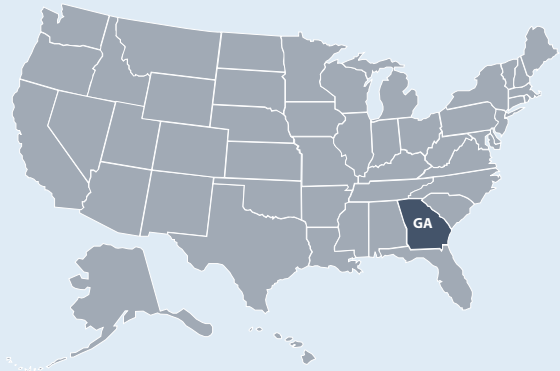
State of Georgia
ENERGY SECTOR RISK PROFILE

U.S. DEPARTMENT OF ENERGY
Cybersecurity, Energy Security, and Emergency Response



Georgia State Facts

POPULATION 10.52 M

HOUSING UNITS 4.33 M

BUSINESS ESTABLISHMENTS 0.23 M

ENERGY EMPLOYMENT: 64,774 jobs
PUBLIC UTILITY COMMISSION: Georgia Public Service Commission
STATE ENERGY OFFICE: Georgia Environmental Finance Authority, Energy Resources Division
EMERGENCY MANAGEMENT AGENCY: Georgia Emergency Management Agency
AVERAGE ELECTRICITY TARIFF: 9.62 cents/kWh
ENERGY EXPENDITURES: $3,266/capita
ENERGY CONSUMPTION PER CAPITA: 269 MMBtu
(33rd highest out of 50 states and Washington, D.C.)
GDP: $592.2 billion

Data from 2020 or most recent year available.
For more information, see the Data Sources document.

ANNUAL ENERGY CONSUMPTION

ELECTRIC POWER: 139,870 GWh
COAL: 17,300 MSTN
NATURAL GAS: 748 Bcf
MOTOR GASOLINE: 115,800 Mbbl
DISTILLATE FUEL: 42,200 Mbbl

ANNUAL ENERGY PRODUCTION

ELECTRIC POWER GENERATION: 191 plants, 128.7 TWh, *30.7 GW total capacity*
- **Coal:** 3 plants, 25.2 TWh, *9.0 GW total capacity*
- **Hydro:** 30 plants, 4.0 TWh, *2.0 GW total capacity*
- **Natural Gas:** 33 plants, 58.6 TWh, *19.0 GW total capacity*
- **Nuclear:** 2 plants, 33.6 TWh, *4.3 GW total capacity*
- **Petroleum:** 24 plants, 0.2 TWh, *1.2 GW total capacity*
- **Wind & Solar:** 65 plants, 2.2 TWh, *1.5 GW total capacity*
- **Other sources:** 34 plants, 4.9 TWh, *2.8 GW total capacity*

COAL: 0 MSTN
NATURAL GAS: 0 Bcf
CRUDE OIL: 0 Mbbl
ETHANOL: 2,900 Mbbl

Data from EIA (2018, 2019).

