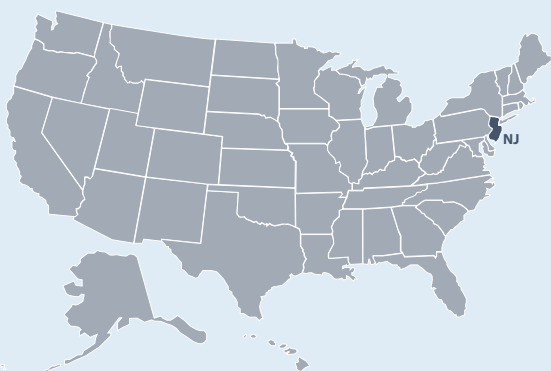




State of New Jersey ENERGY SECTOR RISK PROFILE



New Jersey State Facts



POPULATION

8.91 M



HOUSING UNITS

3.63 M



BUSINESS ESTABLISHMENTS

0.23 M

ENERGY EMPLOYMENT: 64,532 jobs

PUBLIC UTILITY COMMISSION: New Jersey Board of Public Utilities

STATE ENERGY OFFICE: New Jersey Board of Public Utilities
EMERGENCY MANAGEMENT AGENCY: New Jersey Office of Emergency Management

AVERAGE ELECTRICITY TARIFF: 13.23 cents/kWh

ENERGY EXPENDITURES: \$3,323/capita

ENERGY CONSUMPTION PER CAPITA: 240 MMBtu
(39th highest out of 50 states and Washington, D.C.)

GDP: \$622.0 billion

Data from 2020 or most recent year available.

For more information, see the Data Sources document.

ANNUAL ENERGY CONSUMPTION

ELECTRIC POWER: 111,610 GWh

COAL: 600 MSTN

NATURAL GAS: 759 Bcf

MOTOR GASOLINE: 89,400 Mbbl

DISTILLATE FUEL: 38,700 Mbbl

ANNUAL ENERGY PRODUCTION

ELECTRIC POWER GENERATION: 337 plants, 71.0 TWh,
19.0 GW total capacity

Coal: 2 plants, 1.0 TWh, 0.5 GW total capacity

Hydro: 2 plants, 0.0 TWh, 0.0 GW total capacity

Natural Gas: 56 plants, 40.4 TWh, 12.9 GW total capacity

Nuclear: 2 plants, 26.6 TWh, 3.6 GW total capacity

Petroleum: 11 plants, 0.1 TWh, 0.3 GW total capacity

Wind & Solar: 241 plants, 1.2 TWh, 0.9 GW total capacity

Other sources: 23 plants, 1.5 TWh, 0.8 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 Jersey'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 Jersey Risks and Hazards Overview

- The natural hazard that caused the greatest overall property loss between 2009 and 2019 was **Flooding** at \$2.3 billion per year (leading cause nationwide at \$12 billion per year).
- New Jersey had 27 Major Disaster Declarations, 0 Emergency Declarations, and 0 Fire Management Assistance Declarations for 3 events between 2013 and 2019.
- New Jersey registered 14% fewer Heating Degree Days and 54% greater Cooling Degree Days than average in 2019.
- There is 1 Fusion Center located in West Trenton.

