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

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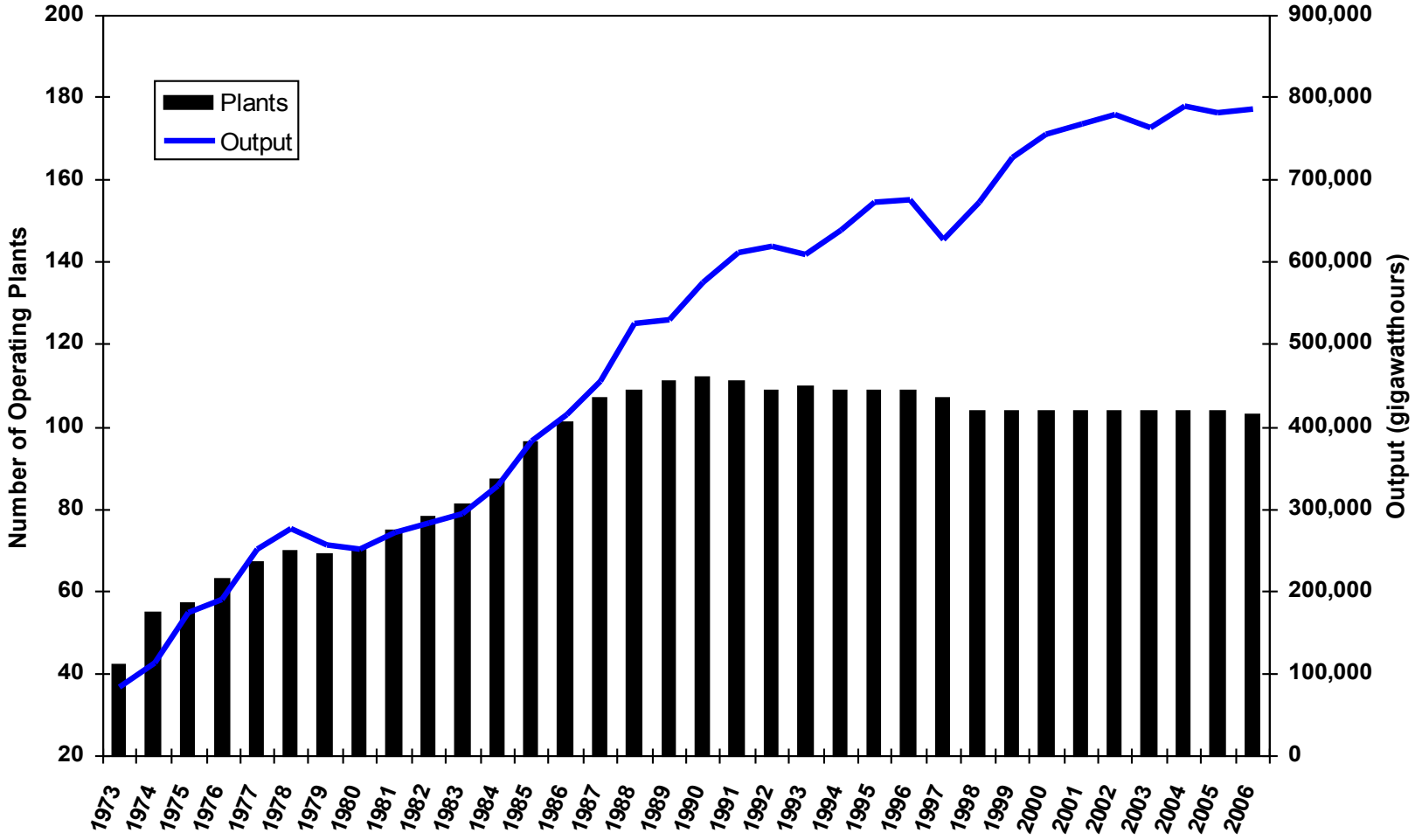
Why Nuclear….Why New Nuclear?

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

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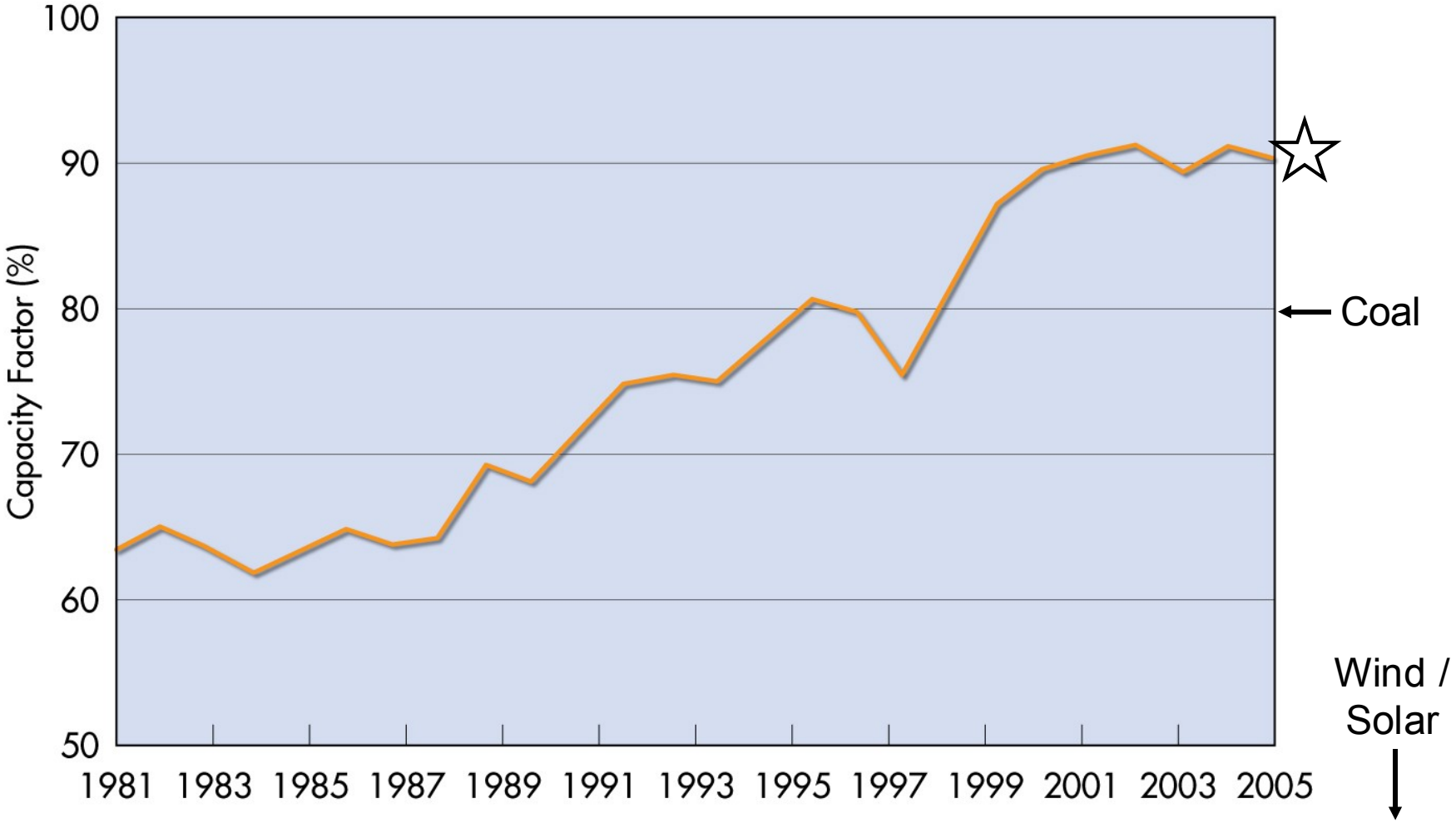
U.S. Nuclear Plants Sustaining ~90% Capacity Factor

