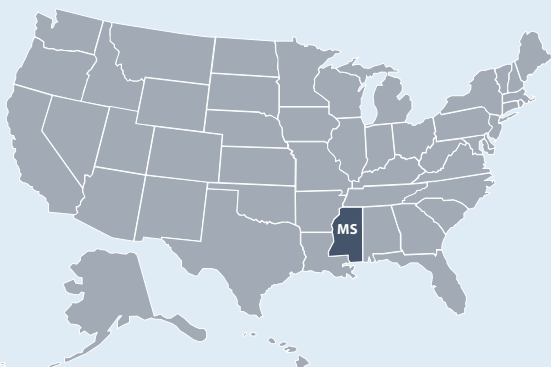




State of Mississippi

ENERGY SECTOR RISK PROFILE



Mississippi State Facts



POPULATION

2.99 M



HOUSING
UNITS

1.33 M



BUSINESS
ESTABLISHMENTS

0.06 M

ENERGY EMPLOYMENT: 28,899 jobs

PUBLIC UTILITY COMMISSION: Mississippi Public Service Commission

STATE ENERGY OFFICE: Mississippi Energy and Natural Resources Division

EMERGENCY MANAGEMENT AGENCY: Mississippi Emergency Management Agency

AVERAGE ELECTRICITY TARIFF: 9.24 cents/kWh

ENERGY EXPENDITURES: \$4,396/capita

ENERGY CONSUMPTION PER CAPITA: 394 MMBtu

(13th highest out of 50 states and Washington, D.C.)

GDP: \$114.8 billion

Data from 2020 or most recent year available.

For more information, see the Data Sources document.

ANNUAL ENERGY CONSUMPTION

ELECTRIC POWER: 50,390 GWh

COAL: 4,500 MSTN

NATURAL GAS: 542 Bcf

MOTOR GASOLINE: 37,100 Mbbl

DISTILLATE FUEL: 17,200 Mbbl

ANNUAL ENERGY PRODUCTION

ELECTRIC POWER GENERATION: 43 plants, 66.0 TWh, 16.2 GW total capacity

Coal: 2 plants, 4.4 TWh, 1.6 GW total capacity

Hydro: 0 plants

Natural Gas: 26 plants, 48.8 TWh, 12.6 GW total capacity

Nuclear: 1 plant, 11.0 TWh, 1.4 GW total capacity

Petroleum: 1 plant, 0.0 TWh, 0.0 GW total capacity

Wind & Solar: 7 plants, 0.3 TWh, 0.2 GW total capacity

Other sources: 6 plants, 1.4 TWh, 0.3 GW total capacity

COAL: 2,600 MSTN

NATURAL GAS: 30 Bcf

CRUDE OIL: 16,900 Mbbl

ETHANOL: 1,300 Mbbl

Data from EIA (2018, 2019).

This State Energy Risk Profile examines the relative magnitude of the risks that the state of Mississippi'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.

Mississippi Risks and Hazards Overview

- The natural hazard that caused the greatest overall property loss between 2009 and 2019 was **Tornadoes** at \$134 million per year (4th leading cause nationwide at \$2 billion per year).
- Mississippi had 150 Major Disaster Declarations, 6 Emergency Declarations, and 0 Fire Management Assistance Declarations for 13 events between 2013 and 2019.
- Mississippi registered 14% fewer Heating Degree Days and 15% greater Cooling Degree Days than average in 2019.
- There is 1 Fusion Center located in Pearl.

