



CONCENTRIC
ENERGY ADVISORS

CAN NUCLEAR ENERGY COMPETE?

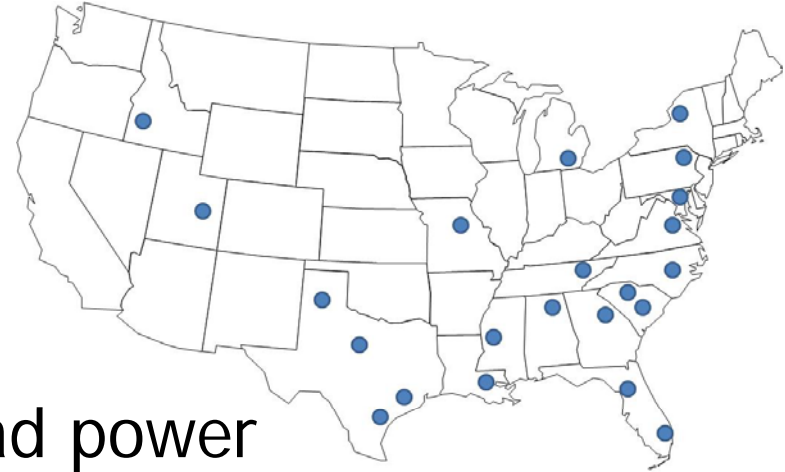
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What's At Stake

- Reduced carbon emissions
- Fuel diversification
- Long-term price stability
- Reliable & abundant baseload power
- Potentially reduced reliance on imported fossil fuels (indirect benefit)



By June 2009, 22* projects announced, today only 2-3 projects are actively moving toward construction in the near term.

* Includes Watts Bar 2



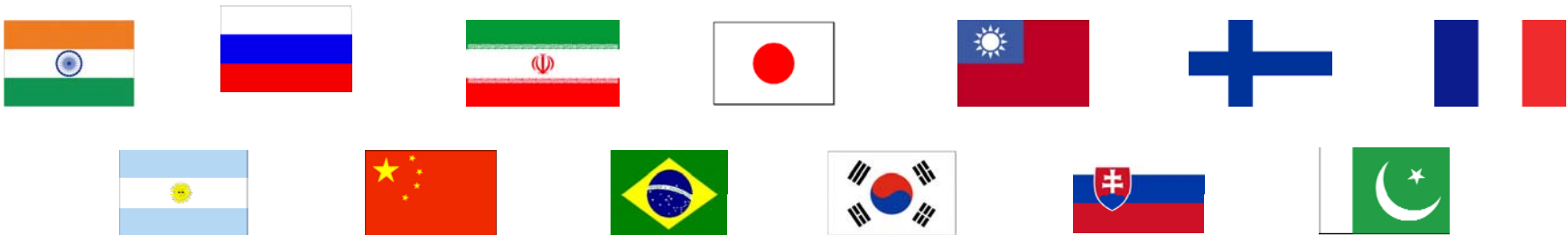
U.S. New Nuclear – A Bump In The Road

- Loan guarantee program continues to languish, but recent announcement indicate a possible increase in funding
- Costs generally trending upward
- Low natural gas prices and resulting low power prices have influenced long-term economics
- Licensing process is being demonstrated, but challenges remain
- Carbon regulation delayed



Rest Of The World Moves Forward

- Since 2004, 22 new reactors have come on-line in seven countries
- 65 reactors totaling nearly 63 GWe are under construction in 14 countries
 - 1 reactor under construction in the US
- Construction costs and schedules are improving in certain countries while other countries are challenged to develop a robust supply chain and workforce



Why?

Worldwide

- National energy plans which embrace nuclear power
- Government support through ownership and supportive policies
- Developed/Developing supply chain and workforce
- Plans for addressing spent nuclear fuel disposal

U.S.

- Lack of national commitment and divided regulatory responsibilities
- Difficulty obtaining loan guarantees and lack of federal government incentives
- Aging workforce/diminished supply chain
- No resolution for SNF



Cost of New Nuclear

- Cost of new reactors is dependent upon:
 - Online date
 - Technology
 - Cost of debt & equity
 - Regulatory or market structure