91% Average Capacity Factor for 2007



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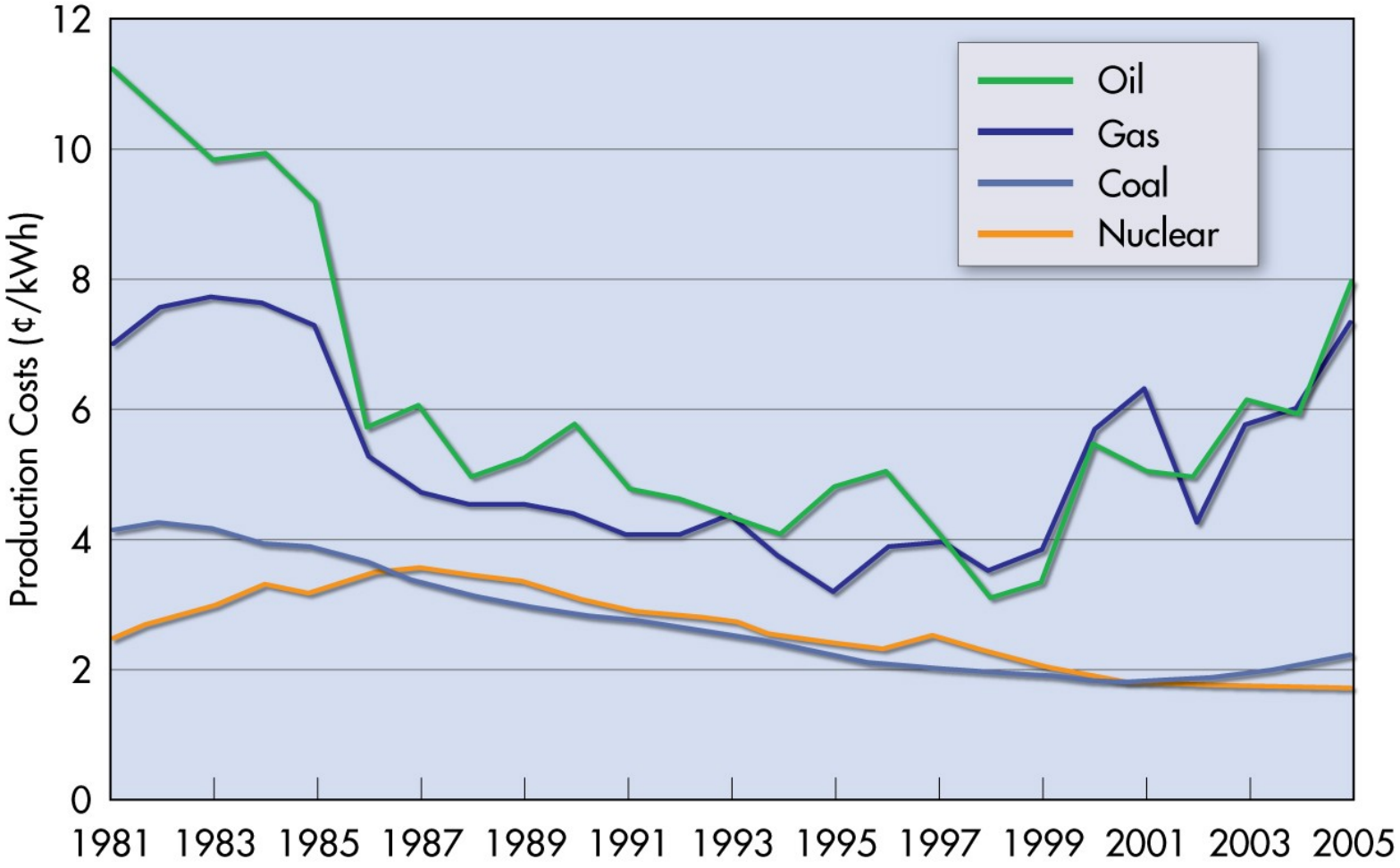
Economic Performance Continues to Improve