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

Georgia Risks and Hazards Overview

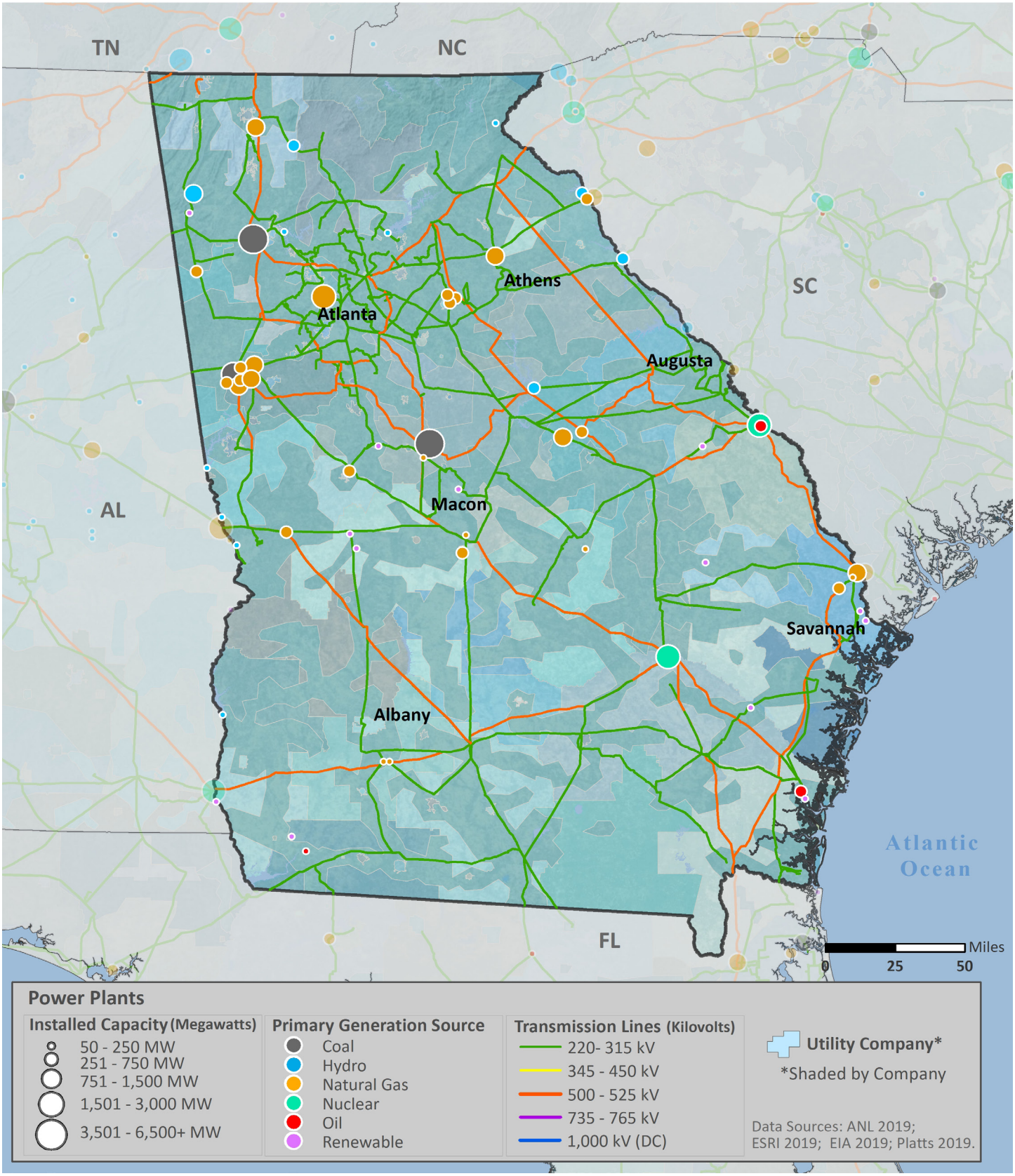
- The natural hazard that caused the greatest overall property loss between 2009 and 2019 was **Hurricanes** at $148 million per year *(5th leading cause nationwide at $1.9 billion per year)*.
- Georgia had 373 Major Disaster Declarations, 400 Emergency Declarations, and 4 Fire Management Assistance Declarations for 15 events between 2013 and 2019.
- Georgia registered 22% fewer Heating Degree Days and 27% greater Cooling Degree Days than average in 2019.
- There is 1 Fusion Center located in Atlanta.

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)	0	$0
Extreme Heat	2	$0
Flood	30	$34
Hurricane	2	$148
Landslide	<1	$0
Thunderstorm & Lightning	168	$41
Tornado	17	$67
Wildfire	11	$2
Winter Storm & Extreme Cold	11	$0

Data Sources: NOAA and USGS

ELECTRIC


TN
NC
SC
AL
FL
Atlanta
Athens
Augusta
Macon
Savannah
Albany
Atlantic Ocean
Miles
0
25
50
Power Plants
Installed Capacity (Megawatts)
50 - 250 MW
251 - 750 MW
751 - 1,500 MW
1,501 - 3,000 MW
3,501 - 6,500+ MW
Primary Generation Source
Coal
Hydro
Natural Gas
Nuclear
Oil
Renewable
Transmission Lines (Kilovolts)
220- 315 kV
345 - 450 kV
500 - 525 kV
735 - 765 kV
1,000 kV (DC)
Utility Company*
*Shaded by Company
Data Sources: ANL 2019; ESRI 2019; EIA 2019; Platts 2019.