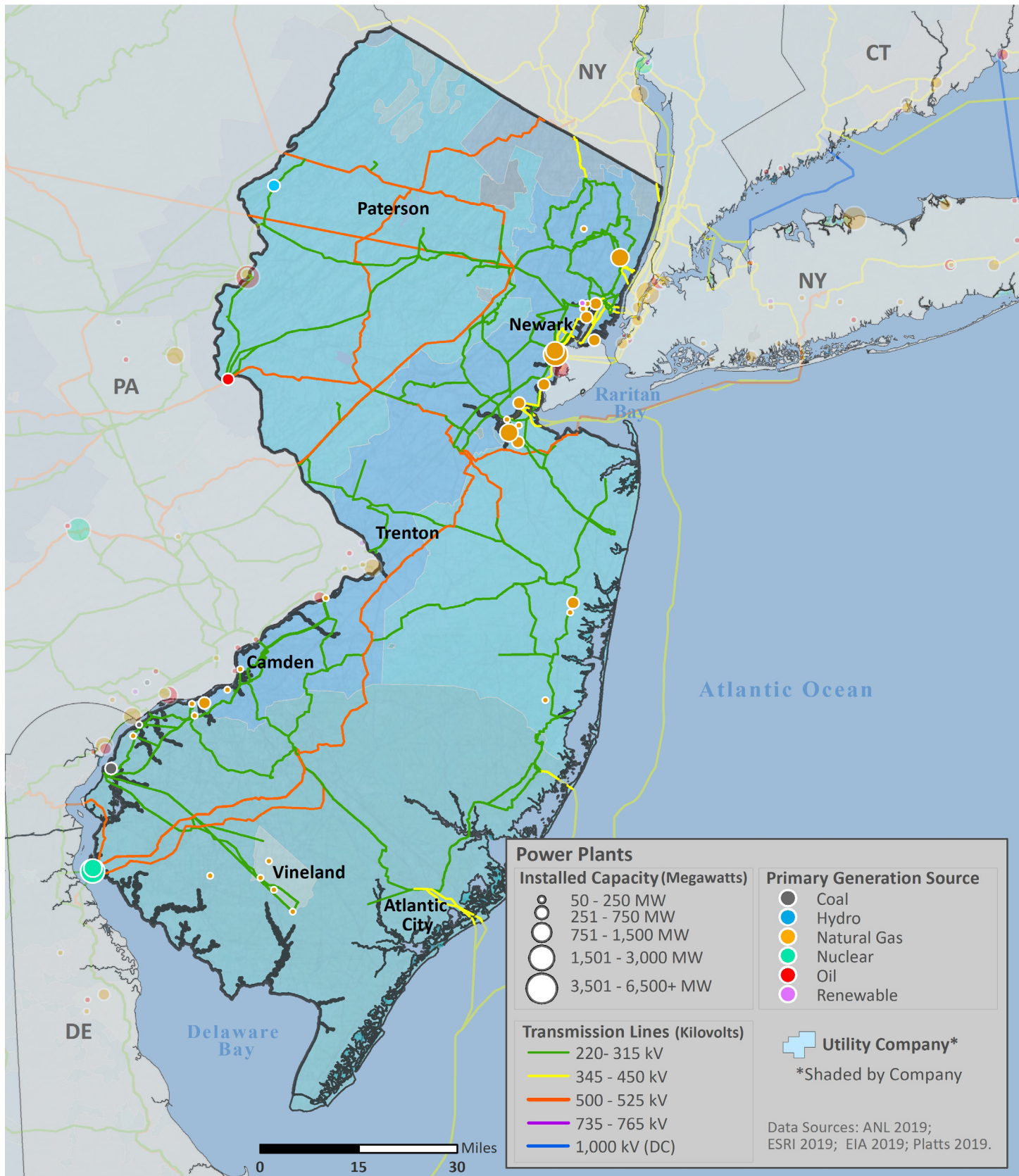
Annualized Frequency of and Property Damage Due to Natural Hazards, 2009 – 2019

	HAZARD FREQUENCY – Annualized	PROPERTY DAMAGE – Annualized (\$Million per year)
Drought	1	\$0
Earthquake (≥ 3.5 M)	0	\$0
Extreme Heat	4	\$0
Flood	31	\$2,262
Hurricane	<1	\$4
Landslide	0	\$0
Thunderstorm & Lightning	55	\$410
Tornado	3	\$0
Wildfire	4	\$0
Winter Storm & Extreme Cold	25	\$11

Data Sources: NOAA and USGS



ELECTRIC









Electric Infrastructure

- New Jersey has 27 electric utilities:
 - 2 Investor owned
 - 1 Cooperative
 - 7 Municipal
 - 17 Other utilities
- Plant retirements scheduled by 2025: 12 electric generating units totaling 370 MW of installed capacity.

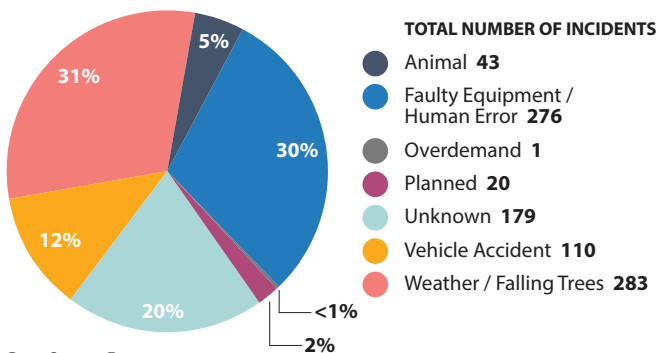
- In 2018, the average New Jersey electric customer experienced 1.4 service interruptions that lasted an average of 8.5 hours.
- In New Jersey, between 2008 and 2017:
 - The greatest number of electric outages occurred in **July** (leading month for outages nationwide)
 - The leading cause of electric outages was **Weather or Falling Trees** (leading cause nationwide)
 - Electric outages affected 821,864 customers on average

