



ELECTRIC POWER
RESEARCH INSTITUTE



EPRI Support of Near-Term Deployment of Advanced Light Water Reactors

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Why Nuclear....Why New Nuclear?

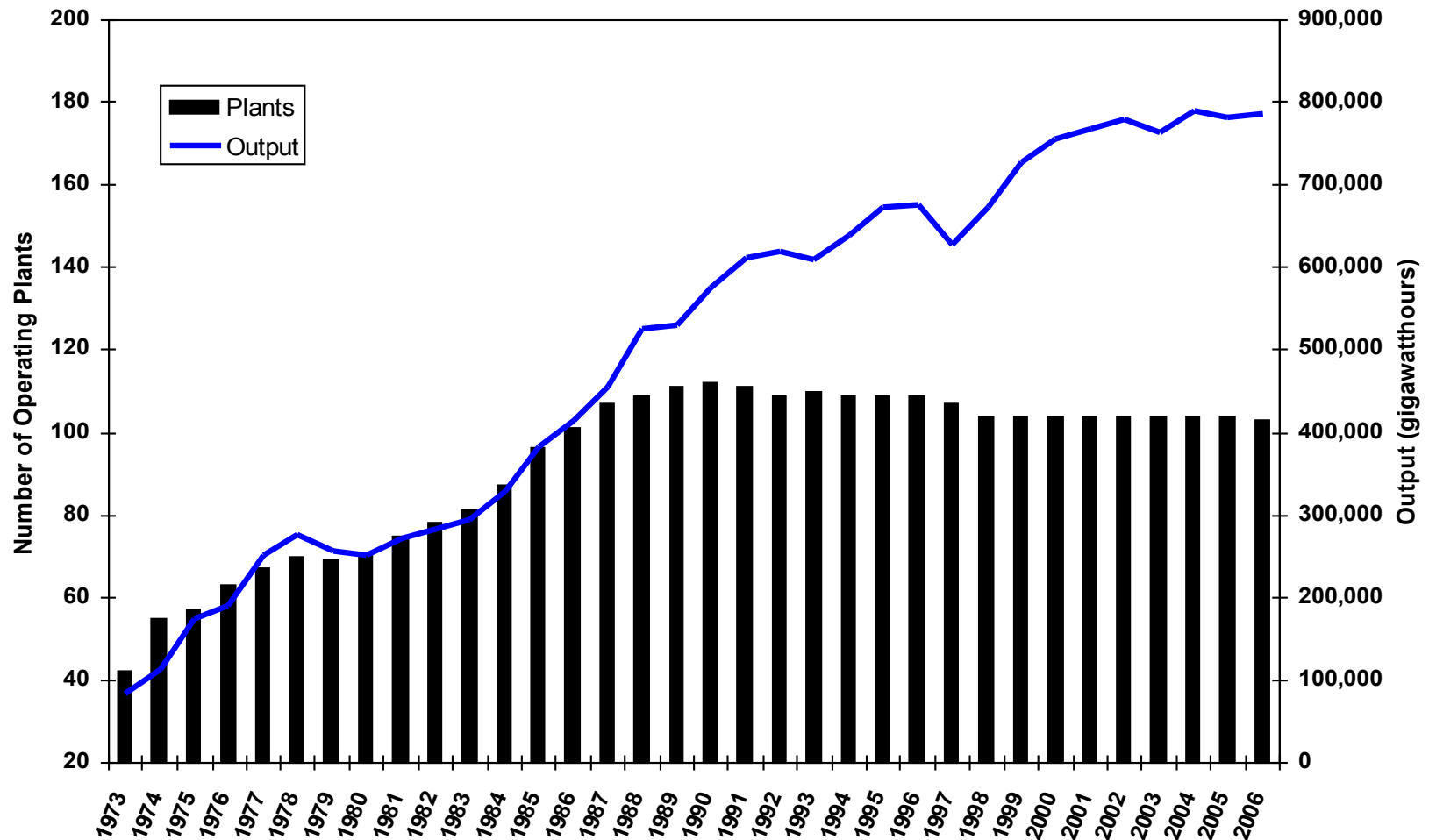
Several factors are driving the resurgence of nuclear power worldwide...