Electric Infrastructure

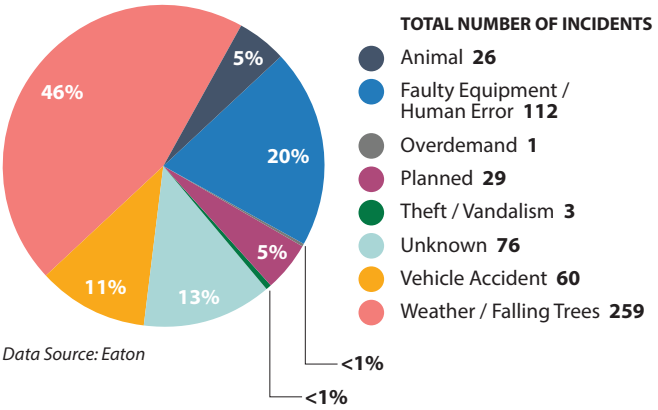
- Georgia has 99 electric utilities:
  - *1 Investor owned*
  - *43 Cooperative*
  - *49 Municipal*
  - *6 Other utilities*
- Plant retirements scheduled by 2025: 5 electric generating units totaling 1,131 MW of installed capacity.
- In 2018, the average Georgia electric customer experienced 1.5 service interruptions that lasted an average of 6.2 hours.
- In Georgia, 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 495,688 customers on average*

Electric Customers and Consumption by Sector, 2018

	CUSTOMERS	CONSUMPTION
Residential	88%	43%
Commercial	12%	34%
Industrial	<1%	23%
Transportation	<1%	<1%

