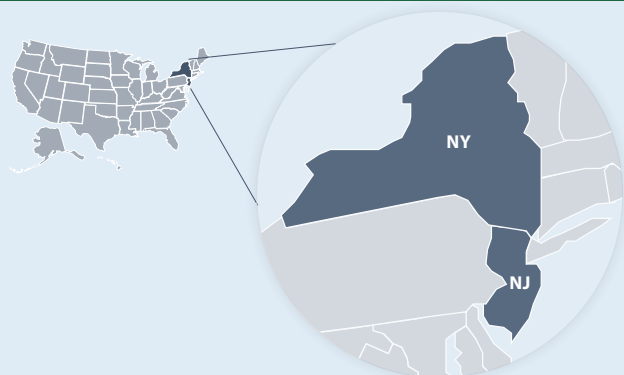




FEMA Region 2 ENERGY SECTOR RISK PROFILE



Region 2 Facts



POPULATION

28.45 M



HOUSING UNITS
11.99 M



BUSINESS ESTABLISHMENTS
0.78 M

ENERGY EMPLOYMENT: 200,971 jobs

POPULATION-WEIGHTED AVERAGE ELECTRICITY TARIFF: 14.33 cents/kWh

POPULATION-WEIGHTED ENERGY EXPENDITURES: \$2,938/capita

POPULATION-WEIGHTED ENERGY CONSUMPTION PER CAPITA: 204 MMBtu

GDP: \$2,290.9 billion

Data from 2020 or most recent year available. For more information, see the Data Sources document.

ANNUAL ENERGY CONSUMPTION

ELECTRIC POWER: 338,180 GWh

COAL: 1,300 MSTN

NATURAL GAS: 2,046 Bcf

MOTOR GASOLINE: 218,600 Mbbbl

DISTILLATE FUEL: 86,800 Mbbbl

ANNUAL ENERGY PRODUCTION

ELECTRIC POWER GENERATION: 943 plants, 202.6 TWh, 63.1 GW total capacity

Coal: 5 plants, 1.5 TWh, 1.9 GW total capacity

Hydro: 166 plants, 30.6 TWh, 4.7 GW total capacity

Natural Gas: 164 plants, 88.1 TWh, 37.1 GW total capacity

Nuclear: 7 plants, 71.5 TWh, 9.3 GW total capacity

Petroleum: 98 plants, 0.7 TWh, 4.1 GW total capacity

Wind & Solar: 440 plants, 6.2 TWh, 3.3 GW total capacity

Other sources: 63 plants, 4.1 TWh, 2.6 GW total capacity

COAL: 0 MSTN

NATURAL GAS: 10 Bcf

CRUDE OIL: 400 Mbbbl

ETHANOL: 4,200 Mbbbl

Data from EIA (2018, 2019).

This Energy Risk Profile examines the relative magnitude of the risks that portions of Federal Emergency Management Agency (FEMA) Region 2's energy infrastructure routinely encounter in comparison with the probable impacts. FEMA Region 2 includes New Jersey, New York, Puerto Rico, and the U.S. Virgin Islands (USVI). This regional profile includes data only for states within the contiguous United States. For information about Puerto Rico, please refer to the [Puerto Rico Energy Snapshot](#). For information about USVI, please refer to the [USVI Energy Snapshot](#).

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.

Region 2 Risks and Hazards Overview

- The natural hazard that caused the greatest overall property loss between 2009 and 2019 was **Flooding** at \$2.4 billion per year (leading cause nationwide at \$12 billion per year).
- Region 2 had 125 Major Disaster Declarations, 0 Emergency Declarations, and 0 Fire Management Assistance Declarations for 11 events between 2013 and 2019.
- The FEMA Region 2 office is located in New York, NY.

