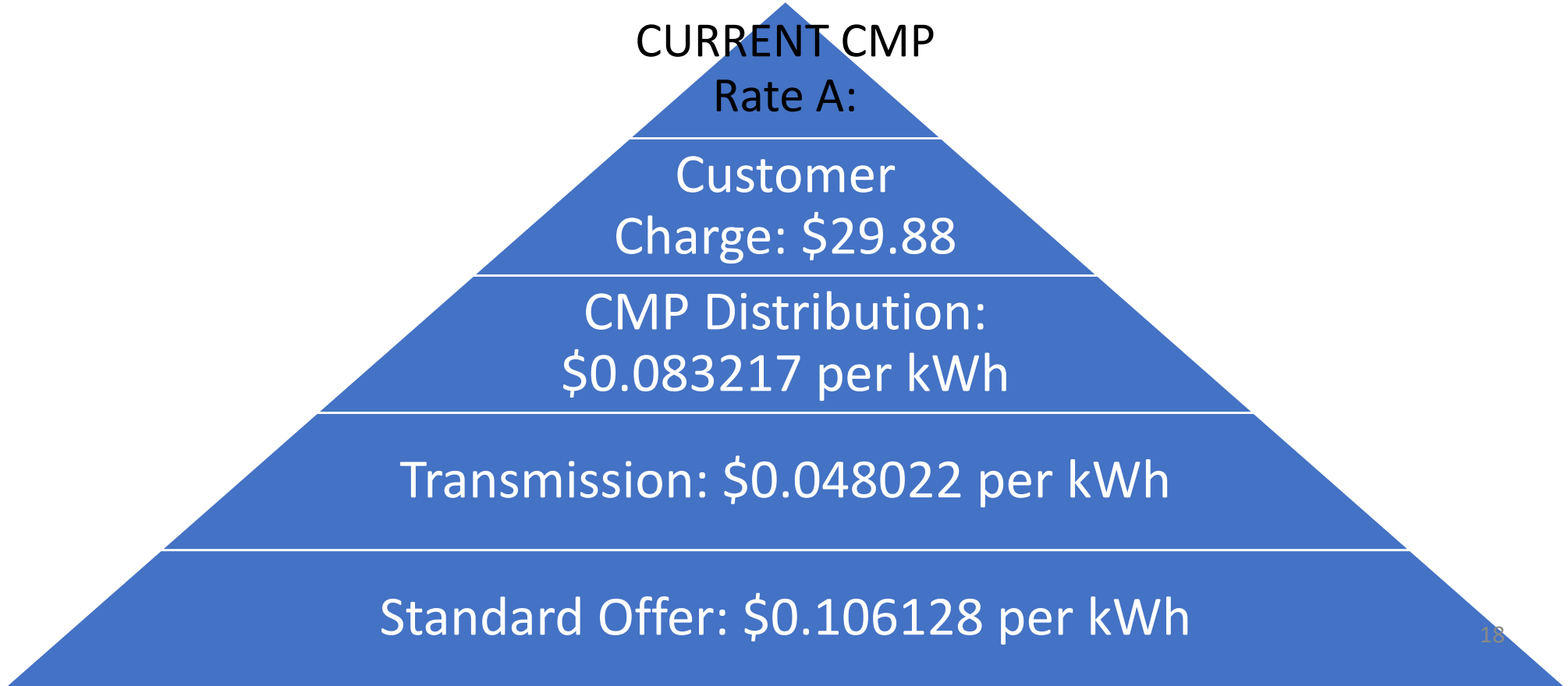
CMP HISTORICAL RESIDENTIAL PRICES



CMP RESIDENTIAL BILL 2025

Stranded Costs, also known as Public Policy Charges, are recovered through the Monthly Fixed Customer Charge, which has more than doubled for these charges since 2022. The breakdown of the $29.88 Customer Charge is as follows:

- Distribution Charges (CMP): $17.44
- Net Energy Billing: $11.41 (proposed for 10/1/1025)
- Efficiency Maine Trust: $0.38
- Low Income Assistance Program: $0.07



VERSANT POWER
BANGOR DISTRICT 2024

- The only part of this bill subject to Maine rate regulation is the “distribution service” portion.
- Most of the “Public Policy Charges” are Net Energy Billing or solar subsidies.

RATES

DISTRIBUTION SERVICE	$	0.09532	per kWh
STRANDED COST - VARIABLE	$	(0.00172)	per kWh
TRANSMISSION SERVICE	$	0.04544	per kWh
CONSERVATION CHARGE	$	0.00641	per kWh
TOTAL DELIVERY SERVICE	$	0.14545	per kWh
PUBLIC POLICY CHARGE	$	11.64	per month

MINIMUM CHARGE

DISTRIBUTION SERVICE	$	9.53	per month (includes energy consumption of 100 kWh)
PUBLIC POLICY CHARGE	$	11.64	per month
TOTAL MINIMUM BILL	$	21.17	per month (includes energy consumption of 100 kWh)

DOES THE RETAIL MARKET FOR ELECTRICITY HELP LOWER BILLS?

- Every study of Maine's retail market prices billed by "competitive electricity providers" or CEPs documents that over time these retail marketers charge more than the Standard Offer.
- Studies by the Maine Public Advocate have documented that from 2016 through 2024 Maine families and LIAP customers have paid over **$150 million in excess costs to CEPs.**
- The Maine results are similar to those documented in Massachusetts, New York, Pennsylvania, Maryland, Ohio, Connecticut, and Illinois.

LOW INCOME ASSISTANCE PROGRAMS

- Maine's current program is funded at less than a $1.00 a month compared to $7-9/month for Net Energy Billing
- Maine's program eligibility criteria at 150% of federal poverty do not even match the 60% of Maine medium income used for LIHEAP
- The program design relies on lump sum payments and does not require monthly bill credits or reductions as in all other New England state programs
- Attempts to increase funding are met with concerns about bill impacts

SOME OBVIOUS OBSERVATIONS

- CMP and Versant Power issue and collect bills for over half the bill's charges they do not control and for which they don't earn a profit
- After ordering utilities to divest generation, Maine has sought to construct its own preferred generation, and we pay for those mandates in distribution services and monthly customer charges
- Our electric generation in Maine is mostly renewable energy, but we don't own or manage it for our benefit in the Standard Offer; the regional market is dominated by natural gas, nuclear, and hydro ownership not within our control
- The retail energy market [CEPs] for residential customers has resulted in increased costs without any additional benefits.

AFFORDABILITY

- Affordability should have been a higher priority when decisions were made about Maine's generation supply mandates. Least cost criteria, competitive bids, and a link to bill impacts were not included in these solar mandates. Competitive bid solar is 2 to 3 times cheaper than the statutory NEB payments.
- Decisions have promised benefits that are not within our jurisdiction to deliver due to the lack of ownership and control.
- Maine's low-income assistance programs are much lower than what we pay to subsidize private solar developers or even fund our efficiency programs.
- **In light of these historical decisions and bill impacts: Can we modernize the grid and improve reliability and storm restoration AND help our vulnerable customers afford basic electric service?**

Panel: Maine's Electricity Affordability Challenge

Phil Bartlett, Chairman, Maine Public Utilities Commission

Dan Dolan, President, New England Power Generators

John Holtz, Senior Director, NRG Energy

Michael Stoddard, Executive Director, Efficiency Maine

Moderator: Tom Welch, Former Chair, Maine Public Utilities Commission

Keynote

Unitil: A Story of Natural Gas in Maine

Robert Hevert

President & Chief Administrative Officer, Unitil

Unitil: A Natural Gas Story

Maine Energy Summit

November 13, 2025

Today's Discussion

- About Unitil
  - Who We Are
  - Acquisition Updates and Commitments
  - Focus on Customers and Sustainability
- Supporting Maine's Climate Policy Objectives
  - Maine's Climate Objectives and Policies
  - Energy Consumption and Sources
  - Carbon Emissions and Affordability
- Looking Forward: Unitil's Focus on Cost-Effective Carbon Mitigation Strategies
- Observations and Conclusions

About Unitil

Regulated utility focused on creating long-term sustainable value for customers, communities, and investors

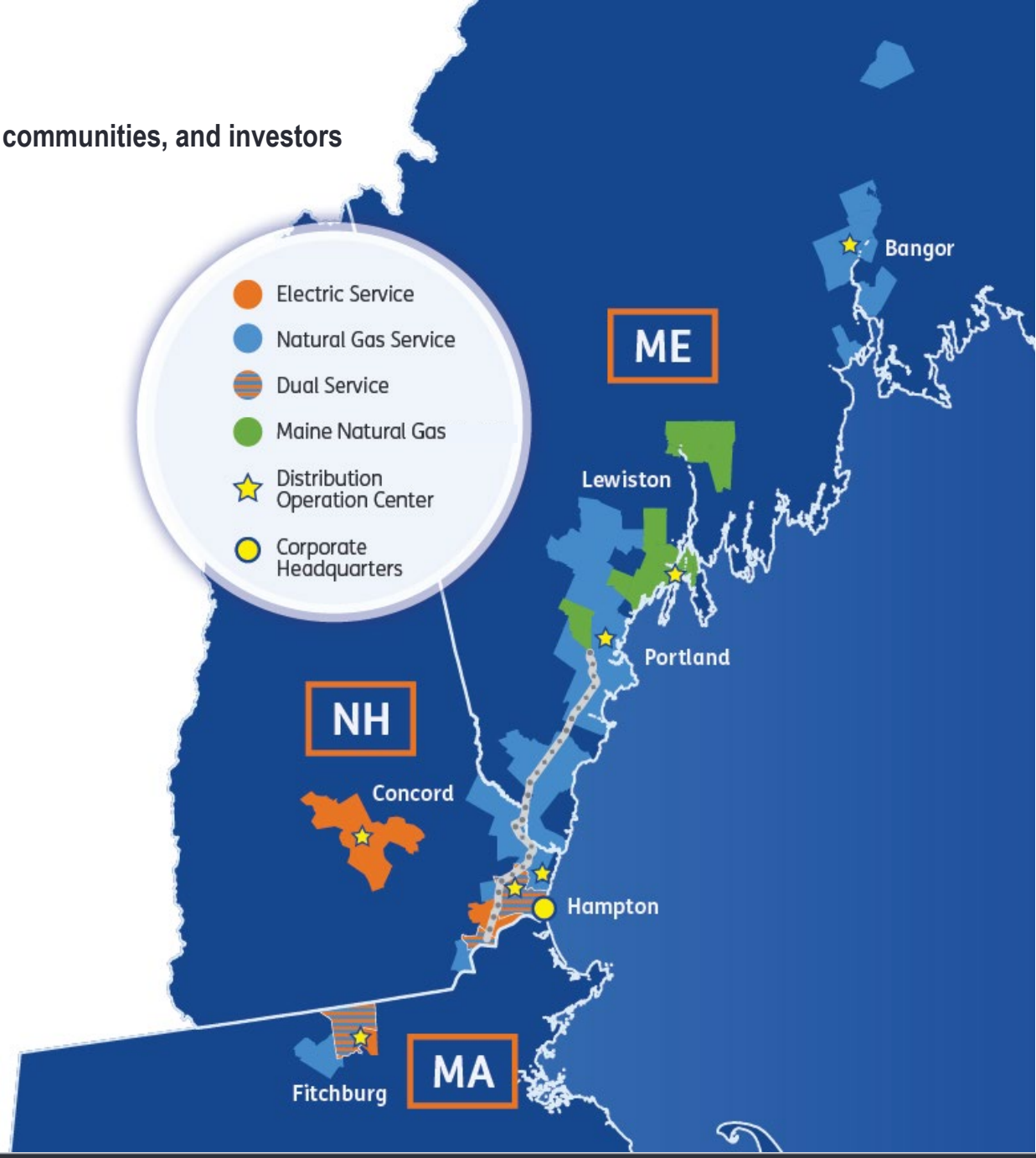
Local distributor of electricity and natural gas in Maine, New Hampshire, and Massachusetts

- Fully regulated electric and gas operations serving about 213,000 customers
- Growing customer base supported by strong regional economic growth
- Pending acquisition of Aquarion MA and NH broaden Unitil's service offerings to water distribution

Unitil's service to Maine customers began in 1849

- 29th Legislature established the Portland Gas-Light Company
- Portland Gas becomes Northern Utilities in late 1970s
- Northern Utilities acquired by Unitil in 2008
- MNG, BNG Founded in 1998 and acquired by Unitil in 2025

Looking forward, we are committed to serving our customers in Maine, and to supporting the State's climate objectives



Acquisitions Update

Maine gas utility transactions have proceeded as expected

Bangor Natural Gas

- Transaction closed January 31, 2025
- Integration is complete

Maine Natural Gas

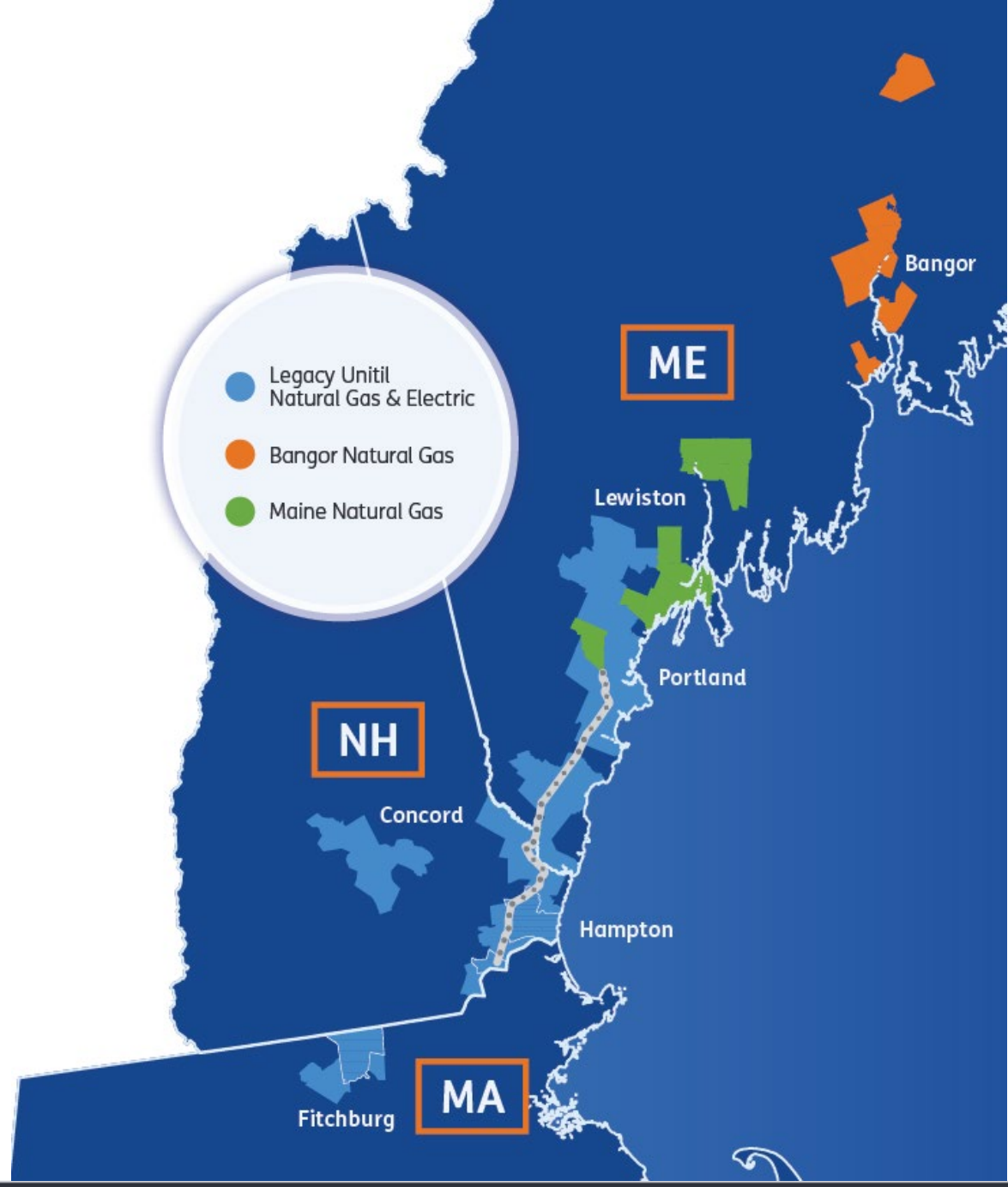
- Transaction closed October 31, 2025
- Integration is currently underway

Transaction Highlights

- 15,000 new natural gas customers
- 580 miles of distribution and nine miles of transmission pipelines
- Fully modern systems
- Well-managed operations
- Synergies with existing operations

Merger Commitments

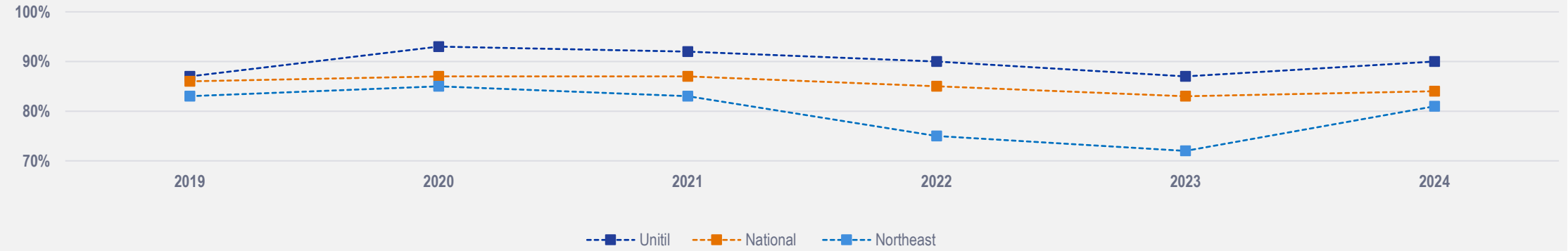
- Greenhouse Gas Monitoring, Reporting, Mitigation
- Gas Operations, Pipeline Safety, Leak Odor Response
- No Recovery of Transaction Costs, Acquisition Premium
- Synergies to Flow to Customers through Cost-of-Service Ratemaking
- Rate Case Stay-Out Through June 1, 2027



Delivering Exceptional Customer Service

Unitil's customer satisfaction consistently exceeds regional and national peers(1)

Customer Satisfaction Consistently Exceeds Peers



90% OVERALL CUSTOMER SATISFACTION

1ST OUT OF 8 NORTHEAST UTILITIES

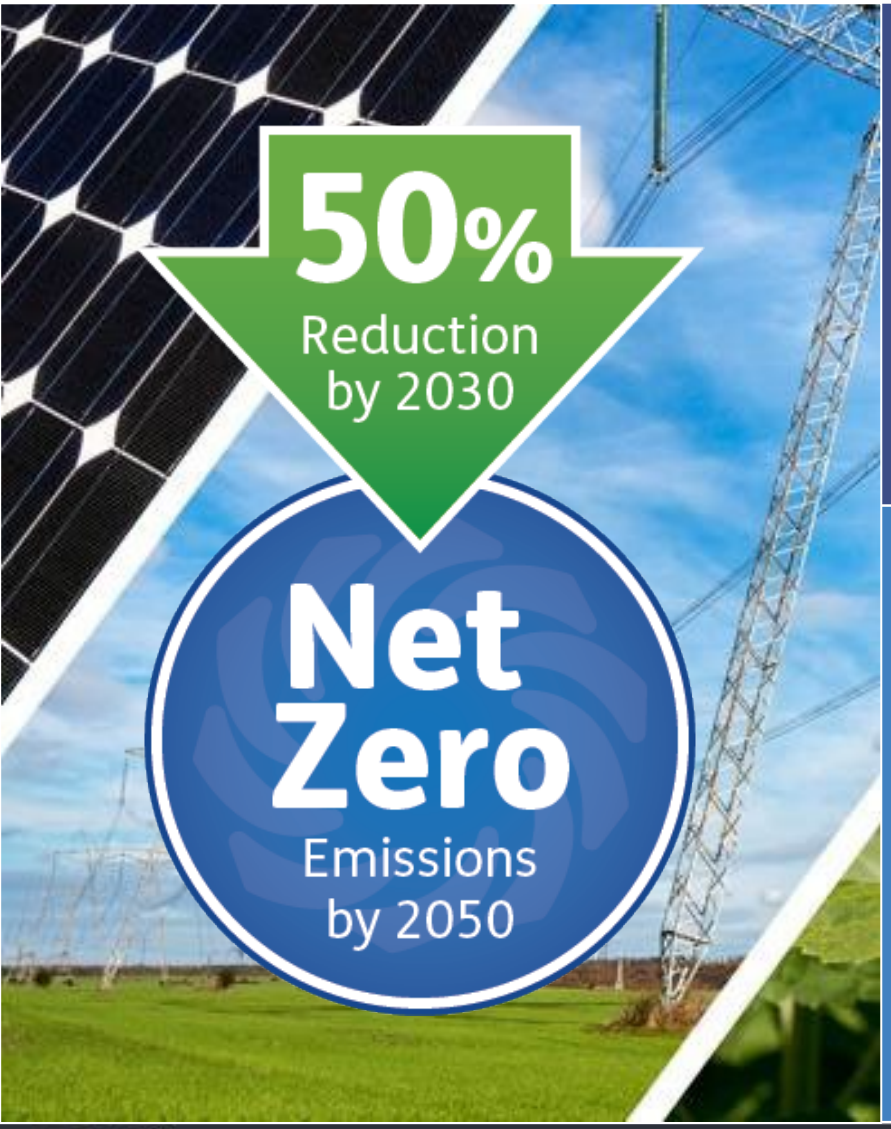
1ST OUT OF 23 EASTERN UTILITIES

2nd OUT OF 118 UTILITIES	Having Friendly Employees
4th OUT OF 121 UTILITIES	Having Knowledgeable and Well-Trained Employees
5th OUT OF 121 UTILITIES	Being Responsive
7th OUT OF 121 UTILITIES	Showing Concern and Caring
10th OUT OF 121 UTILITIES	Being a Company You Can Trust

