Tracking New Coal-Fired Power Plants
(data update 12/13/2010)

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Office of Strategic Energy Analysis & Planning
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Tracking New Coal-Fired Power Plants

This report is intended to provide an overview of proposed new coal-fired power plants that are under development. This report may not represent all possible plants under consideration but is intended to illustrate the potential that exists for installation of new coal-fired power plants. Additional perspective has been added for non-coal-fired generation additions in the U.S. and coal-fired power plant activity in China.

Experience has shown that public announcements of power plant developments do not provide an accurate representation of eventually commissioned power plants. Actual plant capacity commissioned has historically been significantly less than new capacity announced.

The report focuses on those coal-fired power plant projects that have achieved significant progress toward completion, to provide a more accurate assessment of the ability of this segment of the power generation industry to support demand for new electricity capacity in various regions of the United States.

The Department of Energy does not warrant the accuracy or suitability of this information.
Tracking New Coal-Fired Power Plants

• This report provides a perspective of coal-fired power plants that are currently under development, with a focus on those having made significant progress toward achieving commercial operation
• The status of projects identified varies from project announcements to those under construction
• Announced projects are not necessarily strong indicators of commitment of capital and human resources to actual development and follow-through to actual capacity additions is highly dependent on the market environment
• Plants that are permitted or under construction (“Progressing Projects”) reflect a more significant financial and human resource commitment to completion and offer a better perspective of the new generation capacity that may be forthcoming
Past Capacity Announcements vs. Actual

**Figure 1**

Actual capacity completed has been shown to be significantly less than proposed capacity; the 2002 report listed 11,455 MW of proposed capacity for the year 2005 when only 329 MW were constructed.

Source: 2007 & 2010 data Ventyx – Velocity Suite
2002 – 2005 data – Previous NETL Tracking New Coal-Fired Power Plants Reports
Latest Capacity Announcements vs. Actual

Figure 1a

Total Identified Capacity Declines Due to Commissioning, Cancelations, and Fewer Postponements

- **Actual**: 8 GW
- **2010**: 32 GW
- **2009**: 49 GW
- **2008**: 64 GW
- **2007**: 72 GW

Source: Ventyx – Velocity Suite
2010 data – 12/13/2010
# Current Coal-Fired Capacity Projects

(Annual Change)

## Table 1

<table>
<thead>
<tr>
<th>General Status</th>
<th>Number of Plants</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan 2010</td>
<td>Dec 2010</td>
</tr>
<tr>
<td>Under Construction</td>
<td>22</td>
<td>12</td>
</tr>
<tr>
<td>Near Construction</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Permitted</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td><strong>SUB TOTAL</strong></td>
<td>31</td>
<td>21</td>
</tr>
<tr>
<td>Announced (early stages of development)</td>
<td>46</td>
<td>36</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>77</td>
<td>57</td>
</tr>
<tr>
<td>Commissioned this Period</td>
<td>-</td>
<td>11</td>
</tr>
<tr>
<td><strong>TOTAL December 2010 Progressing and Commissioned</strong></td>
<td>32</td>
<td>+1</td>
</tr>
</tbody>
</table>

### Status Listing

<table>
<thead>
<tr>
<th>Status Listing</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under Construction</td>
<td>Project is under construction.</td>
</tr>
<tr>
<td>Near Construction</td>
<td>Project has been approved; majority or all permits are obtained. Sponsor is contracting vendors and Engineering, Procurement and Construction (EPC) contractors. Site preparation has begun.</td>
</tr>
<tr>
<td>Permitted</td>
<td>In the permitting phase. Two or more permits approved or fuel or power contracts have been negotiated.</td>
</tr>
<tr>
<td>Announced</td>
<td>Early stages of development to filing for permits. May include a feasibility study.</td>
</tr>
</tbody>
</table>

Source: Ventyx – Velocity Suite

Data reflects change between 1/8/2010 and 12/13/2010
Current Capacity Additions by Years

Refer to Table 1

- Table 1 reflects the current status of coal-fired plant development activity as of December 13, 2010 (*January 8, 2010 through December 13, 2010*)

- “Progressing” plants represent projects with status indicating permitted, near construction, or under construction

- “Progressing” plants have attained a higher likelihood of advancing toward commercial operation; however, regulatory uncertainty, market perception and industry cost increases continue to impact development decisions for all projects

- 6,682 MW (11 plants) have become operational during 2010 as of December 2010; this is the highest level of coal-fired plant *Commissioned* in 25 years (since 1985)

- There has been a net increase of 3,712 MW (+21%) of total *Progressing and/or Commissioned* projects through 2010 over *Progressing* projects in January
Current Coal Capacity Additions by Years

Figure 2

- **Commissioned in 2010**
  - Rodemacher (Brame) (700 MW)
  - Comanche (850 MW)
  - Iatan (850 MW)
  - J K Spruce (820 MW)
  - Oak Creek-Unit 1 (615 MW)
  - Oak Grove (879 MW)
  - Plumb Point (720 MW)
  - Southwest (300 MW)
  - Trimble (834 MW)
  - Willmar (4 MW)
  - Wygen III (110 MW)

Source: Ventyx – Velocity Suite (12/13/2010)
Currently Proposed and Forecasted Coal-Fired Capacity

