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

**Connecticut State Facts**

**Population:** 3.57 M  
**Housing Units:** 1.52 M  
**Business Establishments:** 0.09 M

**Energy Employment:** 21,516 jobs  
**Public Utility Commission:** Connecticut Public Utilities Regulatory Authority  
**State Energy Office:** Connecticut Department of Energy and Environmental Protection  
**Emergency Management Agency:** Connecticut Division of Emergency Management and Homeland Security

**Average Electricity Tariff:** 18.41 cents/kWh  
**Energy Expenditures:** $3,508/capita

**Energy Consumption per Capita:** 203 MMBtu (46th highest out of 50 states and Washington, D.C.)

**GDP:** $275.7 billion

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

**Annual Energy Consumption**

**Electric Power:** 43,870 GWh  
**Coal:** 200 MSTN  
**Natural Gas:** 277 Bcf  
**Motor Gasoline:** 32,200 Mbbl  
**Distillate Fuel:** 13,500 Mbbl

**Annual Energy Production**

**Electric Power Generation:** 137 plants, 40.1 TWh, 10.9 GW total capacity  
- **Coal:** 1 plant, 0.1 TWh, 0.4 GW total capacity  
- **Hydro:** 13 plants, 0.4 TWh, 0.1 GW total capacity  
- **Natural Gas:** 45 plants, 21.3 TWh, 5.8 GW total capacity  
- **Nuclear:** 1 plant, 16.7 TWh, 2.2 GW total capacity  
- **Petroleum:** 26 plants, 0.0 TWh, 2.3 GW total capacity  
- **Wind & Solar:** 40 plants, 0.2 TWh, 0.1 GW total capacity  
- **Other Sources:** 11 plants, 1.3 TWh, 0.3 GW total capacity  
**Coal:** 0 MSTN  
**Natural Gas:** 0 Bcf  
**Crude Oil:** 0 Mbbl  
**Ethanol:** 0 Mbbl

Data from EIA (2018, 2019).

**Connecticut Risks and Hazards Overview**

- The natural hazard that caused the greatest overall property loss between 2009 and 2019 was **Hurricanes** at $6 million per year (5th leading cause nationwide at $1.9 billion per year).
- Connecticut had 17 Major Disaster Declarations, 9 Emergency Declarations, and 0 Fire Management Assistance Declarations for 5 events between 2013 and 2019.
- Connecticut registered 10% fewer Heating Degree Days and 47% greater Cooling Degree Days than average in 2019.
- There is 1 Fusion Center located in Hartford.

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

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Frequency</th>
<th>Property Damage – Annualized ($Million per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drought</td>
<td>1</td>
<td>$0</td>
</tr>
<tr>
<td>Earthquake (≥ 3.5 M)</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td>Extreme Heat</td>
<td>2</td>
<td>$0</td>
</tr>
<tr>
<td>Flood</td>
<td>12</td>
<td>$2</td>
</tr>
<tr>
<td>Hurricane</td>
<td>&lt;1</td>
<td>$6</td>
</tr>
<tr>
<td>Landslide</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td>Thunderstorm &amp; Lightning</td>
<td>38</td>
<td>$3</td>
</tr>
<tr>
<td>Tornado</td>
<td>2</td>
<td>$1</td>
</tr>
<tr>
<td>Wildfire</td>
<td>0</td>
<td>$0</td>
</tr>
<tr>
<td>Winter Storm &amp; Extreme Cold</td>
<td>21</td>
<td>$2</td>
</tr>
</tbody>
</table>

Data Sources: NOAA and USGS
State of Connecticut | ENERGY SECTOR RISK PROFILE

Electric Infrastructure

- Connecticut has 34 electric utilities:
  - 3 Investor owned
  - 0 Cooperative
  - 7 Municipal
  - 24 Other utilities
- Plant retirements scheduled by 2025: 1 electric generating unit totaling 400 MW of installed capacity.

