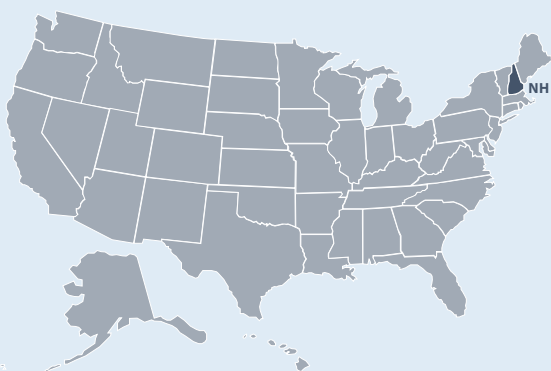




# State of New Hampshire ENERGY SECTOR RISK PROFILE



## New Hampshire State Facts



POPULATION

1.36 M



HOUSING UNITS

0.64 M



BUSINESS ESTABLISHMENTS

0.04 M

ENERGY EMPLOYMENT: 10,812 jobs

PUBLIC UTILITY COMMISSION: New Hampshire Public Utilities Commission

STATE ENERGY OFFICE: New Hampshire Office of Strategic Initiatives, Energy Division

EMERGENCY MANAGEMENT AGENCY: New Hampshire Homeland Security and Emergency Management

AVERAGE ELECTRICITY TARIFF: 17.01 cents/kWh

ENERGY EXPENDITURES: \$3,847/capita

ENERGY CONSUMPTION PER CAPITA: 235 MMBtu (41st highest out of 50 states and Washington, D.C.)

GDP: \$84.5 billion

Data from 2020 or most recent year available.

For more information, see the Data Sources document.

## ANNUAL ENERGY CONSUMPTION

ELECTRIC POWER: 16,760 GWh

COAL: 300 MSTN

NATURAL GAS: 54 Bcf

MOTOR GASOLINE: 13,100 Mbbl

DISTILLATE FUEL: 7,300 Mbbl

## ANNUAL ENERGY PRODUCTION

ELECTRIC POWER GENERATION: 64 plants, 18.0 TWh, 4.7 GW total capacity

Coal: 2 plants, 0.3 TWh, 0.6 GW total capacity

Hydro: 33 plants, 1.5 TWh, 0.5 GW total capacity

Natural Gas: 4 plants, 3.6 TWh, 1.8 GW total capacity

Nuclear: 1 plant, 10.9 TWh, 1.2 GW total capacity

Petroleum: 7 plants, 0.0 TWh, 0.1 GW total capacity

Wind & Solar: 5 plants, 0.4 TWh, 0.2 GW total capacity

Other sources: 12 plants, 1.3 TWh, 0.3 GW total capacity

COAL: 0 MSTN

NATURAL GAS: 0 Bcf

CRUDE OIL: 0 Mbbl

ETHANOL: 0 Mbbl

Data from EIA (2018, 2019).

This State Energy Risk Profile examines the relative magnitude of the risks that the state of New Hampshire's energy infrastructure routinely encounters in comparison with the probable impacts. Natural and man-made hazards with the potential to cause disruption of the energy infrastructure are identified. Certain natural and adversarial threats, such as cybersecurity, electromagnetic pulse, geomagnetic disturbance, pandemics, or impacts caused by infrastructure interdependencies, are ill-suited to location-based probabilistic risk assessment as they may not adhere to geographic boundaries, have limited occurrence, or have limited historic data. Cybersecurity and other threats not included in these profiles are ever present and should be included in state energy security planning. A complete list of data sources and national level comparisons can be found in the Data Sources document.

## New Hampshire Risks and Hazards Overview

- The natural hazard that caused the greatest overall property loss between 2009 and 2019 was **Flooding** at \$8 million per year (leading cause nationwide at \$12 billion per year).
- New Hampshire had 30 Major Disaster Declarations, 0 Emergency Declarations, and 1 Fire Management Assistance Declaration for 10 events between 2013 and 2019.
- New Hampshire registered 6% fewer Heating Degree Days and 54% greater Cooling Degree Days than average in 2019.
- There is 1 Fusion Center located in Concord.

