



# Tracking New Coal-Fired Power Plants

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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.

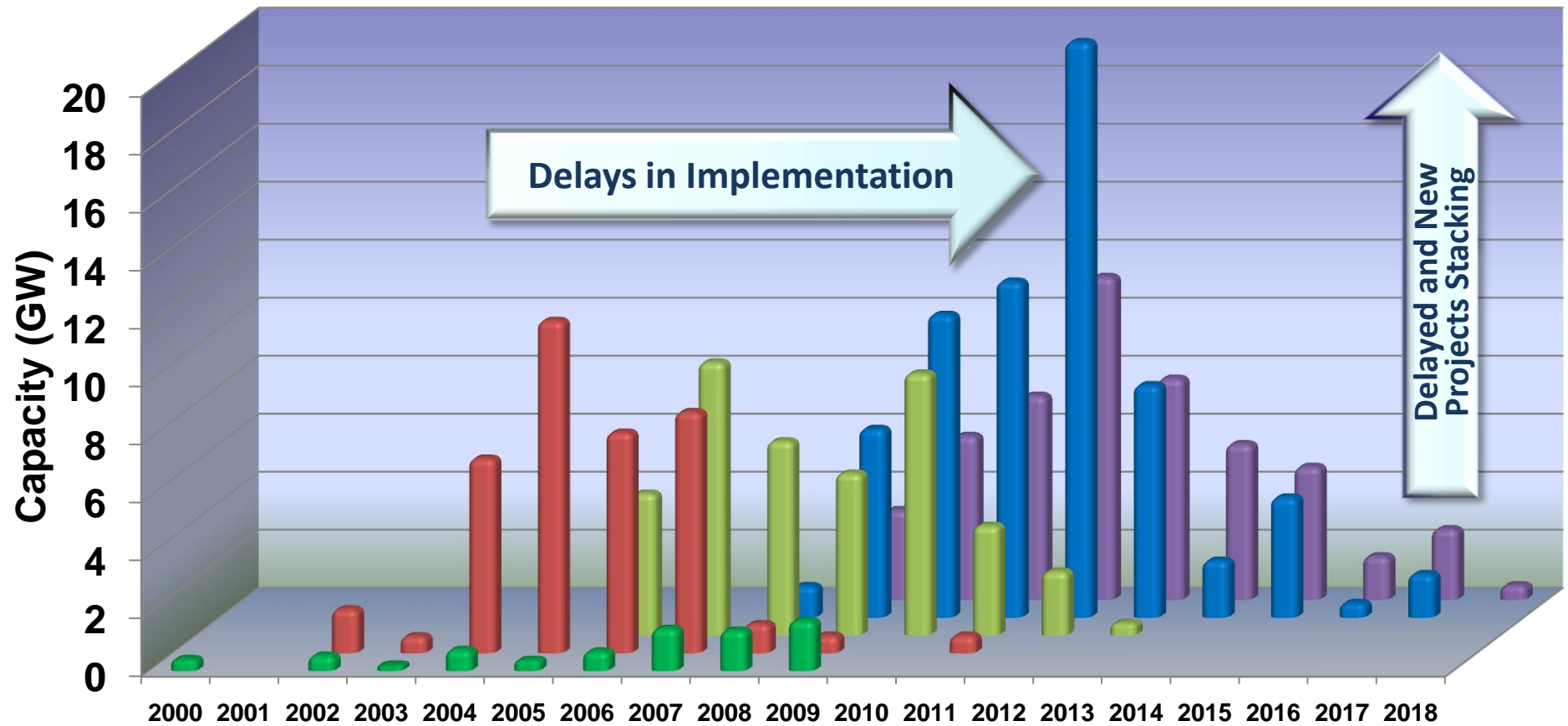
**The Department of Energy does not warrant the accuracy or suitability of this information.**

# 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 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

Table 1

		Number of Plants			Capacity (MW)		
General Status		April 2009	June 2009	Net Change	April 2009	June 2009	Net Change
Progressing Projects	<i>Under Construction</i>	27	23	-4	16,054	14,622	-1,432
	<i>Near Construction</i>	6	4	-2	2,562	1,482	-1,080
	<i>Permitted</i>	9	9	0	3,317	3,317	0
	<b>SUB TOTAL</b>	<b>42</b>	<b>36</b>	<b>-6</b>	<b>21,933</b>	<b>19,421</b>	<b>-2,512 (-11%)</b>
Uncertain Potential and Timing	<i>Announced (early stages of development)</i>	44	47	+3	28,637	29,484	847 (+3%)
	<b>TOTAL</b>	<b>86</b>	<b>83</b>	<b>-3</b>	<b>50,570</b>	<b>48,905</b>	<b>-1,665 (-3%)</b>
	<b>Operational this Period</b>	-	4	+4	-	1,442	+1,442
	<b>TOTAL (with Operational)</b>			<b>-4</b>			<b>-526(-1%)</b>

