



NATIONAL ENERGY TECHNOLOGY LABORATORY



Tracking New Coal-Fired Power Plants

National Energy Technology Laboratory

Office of Systems Analyses and 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.

Recent experience has shown that public announcements of new coal-fired power plant development do not provide an accurate representation of actual new operating power plants. Actual plant capacity commissioned has historically been significantly less than new capacity announced.

The report focuses on those 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.

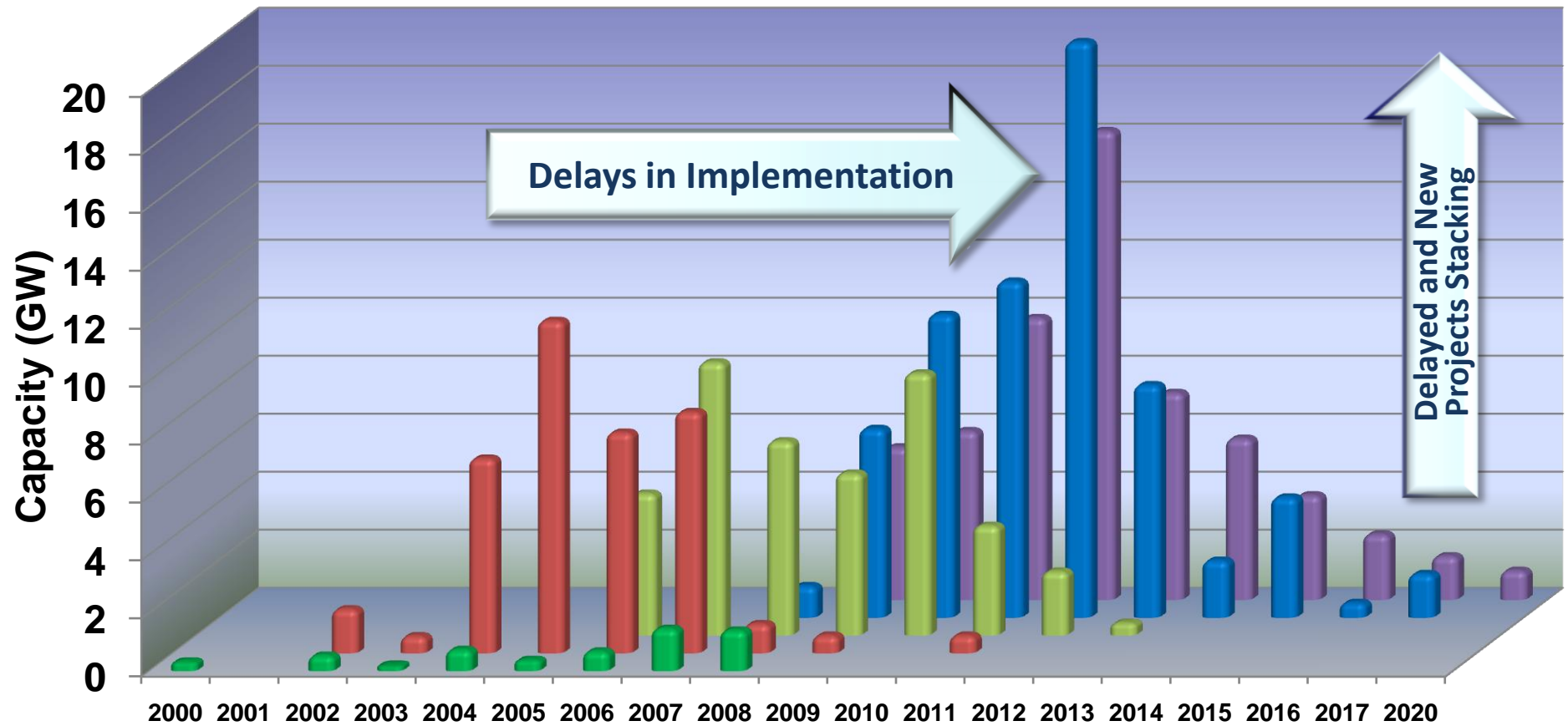
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Tracking New Coal-Fired Power Plants

- **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 in development varies from project announcements to those under construction**
- **Announced projects that are canceled before or during the permitting phase are not unusual; announced projects are not necessarily strong indicators of capacity additions**
- **Plants that are permitted or under construction reflect a developer's significant financial commitment to completion and offer a better perspective of the new generation capacity that may be forthcoming**

Past Capacity Announcements vs. Actual

Figure 1



Historically, actual capacity has been shown to be significantly less than proposed capacity. For example, the 2002 report listed 11,455 MW of proposed capacity for the year 2005 when actually only 329 MW were constructed.

