



# Tracking New Coal-Fired Power Plants

(data update 1/13/2012)

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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.

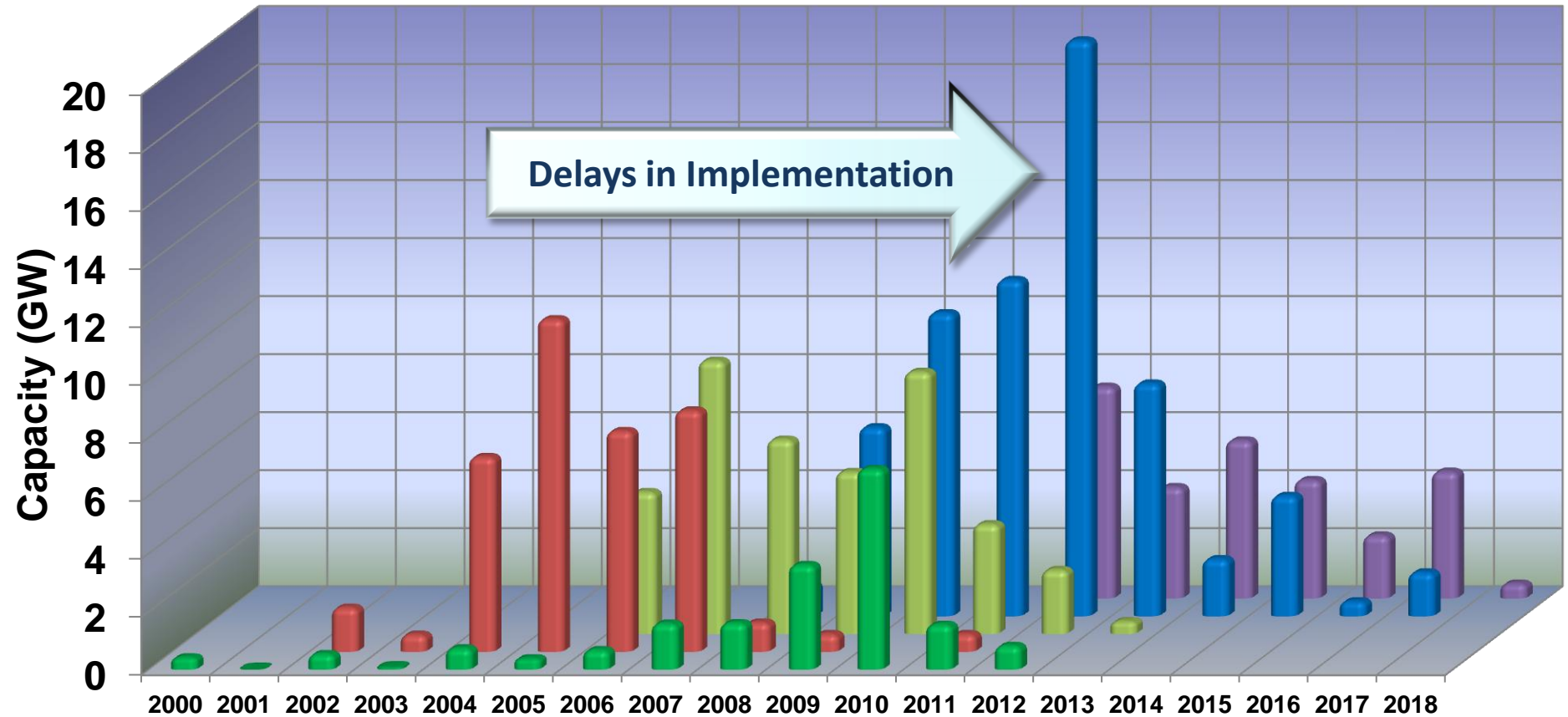
**The Department of Energy does not warrant the accuracy or suitability of this information.**

# 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

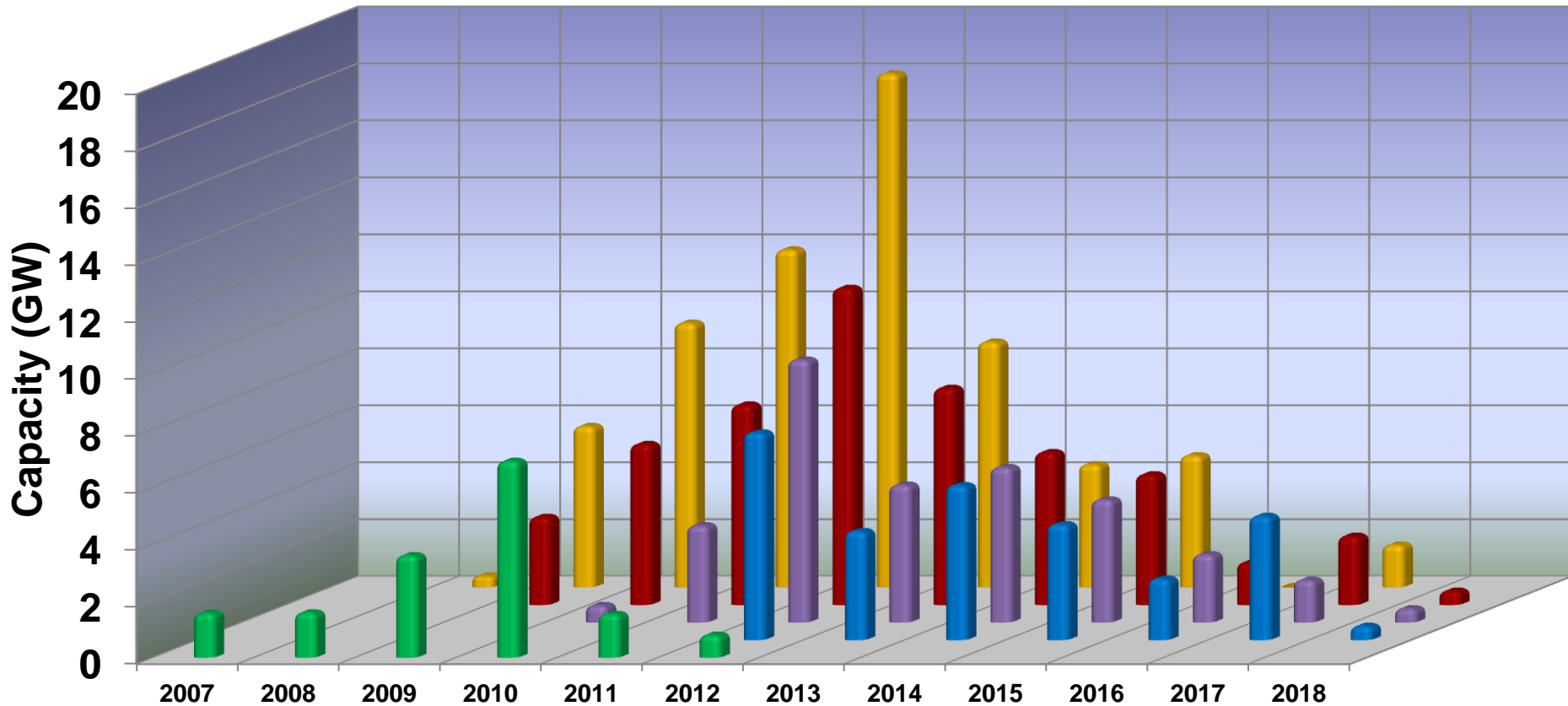


Actual capacity completed has been shown to be significantly less than proposed capacity; the 2002 report listed 11,455 MW of proposed capacity for the year 2005 when only 329 MW were constructed.

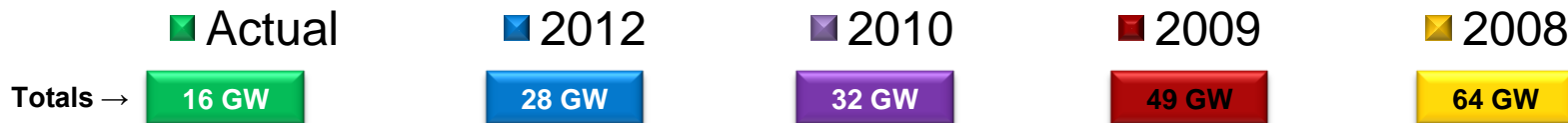
■ Actual   
 ■ 2002 Report   
 ■ 2005 Report   
 ■ 2007 Report   
 ■ 2012 Report

# Latest Capacity Announcements vs. Actual

Figure 1a



*Total Identified Capacity Declines Due to Commissioning, Cancellations, and Fewer Postponements*



# Current Coal-Fired Capacity Projects *(Annual Change)*

**Table 1**

		<i>Number of Plants</i>			<i>Capacity (MW)</i>		
<i>General Status</i>		Dec 2010	Jan 2012	<i>Net Change</i>	Dec 2010	Jan 2012	<i>Net Change</i>
<b>Progressing Projects</b>	<i>Under Construction</i>	12	10	-2	7,619	6,519	-1,100
	<i>Near Construction</i>	1	1	0	320	320	0
	<i>Permitted</i>	8	13	5	6,446	8,934	2,488
	<b>SUB TOTAL</b>	<b>21</b>	<b>24</b>	<b>3</b>	<b>14,385</b>	<b>15,773</b>	<b>1,388</b>
<b>Uncertain Potential and Timing</b>	<i>Announced (early stages of development)</i>	36	24	-12	17,385	11,871	-5,514
	<b>TOTAL</b>	<b>57</b>	<b>48</b>	<b>-9</b>	<b>32,259</b>	<b>27,644</b>	<b>-4,615</b>
	<b>Commissioned this Period</b>	-	5	5	-	2,343	2,343
<b>TOTAL December 2011 Progressing and Commissioned</b>			<b>53</b>	<b>-4</b>		<b>29,987</b>	<b>-2,272</b>

<i>Status Listing</i>	<i>Description</i>
<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.