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 June 23, 2009 and the 2<sup>nd</sup> quarter (*April 6, 2009 through June 23, 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 180 MW Clinton (Iowa), 18 MW Lamar (Colorado), 663 MW Nebraska City Unit 2 (Nebraska), and 581 MW Sandow 5 (Texas) plants has been removed from the tally and are now operational
- There has been a net decrease of 2,815 MW (-13%) of “Progressing” projects for the 3 month period (includes the 1,442 MW that moved from “Progressing” to “operational”)

# Decrease in Capacity - Progressing Plants

*Refer to Table 1*

The decreased capacity (2,522 MW, 6 plants) in “Progressing” Plants was due to:

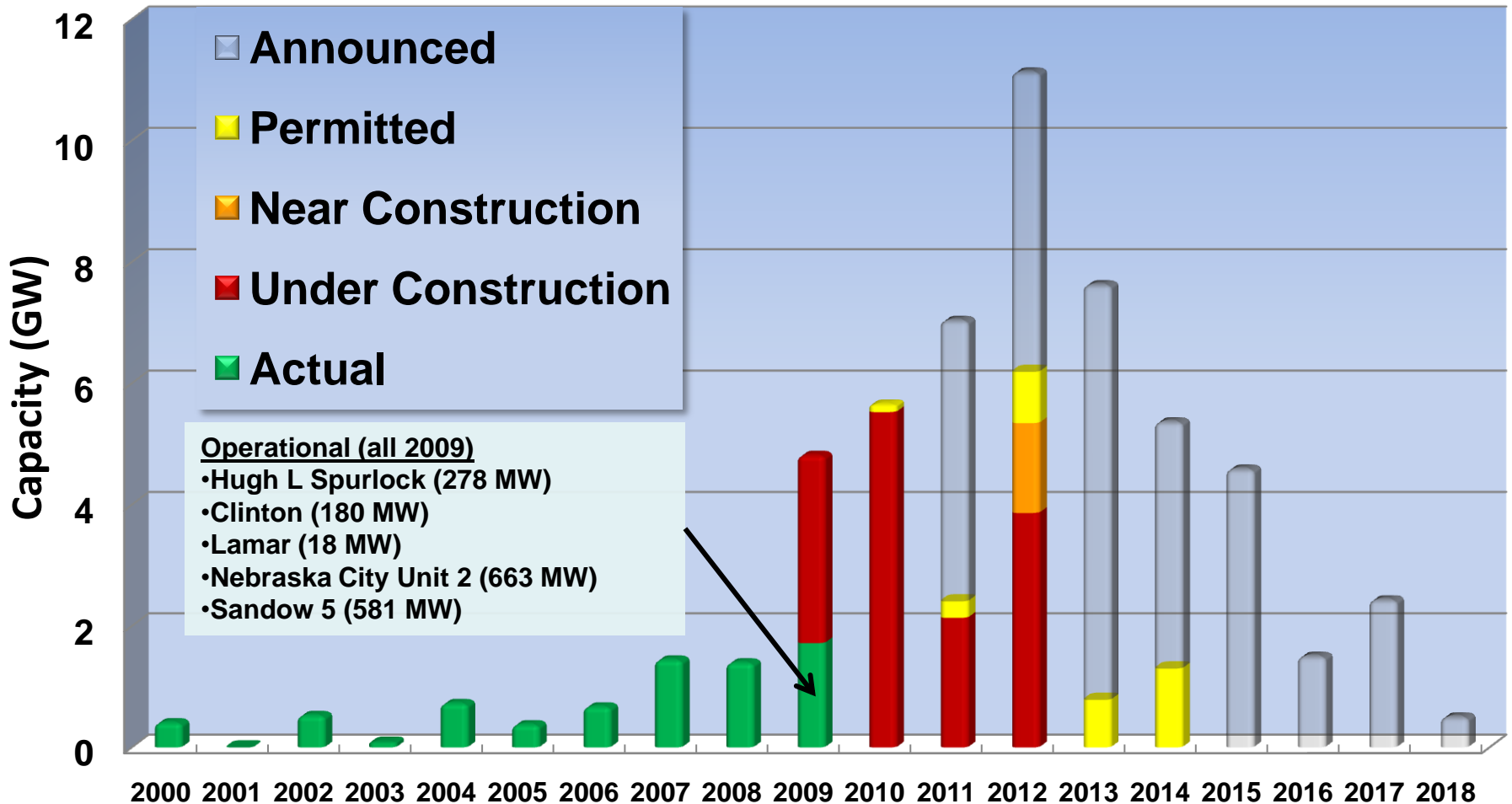
Proposed Plant	Capacity (MW)	Reason for Removal from Progressing Tally
Clinton	180	Status went from “Under Construction” to “Operational”. Operational plants are not included in the tally.
Lamar	18	Status went from “Under Construction” to “Operational”. Operational plants are not included in the tally.
Nebraska City Unit 2	663	Status went from “Under Construction” to “Operational”. Operational plants are not included in the tally.
Sadow 5	581	Status went from “Under Construction” to “Operational”. Operational plants are not included in the tally.
Greene Energy	580	Status moved from “Near Construction” to “Announced” Online date moved out to 2014
Kentucky Mountain Power	500	Expired Clean Air Act permits – Status moved to Cancelled

