The Public Utilities Commission of Nevada accepted the utility NV Energy’s plan to add approximately 1.2 gigawatts of solar and 590 megawatts of batteries, highlighting a push by many Western utilities to deepen their renewables reach. The massive solar procurement includes Quinbrook and Arevia’s newly approved Gemini project (690 megawatts), 8Minute’s South Bighorn project (300 megawatts), and EDF’s Arrow Canyon project (200 megawatts). All three projects will come with four hours of energy storage capacity to shift hundreds of megawatts of power from peak midday to later in the afternoon or the evening. NV Energy provides 81% of Nevada’s electricity and is seeking to double its renewable energy capacity between 2018 and 2023.

Renewable energy lagging global demand

According to the International Energy Agency, while growth in renewables is forecasted to continue, the pace is not expected to be fast enough to offset the effects of economic and population growth. Global oil output is expected to continue to rise over the next decade, but slow markedly after 2025. By 2030, oil demand growth is expected to flatten due to rising fuel efficiency and a transition to electric vehicles.

China showing renewed interest in coal

At the United Nations Climate Summit from December 2nd to December 13th, 2019, world leaders shifted their attention to China, the world’s top emitter of greenhouse gases. In light of its slowest economic growth level in 25 years (6 percent), policy makers are doubling down on support for coal and other heavy industries. Recent satellite images suggest that China is planning to complete a 148 gigawatt coal plant – nearly equal to the entire coal-power capacity of the European Union.

Solar and wind power growing rapidly in the US

According to projections from the Institute for Energy Economic and Financial Analysis, in 2021 the US is expected to generate more power from renewable energy than from coal. In 2020, US power plants are expected to consume less coal than at any point since 1978, dropping coal’s market share to below 22 percent. The shift comes as US power companies rapidly retire old coal plants and replace them with wind and solar energy farms.

Crude prices rose to above $60 a barrel in December, rallying over 10 percent, primarily driven by a Saudi-led effort among OPEC, Russia, and other allies, known as OPEC+, to scale back output. The rally was also supported by the easing of the US - China trade war, which has weighed on the global economy and energy demand. The US crude benchmark began 2019 at just $45 per barrel. Despite the rally, a sizable global oil supply has kept prices low compared to historical levels.

December 4th, 2019 – The Public Utilities Commission of Nevada accepted the utility NV Energy’s plan to add approximately 1.2 gigawatts of solar and 590 megawatts of batteries, highlighting a push by many Western utilities to deepen their renewables reach. The massive solar procurement includes Quinbrook and Arevia’s newly approved Gemini project (690 megawatts), 8Minute’s South Bighorn project (300 megawatts), and EDF’s Arrow Canyon project (200 megawatts). All three projects will come with four hours of energy storage capacity to shift hundreds of megawatts of power from peak midday to later in the afternoon or the evening. NV Energy provides 81% of Nevada’s electricity and is seeking to double its renewable energy capacity between 2018 and 2023.

November 21st, 2019 – New Jersey’s Governor, Phil Murphy, signed an executive order to increase the state’s target for offshore wind generated energy from 3,500 megawatts by 2030 to 7,500 megawatts by 2035. 7,500 megawatts will provide enough electricity to power more than 3.2 million homes and meet fifty percent of New Jersey’s electric power need. Other states, such as Maryland, are approving off-shore wind projects as well. Maryland plans to install a 120 megawatt offshore wind energy facility, which is planning to be commissioned in 2022.
Macroeconomic outlook

US gross domestic product ($ in trillions)\(^1\)

US treasury yield curve (nominal vs. real)\(^2\)

US unemployment rate (% unemployed)\(^3\)

ISM non-manufacturing index and consumer confidence index\(^4\)

Energy sector outlook

Brent, WTI, and natural gas prices (2014 – 2019 YTD)\(^5\)

US energy production by source\(^6\)
## Energy sector breakdown and trading statistics