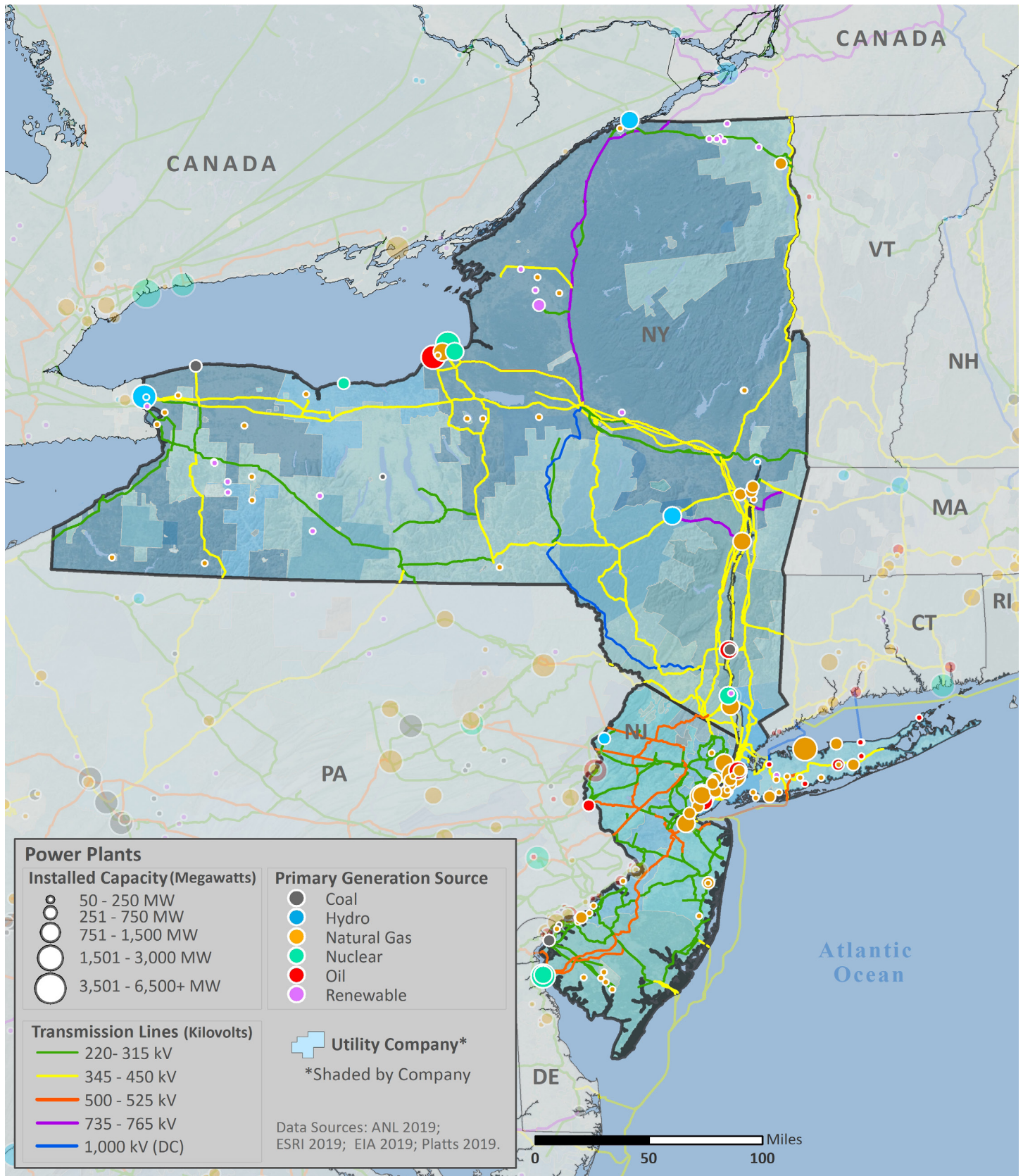
Annualized Frequency of and Property Damage Due to Natural Hazards, 2009 – 2019

	HAZARD FREQUENCY – Annualized	PROPERTY DAMAGE – Annualized (\$Million per year)
Drought	2	\$0
Earthquake (≥ 3.5 M)	0	\$0
Extreme Heat	8	\$0
Flood	83	\$2,418
Hurricane	<1	\$4
Landslide	<1	\$0
Thunderstorm & Lightning	168	\$432
Tornado	12	\$6
Wildfire	5	\$0
Winter Storm & Extreme Cold	82	\$18

Data Sources: NOAA and USGS



ELECTRIC









Electric Infrastructure

- Region 2 has 142 electric utilities:
 - 13 Investor owned
 - 5 Cooperative
 - 54 Municipal
 - 70 Other utilities
- Plant retirements scheduled by 2025: 27 electric generating units totaling 2,711 MW of installed capacity.