(1) Escalent Utility Customer Satisfaction Survey conducted in 2024

Corporate Sustainability and Responsibility

Unitil recently released our 2025 Corporate Sustainability and Responsibility Report, which notes all key metrics are on target



Safety and Reliability

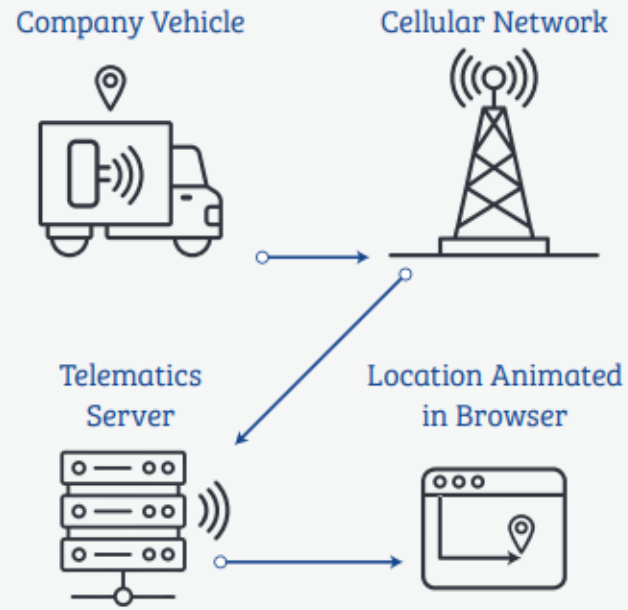
91%	Gas Emergency Response Time Within 30 Minutes
0.92	Days Away, Restricted or Transferred (DART)

People

90%	Overall Customer Satisfaction
91%	Of Employees are proud to work for Unitil
84%	Employee Satisfaction Score

Leveraging Fleet Data for Sustainable Decision Making

Implemented telematics on all Company-owned vehicles, enabling greater efficiency



Climate Policies and Customer Affordability

Maine's climate goals and policy considerations recognize the challenges created by affordability concerns

Maine Policy and Legislative Initiatives

Greenhouse Gas Emission Reductions (38 M.R.S. § 576-A sub-§§1-3)

- Required Greenhouse Gas Reductions

2030	2045	2050
45% reduction (1990)	Carbon Neutral	80% Reduction (1990)

- Monitoring, Reporting, and Compliance
  - Prioritize reductions by sectors that are the most significant sources of greenhouse gas emissions;
  - Consider gross greenhouse gas emissions reductions achieved by each sector since 1990;
  - Consider the cost-effectiveness of future gross greenhouse gas emissions reductions by sector

Maine Won't Wait

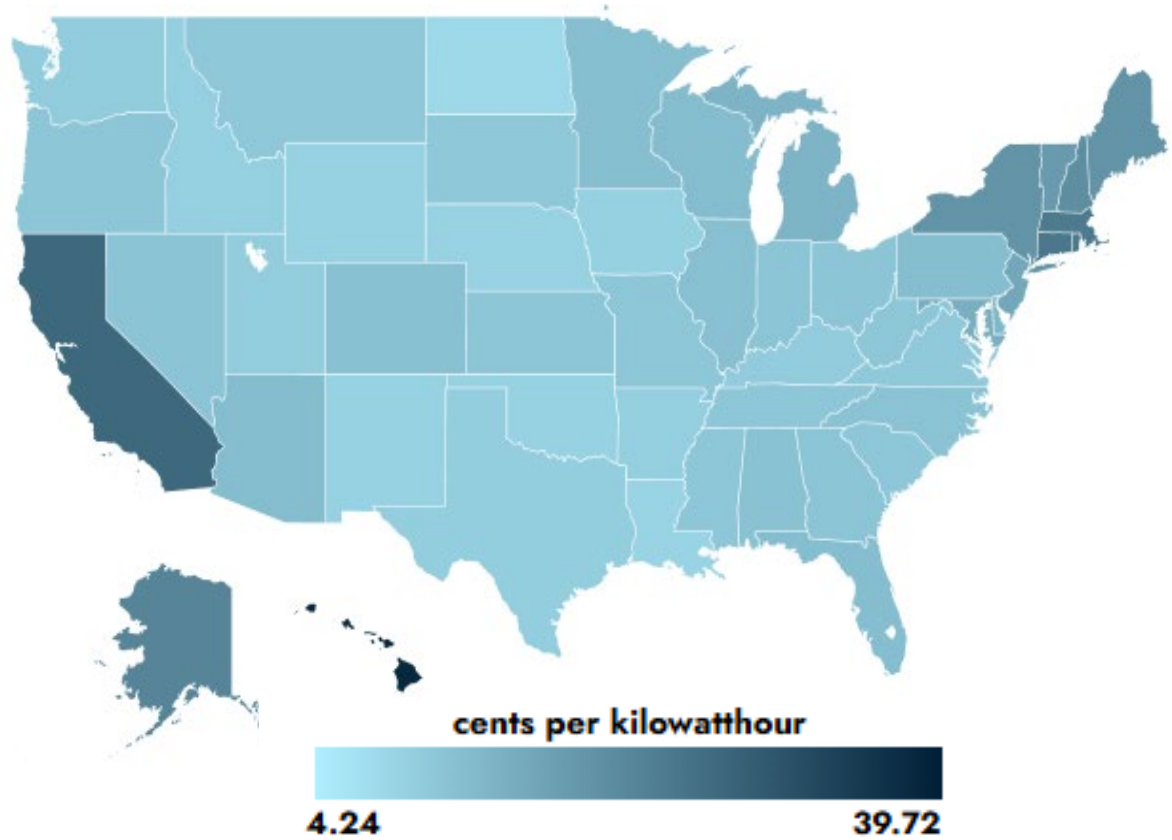
- Climate action plans developed by the Maine Climate Council; electrification of transportation and buildings are key priorities

Fuel Choice Legislation

- Maine recently became the 27th state to pass fuel choice legislation: *"An Act to Preserve Heating and Energy Choice by Prohibiting a Municipality from Prohibiting a Particular Energy System or Energy Distributor"*

PUC Inquiry Regarding the Future of Natural Gas (Docket. No. 2025-00145)

Average Retail Electricity Prices (2024)



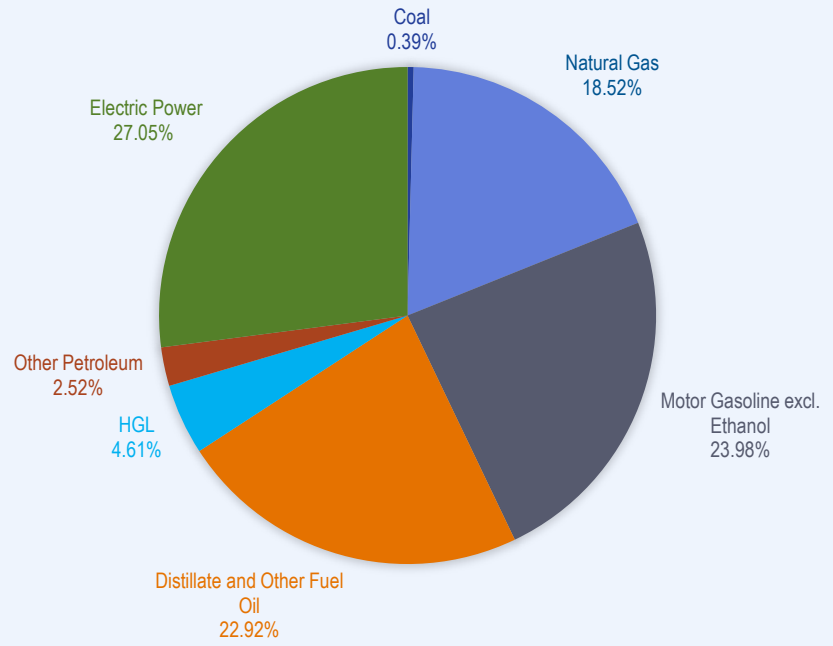
Source: U.S. Energy Information Administration - EIA - Independent Statistics and Analysis

Average Retail Price of Electricity: all sectors, 20243 (cents/kWh)

Energy Consumption and Carbon Dioxide Emissions in Maine

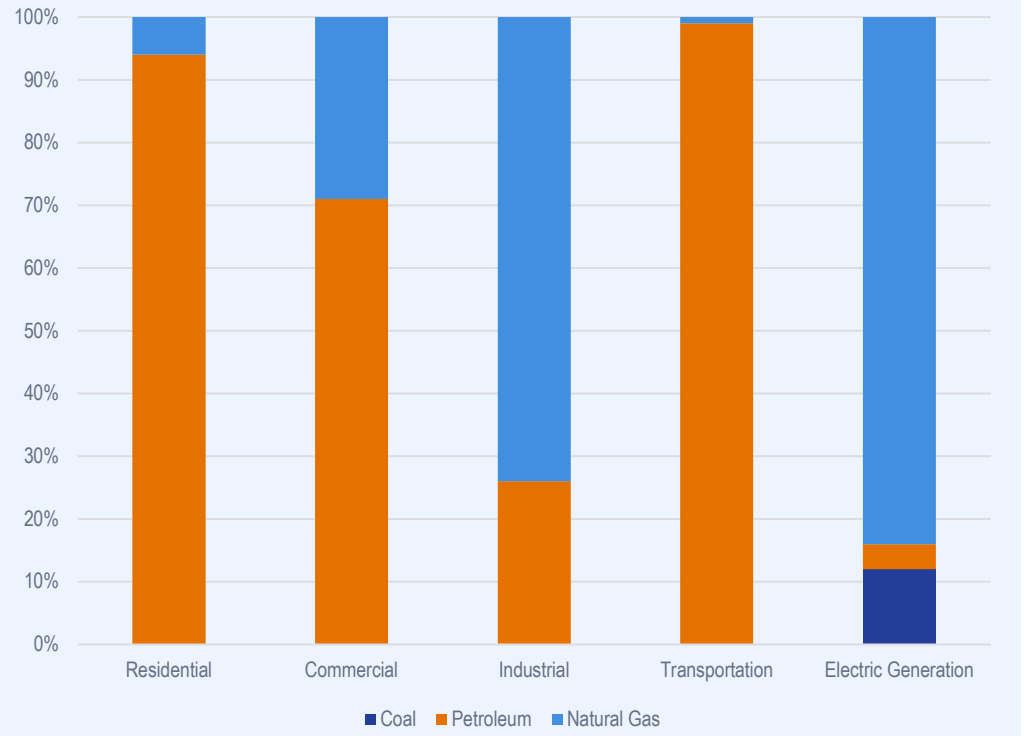
Carbon mitigation strategies must consider current energy consumption and sector-specific emissions

Maine Total Energy Consumption by Fuel (MMBtu)[1]



Fully electrifying Maine's energy consumption would require adding 3.7 times the amount of electric power currently consumed.

Maine Carbon Dioxide Emissions from Fossil Fuel Combustion[2]



As the percentage of natural gas-fired electric generation has increased, regional carbon dioxide emissions have fallen

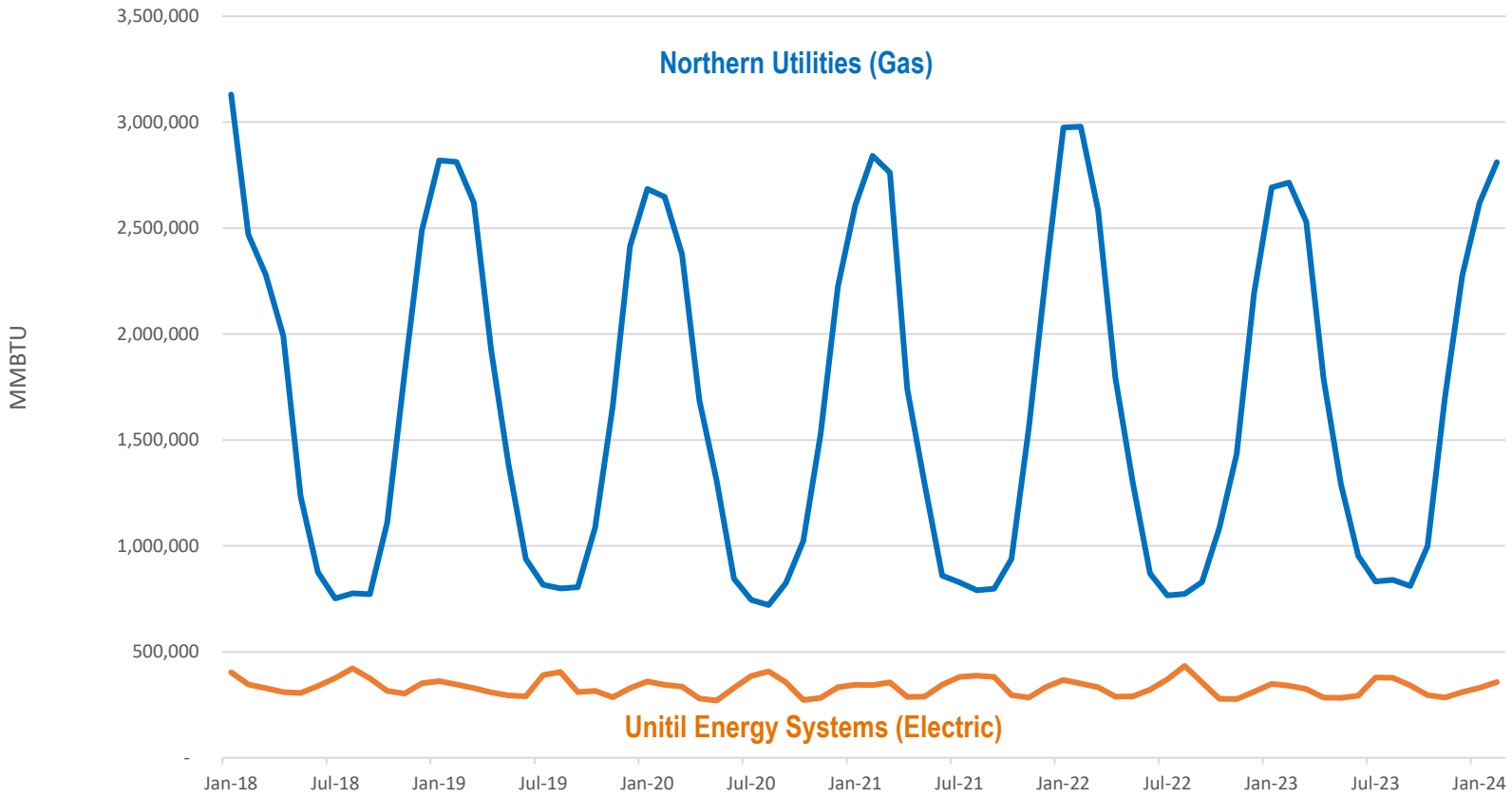
[1] Source: https://www.eia.gov/state/?sid=ME#tabs-1. As of 2023

[2] Source: Tenth Biennial Report on Progress toward Greenhouse Gas Reduction Goals, June 2024, Bureau of Air Quality, Table B-3, Maine Department of Environmental Protection. As of 2021.

Energy Delivered by Unitil's Gas and Electric Distribution Systems

Gas system delivers far more energy than electric infrastructure

Gas and Electric Delivered Energy (NH & ME)



Energy delivered by natural gas in comparison to electricity

5X Annually

8X Cold Winter Month

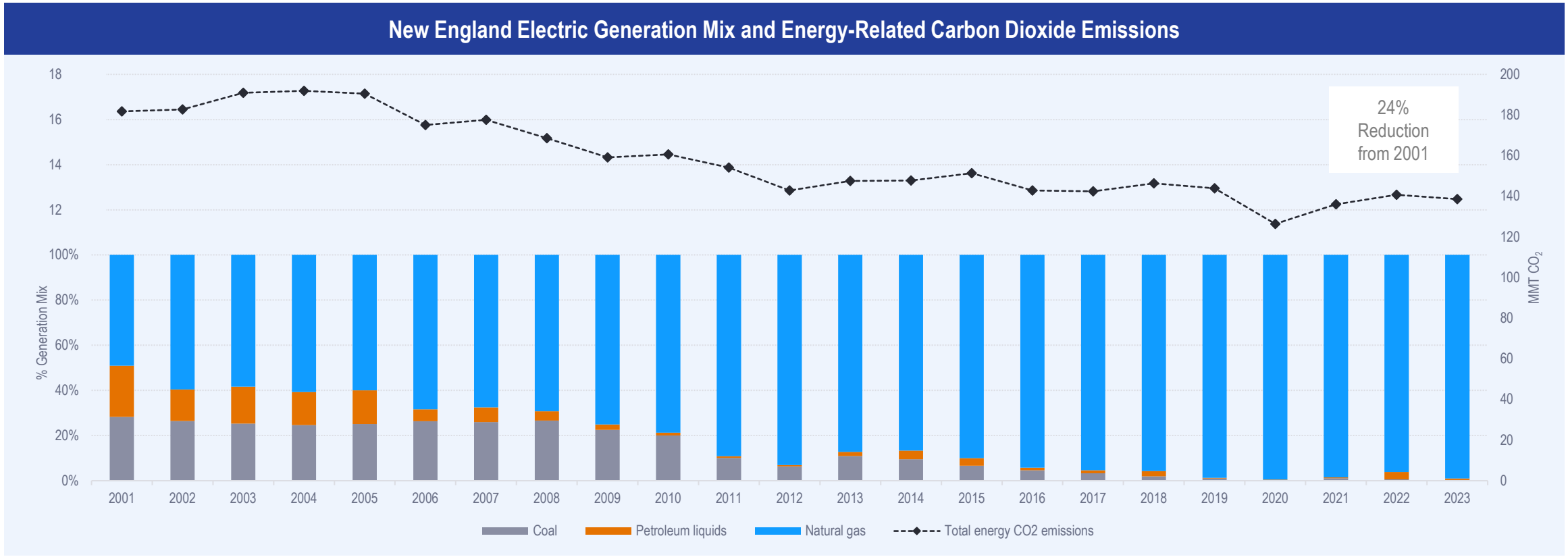
11X Design Day Peak

72,000 Natural gas customers

78,000 Electric customers

New England's Fossil Fuel-Fired Generation Mix and CO_2 Emissions

Carbon dioxide emissions decline as natural gas displaced coal and fuel oil in the New England generation mix

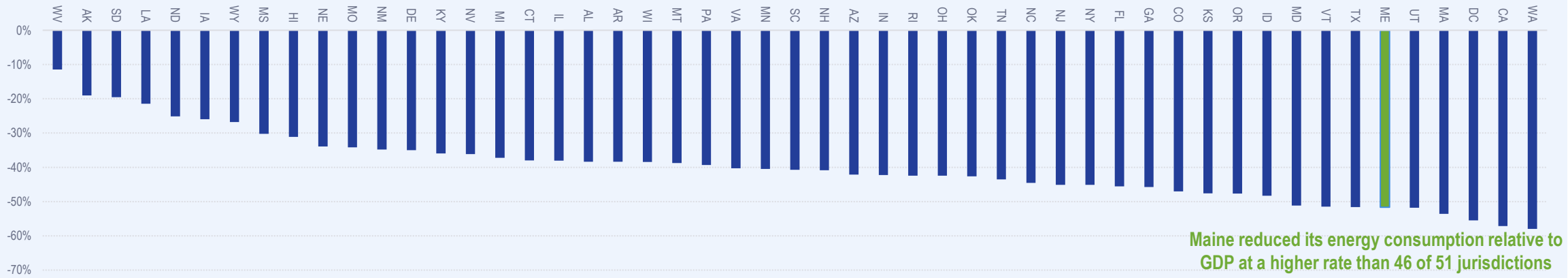


Source: https://www.eia.gov/electricity/data/browser, Net generation for electric power