<table>
<thead>
<tr>
<th>Sector</th>
<th>Number of companies</th>
<th>% of 52 week high</th>
<th>Median revenue CAGR (3 Yr)</th>
<th>Median LTM EBITDA</th>
<th>Median EBITDA Margin</th>
<th>Median enterprise value</th>
<th>Last twelve months</th>
<th>NTM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil and gas, general (13)</td>
<td>13</td>
<td>82.5%</td>
<td>12.4%</td>
<td>$3,730.0</td>
<td>16.0%</td>
<td>$30,736.9</td>
<td>1.4x</td>
<td>8.6x</td>
</tr>
<tr>
<td>Power &amp; utilities (18)</td>
<td>18</td>
<td>95.6%</td>
<td>4.0</td>
<td>3,490.7</td>
<td>31.6</td>
<td>43,262.1</td>
<td>4.6</td>
<td>13.6</td>
</tr>
<tr>
<td>Renewable energy (13)</td>
<td>13</td>
<td>89.1%</td>
<td>4.0</td>
<td>77.9</td>
<td>27.5</td>
<td>3,682.6</td>
<td>3.7</td>
<td>15.1</td>
</tr>
<tr>
<td>Nuclear (3)</td>
<td>3</td>
<td>97.5%</td>
<td>7.2</td>
<td>512.1</td>
<td>17.8</td>
<td>7,080.0</td>
<td>2.8</td>
<td>13.3</td>
</tr>
<tr>
<td><strong>Energy index</strong></td>
<td><strong>47</strong></td>
<td><strong>91.9%</strong></td>
<td><strong>5.3%</strong></td>
<td><strong>$2,128.0</strong></td>
<td><strong>28.6%</strong></td>
<td><strong>$25,797.5</strong></td>
<td><strong>3.7x</strong></td>
<td><strong>12.9x</strong></td>
</tr>
</tbody>
</table>

(§ in Millions)

### Public comparables three-year stock market performance

- S&P 500 index: 39.48%
- NASDAQ composite index: 57.75%
- Energy index*: 10.15%

*Energy index companies listed on page 5 in the Appendix.
Recent energy M&A transactions

<table>
<thead>
<tr>
<th>Close Date</th>
<th>Target/Acquiror</th>
<th>Target Business Description</th>
<th>Enterprise Value (EV)</th>
<th>EV/EBITDA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pending</td>
<td>Tong Petrotech Corp.</td>
<td>Tong Petrotech Corp., together with its subsidiaries, researches, develops, manufactures, sells, and services perforation technology services to oilfield customers.</td>
<td>2,666.4</td>
<td>8.8x</td>
</tr>
<tr>
<td>Pending</td>
<td>Shanxi Meijin Energy Co., Ltd.</td>
<td>Manufactures and sells coking coal.</td>
<td>33,282.8</td>
<td>10.4</td>
</tr>
<tr>
<td>Pending</td>
<td>Caltex Australia Limited</td>
<td>Engages in purchasing, refining, distributing, selling, and supplying petroleum products in Australia, New Zealand, and Singapore.</td>
<td>10,791.6</td>
<td>13.6</td>
</tr>
<tr>
<td>Pending</td>
<td>DOF Subsea AS</td>
<td>DOF Subsea AS, together with its subsidiaries, provides subsea services to the oil and gas industry.</td>
<td>9,654.0</td>
<td>8.8</td>
</tr>
<tr>
<td>Pending</td>
<td>Amerisur Resources plc</td>
<td>Engages in the exploration and production of oil and gas assets.</td>
<td>219.7</td>
<td>8.0</td>
</tr>
<tr>
<td>Pending</td>
<td>Kuzbasskaya Toplivnaya Company</td>
<td>Kuzbasskaya Toplivnaya Company, together with its subsidiaries, engages in the extraction and production of thermal coal.</td>
<td>26,221.4</td>
<td>6.2</td>
</tr>
<tr>
<td>Pending</td>
<td>Huadian Coal Industry Group Co., Ltd.</td>
<td>Mines, processes, and transports coal.</td>
<td>49,830.5</td>
<td>6.9</td>
</tr>
</tbody>
</table>

12/18/2019 SLOVNAFT, a.s. | SLOVNAFT, a.s., together with its subsidiaries, processes crude oil. | 1,744.7 | 7.0 |

11/13/2019 Universal Coal Plc | Universal Coal Plc, a coal mining company, engages in acquisition, exploration, development, and commercialization of coal projects in the Republic of South Africa. | 213.0 | 2.3 |

Annual energy M&A transaction volume

![Chart showing annual energy M&A transaction volume from 2010 to 2019.](chart.png)

- **2010:** 2,287
- **2011:** 2,016
- **2012:** 1,925
- **2013:** 1,605
- **2014:** 1,707
- **2015:** 1,293
- **2016:** 1,025
- **2017:** 1,210
- **2018:** 1,394
- **2019:** 1,060

- **Undisclosed**
- **<$100M**
- **$100-$250M**
- **$250-$500M**
- **$500-$1B**
- **>$1B**

