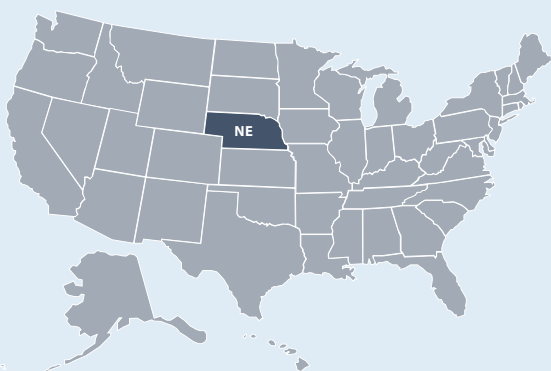




State of Nebraska ENERGY SECTOR RISK PROFILE



Nebraska State Facts



POPULATION

1.93 M



HOUSING UNITS

0.85 M



BUSINESS ESTABLISHMENTS

0.05 M

ENERGY EMPLOYMENT: 25,473 jobs

PUBLIC UTILITY COMMISSION: Nebraska Public Service Commission

STATE ENERGY OFFICE: Nebraska Department of Environment and Energy

EMERGENCY MANAGEMENT AGENCY: Nebraska Emergency Management Agency

AVERAGE ELECTRICITY TARIFF: 9.02 cents/kWh

ENERGY EXPENDITURES: \$4,299/capita

ENERGY CONSUMPTION PER CAPITA: 457 MMBtu (7th highest out of 50 states and Washington, D.C.)

GDP: \$124.0 billion

Data from 2020 or most recent year available.

For more information, see the Data Sources document.

ANNUAL ENERGY CONSUMPTION

ELECTRIC POWER: 30,940 GWh

COAL: 15,600 MSTN

NATURAL GAS: 178 Bcf

MOTOR GASOLINE: 20,200 Mbbl

DISTILLATE FUEL: 19,200 Mbbl

ANNUAL ENERGY PRODUCTION

ELECTRIC POWER GENERATION: 131 plants, 37.3 TWh, 10.0 GW total capacity

Coal: 10 plants, 20.4 TWh, 4.0 GW total capacity

Hydro: 10 plants, 1.3 TWh, 0.3 GW total capacity

Natural Gas: 33 plants, 1.3 TWh, 2.3 GW total capacity

Nuclear: 1 plant, 7.0 TWh, 0.8 GW total capacity

Petroleum: 37 plants, 0.0 TWh, 0.4 GW total capacity

Wind & Solar: 36 plants, 7.2 TWh, 2.2 GW total capacity

Other sources: 4 plants, 0.1 TWh, 0.0 GW total capacity

COAL: 0 MSTN

NATURAL GAS: 0 Bcf

CRUDE OIL: 1,800 Mbbl

ETHANOL: 52,100 Mbbl

Data from EIA (2018, 2019).

This State Energy Risk Profile examines the relative magnitude of the risks that the state of Nebraska’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.

Nebraska Risks and Hazards Overview

- The natural hazard that caused the greatest overall property loss between 2009 and 2019 was **Flooding** at \$81 million per year (leading cause nationwide at \$12 billion per year).
- Nebraska had 230 Major Disaster Declarations, 0 Emergency Declarations, and 0 Fire Management Assistance Declarations for 11 events between 2013 and 2019.
- Nebraska registered 3% greater Heating Degree Days and 5% greater Cooling Degree Days than average in 2019.
- There is 1 Fusion Center located in Lincoln.