Maine's Energy Consumption and Emissions Profile

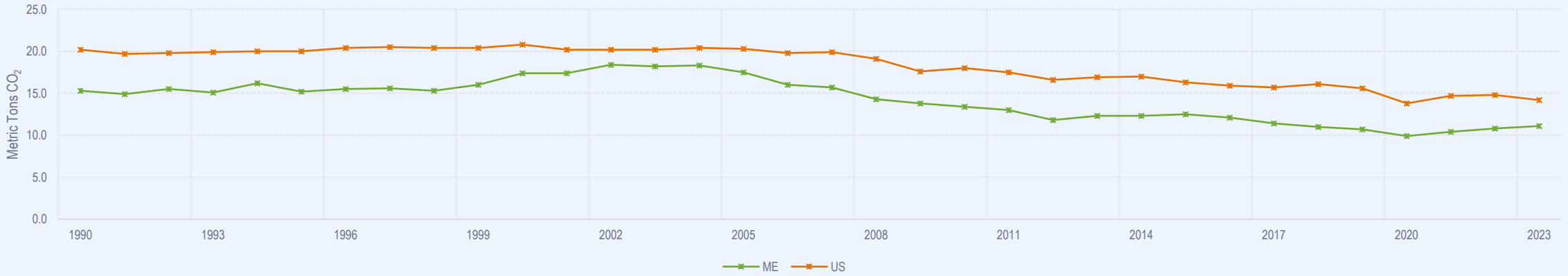
As Maine has reduced its energy consumption as a percentage of GDP…

Change in Energy Consumption Per $ Gross Domestic Product (1997 – 2013)



…its per capita CO_2 emissions have remained below the U.S. average

Maine and U.S. CO_2 Emissions Per Capita



Source: U.S. Energy Information Administration, State Energy Data System

Maine's CO_2 Emissions Are Among the Lowest in the Nation

Maine's current GHG emissions represent 0.32 percent of the country's carbon footprint, and are driven largely by transportation

Sector (Maine)	% U.S. CO_2 Emissions
Residential	0.06%
Commercial	0.04%
Industrial	0.03%
Transportation	0.17%
Electric Production	0.03%
Total	**0.32%**

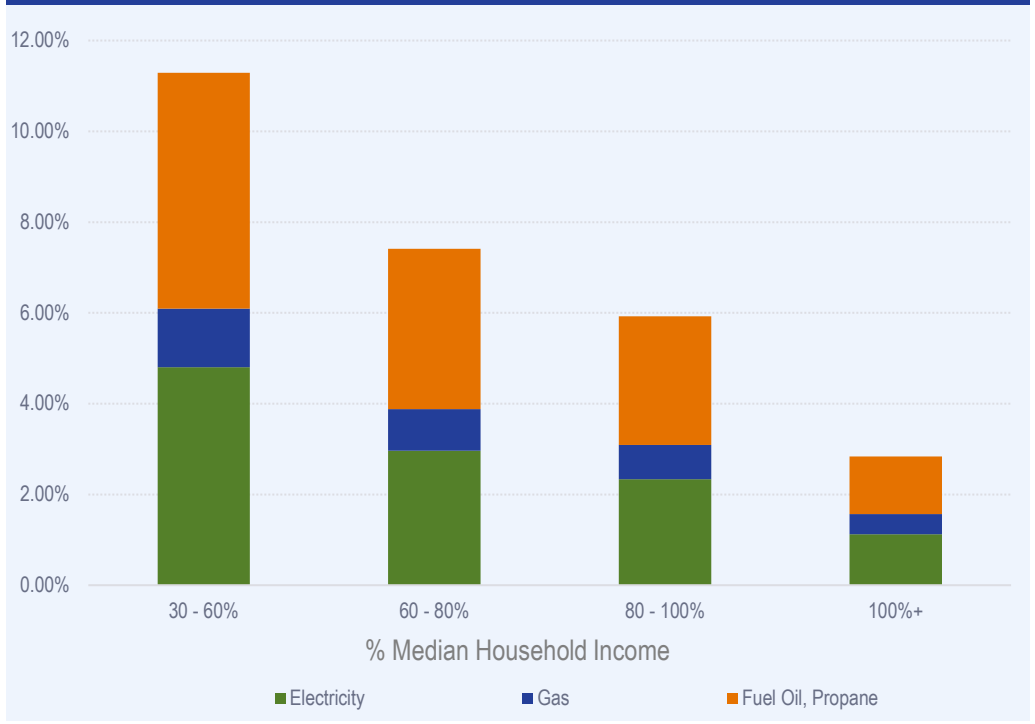
Combined, Maine's Residential, Commercial, and Industrial sectors contribute only about 0.13% of the nation's carbon dioxide emissions.

Source: U.S. Energy Information Administration, State Energy Data System

Energy Burdens in Maine and Across the U.S.

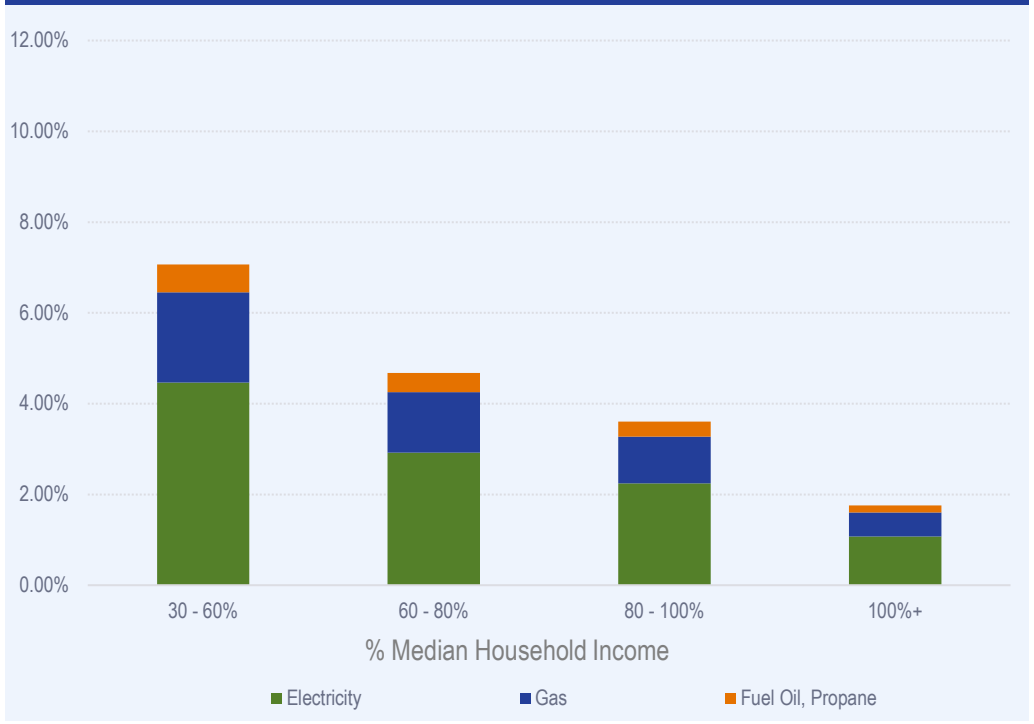
Maine's energy burden is driven by its unique combination of home heating fuels

Maine Energy Burden



About five of every ten Maine households use petroleum products, primarily heating oil or propane, for home heating, a larger share than in any other state. - EIA Maine State Profile and Energy Estimates, accessed 11/7/2025

U.S. Energy Burden



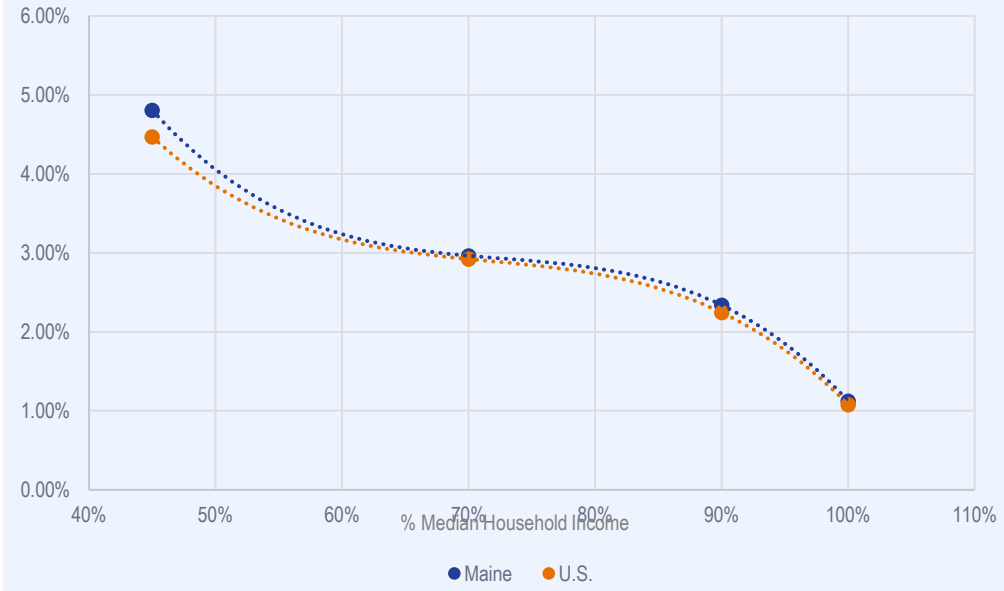
The U.S. average energy burden is driven principally by electricity and natural gas.

Source: https://www.energy.gov/scep/slsc/lead-tool, accessed 11/10/25. Energy Burden is average annual energy cost by fuel as a percentage of household income.

Energy Burdens in Maine and Across the U.S. by Household Income Levels

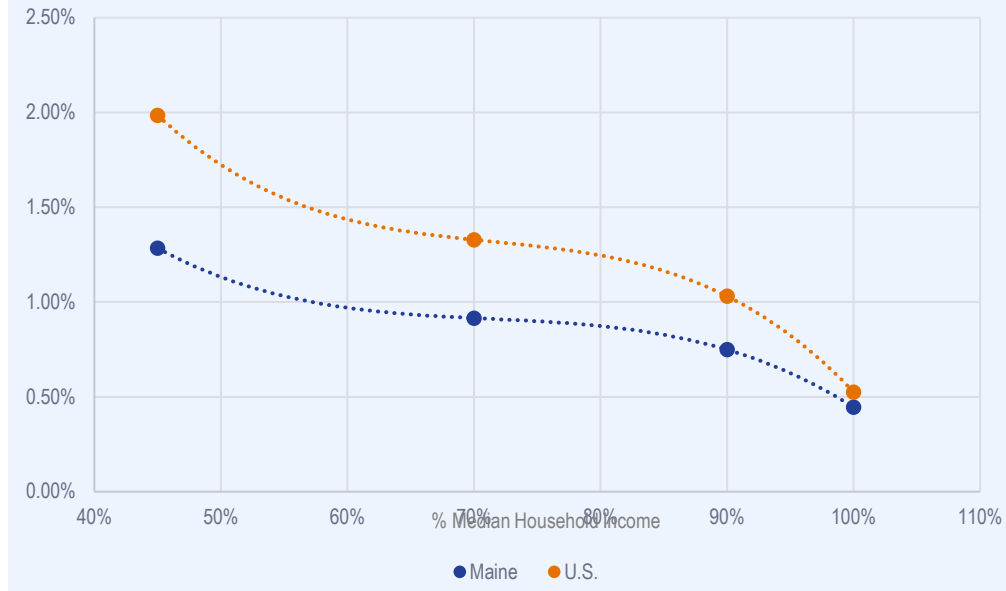
Across the Country, including Maine, the energy burden for low to moderate income households is substantial

Electricity Energy Burden



- In Maine, the Electricity Energy Burden is about 4.3 times higher for lower income households relative to higher income households
- Across the U.S., the Electricity Energy Burden is about 4.2 times higher for lower income households relative to higher income households

Natural Gas Energy Burden

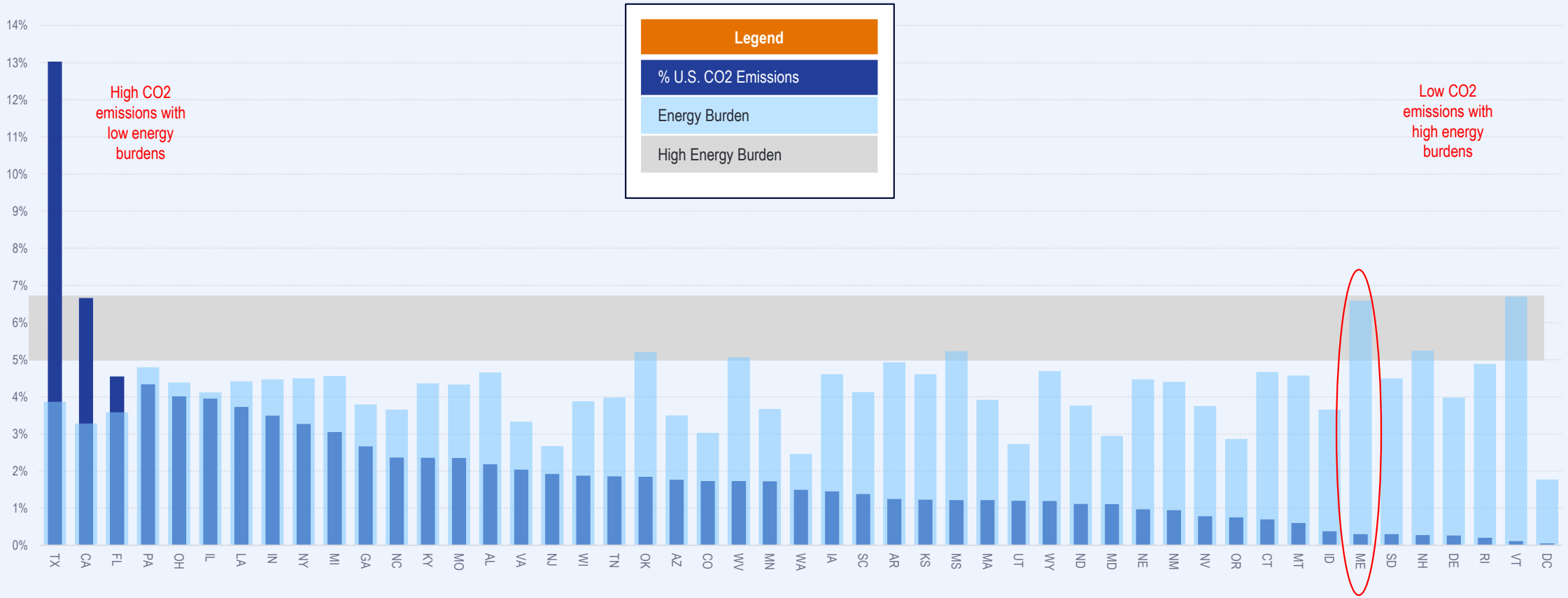


- In Maine, the Natural Gas Energy Burden is about 2.9 times higher for lower income households relative to higher income households
- Across the U.S., the Electricity Energy is about 3.8 times higher for lower income households relative to higher income households

Source: https://www.energy.gov/scep/slsc/lead-tool, accessed 11/10/25. Energy Burden is average annual energy cost by fuel as a percentage of household income.

A Combined Perspective - Emissions and Energy Burdens Across the U.S.

Maine's current GHG emissions represent about 0.32 percent of the country's carbon footprint, with a high energy burden



Pursuing Cost-Effective Carbon Mitigation Strategies

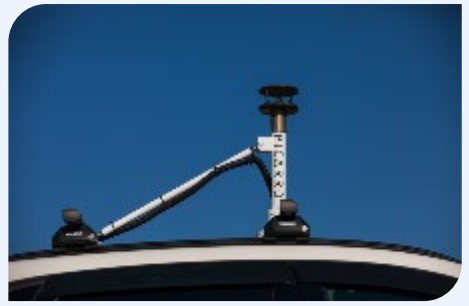
Unitil continuously focuses finding and implementing cost-effective methods of mitigation GHG emissions

ZEVAC Mitigates Emissions from Operations

- "Recompression" of lines to safely remove gas from pipes prior to repairs or other maintenance.
- Once complete, the stored compressed gas can be reinjected into an adjacent line.
- The process is used in place of venting or flaring gas
- Unitil estimates that 4.5 Million cubic feet of gas have been recaptured though the ZAVAC process since 2022.

Advanced Leak Detection Provides More Accurate Measurement

- Detects potential micro-leaks at a parts per billion level.
  - Data confirms cast iron replacement provided meaningful emissions reduction.
  - Final areas of cast iron work surveyed prior to removal have seen a 65 percent reduction in emissions year-to-year.
- Allows greater targeting of maintenance work to further lower fugitive emissions.
  - Analysis indicates 36 percent of emissions originate from 11 percent of leaks.
- Results have shown actual emissions on Unitil's system in Maine are 84 percent lower than EPA estimates for similar infrastructure.



Northern Utilities retired its last foot of leak-prone pipe in late 2024

Observations and Conclusions

- Viewed from several perspectives, Maine has been a leader in carbon reduction
  - Emissions per capita
  - Emissions relative to GDP
  - Contribution to U.S. carbon emissions
- Maine's total energy burden remains high
  - Relative to other jurisdictions
  - Relative to carbon emissions
- Policy considerations balance climate goals with affordability concerns
  - Consider current level of emissions (by sector)
  - Focus on the lowest-cost method of mitigating the next ton of emissions
- Unitil is committed to supporting Maine in its climate objectives
  - Natural gas delivery infrastructure as part of the climate/affordability solution
  - Continue our practice of customer service and operating excellence

MAINE
STATE
CHAMBER
of
COMMERCE

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NEXTera ENERGY RESOURCES

MREA
Maine Renewable Energy Association

longroad ENERGY

Panel: Legislative Outlook

State Senator Mark Lawrence

State Senator Matthew Harrington

State Representative Melanie Sachs

State Representative Steve Foster

Moderator: Ashley Luszczki, Government Relations Specialist, Maine State Chamber of Commerce

