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

New Mexico Risks and Hazards Overview

- The natural hazard that caused the greatest overall property loss between 2009 and 2019 was Winter Storms & Extreme Cold at $39 million per year (7th leading cause nationwide at $418 million per year).
- New Mexico had 56 Major Disaster Declarations, 0 Emergency Declarations, and 8 Fire Management Assistance Declarations for 14 events between 2013 and 2019.
- New Mexico registered 7% fewer Heating Degree Days and 37% greater Cooling Degree Days than average in 2019.
- There is 1 Fusion Center located in Santa Fe.

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

<table>
<thead>
<tr>
<th>HAZARD FREQUENCY - Annualized</th>
<th>PROPERTY DAMAGE – Annualized (Million per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drought</td>
<td>16</td>
</tr>
<tr>
<td>Earthquake (≥ 3.5 M)</td>
<td>2</td>
</tr>
<tr>
<td>Extreme Heat</td>
<td>1</td>
</tr>
<tr>
<td>Flood</td>
<td>33</td>
</tr>
<tr>
<td>Hurricane</td>
<td>0</td>
</tr>
<tr>
<td>Landslide</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Thunderstorm &amp; Lightning</td>
<td>113</td>
</tr>
<tr>
<td>Tornado</td>
<td>9</td>
</tr>
<tr>
<td>Wildfire</td>
<td>5</td>
</tr>
<tr>
<td>Winter Storm &amp; Extreme Cold</td>
<td>21</td>
</tr>
</tbody>
</table>

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

ELECTRIC

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

- New Mexico has 24 electric utilities:
  - 1 Investor owned
  - 16 Cooperative
  - 7 Municipal
  - 0 Other utilities
- Plant retirements scheduled by 2025: 6 electric generating units totaling 464 MW of installed capacity.
- In 2018, the average New Mexico electric customer experienced 1.1 service interruptions that lasted an average of 2.3 hours.
- In New Mexico, between 2008 and 2017:
  - The greatest number of electric outages occurred in July (leading month for outages nationwide)
  - The leading cause of electric outages was Weather or Falling Trees (leading cause nationwide)
  - Electric outages affected 91,741 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>85%</td>
<td>28%</td>
</tr>
<tr>
<td>Commercial</td>
<td>14%</td>
<td>38%</td>
</tr>
<tr>
<td>Industrial</td>
<td>&lt;1%</td>
<td>34%</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

<table>
<thead>
<tr>
<th>Year</th>
<th>Animal</th>
<th>Faulty Equipment / Human Error</th>
<th>Planned</th>
<th>Theft / Vandalism</th>
<th>Vehicle Accident</th>
<th>Weather / Falling Trees</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>12</td>
<td>53</td>
<td>12</td>
<td>4</td>
<td>16</td>
<td>61</td>
</tr>
<tr>
<td>2009</td>
<td>16</td>
<td>16</td>
<td>15</td>
<td>8</td>
<td>16</td>
<td>31</td>
</tr>
<tr>
<td>2010</td>
<td>15</td>
<td>15</td>
<td>13</td>
<td>7</td>
<td>16</td>
<td>27</td>
</tr>
<tr>
<td>2011</td>
<td>13</td>
<td>13</td>
<td>43</td>
<td>9</td>
<td>16</td>
<td>8%</td>
</tr>
<tr>
<td>2012</td>
<td>43</td>
<td>43</td>
<td>16</td>
<td>12</td>
<td>16</td>
<td>6%</td>
</tr>
<tr>
<td>2013</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>8</td>
<td>16</td>
<td>2%</td>
</tr>
<tr>
<td>2014</td>
<td>3</td>
<td>3</td>
<td>8</td>
<td>6</td>
<td>15</td>
<td>6%</td>
</tr>
<tr>
<td>2015</td>
<td>8</td>
<td>8</td>
<td>17</td>
<td>6</td>
<td>15</td>
<td>6%</td>
</tr>
<tr>
<td>2016</td>
<td>17</td>
<td>17</td>
<td>17</td>
<td>7</td>
<td>15</td>
<td>6%</td>
</tr>
<tr>
<td>2017</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>8</td>
<td>15</td>
<td>6%</td>
</tr>
</tbody>
</table>

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

Electric Utility Outage Data, 2008 – 2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Number of People Affected by Outages</th>
<th>Total Duration of Outages (Hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>59,200</td>
<td>10,000</td>
</tr>
<tr>
<td>2009</td>
<td>69,560</td>
<td>10,000</td>
</tr>
<tr>
<td>2010</td>
<td>7,220</td>
<td>1,000</td>
</tr>
<tr>
<td>2011</td>
<td>169,740</td>
<td>10,000</td>
</tr>
<tr>
<td>2012</td>
<td>51,270</td>
<td>1,000</td>
</tr>
<tr>
<td>2013</td>
<td>37,130</td>
<td>1,000</td>
</tr>
<tr>
<td>2014</td>
<td>10,750</td>
<td>1,000</td>
</tr>
<tr>
<td>2015</td>
<td>45,730</td>
<td>1,000</td>
</tr>
<tr>
<td>2016</td>
<td>360,530</td>
<td>1,000</td>
</tr>
<tr>
<td>2017</td>
<td>106,280</td>
<td>1,000</td>
</tr>
</tbody>
</table>