Fuel Represents ~25% of Nuclear's Production Costs



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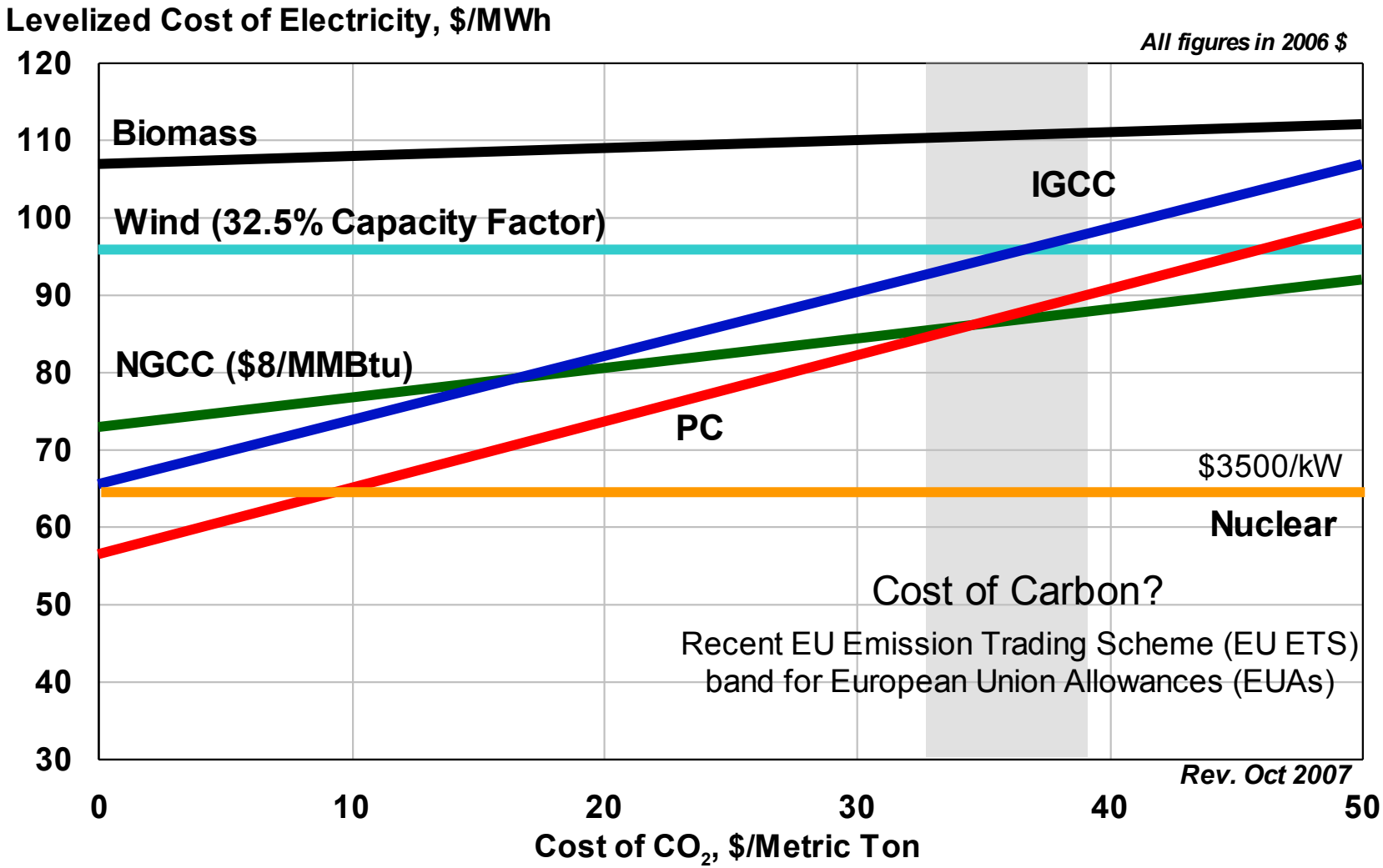
Electricity Generation Options 2010–2015

Baseload of Choice…?



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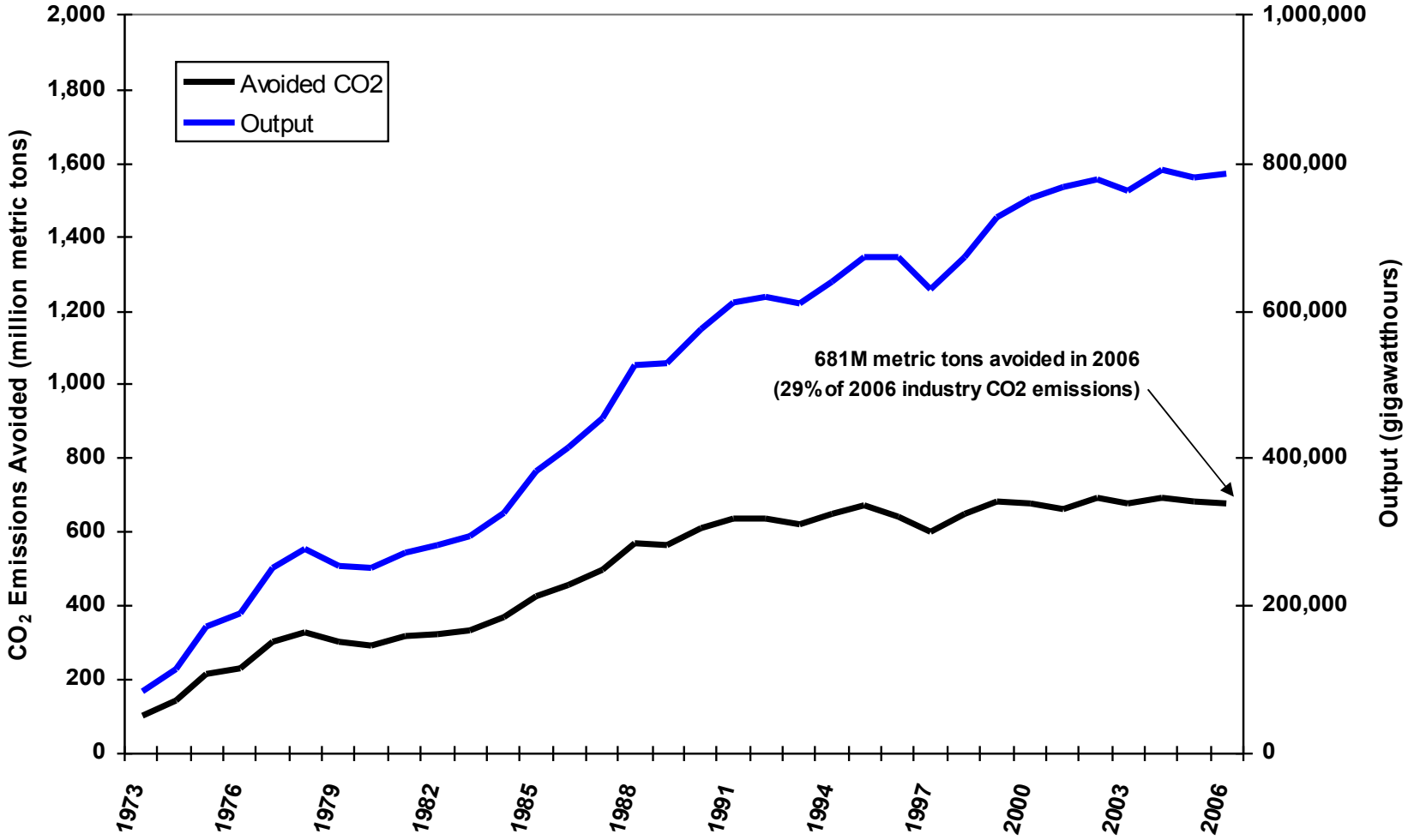
U.S. Nuclear Plant Impact on CO2 Emissions

