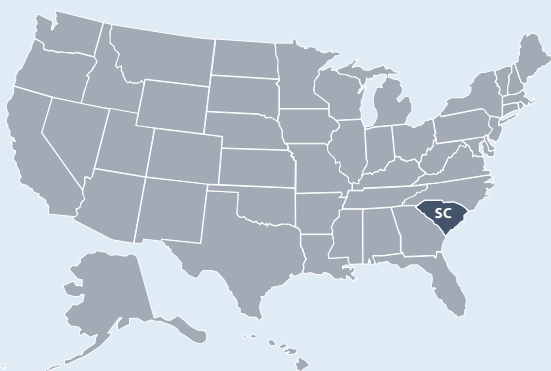




State of South Carolina ENERGY SECTOR RISK PROFILE



South Carolina State Facts



POPULATION

5.08 M



HOUSING UNITS

2.32 M



BUSINESS ESTABLISHMENTS

0.11 M

ENERGY EMPLOYMENT: 49,215 jobs

PUBLIC UTILITY COMMISSION: South Carolina Public Service Commission

STATE ENERGY OFFICE: South Carolina Office of Regulatory Staff – Energy Office

EMERGENCY MANAGEMENT AGENCY: South Carolina Emergency Management Division

AVERAGE ELECTRICITY TARIFF: 9.66 cents/kWh

ENERGY EXPENDITURES: \$3,776/capita

ENERGY CONSUMPTION PER CAPITA: 327 MMBtu (19th highest out of 50 states and Washington, D.C.)

GDP: \$233.9 billion

Data from 2020 or most recent year available.

For more information, see the Data Sources document.

ANNUAL ENERGY CONSUMPTION

ELECTRIC POWER: 81,790 GWh

COAL: 8,500 MSTN

NATURAL GAS: 335 Bcf

MOTOR GASOLINE: 63,000 Mbbbl

DISTILLATE FUEL: 24,700 Mbbbl

ANNUAL ENERGY PRODUCTION

ELECTRIC POWER GENERATION: 163 plants, 100.1 TWh, 26.1 GW total capacity

Coal: 4 plants, 14.9 TWh, 5.1 GW total capacity

Hydro: 31 plants, 3.0 TWh, 1.4 GW total capacity

Natural Gas: 23 plants, 23.9 TWh, 8.2 GW total capacity

Nuclear: 4 plants, 56.1 TWh, 6.9 GW total capacity

Petroleum: 17 plants, 0.1 TWh, 0.6 GW total capacity

Wind & Solar: 61 plants, 0.9 TWh, 0.7 GW total capacity

Other sources: 23 plants, 1.3 TWh, 3.3 GW total capacity

COAL: 0 MSTN

NATURAL GAS: 0 Bcf

CRUDE OIL: 0 Mbbbl

ETHANOL: 0 Mbbbl

Data from EIA (2018, 2019).

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

South Carolina Risks and Hazards Overview

- The natural hazard that caused the greatest overall property loss between 2009 and 2019 was **Hurricanes** at \$22 million per year (5th leading cause nationwide at \$1.9 billion per year).
- South Carolina had 162 Major Disaster Declarations, 282 Emergency Declarations, and 2 Fire Management Assistance Declarations for 13 events between 2013 and 2019.
- South Carolina registered 21% fewer Heating Degree Days and 27% greater Cooling Degree Days than average in 2019.
- There is 1 Fusion Center located in Columbia.