Remaining 10 MW due to changes or refinements in proposed nameplate capacities



# Current Capacity Additions by Years

Figure 2



Actual

Operational Dates

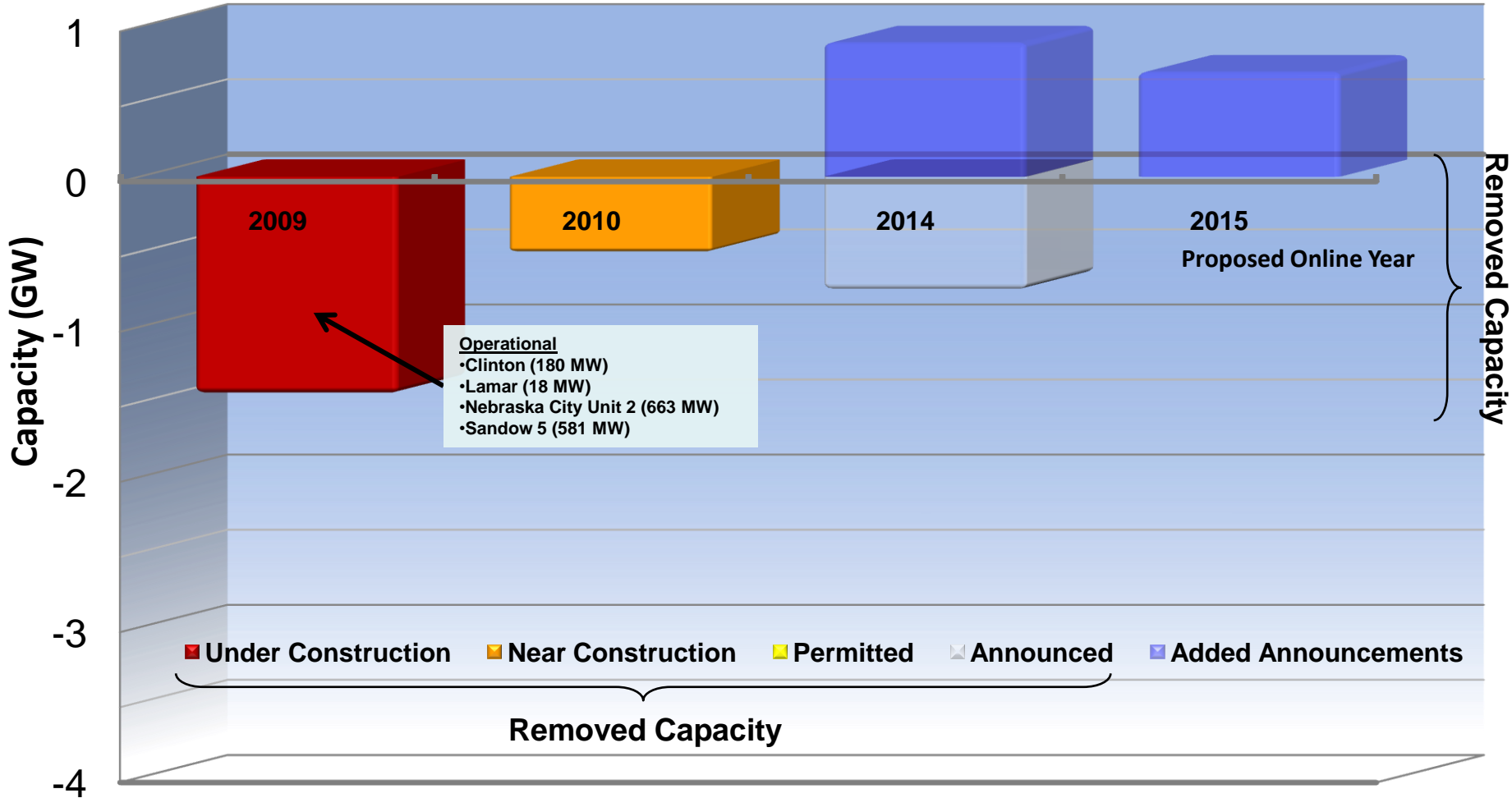
Proposed

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# Net Capacity Changes (Removed and Added Opportunities)

Figure 3

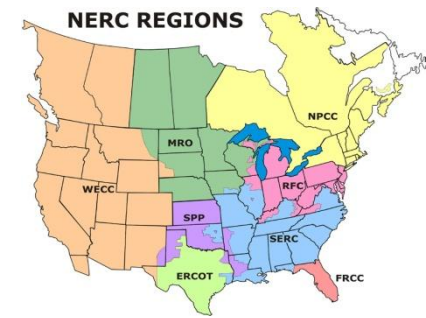
25% of MWs removed represent "Announced" projects  
 48% of MWs removed due to Now Operating plants



**Total Net Reductions (less operating) 526 MW (-1%)**

# 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)	Operational
		Under Construction	Near Construction	Permitted	Sub Total			
ASCC	Capacity (MW)	0	0	0	0	0	0	
	Plants	0	0	0	0	0	0	
ERCOT	Capacity (MW)	3,584	0	0	3,584	8,235	11,819	581
	Plants	4	0	0	4	8	12	
FRCC	Capacity (MW)	0	0	750	750	0	750	
	Plants	0	0	1	1	0	1	
MRO US	Capacity (MW)	99	0	10	109	2,050	2,159	180
	Plants	1	0	1	2	4	6	
NPCC	Capacity (MW)	0	0	125	125	40	165	
	Plants	0	0	1	1	1	2	
RFC	Capacity (MW)	3,140	562	1,375	5,077	4,608	9,685	
	Plants	4	2	3	9	10	19	
SERC	Capacity (MW)	4,065	0	677	4,742	7,941	12,683	
	Plants	5	0	1	6	13	19	
SPP	Capacity (MW)	2,052	600	0	2,652	895	3,547	663
	Plants	5	1	0	6	1	7	
WECC	Capacity (MW)	1,682	320	380	2,382	5,715	8,097	18
	Plants	4	1	2	7	10	17	
N/A	Capacity (MW)	0	0	0	0	0	0	
	Plants	0	0	0	0	0	0	
Total Sum Capacity (MW)		14,622	1,482	3,317	19,421	29,484	48,905	1,442
Total Count of Plants		23	4	9	36	47	83	4

# Proposed Technologies of New Plants

(3 month period change)