Largest Domestic Source of Emissions-Free Energy



Sources: Nuclear Energy Institute & Energy Information Administration

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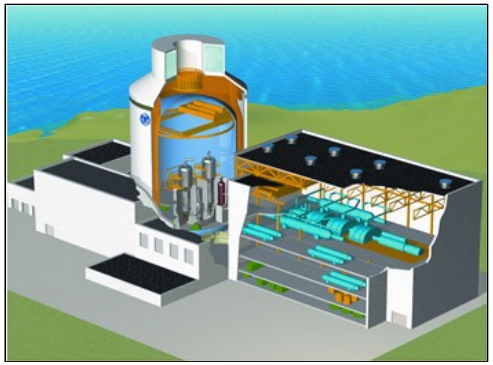
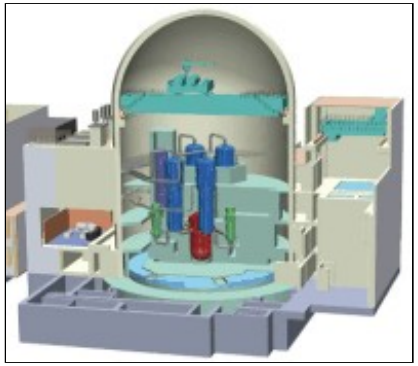
Near-Term Deployment Technologies Being Pursued

Gen III/III+ LWR Technology

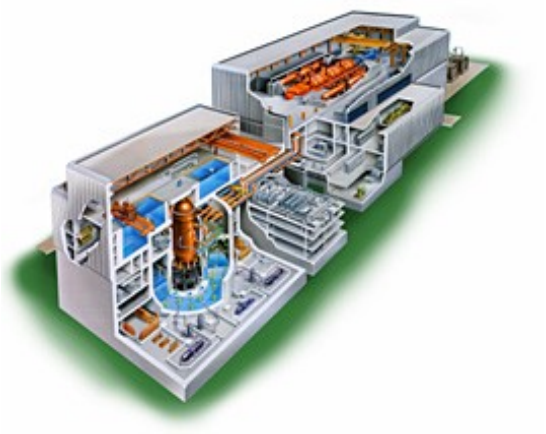


*Westinghouse AP1000 (1115 MWe)



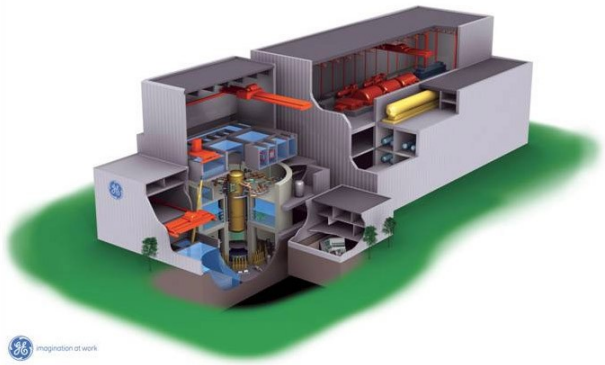
MHI APWR (1700 MWe)

AREVA US EPR (1600 MWe)



*GE ABWR (1371 MWe)

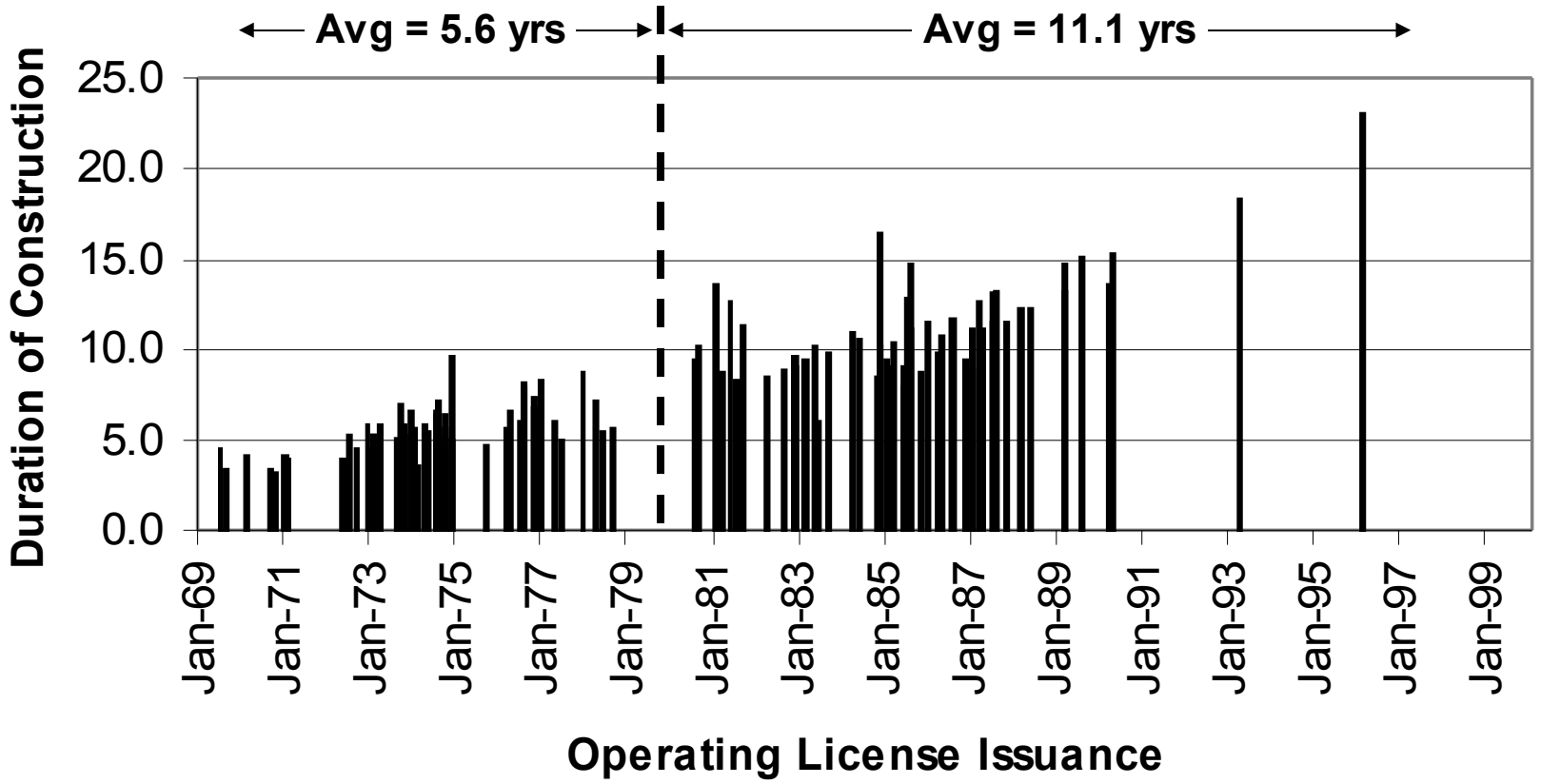
Current Status of Announced U.S. Intentions	
Technology	**Units**
AP1000	14
EPR	7
ESBWR	5
TBD	***4***
ABWR	2
APWR	2