Source: Ventyx – Velocity Suite  
 Data reflects change between 12/13/2010 and 1/13/2012

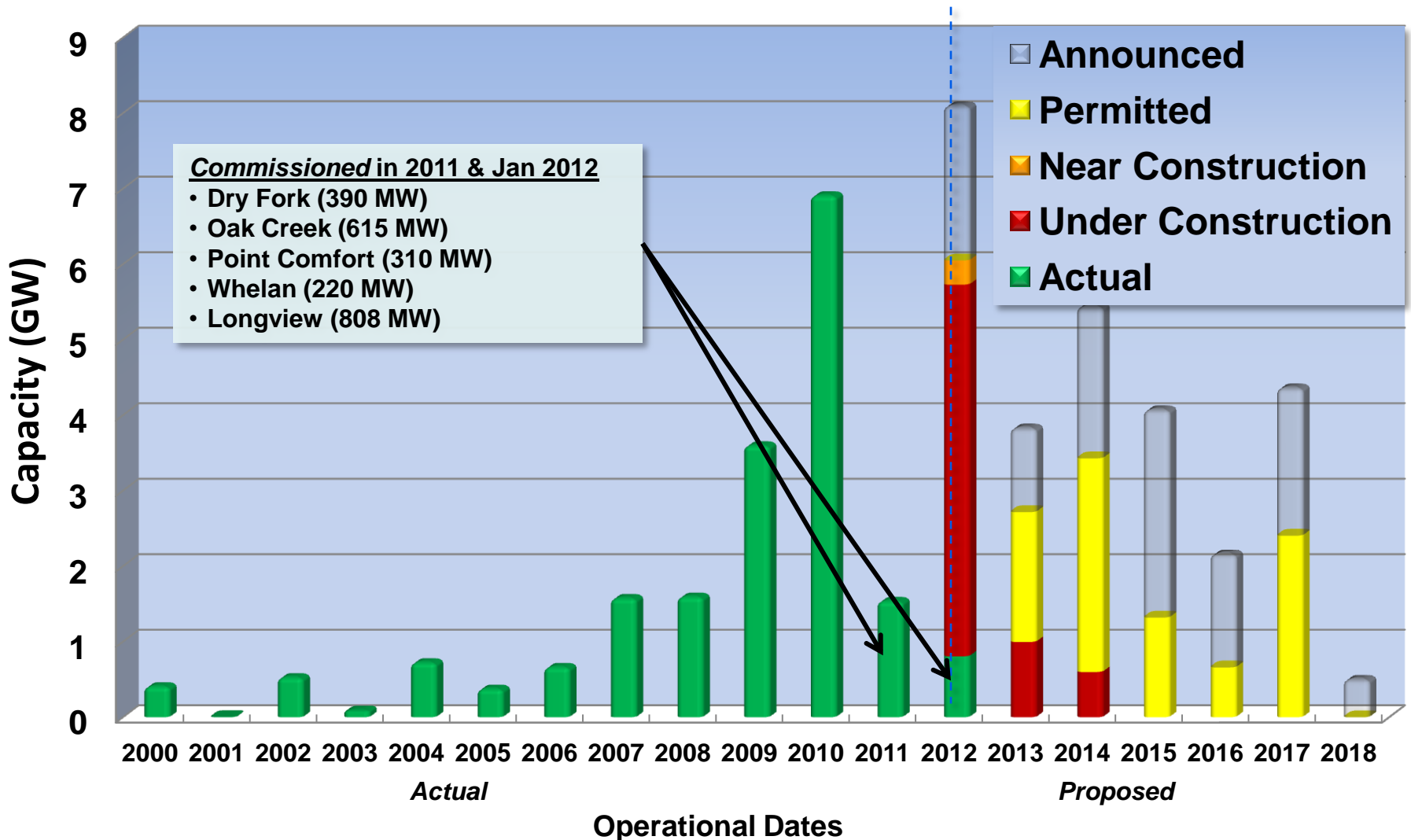
# Current Capacity Additions by Years

## *Refer to Table 1*

- Table 1 reflects the current status of coal-fired plant development activity as of January 13, 2012 and shows the nominal annual change (*December 13, 2010 through January 13, 2012*)
- “*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
- 2,343 MW (6 units at 5 plants) have become operational during 2011 & Jan 2012
- There has been a net increase of 1,388 MW (+10%) of total *Progressing and/or Commissioned* projects through 2011 over *Progressing* projects in January

# Current Coal Capacity Additions by Years

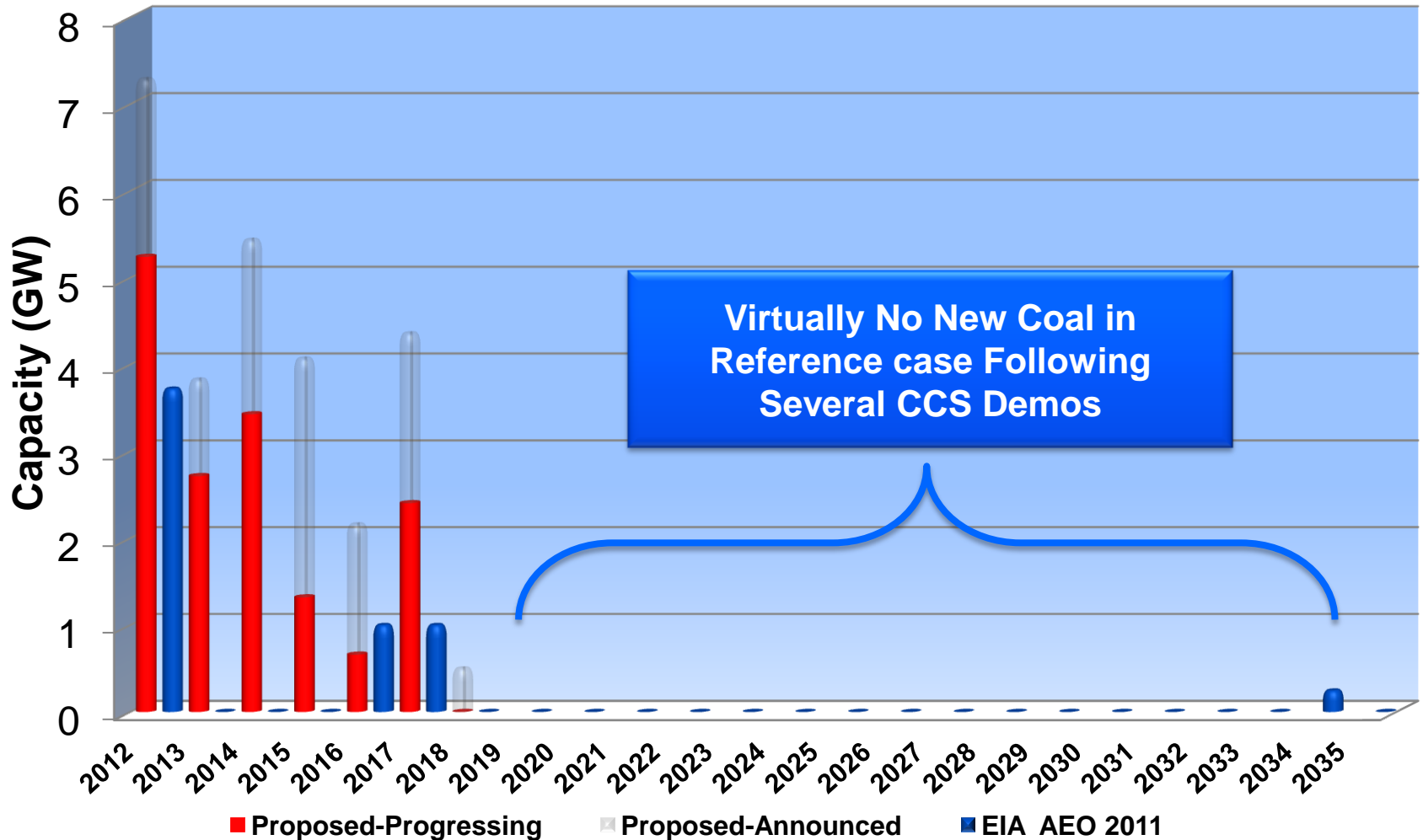
Figure 2





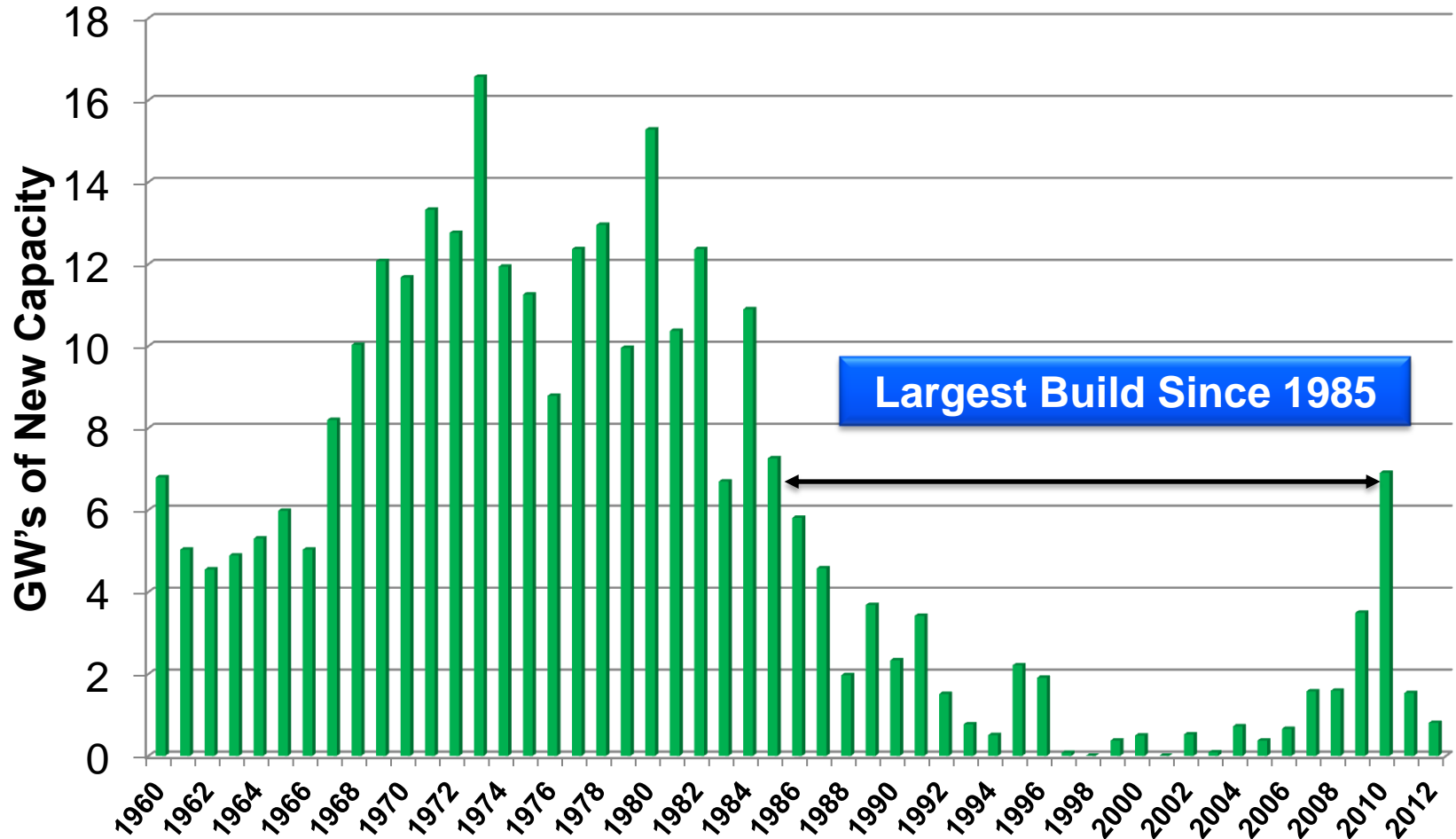
# Currently Proposed and Forecasted Coal-Fired Capacity