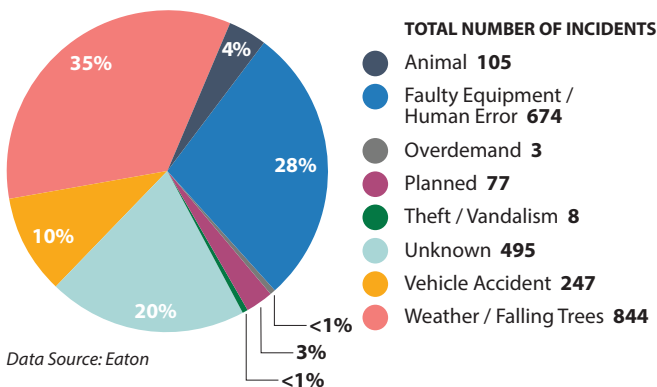
- In 2018, the average Region 2 electric customer experienced 1.1 service interruptions that lasted an average of 7.4 hours.
- Between 2008 and 2017:
 - In Region 2, the greatest number of electric outages occurred in **July** (leading month for outages nationwide)
 - The leading cause of electric outages in Region 2 was **Weather or Falling Trees** (leading cause nationwide)
 - Electric outages affected 2,810,910 customers on average

Electric Customers and Consumption by Sector, 2018

	 CUSTOMERS	 CONSUMPTION
Residential 	87%	36%
Commercial 	13%	51%
Industrial 	<1%	11%
Transportation 	<1%	<1%