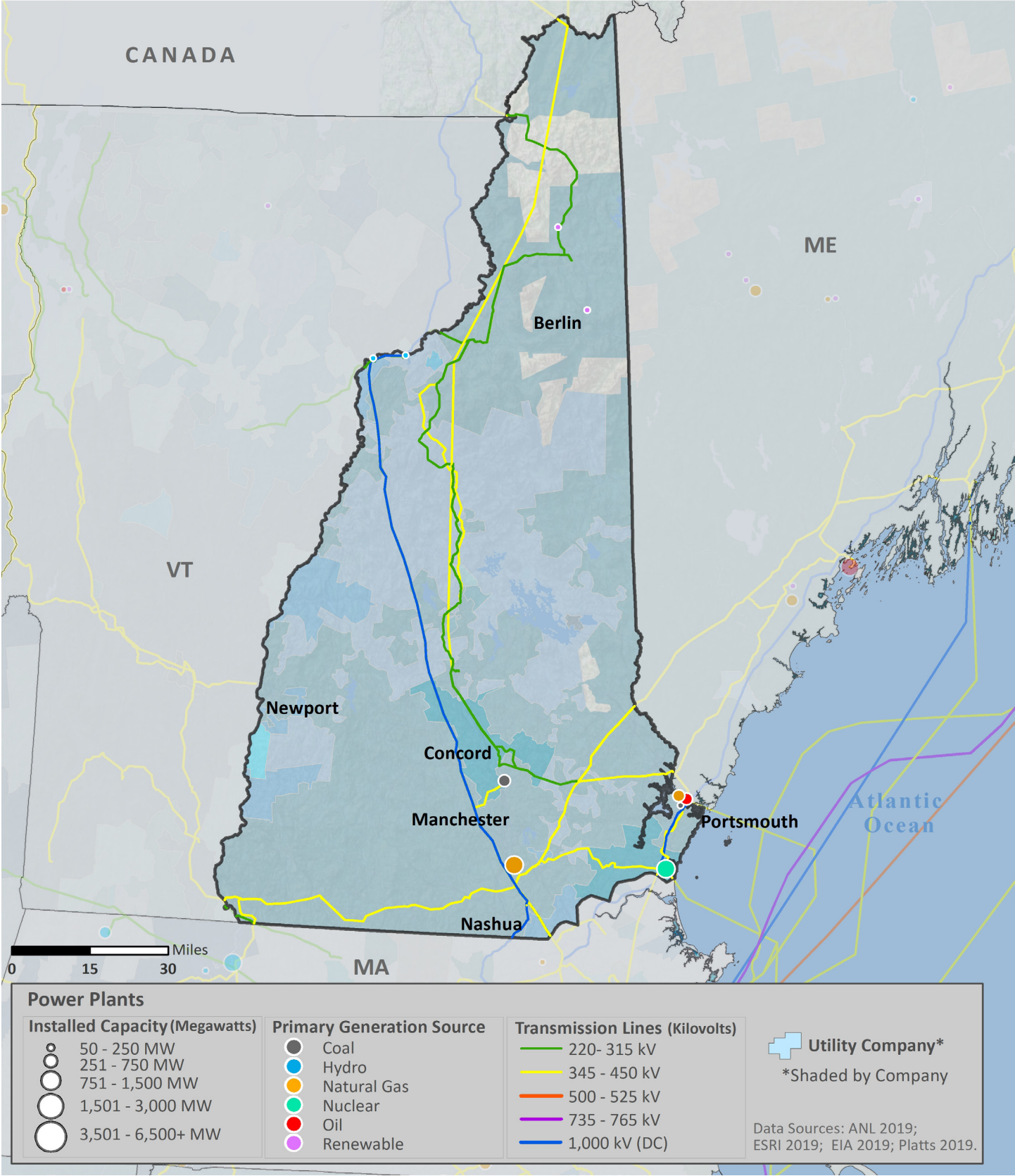
## Annualized Frequency of and Property Damage Due to Natural Hazards, 2009 – 2019