2. Sustained high output and performance
3. Competitive economics
4. Climate change



20 Years of U.S. Nuclear Industry Efficiency Gains

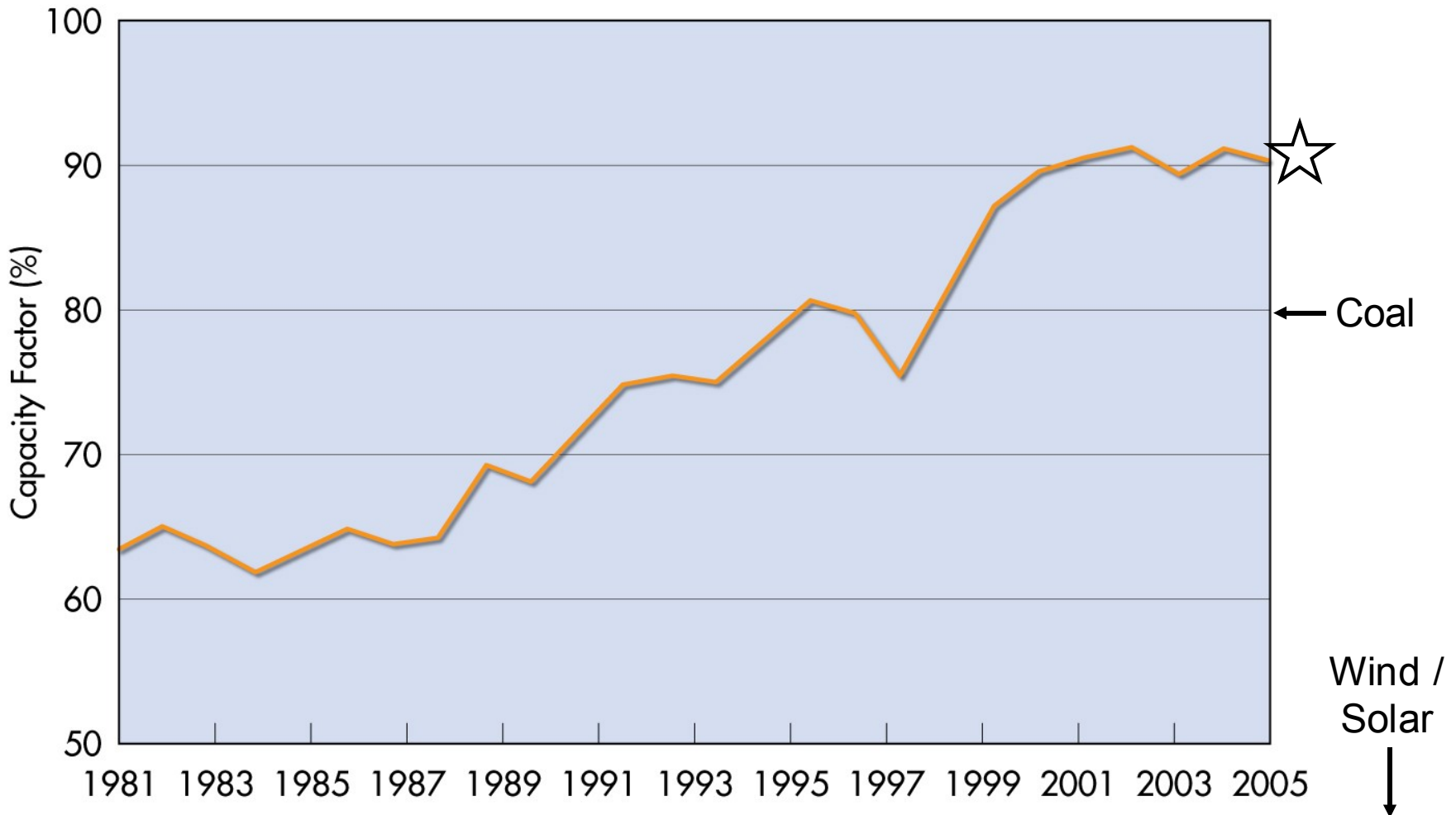
Equivalent to Adding 27 New Nuclear Plants



Sources: Nuclear Energy Institute & Energy Information Administration

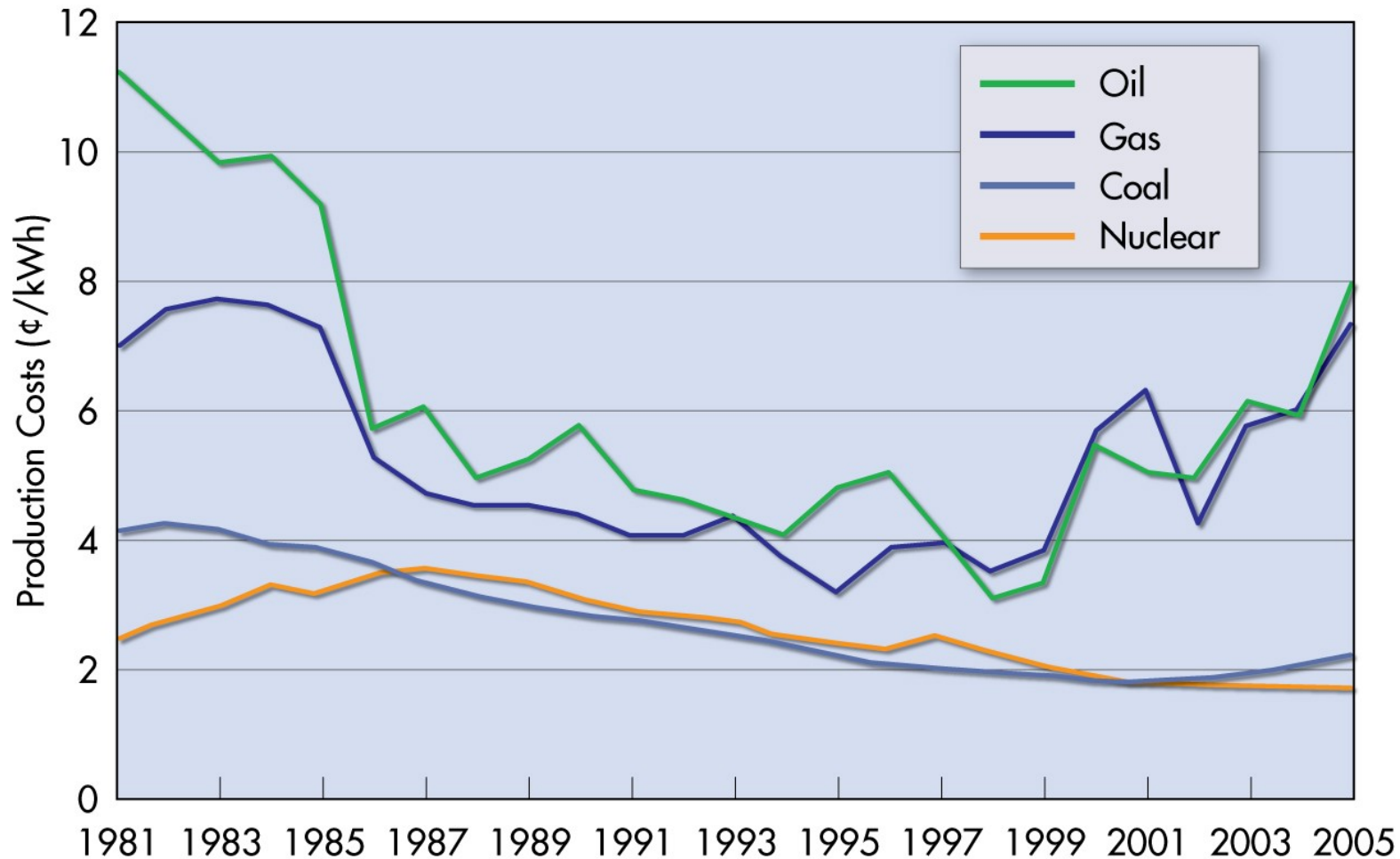
U.S. Nuclear Plants Sustaining ~90% Capacity Factor