Figure 4

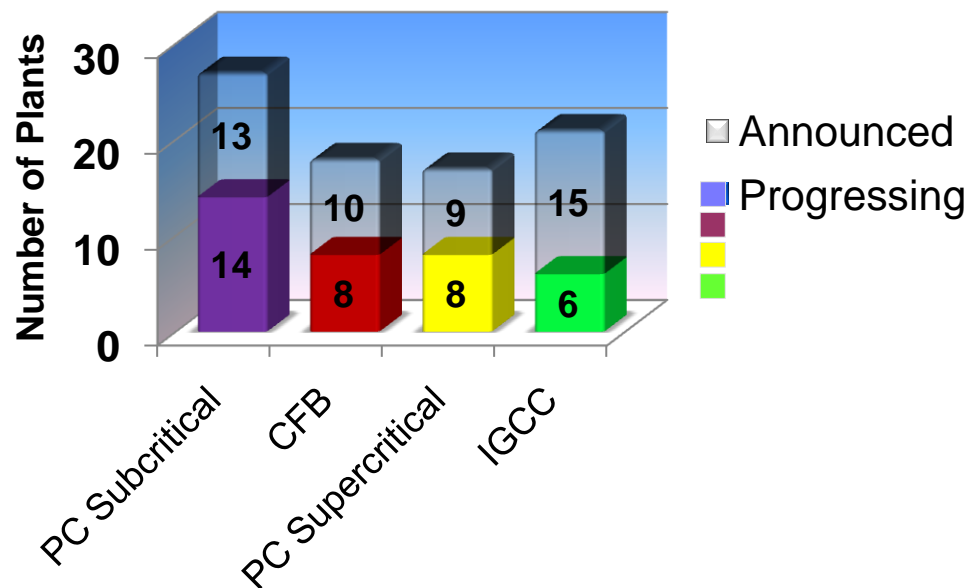


Table 3

Technology Listings	Operational (Since 2000)	Progressing (Permitted, Near-, and Under Construction)		Announced		Total Proposed	
		April 2009	Jun 2009 (Change)	April 2009	Jun 2009 (Change)	April 2009	Jun 2009 (Change)
PC Subcritical	19	16	14 (-2)	14	13 (-1)	30	27 (-3)
CFB	9	12	8 (-4)	9	10 (+1)	21	18 (-3)
PC Supercritical	2	9	8 (-1)	8	9 (+1)	17	17 (0)
IGCC	1	6	6 (0)	13	15 (2)	19	21 (2)

Source: Ventyx – Velocity Suite

April Report data collected (4/6/2009); Current Report data collected (6/23/2009)