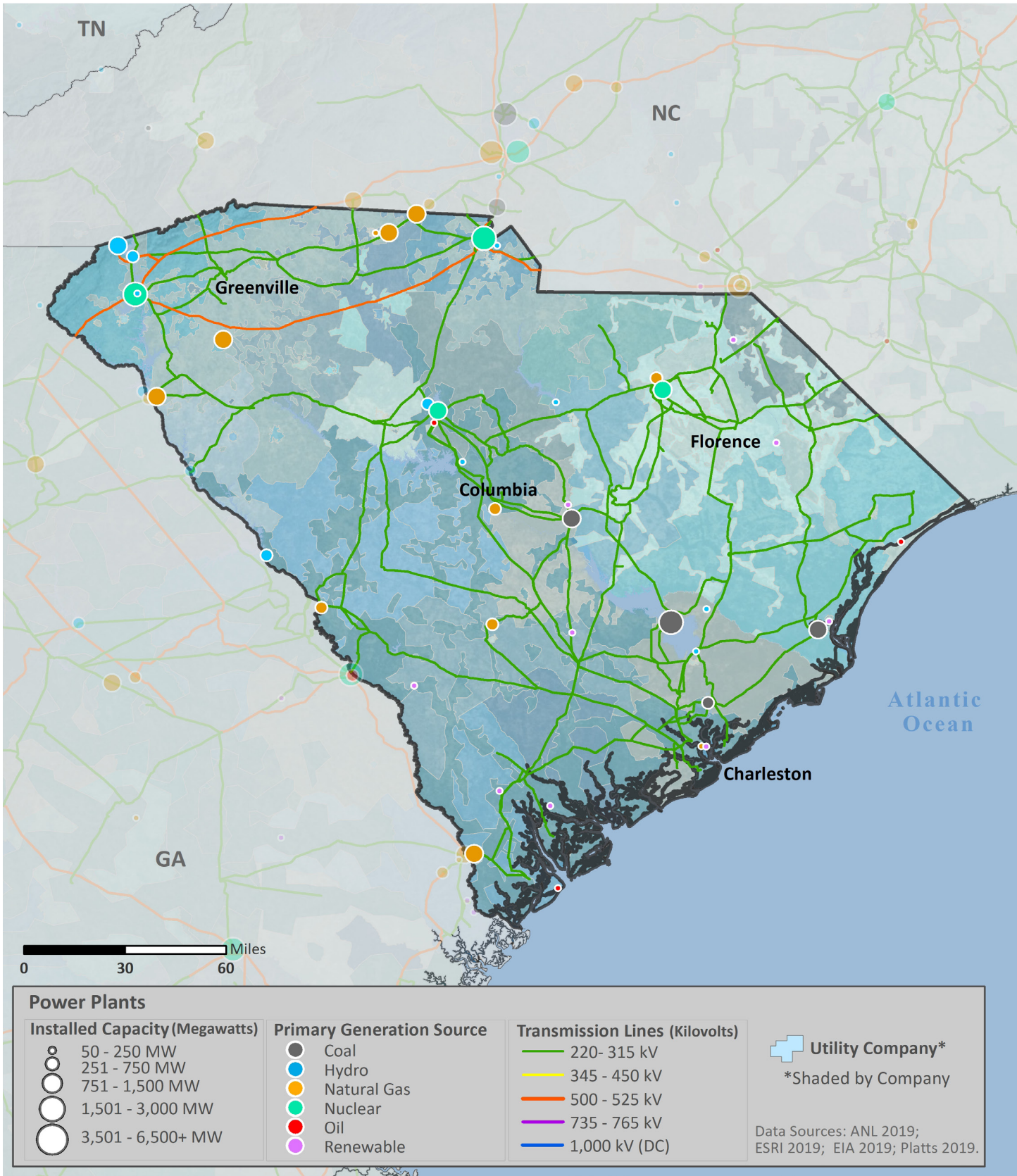
Annualized Frequency of and Property Damage Due to Natural Hazards, 2009 – 2019

	HAZARD FREQUENCY – Annualized	PROPERTY DAMAGE – Annualized (\$Million per year)
Drought	1	\$0
Earthquake (≥ 3.5 M)	<1	\$0
Extreme Heat	2	\$0
Flood	31	\$17
Hurricane	2	\$22
Landslide	0	\$0
Thunderstorm & Lightning	149	\$6
Tornado	10	\$3
Wildfire	1	\$6
Winter Storm & Extreme Cold	11	\$0

Data Sources: NOAA and USGS



ELECTRIC









Electric Infrastructure

- South Carolina has 47 electric utilities:
 - 3 Investor owned
 - 21 Cooperative
 - 21 Municipal
 - 2 Other utilities
- Plant retirements scheduled by 2025: 2 electric generating units totaling 11 MW of installed capacity.

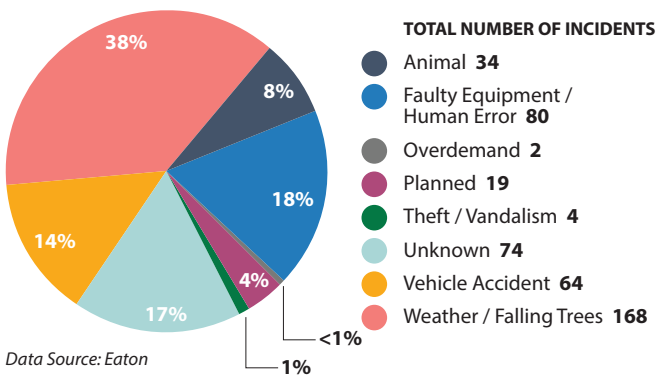
- In 2018, the average South Carolina electric customer experienced 1.6 service interruptions that lasted an average of 7.8 hours.
- In South Carolina, between 2008 and 2017:
 - The greatest number of electric outages occurred in **June** (2nd for outages nationwide)
 - The leading cause of electric outages was **Weather or Falling Trees** (leading cause nationwide)
 - Electric outages affected 248,148 customers on average