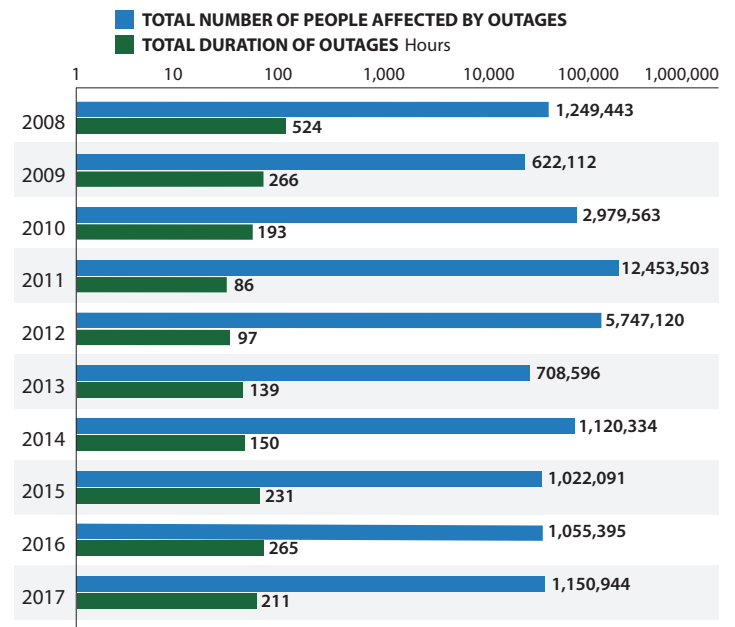
Data Source: EIA

Electric Utility-Reported Outages by Cause, 2008 – 2017



Data Source: Eaton

Electric Utility Outage Data, 2008 – 2017



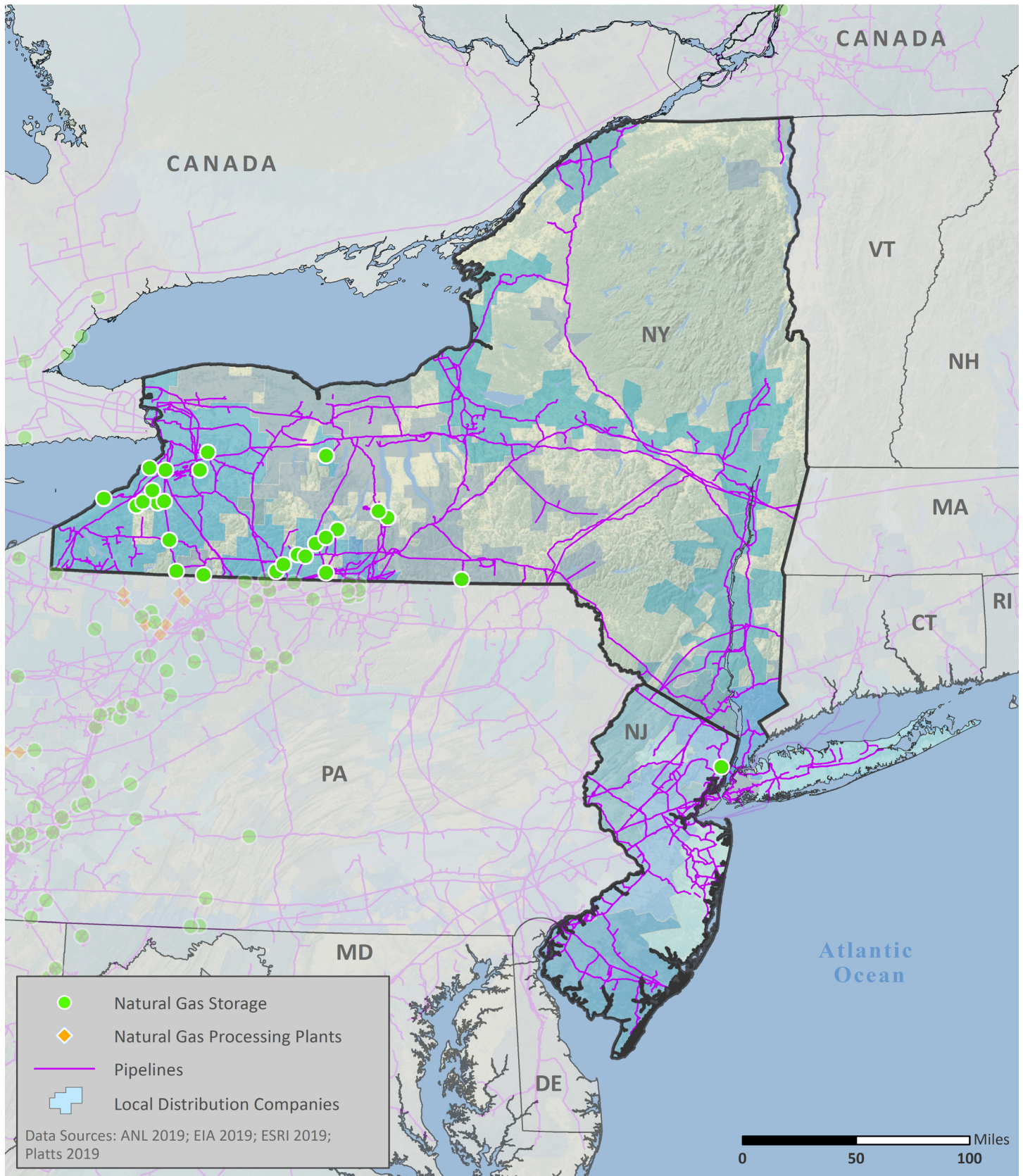
Note: This chart uses a logarithmic scale to display a very wide range of values.

Data Source: Eaton





NATURAL GAS



Natural Gas Transport

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



Data Source: DOT PHMSA

- As of 2018, Region 2 had:
 - 6,155 miles of natural gas transmission pipelines
 - 84,314 miles of natural gas distribution pipelines
- 54% of Region 2’s natural gas transmission system and 37% of the distribution system were constructed prior to 1970 or in an unknown year.
- Between 1984 and 2019, Region 2’s natural gas supply was most impacted by:
 - **Outside Forces** when transported by transmission pipelines (3rd leading cause nationwide at \$20.65M per year)
 - **Outside Forces** when transported by distribution pipelines (leading cause nationwide at \$76.59M per year)

Natural Gas Processing and Liquefied Natural Gas

Natural Gas Customers and Consumption by Sector, 2018

	CUSTOMERS	CONSUMPTION
Residential	93%	34%
Commercial	7%	23%
Industrial	<1%	7%
Transportation	<1%	<1%
Electric Power	<1%	36%
Other	<1%	<1%