Figure 3



# Last 50 Years of New Coal Capacity

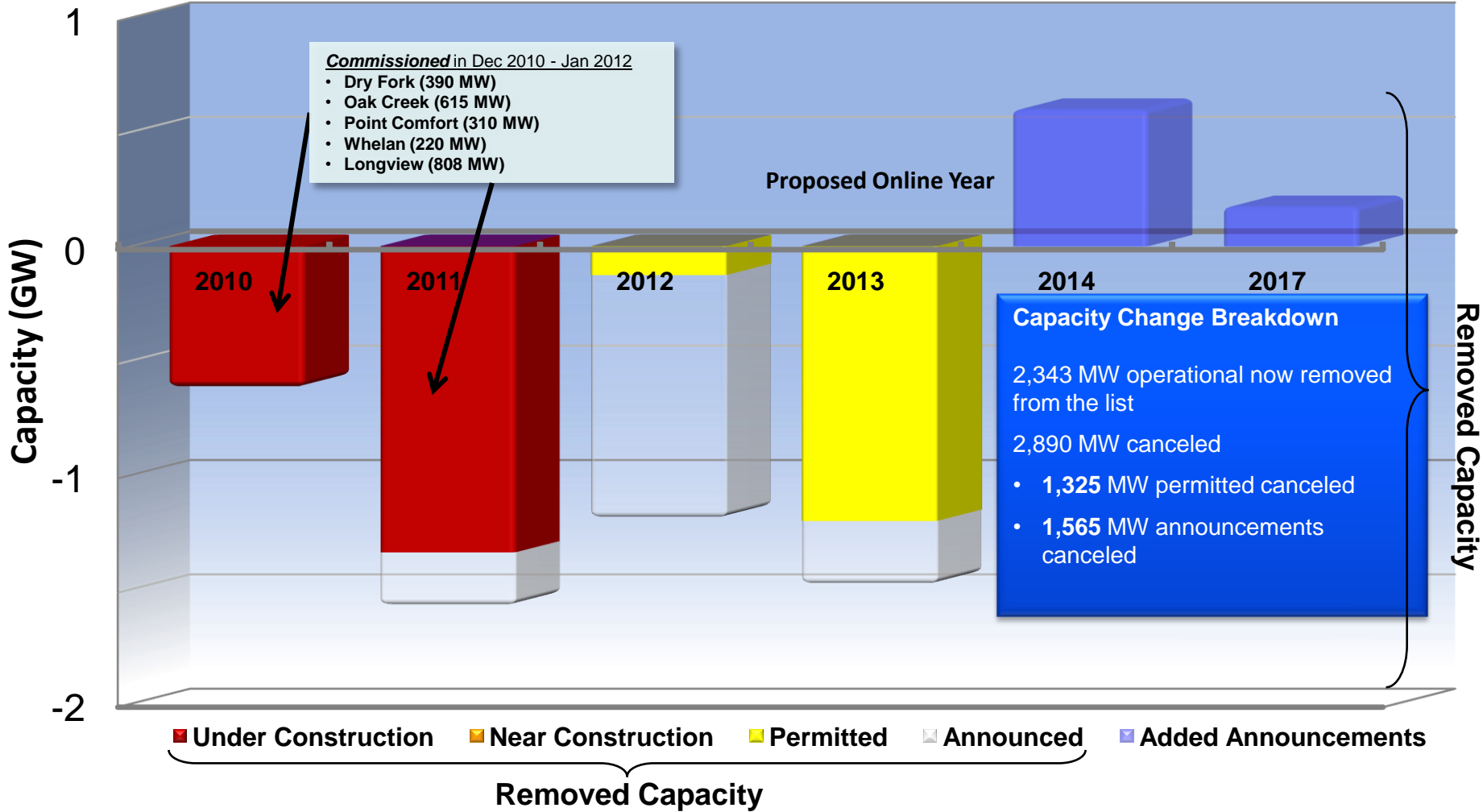
Figure 4



# Net Capacity Changes (Removed and Added Opportunities)

Figure 5

32% of MWs removed represent "Announced" projects  
 48% of MWs removed due to Commissioned plants



**Total Net Reductions (less operating) -2,272 MW**

# Proposed Technologies of New Plants

(with Annual change)

Figure 6

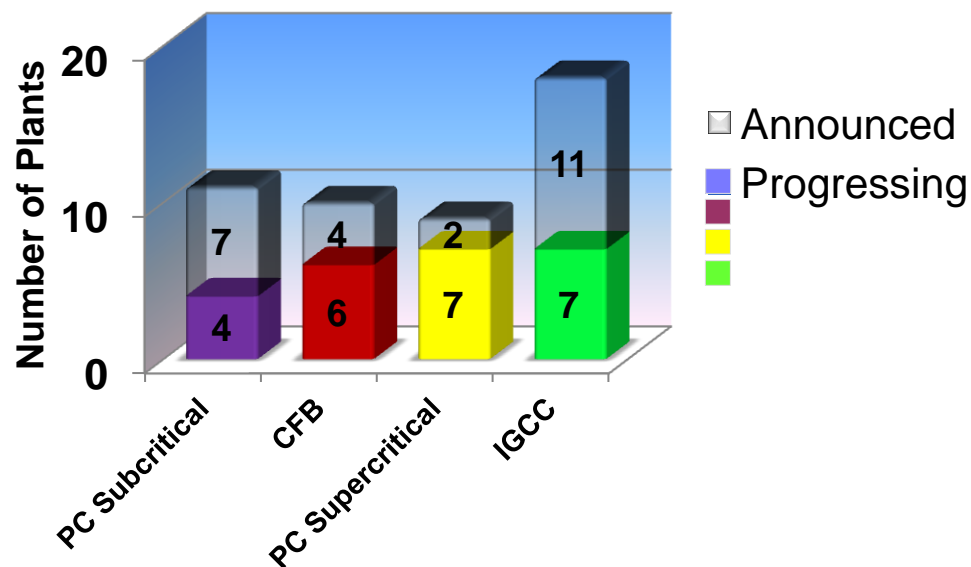
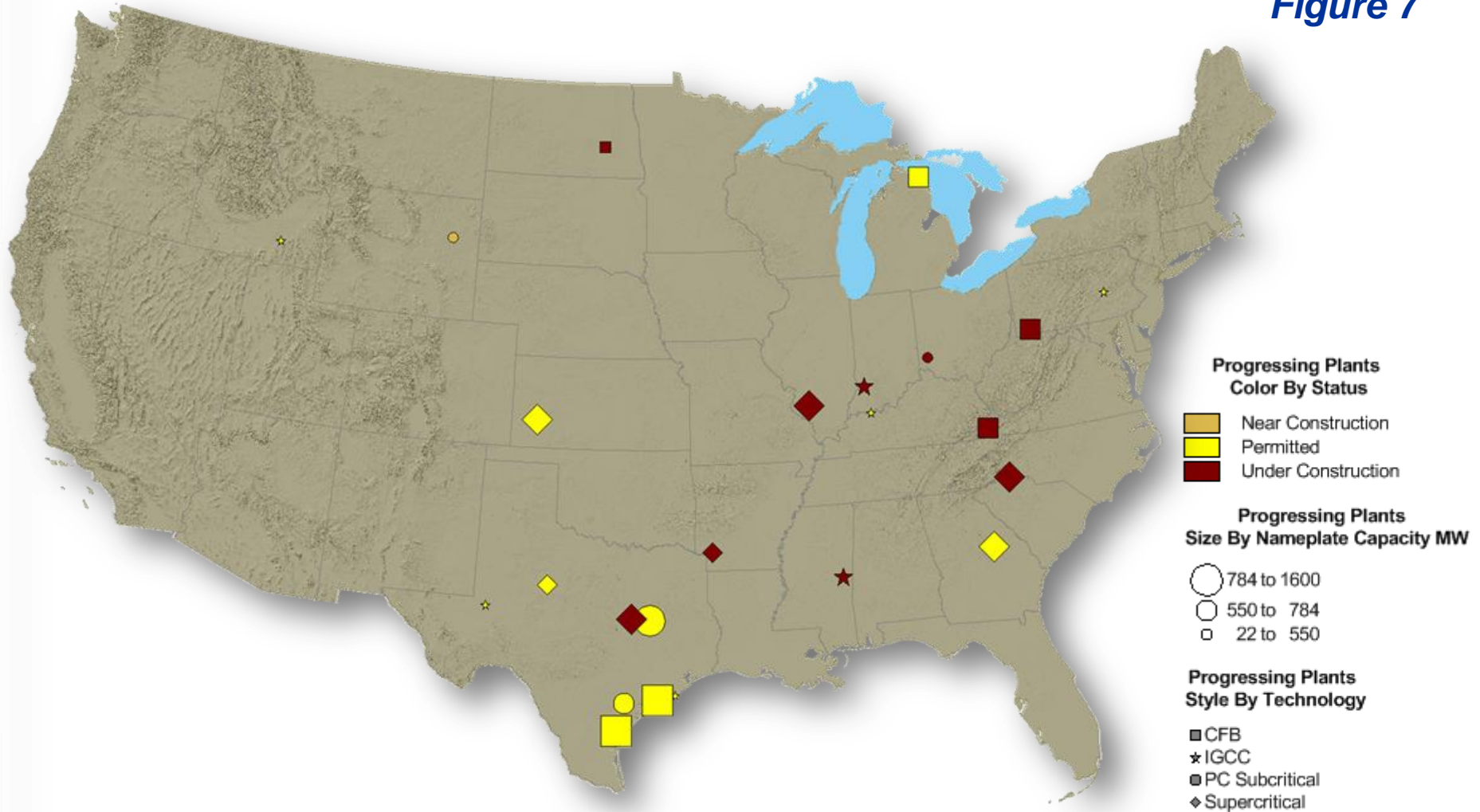