Electric Customers and Consumption by Sector, 2018

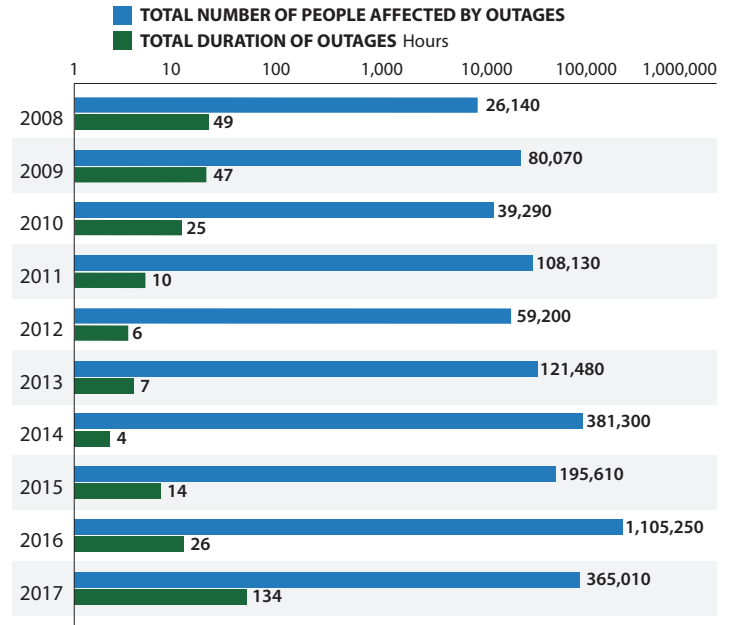
	 CUSTOMERS	 CONSUMPTION
Residential 	86%	39%
Commercial 	14%	27%
Industrial 	<1%	34%
Transportation 	<1%	<1%