	HAZARD FREQUENCY – Annualized	PROPERTY DAMAGE – Annualized (\$Million per year)
Drought	0	\$0
Earthquake (≥ 3.5 M)	0	\$0
Extreme Heat	<1	\$0
Flood	15	\$8
Hurricane	<1	\$0
Landslide	<1	\$0
Thunderstorm & Lightning	20	\$1
Tornado	1	\$0
Wildfire	0	\$0
Winter Storm & Extreme Cold	12	\$0

Data Sources: NOAA and USGS



# ELECTRIC









## Electric Infrastructure

- New Hampshire has 11 electric utilities:
  - 4 Investor owned
  - 1 Cooperative
  - 5 Municipal
  - 1 Other utility
- Plant retirements scheduled by 2025: 2 electric generating units totaling 2 MW of installed capacity.

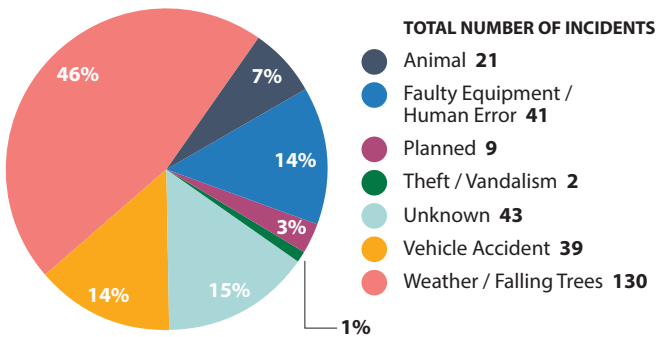
- In 2018, the average New Hampshire electric customer experienced 2.2 service interruptions that lasted an average of 8.5 hours.
- In New Hampshire, between 2008 and 2017:
  - The greatest number of electric outages occurred in **October** (5th for outages nationwide)
  - The leading cause of electric outages was **Weather or Falling Trees** (leading cause nationwide)
  - Electric outages affected 277,338 customers on average

### Electric Customers and Consumption by Sector, 2018

	 CUSTOMERS	 CONSUMPTION
Residential 	85%	42%
Commercial 	15%	40%
Industrial 	<1%	18%
Transportation 	<1%	<1%