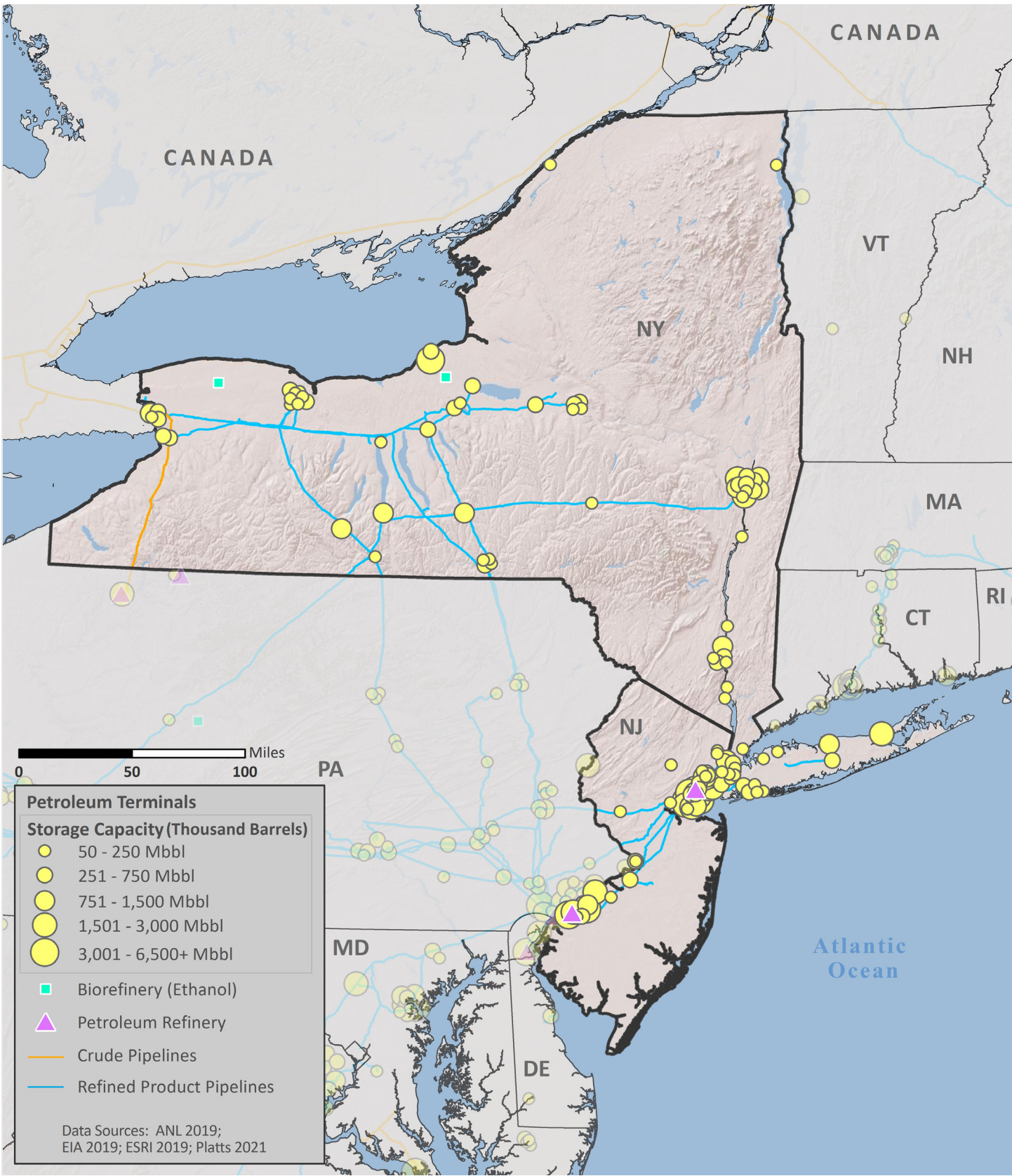
Data Source: EIA

- Region 2 has 0 natural gas processing facilities.
- Region 2 has 9 liquefied natural gas (LNG) facilities with a total storage capacity of 2,035,800 barrels.



