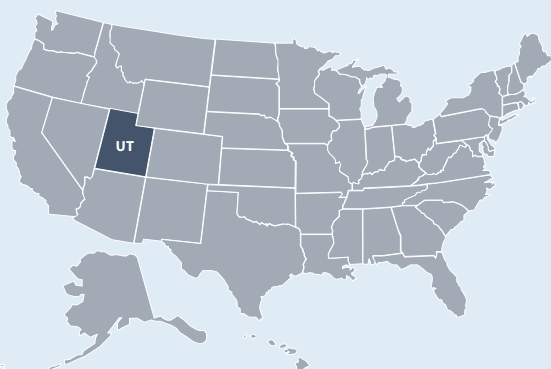




State of Utah

ENERGY SECTOR RISK PROFILE



Utah State Facts



POPULATION

3.16 M



HOUSING
UNITS

1.11 M



BUSINESS
ESTABLISHMENTS

0.08 M

ENERGY EMPLOYMENT: 31,468 jobs

PUBLIC UTILITY COMMISSION: Public Service Commission of Utah
STATE ENERGY OFFICE: Utah Governor's Office of Energy Development

EMERGENCY MANAGEMENT AGENCY: Utah Department of Public Safety, Division of Emergency Management

AVERAGE ELECTRICITY TARIFF: 8.21 cents/kWh

ENERGY EXPENDITURES: \$2,990/capita

ENERGY CONSUMPTION PER CAPITA: 267 MMBtu
(34th highest out of 50 states and Washington, D.C.)

GDP: \$178.1 billion

Data from 2020 or most recent year available.

For more information, see the Data Sources document.

ANNUAL ENERGY CONSUMPTION

ELECTRIC POWER: 31,240 GWh

COAL: 12,700 MSTN

NATURAL GAS: 233 Bcf

MOTOR GASOLINE: 33,000 Mbbl

DISTILLATE FUEL: 17,700 Mbbl

ANNUAL ENERGY PRODUCTION

ELECTRIC POWER GENERATION: 106 plants, 39.1 TWh,
9.8 GW total capacity

Coal: 5 plants, 25.2 TWh, 4.8 GW total capacity

Hydro: 29 plants, 0.9 TWh, 0.3 GW total capacity

Natural Gas: 24 plants, 9.4 TWh, 3.3 GW total capacity

Nuclear: 0 plants

Petroleum: 3 plants, 0.0 TWh, 0.0 GW total capacity

Wind & Solar: 36 plants, 3.0 TWh, 1.3 GW total capacity

Other sources: 9 plants, 0.6 TWh, 0.1 GW total capacity

COAL: 14,300 MSTN

NATURAL GAS: 270 Bcf

CRUDE OIL: 36,700 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 Utah'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.

Utah Risks and Hazards Overview

- The natural hazard that caused the greatest overall property loss between 2009 and 2019 was **Thunderstorms & Lightning** at \$10 million per year (2nd leading cause nationwide at \$2.8 billion per year).
- Utah had 2 Major Disaster Declarations, 0 Emergency Declarations, and 11 Fire Management Assistance Declarations for 10 events between 2013 and 2019.
- Utah registered 1% fewer Heating Degree Days and 22% greater Cooling Degree Days than average in 2019.
- There is 1 Fusion Center located in Sandy.