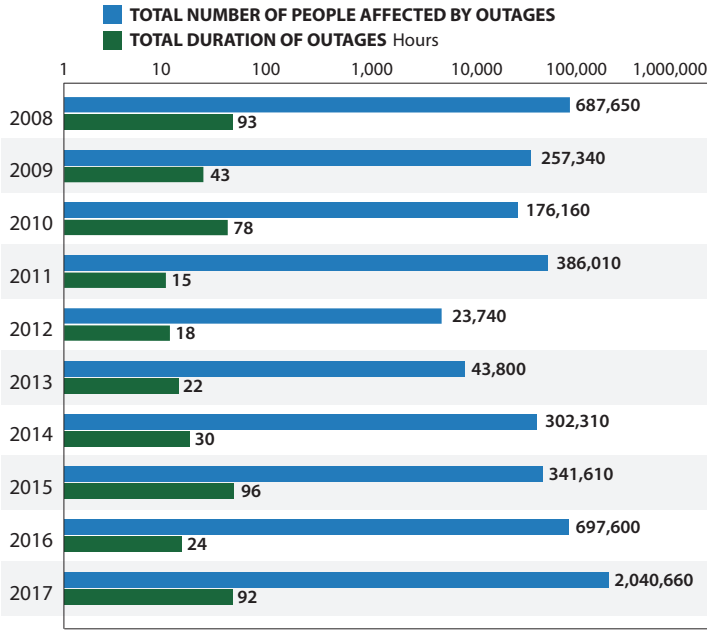
Data Source: EIA

Electric Utility-Reported Outages by Cause, 2008 – 2017



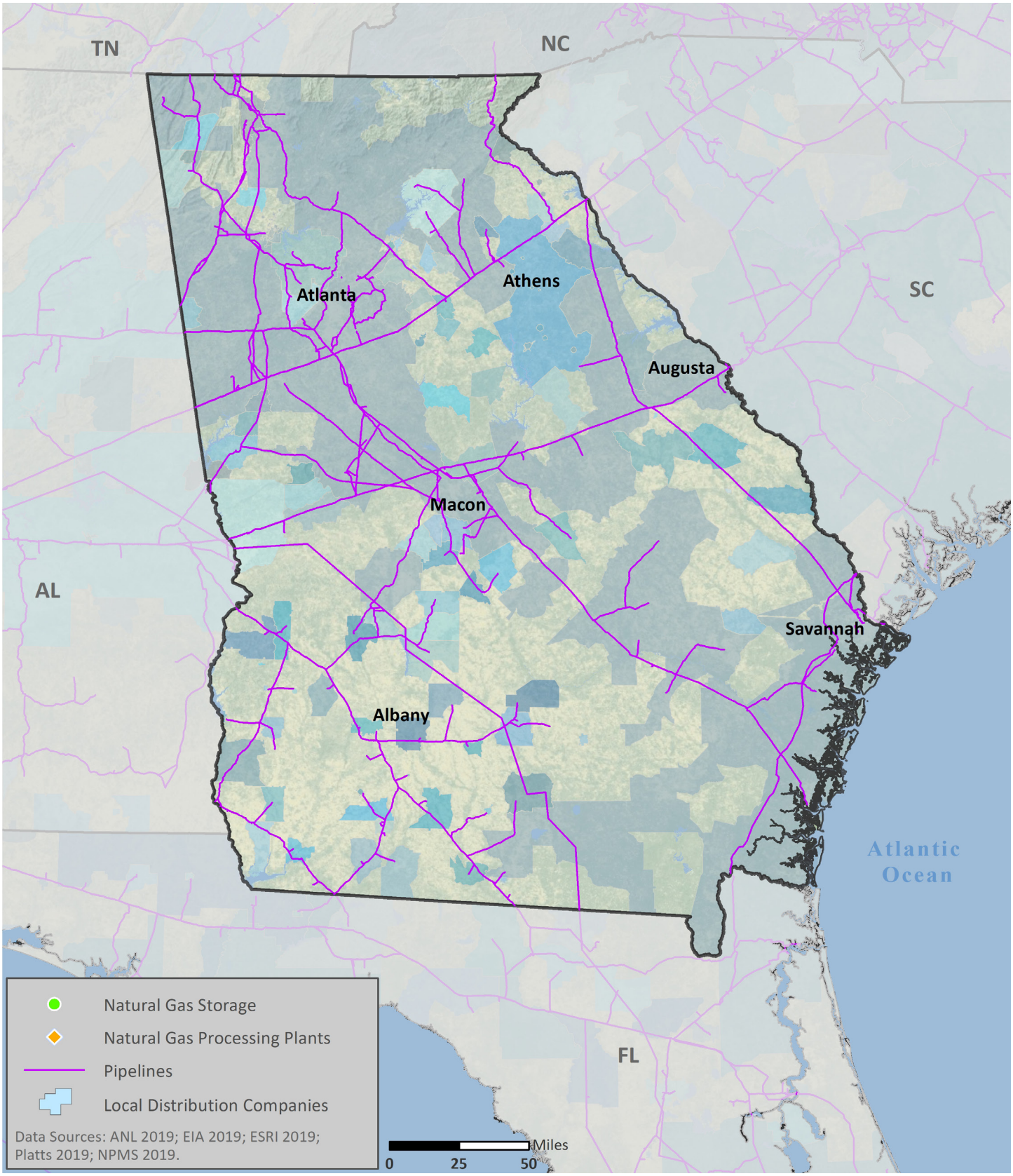
Data Source: Eaton

Electric Utility Outage Data, 2008 – 2017



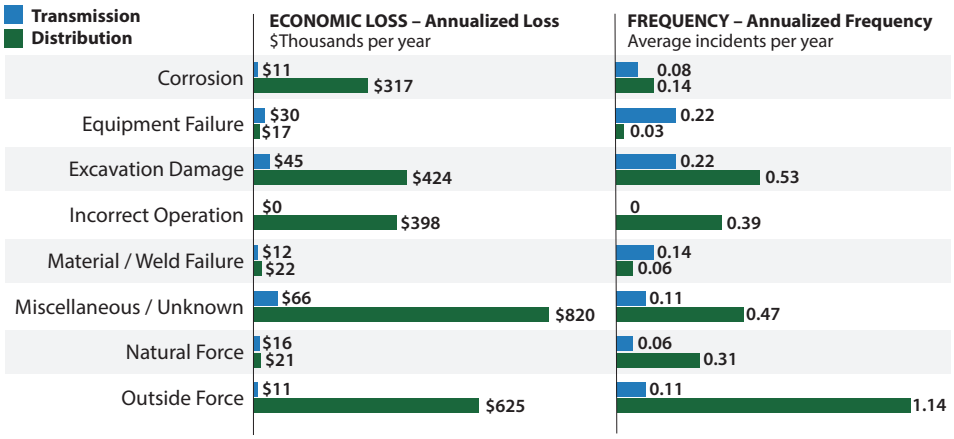
Note: This chart uses a logarithmic scale to display a very wide range of values.
Data Source: Eaton

NATURAL GAS


TN
NC
SC
AL
FL
Atlanta
Athens
Augusta
Macon
Savannah
Albany
Atlantic Ocean
Natural Gas Storage
Natural Gas Processing Plants
Pipelines
Local Distribution Companies
Data Sources: ANL 2019; EIA 2019; ESRI 2019; Platts 2019; NPMS 2019.
0
25
50
Miles