Data Source: EIA

Electric Utility-Reported Outages by Cause, 2008 – 2017



Electric Utility Outage Data, 2008 – 2017

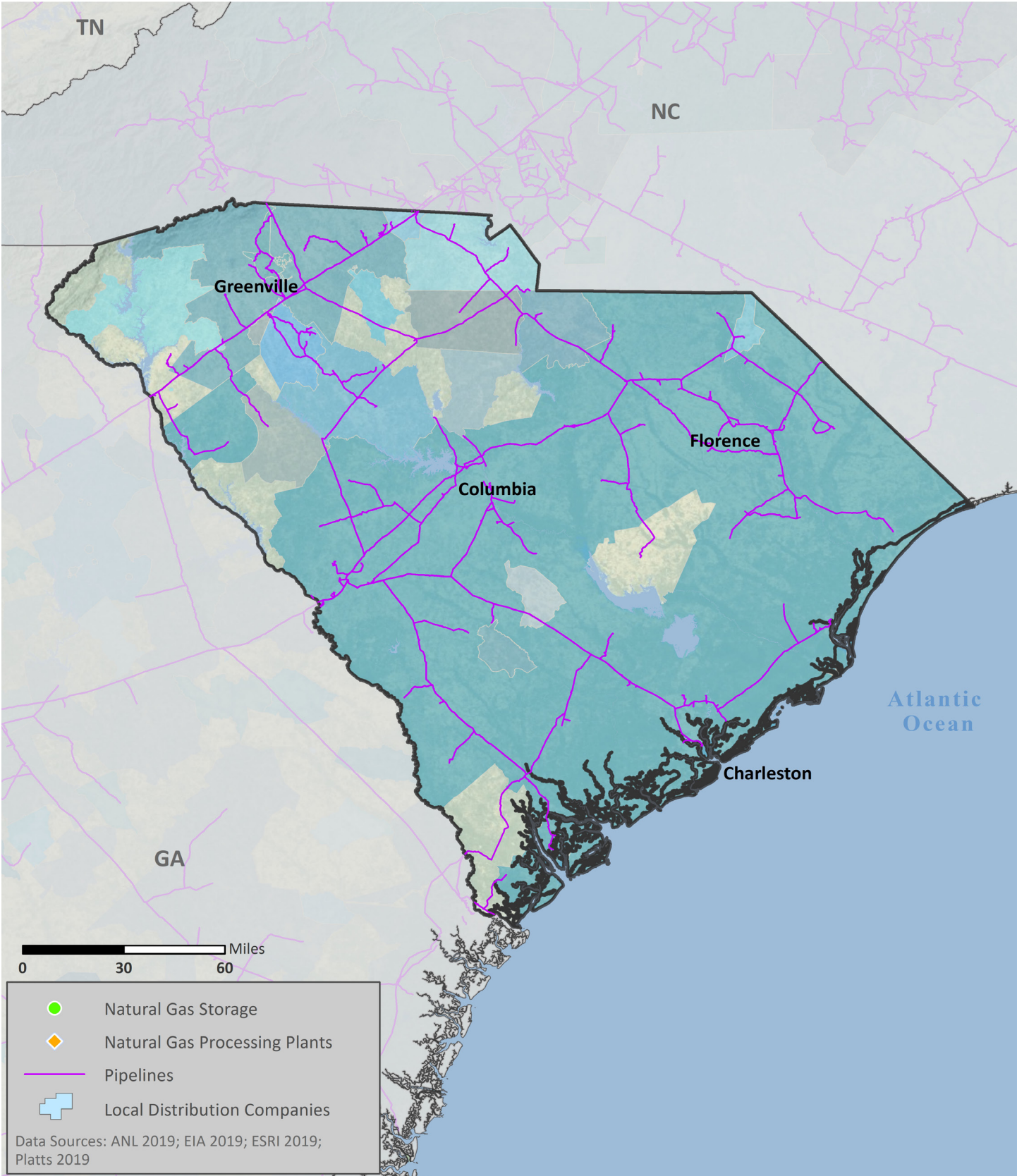


Note: This chart uses a logarithmic scale to display a very wide range of values.
Data Source: Eaton



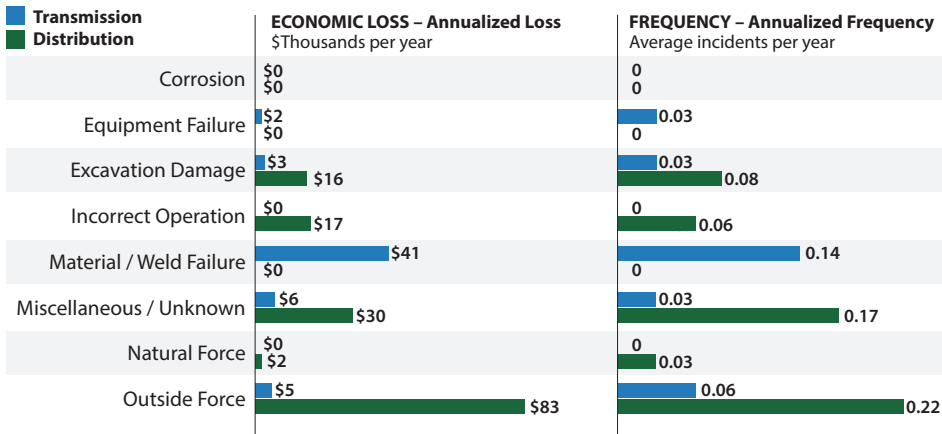


NATURAL GAS



Natural Gas Transport

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



Data Source: DOT PHMSA

- As of 2018, South Carolina had:
 - 2,774 miles of natural gas transmission pipelines
 - 22,860 miles of natural gas distribution pipelines
- 56% of South Carolina’s natural gas transmission system and 22% of the distribution system were constructed prior to 1970 or in an unknown year.
- Between 1984 and 2019, South Carolina’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	92%	7%
Commercial	8%	6%
Industrial	<1%	23%
Transportation	<1%	<1%
Electric Power	<1%	64%
Other	<1%	<1%