Table 2

Technology Listings	Operational (Since 2000)	Progressing (Permitted, Near-, and Under Construction)		Announced		Total Proposed	
		December 2010	Jan 2012 (Change)	December 2010	Jan 2012 (Change)	December 2010	Jan 2012 (Change)
PC Subcritical	31	5	4 (-1)	10	7 (-3)	15	11 (-4)
CFB	12	4	6 (-2)	9	4 (-5)	13	10 (-3)
PC Supercritical	7	7	7 (0)	4	2 (-2)	11	9 (-2)
IGCC	1	5	7 (2)	13	11 (-2)	18	18 (0)

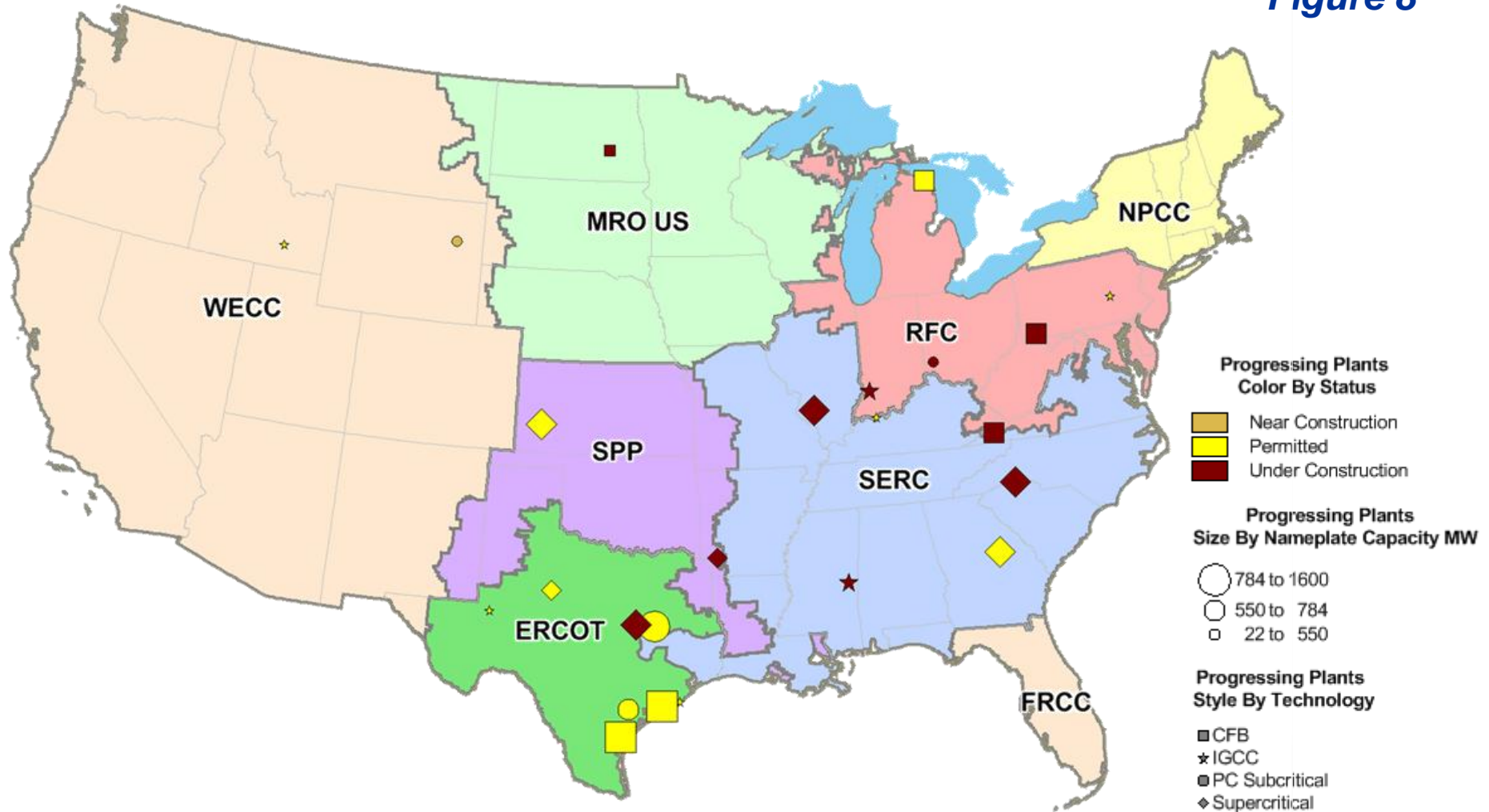
# Geographical location by State: Coal-Fired Plants (Permitted, Near Construction, and Under Construction)

Figure 7



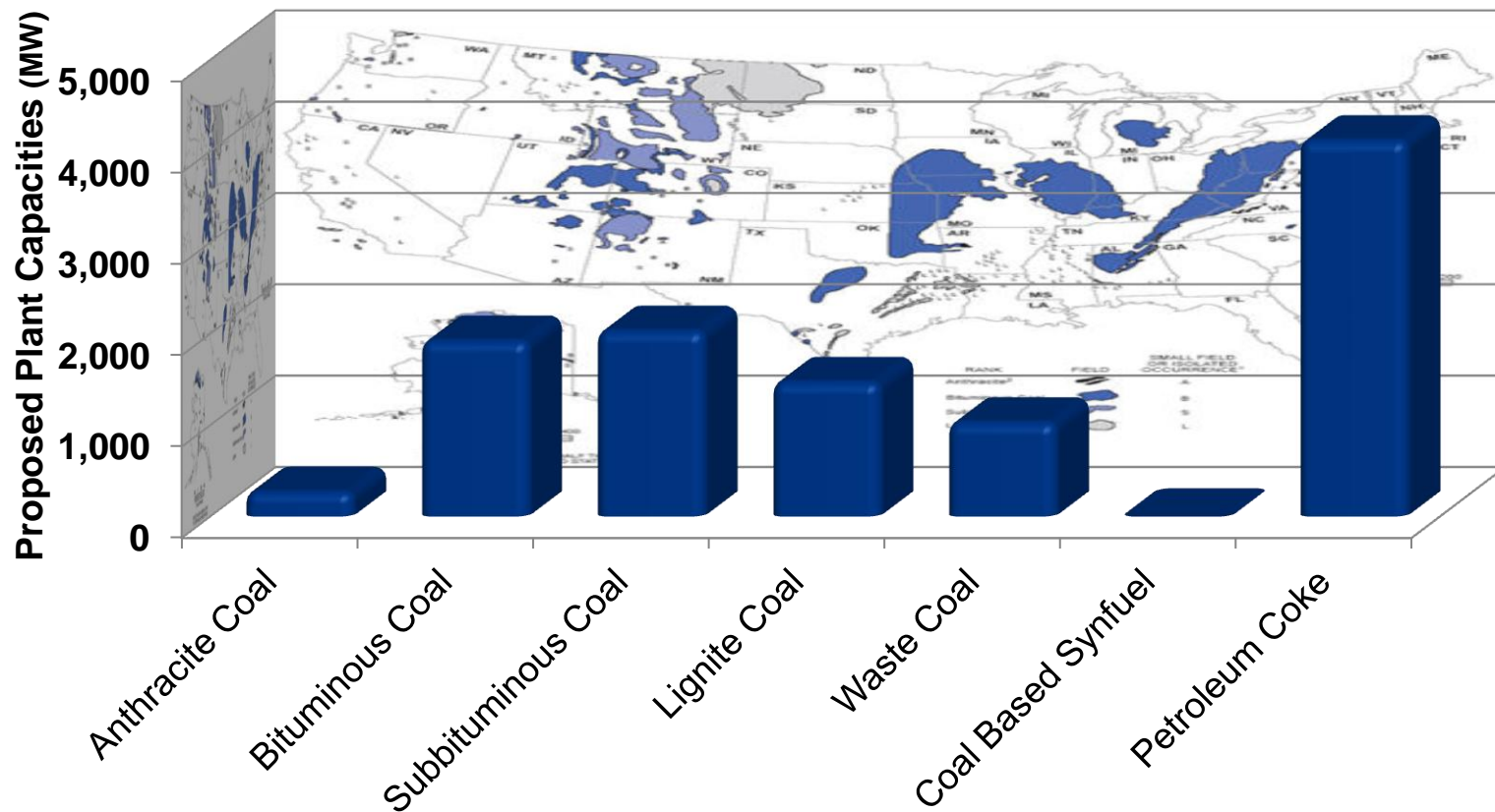
# Location by NERC Regions: Coal-Fired Plants (Permitted, Near Construction, and Under Construction)