91% Average Capacity Factor for 2007



Economic Performance Continues to Improve

Fuel Represents ~25% of Nuclear's Production Costs

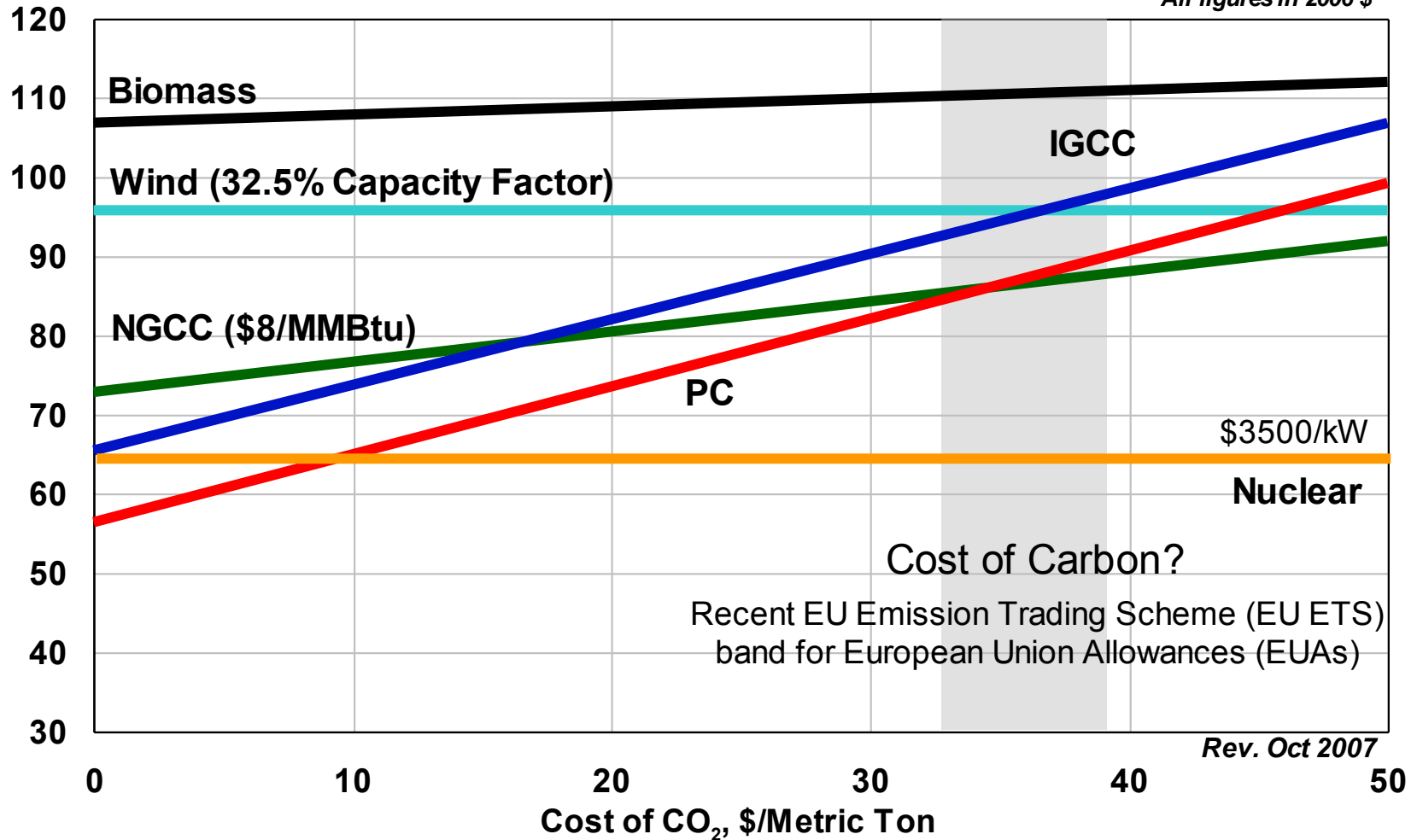


Electricity Generation Options 2010–2015

Baseload of Choice...?