GE ESBWR (1535 MWe)

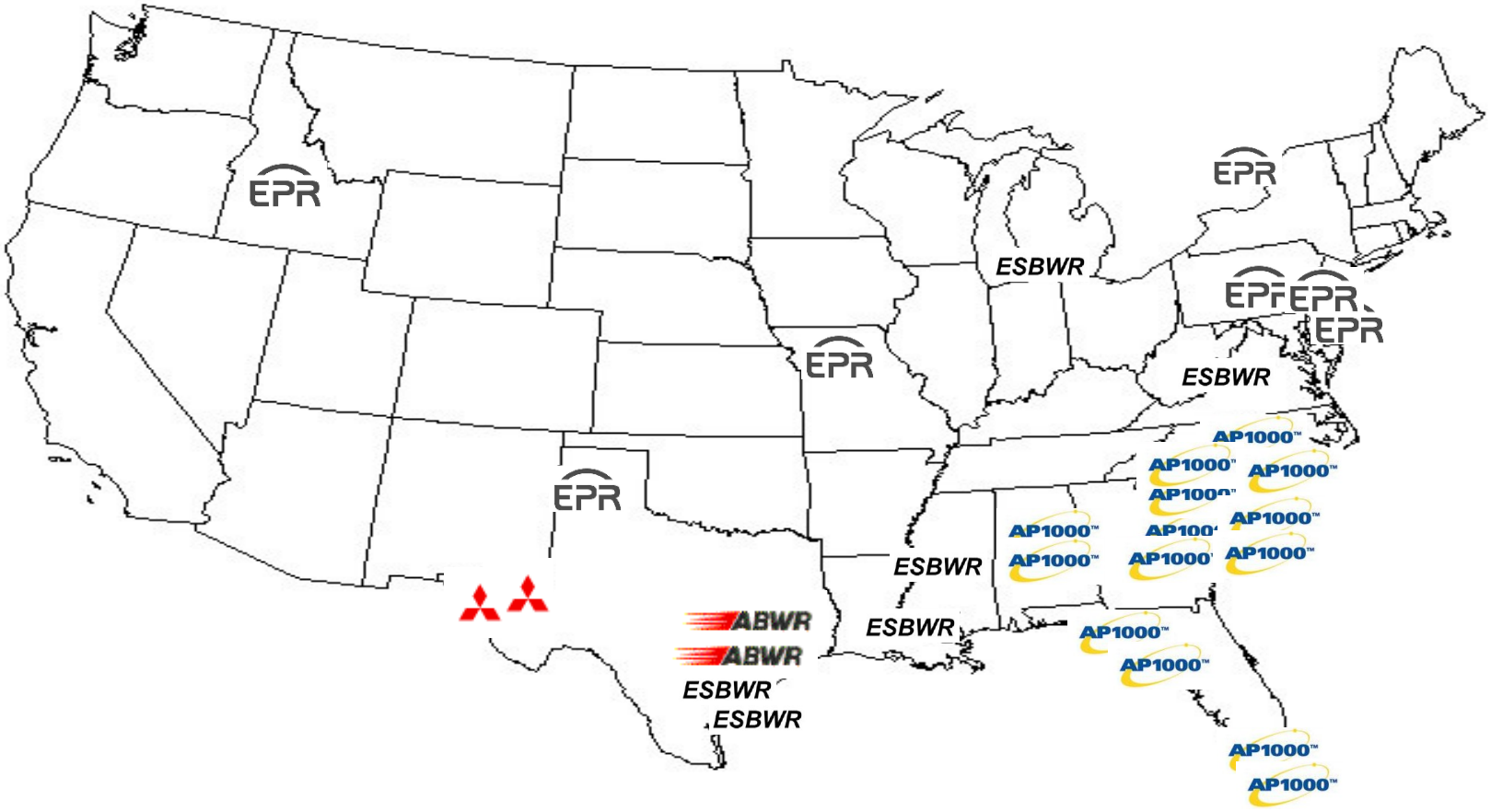
**** Design Certified***

Improving Upon The Past…



U.S. New Nuclear Plant Announcements

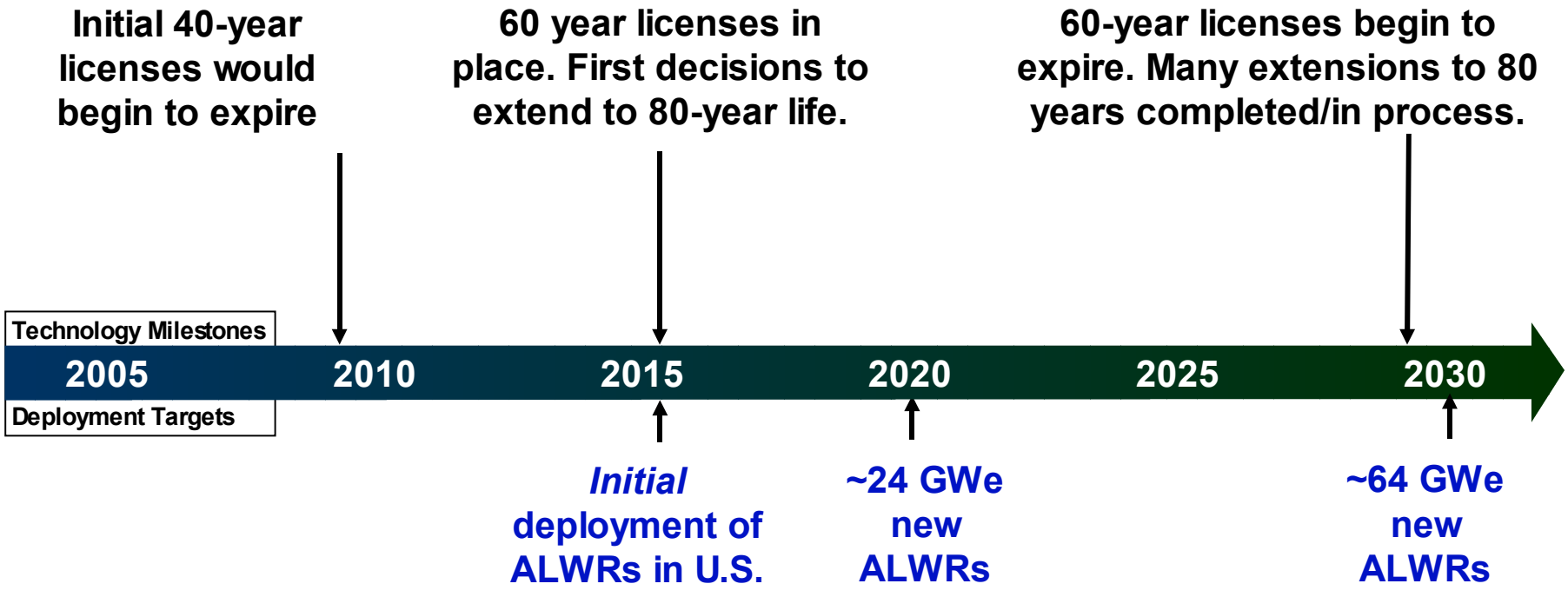
*Concentrated at Existing Plant Sites…Totaling Over 42GWe**



** Assume Average 1,250 MWe per Unit*

Forward Looking Vision…For the U.S.