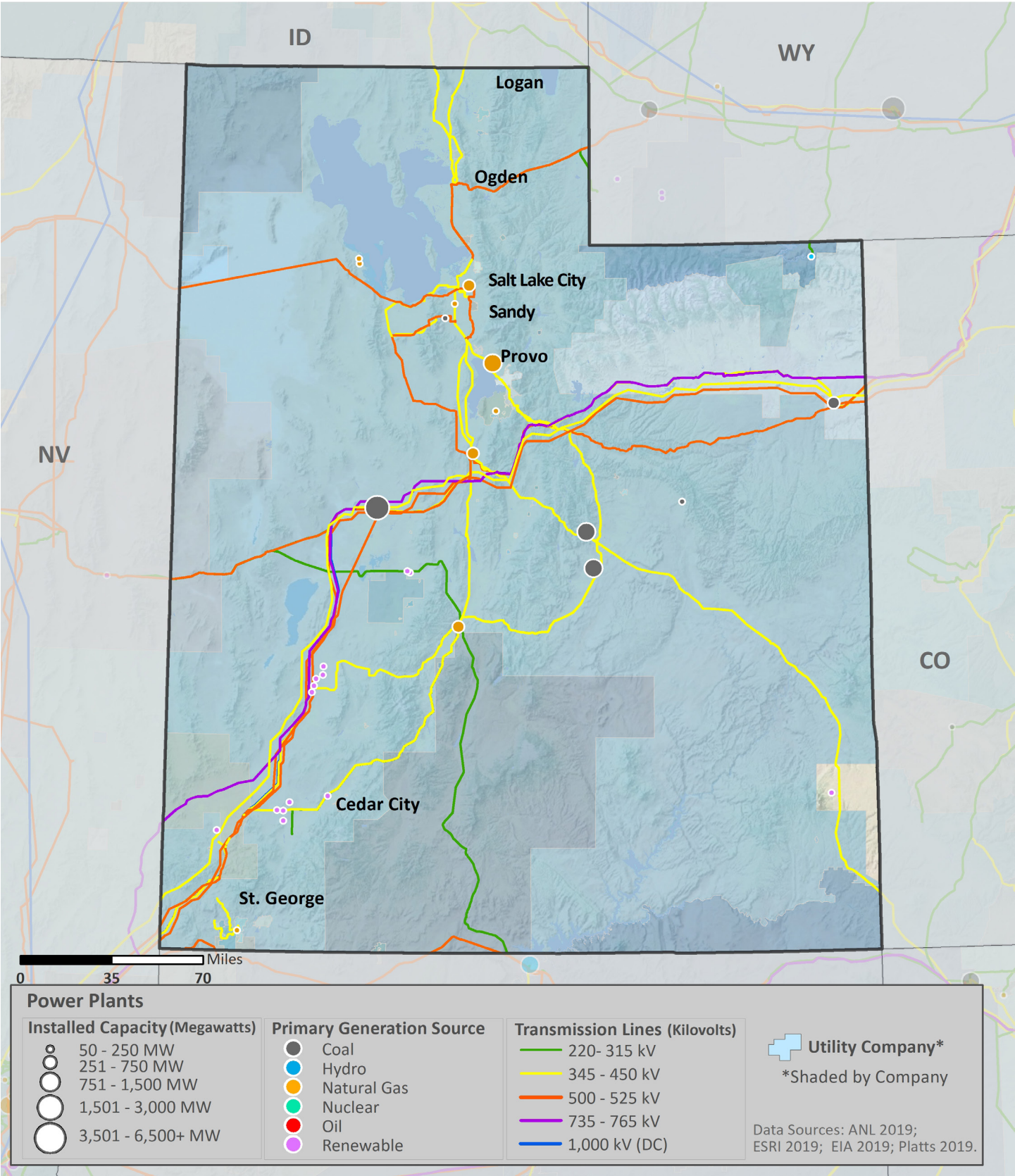
Annualized Frequency of and Property Damage Due to Natural Hazards, 2009 – 2019

	HAZARD FREQUENCY – Annualized	PROPERTY DAMAGE – Annualized (\$Million per year)
Drought	7	\$0
Earthquake (≥ 3.5 M)	3	\$0
Extreme Heat	<1	\$0
Flood	17	\$8
Hurricane	0	\$0
Landslide	5	\$1
Thunderstorm & Lightning	36	\$10
Tornado	2	\$0
Wildfire	4	\$8
Winter Storm & Extreme Cold	36	\$0

Data Sources: NOAA and USGS



ELECTRIC



Electric Infrastructure

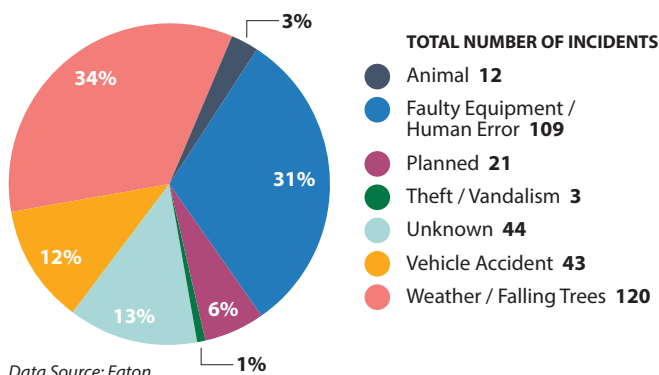
- Utah has 47 electric utilities:
 - 1 Investor owned
 - 5 Cooperative
 - 37 Municipal
 - 4 Other utilities
- Plant retirements scheduled by 2025: 2 electric generating units totaling 1 MW of installed capacity.