Long-term Transmission Planning (LTTP) RFP Process

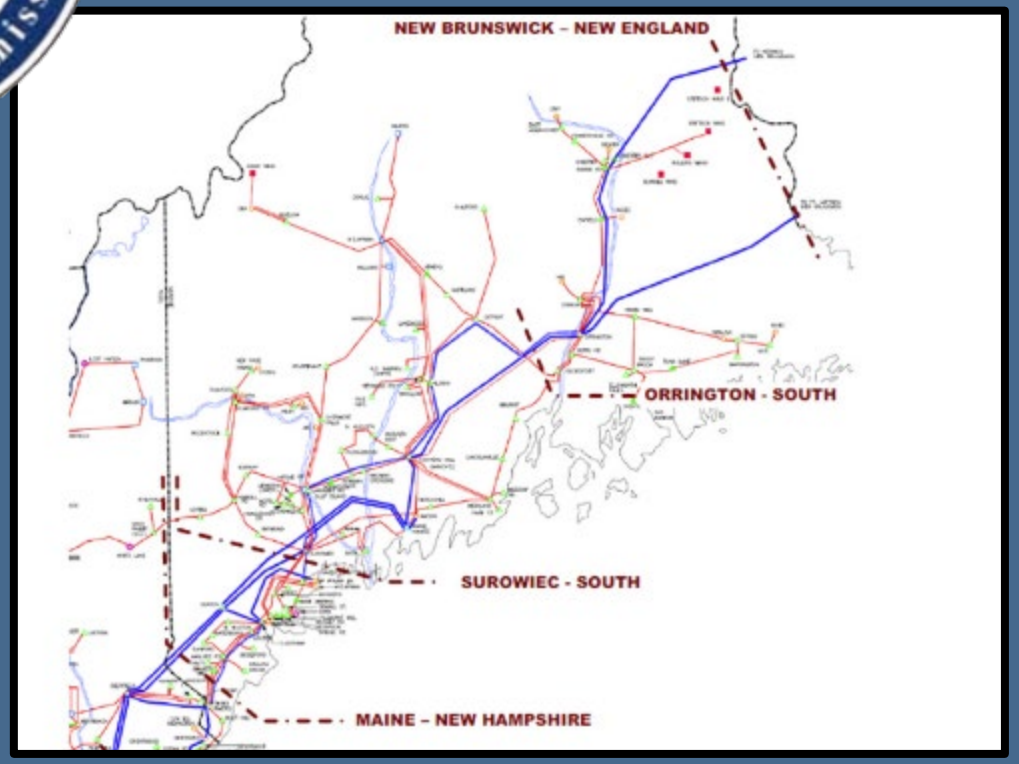
Eric Johnson

Executive Director of External Affairs, ISO New England

Benefit of LTTP to Maine

Michael Haskell

Staff Utility Analyst, Maine Public Utilities Commission



MAINE & LTTP

Michael Haskell
Senior Regional Analyst
Maine Public Utilities Commission

TAKEAWAYS FOR TODAY

01. Maine & New England are facing an energy crunch

02. Maine's onshore wind is valuable

03. LTTP helps Maine affordably develop wind resources

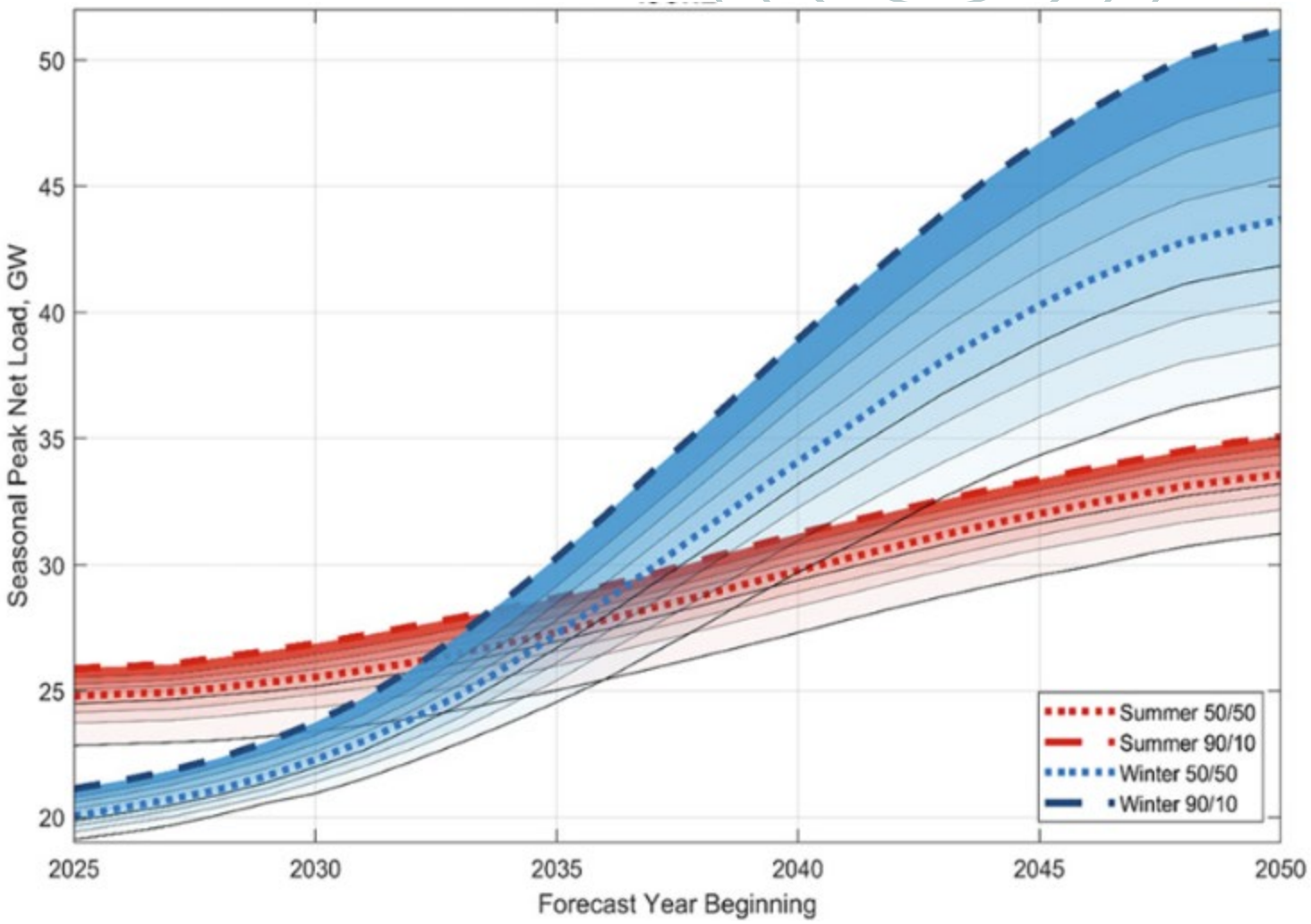
THE ISSUES OF THE DAY

Demand growth

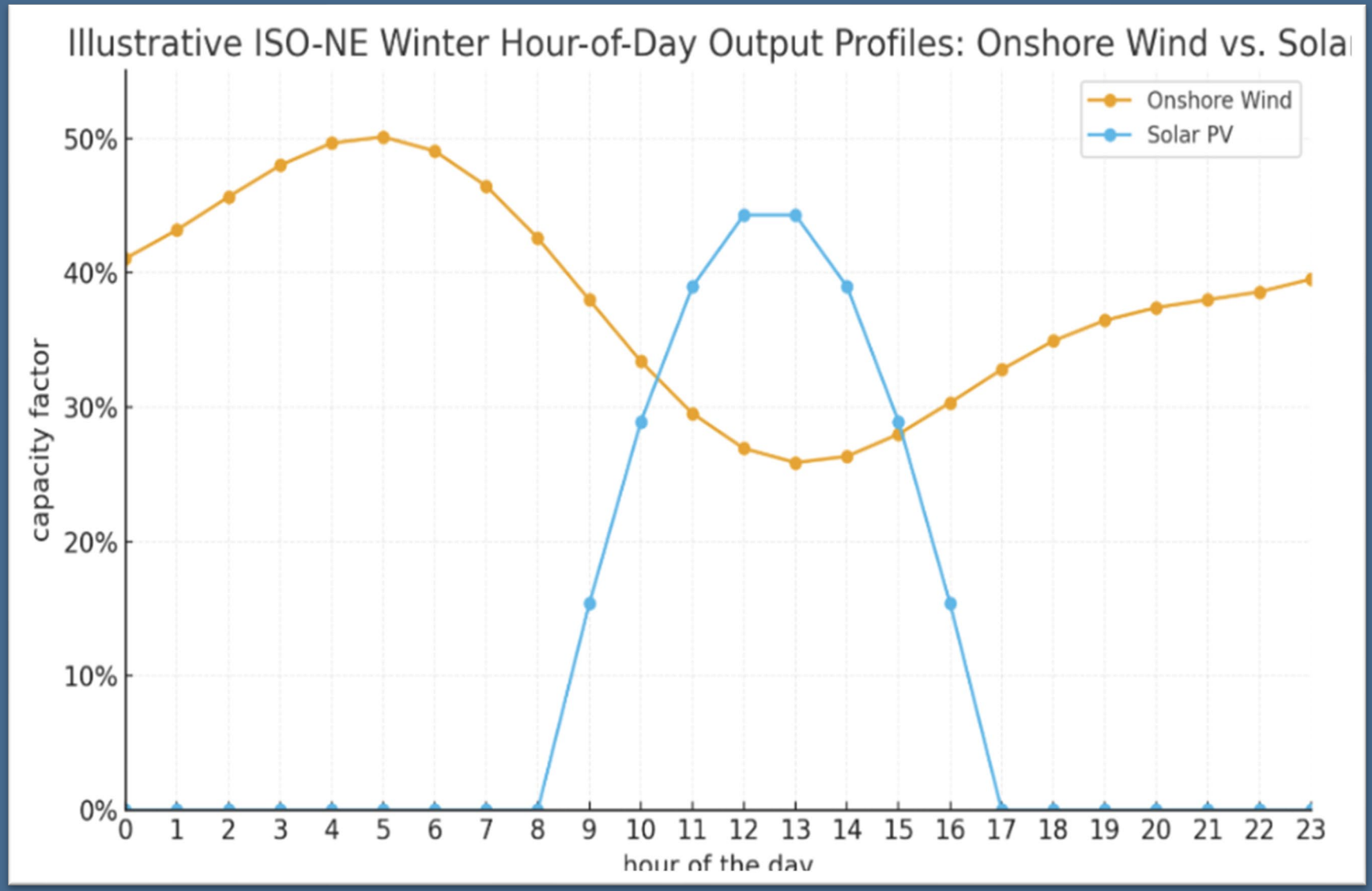
Supply challenges

Winter reliability

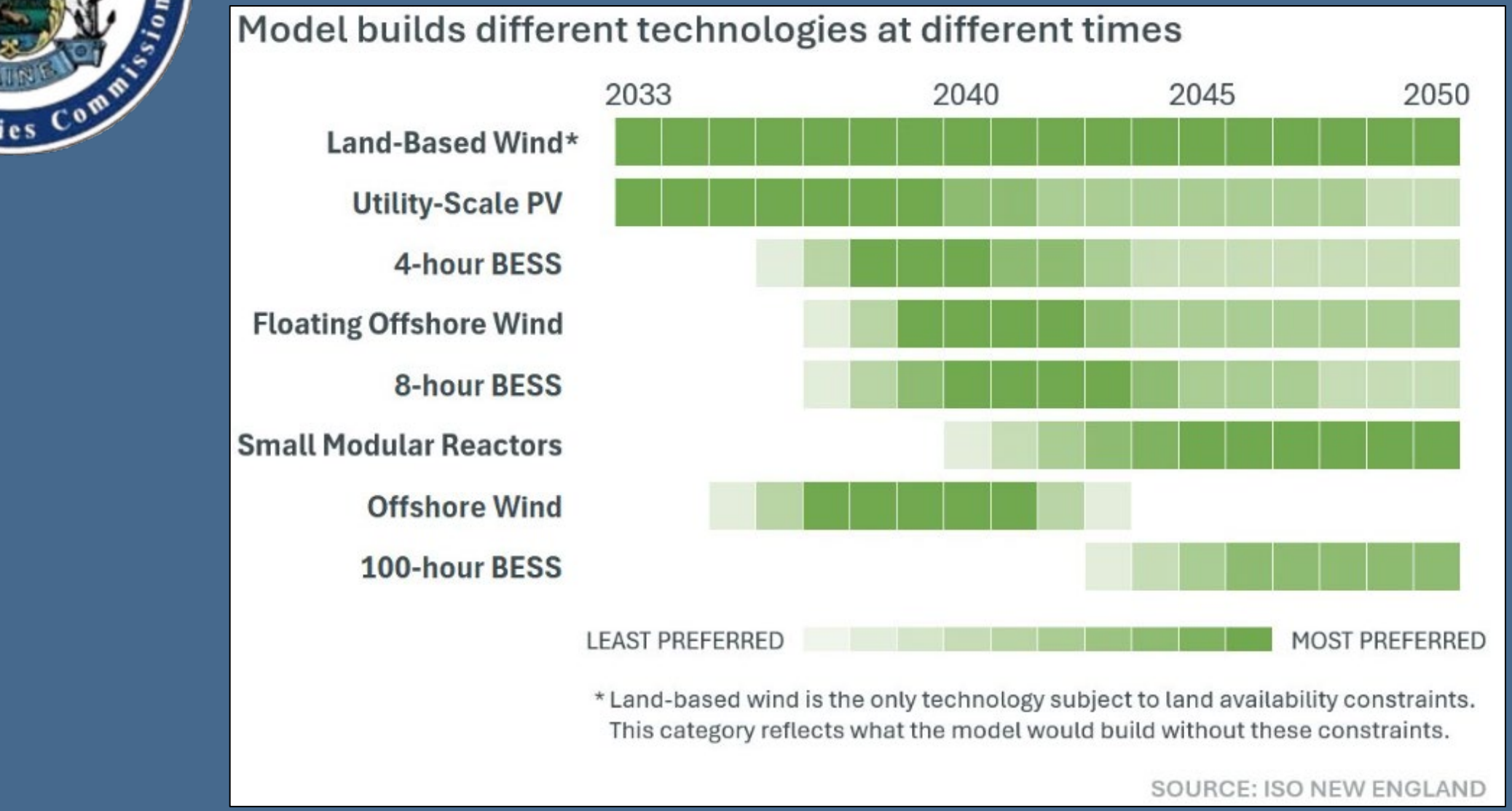
Affordability



ONSHORE WIND HELPS IN WINTER



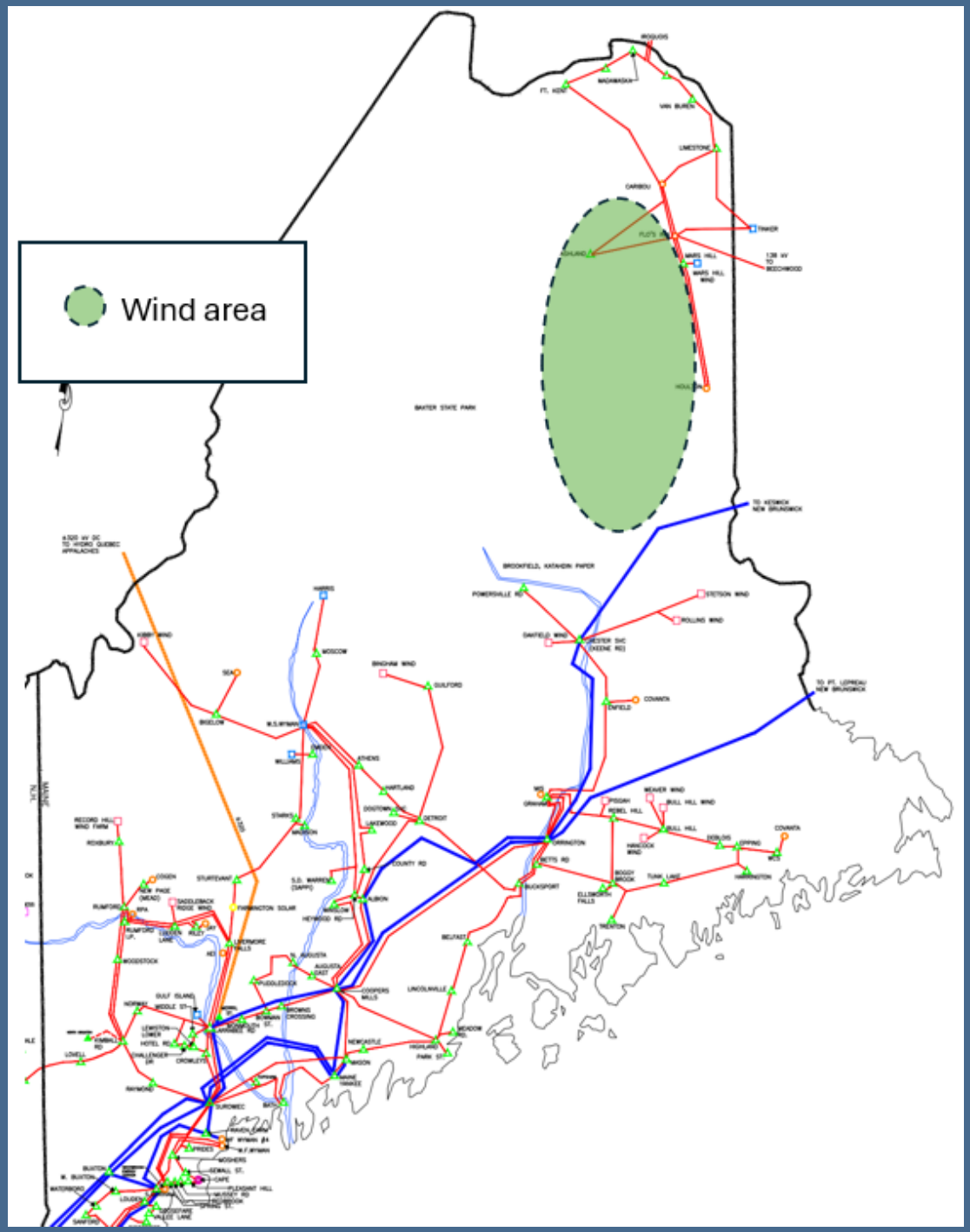
ONSHORE WIND IS AFFORDABLE



THE CHALLENGE OF BUILDING WIND IN NORTHERN MAINE

Wind projects have been proposed in various configurations many times over the last 15 years

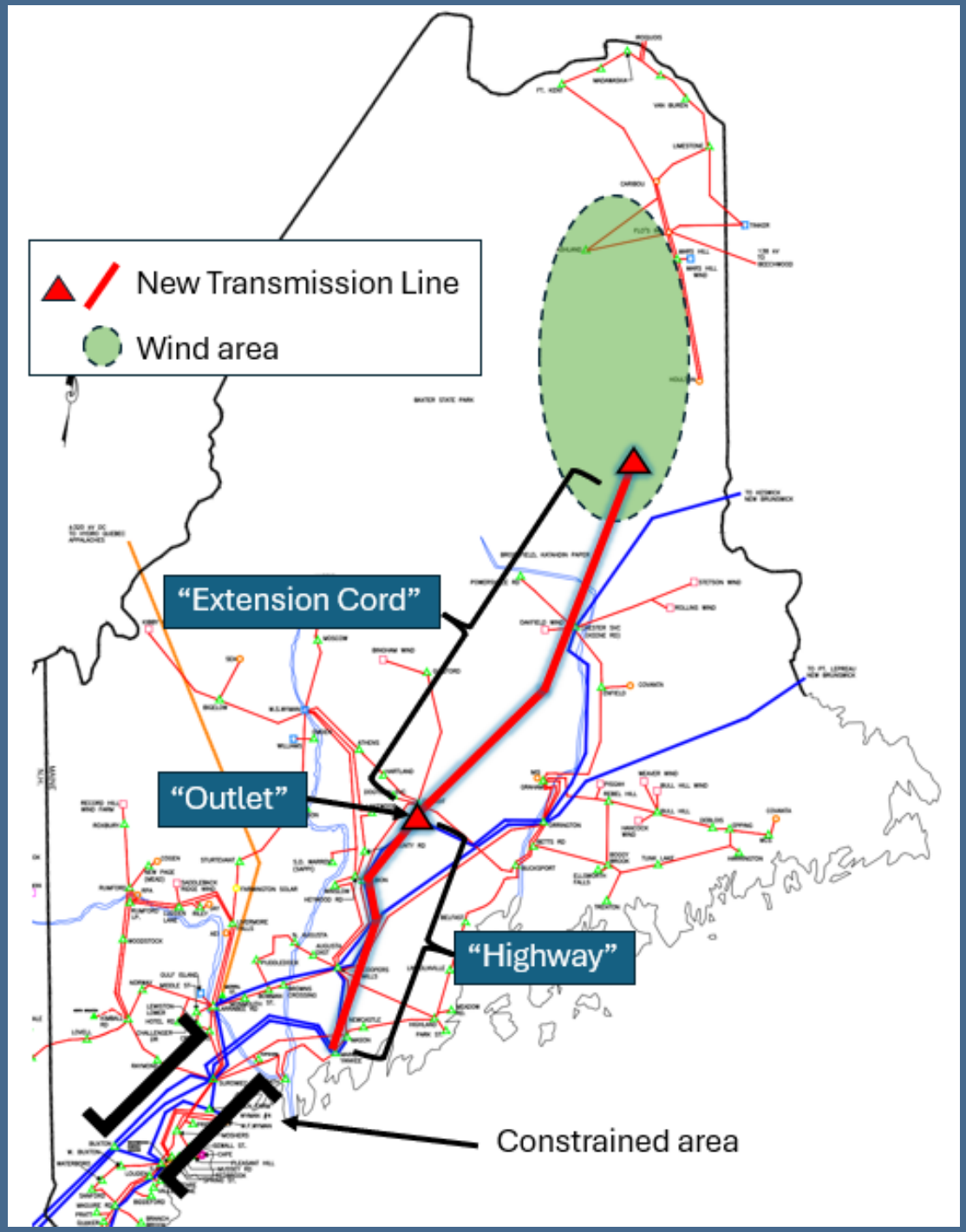
The recurring problem: how to bring the electricity to market?



THE 1ST NORTHERN MAINE PROCUREMENT (2022)

Who pays?

Extension cord:	Maine up to 100%
Outlet/POI:	Maine up to 100%
Expand Tx highway:	Maine up to 100%



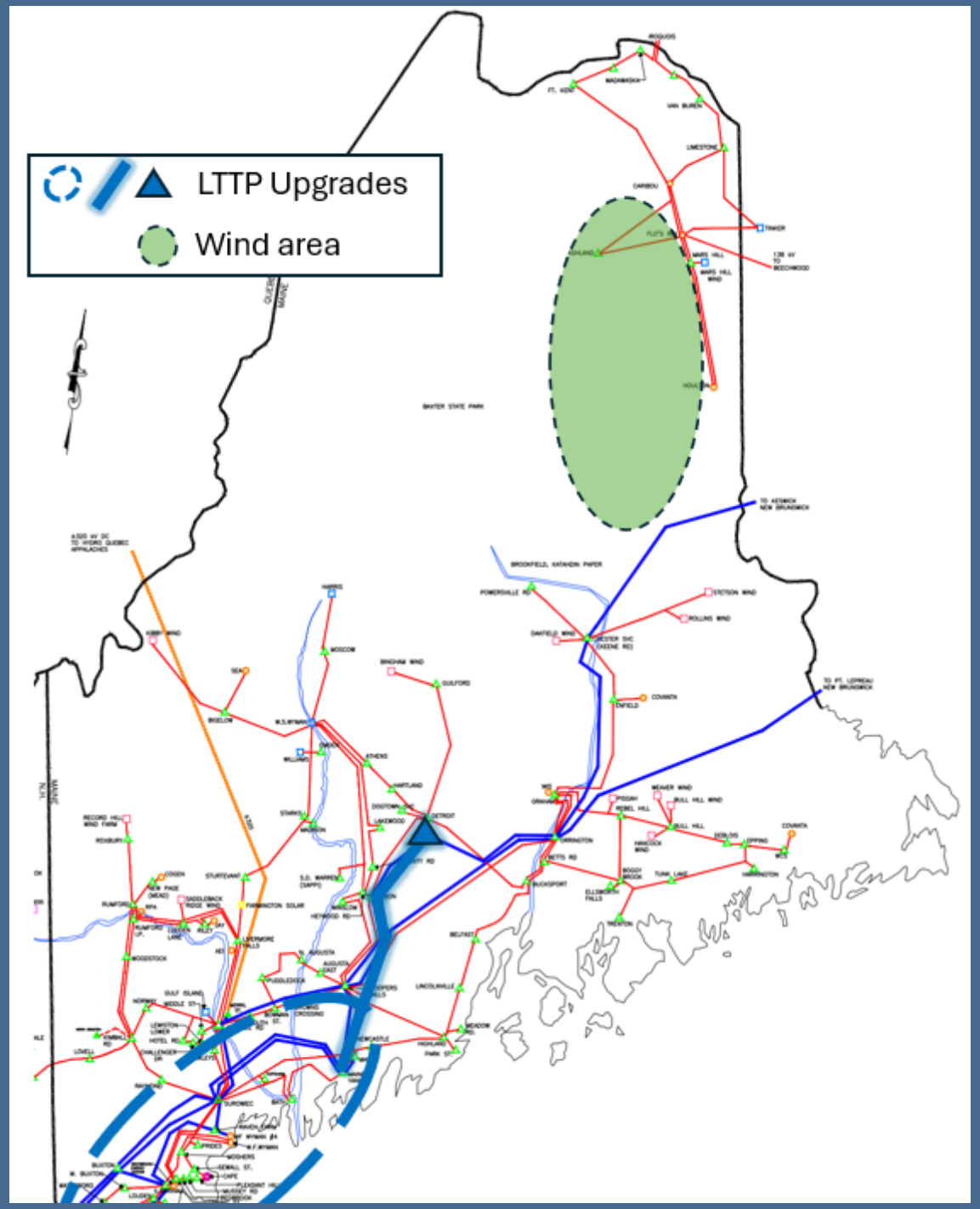
LTTP

ISO-NE 2050 Transmission Study: what does the region need to achieve goals and remain reliable?