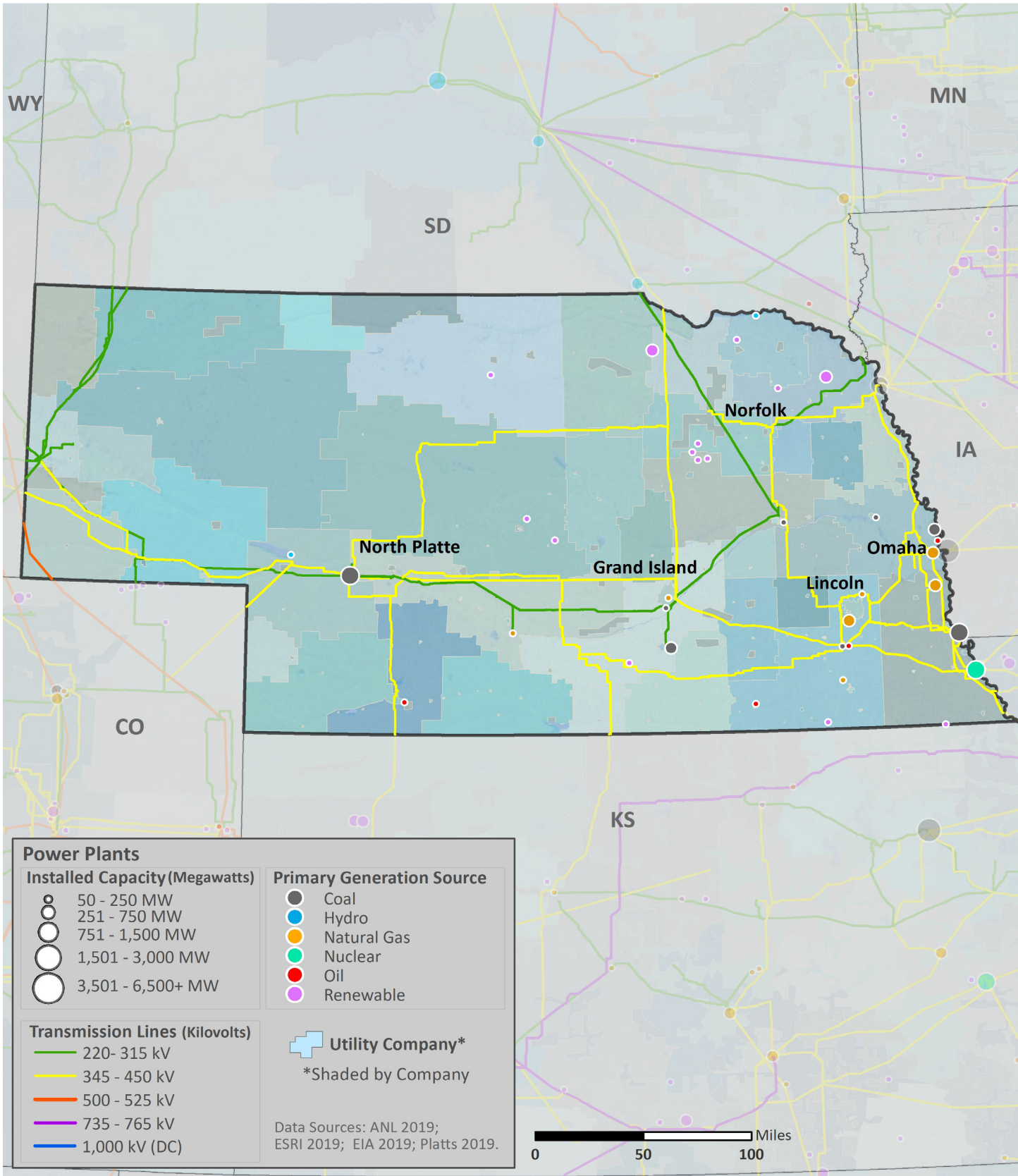
Annualized Frequency of and Property Damage Due to Natural Hazards, 2009 – 2019

	HAZARD FREQUENCY – Annualized	PROPERTY DAMAGE – Annualized (\$Million per year)
Drought	9	\$22
Earthquake (≥ 3.5 M)	1	\$0
Extreme Heat	3	\$1
Flood	32	\$81
Hurricane	0	\$0
Landslide	<1	\$0
Thunderstorm & Lightning	177	\$28
Tornado	24	\$10
Wildfire	2	\$1
Winter Storm & Extreme Cold	41	\$0

Data Sources: NOAA and USGS



ELECTRIC









Electric Infrastructure

- Nebraska has 147 electric utilities:
 - 0 Investor owned
 - 4 Cooperative
 - 112 Municipal
 - 31 Other utilities
- Plant retirements scheduled by 2025: 3 electric generating units totaling 291 MW of installed capacity.