Project	Technology	# of Units	Total Capacity	Estimate Type	\$ Year	Project Cost		COD Assumed In Estimate
						(billions)	\$/kW	
Unistar	US EPR	1	1600 MW	Overnight Costs	2008	\$10.00	\$6,250	2016
Duke Energy	AP1000	2	2234 MW	Overnight Costs	2007	\$11.00	\$4,924	2021, 2023
Florida Power & Light	AP1000	2	2234 MW	All-in Costs	Year	\$18.70	\$8,371	2022, 2023
Florida Power & Light	ESBWR	2	3040 MW	All-in Costs	2018	\$24.30	\$8,005	2018, 2020
NRG Energy	ABWR	2	2700 MW	Overnight Costs	2010	\$12.10	\$4,481	2015, 2016
PPL	EPR	1	1600 MW	All-in Costs	2010	\$14.00	\$8,750	2018-2020
Progress Energy - Levy	AP1000	2	2234 MW	Overnight Costs	2007	\$9.30	\$4,206	2021, 2022
Progress Energy - Levy	AP1000	2	2234 MW	All-in Costs	Year	\$19.85	\$8,885	2021, 2022
SCE&G	AP1000	2	2234 MW	Overnight Costs	2007	\$7.18	\$3,214	2016, 2019
Southern Company	AP1000	2	2234 MW	All-in Costs	Year spent	\$13.33	\$5,967	2016, 2017
Tennessee Valley Authority	AP1000	2	2234 MW	All-in Costs	Year	\$8.00	\$3,636	2014, 2015 †

New nuclear is a \$7-9 billion per reactor, “bet the company” proposition for US power companies



U.S. Nuclear Development – Financing Matters

Impact of Assumptions on Merchant Plant

<u>Assumption</u>	<u>Construction Costs</u>	<u>Value of Plant</u>
Federal Loan Guarantee	(~3.5%)	~75%
Power Prices ↑10%	NA	~8.75%
1 Yr Schedule Reduction	(~5.5%)	~5.25%*

*Assumes overnight costs remain constant.



Can New Nuclear Compete In The U.S.?

Yes, but the private sector cannot do it alone

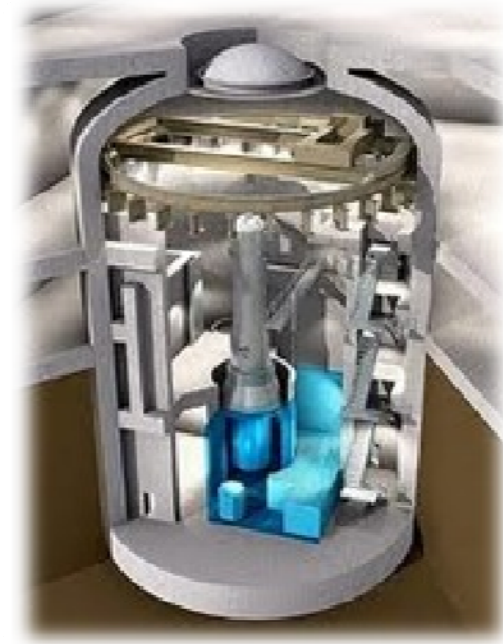
- Only the largest power companies can even consider tackling these investments individually
- Loan guarantees are a must for merchant projects
- Consortium approach is critical to managing risk and scale for merchant projects
- In the short-run, “option” value of a COL supports continued investment in licensing process

Strong energy policy and effective government support are critical



What About Small Modular Reactors (“SMRs”)?

- “Bite sized” units and investments
 - Size
 - Cost
- May be a way to broaden the number of companies involved
- SMRs seem to be key to a significant enlarging of the U.S. nuclear program.



Babcock & Wilcox



To Be Successful - Build Upon The Positive

- State of the Union & 2011 Budget Proposal
 - Administration is committing to a clean energy strategy, including nuclear
- State level initiatives
 - CWIP in rate base is critical for rate regulated projects
 - PILOT agreements and other state support necessary for merchant projects
- Federal licensing process is being demonstrated



And Take On The Hard Issues Once And For All

- Get serious about pricing externalities, particularly carbon, and recognize the benefits of nuclear power
- Commit to effective and consistent government support which lowers the cost of financing nuclear development
- International lessons learned
- Advance modular development
- Address spent fuel disposal

Consistency and certainty are critical



Potential Government Support

- Loan guarantees
- Streamline nuclear construction oversight and regulation
- Incentives and tax credits, possibly minimum price guarantees
- Potential direct federal involvement
 - TVA or other publicly owned companies



New Nuclear Can Compete In The U.S.

But we must:

- Develop a national imperative
- Fix the loan guarantee program
- Provide other government support
- Establish supportive and consistent regulatory policies
- Solve the spent fuel disposal issue

Will these investments cost something? Yes.

Will it cost more if we do nothing? Likely.



Questions and Follow Up

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