LTTP provisions were created to enable states actualize the 2050 Study outputs

First of its kind in the U.S.

States decided to focus the first LTTP solicitation on Maine



A BETTER DEAL FOR MAINE: LTTP & THE N. MAINE PROCUREMENT

LTTP Objectives

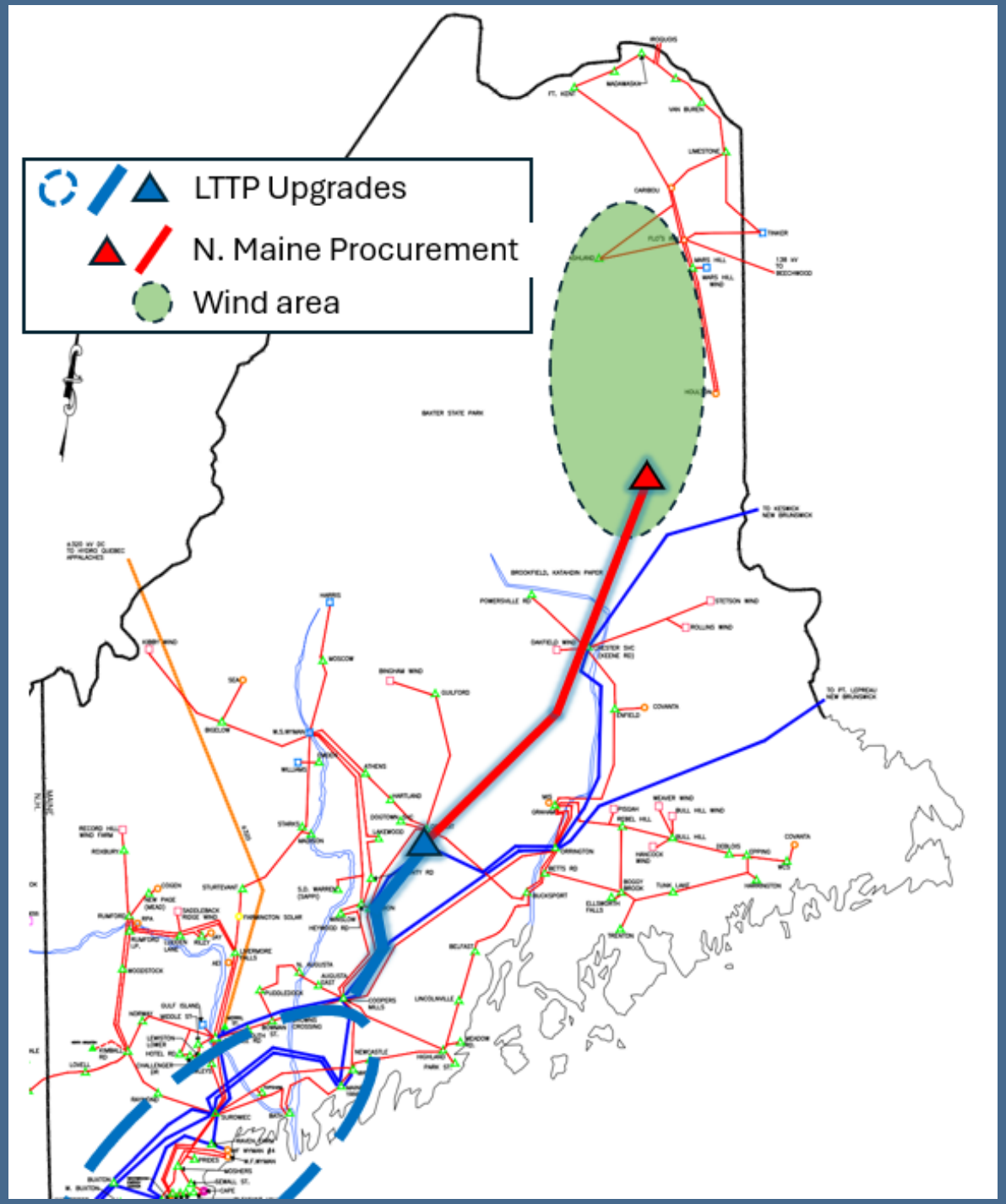
1. Widen the highway
2. Build the outlet

Northern Maine procurement objectives

1. Build the generation
2. Build the extension cord

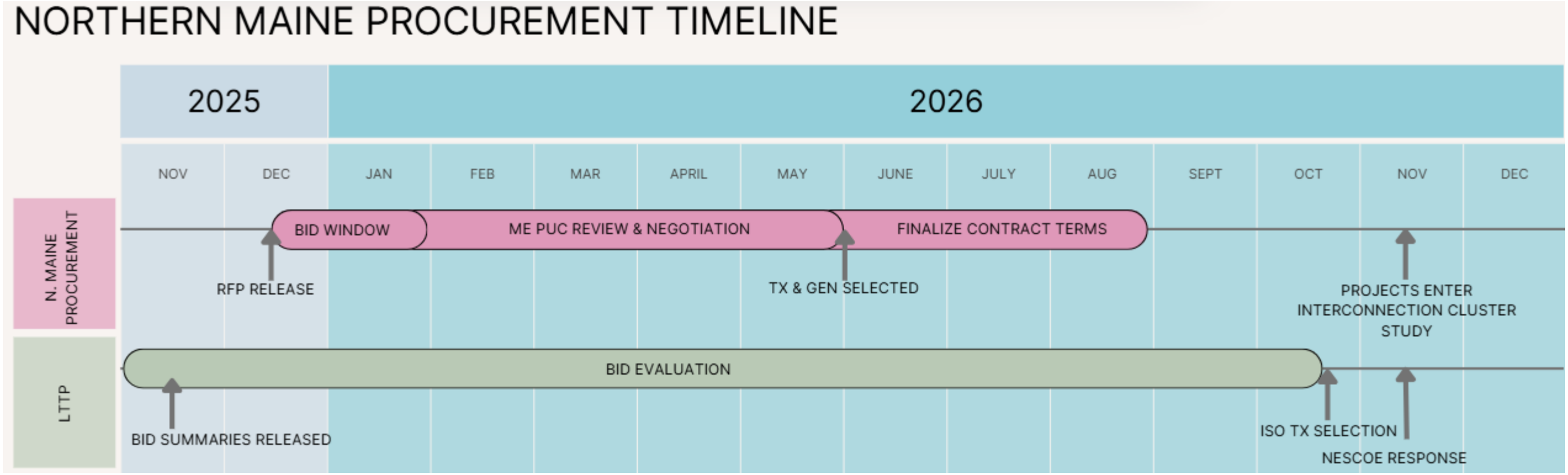
Who pays?

Extension cord:	Maine up to 100%
Outlet/POI:	Maine ~10%
Expand Tx highway:	Maine ~10%



WHAT TO WATCH FOR

Tomorrow: ISO-NE releases LTTP bid summaries
December 2025/January 2025: PUC releases N Maine RFP
Q2/Q3 2026: PUC selects N Maine projects
November 2026: N. Maine procurement projects enter ISO-NE interconnection cluster study
2032-2035: In-service date for transmission and generation



THANK YOU

Do you have any questions?

(207) 592-0184
michael.haskell@maine.gov

Nuclear Policy Trends and Opportunities

Christopher Heck

Senior Manager of State Government Affairs,
Nuclear Energy Institute

Maine State Chamber of Commerce Energy Summit

Nuclear Policy Trends and Opportunities

Chris Heck
Senior Manger, Policy and Public Affairs

cjh@nei.org

NUCLEAR ENERGY INSTITUTE

November 13th, 2025

Nuclear in New England

Beginnings:

Yankee Rowe (Rowe, MA) - 1958

Shuttering of Plants:

Began in 1991 (Rowe) and continued through 2019 (Pilgrim) – Maine Yankee shutdown in 1997

Current:

Two commercial reactors

- Seabrook Station (1,244 MW)
  - NextEra
- Millstone Unit 2 (869MW) & Unit 3 (1,229MW)
  - Dominion

Research reactors

UMass Lowell (1 MW) and MIT (6 MW)


Yankee Rowe

Current Moratoriums

Require federal government accepting of used fuel:

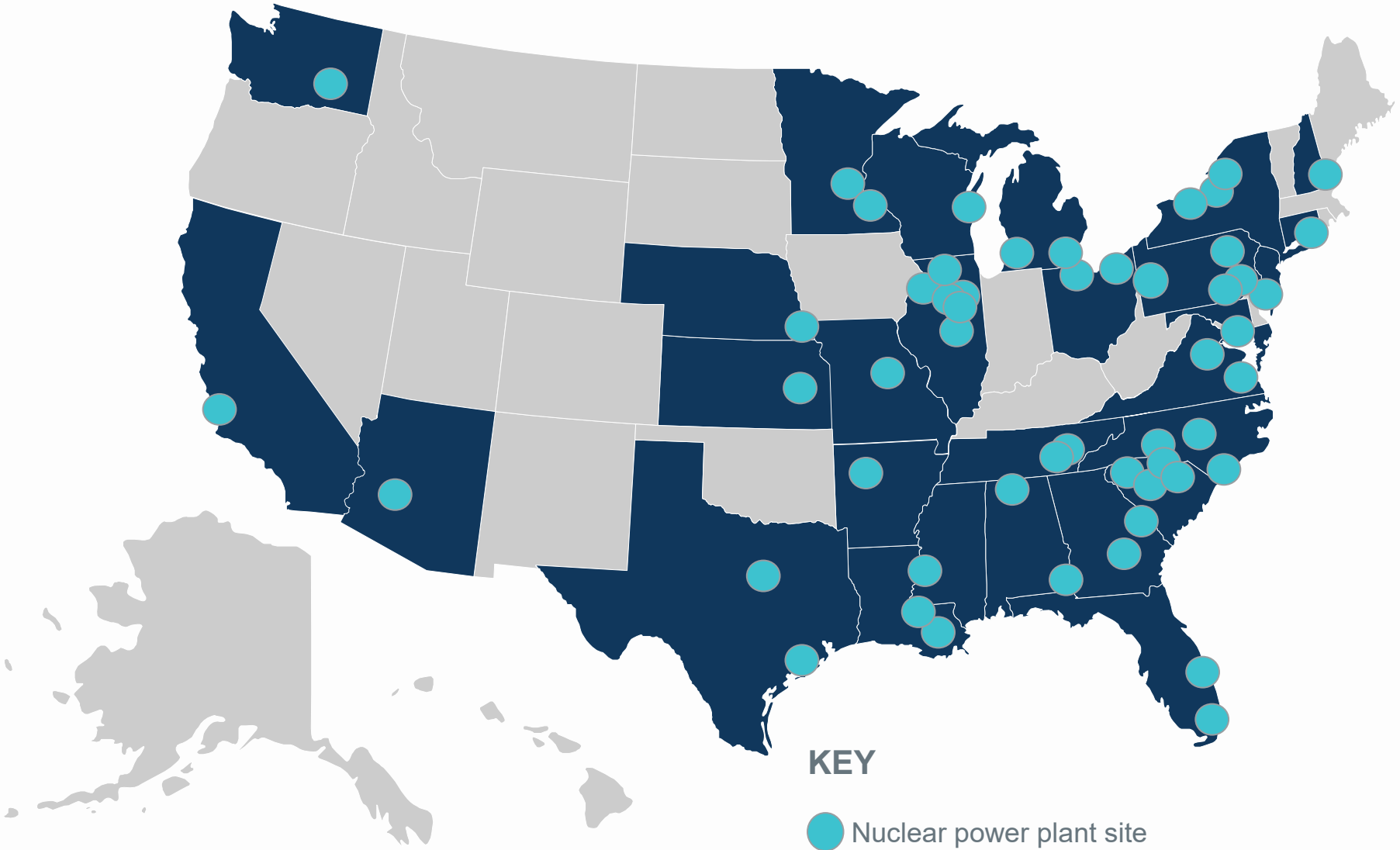
- Maine and Massachusetts

Require voter approval:

- Maine and Massachusetts

- Three bills introduced by Representative Paul considered this year:
  - LD 342: Nuclear as a renewable energy source
  - LD 343: Require PUC to issue RFPs for informational SMR bids
  - LD 601: Repealed the voter approval

Nuclear Provides Majority of Emissions Free Electricity



Updated: July 2024

U.S. Clean Generation (2023)

47.8% NUCLEAR

26.2% WIND

14.8% HYDRO

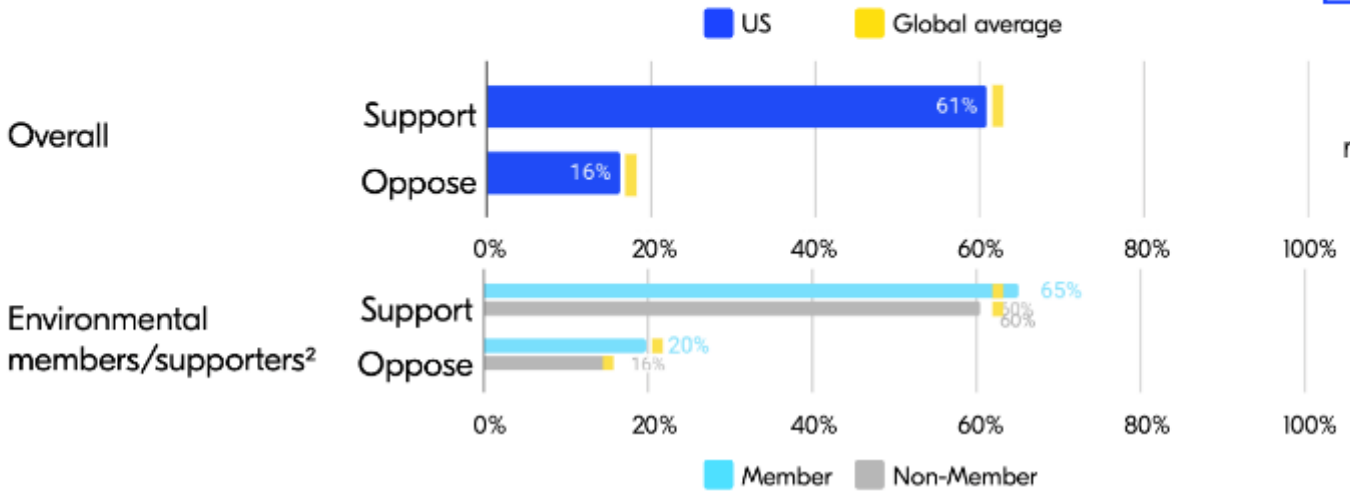
10.2% SOLAR

1% GEOTHERMAL

Strong Public Support for Nuclear Energy

US

Support vs. opposition[1]



n=4,250

Support by...

Gender

Men	73%
Women	50%

Age

18-34	58%
35-54	62%
55+	62%

Income

Low income (under 50k USD)	52%
Medium income (50k-100k USD)	60%
High income (100k+ USD)	70%

Political Affiliation

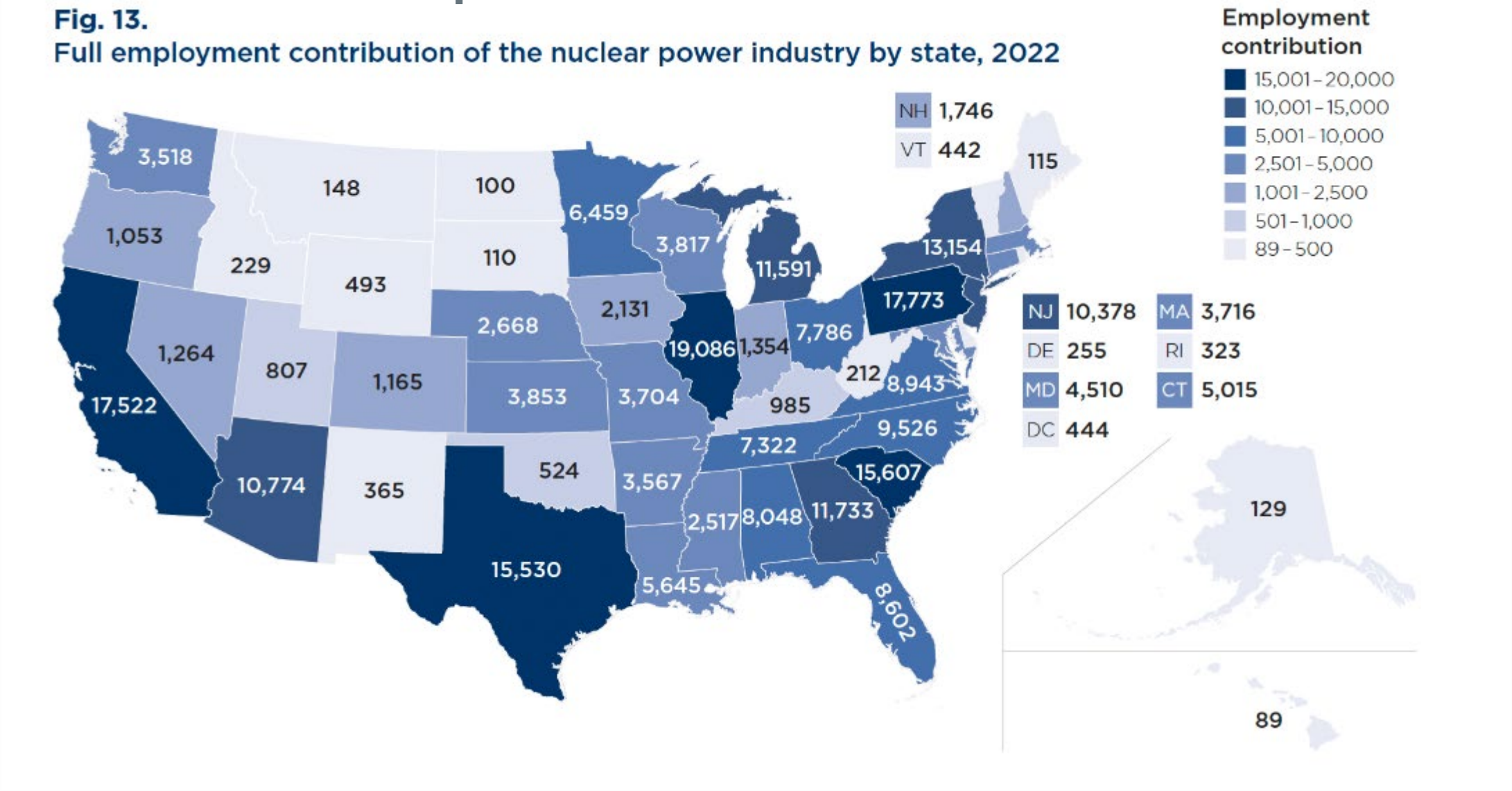
Democrat	61%
Independent	60%
Republican	66%

Top 5 nuclear sentiments[3]
(% agree)

We need a way to produce more and more energy for our economy to keep growing	76%
We need to be building capacity for more energy, not just trying to use less	63%
We need nuclear energy in the mix, along with renewables, if we are to meet our climate goals	60%
Leaving nuclear waste behind is just wrong, however safe it is	59%
We should use advanced nuclear energy to reduce our dependence on other countries	58%