Electric Customers and Consumption by Sector, 2018

	 CUSTOMERS	 CONSUMPTION
Residential 	89%	31%
Commercial 	11%	39%
Industrial 	<1%	30%
Transportation 	<1%	<1%

Data Source: EIA

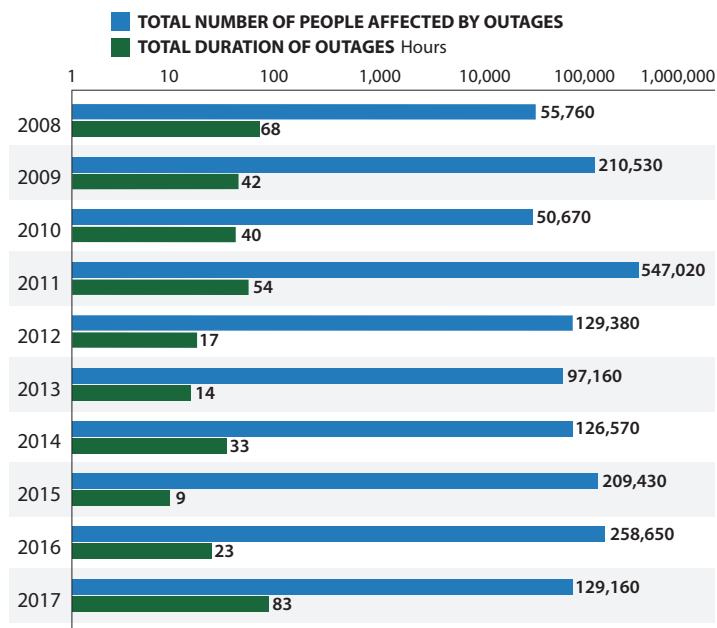
Electric Utility-Reported Outages by Cause, 2008 – 2017



Data Source: Eaton

- In 2018, the average Utah electric customer experienced 1 service interruption that lasted an average of 2.1 hours.
- In Utah, 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 181,433 customers on average