### Public comparables analysis

<table>
<thead>
<tr>
<th>Company (Ticker)</th>
<th>% of 52 week high</th>
<th>LTM Revenue</th>
<th>Revenue (3 Yr) CAGR</th>
<th>LTM EBITDA</th>
<th>EBITDA Margin</th>
<th>Enterprise Value / Revenue</th>
<th>EV / EBITDA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power &amp; utilities (18)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ameren Corporation (NYSE:AEE)</td>
<td>95.6 %</td>
<td>$5,744.0</td>
<td>$3,322.0</td>
<td>40.6 %</td>
<td>$78,790.3</td>
<td>5.0 x</td>
<td>12.3 x</td>
</tr>
<tr>
<td>ALLETE, Inc. (NYSE:ALE)</td>
<td>91.2</td>
<td>1,384.2</td>
<td>0.1</td>
<td>399.8</td>
<td>28.9</td>
<td>5,755.0</td>
<td>4.2</td>
</tr>
<tr>
<td>American Electric Power Company, Inc. (NYSE:AEP)</td>
<td>98.3</td>
<td>15,746.5</td>
<td>(1.0)</td>
<td>5,249.4</td>
<td>33.3</td>
<td>76,280.6</td>
<td>4.8</td>
</tr>
<tr>
<td>Avangrid, Inc. (NYSE:AGR)</td>
<td>95.6</td>
<td>6,390.4</td>
<td>4.6</td>
<td>1,829.2</td>
<td>28.6</td>
<td>23,659.1</td>
<td>3.7</td>
</tr>
<tr>
<td>Black Hills Corporation (NYSE:BXH)</td>
<td>95.6</td>
<td>1,758.4</td>
<td>7.2</td>
<td>600.1</td>
<td>34.1</td>
<td>8,276.2</td>
<td>4.7</td>
</tr>
<tr>
<td>CenterPoint Energy, Inc. (NYSE:CP)</td>
<td>84.6</td>
<td>12,107.0</td>
<td>18.7</td>
<td>2,531.0</td>
<td>20.9</td>
<td>28,832.9</td>
<td>2.4</td>
</tr>
<tr>
<td>Consolidated Edison, Inc. (NYSE:ED)</td>
<td>92.1</td>
<td>12,572.1</td>
<td>1.4</td>
<td>4,161.0</td>
<td>33.1</td>
<td>50,912.1</td>
<td>4.0</td>
</tr>
<tr>
<td>Dominion Energy, Inc. (NYSE:DO)</td>
<td>97.0</td>
<td>15,458.0</td>
<td>11.3</td>
<td>6,682.0</td>
<td>43.2</td>
<td>111,602.8</td>
<td>7.2</td>
</tr>
<tr>
<td>DTE Energy Company (NYSE:DTE)</td>
<td>96.5</td>
<td>13,271.0</td>
<td>9.0</td>
<td>2,578.0</td>
<td>19.4</td>
<td>40,909.9</td>
<td>3.1</td>
</tr>
<tr>
<td>Duke Energy Corporation (NYSE:DUK)</td>
<td>93.4</td>
<td>24,686.0</td>
<td>5.5</td>
<td>10,767.0</td>
<td>43.6</td>
<td>131,180.0</td>
<td>5.3</td>
</tr>
<tr>
<td>Entergy Corporation (NYSE:ETR)</td>
<td>99.0</td>
<td>10,928.8</td>
<td>0.7</td>
<td>3,322.4</td>
<td>30.4</td>
<td>43,170.8</td>
<td>4.0</td>
</tr>
<tr>
<td>Eversource Energy (NYSE:ES)</td>
<td>98.9</td>
<td>8,511.0</td>
<td>4.1</td>
<td>2,698.0</td>
<td>31.6</td>
<td>43,355.3</td>
<td>5.1</td>
</tr>
<tr>
<td>Exxon Corporation (NYSE:XOM)</td>
<td>89.3</td>
<td>34,911.0</td>
<td>5.0</td>
<td>9,507.0</td>
<td>27.2</td>
<td>84,857.7</td>
<td>2.4</td>
</tr>
<tr>
<td>PG&amp;E Corporation (NYSE:PCG)</td>
<td>47.9</td>
<td>16,474.0</td>
<td>(1.3)</td>
<td>4,306.0</td>
<td>26.1</td>
<td>29,538.6</td>
<td>1.8</td>
</tr>
<tr>
<td>Sempra Energy (NYSE:SRE)</td>
<td>97.6</td>
<td>12,927.0</td>
<td>7.1</td>
<td>4,344.0</td>
<td>35.3</td>
<td>73,605.2</td>
<td>6.0</td>
</tr>
<tr>
<td>The Southern Company (NYSE:SO)</td>
<td>99.5</td>
<td>21,842.0</td>
<td>6.1</td>
<td>8,733.0</td>
<td>40.0</td>
<td>117,106.3</td>
<td>5.4</td>
</tr>
<tr>
<td>WEC Energy Group, Inc. (NYSE:WEC)</td>
<td>95.3</td>
<td>7,652.4</td>
<td>1.3</td>
<td>2,399.6</td>
<td>31.4</td>
<td>41,962.3</td>
<td>5.5</td>
</tr>
<tr>
<td>Xcel Energy Inc. (NasdaqGS:XEL)</td>
<td>95.8</td>
<td>11,611.0</td>
<td>1.9</td>
<td>3,659.0</td>
<td>31.5</td>
<td>52,859.5</td>
<td>4.6</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>95.6 %</td>
<td>$12,202.0</td>
<td>4.0 %</td>
<td>$3,490.7</td>
<td>31.6 %</td>
<td>$43,262.1</td>
<td>4.6 x</td>
<td>13.6 x</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>92.4 %</td>
<td>$12,963.8</td>
<td>4.5 %</td>
<td>$4,227.3</td>
<td>32.2 %</td>
<td>$55,145.0</td>
<td>4.4 x</td>
<td>13.5 x</td>
</tr>
</tbody>
</table>