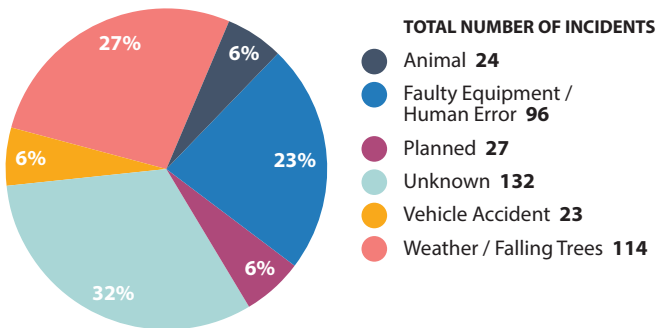
- In 2018, the average Nebraska electric customer experienced 1 service interruption that lasted an average of 3.1 hours.
- In Nebraska, between 2008 and 2017:
 - The greatest number of electric outages occurred in **August** (3rd for outages nationwide)
 - The leading cause of electric outages was **Weather or Falling Trees** (leading cause nationwide)
 - Electric outages affected 92,381 customers on average

Electric Customers and Consumption by Sector, 2018

	 CUSTOMERS	 CONSUMPTION
Residential 	80%	34%
Commercial 	14%	31%
Industrial 	6%	35%
Transportation 	<1%	<1%