Levelized Cost of Electricity, \$/MWh

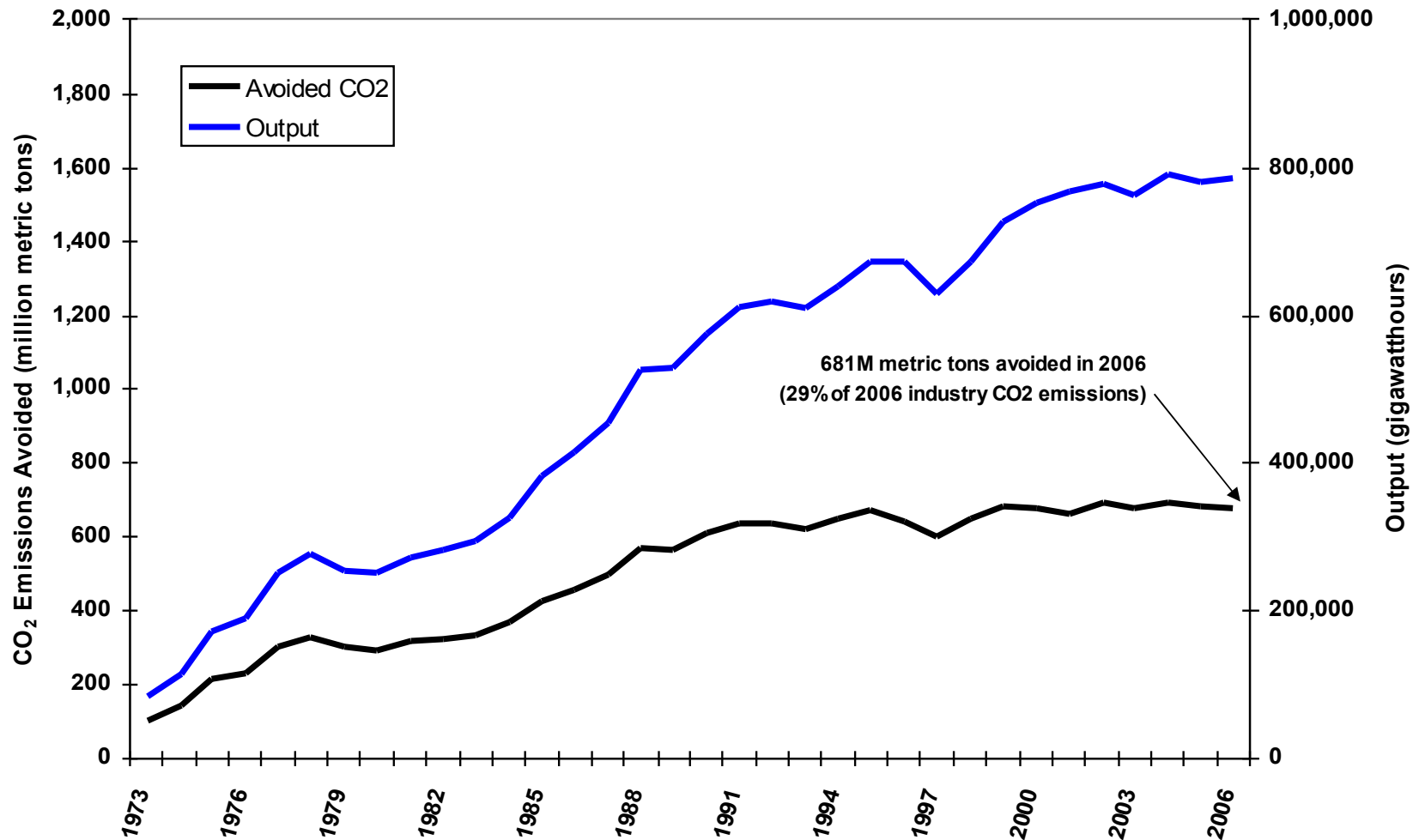
All figures in 2006 \$



Rev. Oct 2007

U.S. Nuclear Plant Impact on CO2 Emissions

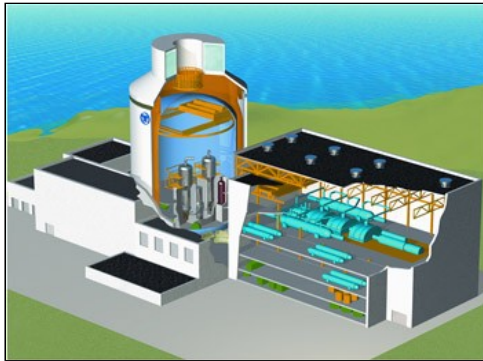
Largest Domestic Source of Emissions-Free Energy



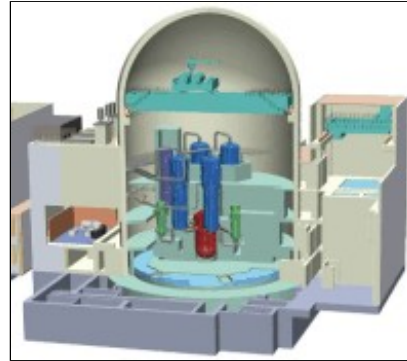
Sources: Nuclear Energy Institute & Energy Information Administration

Near-Term Deployment Technologies Being Pursued

Gen III/III+ LWR Technology



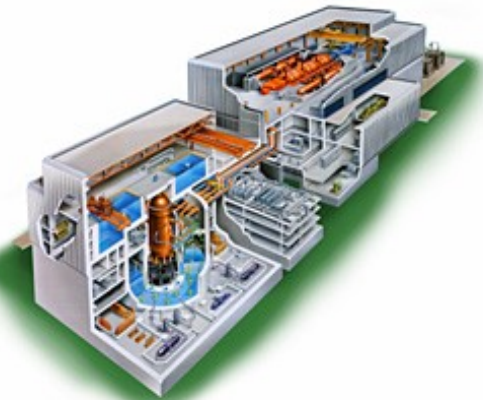
*Westinghouse
AP1000 (1115 MWe)



MHI APWR (1700 MWe)

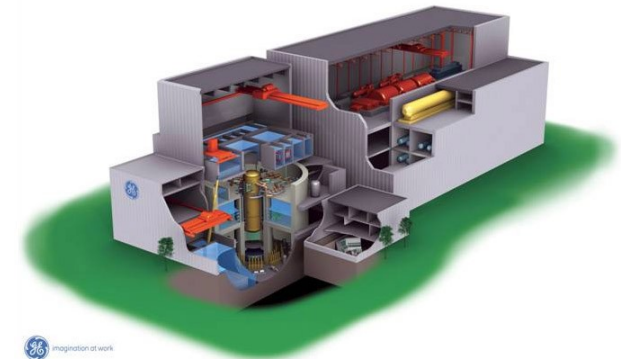


AREVA US EPR (1600 MWe)



*GE ABWR (1371 MWe)