Electric Utility Outage Data, 2008 – 2017

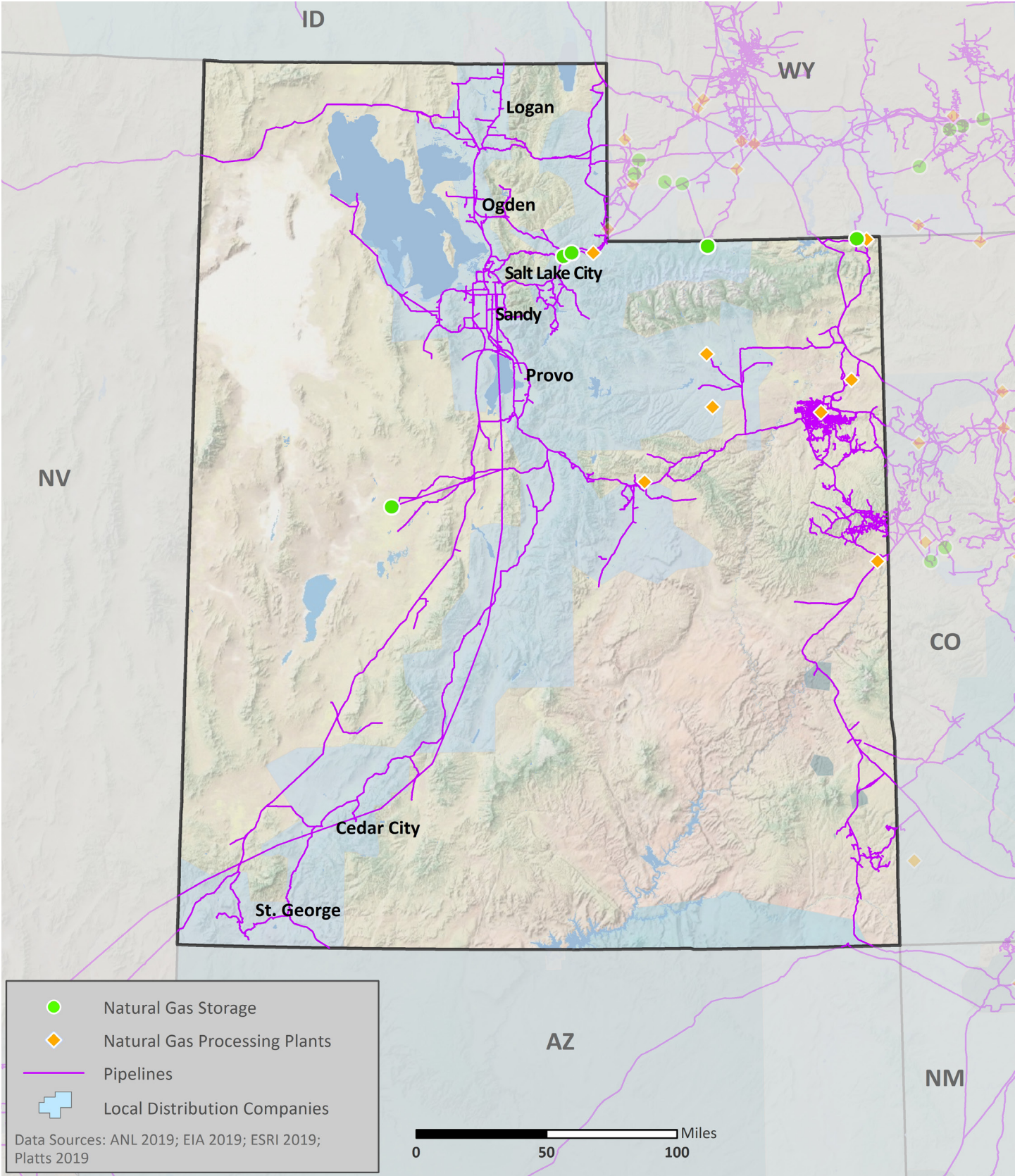


Note: This chart uses a logarithmic scale to display a very wide range of values.
Data Source: Eaton



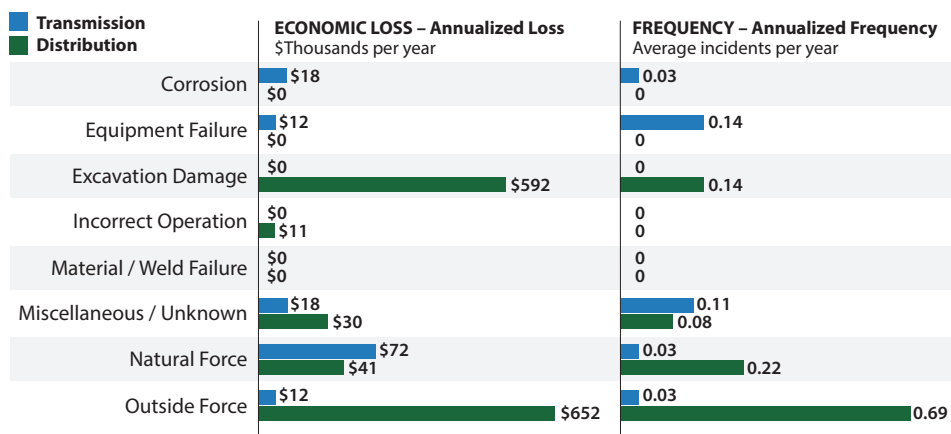


NATURAL GAS



Natural Gas Transport

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



Data Source: DOT PHMSA

- As of 2018, Utah had:
 - 3,067 miles of natural gas transmission pipelines
 - 18,563 miles of natural gas distribution pipelines
- 19% of Utah's natural gas transmission system and 13% of the distribution system were constructed prior to 1970 or in an unknown year.
- Between 1984 and 2019, Utah's natural gas supply was most impacted by:
 - Natural Forces** when transported by transmission pipelines (2nd leading cause nationwide at \$25.17M 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%	32%
Commercial 	7%	20%
Industrial 	<1%	19%
Transportation 	<1%	<1%
Electric Power 	<1%	29%
Other	<1%	<1%