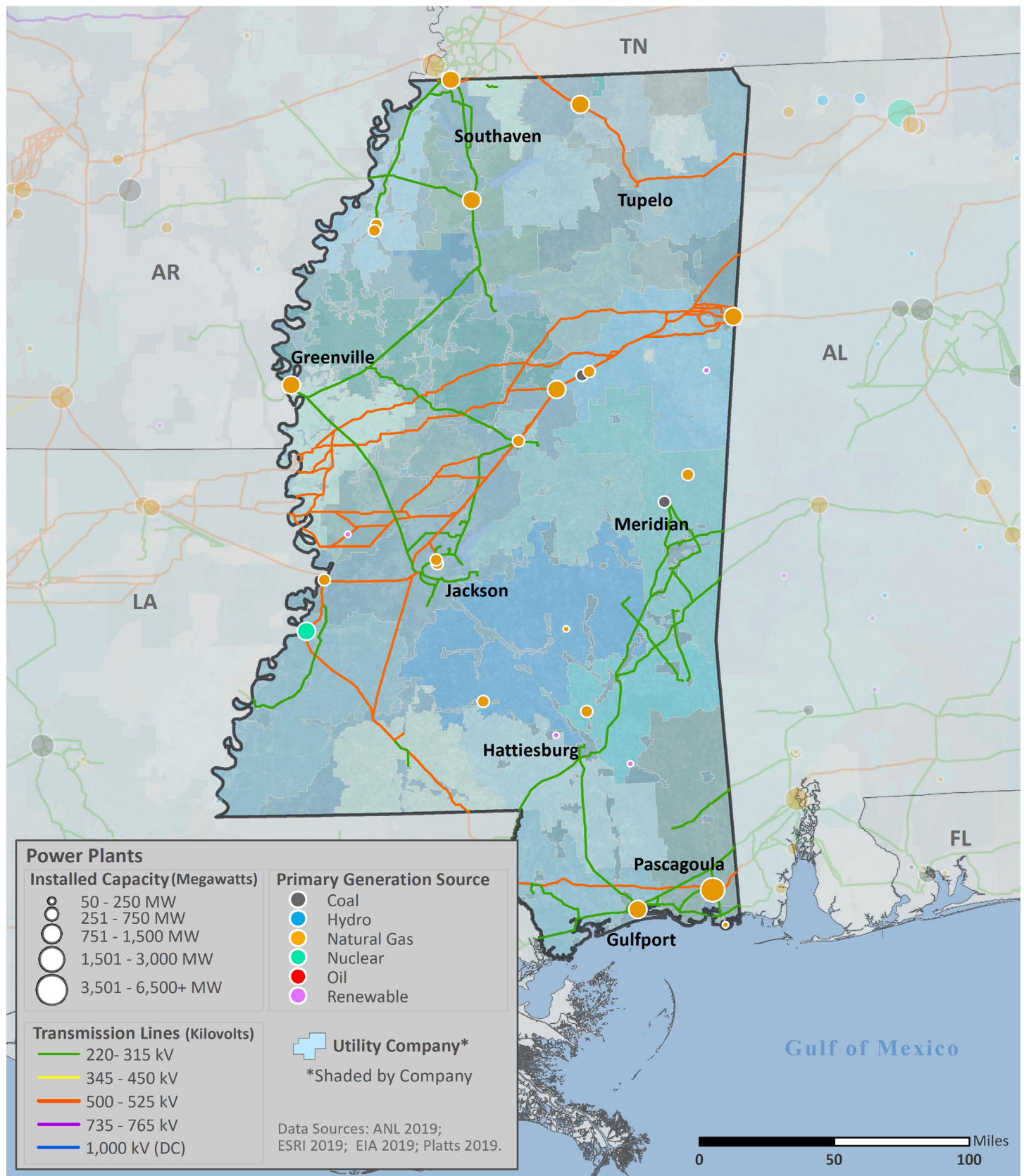
Annualized Frequency of and Property Damage Due to Natural Hazards, 2009–2019

	HAZARD FREQUENCY – Annualized	PROPERTY DAMAGE – Annualized (\$Million per year)
Drought	6	\$0
Earthquake (≥ 3.5 M)	<1	\$0
Extreme Heat	4	\$0
Flood	38	\$117
Hurricane	1	\$1
Landslide	0	\$0
Thunderstorm & Lightning	89	\$67
Tornado	19	\$134
Wildfire	0	\$0
Winter Storm & Extreme Cold	7	\$7

Data Sources: NOAA and USGS



ELECTRIC









Electric Infrastructure

- Mississippi has 51 electric utilities:
 - 3 Investor owned
 - 26 Cooperative
 - 21 Municipal
 - 1 Other utility
- Plant retirements scheduled by 2025: 4 electric generating units totaling 852 MW of installed capacity.

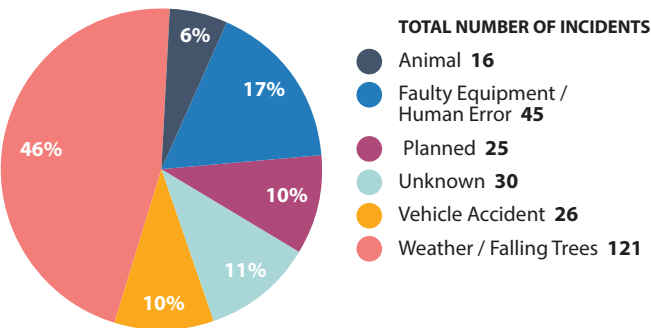
- In 2018, the average Mississippi electric customer experienced 1.5 service interruptions that lasted an average of 4.5 hours.
- In Mississippi, between 2008 and 2017:
 - The greatest number of electric outages occurred in **May** (9th for outages nationwide)
 - The leading cause of electric outages was **Weather or Falling Trees** (leading cause nationwide)
 - Electric outages affected 85,166 customers on average