- In 2018, the average Connecticut electric customer experienced 1.3 service interruptions that lasted an average of 10.9 hours.
- In Connecticut, 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 379,319 customers on average

Electric Customers and Consumption by Sector, 2018

<table>
<thead>
<tr>
<th></th>
<th>CUSTOMERS</th>
<th>CONSUMPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>90%</td>
<td>45%</td>
</tr>
<tr>
<td>Commercial</td>
<td>9%</td>
<td>43%</td>
</tr>
<tr>
<td>Industrial</td>
<td>&lt;1%</td>
<td>11%</td>
</tr>
<tr>
<td>Transportation</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

Data Source: EIA

Electric Utility-Reported Outages by Cause, 2008 – 2017

- Animal: 38
- Faulty Equipment / Human Error: 154
- Planned: 22
- Theft / Vandalism: 1
- Unknown: 82
- Vehicle Accident: 70
- Weather / Falling Trees: 228

Note: This chart uses a logarithmic scale to display a very wide range of values.
Data Source: Eaton
State of Connecticut | ENERGY SECTOR RISK PROFILE

Natural Gas Transport

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

- As of 2018, Connecticut had:
  - 598 miles of natural gas transmission pipelines
  - 8,168 miles of natural gas distribution pipelines
- 68% of Connecticut’s natural gas transmission system and 21% of the distribution system were constructed prior to 1970 or in an unknown year.
- Between 1984 and 2019, Connecticut’s natural gas supply was most impacted by:
  - Incorrect Operations when transported by transmission pipelines (8th leading cause nationwide at $3.58M 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

- Connecticut has 0 natural gas processing facilities.
- Connecticut has 4 liquefied natural gas (LNG) facilities with a total storage capacity of 1,045,191 barrels.

Data Source: DOT PHMSA

Data Source: EIA
**Petroleum Transport**

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

<table>
<thead>
<tr>
<th>Event</th>
<th>Truck</th>
<th>Rail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrosion</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Derailment or Collision / Rollover</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Equipment Failure</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Incorrect Operation</td>
<td>$1</td>
<td>$0</td>
</tr>
<tr>
<td>Material / Weld Failure</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Miscellaneous / Unknown</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Natural Force</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Outside Force</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

**ECONOMIC LOSS – Annualized Loss**
- Corrosion: $151
- Derailment or Collision / Rollover: $0
- Equipment Failure: $0
- Incorrect Operation: $26
- Material / Weld Failure: $1
- Miscellaneous / Unknown: $0
- Natural Force: $146
- Outside Force: $564

**FREQUENCY – Annualized Frequency**
- Corrosion: 0.09
- Derailment or Collision / Rollover: 0.68
- Equipment Failure: 0.18
- Incorrect Operation: 0.06
- Material / Weld Failure: 0.79
- Miscellaneous / Unknown: 0.15
- Natural Force: 0
- Outside Force: 0.14

*Data Source: DOT PHMSA*

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

<table>
<thead>
<tr>
<th>Event</th>
<th>Crude Pipelines</th>
<th>Product Pipelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrosion</td>
<td>$0</td>
<td>$253</td>
</tr>
<tr>
<td>Excavation Damage</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Incorrect Operation</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Material / Weld Failure</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Miscellaneous / Unknown</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Natural Force</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Outside Force</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

**ECONOMIC LOSS – Annualized Loss**
- Corrosion: $253
- Excavation Damage: $0
- Incorrect Operation: $0
- Material / Weld Failure: $0
- Miscellaneous / Unknown: $0
- Natural Force: $0
- Outside Force: $0

**FREQUENCY – Annualized Frequency**
- Corrosion: 0.12
- Excavation Damage: 0.06
- Incorrect Operation: 0.03
- Material / Weld Failure: 0
- Miscellaneous / Unknown: 0
- Natural Force: 0
- Outside Force: 0

*Data Source: DOT PHMSA*

**Petroleum Refineries**

- There are no operating petroleum refineries in Connecticut.

- As of 2018, Connecticut had:
  - 0 miles of crude oil pipelines
  - 94 miles of refined product pipelines
  - 0 miles of biofuels pipelines

- 77% of Connecticut’s petroleum pipeline systems were constructed prior to 1970 or in an unknown year.

- Between 1986 and 2019, Connecticut’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 $15.20M per year)

- Disruptions in other states may impact supply.