■ Actual
 ■ 2002 Report
 ■ 2005 Report
 ■ 2007 Report
 ■ 2009 Report

Historic Capacity Additions by Years

Refer to Figure 1

- **Actual plant capacity, commissioned since 2000, has been far less than new capacity announced; the year 2002 report of announcements reflected a schedule of over 36,000 MW to be installed by 2007, whereas \approx 4,500 MW (12%) were achieved**
- **The trend over several years has reflected the bulk of power plant developments shifting out in time due to project delays**
- **Delays and cancelations have been attributed to regulatory uncertainty (regarding climate change) or strained project economics due to escalating costs in the industry**
- **New announcements combined with delayed projects have tended to increase the backlog of plants in the queue**
- **Cancellations become more prevalent as prospects of fulfilling all projects in the queue become impractical**

Current Coal-Fired Capacity Projects (2008 year change)

Table 1

		Number of Plants			Capacity (MW)		
General Status		December 2007	January 2009	Net Change	December 2007	January 2009	Net Change
Progressing Projects	<i>Under Construction</i>	28	28	0	14,885	16,319	+1,434
	<i>Near Construction</i>	6	7	+1	1,859	2,812	+953
	<i>Permitted</i>	13	13	0	6,422	7,000	+578
	SUB TOTAL	47	48	+1	23,166	26,131	+2,965 (+13%)
Uncertain Potential and Timing	<i>Announced (early stages of development)</i>	67	47	-20	42,394	31,869	-10,525 (-25%)
	TOTAL	114	95	-19	65,560	58,000	-7,560 (-12%)
	Operational this Year (2008)	-	5	+5	-	1,392	+1,392
TOTAL (with Operational)				-14			-6,168 (-9%)

Status Listing	Description
<i>Under Construction</i>	Project is under construction.
<i>Near Construction</i>	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.
<i>Permitted</i>	In the permitting phase. Two or more permits approved or fuel or power contracts have been negotiated.
<i>Announced</i>	Early stages of development to filing for permits. May include a feasibility study.