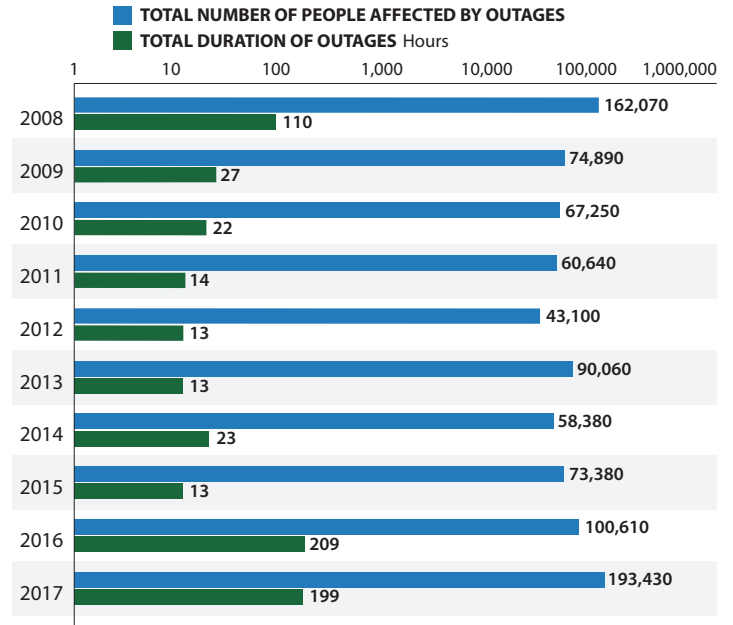
Data Source: EIA

Electric Utility-Reported Outages by Cause, 2008 – 2017



Data Source: Eaton

Electric Utility Outage Data, 2008 – 2017

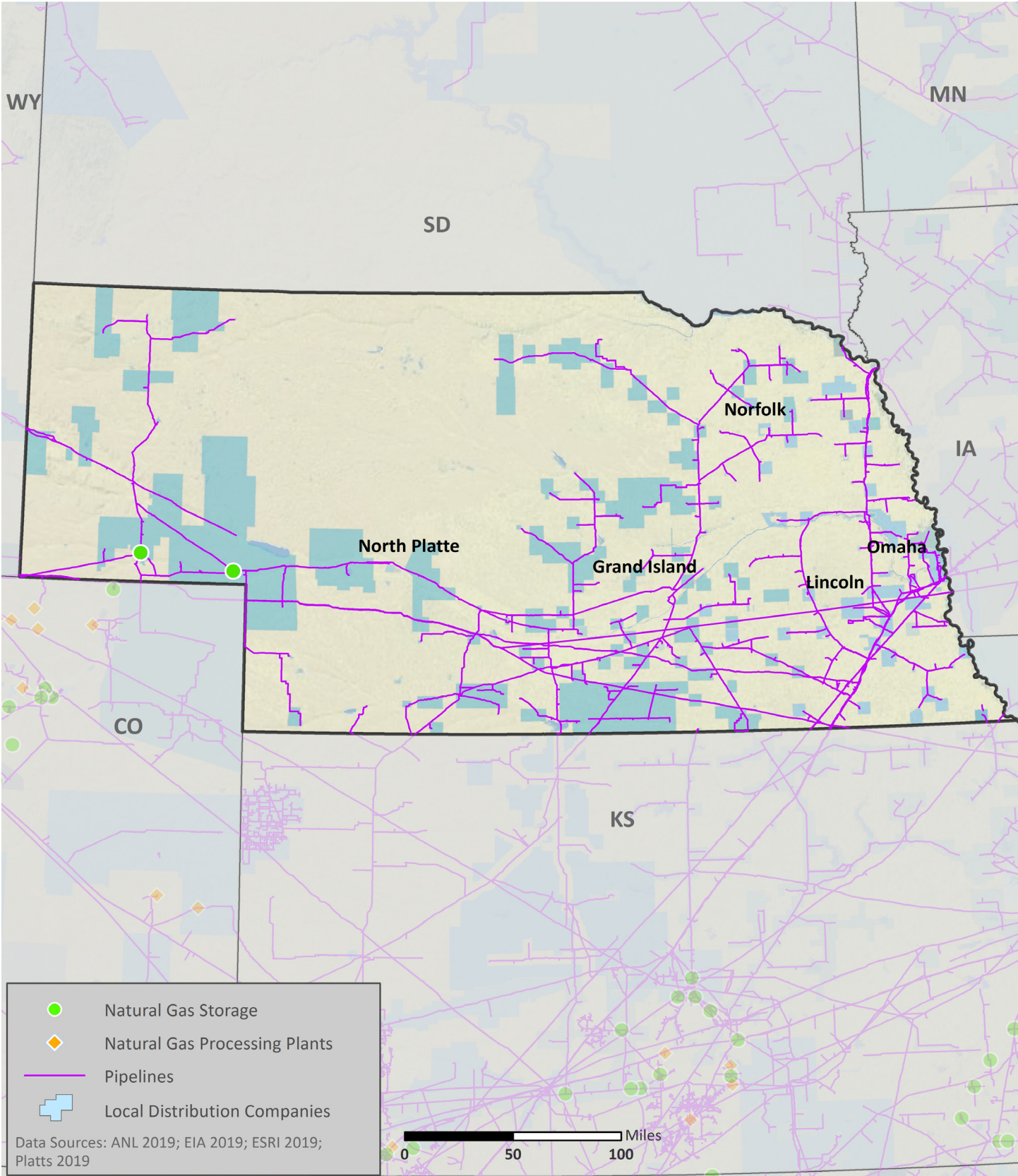


Note: This chart uses a logarithmic scale to display a very wide range of values.
Data Source: Eaton