Figure 8



# Specified Coal Ranks All Proposed Plants

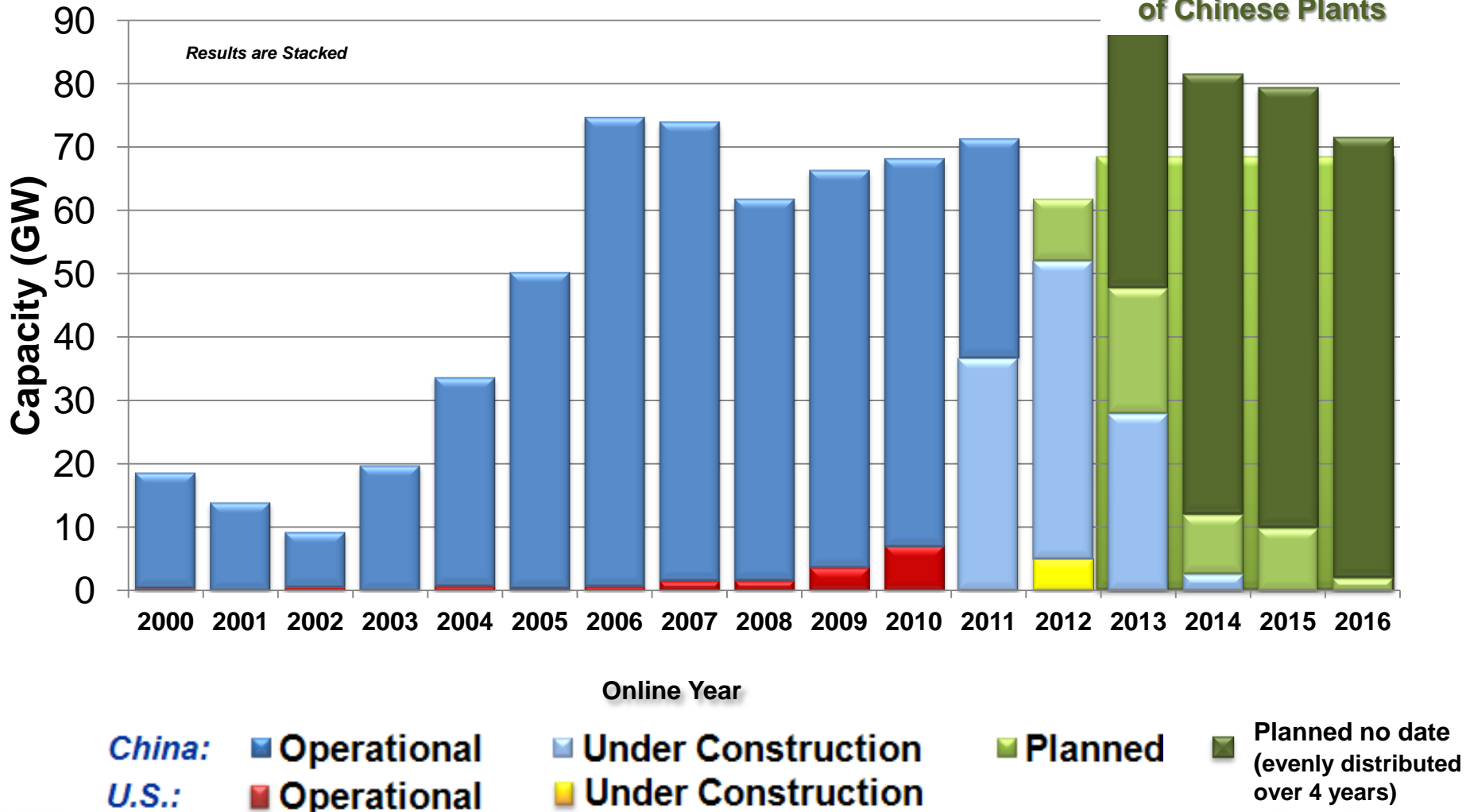
Figure 9



16,790 MW "Generic Coal"  
not shown on chart

# Coal-Fired Build Rate China and United States

Figure 10



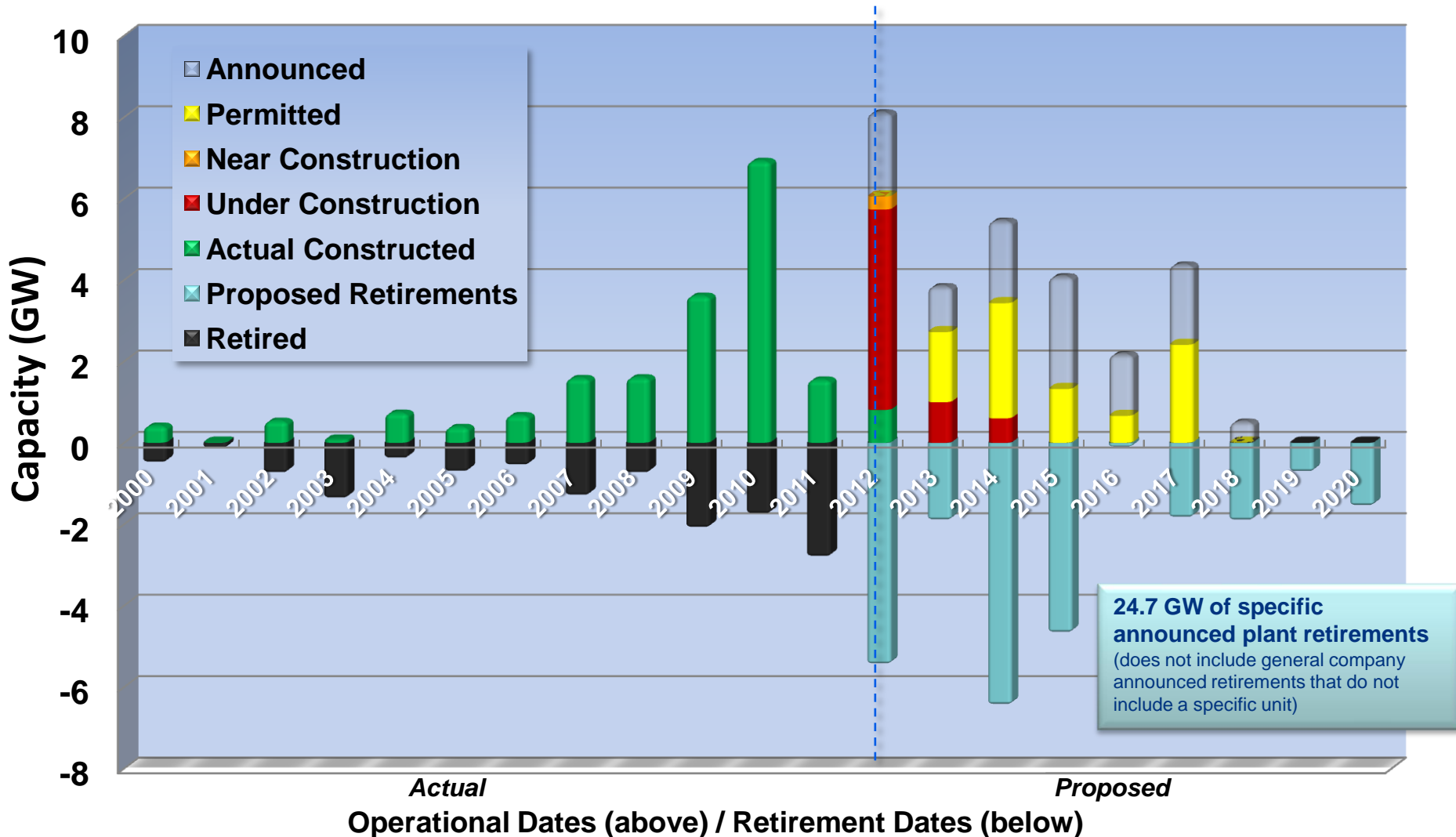


# Coal-Fired Power Plants Retirements

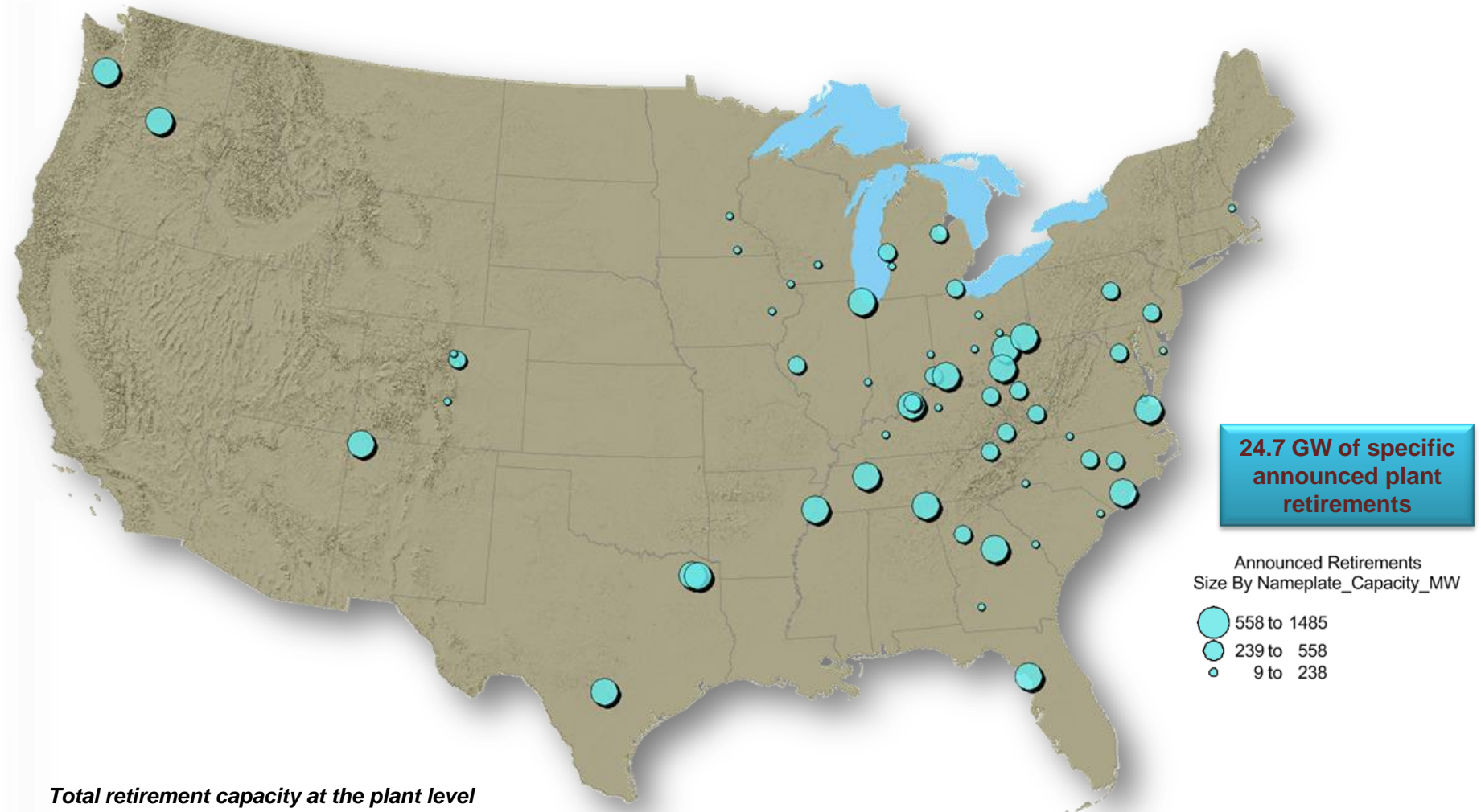
*Recently announced retirements of currently operating coal-fired power plants with retirement date from 2012 - 2020*