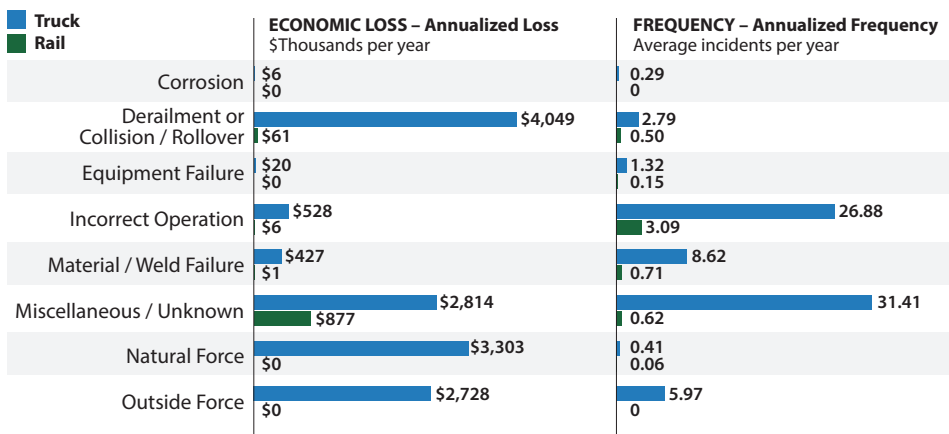


PETROLEUM



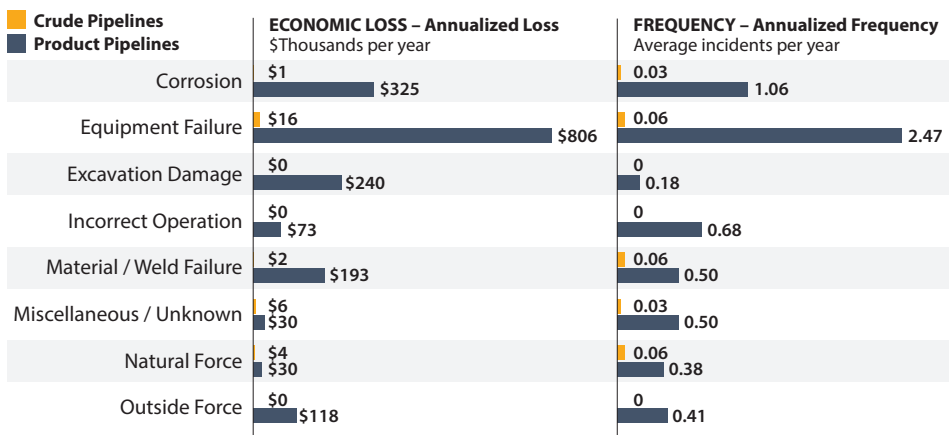
Petroleum Transport

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



Data Source: DOT PHMSA

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



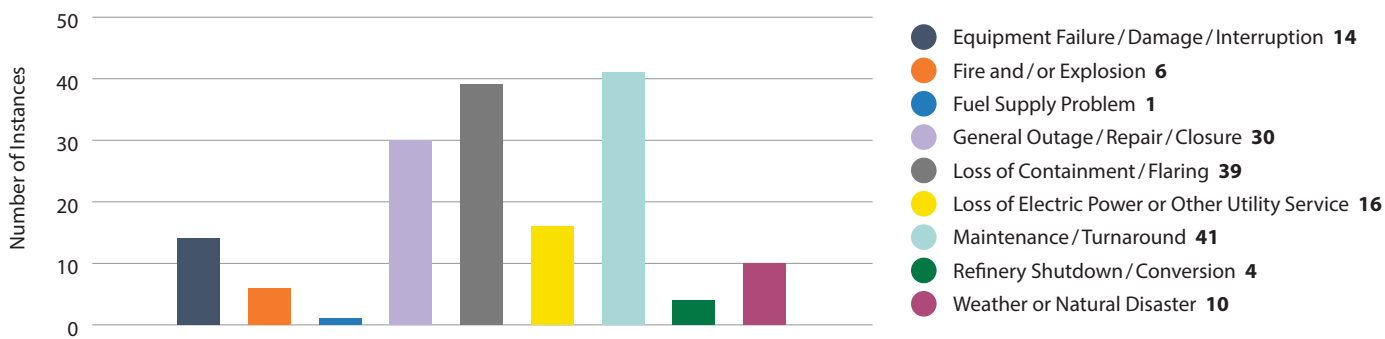
Data Source: DOT PHMSA

- Region 2 is part of Petroleum Administration for Defense District (PADD) 1.
- As of 2018, Region 2 had:
 - 167 miles of crude oil pipelines
 - 3,462 miles of refined product pipelines
 - 0 miles of biofuels pipelines
- 79% of Region 2’s petroleum pipeline systems were constructed prior to 1970 or in an unknown year.
- Between 1986 and 2019, Region 2’s petroleum supply was most impacted by:
 - **Derailments, Collisions, or Rollovers** when transported by truck (8th leading cause nationwide at \$0.07M per year)
 - **Miscellaneous or Unknown** when transported by rail (3rd leading cause nationwide at \$6.11M per year)
 - **Excavation Damage** when transported by crude pipelines (7th leading cause nationwide at \$3.30M per year)
 - **Excavation Damage** when transported by product pipelines (5th leading cause nationwide at \$5.74M per year)
- Disruptions in other states may impact supply.

Petroleum Refineries

- Region 2 has 2 petroleum refineries with a total operable capacity of 418.5 Mb/d.

Causes and Frequency of Petroleum Refinery Disruptions, 2009 – 2019



Data Source: Hydrocarbon Publishing