Financial Arrangements Behind New Generating Capacity

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Overview of Analysis

What are the *types* of financial arrangements behind new generation that came on-line between 2016 and 2017?

• **Types:**
  - Bilateral Contracts (Utility or End-User)
  - Ownership (Utility or End-User)
  - Merchant Generation
  - Also: Financial Hedge, Community Solar, Virtual Net Metering

• Source of New Capacity: EIA Table 6.3.
• Data on financial arrangements from multiple sources.
### New Capacity & Merchant Generation

<table>
<thead>
<tr>
<th>Year</th>
<th>Total New Generation</th>
<th>Merchant</th>
<th>% Merchant</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>14,680.3</td>
<td>348.0</td>
<td>2.4%</td>
</tr>
<tr>
<td>2014</td>
<td>17,638.2</td>
<td>839.9</td>
<td>4.8%</td>
</tr>
<tr>
<td>2015</td>
<td>18,316.9</td>
<td>3,531.6</td>
<td>19.3%</td>
</tr>
<tr>
<td>2016</td>
<td>28,355.8</td>
<td>2,037.0</td>
<td>7.2%</td>
</tr>
<tr>
<td>2017</td>
<td>21,347.0</td>
<td>6,212.8</td>
<td>29.1%</td>
</tr>
</tbody>
</table>

**Retirements**
- 2016: 12,712 MW
- 2017: 11,229 MW

**Change in Demand**
- 2016 - 2017: -2.1%
- 2015 - 2016: 0%
Financial Arrangements behind New Capacity, 2016-2017

- Contract with Utility/CCA
- Contract with Customer
- Financial Hedge
- Utility Ownership
- Customer Ownership
- Merchant Projects

Hydropower, Natural Gas, Nuclear, Solar, Storage, Wind, Other
Merchant Vs. Utility

Utility Owned or Contracted Capacity
- Hydropower
- Natural Gas
- Nuclear
- Solar
- Storage
- Wind
- Other*

Merchant Capacity
- Natural Gas
- Solar
- Storage
- Wind

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# Distribution of New Capacity

<table>
<thead>
<tr>
<th></th>
<th>New Capacity</th>
<th>Total Capacity (Aug 2018)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA</td>
<td>10.9%</td>
<td>7.0%</td>
</tr>
<tr>
<td>ERCOT</td>
<td>19.0%</td>
<td>11.1%</td>
</tr>
<tr>
<td>ISO-NE</td>
<td>1.4%</td>
<td>3.2%</td>
</tr>
<tr>
<td>MISO</td>
<td>12.1%</td>
<td>19.6%</td>
</tr>
<tr>
<td>NYISO</td>
<td>0.3%</td>
<td>3.8%</td>
</tr>
<tr>
<td>PJM</td>
<td>15.4%</td>
<td>16.2%</td>
</tr>
<tr>
<td>SPP</td>
<td>13.2%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Non-RTO</td>
<td>27.6%</td>
<td>34.0%</td>
</tr>
</tbody>
</table>
PJM Interconnection, New Capacity, 2016-17

- Contract with Utility
- Contract with Customer
- Utility Ownership
- Customer Ownership
- Merchant Projects

Hydropower | Natural Gas | Solar | Storage | Wind | Other
MISO, New Capacity, 2016-17

- Contract with Utility
- Contract with Customer
- Financial Hedge
- Utility Ownership
- Customer Ownership

- Hydropower
- Natural Gas
- Nuclear
- Solar
- Storage
- Wind
- Other
SPP, New Capacity, 2016-17

- Contract with Utility
- Contract with Customer
- Financial Hedge
- Utility Ownership
- Merchant Projects

- Natural Gas
- Solar
- Wind
- Other
California, New Capacity 2016-17

- Contract with Utility
- Contract with Customer
- Utility Ownership
- Customer Ownership

Hydropower  Natural Gas  Solar  Storage  Wind  Other
ERCOT, New Capacity 2016-17

- Contract with Utility
- Contract with Customer
- Financial Hedge
- Utility Ownership
- Customer Ownership
- Merchant

- Natural Gas
- Solar
- Storage
- Wind

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Summary of Observations

• Merchant is almost entirely located within PJM and ERCOT and is predominantly natural gas (86%), followed by wind (12%), and small amounts of solar and storage.

• Utility-developed new capacity accounted for two-thirds of new capacity and shows much greater diversity than the merchant projects.

• Wind and solar are typically subject to bilateral contracts, while natural gas tends to be owned.

• There has been a growth of new financing schemes outside of the utility and merchant arenas, including financial hedges, corporate PPAs, virtual net metering, and community solar.
QUESTIONS AND FEEDBACK?

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## Financial Arrangements behind New Capacity, 2016-2017

<table>
<thead>
<tr>
<th>Arrangement</th>
<th>Hydro-power</th>
<th>Natural Gas</th>
<th>Nuclear</th>
<th>Solar</th>
<th>Storage</th>
<th>Wind</th>
<th>Other</th>
<th>Total</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MW of Net Summer Capacity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contracts</td>
<td>7.2</td>
<td>329.2</td>
<td>-</td>
<td>11,630.5</td>
<td>105.6</td>
<td>13,360.3</td>
<td>167.5</td>
<td><strong>25,600.3</strong></td>
<td>51.5%</td>
</tr>
<tr>
<td>Percent of Contracts</td>
<td>0.03%</td>
<td>1.3%</td>
<td>-</td>
<td>45.4%</td>
<td>0.4%</td>
<td>52.2%</td>
<td>0.7%</td>
<td><strong>100%</strong></td>
<td></td>
</tr>
<tr>
<td>Ownership</td>
<td>579.7</td>
<td>11,086.0</td>
<td>1,224.0</td>
<td>1,088.7</td>
<td>116.9</td>
<td>1,133.8</td>
<td>251.5</td>
<td><strong>15,480.6</strong></td>
<td>31.2%</td>
</tr>
<tr>
<td>Percent of Ownership</td>
<td>3.7%</td>
<td>71.6%</td>
<td>7.9%</td>
<td>7.1%</td>
<td>0.8%</td>
<td>7.3%</td>
<td>1.6%</td>
<td><strong>100%</strong></td>
<td></td>
</tr>
<tr>
<td>Community Solar</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>372.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td><strong>372.1</strong></td>
</tr>
<tr>
<td>Merchant</td>
<td>-</td>
<td>7,107.2</td>
<td>-</td>
<td>39.9</td>
<td>104.4</td>
<td>998.3</td>
<td>-</td>
<td><strong>8,249.8</strong></td>
<td>16.6%</td>
</tr>
<tr>
<td>Percent of Merchant</td>
<td>-</td>
<td>86.1%</td>
<td>-</td>
<td>0.5%</td>
<td>1.3%</td>
<td>12.1%</td>
<td>-</td>
<td><strong>100%</strong></td>
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<tr>
<td><strong>Total</strong></td>
<td>586.9</td>
<td>18,522.4</td>
<td>1,224.0</td>
<td>13,131.2</td>
<td>326.9</td>
<td>15,492.4</td>
<td>419.0</td>
<td><strong>49,702.8</strong></td>
<td></td>
</tr>
<tr>
<td>% of Total</td>
<td>1.2%</td>
<td>37.3%</td>
<td>2.5%</td>
<td>26.4%</td>
<td>0.7%</td>
<td>31.2%</td>
<td>0.84%</td>
<td></td>
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</tr>
</tbody>
</table>