Natural Gas Transport

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



Data Source: DOT PHMSA

- As of 2018, Georgia had:
  - *4,884 miles of natural gas transmission pipelines*
  - *45,449 miles of natural gas distribution pipelines*
- 51% of Georgia's natural gas transmission system and 23% of the distribution system were constructed prior to 1970 or in an unknown year.
- Between 1984 and 2019, Georgia'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)*
  - ***Miscellaneous or Unknown*** *events when transported by distribution pipelines (2nd leading cause nationwide at $67.89M per year)*

Natural Gas Processing and Liquefied Natural Gas

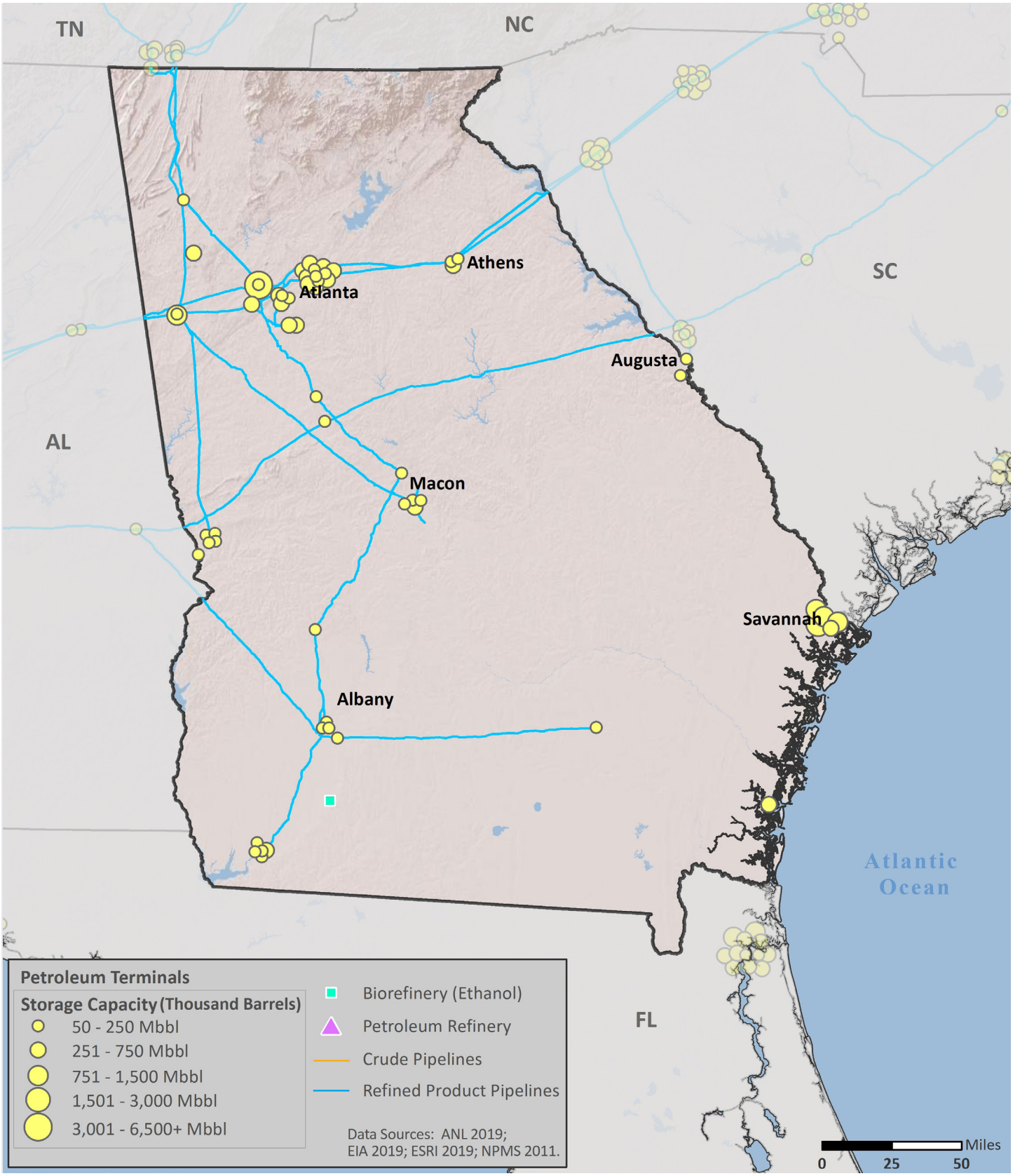
Natural Gas Customers and Consumption by Sector, 2018