| **Renewable energy (13)** | | | | | | | |
| Ballard Power Systems Inc. (TSX:BLP) | 90.5 % | $292.7 | 7.6 % | (314.0) | NM % | $2,144.7 | 23.1 x | NM x |
| Brookfield Renewable Partners L.P. (TSX:BEP.UN) | 93.3 | 3,034.0 | 10.1 | 1,924.0 | 63.4 | 34,282.3 | 11.3 | 17.8 |
| Canadian Solar Inc. (NasdaqGS:CSIQ) | 90.4 | 3,181.9 | (1.3) | 433.2 | 13.6 | 2,764.9 | 0.9 | 6.4 |
| Enphase Energy, Inc. (NasdaqGM:ENPH) | 84.2 | 506.1 | 19.4 | 77.9 | 15.4 | 3,682.6 | 7.3 | 47.3 |
| First Solar, Inc. (NasdaqGS:FSLR) | 84.3 | 2,355.0 | (12.5) | 158.6 | 6.7 | 5,157.0 | 2.2 | 32.5 |
| Avangrid, Inc. (NYSE:AGR) | 95.6 | 6,394.0 | 4.0 | 1,829.2 | 28.6 | 23,659.1 | 3.7 | 12.9 |
| Macquarie Infrastructure Corporation (NYSE:MIC) | 99.1 | 1,740.5 | 2.5 | 534.6 | 30.7 | 6,482.0 | 3.7 | 12.1 |
| Ormat Technologies, Inc. (NYSE:ORA) | 96.6 | 744.1 | 1.7 | 344.8 | 46.2 | 5,218.8 | 7.0 | 12.4 |
| ReneSola Ltd (NYSE:SOL) | 65.2 | 98.2 | (53.6) | 27.0 | 27.5 | 240.4 | 2.4 | 8.9 |
| Renewable Energy Group, Inc. (NasdaqGS:REGI) | 89.1 | 2,143.0 | 4.7 | (5.0) | NM | 1,180.3 | 0.6 | NM |
| SunPower Corporation (NasdaqGS:SPWR) | 53.7 | 1,717.3 | (3.5) | (155.2) | NM | 2,232.8 | 1.3 | NM |
| Sunrun Inc. (NasdaqGS:RUN) | 71.7 | 854.8 | 25.4 | 4.4 | 0.5 | 4,585.5 | 5.4 | 103.7 |
| Vivint Solar, Inc. (NasqasGS:VSLR) | 83.6 | 327.4 | 44.1 | (86.9) | NM | 2,461.3 | 7.5 | NM |
| **Median** | | | | | | | |
| 89.1 % | $1,717.3 | 4.0 % | $77.9 | 27.5 % | $3,682.6 | 3.7 x | 15.1 x |
| **Mean** | | | | | | | |
| 84.4 % | $1,783.8 | 3.9 % | $389.6 | 25.9 % | $7,235.8 | 5.9 x | 131.5 x |

| **Nuclear (3)** | | | | | | | |
| BWX Technologies, Inc. (NYSE:BXT) | 97.5 % | $1,871.7 | 7.4 % | $333.4 | 17.8 % | $7,080.0 | 3.8 x | 21.2 x |
| Curtiss-Wright Corporation (NYSE:CW) | 98.6 | 2,480.8 | 5.2 | 512.1 | 20.6 | 6,825.0 | 2.8 | 13.3 |
| Huntington Ingalls Industries, Inc. (NYSE:HII) | 96.7 | 8,686.0 | 7.2 | 976.0 | 11.2 | 12,965.2 | 1.5 | 13.3 |
| **Median** | | | | | | | |
| 97.5 % | $2,480.8 | 7.2 % | $512.1 | 17.8 % | $7,080.0 | 2.8 x | 13.3 x |
| **Mean** | | | | | | | |
| 97.6 % | $4,346.6 | 6.6 % | $607.1 | 16.8 % | $8,956.7 | 2.7 x | 15.9 x |
Sources cited

Page 1:


Page 2:


Page 3:


2. Ibid.

Page 4:


2. Ibid.

Page 5:

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