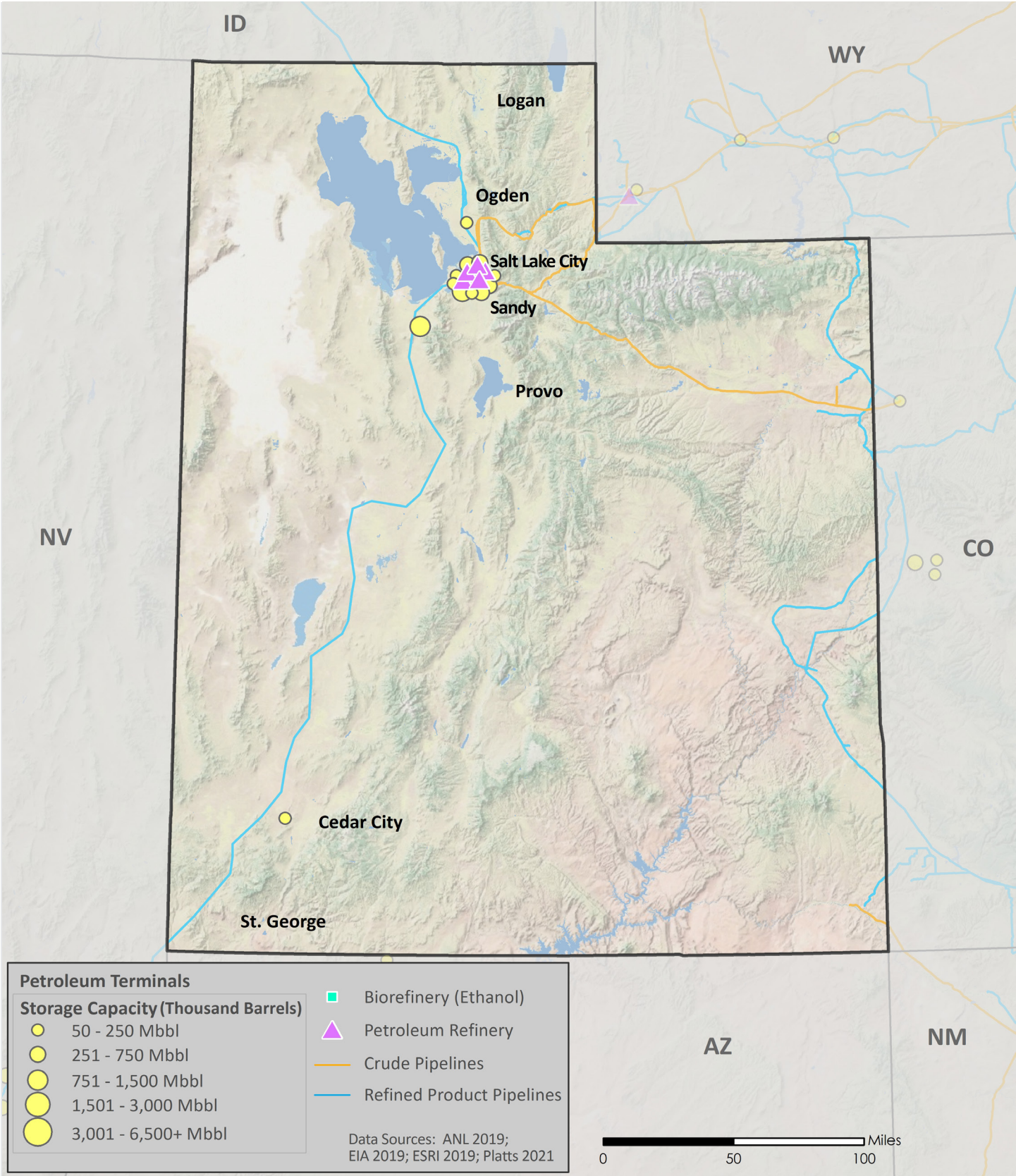
Data Source: EIA

- Utah has 8 natural gas processing facilities with a total capacity of 1,622 MMcf/d.
- Utah has 0 liquefied natural gas (LNG) facilities.