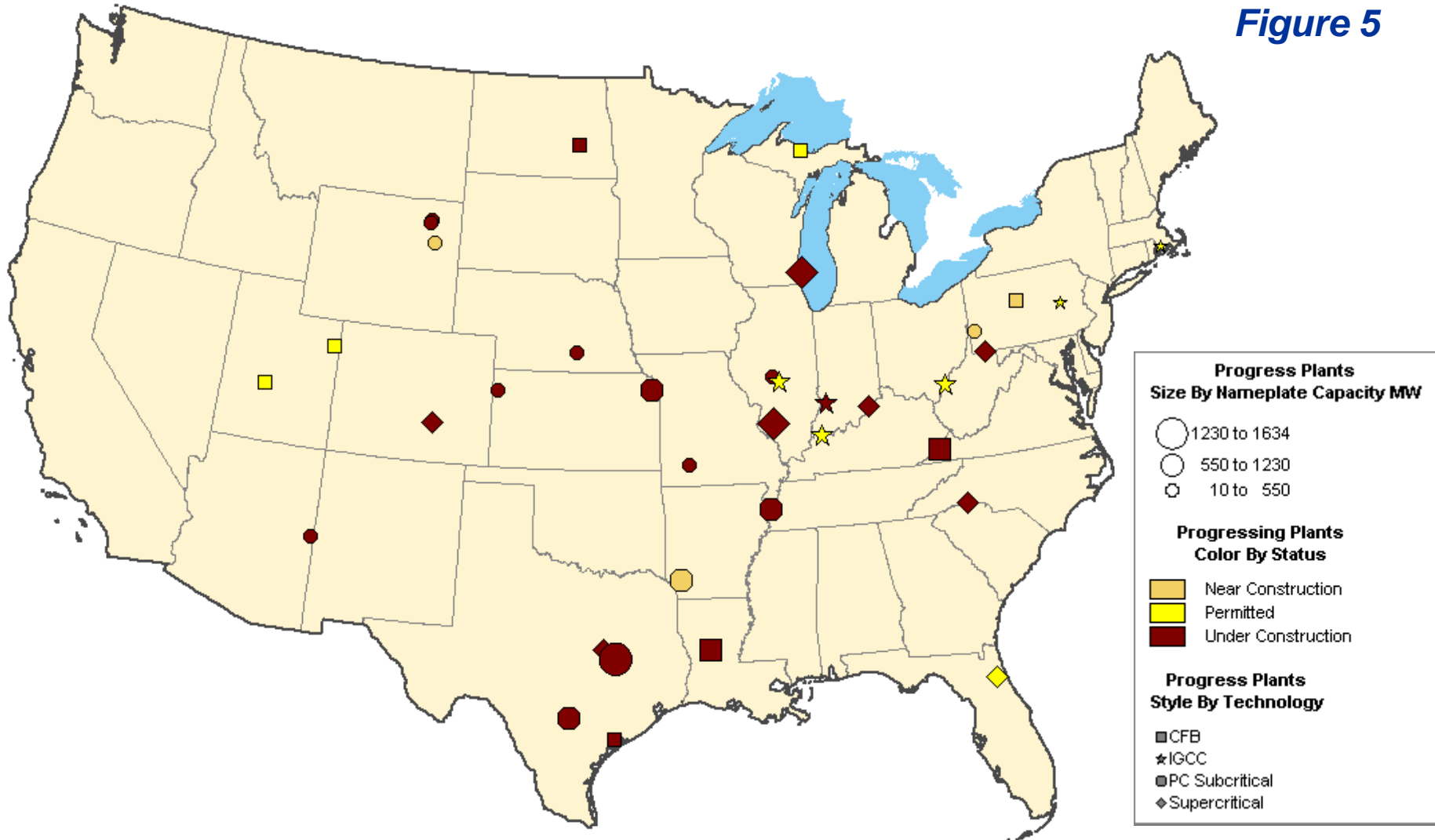
# Proposed Technologies of New Plants

*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 CO<sub>2</sub> mitigation**
- **Higher capital costs incurred for IGCC may make such new plants