Electric Customers and Consumption by Sector, 2018

	 CUSTOMERS	 CONSUMPTION
Residential 	87%	39%
Commercial 	13%	51%
Industrial 	<1%	10%
Transportation 	<1%	<1%

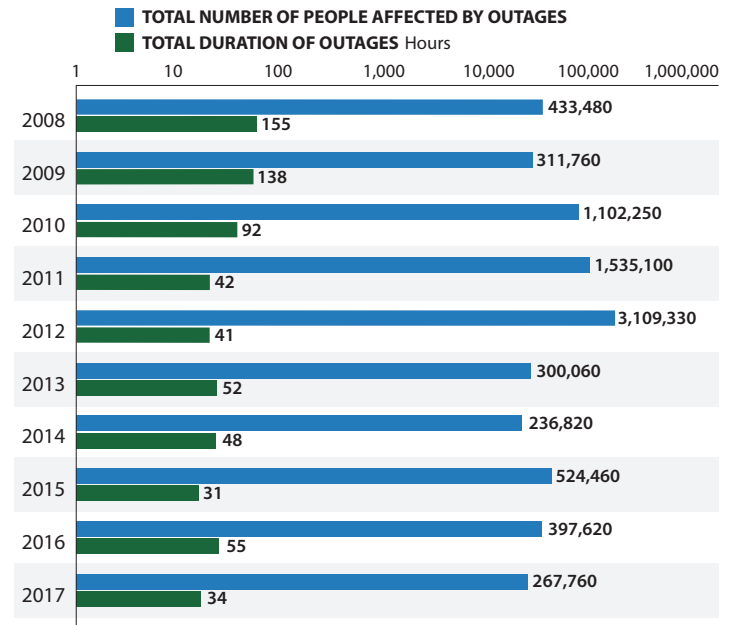
Data Source: EIA

Electric Utility-Reported Outages by Cause, 2008 – 2017



Data Source: Eaton

Electric Utility Outage Data, 2008 – 2017

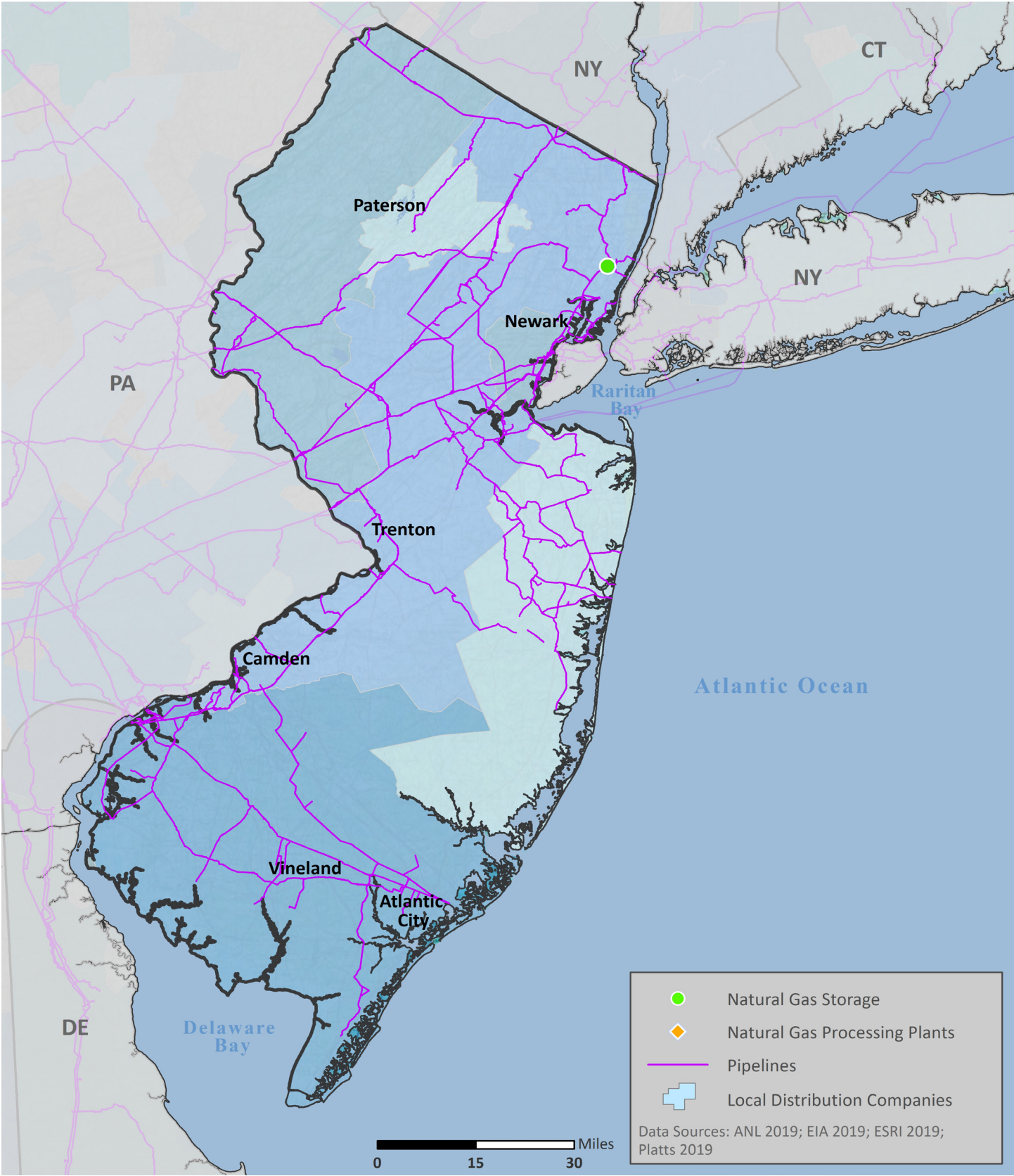


Note: This chart uses a logarithmic scale to display a very wide range of values.
Data Source: Eaton



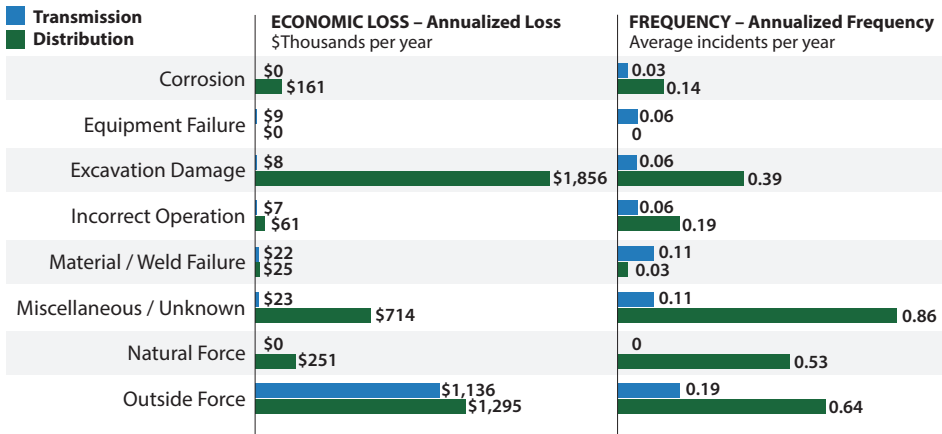


NATURAL GAS



Natural Gas Transport

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








Data Source: DOT PHMSA

- As of 2018, New Jersey had:
 - 1,566 miles of natural gas transmission pipelines
 - 35,007 miles of natural gas distribution pipelines
- 51% of New Jersey’s natural gas transmission system and 28% of the distribution system were constructed prior to 1970 or in an unknown year.
- Between 1984 and 2019, New Jersey’s natural gas supply was most impacted by:
 - **Outside Forces** when transported by transmission pipelines (3rd leading cause nationwide at \$20.65M per year)
 - **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 	92%	31%
Commercial 	8%	21%
Industrial 	<1%	8%
Transportation 	<1%	<1%
Electric Power 	<1%	39%
Other	<1%	<1%