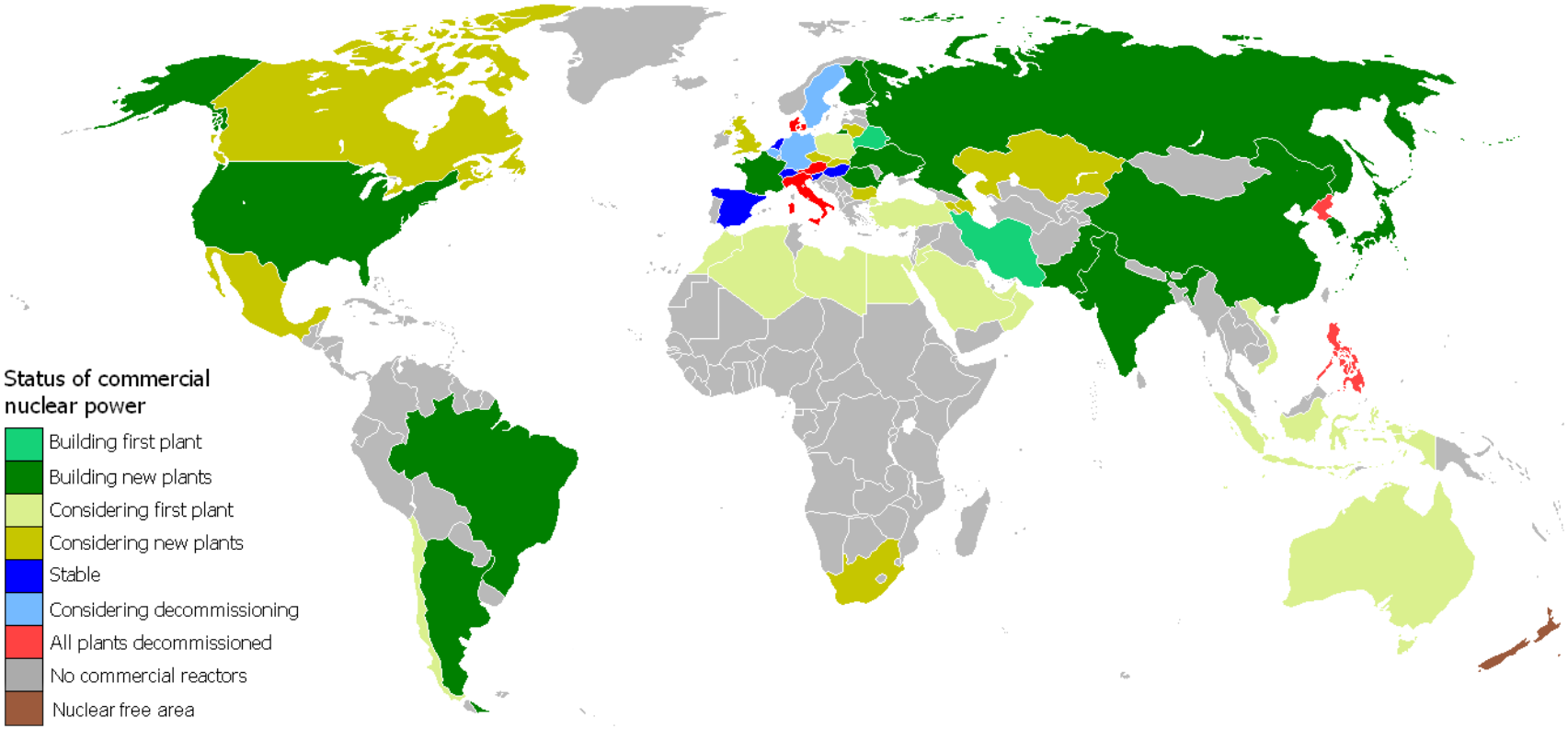
Current Fleet…



…New Fleet

Status of Nuclear Power Worldwide

Significant Expansion and Future Interest



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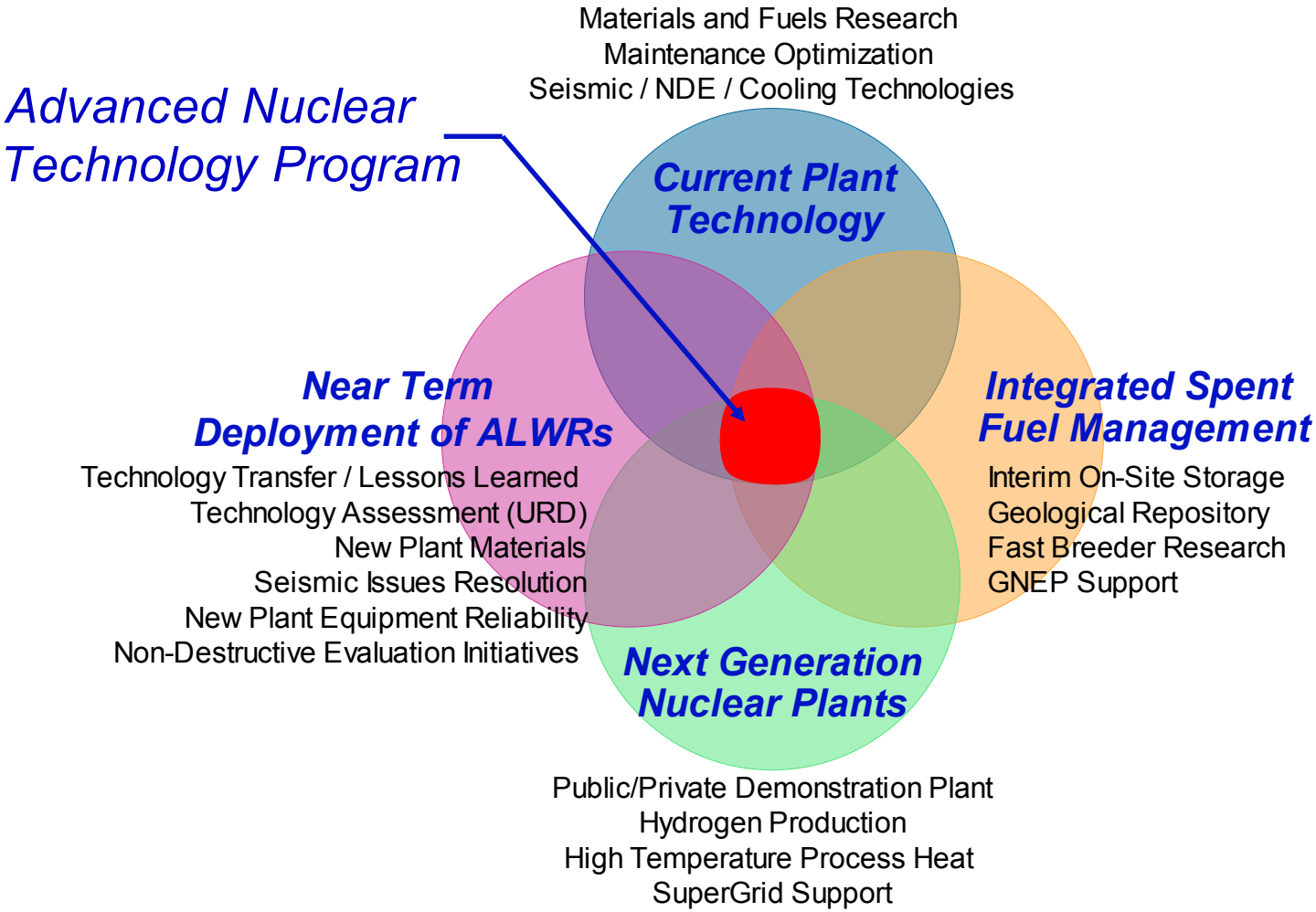