Electric Customers and Consumption by Sector, 2018

	 CUSTOMERS	 CONSUMPTION
Residential 	84%	38%
Commercial 	15%	29%
Industrial 	<1%	33%
Transportation 	<1%	<1%

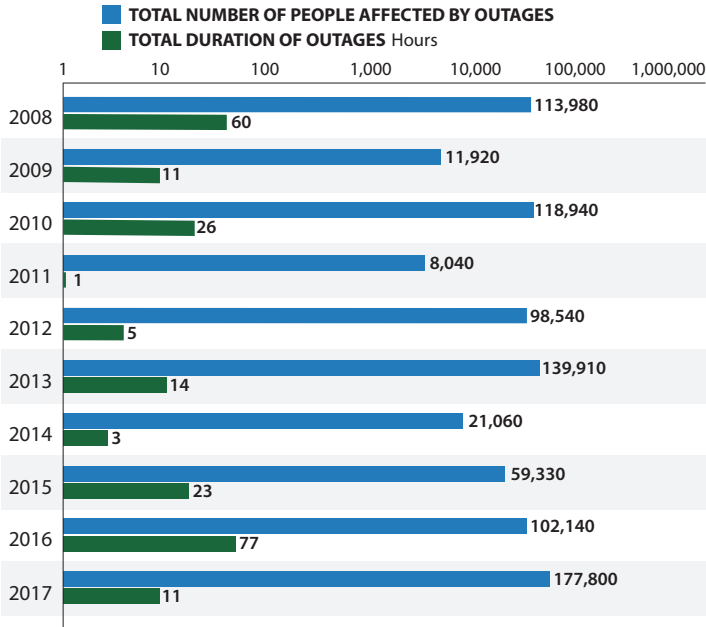
Data Source: EIA

Electric Utility-Reported Outages by Cause, 2008 – 2017



Data Source: Eaton

Electric Utility Outage Data, 2008 – 2017

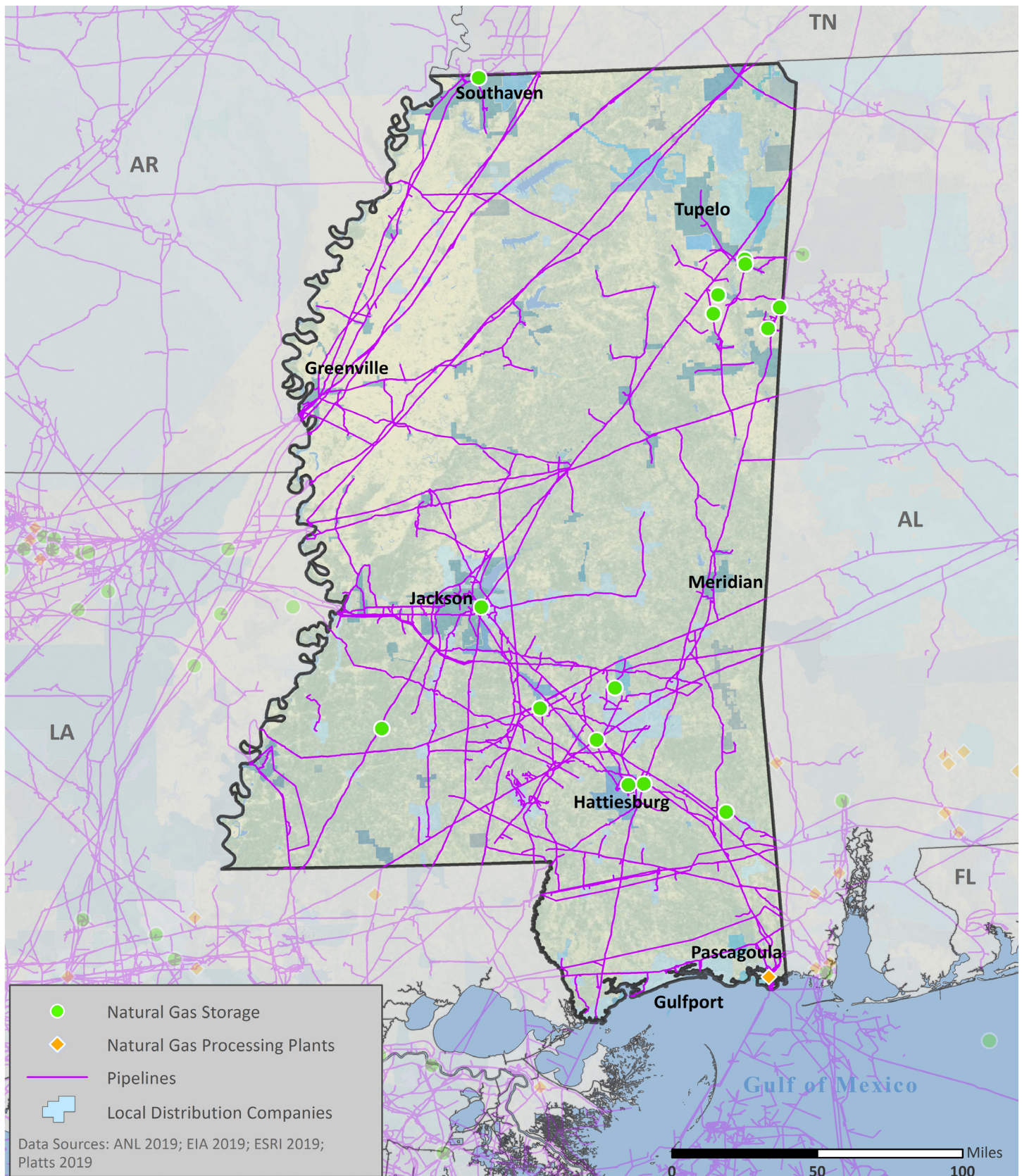


Note: This chart uses a logarithmic scale to display a very wide range of values.
Data Source: Eaton



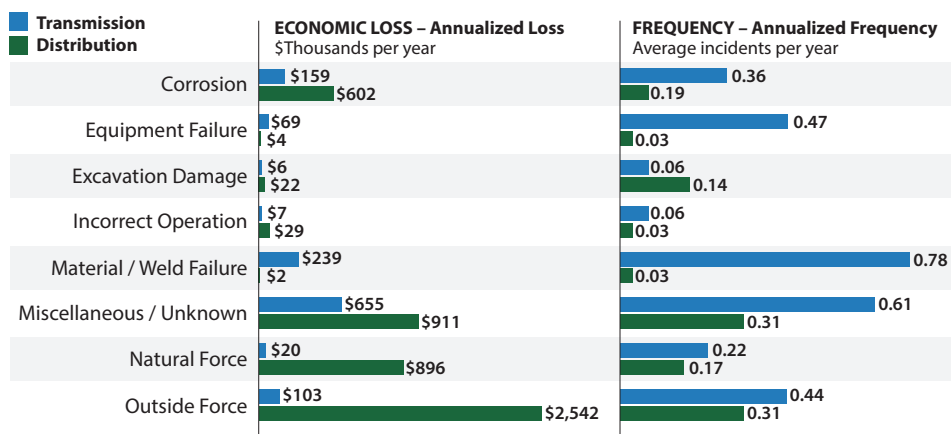


NATURAL GAS



Natural Gas Transport

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










Data Source: DOT PHMSA

- As of 2018, Mississippi had:
 - 10,331 miles of natural gas transmission pipelines
 - 17,086 miles of natural gas distribution pipelines
- 67% of Mississippi'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, Mississippi's natural gas supply was most impacted by:
 - Miscellaneous or Unknown** events when transported by transmission pipelines (5th leading cause nationwide at \$16.77M 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 	90%	5%
Commercial 	10%	4%
Industrial 	<1%	25%
Transportation 	<1%	<1%
Electric Power 	<1%	66%
Other	<1%	<1%