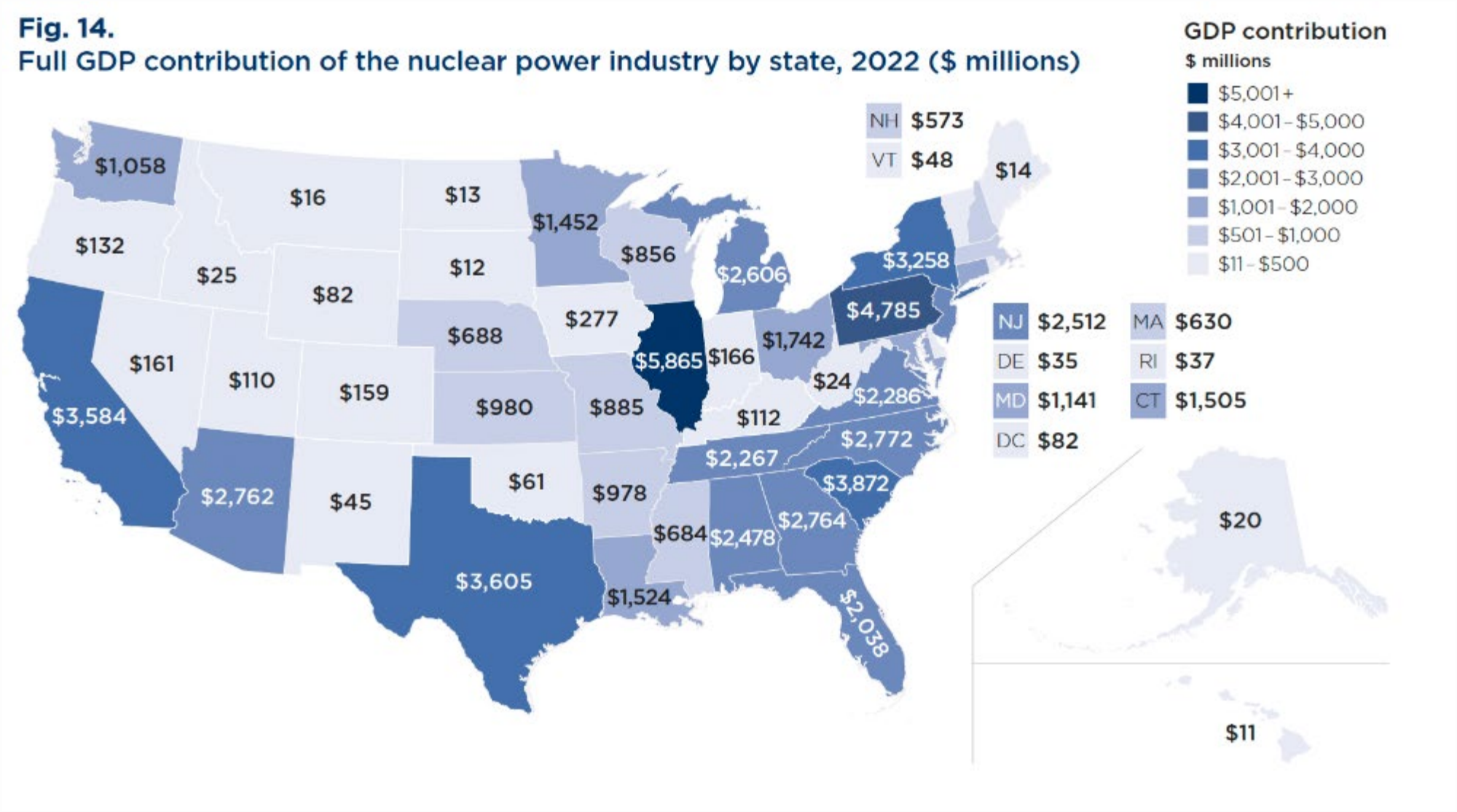
Source: Potential Energy, 2023, https://potentialenergycoalition.org/wp-content/uploads/NewNuclear_Report_May2023.pdf

Economic Impacts of Nuclear in the U.S.



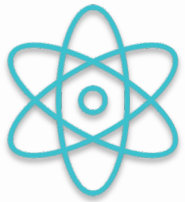
Source: https://www.oxfordeconomics.com/resource/the-economic-contribution-of-the-us-nuclear-power-industry/

Economic Impacts of Nuclear in the U.S.



Source: https://www.oxfordeconomics.com/resource/the-economic-contribution-of-the-us-nuclear-power-industry/

Key Messages in the States



Value Proposition of Nuclear Energy

Regulatory Reform and Efficiency

New Nuclear Feasibility

States Taking Action for Nuclear

New in 2025 **Highlighted**

Exploring Nuclear Technology with Studies, Working Groups, Commissions and Task Forces	**Arkansas**, Connecticut, **Delaware**, Florida, **Hawaii**, Idaho, Indiana, Kentucky, **Louisiana**, Maine, Maryland, Michigan, Montana, Nebraska, New Hampshire, **North Dakota**, Ohio, **Oklahoma**, Pennsylvania, Tennessee, and Texas, **Utah**, Virginia, and **Wisconsin**
Recognizing Nuclear as a Clean Energy Resource	**Colorado**, Idaho, **Indiana**, **Kentucky**, Maine, Michigan, Minnesota, New Mexico, North Carolina, Ohio, Tennessee, Utah, Virginia and Washington
Removing Barriers and Signaling Support	Repealing Nuclear Moratoriums: **Connecticut**, Illinois, Kentucky, Montana, West Virginia, and Wisconsin Signaling Regulatory Support: Indiana, Mississippi, North Carolina, and South Dakota
Incentivizing Nuclear Technology and Supply Chain	**Indiana**, Kentucky, **Maryland**, Michigan, **New York**, **Tennessee**, **Texas**, Virginia, Washington, and Wyoming

NEI helpful documents:

State Legislation and Regulation Supporting Nuclear Energy 2025 /// State Policy Options

2025 Highlights

Legislative

- Texas (funding)
- Colorado, Kentucky, & New Hampshire (clean energy)
- Louisiana (streamlining permitting)
- Indiana & North Carolina (cost recovery)
- Utah (consortium)

Governor/Energy Office

- New York (1 GW of new nuclear)
- Utah (regional coordination)
- Indiana (attracting business)
- Tennessee (working group)
- Idaho (Line Commission 2.0)

PSC

- New Jersey (resource adequacy)
- New York (ZECs)
- Maryland (nuclear procurement)
- Louisiana & Kentucky (new reactor regulations)

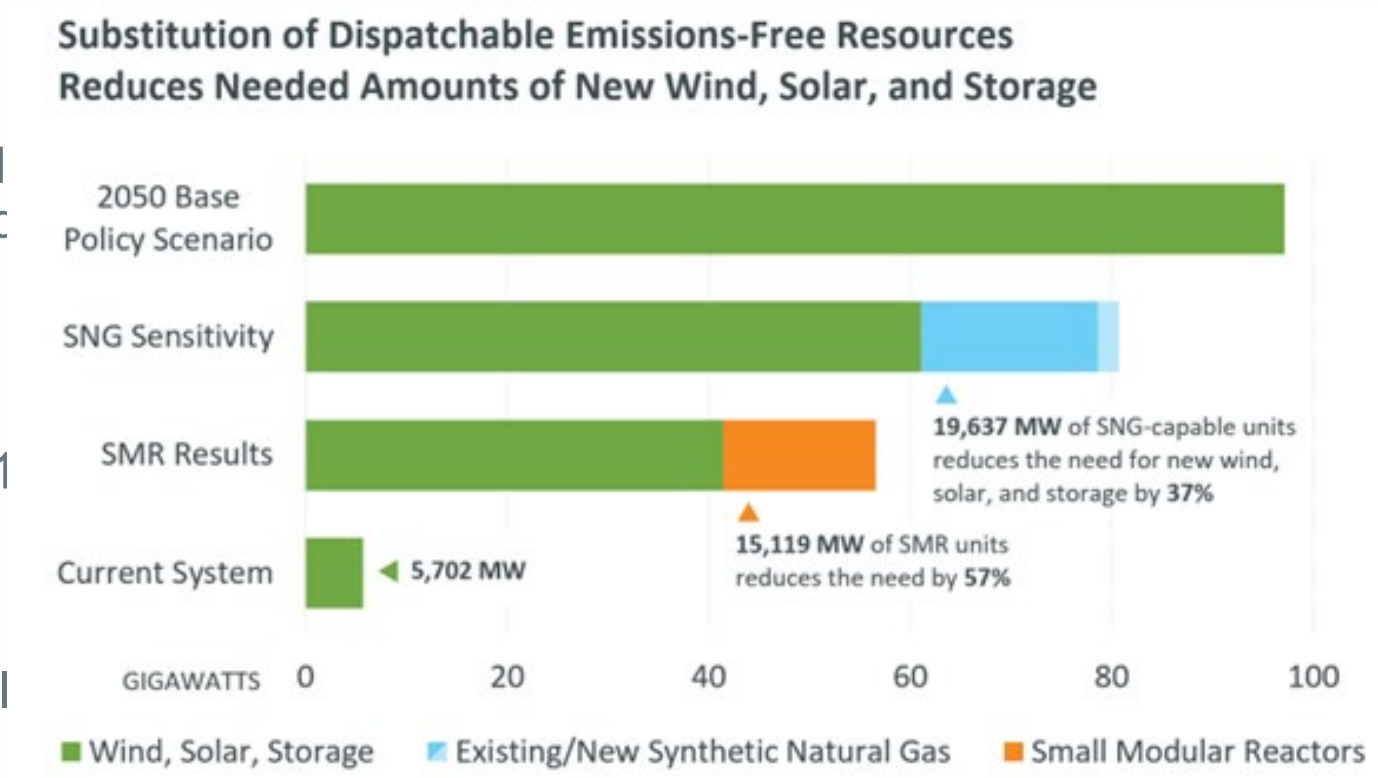
Recent National Organization Activities

- **The National Governors Association:** In state nuclear trainings (WV, MO, IN, KY, LA, WA, and joint 6 New England states)
- The **Western Governors Association:** Chair Initiative, led by Gov. Cox (UT): "Energy Superabundance: Unlocking Prosperity in the West"
- **The National Association of State Energy Officials:** 11-state First Movers Initiative: bringing together stakeholders to create an "order book" of projects. Issued RFI for feedback.
- First of a kind resolutions from **NARUC, CSG Midwest,** and the **National Conference of Mayors**

Economic Planning For Clean Energy Transition Study

Findings

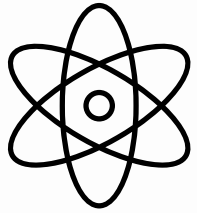
- Renewable-only model
  - Need 97 GW of total renewable capacity by 2050
  - Later additions of renewables could have diminishing environmental and economic returns
- SMR results show that a renewable-dominant build-out that also includes 15.1 GW of SMRs achieves the states' 2050 decarbonization targets while requiring 57% less new renewable capacity than the base Policy Scenario…Overall capital costs of a build-out that includes SMRs are 33% lower than the base case.



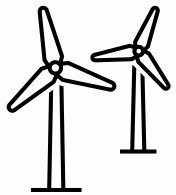
https://www.iso-ne.com/static-assets/documents/100016/2024-epcet-report.pdf

Lowest System Cost Achieved by Enabling Large Scale New Nuclear Deployment

Lowest Cost System

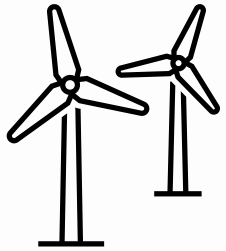


Nuclear is 43% of generation (>300 GW of new nuclear)

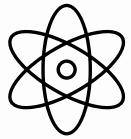


Wind and solar are 50%

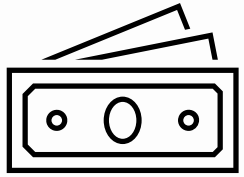
Energy System with Nuclear Constrained



Wind and Solar are 77% of generation



Nuclear is 13% (>60 GW of new nuclear)



Increased cost to customers of $449 Billion

Both scenarios are successful in reducing electricity grid GHG emissions by over 95% by 2050 and reducing the economy-wide GHG emissions by over 60%

Source: Vibrant Clean Energy: https://www.vibrantcleanenergy.com/media/reports/

System Benefits of Advanced Reactors

Long term price stability	• Low fuel and operating costs
Reliable dispatchable generation	• 24/7, 365 days per year, years between refueling (Capacity factors >92%)
Efficient use of transmission	• Land utilization <0.1 acre/TWh (Wind =1,125 acre/TWh; Solar 144 acre/TWh)
Environmentally friendly	• Zero-carbon emissions, one of lowest total carbon footprints • Many SMRs are being designed with ability for dry air cooling
Integration with renewables and storage	• Paired with heat storage and able to quickly change power
Black-start and operate independent from the grid	• Resilience for mission critical activities • Protect against natural phenomena, cyber threats and EMP

Source: SMR Start, *SMRs in Integrated Resource Planning*

State Options to Support Advanced Reactors

- Reliability Portfolio Standards
- Value-based market/regulatory system
- Tax incentives (e.g., property)
- Advanced cost recovery
- Workforce and infrastructure

State Policy Options: https://www.nei.org/resources/reports-briefs/policy-options-for-states-to-support-new-nuclear

Scan to view state policy options.

Source NARUC/NASEO: https://pubs.naruc.org/pub/8C96325F-CF7E-90BE-F8B3-B07570F3953B

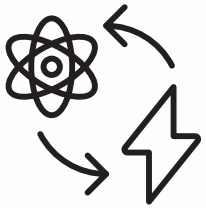
Recent Survey of NEI's U.S. Utilities

Nuclear power's potential role in meeting their company's decarbonization goals:

SLR

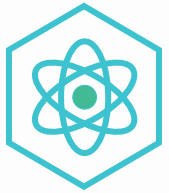
>90% of fleet expects to operate to at least **80 years**

GW



100 GW of new nuclear opportunity by **2050s**

SMRs



Translates to roughly **300 SMR-scale plants**

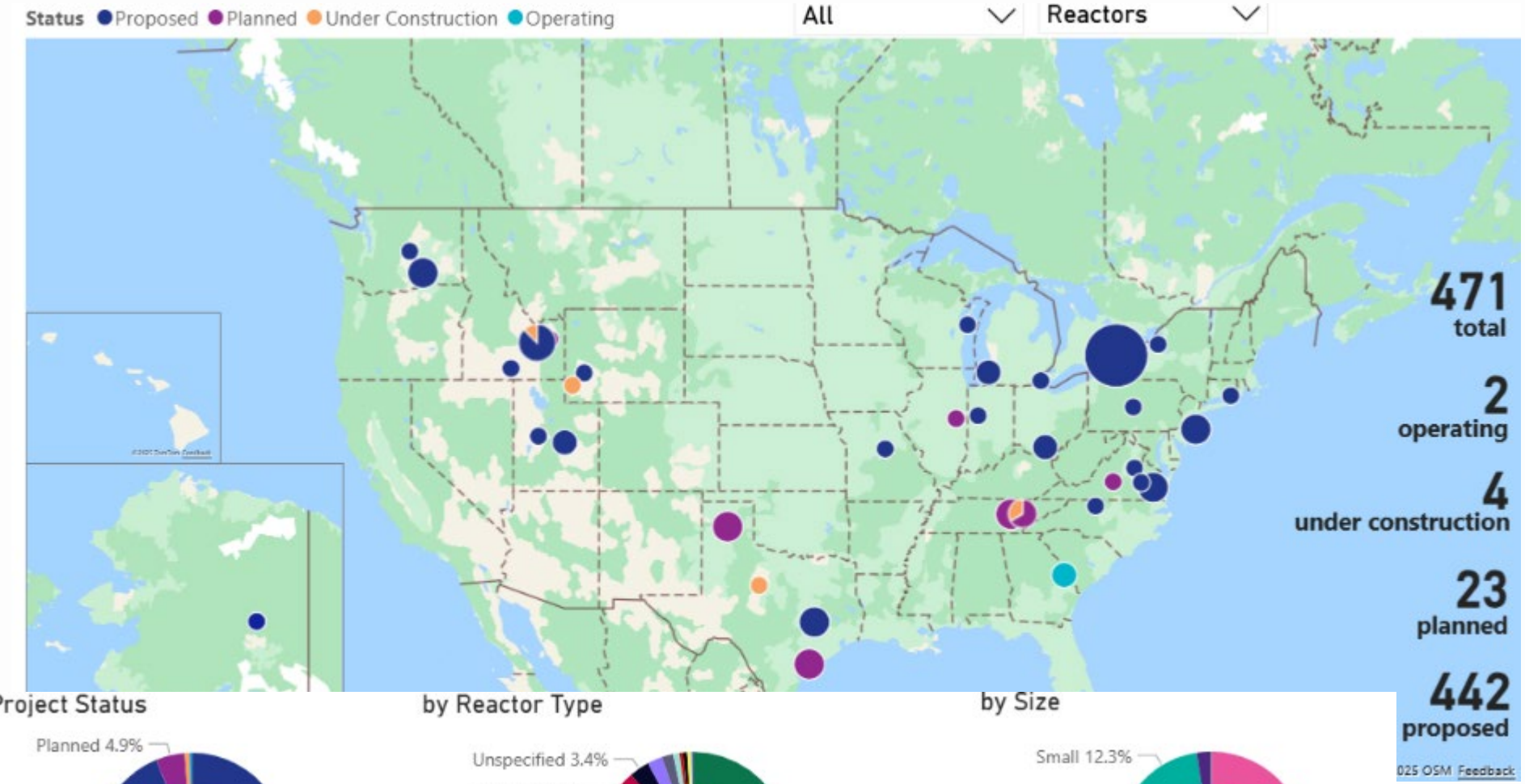
NEI utility member companies produce nearly half of all US electricity.

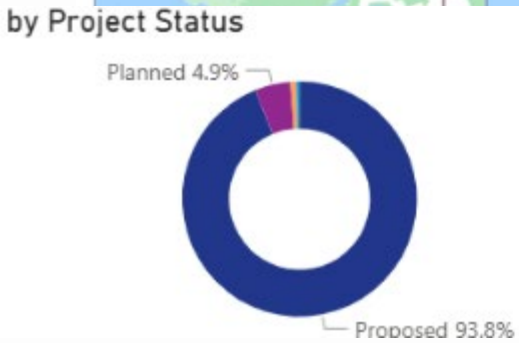
- More than half have more interest than in 2022 (prior survey year)
- Interest in 23 Early Site Permits, 18-19 Construction Permits, and 8 Combined Operating Licenses (by 2034)

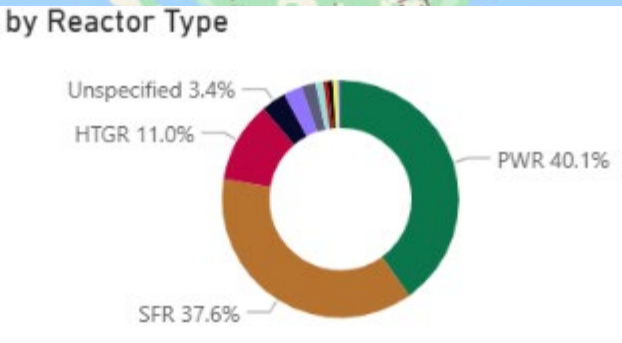
Tech Company	AR Developer Partner	Deployment Timeline	Deployment Scale	Location
Amazon	N/A Talen's Susquehanna Plant	2026	2 GW	Berwick, PA
Amazon	X-Energy	2039	5 GW	Richland, WA and Mineral, VA
Endeavour Energy	Deep Fission	2029	2 GW	Unknown
Equinix	OKLO	Unknown	500 MW	Unknown
Equinix	Radiant	Unknown	25 MW	Unknown
Digihost	Nano Nuclear	2031	60 MW	Upstate NY
Green Energy Partners (GEP)	Unknown	2037	1 GW	Surry, VA
Google	Unknown *(*Elementl as Proj. Developer)*	Unknown	2 GW	Unknown *(*3 sites)*
Google	Kairos	2030 - 2035	500 MW	Oak Ridge, TN and other
Google	N/A Duane Arnold Re-start	2029	615 MW	Palo, IA
META	N/A Constellation's Clinton Plant	2027	1 GW	Clinton, IL
META	TBD	"Early 2030's"	4 GW	Unknown
Microsoft	N/A Crane Clean Energy Re-start	2028	835 MW	Middletown, PA
NVIDIA	*$650M investment into TerraPower*			
Oracle	Unknown	Unknown	1 GW	Unknown
Sabey Data Centers	TerraPower	Unknown	Unknown	Rocky Mtn Region and Texas
Standard Power	NuScale	2029	1848 MW	Ohio and PA
Switch	OKLO	2029 - 2044	12 GW	Reno, NV and other
Wyoming Hyperscale (i.e. *Prometheus*)	OKLO	Unknown	100 MW	Evanston, WY
Unknown	Last Energy	Unknown	600 MW	Texas
TOTAL Commitments ***(Binding and Non-Binding)***			**~34 GW**	

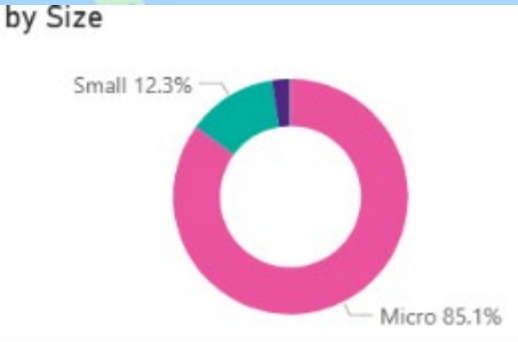
U.S. New Nuclear Deployment Plans

Over 60 projects that may be in operation by early 2030s









Power BI

Updated 08/06/2025

Enablers and Opportunities

01 First Mover Success	1. Government policies are equitable for nuclear and fully funded 2. Policies support industry's implementation of project best practices 3. Building education and comfort in the investment community
02 Fast Followers	4. Decisions that support industry's achieving de-risking milestones 5. Actions that support industry's pursuit of standardization of fleets
03 Regulatory Efficiency	6. Reform and modernize the regulators 7. Congress and Parliament to enable regulatory reform
04 Siting Availability	8. Rapid decision making to enable designs that are capable of being deployed in a wide range of site conditions 9. Industry will need to develop flexible designs that are both standardized and adaptable
05 Public Engagement	10. Governments enable early engagement of public in processes 11. Enable communities to more effectively engage the industry on advanced reactors 12. Collaborative engagement of Indigenous peoples
06 Supply Chain Ramp-up	13. Congress and DOE establish programs to assure access to fuel 14. Government support for prototyping novel components early in design
07 Workforce Development	15. Government programs support industry's action to establishes programs to recruit, train and retain workers

https://publicdownload.epri.com/PublicAttachmentDownload.svc/AttachmentId=83812

Types of Advanced Reactors

Range of sizes and features to meet diverse market needs

Water Cooled | **Non-Water Cooled** | **Both**

Westinghouse AP1000® (shown)
GE ABWR
GE ESBWR

GEH BWRX-300 (shown)
NuScale
Holtec SMR-300
Westinghouse AP300

High Temp Gas Reactors

X-energy (shown)

Liquid Metal Reactors

TerraPower Natrium™ (shown)

Molten Salt Reactors

Kairos Hermes (shown)
Natura Resources

Oklo (shown)
Last Energy
Radiant
Westinghouse eVinci™

Large ~1000 MWe | Small Modular Reactors < 300 MWe | Micro < 50 MWe

Learn more about innovative technologies with the Nuclear Innovation Alliance.