less competitive unless their advantage in CO<sub>2</sub> mitigation is assured**

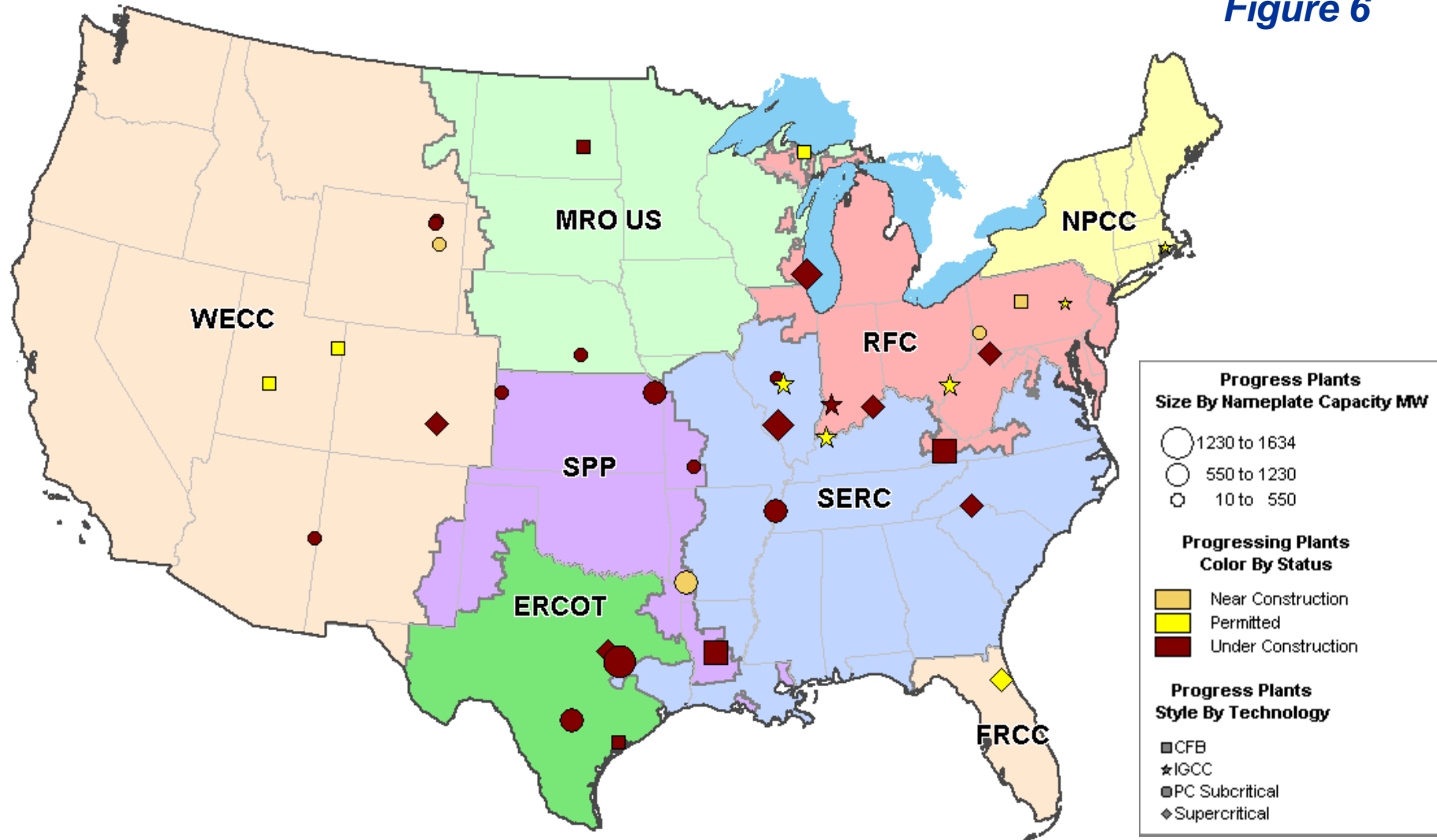
# Geographical Map by State: Coal-Fired Plants (Permitted, Near Construction, and Under Construction)