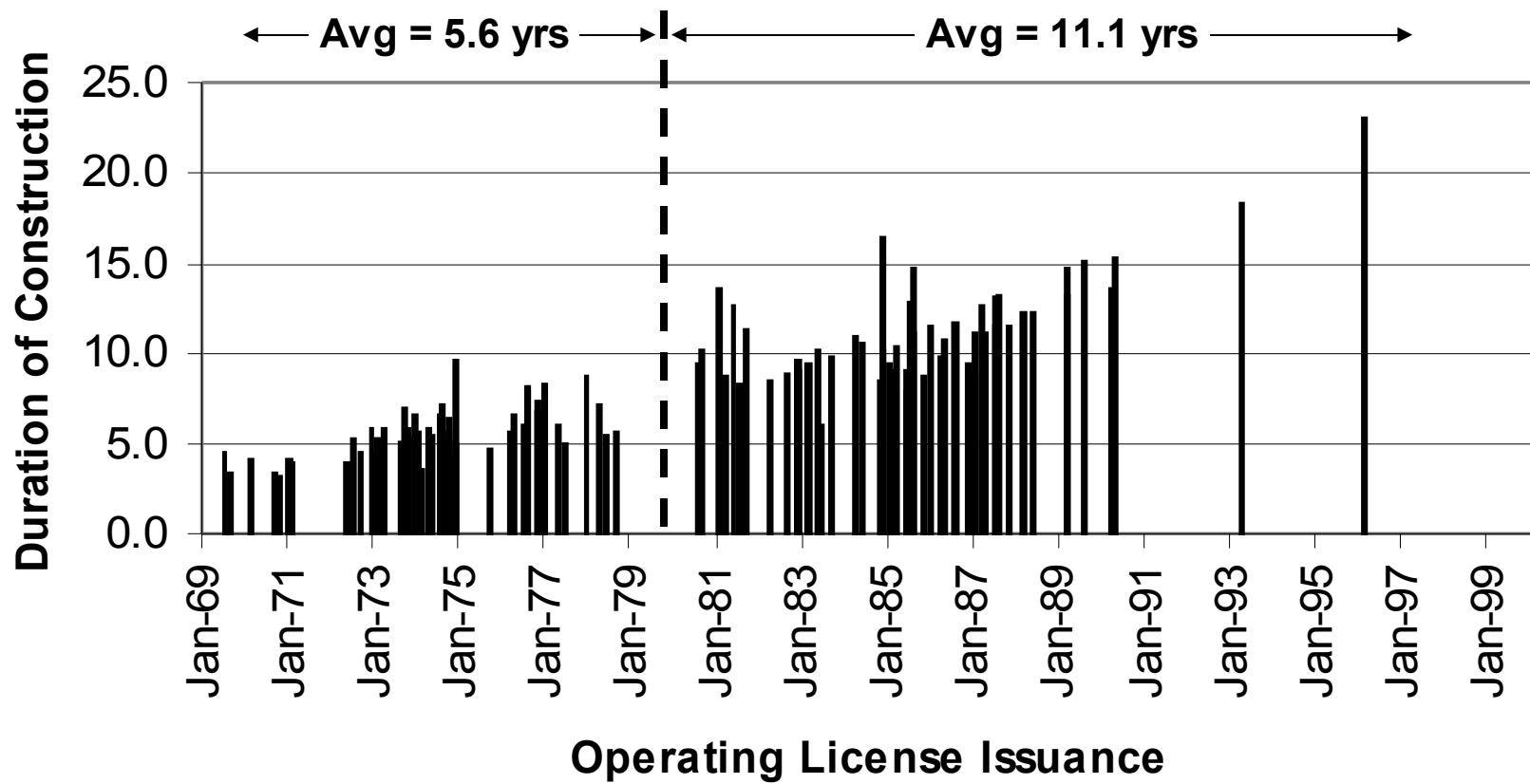
Current Status of Announced U.S. Intentions		
Technology		Units
AP1000		14
EPR		7
ESBWR		5
TBD		4
ABWR		2
APWR		2



GE ESBWR (1535 MWe)

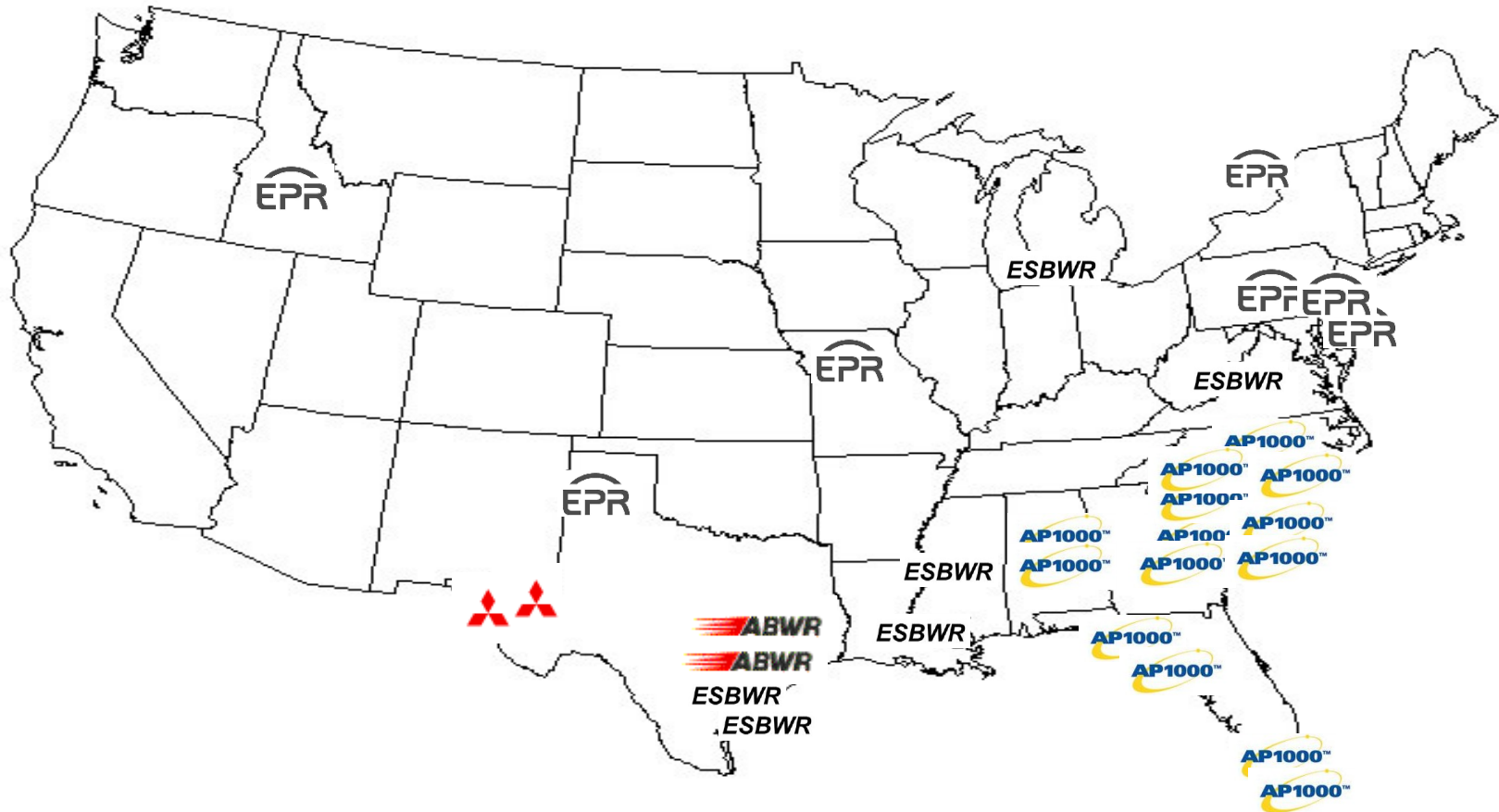
* Design Certified

Improving Upon The Past...