# Current Coal Capacity Additions/Retirements by Years

## Figure 2a

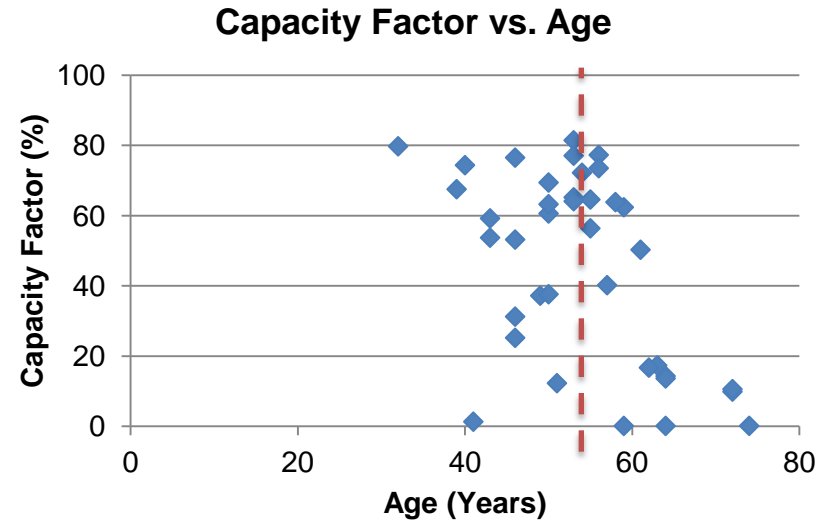
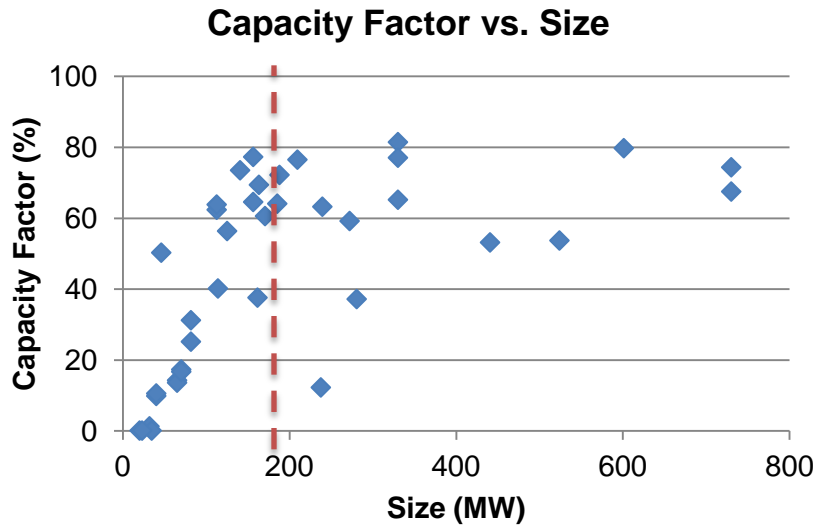


# Announced Coal-Fired Retirements (2012 – 2020)



# Announced Coal-Fired Retirements

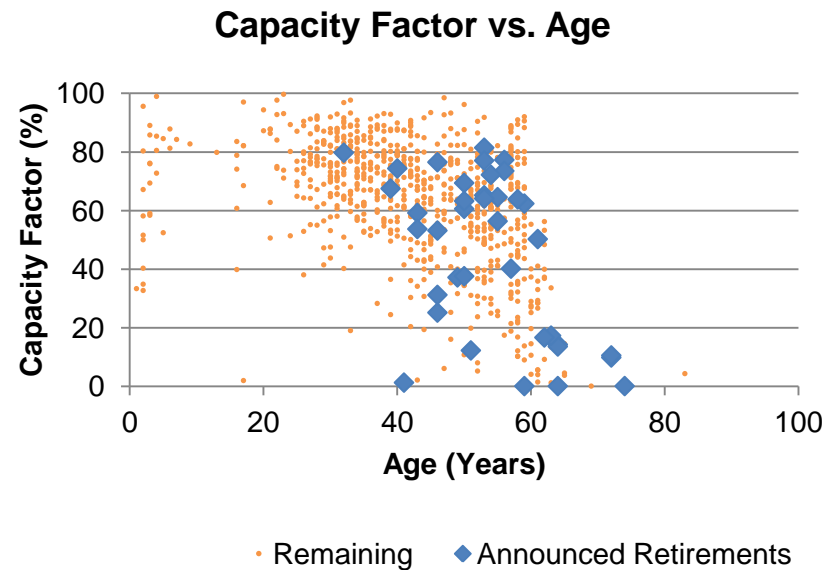
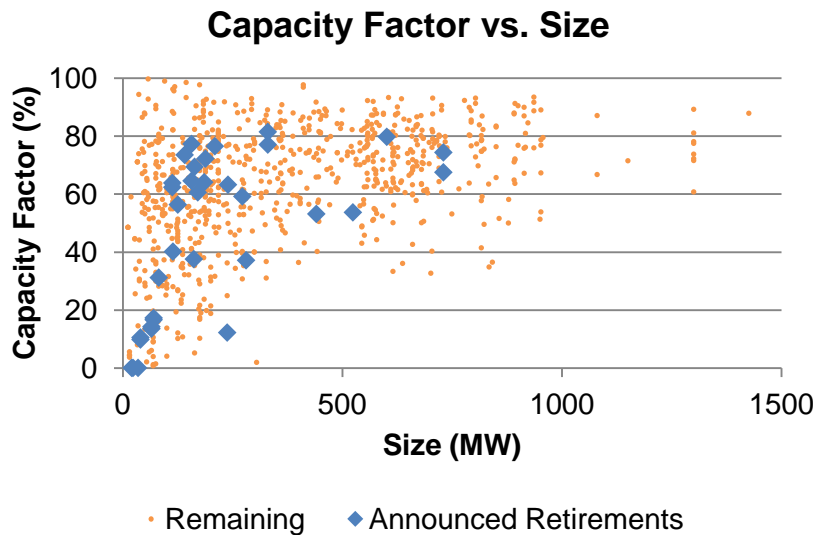
## 24.7 GW



Parameter	Value	Trend Observed
Average Capacity Factor	45.6%	Lower capacity factors
Average size (MW)	191 MW	Units under 200 MW in size
Average Age of Units	54 Years	Older units being retired
% of units with No SO <sub>2</sub> Control	84%	Units with out SO <sub>2</sub> controls
% of units with Planned SO <sub>2</sub> Control	6%	Units that did not have plans to install SO <sub>2</sub> controls

# Operating Coal-Fired Fleet

## *Announced Retirements & Remaining Units*



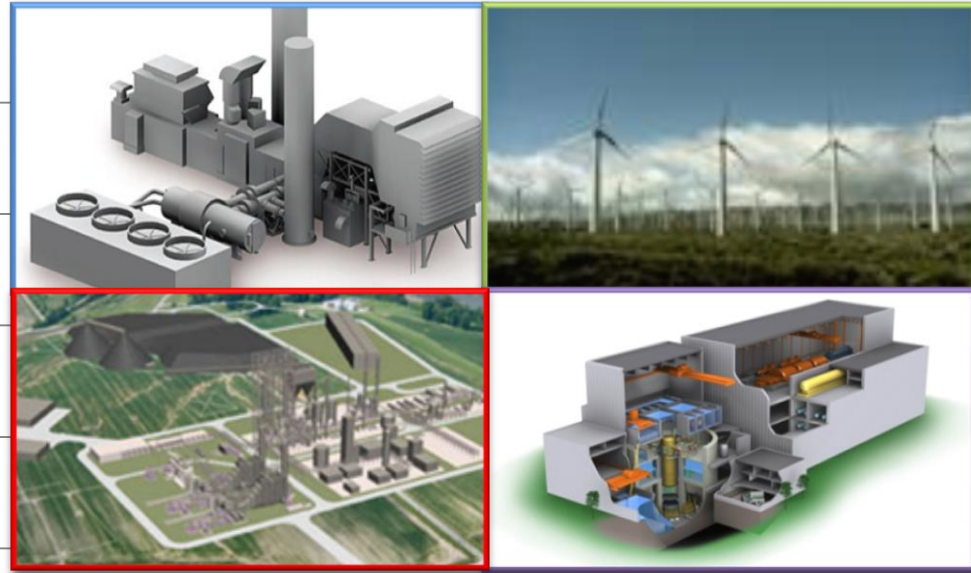
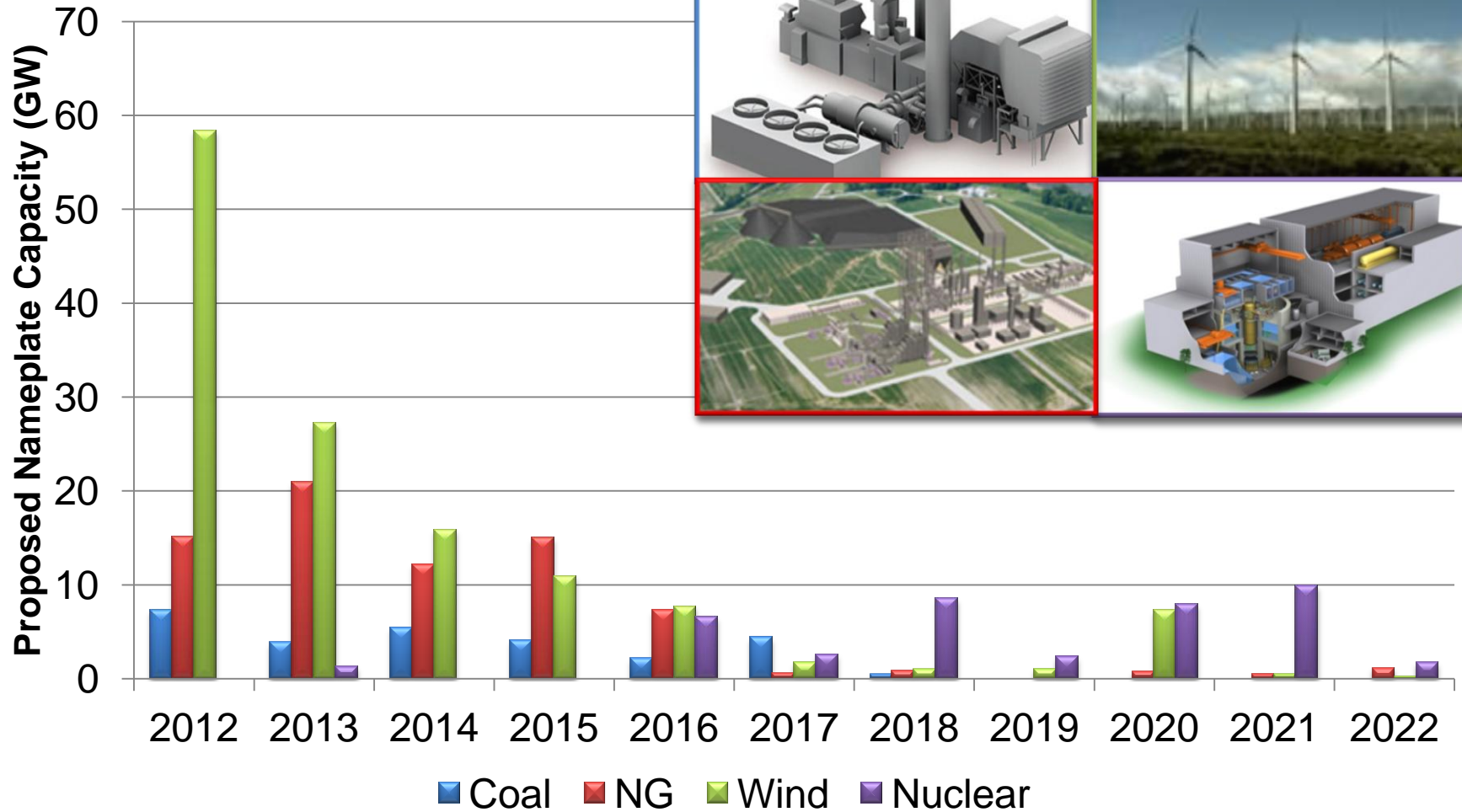
**Announced Retirements:  
24.7 GW**