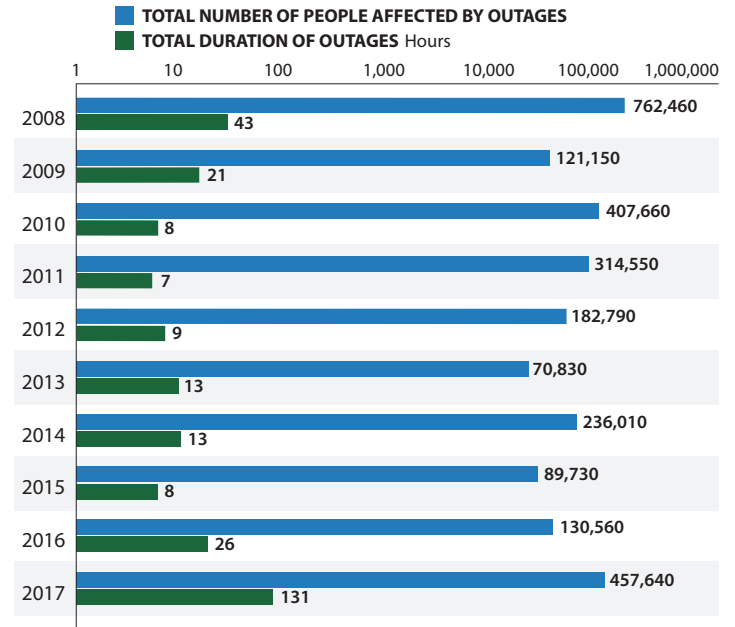
Data Source: EIA

### Electric Utility-Reported Outages by Cause, 2008 – 2017



Data Source: Eaton

### Electric Utility Outage Data, 2008 – 2017

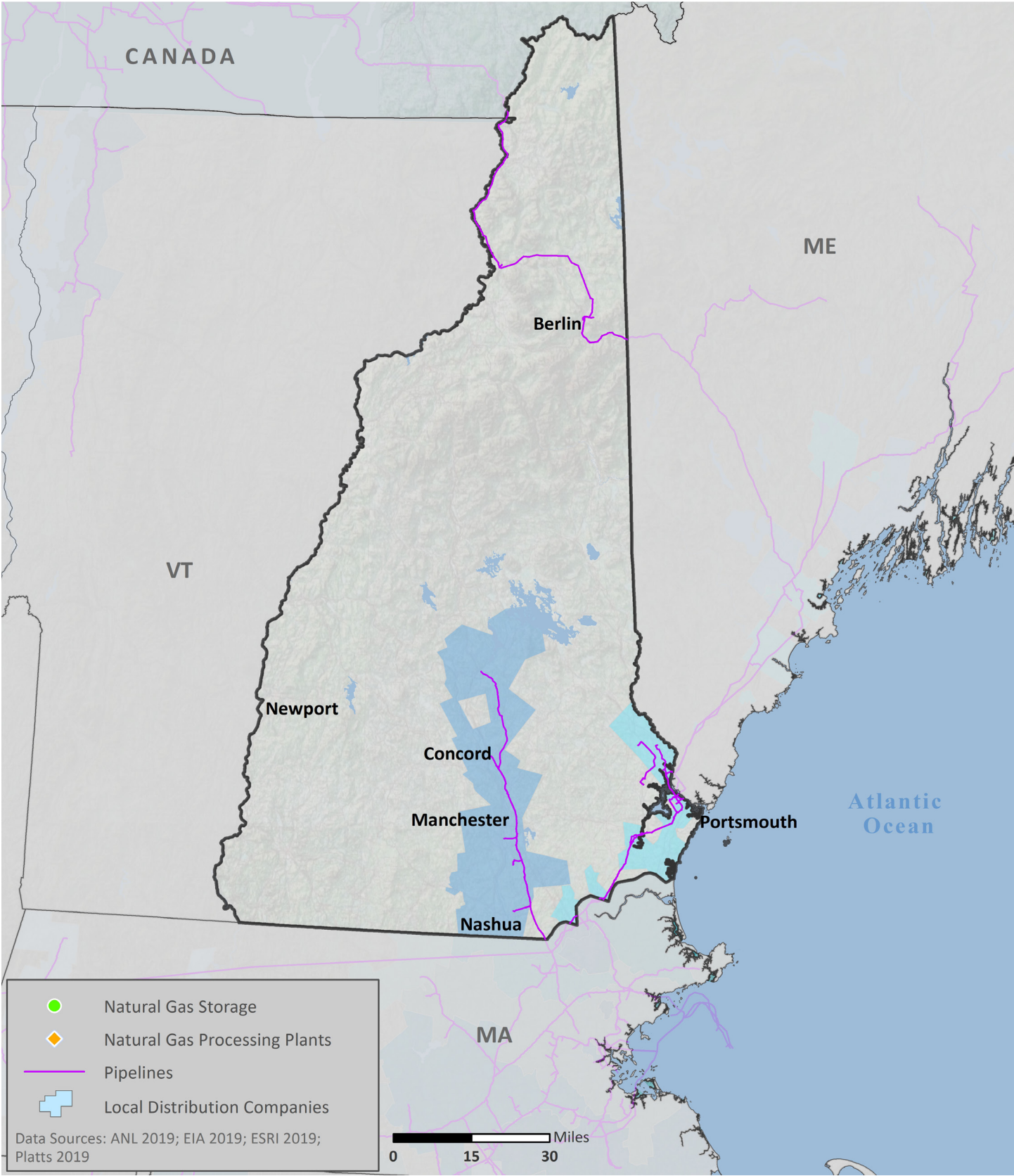


Note: This chart uses a logarithmic scale to display a very wide range of values.  
Data Source: Eaton