U.S. New Nuclear Plant Announcements

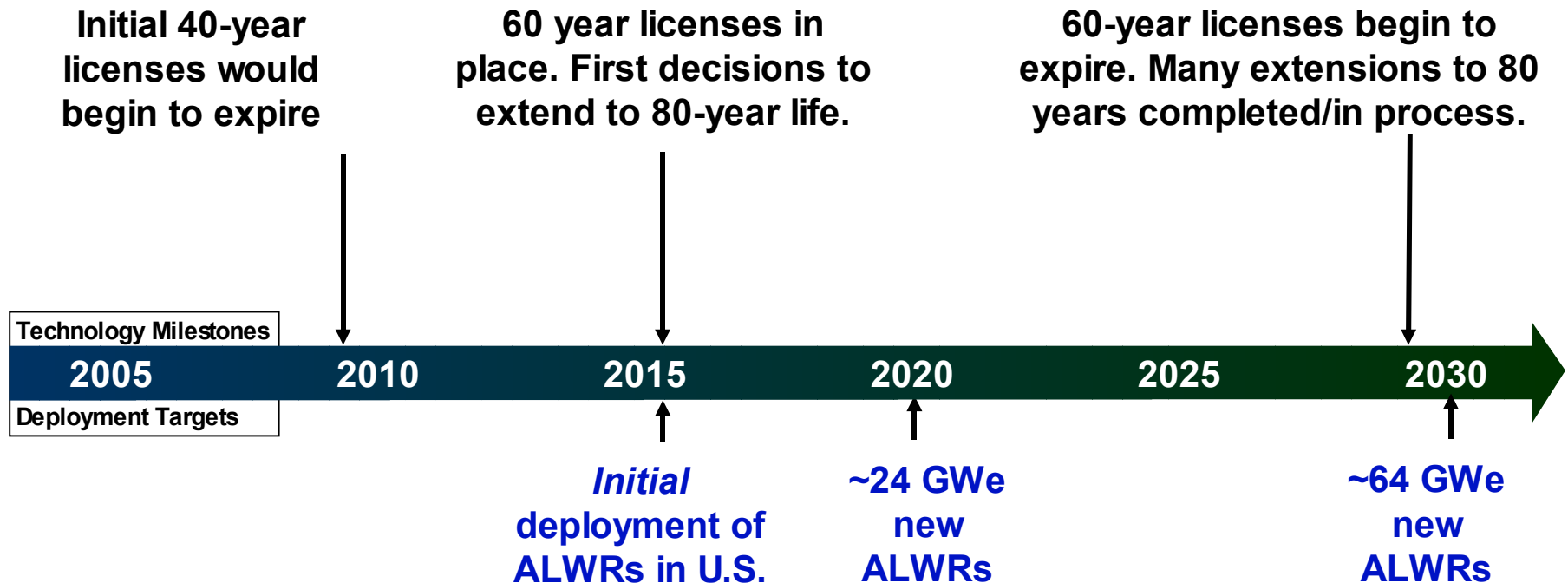
*Concentrated at Existing Plant Sites...Totaling Over 42GWe**



* Assume Average 1,250 MWe per Unit

Forward Looking Vision...For the U.S.

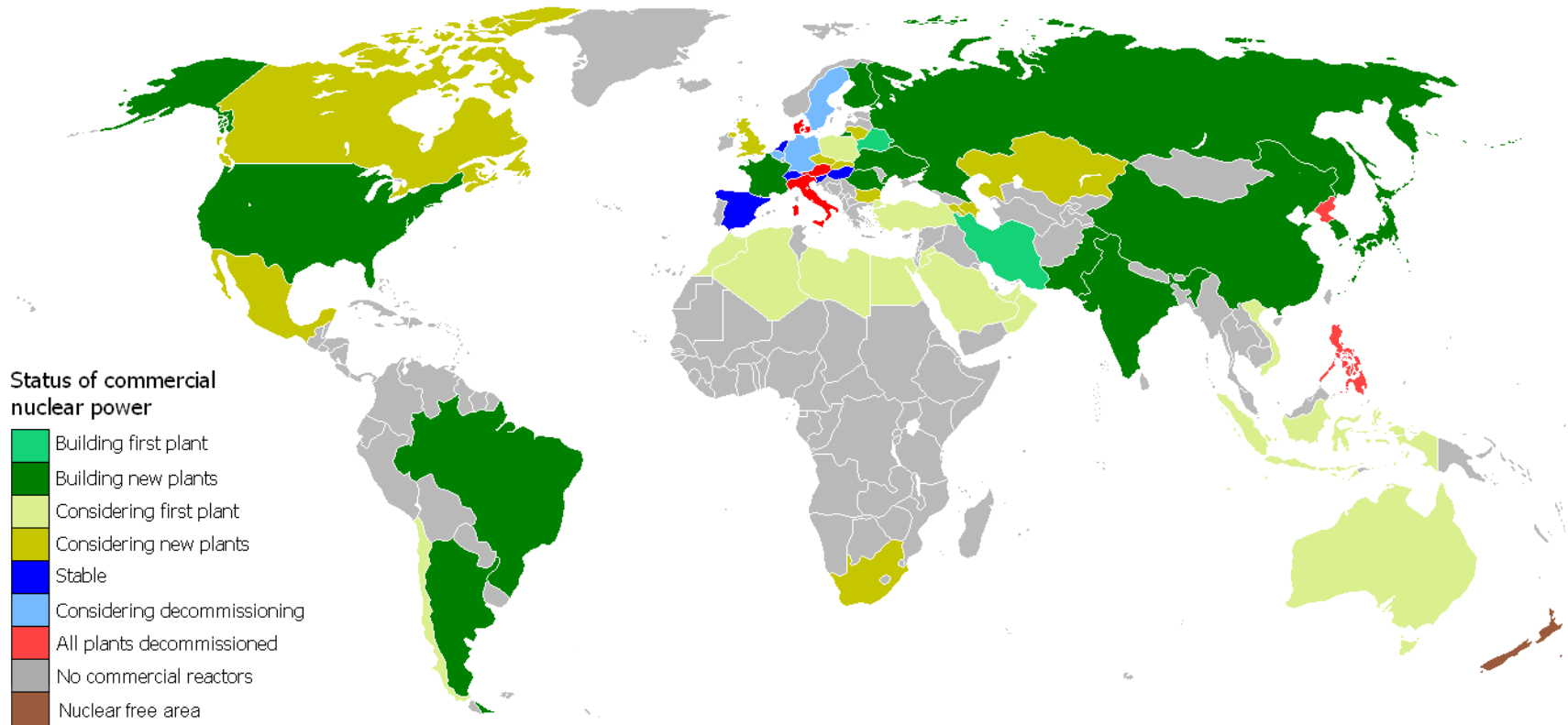
Current Fleet...