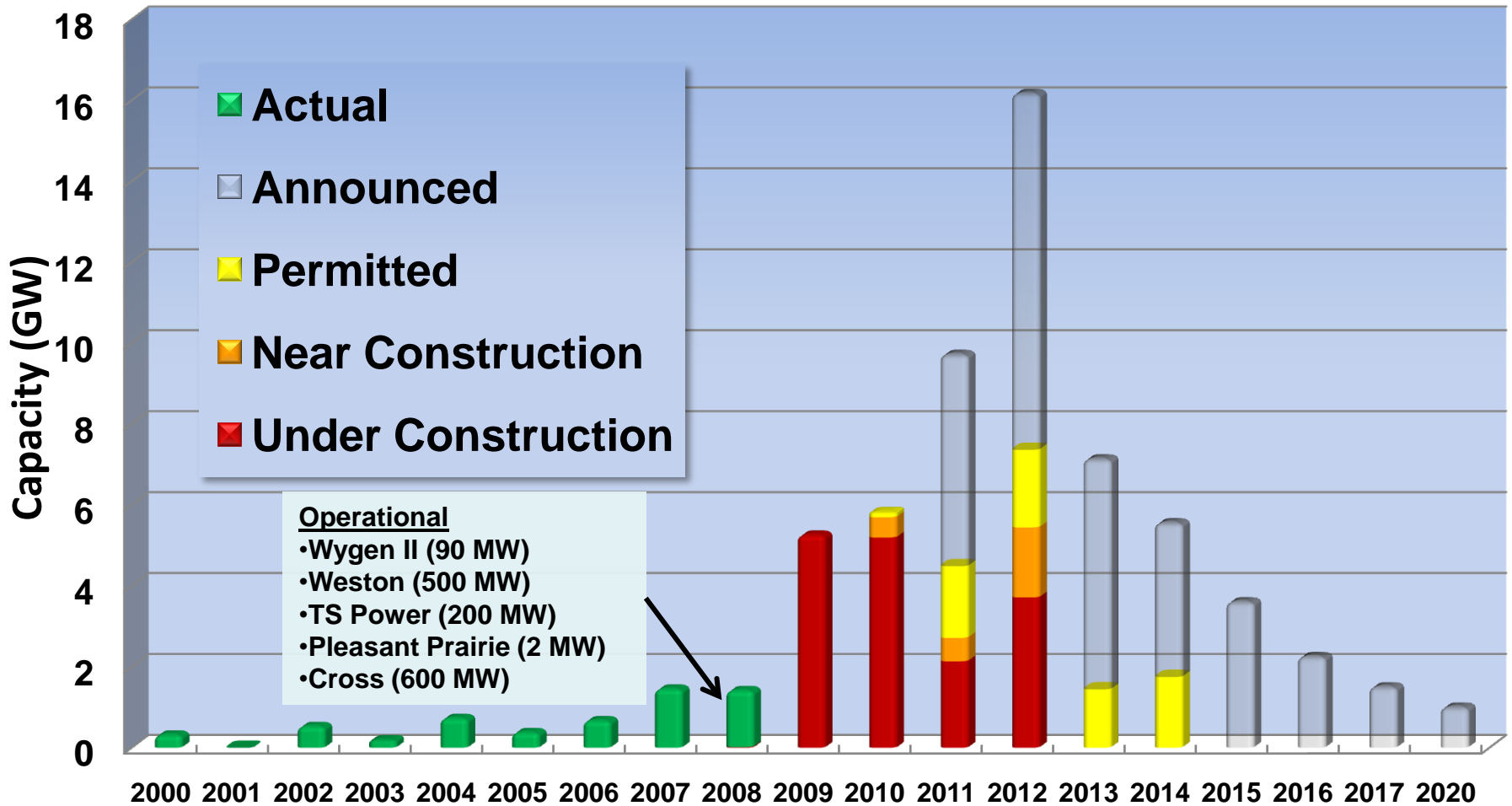
Current Capacity Additions by Years

Refer to Table 1

- Table 1 reflects the current status of coal-fired plant development activity as of January 5, 2009 and the 2008 yearly change (*December 31, 2007 through January 5, 2009*)
- “Progressing” plants are 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 and industry cost increases are impacting development decisions for all projects
- The 90 MW Wygen II (Wyoming), 500 MW Weston (Wisconsin), 600 MW Cross (S. Carolina), 200 MW TS Power (Nevada), and 1.7 MW Pleasant Prairie (Wisconsin) plants have been removed from the tally and are now operational
- There has been a net increase of 2,965 MW (13%) of “Progressing” projects for the year 2008