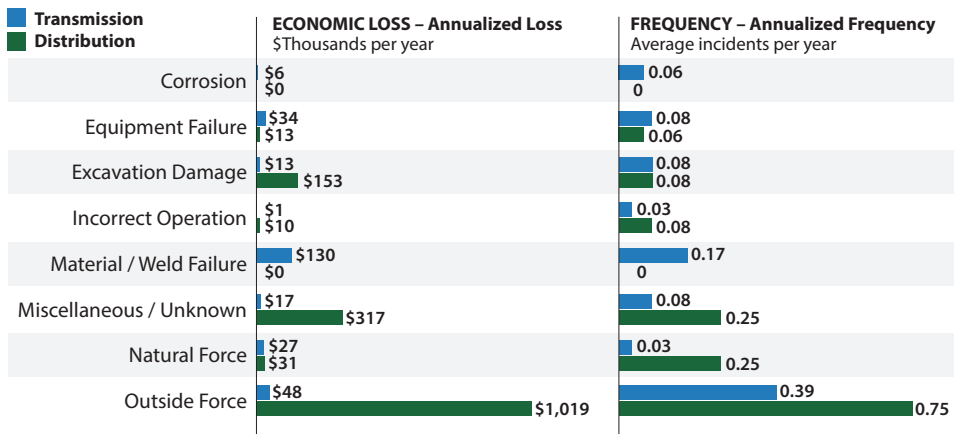


NATURAL GAS



Natural Gas Transport

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








Data Source: DOT PHMSA

- As of 2018, Nebraska had:
 - 5,873 miles of natural gas transmission pipelines
 - 13,209 miles of natural gas distribution pipelines
- 61% of Nebraska’s natural gas transmission system and 34% of the distribution system were constructed prior to 1970 or in an unknown year.
- Between 1984 and 2019, Nebraska’s natural gas supply was most impacted by:
 - **Material Failures** when transported by transmission pipelines (leading cause nationwide at \$28.43M 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 	89%	25%
Commercial 	10%	21%
Industrial 	<1%	52%
Transportation 	<1%	<1%
Electric Power 	<1%	3%
Other	<1%	<1%