**Remaining Plants: ~300 GW**

# Other Generation Development Activity

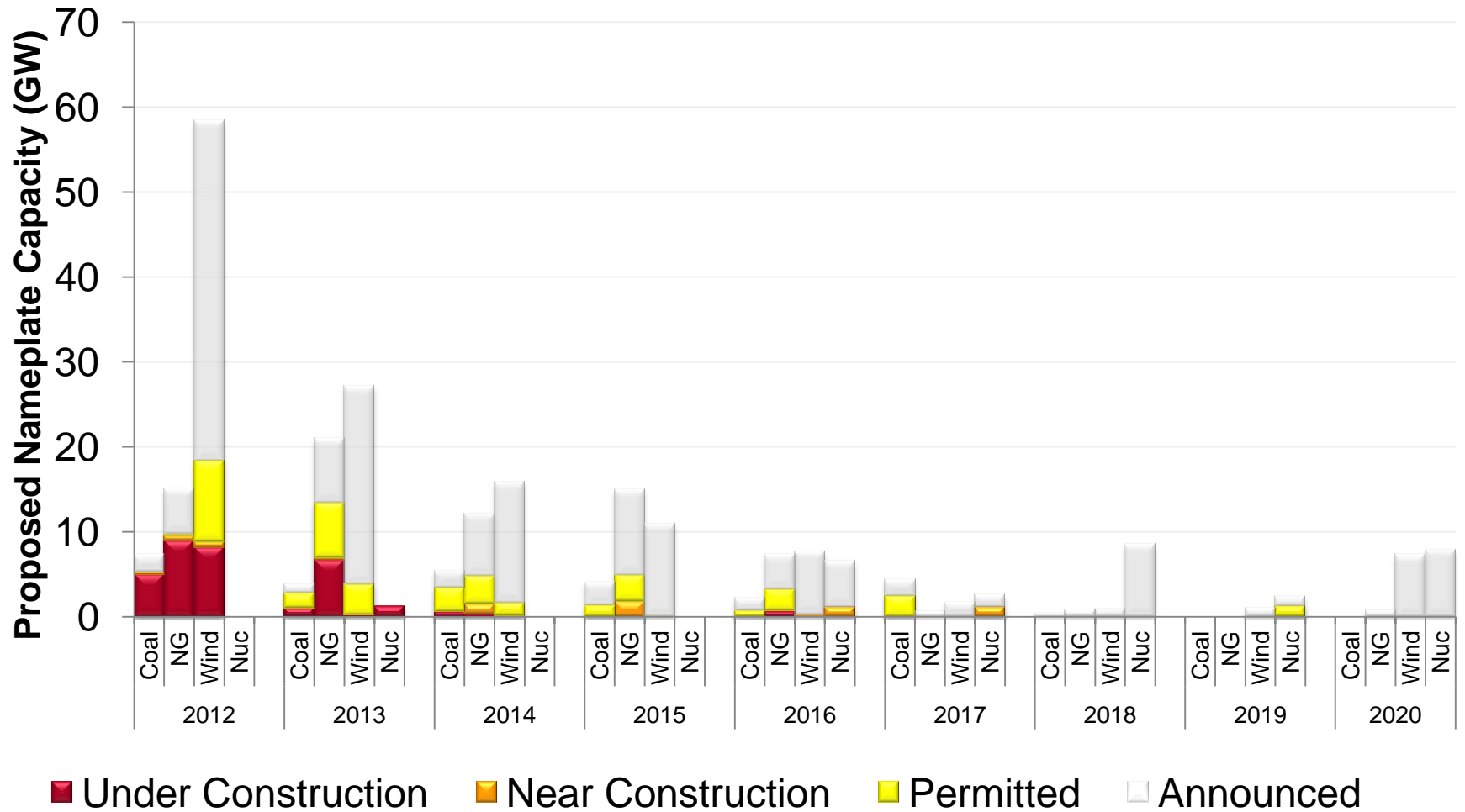
# Proposed U.S. New Capacity Coal, Natural Gas, Wind, and Nuclear