A Variety Of Variables In Play…

…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



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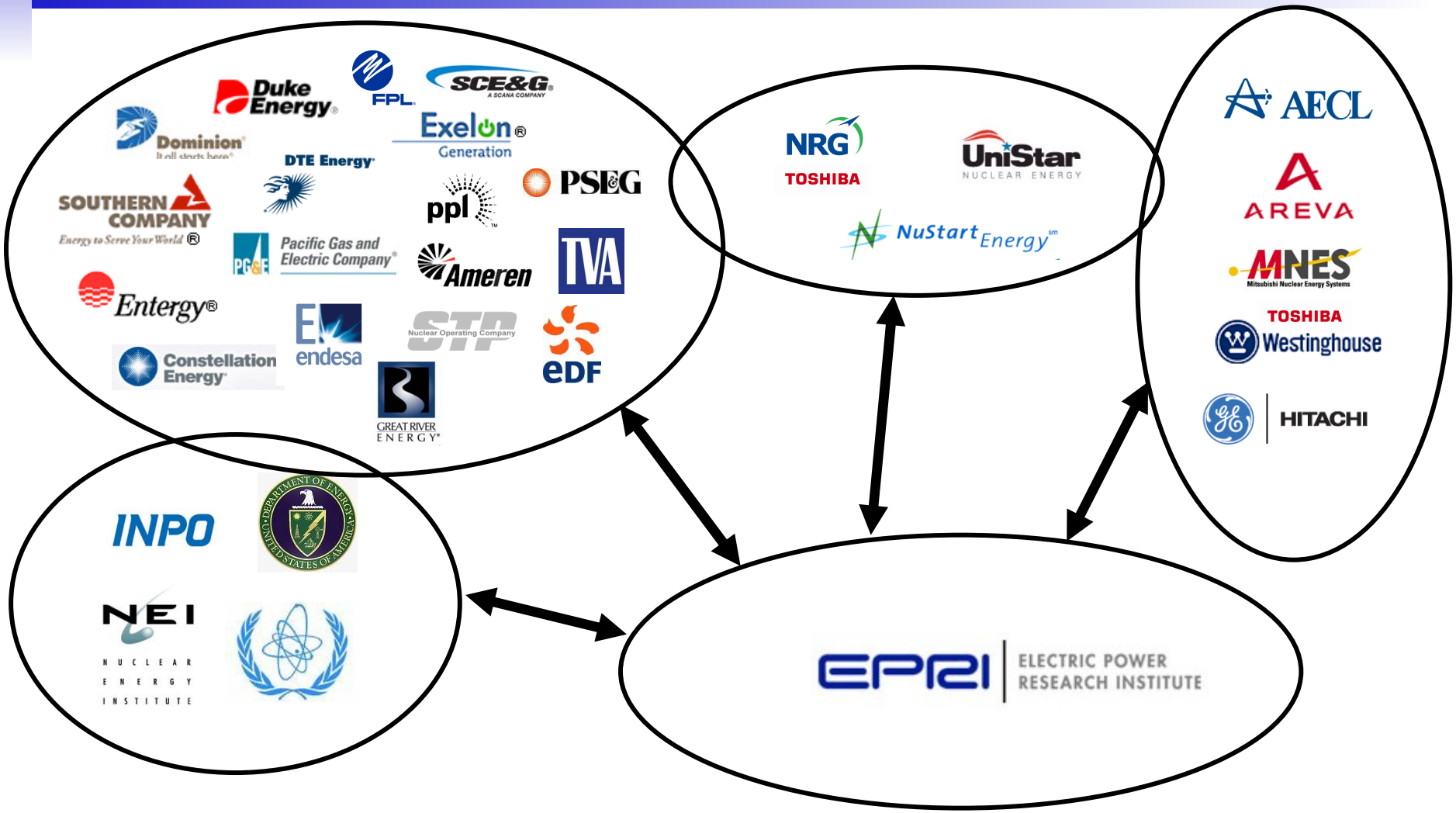
EPRI's ANT Program…Leveraging the Industry