# NATURAL GAS



## Natural Gas Transport

### Top Events Affecting Natural Gas Transmission and Distribution, 1984 – 2019

	ECONOMIC LOSS – Annualized Loss \$Thousands per year	FREQUENCY – Annualized Frequency Average incidents per year
Corrosion	\$0	0
Equipment Failure	\$3	0.03
Excavation Damage	\$19	0.03
Incorrect Operation	\$0	0
Material / Weld Failure	\$0	0
Miscellaneous / Unknown	\$12	0.11
Natural Force	\$3	0.03
Outside Force	\$4	0.08

Data Source: DOT PHMSA

- As of 2018, New Hampshire had:
  - 251 miles of natural gas transmission pipelines
  - 1,989 miles of natural gas distribution pipelines
- 20% of New Hampshire’s natural gas transmission system and 12% of the distribution system were constructed prior to 1970 or in an unknown year.
- Between 1984 and 2019, New Hampshire’s natural gas supply was most impacted by:
  - **Excavation Damage** when transported by distribution pipelines (5th leading cause nationwide at \$16.56M per year)

## Natural Gas Processing and Liquefied Natural Gas

### Natural Gas Customers and Consumption by Sector, 2018

	CUSTOMERS	CONSUMPTION
Residential	85%	15%
Commercial	15%	18%
Industrial	<1%	18%
Transportation	<1%	<1%
Electric Power	<1%	49%
Other	<1%	<1%