Current Capacity Additions by Years

Figure 2



Actual

Operational Dates

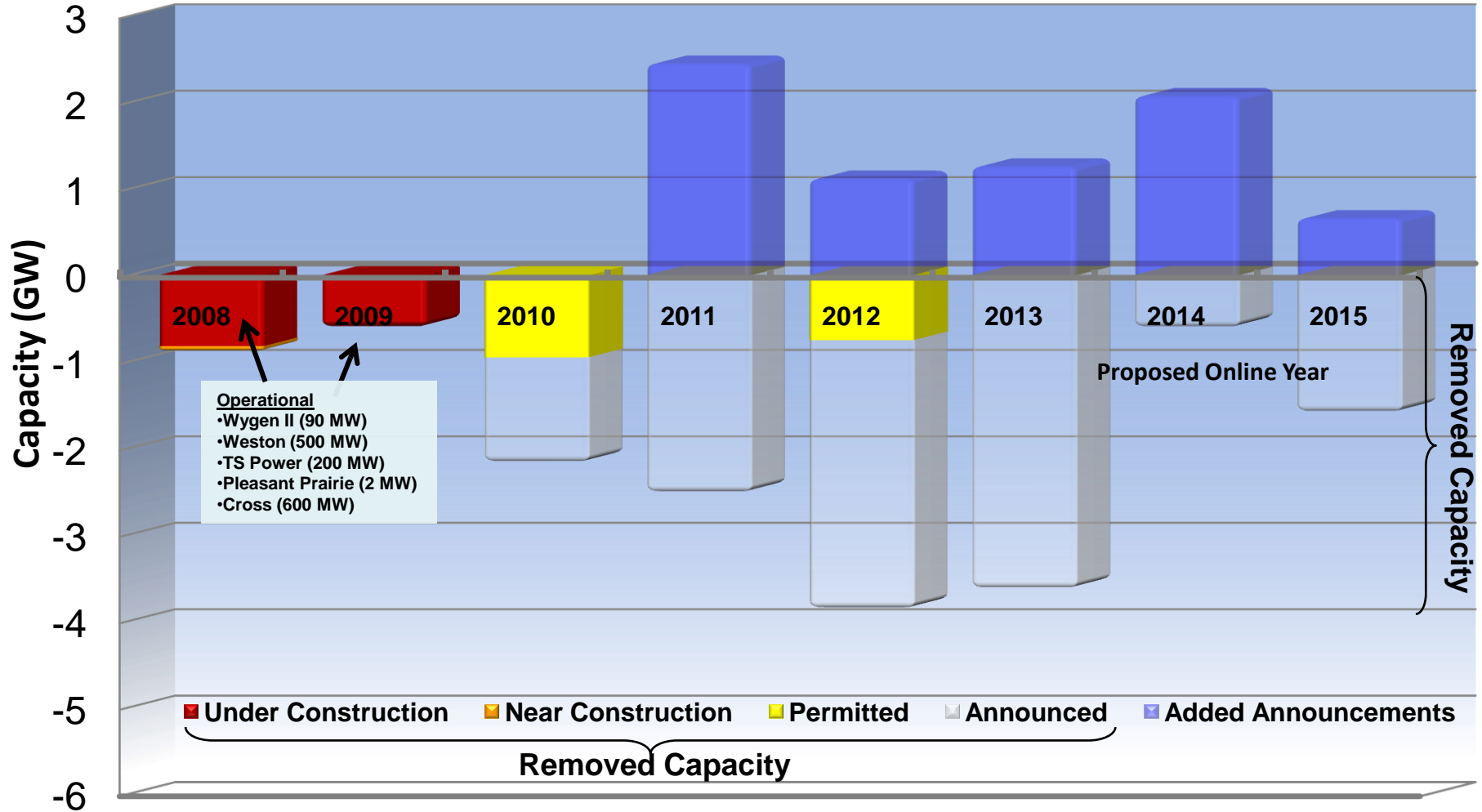
Proposed

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Net Capacity Changes (Removed and Added Opportunities)

Figure 3

80% of MWs removed represent "Announced" projects
 9% of MWs removed due to Now Operating plants



Total Net Reductions (less operating) 6,168MW (-9%) for 2008

Canceled Plant Implications

- **The projects removed from the list are predominately due to today's economic environment and regulatory uncertainty**
- **Announced projects that are canceled before or during the permitting phase are not unusual**
 - announced projects are not necessarily strong indicators of capacity additions
- **Delayed or abandoned projects still represent future opportunities**
 - Land, fuel, transportation, and water availability still exists
 - Specifically: Mine mouth opportunities and waste coal piles are still there

Proposed Capacity by NERC Regions

Table 2

NERC Region		Progressing Projects				Announced	Grand Total (less Operational)	~2008
		Under Construction	Near Construction	Permitted	Sub Total			Operational
ASCC	Capacity (MW)	0	0	0	0	0	0	
	Plants	0	0	0	0	0	0	
ERCOT	Capacity (MW)	4,165	0	303	4,468	7,435	11,903	
	Plants	5	0	1	6	7	13	
FRCC	Capacity (MW)	0	0	750	750	0	750	
	Plants	0	0	1	1	0	1	
MRO US	Capacity (MW)	266	0	10	276	3,230	3,506	500
	Plants	2	0	1	3	5	8	1
NPCC	Capacity (MW)	0	0	125	125	40	165	
	Plants	0	0	1	1	1	2	
RFC	Capacity (MW)	3,140	1,142	2,595	6,877	3,706	10,583	1.7
	Plants	4	3	4	11	7	18	1
SERC	Capacity (MW)	4,343	500	2,837	7,680	7,213	14,893	600
	Plants	6	1	3	10	13	23	1
SPP	Capacity (MW)	2,715	600	0	3,315	1,430	4,745	
	Plants	6	1	0	7	2	9	
WECC	Capacity (MW)	1,690	570	380	2,640	8,815	11,455	290
	Plants	5	2	2	9	12	21	2
N/A	Capacity (MW)	0	0	0	0	0	0	
	Plants	0	0	0	0	0	0	
Total Sum Capacity (MW)		16,319	2,812	7,000	26,131	31,869	58,000	1,392
Total Count of Plants		28	7	13	48	47	95	5

Proposed Technologies of New Plants

(2008 Yearly change)

