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

Indiana Risks and Hazards Overview

- The natural hazard that caused the greatest overall property loss between 2009 and 2019 was Thunderstorms & Lightning at $11 million per year (2nd leading cause nationwide at $2.8 billion per year).
- Indiana had 61 Major Disaster Declarations, 0 Emergency Declarations, and 0 Fire Management Assistance Declarations for 2 events between 2013 and 2019.
- Indiana registered 8% fewer Heating Degree Days and 14% greater Cooling Degree Days than average in 2019.
- There is 1 Fusion Center located in Indianapolis.
Electric Infrastructure

- Indiana has 113 electric utilities:
  - 5 Investor owned
  - 39 Cooperative
  - 68 Municipal
  - 1 Other utility

- Plant retirements scheduled by 2025: 8 electric generating units totaling 1,045 MW of installed capacity.

- In 2018, the average Indiana electric customer experienced 1.4 service interruptions that lasted an average of less than 1 hour.

- In Indiana, between 2008 and 2017:
  - The greatest number of electric outages occurred in November (10th for outages nationwide)
  - The leading cause of electric outages was Weather or Falling Trees (leading cause nationwide)
  - Electric outages affected 259,171 customers on average

Electric Customers and Consumption by Sector, 2018

<table>
<thead>
<tr>
<th>Sector</th>
<th>Customers</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>88%</td>
<td>33%</td>
</tr>
<tr>
<td>Commercial</td>
<td>11%</td>
<td>23%</td>
</tr>
<tr>
<td>Industrial</td>
<td>&lt;1%</td>
<td>43%</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: 59
- Faulty Equipment / Human Error: 149
- Planned: 48
- Theft / Vandalism: 2
- Unknown: 135
- Vehicle Accident: 74
- Weather / Falling Trees: 229

Total Number of Incidents

- 2008: 261
- 2009: 59
- 2010: 93
- 2011: 18
- 2012: 48
- 2013: 32
- 2014: 32
- 2015: 62
- 2016: 70
- 2017: 45

Data Source: Eaton

Electric Utility Outage Data, 2008 – 2017

- Total number of people affected by outages:
  - 2008: 365,410
  - 2009: 218,190
  - 2010: 140,400
  - 2011: 353,660
  - 2012: 424,920
  - 2013: 230,400
  - 2014: 154,240
  - 2015: 197,840
  - 2016: 329,750
  - 2017: 176,900

- Total duration of outages (Hours):
  - 2008: 1,100
  - 2009: 1,100
  - 2010: 1,100
  - 2011: 1,100
  - 2012: 1,100
  - 2013: 1,100
  - 2014: 1,100
  - 2015: 1,100
  - 2016: 1,100
  - 2017: 1,100

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

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

<table>
<thead>
<tr>
<th></th>
<th>Transmission</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corrosion</strong></td>
<td>$156</td>
<td>$882</td>
</tr>
<tr>
<td><strong>Equipment Failure</strong></td>
<td>$8</td>
<td>$6</td>
</tr>
<tr>
<td><strong>Excavation Damage</strong></td>
<td>$15</td>
<td>$1,241</td>
</tr>
<tr>
<td><strong>Incorrect Operation</strong></td>
<td>$8</td>
<td>$597</td>
</tr>
<tr>
<td><strong>Material / Weld Failure</strong></td>
<td>$71</td>
<td>$16</td>
</tr>
<tr>
<td><strong>Miscellaneous / Unknown</strong></td>
<td>$50</td>
<td>$1,011</td>
</tr>
<tr>
<td><strong>Natural Force</strong></td>
<td>$539</td>
<td>$132</td>
</tr>
<tr>
<td><strong>Outside Force</strong></td>
<td>$537</td>
<td>$877</td>
</tr>
</tbody>
</table>

**ECONOMIC LOSS – Annualized Loss**: Thousands per year
**FREQUENCY – Annualized Frequency**: Average incidents per year

- As of 2018, Indiana had:
  - 5,326 miles of natural gas transmission pipelines
  - 41,701 miles of natural gas distribution pipelines
- 64% of Indiana’s natural gas transmission system and 19% of the distribution system were constructed prior to 1970 or in an unknown year.
- Between 1984 and 2019, Indiana’s natural gas supply was most impacted by:
  - **Outside Forces** when transported by transmission pipelines (3rd leading cause nationwide at $20.65M per year)
  - **Excavation Damage** when transported by distribution pipelines (5th leading cause nationwide at $16.56M per year)

Natural Gas Processing and Liquefied Natural Gas

Natural Gas Customers and Consumption by Sector, 2018

- **Customers**
- **Consumption**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Residential</th>
<th>Commercial</th>
<th>Industrial</th>
<th>Transportation</th>
<th>Electric Power</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CUSTOMERS</strong></td>
<td>91%</td>
<td>8%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td><strong>CONSUMPTION</strong></td>
<td>18%</td>
<td>11%</td>
<td>54%</td>
<td>&lt;1%</td>
<td>17%</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

- Indiana has 0 natural gas processing facilities.
- Indiana has 4 liquefied natural gas (LNG) facilities with a total storage capacity of 1,856,000 barrels.

Data Source: EIA
Petroleum Transport

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

<table>
<thead>
<tr>
<th>Cause</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>$33</td>
<td>$3</td>
</tr>
<tr>
<td>Equipment Failure</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Incorrect Operation</td>
<td>$122</td>
<td>$51</td>
</tr>
<tr>
<td>Material / Weld Failure</td>
<td>$450</td>
<td>$0</td>
</tr>
<tr>
<td>Miscellaneous / Unknown</td>
<td>$53</td>
<td>$907</td>
</tr>
<tr>
<td>Natural Force</td>
<td>$0</td>
<td>$199</td>
</tr>
<tr>
<td>Outside Force</td>
<td>$0</td>
<td>$1,616</td>
</tr>
</tbody>
</table>

Data Source: DOT PHMSA

Petroleum Refineries

- Indiana has 2 petroleum refineries with a total operable capacity of 458.8 Mb/d.
- Between 2009 and 2019, the leading cause of petroleum refinery disruptions in Indiana was:
  - Maintenance (2nd leading cause nationwide)

As of 2018, Indiana had:
- 668 miles of crude oil pipelines
- 2,565 miles of refined product pipelines
- 0 miles of biofuels pipelines

71% of Indiana’s petroleum pipeline systems were constructed prior to 1970 or in an unknown year.

Between 1986 and 2019, Indiana’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)
- Corrosion when transported by crude pipelines (3rd leading cause nationwide at $14.51M per year)
- Corrosion when transported by product pipelines (2nd leading cause nationwide at $15.20M per year)

Disruptions in other states may impact supply.