Expanded Versatility Meets a Diverse Set of Market Needs

Spectrum of Sizes and Options

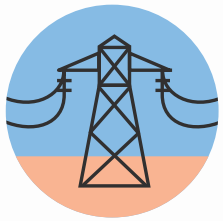
Micro (Few MW)

Mini (10s of MW)

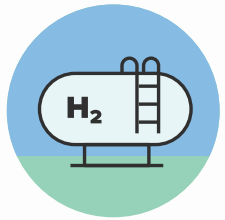
Small (100s of MW)

Large (1,000+ MW)

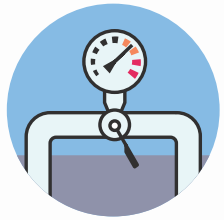
Variety of Outputs



Electricity

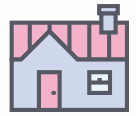


H_2 Hydrogen



Process Heat

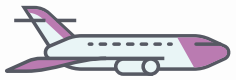
Multitude of Uses



Homes

Vehicles

Businesses

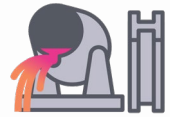


Aviation

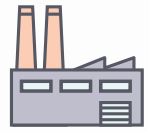
Rail

Shipping

Concrete

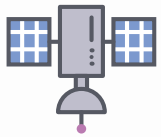


Steel



Factories

Water



Space

Watch the video: https://www.youtube.com/watch?v=7zN_YLg-roo

State Restrictions on New Nuclear

Removing Barriers to Enable Clean, Reliable and Affordable Energy

- Restrictions on new nuclear:
  - Established in late 1970s
  - Conditioned on a repository
  - Before Nuclear Waste Policy Act and experience with used fuel safety
- States pursuing restriction repeals recognize that
  - Used fuel is not the concern once perceived
  - New nuclear needed to meet goals for clean, reliable and affordable energy
- Nearly every state with a restriction is looking into new nuclear*
  - 6 - State Moratoriums Repealed: Connecticut, Illinois, Kentucky, Montana, West Virginia, and Wisconsin
  - 9 – States with recent bills to Repeal: Connecticut (remove Millstone only), California, Hawaii, Illinois (remove 300 MWe cap), Maine, Minnesota, Oregon, Rhode Island
  - 4 - States with bills to study nuclear: Hawaii, Massachusetts, Oregon, Vermont

*New Jersey is the only other state with a restriction, and while it has several bills for nuclear clean energy, nothing is currently being considered

Key Enablers from the Executive Orders on Nuclear Energy

National Security (14299), NRC Reform (14300), DOE Testing (14301), and Industrial Base (14302)

Add 300 Gigawatts of U.S. Nuclear Capacity by 2050

- Restarts and power uprates
- 10 large reactors in construction by 2030

1 Speed up Nuclear Reactor Licensing

- NRC licensing less than 18 months
- Faster for DOE/DoD tested designs

2 Lay the Ground-Work for Faster Reactor Testing

- Pilot 3 reactors outside of labs
- Expand DOE testing pathways

3 Deploy U.S. Reactors for AI and Military Bases

- Operate at DoD facilities in 3 years
- AI as critical defense facilities

4 Amp Up Domestic Nuclear Fuel Production

- Maximize domestic fuel production
- Mine, enrich, convert, de-convert

5 Assess Spent Fuel and Recycling

- Recommend a National policy
- Safe, Secure Long Term Fuel Cycle

6 Expand U.S. Nuclear Energy Exports

- Compete for civil nuclear globally
- Pursue new 123 Agreements

7 Bolster the American Nuclear Workforce

- Increase nuclear apprenticeships
- Prioritize nuclear energy careers

Reference: https://www.energy.gov/ne/articles/9-key-takeaways-president-trumps-executive-orders-nuclear-energy

Addressing Waste

All Energy Sources Have Waste, and All Must Do Three Things to Address it

Must be able to manage it safely

- Used fuel is solid, compact and there is proven technology to store it safely
- Over 1,300 used fuel shipments safely completed in U.S.

Must be able to pay for it

- U.S. law requires nuclear plants to fund used fuel management and decommissioning activities
- Over $40 billion in Nuclear Waste Fund

Must have a place to put it

- Department of Energy required dispose of used fuel
- Industry pursuit of consolidated interim storage

Spent Nuclear Fuel Disposal Impasse – History & National Status Update

Kathleen Capstick

Director of Government and Public Affairs,
Maine Yankee Atomic Power Company

Spent Nuclear Fuel Disposal Impasse – History & National Status Update

Maine State Chamber of Commerce Energy Summit
Portland Maine

November 13, 2025

Kathleen Capstick

Director of Government & Public Affairs, Maine Yankee Electric Co.

US Inventory of SNF/HLW and Reprocessing Waste

- As of the end of 2022, the U.S. Inventory of SNF/HLW and primary reprocessing waste was located at over 100 sites in 39 states.
- These locations include commercial Nuclear Power Reactors (NPR) and Independent Spent Fuel Storage Installations (ISFSI) sites; DOE sites; and other research and development (R&D) sites.
- 73 Sites of Commercial NPRs and/or ISFSIs (often co-located) with SNF/HLW stored onsite including: 72 sites of 74 Light Water Reactor (LWR) nuclear power plants with a total of 92 operating NPRs and 27 shutdown NPRs – not including ISFSIs at DOE site.
- 1 away-from-reactor NPR SNF pool storage ISFSI.
- 6 DOE Sites with SNF storage and/or DOE research reactors.
- 28 Other Research and Development (R&D) Sites including: 20 university research reactor sites; 4 other government agency research reactors; and 4 commercial R&D centers.
- 4 Reprocessing Waste Storage Sites:3 DOE sites with primary reprocessing waste and 1 commercial HLW storage location.
- 278 HLW stainless steel canisters in long term interim storage at the West Valley New York former reprocessing site awaiting DOE removal to a federal disposal site.

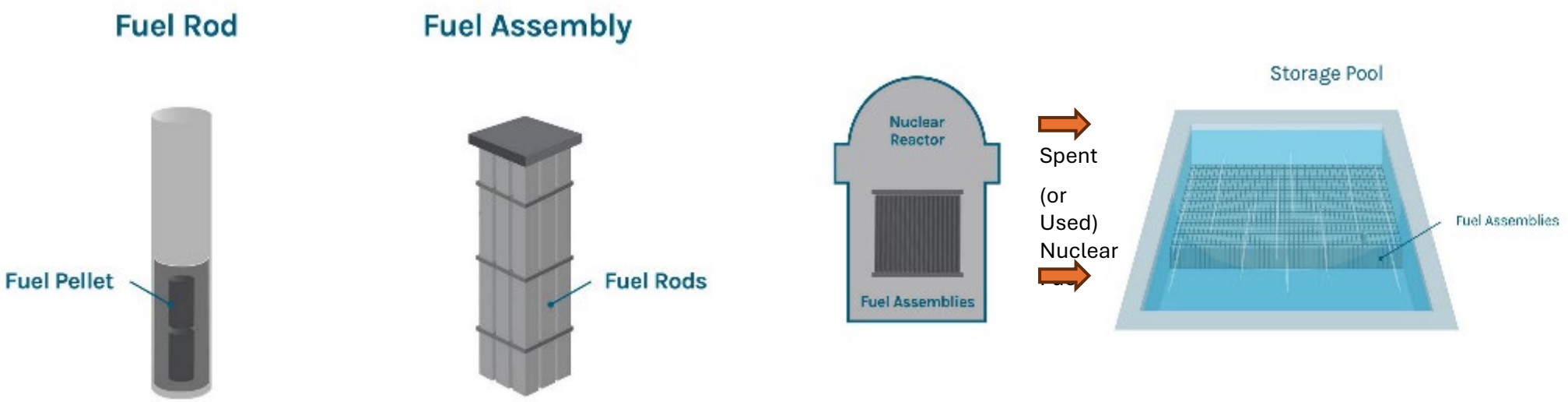
(Reference – "Spent Nuclear Fuel and Reprocessing Waste Inventory, December 2024, PNNL-33938, Rev.1.1, page 2 inventory summary)

NOTE: U.S. commercial reactors have generated about 90,000 metric tons of spent fuel since the 1950s and generates about 2,000 metric tons of spent fuel each year (Yucca Mountain limit is 70,000 MTUs)

US Non-Commercial Nuclear Waste

- The inventory of non-commercial nuclear waste includes roughly 360,000 cubic meters of reprocessing waste managed by DOE that is liquid/sludge waste in tanks in Hanford WA and the Savannah River Site in South Carolina.
- Non-commercial SNF generated by activities – including the Navy's nuclear fleet SNF stored in Idaho with 201 naval SNF canisters already temporarily stored at the Idaho National Laboratory site.
- DOE Research & Development activities - DOE's current SNF inventory for R&D activities totals approximately 2,400 MTUs.

Commercial Nuclear Fuel Basics

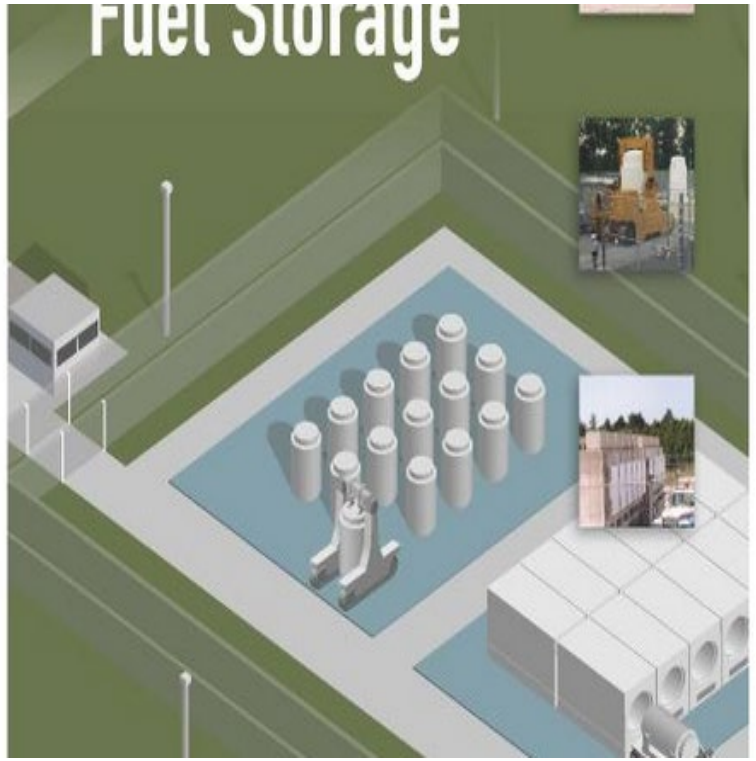


Credit: DOE IWM StoryMap: Consent-Based Siting for Consolidated Interim Storage, May 2024

Commercial Nuclear Fuel Basics

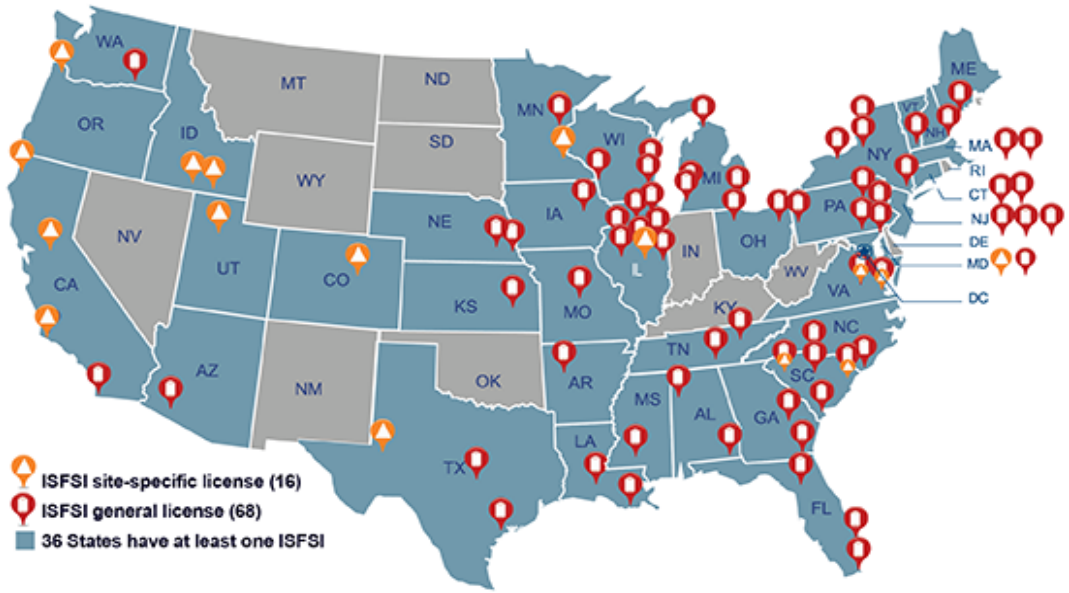
- Independent Spent Fuel Storage Installations (ISFSIs) not originally anticipated.
- 1st ISFSI licensed in 1986.

Credit: DOE IWM StoryMap: Consent-Based Siting for Consolidated Interim Storage, May 2024



Credit: NRC Safety of Spent Fuel Storage Report (excerpt from cover), April 2017

Licensed and Operating Independent Spent Fuel Storage Installations by State



ALABAMA
- Browns Ferry
- Farley

ARIZONA
- Palo Verde

ARKANSAS
- Arkansas Nuclear

CALIFORNIA
- Diablo Canyon
- Humboldt Bay
- Rancho Seco
- San Onofre

COLORADO
- Fort St. Vrain

CONNECTICUT
- Haddam Neck
- Millstone

FLORIDA
- Crystal River
- St. Lucie
- Turkey Point

GEORGIA
- Hatch
- Vogtle

IDAHO
- DOE: Three Mile Island 2 (Fuel Debris)
- DOE: Idaho Spent Fuel Facility *

ILLINOIS
- Braidwood
- Byron
- Clinton
- Dresden
- GEH Morris (Wet)
- LaSalle
- Quad Cities
- Zion

IOWA
- Duane Arnold

KANSAS
- Wolf Creek

LOUISIANA
- River Bend
- Waterford

MAINE
- Maine Yankee

MARYLAND
- Calvert Cliffs

MASSACHUSETTS
- Pilgrim
- Yankee Rowe

MICHIGAN
- Big Rock Point
- Cook
- Fermi 2
- Palisades

MINNESOTA
- Monticello
- Prairie Island

MISSISSIPPI
- Grand Gulf

MISSOURI
- Callaway

NEBRASKA
- Cooper
- Ft. Calhoun

NEW HAMPSHIRE
- Seabrook

NEW JERSEY
- Hope Creek
- Oyster Creek
- Salem

NEW YORK
- FitzPatrick
- Ginna
- Indian Point
- Nine Mile Point

NORTH CAROLINA
- Brunswick
- McGuire

OHIO
- Davis-Besse
- Perry

OREGON
- Trojan

PENNSYLVANIA
- Beaver Valley
- Limerick
- Peach Bottom
- Susquehanna
- Three Mile Island

SOUTH CAROLINA
- Catawba
- Oconee
- Robinson
- Summer

TENNESSEE
- Sequoyah
- Watts Bar

TEXAS
- WCS Consolidated Interim Storage Facility (CISF)*
- Comanche Peak
- South Texas Project

UTAH
- Private Fuel Storage*

VERMONT
- Vermont Yankee

VIRGINIA
- North Anna
- Surry

WASHINGTON
- Columbia

WISCONSIN
- Kewaunee
- La Crosse
- Point Beach

* Facility licensed only, never built or operated.

Note: Alaska and Hawaii are not pictured and have no sites. NRC-abbreviated reactor names are listed. Data are current as of September 30, 2022. For the most recent information, go to the NRC facility locator page at https://www.nrc.gov/info-finder.html.

Source: U.S. Nuclear Regulatory Commission - As of February 2023

Pre-Nuclear Waste Policy Act 1950's - 1960's

- 1954 – President Eisenhower Atoms for Peace Program
- 1957 – National Academy of Sciences recommendation for deep geologic disposal (reaffirmed similar 1966, 1970, 2001);
- 1957 - 1st US commercial nuclear power plant (Shippingport, PA) began operation.
- 1960 - Yankee Rowe (Massachusetts) operational.
- 1966 – Only US commercial reprocessing plant (West Valley in NY) to operate. Operated from 1966 - 1972.

Note: Reprocessing plants at Morris Illinois and Barnwell South Carolina never permitted to operate – Morris pool currently storing commercial SNF.

Pre-Nuclear Waste Policy Act 1970's

- 1974 – Energy Reorganization Act abolished the Atomic Energy Commission:
  - created NRC to focus on protecting health & safety;
  - moved nuclear R&D to DOE's predecessor Energy Research & Development Administration.
- 1977 – Department of Energy Organization Act created DOE.
- 1977 - President Carter banned commercial reprocessing indefinitely.
- 1981 – President Reagan lifted ban on commercial reprocessing – but was not considered economic.

1982 Nuclear Waste Policy Act (NWPA)

- Called for repository site search to result in 2 sites (1 in East & 1 in West assumed).
- Limited 1st repository to 70,000 metric tons until 2nd repository open.
- Created office in DOE to focus on waste (OCRWM).
- Established the Nuclear Waste Fund and mandated DOE contract with utilities as a prerequisite for their continued operation and for DOE to remove the SNF starting in January 1998 in return for fees collected from electric customers that benefitted form the nuclear energy.
- Directed DOE to propose site & design for monitored retrievable storage (MRS).
- Assigned licensing to NRC using EPA standards.

1987 NWPA Amendments

- Named Yucca Mountain (YM) as sole repository site.
- Rescinded MRS site selection and tied future operation to repository progress (“linkage”).
- Offered limited incentives to host states & tribes.
- Established Nuclear Waste Negotiator to find voluntary repository or MRS sites (expired).
- If YM found unsuitable, studies to be stopped, site restored, and DOE to report to Congress in 6 mos.
- Maintained “quid pro quo” of electric customer payments for federal “performance”.

History: 1990's

- In early 1990's it was clear DOE will not meet the 1998 obligation to remove the SNF/HLW.
- NARUC and utilities filed lawsuit in US Court seeking a Writ of Mandamus for DOE to meet its statutory and contractual obligation to remove the material beginning January 1998.
- Court decision ruled DOE had no place to take it so there was a partial breach of the contracts.
- Storage costs incurred by utilities could be recovered in damages claim lawsuits in the US Court of Federal Claims or utility-DOE settlements.
- Settlements/lawsuits continue today with damages awarded out of taxpayer funded Treasury Department Judgement Fund – not the NWF – awards today are on the order of $1-2 million/day.

Permanently & Announced Shutdown Nuclear Plant Sites

1. **Big Rock**
Charlevoix, MI

2. **Connecticut Yankee**
Haddam Neck, CT

3. **Crystal River**
Crystal River, FL

4. **Diablo Canyon**
Avila Beach, CA
* Restart decision pending.

5. **Duane Arnold**
Palo, IA
* Restart decision pending.