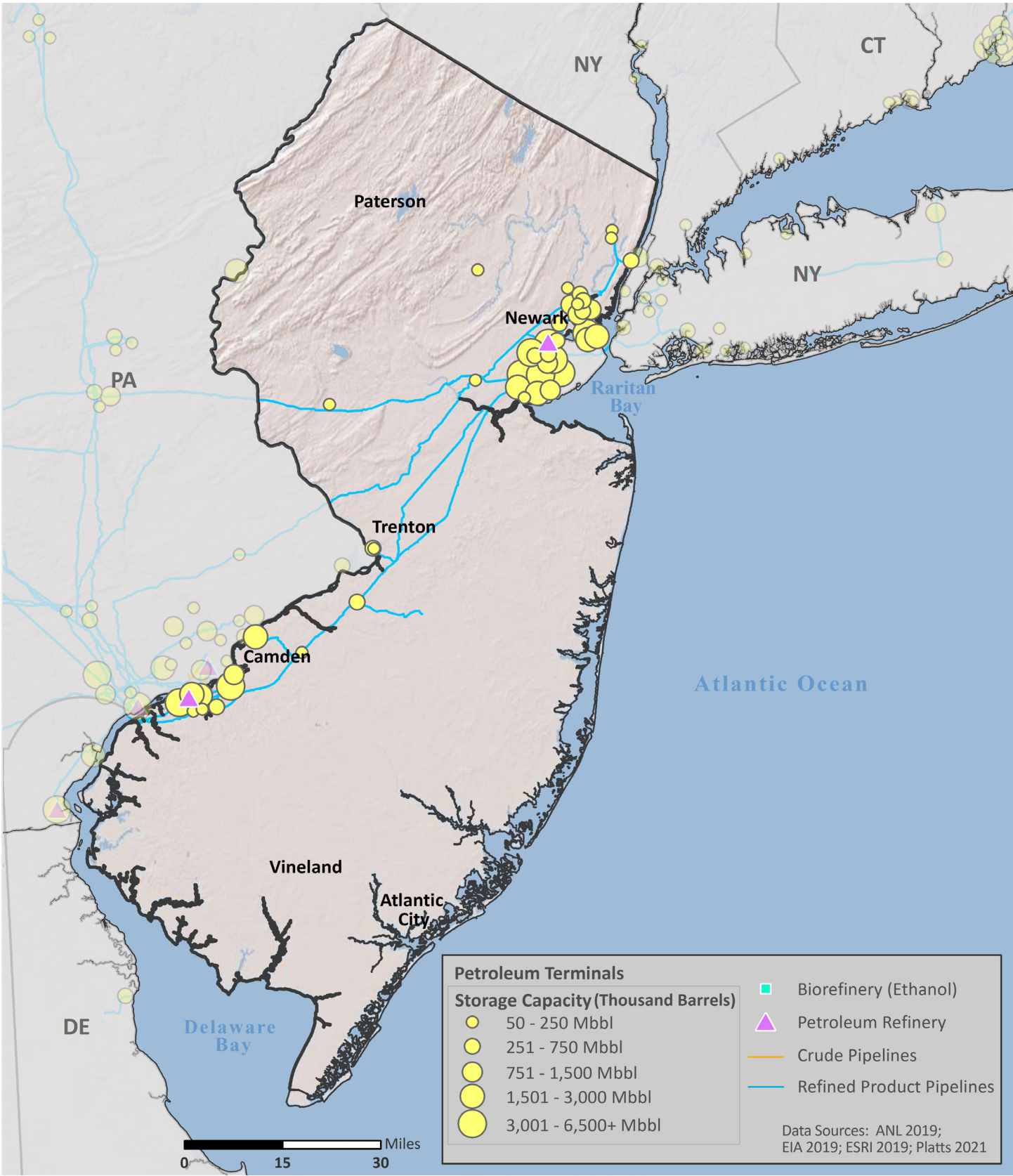
Data Source: EIA

- New Jersey has 0 natural gas processing facilities.
- New Jersey has 6 liquefied natural gas (LNG) facilities with a total storage capacity of 1,105,800 barrels.