...New Fleet

Status of Nuclear Power Worldwide

Significant Expansion and Future Interest



A Variety Of Variables In Play...

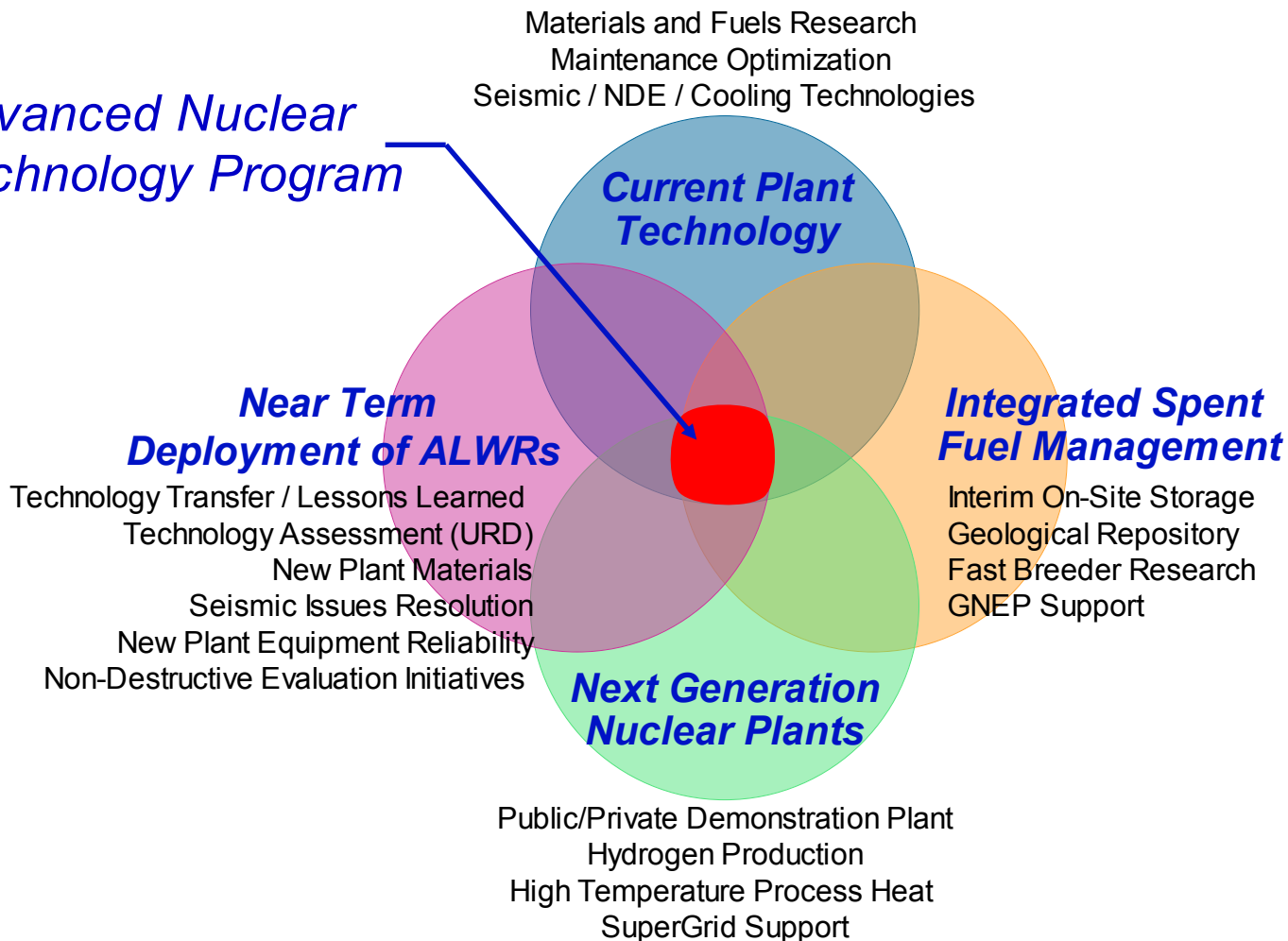


...So What Is EPRI Doing To Advance Near-Term Deployment of New Nuclear Units?