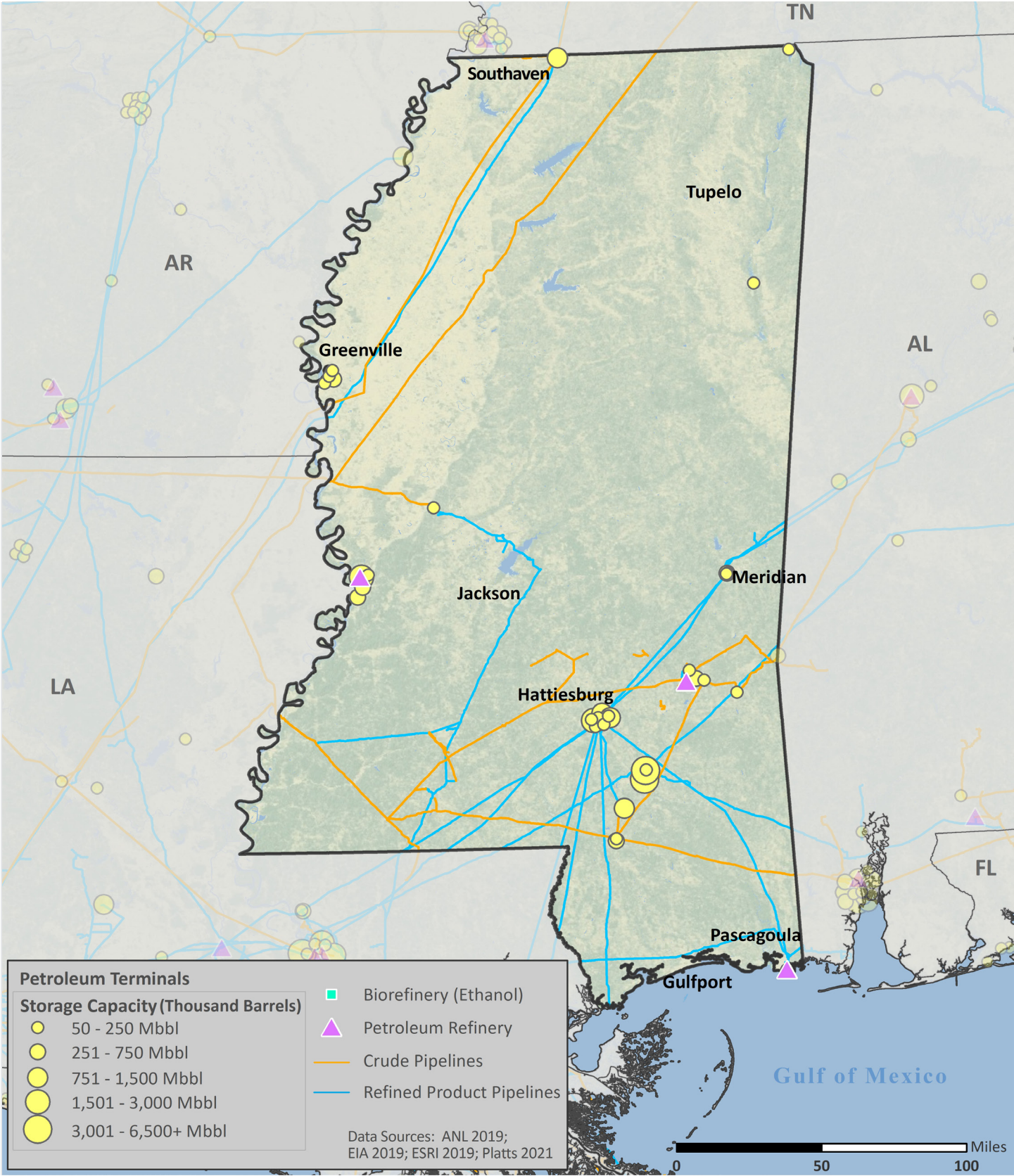
Data Source: EIA

- Mississippi has 1 natural gas processing facility with a total capacity of 750 MMcf/d.
- Mississippi has 1 liquefied natural gas (LNG) facility with a total storage capacity of 2,000,000 barrels.