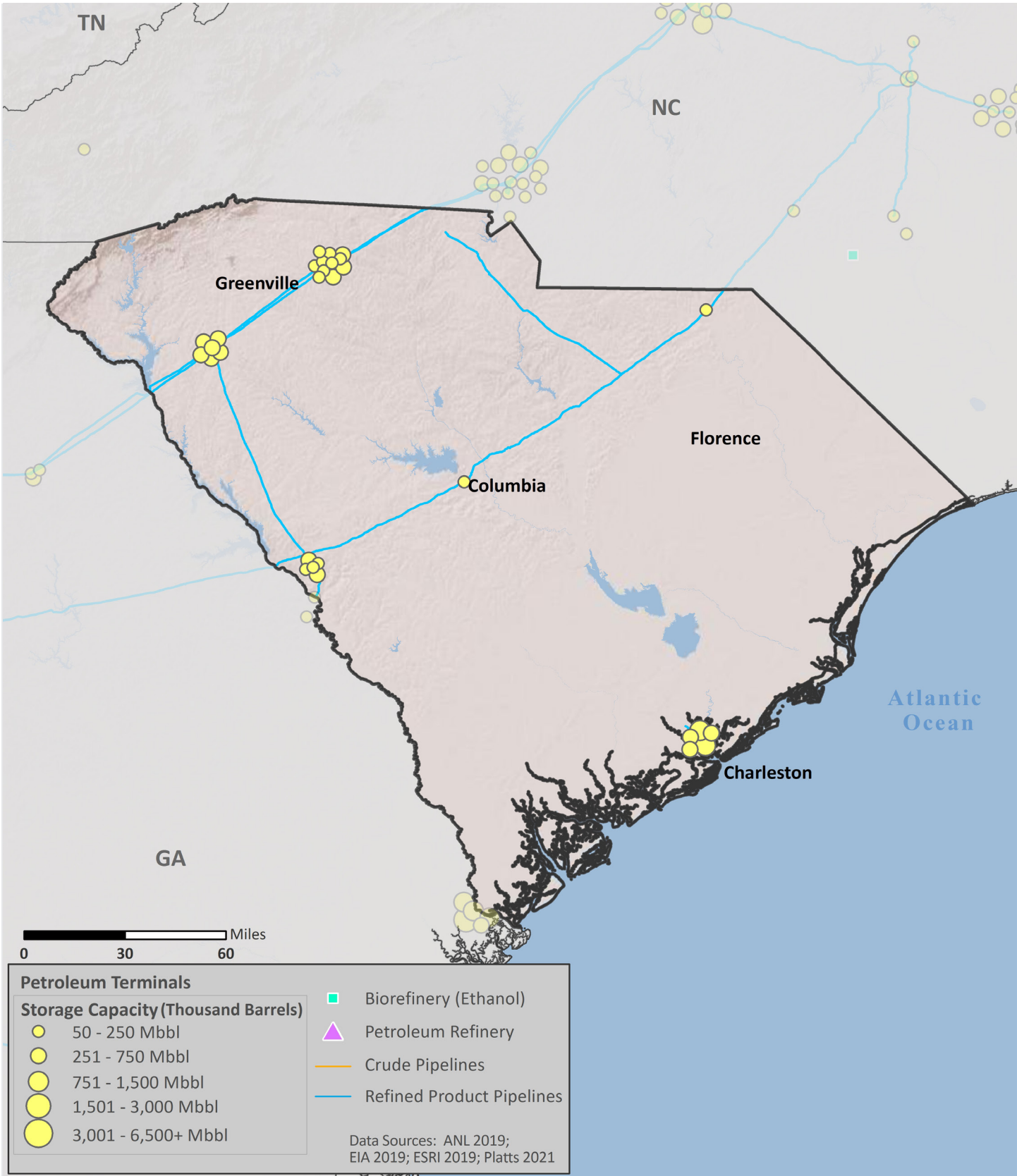
Data Source: EIA

- South Carolina has 0 natural gas processing facilities.
- South Carolina has 2 liquefied natural gas (LNG) facilities with a total storage capacity of 550,000 barrels.





PETROLEUM



Petroleum Transport

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

	ECONOMIC LOSS – Annualized Loss \$Thousands per year	FREQUENCY – Annualized Frequency Average incidents per year
Corrosion	\$0	0.03
Derailment or Collision / Rollover	\$2,368	1.21
Equipment Failure	\$0	0.03
Incorrect Operation	\$21	3.41
Material / Weld Failure	\$15	0.82
Miscellaneous / Unknown	\$721	0.09
Natural Force	\$0	0
Outside Force	\$3,050	1.03

Data Source: DOT PHMSA

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

	ECONOMIC LOSS – Annualized Loss \$Thousands per year	FREQUENCY – Annualized Frequency Average incidents per year
Corrosion	\$1,262	0.15
Equipment Failure	\$58	0.38
Excavation Damage	\$0	0
Incorrect Operation	\$164	0.26
Material / Weld Failure	\$62	0.06
Miscellaneous / Unknown	\$32	0.12
Natural Force	\$0	0
Outside Force	\$17	0.12

Data Source: DOT PHMSA

- As of 2018, South Carolina had:
 - 0 miles of crude oil pipelines
 - 585 miles of refined product pipelines
 - 0 miles of biofuels pipelines
- 67% of South Carolina’s petroleum pipeline systems were constructed prior to 1970 or in an unknown year.
- Between 1986 and 2019, South Carolina’s petroleum supply was most impacted by:
 - **Outside Forces** when transported by truck (2nd leading cause nationwide at \$60.45M per year)
 - **Incorrect Operations** when transported by rail (4th leading cause nationwide at \$2.02M 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

- There are no operating petroleum refineries in South Carolina.