Source: Ventyx – Velocity Suite (12/13/2010)

EIA – AEO 2011 early release, Reference Case

Figure 3

Virtually No New Coal in Reference case Following Several CCS Demos
Last 50 Years of New Coal Capacity

Figure 4

GW’s of New Capacity

Source: Ventyx–Velocity Suite (12/13/2010)
Net Capacity Changes (Removed and Added Opportunities)

43% of MWs removed represent “Announced” projects
49% of MWs removed due to Commissioned plants

Commissioned in 2010 (as of December)
- Rodemacher (Brame) (700 MW)
- Comanche (850 MW)
- Iatan (850 MW)
- J K Spruce (820 MW)
- Oak Creek-Unit 1 (615 MW)
- Oak Grove (879 MW)
- Plumb Point (720 MW)
- Southwest (300 MW)
- Trimble (634 MW)
- Willmar (4 MW)
- Wygen III (110 MW)

Capacity Change Breakdown
- 6,267 MW operational now removed from the list
- 6,418 MW canceled
  - 935 MW permitted cancelled
  - 22 MW construction cancelled
  - 5,461 MW announcements cancelled
- 1,599 MW of new announcements added

Total Net Reductions (less operating) -4,647 MW

Proposed Technologies of New Plants
(with Annual change)

Figure 6

Table 2

<table>
<thead>
<tr>
<th>Technology Listings</th>
<th>Operational (Since 2000)</th>
<th>Progressing (Permitted, Near-, and Under Construction)</th>
<th>Announced</th>
<th>Total Proposed</th>
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<tbody>
<tr>
<td>PC Subcritical</td>
<td>31</td>
<td>11</td>
<td>5 (-6)</td>
<td>13</td>
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<tr>
<td>CFB</td>
<td>12</td>
<td>6</td>
<td>4 (-2)</td>
<td>11</td>
</tr>
<tr>
<td>PC Supercritical</td>
<td>7</td>
<td>8</td>
<td>7 (-1)</td>
<td>7</td>
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<tr>
<td>IGCC</td>
<td>1</td>
<td>6</td>
<td>5 (-1)</td>
<td>15</td>
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</tbody>
</table>

Source: Ventyx – Velocity Suite
Data collected (1/8/2010); Current Report data collected (12/13/2010)
Geographical location by State: Coal-Fired Plants (Permitted, Near Construction, and Under Construction)

Source: Ventyx – Velocity Suite (12/13/2010)
Location by NERC Regions: Coal-Fired Plants
(Permitted, Near Construction, and Under Construction)

Source: Ventyx – Velocity Suite (12/13/2010)
Specified Coal Ranks
All Proposed Plants

Figure 9

Proposed Plant Capacities (MW)

- Anthracite Coal
- Bituminous Coal
- Subbituminous Coal
- Lignite Coal
- Waste Coal
- Coal Based Syrfigel
- Petroleum Coke

19,779 MW “Generic Coal” not shown on chart

Source: Ventyx – Velocity Suite (12/13/2010)
Coal-Fired Build Rate
China and United States

Figure 10

Results are Stacked

209 GW of Undetermined Dates of Chinese Plants

Online Year

China: Operational Under Construction Planned
U.S.: Operational Under Construction

Source: USA data - Ventyx - Velocity Suite (12/13/2010)
China data - Platts - UDI WEPPDB 2010

Planned no date (evenly distributed over 4 years)
Other Generation Development Activity
Proposed U.S. New Capacity
Coal, Natural Gas, Wind, and Nuclear

**Figure 12**

<table>
<thead>
<tr>
<th>Year</th>
<th>Coal</th>
<th>NG</th>
<th>Wind</th>
<th>Nuclear</th>
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<tr>
<td>2010</td>
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<tr>
<td>2018</td>
<td></td>
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</tr>
</tbody>
</table>

Proposed Nameplate Capacity (GW)

Source: Ventyx – Velocity Suite 12/13/2010
Status of Proposed New U.S. Capacity

Coal, Natural Gas, Wind, and Nuclear

Proposed Nameplate Capacity (GW)

Under Construction
Near Construction
Permitted
Announced

Source: Ventyx – Velocity Suite 12/13/2010

Figure 13
Current Wind Capacity Additions by Years

Figure 14

- Announced
- Permitted
- Near Construction
- Under Construction
- Actual

Source: Ventyx – Velocity Suite (12/13/2010)
Current NGCC Capacity Additions by Years

Figure 15

Source: Ventyx – Velocity Suite (12/13/2010)
Current NG-GT Capacity Additions by Years

Figure 16

Source: Ventyx – Velocity Suite (12/13/2010)
Watts Bar Unit 2
Construction begun in the 1970s, suspended in 1988 at 80% complete, currently revived with completion due 2012.
Eleven new coal-plants totaling 6,682 MW were Commissioned in 2010; the most in 25 years.

Progressing/Commissioned projects by December 2010 have had a net increase of 1 plant; a net change in capacity of 3,712 MW (+21%) over Progressing projects in January 2010.

1,599 MW of new capacity has been Announced and 6,418 MW have been canceled.
- Of 6,418 MW canceled plants, 85% were Announced phase and 15% were Progressing.

Compared to previous years, fewer projects are being Announced to offset recent Commissioning.