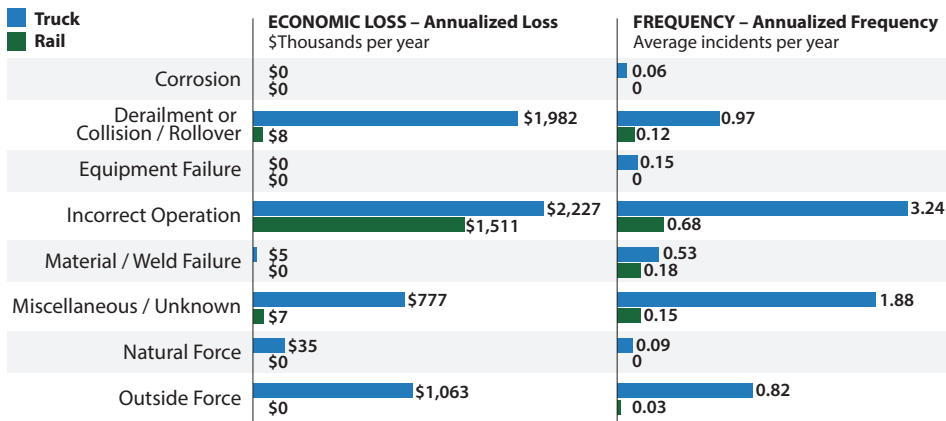


PETROLEUM



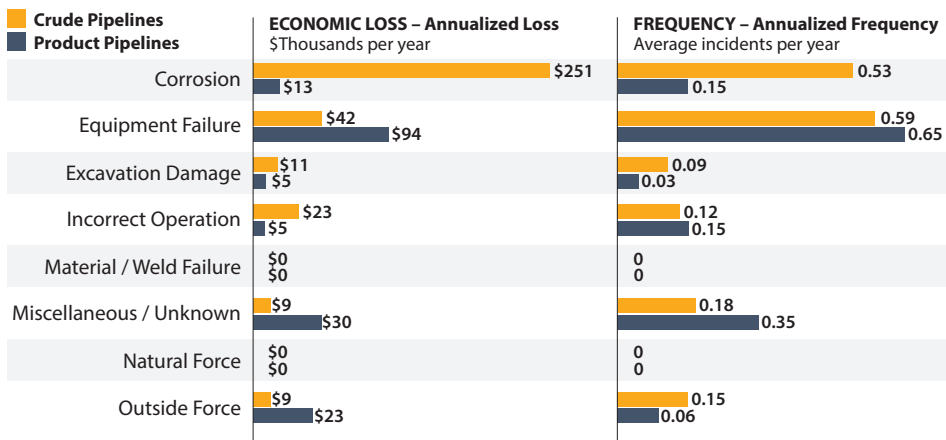
Petroleum Transport

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, Mississippi had:

- 1,623 miles of crude oil pipelines
- 1,541 miles of refined product pipelines
- 0 miles of biofuels pipelines

- 65% of Mississippi's petroleum pipeline systems were constructed prior to 1970 or in an unknown year.

- Between 1986 and 2019, Mississippi's petroleum supply was most impacted by:

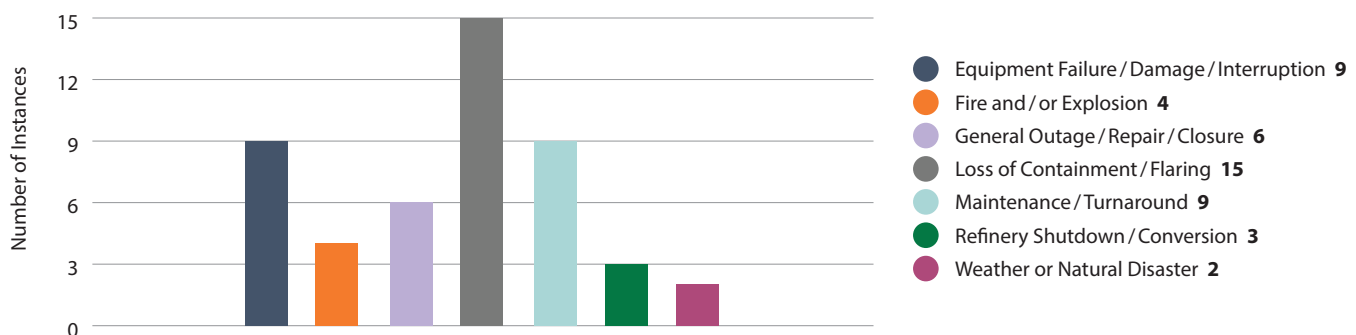
- **Incorrect Operations** when transported by truck (5th leading cause nationwide at \$11.01M per year)
- **Incorrect Operations** when transported by rail (4th leading cause nationwide at \$2.02M per year)
- **Corrosion** when transported by crude pipelines (3rd leading cause nationwide at \$14.51M per year)
- **Material Failures** when transported by product pipelines (4th leading cause nationwide at \$9.47M per year)

- Disruptions in other states may impact supply.

Petroleum Refineries

- Mississippi has 3 petroleum refineries with a total operable capacity of 393.9 Mb/d.
- Between 2009 and 2019, the leading cause of petroleum refinery disruptions in Mississippi was:
 - **Loss of Containment or Flaring** (leading cause nationwide)

Causes and Frequency of Petroleum Refinery Disruptions, 2009 – 2019



Data Source: Hydrocarbon Publishing