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

- As of 2018, New Mexico had:
  - 6,440 miles of natural gas transmission pipelines
  - 14,347 miles of natural gas distribution pipelines
- 69% of New Mexico’s natural gas transmission system and 42% of the distribution system were constructed prior to 1970 or in an unknown year.
- Between 1984 and 2019, New Mexico’s natural gas supply was most impacted by:
  - Corrosion when transported by transmission pipelines (4th leading cause nationwide at $20.15M 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

- New Mexico has 24 natural gas processing facilities with a total capacity of 3,847 MMcf/d.
- New Mexico has 0 liquefied natural gas (LNG) facilities with a total storage capacity of 0 barrels.
Petroleum Transport

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

- **Corrosion**
  - **Economic Loss**:
    - Truck: $0
    - Rail: $0
  - **Frequency**:
    - Truck: $0
    - Rail: 0.17

- **Derailment or Collision / Rollover**
  - **Economic Loss**:
    - Truck: $0
    - Rail: $0
  - **Frequency**:
    - Truck: $0
    - Rail: 0.05

- **Equipment Failure**
  - **Economic Loss**:
    - Truck: $17
    - Rail: $18
  - **Frequency**:
    - Truck: 0.12
    - Rail: 0.15

- **Incorrect Operation**
  - **Economic Loss**:
    - Truck: $17
    - Rail: $31
  - **Frequency**:
    - Truck: 0.09
    - Rail: 0.12

- **Material / Weld Failure**
  - **Economic Loss**:
    - Truck: $1
    - Rail: $31
  - **Frequency**:
    - Truck: 0.03
    - Rail: 0.24

- **Miscellaneous / Unknown**
  - **Economic Loss**:
    - Truck: $0
    - Rail: $31
  - **Frequency**:
    - Truck: 0.03
    - Rail: 0.29

- **Natural Force**
  - **Economic Loss**:
    - Truck: $11
    - Rail: $10
  - **Frequency**:
    - Truck: 0.3
    - Rail: 0.03

- **Outside Force**
  - **Economic Loss**:
    - Truck: $15
    - Rail: $165
  - **Frequency**:
    - Truck: 1.09
    - Rail: 1.18

Data Source: DOT PHMSA

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

- **Corrosion**
  - **Economic Loss**:
    - Crude Pipelines: $48
    - Product Pipelines: $165
  - **Frequency**:
    - Crude Pipelines: 0.21
    - Product Pipelines: 0.03

- **Equipment Failure**
  - **Economic Loss**:
    - Crude Pipelines: $17
    - Product Pipelines: $78
  - **Frequency**:
    - Crude Pipelines: 0.15
    - Product Pipelines: 0.47

- **Excavation Damage**
  - **Economic Loss**:
    - Crude Pipelines: $1
    - Product Pipelines: $18
  - **Frequency**:
    - Crude Pipelines: 0.03
    - Product Pipelines: 0.12

- **Incorrect Operation**
  - **Economic Loss**:
    - Crude Pipelines: $2
    - Product Pipelines: $31
  - **Frequency**:
    - Crude Pipelines: 0.09
    - Product Pipelines: 0.26

- **Material / Weld Failures**
  - **Economic Loss**:
    - Crude Pipelines: $17
    - Product Pipelines: $31
  - **Frequency**:
    - Crude Pipelines: 0.03
    - Product Pipelines: 0.24

- **Miscellaneous / Unknown**
  - **Economic Loss**:
    - Crude Pipelines: $6
    - Product Pipelines: $1
  - **Frequency**:
    - Crude Pipelines: 0.15
    - Product Pipelines: 0.29

- **Natural Forces**
  - **Economic Loss**:
    - Crude Pipelines: $1
    - Product Pipelines: $10
  - **Frequency**:
    - Crude Pipelines: 0.03
    - Product Pipelines: 0.03

- **Outside Force**
  - **Economic Loss**:
    - Crude Pipelines: $11
    - Product Pipelines: $10
  - **Frequency**:
    - Crude Pipelines: 0.3
    - Product Pipelines: 0.03

Data Source: DOT PHMSA

Petroleum Refineries

- New Mexico has 2 petroleum refineries with a total operable capacity of 136 Mb/d.
- Between 2009 and 2019, the leading causeS of petroleum refinery disruptions in New Mexico were:
  - General Outages, Repairs, or Closures (3rd leading cause nationwide)
  - Loss of Containment or Flaring (leading cause nationwide)
  - Maintenance (2nd leading cause nationwide)

Causes and Frequency of Petroleum Refinery Disruptions, 2009 – 2019

- As of 2018, New Mexico had:
  - 2,055 miles of crude oil pipelines
  - 2,164 miles of refined product pipelines
  - 0 miles of biofuels pipelines
- 45% of New Mexico’s petroleum pipeline systems were constructed prior to 1970 or in an unknown year.
- Between 1986 and 2019, New Mexico’s petroleum supply was most impacted by:
  - **Outside Forces** when transported by truck (2nd leading cause nationwide at $60.45M per year)
  - **Material Failures** when transported by rail (5th leading cause nationwide at $0.05M per year)
  - **Equipment Failures** when transported by crude pipelines (8th leading cause nationwide at $2.88M per year)
  - **Corrosion** when transported by product pipelines (2nd leading cause nationwide at $15.20M per year)
- Disruptions in other states may impact supply.