Figure 5



# Geographical Map by NERC Regions: Coal-Fired Plants (Permitted, Near Construction, and Under Construction)

Figure 6

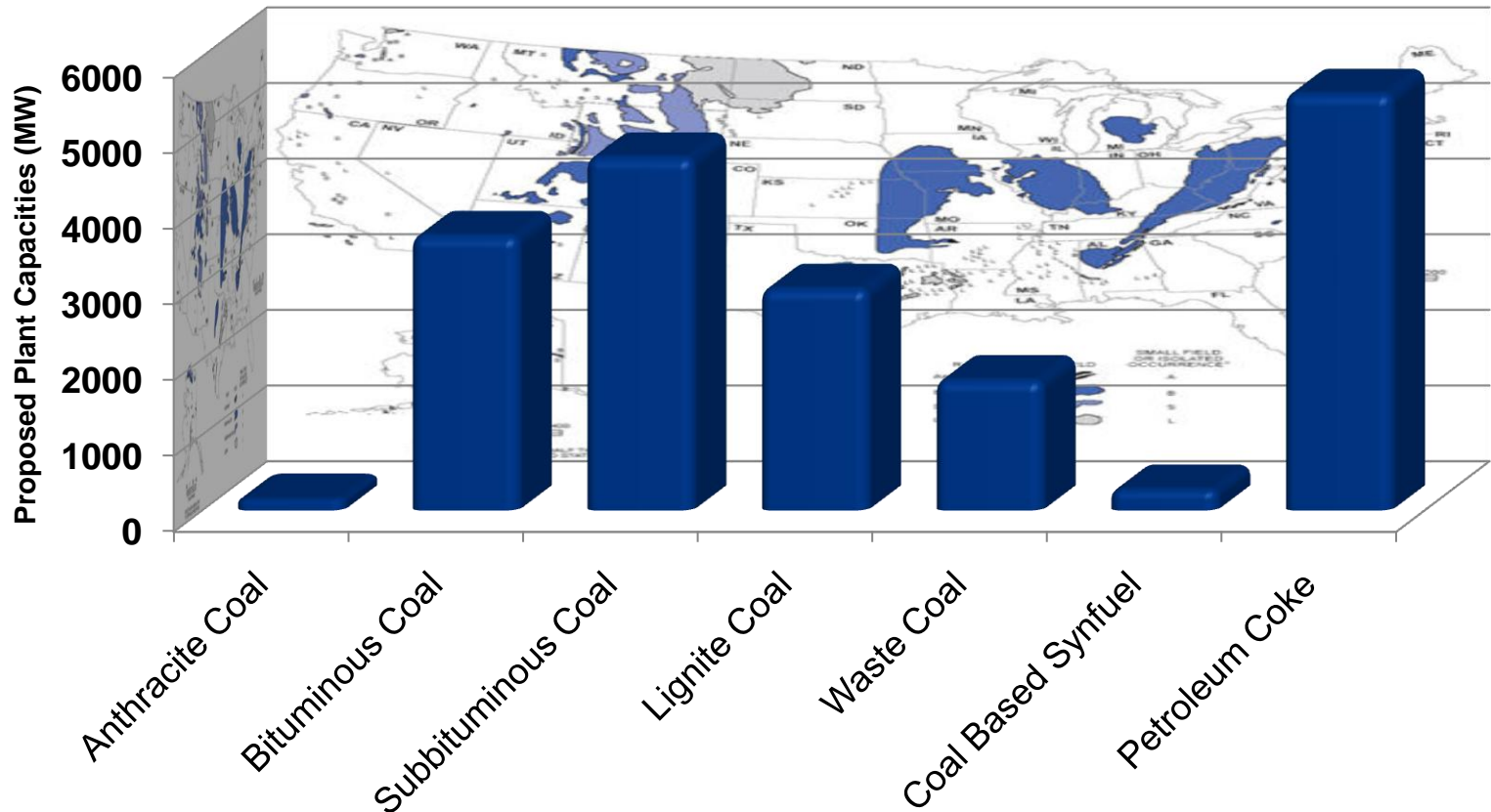




# Specified Coal Ranks

## All Proposed Plants

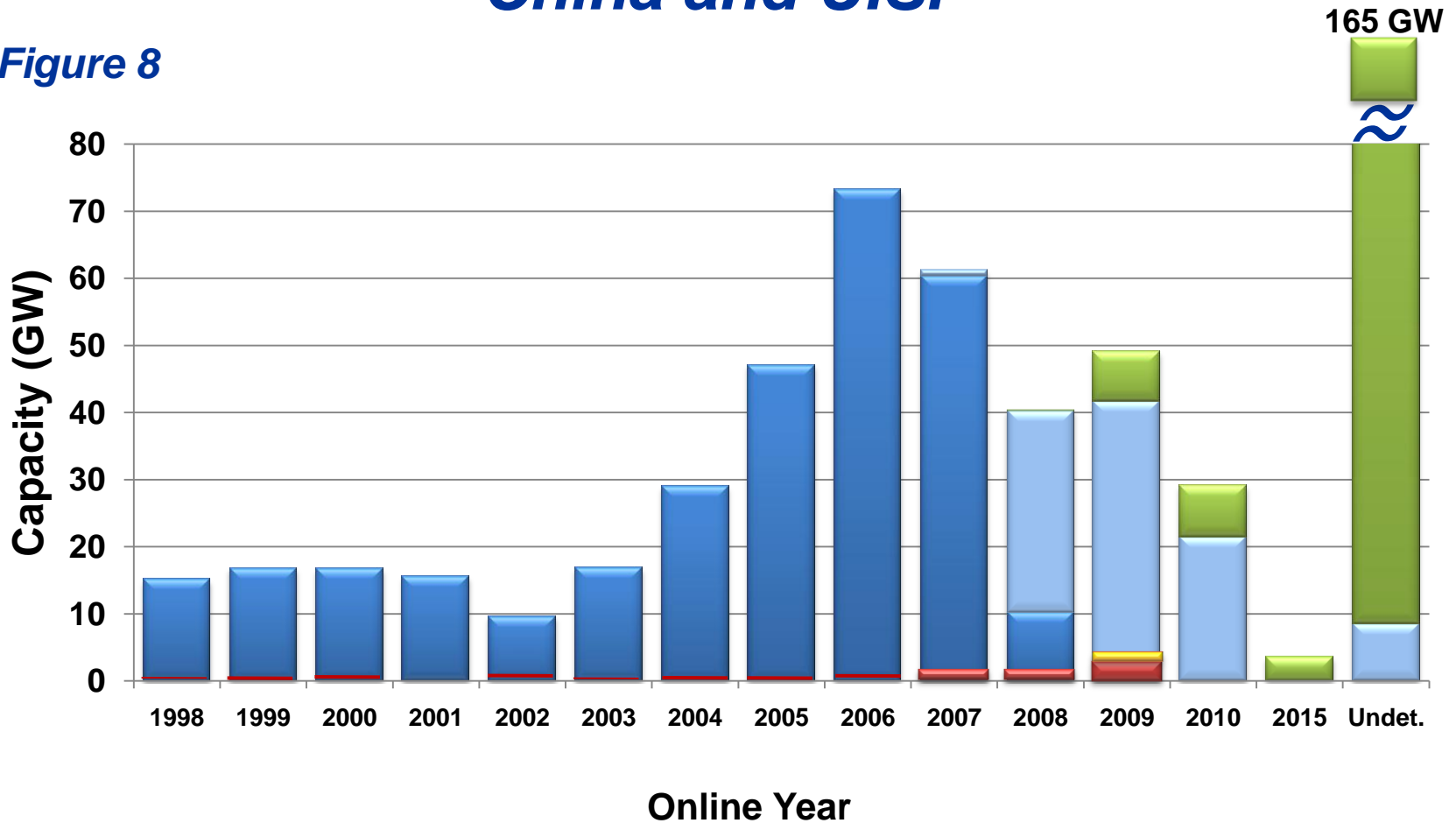
Figure 7



30,00 MW "Generic Coal"  
Not shown on graph

# Coal-Fired Build Rate China and U.S.

Figure 8



**China:** ■ Operational    ■ Under Construction  
**U.S.:** ■ Operational    ■ Under Construction

■ Under Construction  
 ■ Under Construction

■ Planned

# Summary – 2<sup>nd</sup> Quarter 2009

- Five plants (1,442 MW) has become operational
- “Progressing” projects have decreased by seven plants in total MW involved (from 22,236 MW to 19,421 MW)
- 1,595 MW of new capacity have been proposed and 1,553 MW have been canceled
- The net decrease of total proposed capacity, if the five operational plants were not removed from the tally, is 1%
- 48% of canceled plants (capacity) were at the announced stage