	CUSTOMERS	CONSUMPTION
Residential	93%	19%
Commercial	6%	8%
Industrial	<1%	22%
Transportation	<1%	<1%
Electric Power	<1%	51%
Other	<1%	<1%

Data Source: EIA

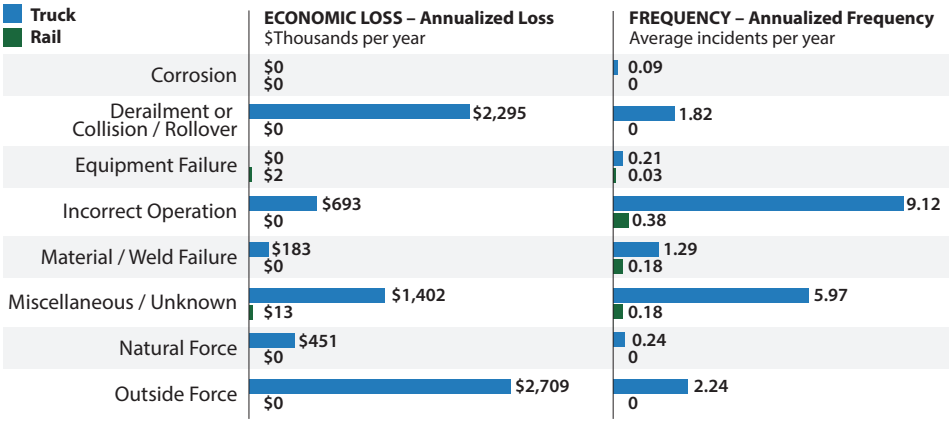
- Georgia has 0 natural gas processing facilities.
- Georgia has 5 liquefied natural gas (LNG) facilities with a total storage capacity of 5,240,000 barrels.

PETROLEUM


TN
NC
SC
AL
FL
Athens
Atlanta
Augusta
Macon
Savannah
Albany
Atlantic Ocean
Petroleum Terminals
Storage Capacity (Thousand Barrels)
50 - 250 Mbbl
251 - 750 Mbbl
751 - 1,500 Mbbl
1,501 - 3,000 Mbbl
3,001 - 6,500+ Mbbl
Biorefinery (Ethanol)
Petroleum Refinery
Crude Pipelines
Refined Product Pipelines
Data Sources: ANL 2019; EIA 2019; ESRI 2019; NPMS 2011.
Miles
0
25
50

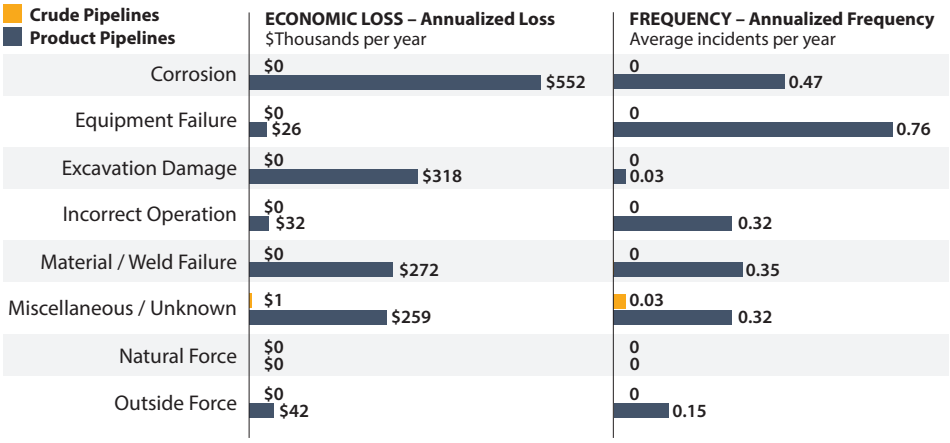
Petroleum Transport

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, Georgia had:
  - *0 miles of crude oil pipelines*
  - *1,759 miles of refined product pipelines*
  - *0 miles of biofuels pipelines*
- 53% of Georgia's petroleum pipeline systems were constructed prior to 1970 or in an unknown year.
- Between 1986 and 2019, Georgia'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)*
  - ***Miscellaneous or Unknown*** *events when transported by crude pipelines (5th leading cause nationwide at $4.71M 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

- There are no operating petroleum refineries in Georgia.