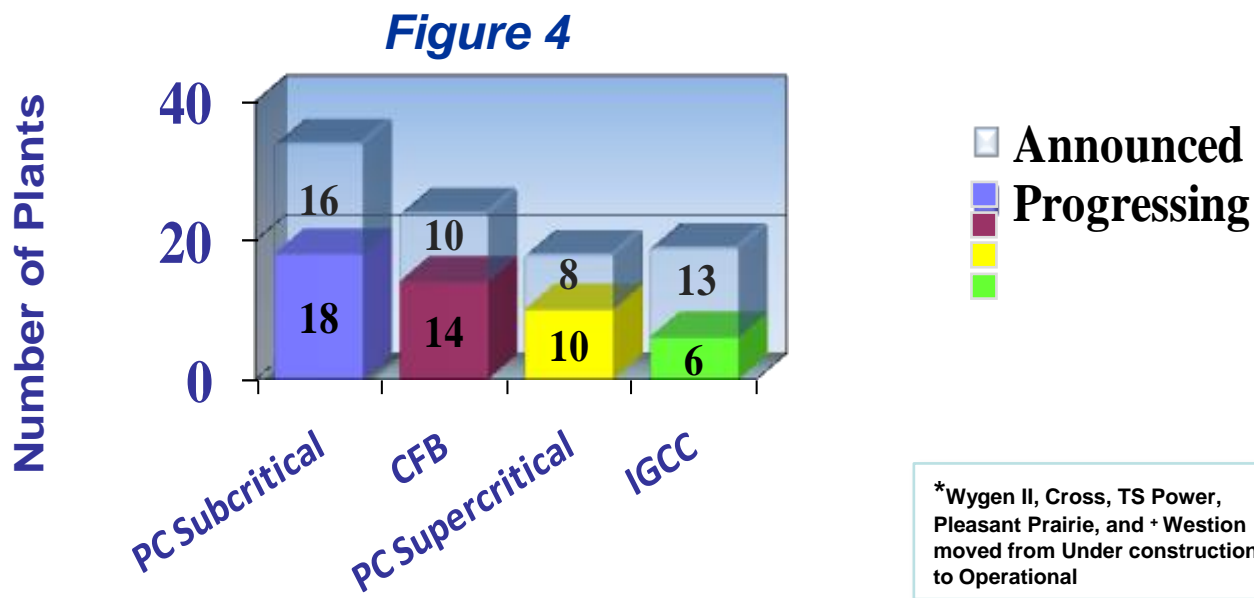


Table 3

Technology Listings	Operational (Since 2000)	Progressing (Permitted, Near-, and Under Construction)		Announced		Total Proposed	
		December 2007	Jan 2009 (Change)	December 2007	Jan 2009 (Change)	December 2007	Jan 2009 (Change)
PC Subcritical	14*	22	18 (-4)*	18	16 (-2)	40	34 (-6)*
CFB	8	14	14 (0)	11	10 (-1)	25	24 (-1)
PC Supercritical	2+	8	10(+2)+	9	8 (-1)	17	18 (+1)
IGCC	1	3	6 (+3)	29	13 (-16)	32	19 (-13)

Source: Ventyx – Velocity Suite

October Report data collected (12/31/2007); Current Report data collected (1/5/2009)

Proposed Technologies of New Plants

Refer to Figure 4 and Table 3

- **Opportunities involving conventional technologies, such as subcritical PC and CFB, are more plentiful and tend to be more advanced due to earlier start in development**
- **Advanced technologies proposed, such as supercritical PC and IGCC, reflect more recent trends in development activity, thus fewer have achieved permitted status**
- **Regulatory uncertainty for GHG legislation is a key issue impacting technology selection and reliability of economic forecasts**
- **Returns on investment for conventional plants, including supercritical, can be severely compromised by the need to subsequently address CO₂ mitigation**
- **Higher capital costs incurred for IGCC may make such new plants less competitive unless their advantage in CO₂ mitigation is assured**

Summary – Year 2008

12/31/2007 – 1/5/2009

- Five plants totaling 1,392 MW have become operational
- “Progressing” projects have increased by one plant with an increase in total MW involved (from 23,000 MW to 26,000 MW)
- 9,133 MW of new capacity have been proposed and 14,402 MW have been canceled
- The net decrease of total proposed capacity, if the 5 operational plants were not removed from the tally, is 9%
- 80% of canceled plants were at the announced stage
- Fewer “announced” projects were proposed, therefore decreasing the overall tally of the projects