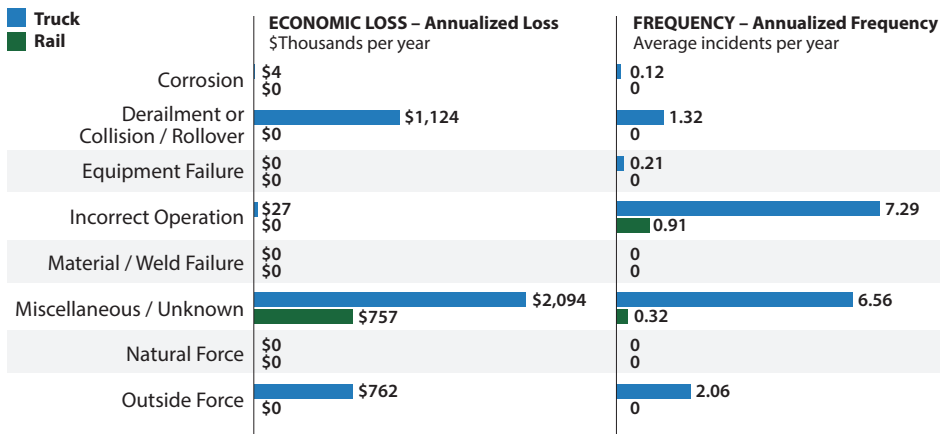


PETROLEUM



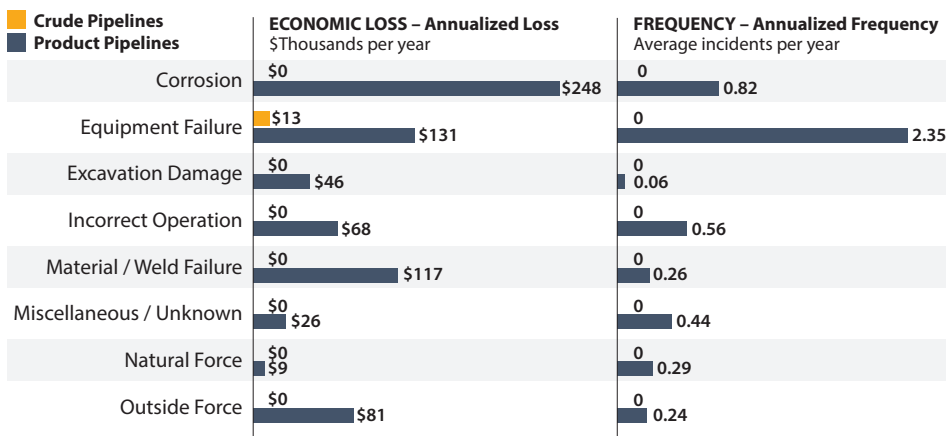
Petroleum Transport

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



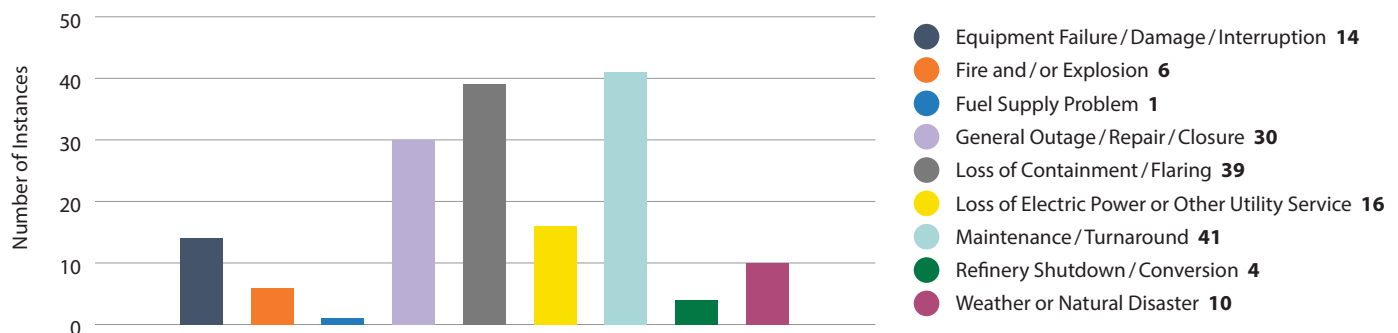
Data Source: DOT PHMSA

- As of 2018, New Jersey had:
 - 0 miles of crude oil pipelines
 - 572 miles of refined product pipelines
 - 0 miles of biofuels pipelines
- 71% of New Jersey’s petroleum pipeline systems were constructed prior to 1970 or in an unknown year.
- Between 1986 and 2019, New Jersey’s petroleum supply was most impacted by:
 - Miscellaneous or Unknown** events when transported by truck (3rd leading cause nationwide at \$52.87M per year)
 - Miscellaneous or Unknown** events when transported by rail (3rd leading cause nationwide at \$6.11M per year)
 - Equipment Failure** when transported by crude pipelines (8th leading cause nationwide at \$2.88M per year)
 - Corrosion** when transported by product pipelines (2nd leading cause nationwide at \$15.2M per year)
- Disruptions in other states may impact supply.

Petroleum Refineries

- New Jersey has 2 petroleum refineries with a total operable capacity of 418.5 Mb/d.
- Between 2009 and 2019, the leading cause of petroleum refinery disruptions in New Jersey was:
 - Maintenance** (2nd leading cause nationwide)

Causes and Frequency of Petroleum Refinery Disruptions, 2009 – 2019



Data Source: Hydrocarbon Publishing