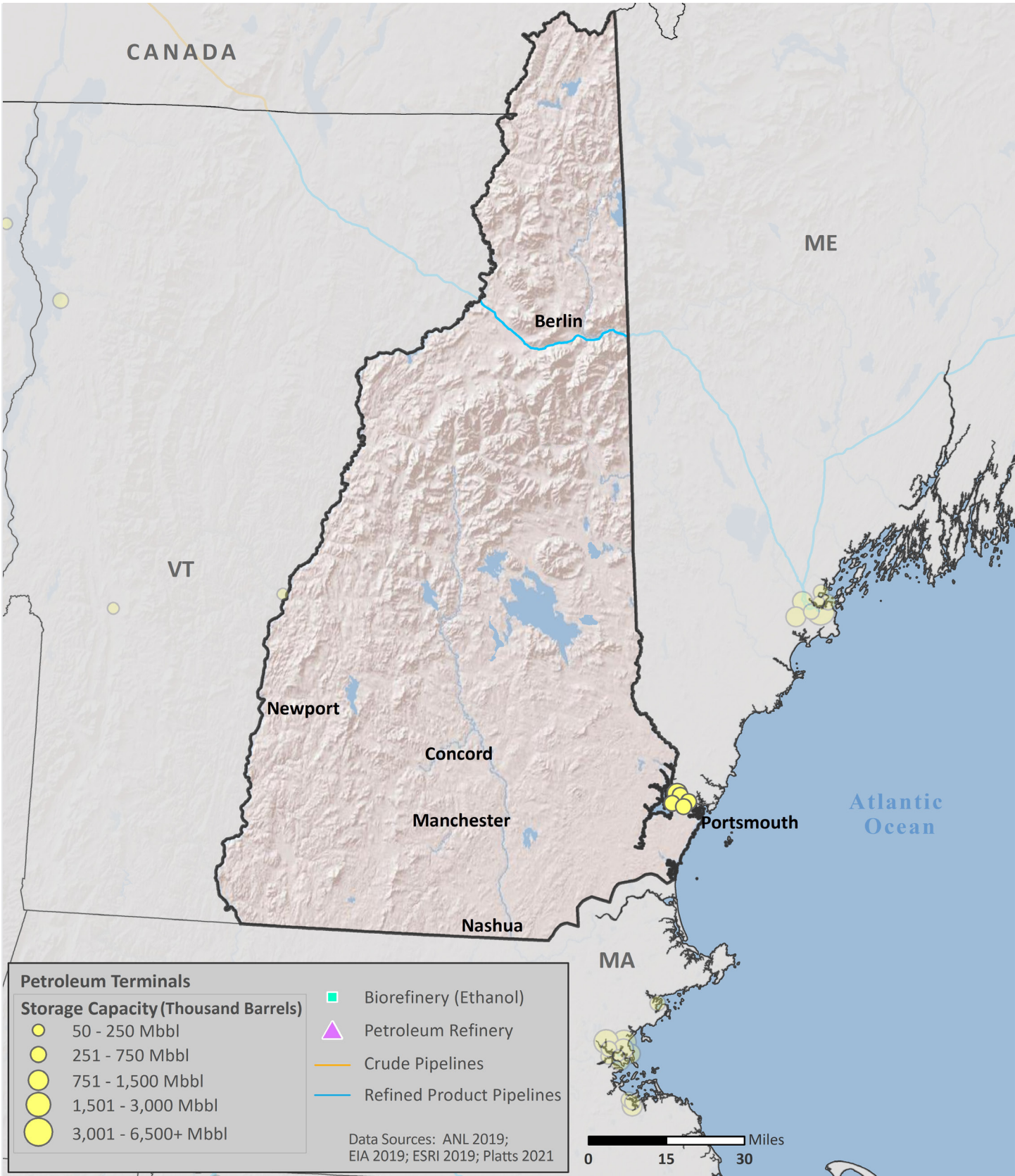
Data Source: EIA

- New Hampshire has 0 natural gas processing facilities.
- New Hampshire has 3 liquefied natural gas (LNG) facilities with a total storage capacity of 3,785 barrels.





# PETROLEUM



## Petroleum Transport

### Top Events Affecting Petroleum Transport by Truck and Rail, 1986 – 2019

	ECONOMIC LOSS – Annualized Loss \$Thousands per year	FREQUENCY – Annualized Frequency Average incidents per year
Corrosion	\$0	0.03
Derailment or Collision / Rollover	\$49	0.26
Equipment Failure	\$0	0
Incorrect Operation	\$1	0.68
Material / Weld Failure	\$9	0.26
Miscellaneous / Unknown	\$20	0.50
Natural Force	\$9	0.03
Outside Force	\$21	0.21

Data Source: DOT PHMSA

- As of 2018, New Hampshire had:
  - 71 miles of crude oil pipelines
  - 0 miles of refined product pipelines
  - 0 miles of biofuels pipelines
- 100% of New Hampshire’s petroleum pipeline systems were constructed prior to 1970 or in an unknown year.
- Between 1986 and 2019, New Hampshire’s petroleum supply was most impacted by:
  - **Derailments, Collisions, or Rollovers** when transported by truck (8th leading cause nationwide at \$0.07M per year)
  - **Corrosion** when transported by crude pipelines (3rd leading cause nationwide at \$14.51M per year)

### Top Events Affecting Crude Oil and Refined Product Pipelines, 1986 – 2019

	ECONOMIC LOSS – Annualized Loss \$Thousands per year	FREQUENCY – Annualized Frequency Average incidents per year
Corrosion	\$0	0.03
Equipment Failure	\$0	0
Excavation Damage	\$0	0
Incorrect Operation	\$0	0
Material / Weld Failure	\$0	0
Miscellaneous / Unknown	\$0	0
Natural Force	\$0	0
Outside Force	\$0	0

Data Source: DOT PHMSA

- Disruptions in other states may impact supply.

## Petroleum Refineries

- There are no operating petroleum refineries in New Hampshire.