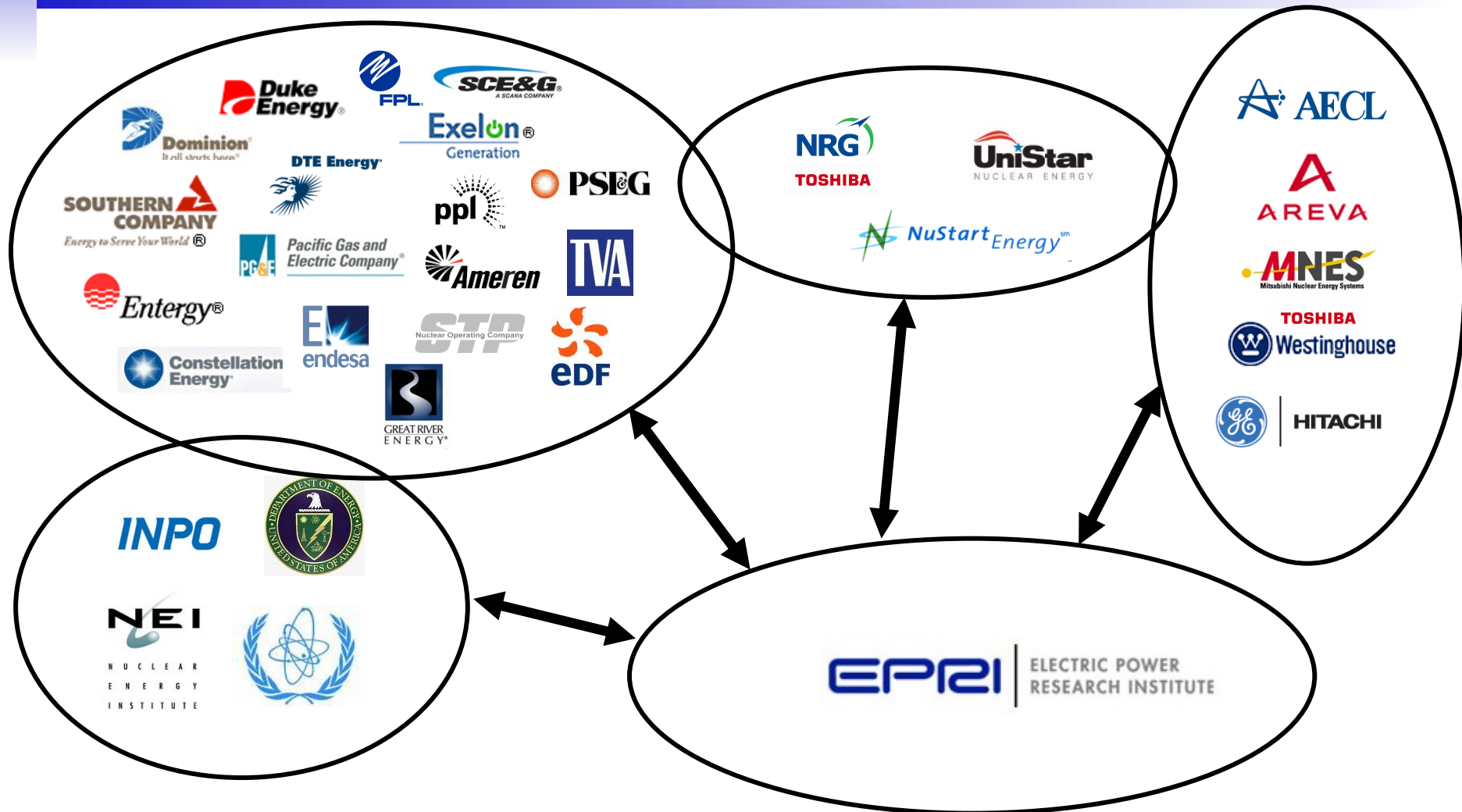
EPRI's Focal Point for New Plant Activities

Linking Lessons Learned to Future Opportunity

Advanced Nuclear Technology Program



EPRI's ANT Program...Leveraging the Industry



ANT Program Activities



Table B-2

Operations Management: Reactor Vessel Internals (Continued)

Component Configuration ^[1]		Expert Assessment ^[2]		Operations Management Guidance ^[3]			
Component & ID No.	Material	Degradation Mechanism	Risk Assessment	Mitigation	Repair / Replace	I & E Guidance	Gaps & Opport.
2.5 Core Shroud Assembly							
2.5-1 Core Shroud (Core Support)	SS (A/SA-240, 316L)	SCC: IG/TG IA Fat: LC-Env RIB: Env IE: Emb	High Risk Data: LOF = High COF = High POD = Low REL. RPN = 2.1	Water Chemistry BWRVIP-130 (BWRVIP 2005-168) HWC / NMCA BWRVIP-62 BWRVIP-156 BWRVIP-159 (Some locations not mitigated by HWC / NMCA)	ASME Sect. XI IWA-4000 EPRI BWRVIP BWRVIP-02-A BWRVIP-84	EPRI BWRVIP BWRVIP-76 BWRVIP-158	MT-01 MT-03 MT-06 I&E-01 RR-01 AS-01 AS-02 AS-07 AS-08 AS-09 AS-11 AS-13 RG-04 RG-05



EPRI's Advanced Nuclear Technology Program Website

<http://www.epri.com/ant>

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(non-EPRI affiliated)

-  [In Pursuit of a Nuclear Renaissance: EPRI Journal Summer 2007](#) (pdf)
-  [Running Dry...At The Power Plant: EPRI Journal Summer 2007](#) (pdf)
-  [EPRI Utility Requirements Document, Revision 9](#)

Advanced Nuclear Technology (ANT)

Overview

Siting, licensing, development, and deployment of new nuclear power plants are challenged by a host of technological, economic and regulatory concerns. Mitigating these concerns is critical to maintaining momentum along the nuclear development cycle.

EPRI's Advanced Nuclear Technology (ANT) Program focuses on developing the technologies and tools needed to deploy advanced nuclear plants in the near term, while pursuing research to support nuclear sustainability and growth in the long term, including the development of next-generation nuclear plants and integrated spent fuel management.

- [Near-term Deployment of Advanced Light-water Reactors Supplemental Program Notice](#) (pdf)
- [ANT Program Overview](#) (pdf)

What's New

- [New Plant Deployment Program Model \(NPDP\) Technical Summary](#)
- [EPRI Materials Management Matrix Project Technical Summary](#)
- [Utility Requirements Document Revision 9; Web Application and Technology Transfer—Web-Based URD Viewer Technical Summary](#)
- [Advanced Nuclear Technology \(ANT\) Margins and Monitoring Project Technical Summary](#)



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In Closing...

WARNING