6. **Fort Calhoun**
Blair, NE

7. **Humboldt Bay**
Eureka, CA

8. **Indian Point**
Buchanan, NY

9. **Kewaunee**
Kewaunee, WI

10. **La Crosse**
Genoa, WI

11. **Maine Yankee**
Wiscasset, ME

12. **Oyster Creek**
Lacey Township, NJ

13. **Palisades**
Covert, MI
* Restart pending.

14. **Pilgrim**
Plymouth, MA

15. **Rancho Seco**
Herald, CA

16. **San Onofre**
Pendleton, CA

17. **Three Mile Island**
Middletown, PA
* Restart decision pending.

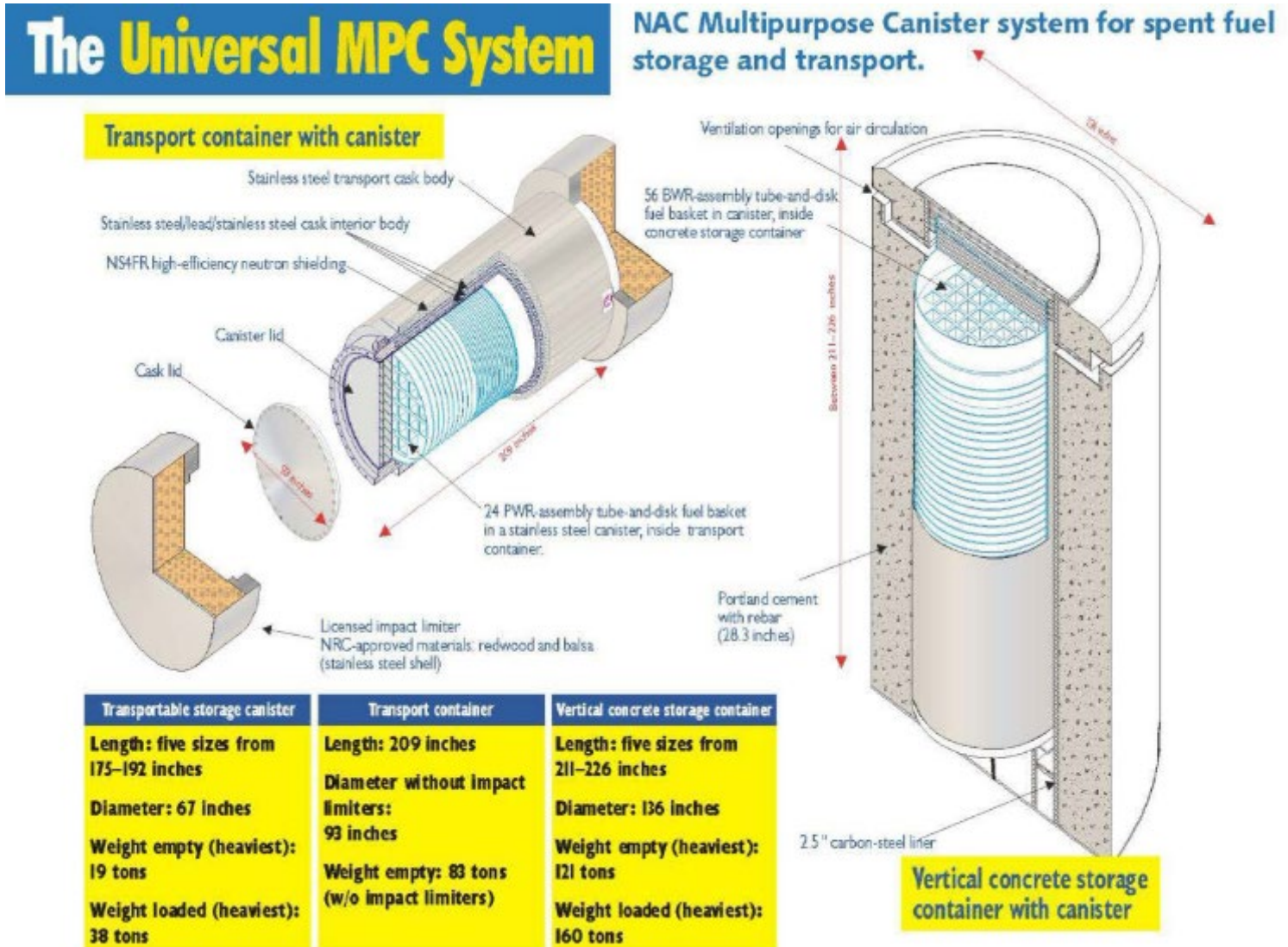
18. **Trojan**
Ranier, OR

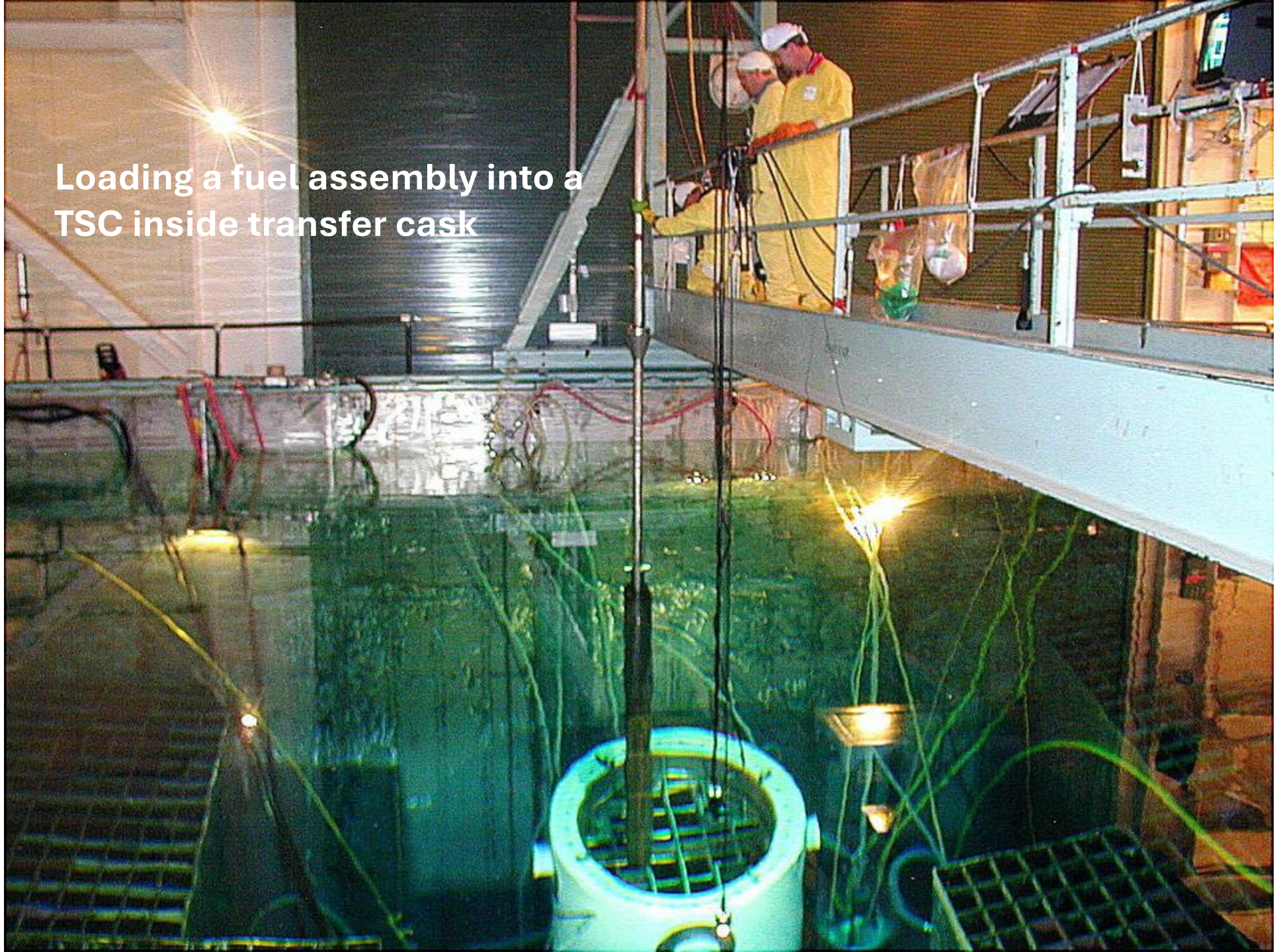
19. **Vermont Yankee**
Vernon, VT

20. **Yankee Rowe**
Rowe, MA

21. **Zion**
Zion, IL

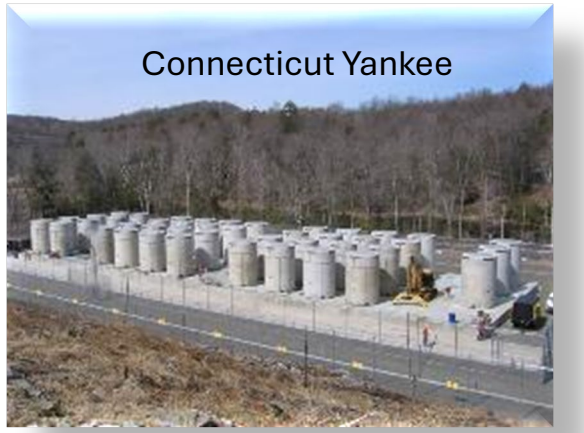
NAC Dual-Purpose Canister System Schematic




Loading a fuel assembly into a
TSC inside transfer cask

Transfer Cask lift, Transfer to VCC, and Transfer to the ISFSI Pad

The 3 Yankee Company ISFSIs



40 Spent Fuel Dry Casks
3 GTCC Dry Casks
NAC canister system

15 Spent Fuel Dry Casks
1 GTCC Dry Cask
NAC canister system

60 Spent Fuel Dry Casks
4 GTCC Dry Casks
NAC canister system

Connecticut Yankee

Yankee Rowe

Maine Yankee

History: 2000 - 2011

- **Milestones Achieved 2002**
  - Energy Secretary recommended Yucca Mountain (YM) for only repository; Pres. Bush approved
  - Nevada exercised state veto in April
  - Veto overridden by Congress by mid-July
- 2008 – DOE submitted license application for YM repository to NRC
- **Political Intervention Sidetracks Program 2009-2010**
  - Administration zeroed out YM funding and DOE Secretary Chu moved to withdraw YM license application
  - President created Blue Ribbon Commission (BRC) to "recommend a new strategy"
  - DOE's OCRWM closed
- 2011 – NRC discontinued technical review of YM license application thus the national nuclear waste policy became – and remains - the Yucca Mountain Final EIS No-Action Alternative – which is to leave the material where it is currently stored in perpetuity.

Final Environmental Impact Statement

for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada
February 2002

S.3.2 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, DOE would end site characterization activities at Yucca Mountain. The commercial nuclear power utilities and DOE would continue to store spent nuclear fuel and high-level radioactive waste. Because it would be highly speculative to attempt to predict future events, DOE decided to illustrate one set of possibilities by focusing its analysis of the No-Action Alternative on the potential impacts of two scenarios:

- **Scenario 1** assumes that spent nuclear fuel and high-level radioactive waste would remain at the 72 commercial and 5 DOE sites under institutional control for at least 10,000 years.... For purposes of analysis, DOE assumed that the storage facilities would undergo one major repair during the first approximately 100 years, and complete replacement after the first 100 years and every 100 years thereafter.
- **Scenario 2** assumes that spent nuclear fuel and high-level radioactive waste would remain in dry storage at the commercial and DOE sites and would be under institutional control for approximately 100 years (as in Scenario 1). This scenario, however, assumes no effective institutional control after 100 years, and that the storage facilities at 72 commercial and 5 DOE sites would begin to deteriorate after 100 years.

History: 2012-2016

2012: President's Blue Ribbon Commission on America's Nuclear Future Report to DOE

2013:

- DOE issues "Strategy" for Integrated Waste Management, Jan. 2013
- NRC restarts review of YM license app as directed by USCA-DC writ of mandamus
- USCA-DC decision in NARUC fee suspension case, Nov. 2013

2014: DOE suspended collection of fees from electric customers, May 2014

2015:

- NRC completion of Safety Evaluation Report (SER), confirming YM repository can dispose of SNF & HLW for > 1 M years while protecting public health, safety & environment (Jan. 2015) – that the Commission has not acted on.

2016:

- DOE pursuit of Deep Boreholes for specific waste forms (canceled 2017)
- NRC completion of YM Supplemental EIS (concerning groundwater impacts)
- DOE Consent-Based Siting (CBS) Public Meeting Series (2016)

History: 2017- 2020

2017: DOE issues Draft Consent-Based Siting Process Report, Jan 2017

2017-2019:

- Admin Budget Requests for FY 2018, 2019 & 2020: Sought $116 M - $120 M for DOE for YM and “robust” interim storage and $30 M - $47.7 M for NRC for YM licensing.
- Congress did not award the YM requested funding - and the administration eventually changed its position in support of YM.

2020:

- Admin Budget Request for FY 2021: Sought $0 for YM and $25 M for interim storage
- Congress FY 2021 Appropriations: New $20 M for interim storage and $7.5 M from NWF for NWF oversight

Nuclear Waste Fund (NWF) Summary

- Established by NWPA and composed of payments by generators and owners of commercial SNF and HLW to ensure that costs relating to disposal were borne by those benefiting from the power (i.e., electric customers).
- Quarterly fee (1 mill/kWh = 1/10 of a cent/kWh) established for nuclear power generated and sold *from April 7, 1983 forward*.
- "One-time fee" established for nuclear power generated and sold *prior to April 7, 1983* (does not have to be paid until DOE begins SNF removal from reactor site).
- In response to lawsuit initiated by NARUC, U.S. Court of Appeals for D.C. Circuit ordered DOE Secretary to suspend collecting fees until DOE conducts a legally adequate fee assessment. *NARUC v. DOE* (D.C. Cir. Nov. 19, 2013). Fee collection ceased in May 2014.

Nuclear Waste Fund Summary as of December 31, 2023

Net Payments and Balances by State Under Standard Contracts with Commercial Facilities[1]

State[2]	Total Net Payments ($M)	One-Time Fee Outstanding ($M)
Alabama	948.9	-
Arizona	686.6	-
Arkansas	367.1	205.2
California	953.0	0.8
Colorado	0.2	-
Connecticut	923.9	12.5
Florida	887.0	-
Georgia	846.1	-
Illinois	2,261.2	1,157.3
Iowa	137.1	-
Kansas	225.3	-
Louisiana	407.4	-
Maine	251.9	-
Maryland	426.4	-
Massachusetts	188.4	-
Michigan	829.0	300.4
Minnesota	449.2	-
Mississippi	250.4	-
Missouri	243.1	-
Nebraska	300.2	-
New Hampshire	201.2	-
New Jersey	769.6	197.9
New York	1,011.8	573.3
North Carolina	1,034.6	-
Ohio	381.5	37.0
Oregon	75.5	-
Pennsylvania	1,947.3	100.8
South Carolina	1,498.7	-
Tennessee	596.9	-
Texas	812.3	-
Vermont	272.3	-
Virginia	837.0	-
Washington	198.9	-
Wisconsin	416.4	-

Notes:

1. The Nuclear Waste Policy Act established the Federal Government's responsibility to dispose of commercial spent nuclear fuel (SNF) and high-level radioactive waste (HLW), and the Nuclear Waste Fund, composed of payments made by the generators and owners of SNF and HLW, to ensure that the costs relating to disposal are borne by the generators and owners of SNF and HLW. The "one-time fee" was established for fuel used to generate electricity prior to April 7, 1983 (permanently discharged SNF and fuel that had been irradiated but was still in-core), and an ongoing quarterly fee was established based on electricity generated and sold from April 7, 1983 forward. This summary does not include the $5.293M one-time fee and $2.263M ongoing fee payments made by DOE. Payment information comes from the Department of Energy Consolidated Accounting & Investment System (CAIS). Payments are net of credits/refunds of fees and interest, and do not include penalties. The one-time fees include principal and interest. This summary also includes on-time fee payments by GE Vallecitos (CA), GE Morris (IL), NFS (NY), and B&W (VA).

2. The fees by state largely reflect generation of electricity from nuclear power plants located within each state. However, the ultimate consumers of some of the electricity may not be within the state, so out-of-state consumers may have contributed to a portion of these fees.

Nuclear Waste Fund (NWF)
Annual Financial Report Summary
FY2024 and Cumulative ($'s in millions)

	1983 - FY2024	FY2024
Fee and Interest Billings to Commercial Nuclear Generators	24,472	141
Less: Receivable as of September 30, 2024	(2,691)	(141)
Receipts from Commercial Nuclear Generators	21,781	-
Interest Income, Gains, and Other Revenues	35,402	1,811
Receipts from Defense Nuclear Generators	3,768	0
Receipts from Nuclear Waste Disposal Appropriation Not Derived From the NWF	28	5
Total Income	**$ 60,979**	**$ 1,816**
Expenditures for First Repository Costs (Yucca Mountain and Other First Repository Activities)	7,528	0
Expenditures for Other Waste Program Activities[1]	3,855	19
Expenditures for Second Repository Costs	109	-
Total Expenditures	**$ 11,491**	**$ 19**
Unexpended or Undisbursed Defense Nuclear Waste Disposal Appropriations (DNWDA)	2	(0)
Unexpended or Undisbursed Nuclear Waste Disposal Appropriation Not Derived From the NWF[2]	14	(4)
Current Balance in the Nuclear Waste Fund (Fund Balance with Treasury and Investments and Related Interest, Net) and Unexpended/Undisbursed Appropriations	**$ 49,503**	**$ 1,793**

(Numbers may not add due to rounding)

[1] For FY2024, the Expenditures for Other Waste Program Activities included $13.4 million derived from the NWF ($9.4 million for program support and $4.1 million for the Nuclear Waste Technical Review Board) and $5.3 million derived from the Treasury's General Fund for interim storage. (Numbers may not add due to rounding)

[2] The -$4 million (rounded) results from the $5.3 million of interim storage expenditures in FY2024 minus $0.9 million costs incurred but not paid in FY2024.

Impacts to US Taxpayers of Continued Program Delay (All 50 States)

- Damages for unmet obligation (breach of contract) paid, or to be paid in future, from US Treasury's Judgment Fund
  - $11.1B paid as of 9/30/24
  - $37.6 – $44.5 B estimated remaining future liability as of 9/30/24
    - Performance assumption used for estimate consistent with durations provided for Consent-Based Siting Process road map phases
    - Contingent upon adequate ongoing appropriations and amending NWPA
- Costing U.S. taxpayers and increasing federal deficit ≈ $1-2 million per day.

President's Executive Orders

- On May 23rd the President signed four executive orders related to the rapid deployment of next-generation nuclear technologies in the U.S.
- One of them, "Reinvigorating the Nuclear Industrial Base" requires that within 240 days of the Order (which is January 18, 2026) the Secretary of Energy must prepare and submit to the President a report that recommends a national policy to manage the spent nuclear fuel and high-level waste – as well as provide recommendations for legislative proposals and regulatory actions regarding the management of SNF/HLW - including an evaluation of reprocessing and recycling of defense waste and other SNF managed by DOE.

Multiple National Organization letter to DOE Secretary Chris Wright

- Multiple National Organization Letter to Secretary Wright on Nuclear Waste Program
- Eight nuclear and energy groups sent DOE Secretary of Energy Wright a letter on July 8th urging he take action to address the back end of the nuclear fuel cycle in the United States and requested a meeting to discuss the topic.
- Wayne Norton (President & CEO of the 3Yankees) signed on the letter on behalf of the Decommissioning Plant Coalition (DPC).
- The other organizations that signed on are the Nuclear Energy Institute (NEI), Energy Communities Alliance (ECA), Nuclear Industry Council (NIC), American Nuclear Society (ANS), Nuclear Waste Strategy Coalition (NWSC), National Association of Regulatory Utility Commissioners (NARUC), and the Sustainable Fuel Cycle Task Force Science Panel

What needs to happen next?

The Multiple National Organization letter calls for development of:

- A governance and funding structure that maximizes opportunities for sustained performance over the decades required for completion of this program, including:
  - An interim step to re-establish an office within DOE, reporting directly to the Secretary of Energy and solely responsible for the back-end of the fuel cycle;
  - The formation of a new, single-purpose organization – independent of DOE – to manage the SNF and HLW program long-term; and
  - Sustainable, annual access to the Nuclear Waste Fund balance and accumulating interest to effectively implement the program.
- An integrated program that includes storage, transportation, examination of the role for reprocessing, and geologic disposal elements; and
- A collaborative process that brings about necessary alignment of federal, state, local, and Tribal governments on the siting of necessary facilities.

Thank you!

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Panel: What's next? Maine's Solar Successor Program

Celina Cunningham, Acting Deputy Commissioner, Maine Department of Energy Resources

Nick Lacasse, Partner, Perennial Renewables

Fortunat Mueller, CEO, Revision Energy

Heather Sanborn, Public Advocate, Office of the Public Advocate

Moderator: Eliza Donoghue, Executive Director, Maine Renewable Energy Association

Fireside Chat: Federal Regulatory Outlook

Judy Chang, Commissioner, Federal Energy Regulatory Commission

Patrick Woodcock
President & CEO, Maine State Chamber of Commerce

Closing Reflections

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