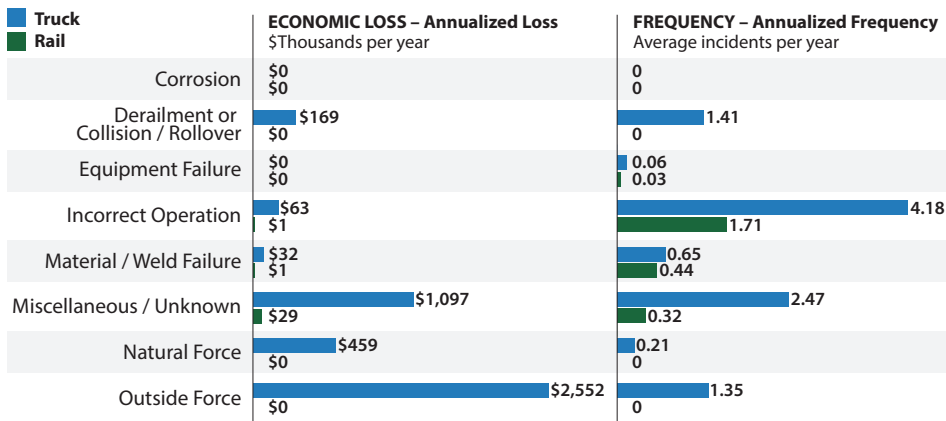


PETROLEUM



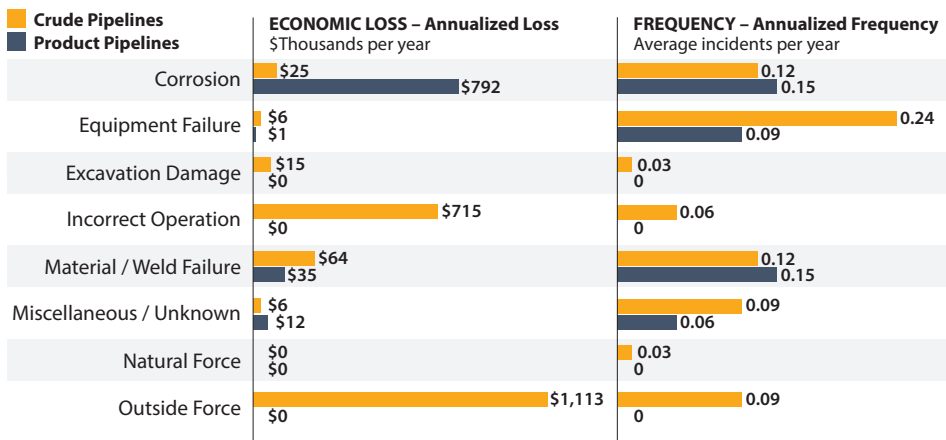
Petroleum Transport

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, Utah had:

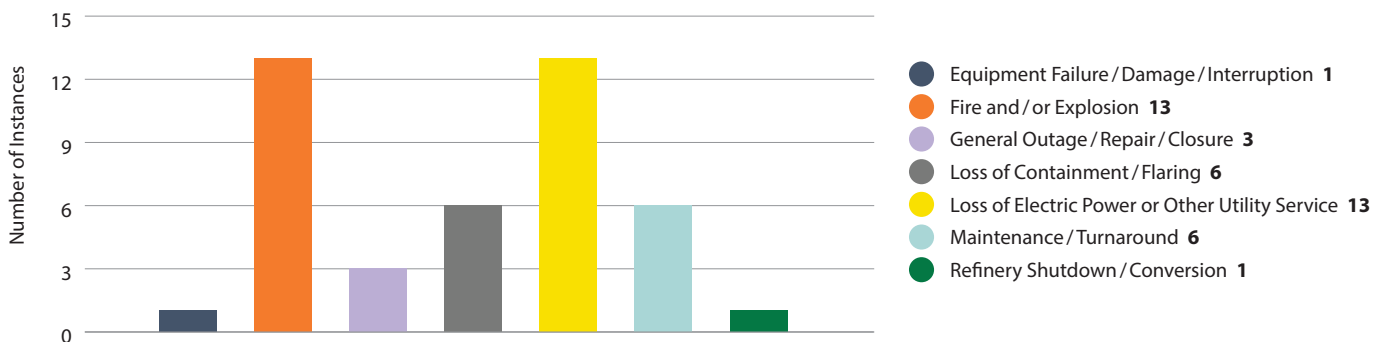
- 600 miles of crude oil pipelines
- 719 miles of refined product pipelines
- 0 miles of biofuels pipelines

- 57% of Utah's petroleum pipeline systems were constructed prior to 1970 or in an unknown year.
- Between 1986 and 2019, Utah's petroleum supply was most impacted by:
 - **Outside Forces** when transported by truck (2nd leading cause nationwide at \$60.45M per year)
 - **Miscellaneous or Unknown** events when transported by rail (3rd leading cause nationwide at \$6.11M per year)
 - **Outside Forces** when transported by crude pipelines (4th leading cause nationwide at \$8.71M 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

- Utah has 5 petroleum refineries with a total operable capacity of 200.6 Mb/d.
- Between 2009 and 2019, the leading causes of petroleum refinery disruptions in Utah were:
 - **Fires and/or Explosions** (6th leading cause nationwide)
 - **Loss of Electric Power or other Utility Services** (5th leading cause nationwide)

Causes and Frequency of Petroleum Refinery Disruptions, 2009 – 2019



Data Source: Hydrocarbon Publishing