Figure 12



# Status of Proposed New U.S. Capacity

Figure 13 Coal, Natural Gas, Wind, and Nuclear

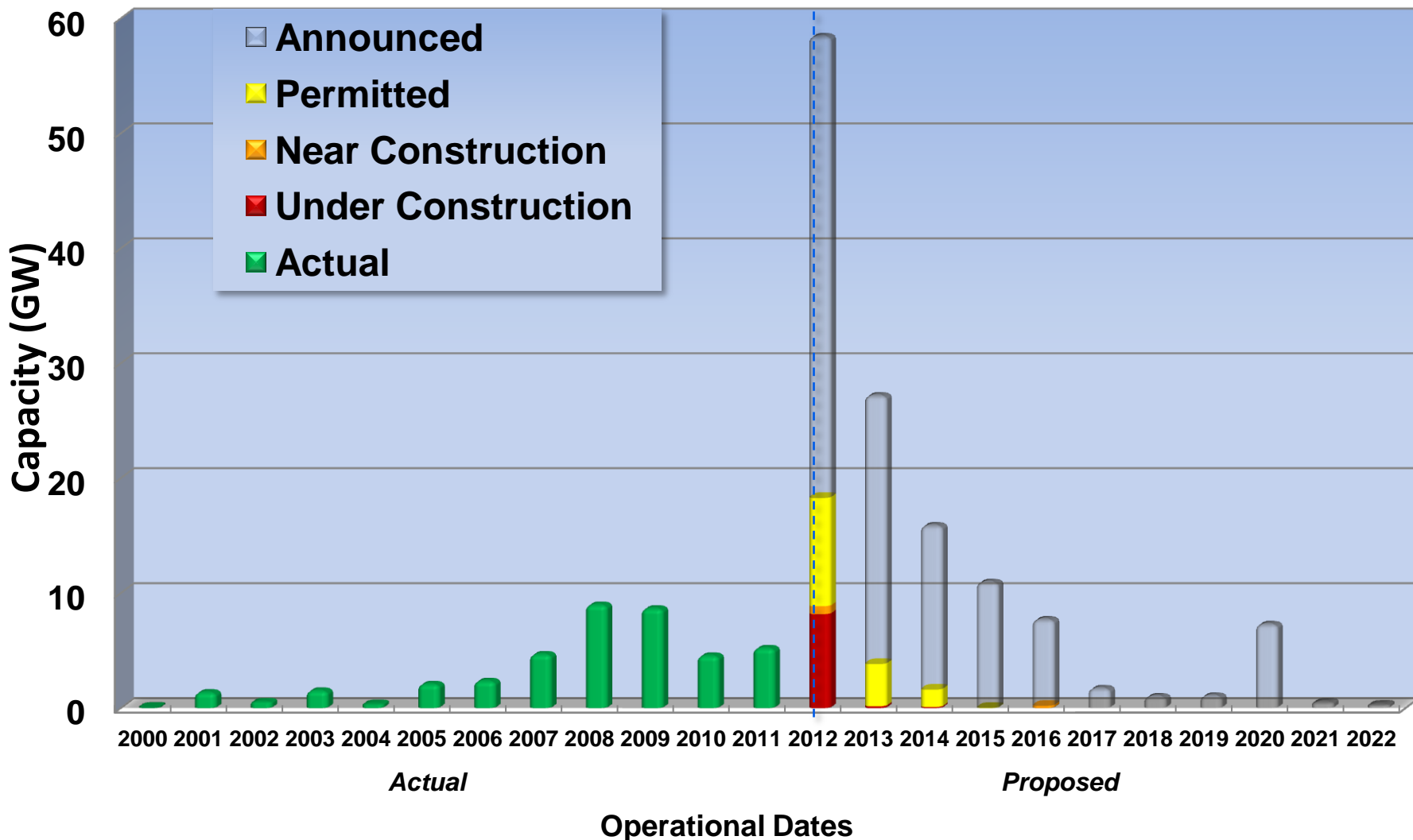


Source: Ventyx – Velocity Suite 1/13/2012



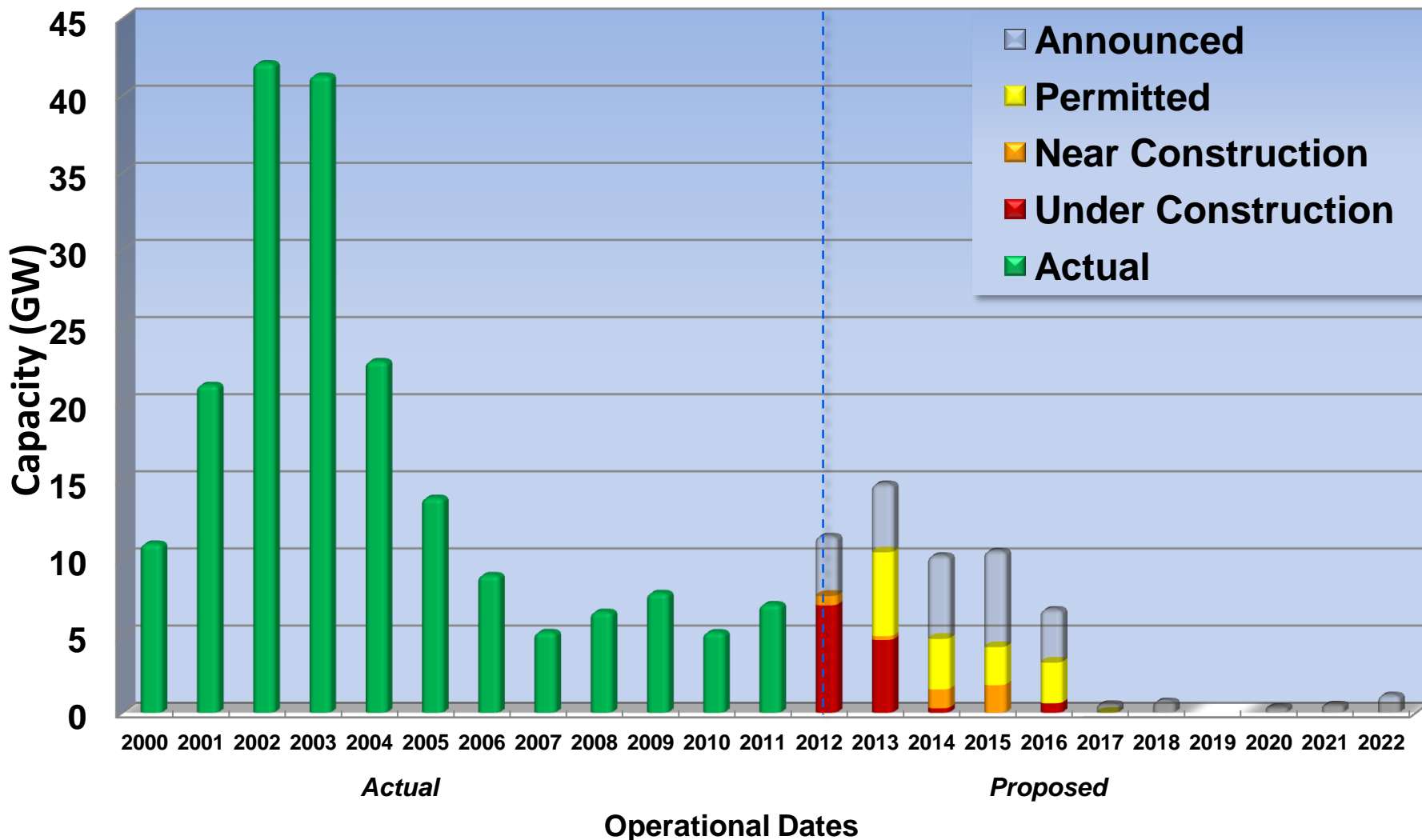
# Current Wind Capacity Additions by Years

Figure 14



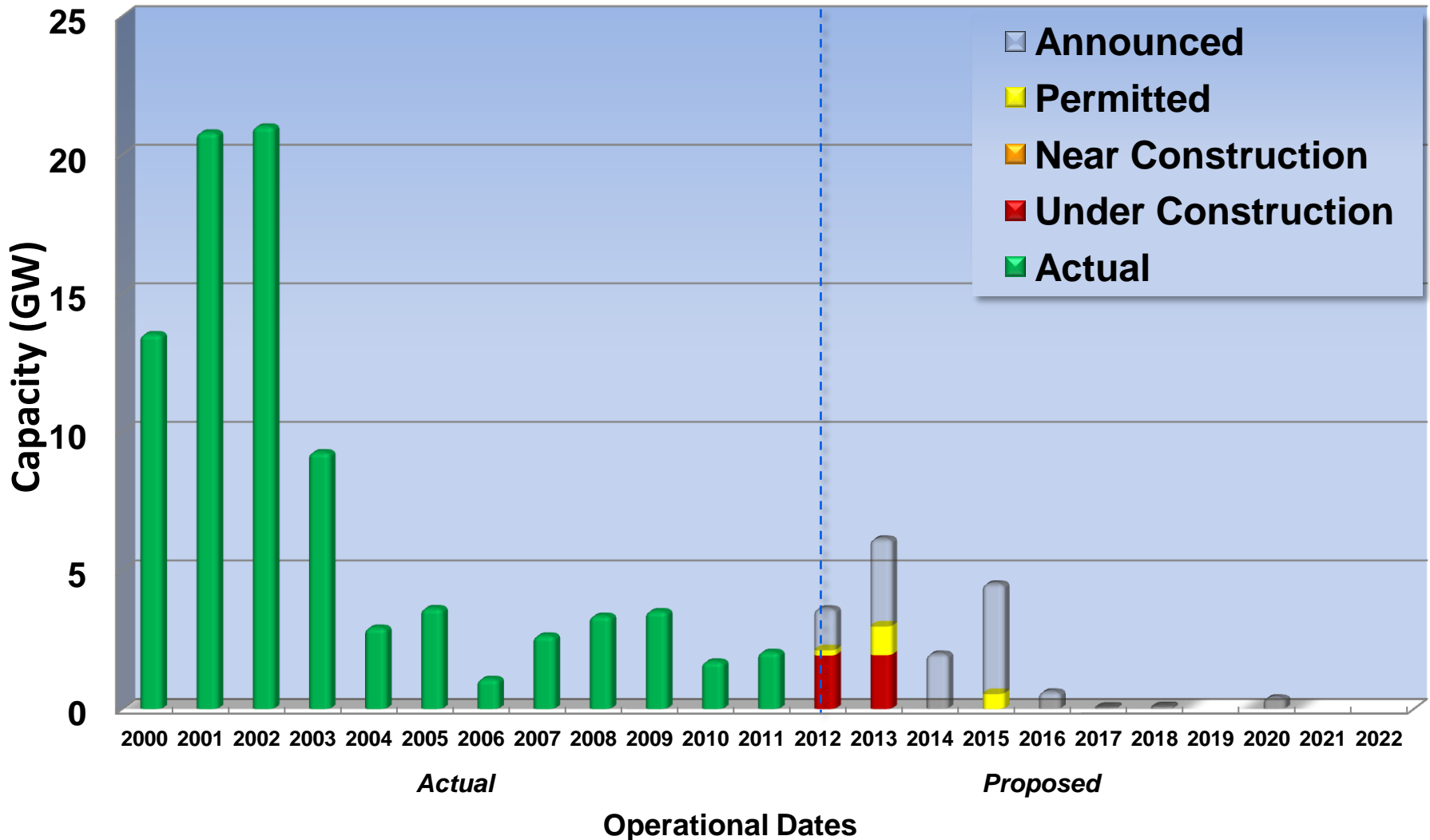
# Current NGCC Capacity Additions by Years

Figure 15



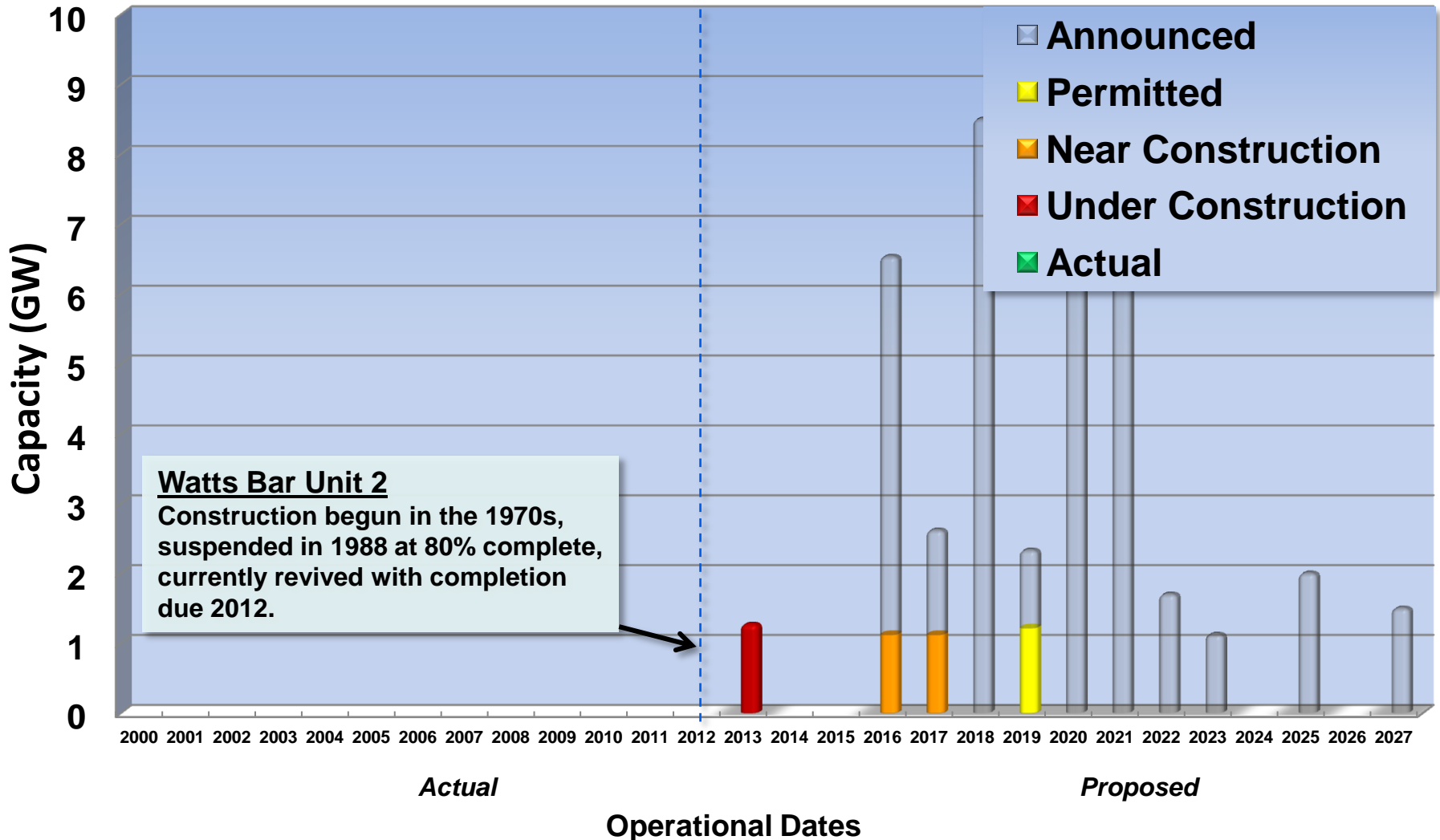
# Current NG-GT Capacity Additions by Years

Figure 16



# Current Nuclear Capacity Additions by Years

Figure 17



# U.S. Coal-Fired Power Plant Summary – Year 2011

12/13/2010 – 1/13/2012

- **Five new coal-plants totaling 2,343 MW were *Commissioned* in 2011**
- ***Progressing/Commissioned* projects by January 2012 have had a net increase of 3 plants; a net change in capacity of 1,388 MW (+10%) over *Progressing* projects**
- **1,599 MW of new capacity has been *Announced* and 2,890 MW have been canceled**
  - Of 2,890 MW canceled plants, 54% were *Announced* phase and 46% were *Progressing*
- **Compared to previous years, fewer projects are being *Announced* to offset recent *Commissioning***