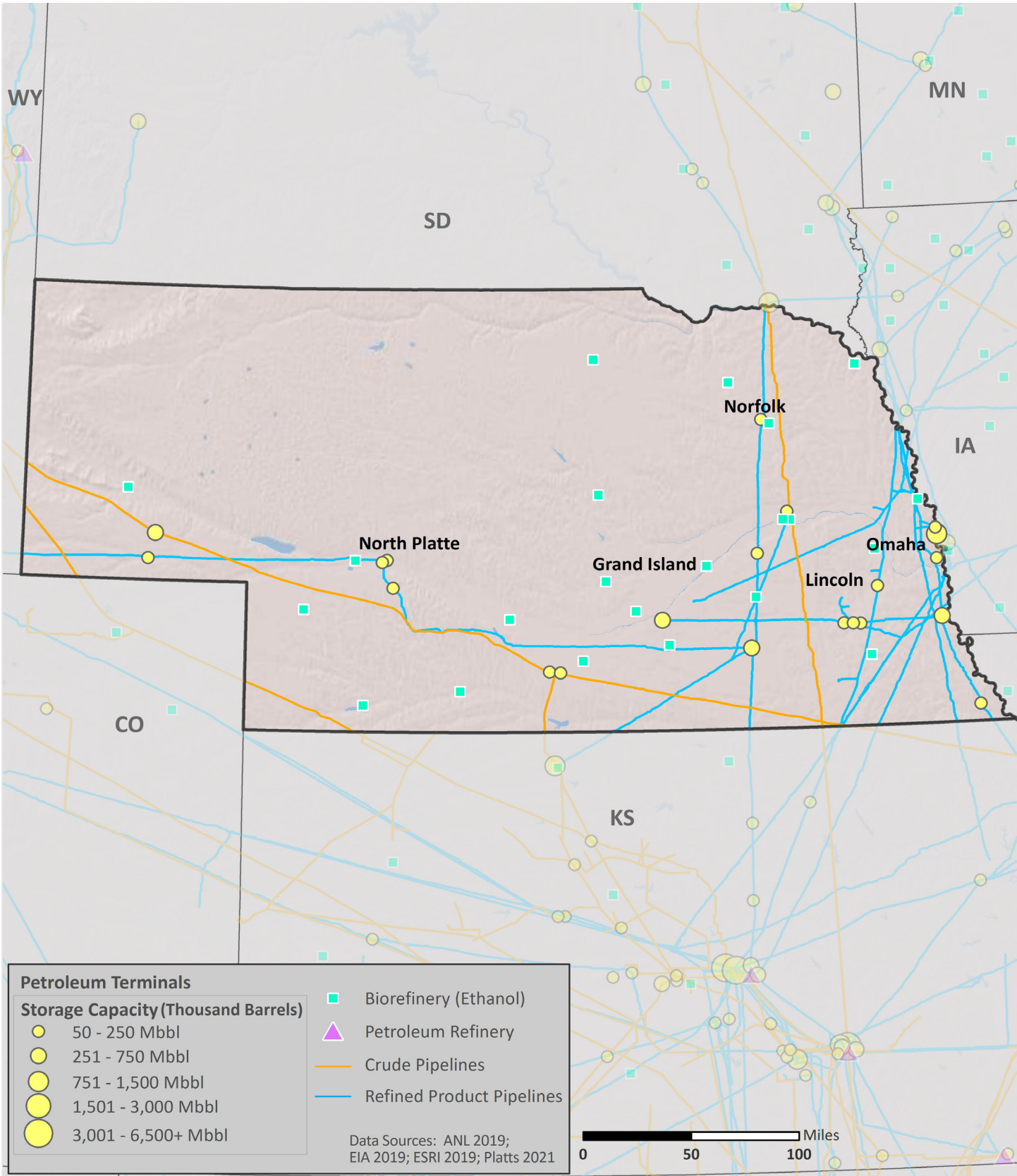
Data Source: EIA

- Nebraska has 0 natural gas processing facilities.
- Nebraska has 1 liquefied natural gas (LNG) facility with a total storage capacity of 290,000 barrels.



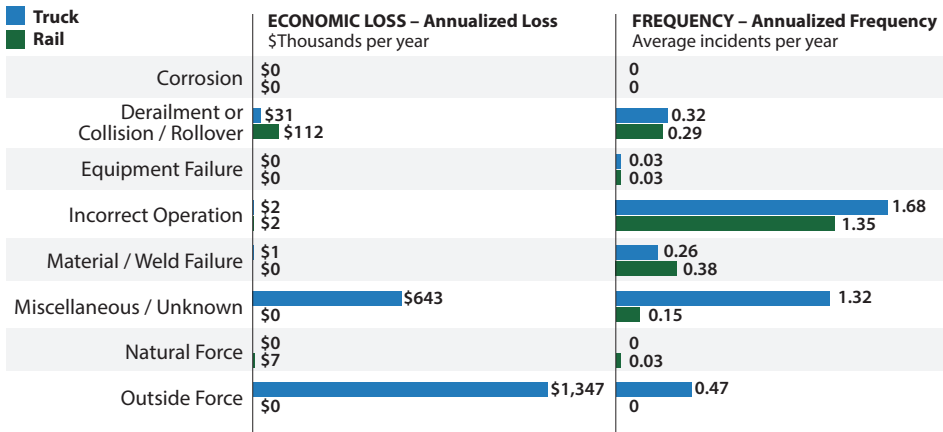


PETROLEUM



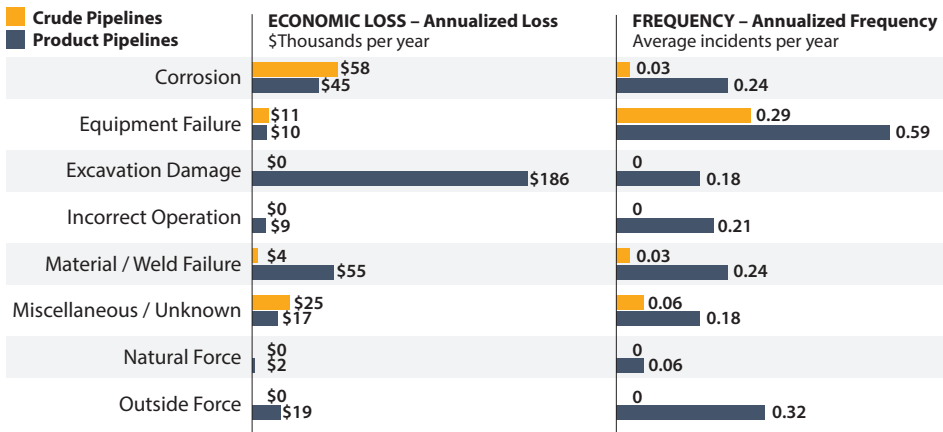
Petroleum Transport

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, Nebraska had:
 - 754 miles of crude oil pipelines
 - 1,320 miles of refined product pipelines
 - 0 miles of biofuels pipelines
- 73% of Nebraska’s petroleum pipeline systems were constructed prior to 1970 or in an unknown year.
- Between 1986 and 2019, Nebraska’s petroleum supply was most impacted by:
 - **Outside Forces** when transported by truck (2nd leading cause nationwide at \$60.45M per year)
 - **Derailments, Collisions, or Rollovers** when transported by rail (leading cause nationwide at \$19.71M per year)
 - **Corrosion** when transported by crude pipelines (3rd leading cause nationwide at \$14.51M 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

- There are no operating petroleum refineries in Nebraska.