ANT Program Activities

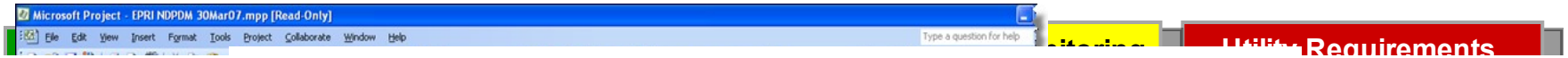


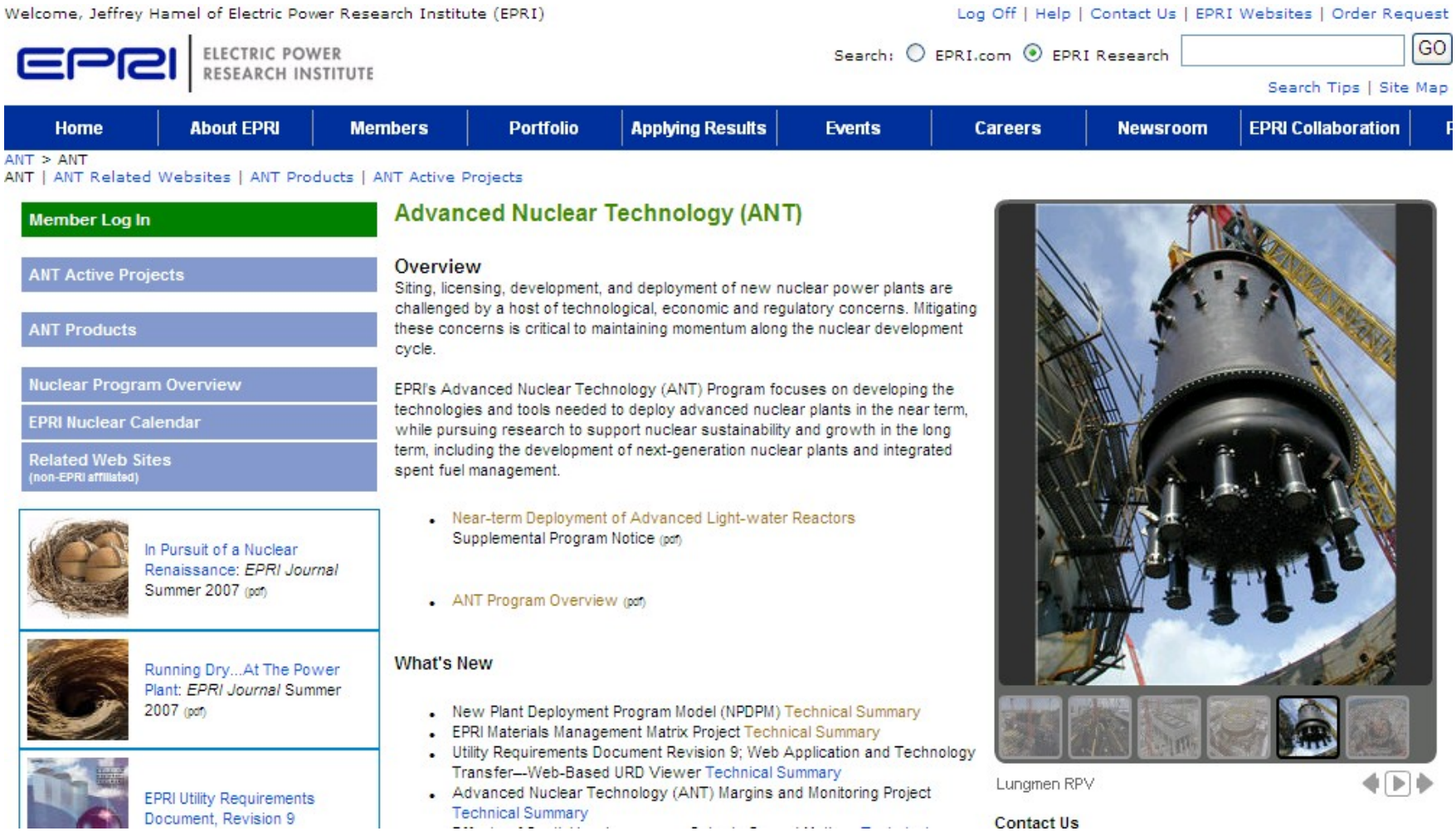
Table B-2

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 RIFR: 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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In Closing…