

Risks, Rewards, Resources, Reality

EESI Briefing on the Loan Guarantee
Provisions in the 2007 Energy Bills

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October 30, 2007

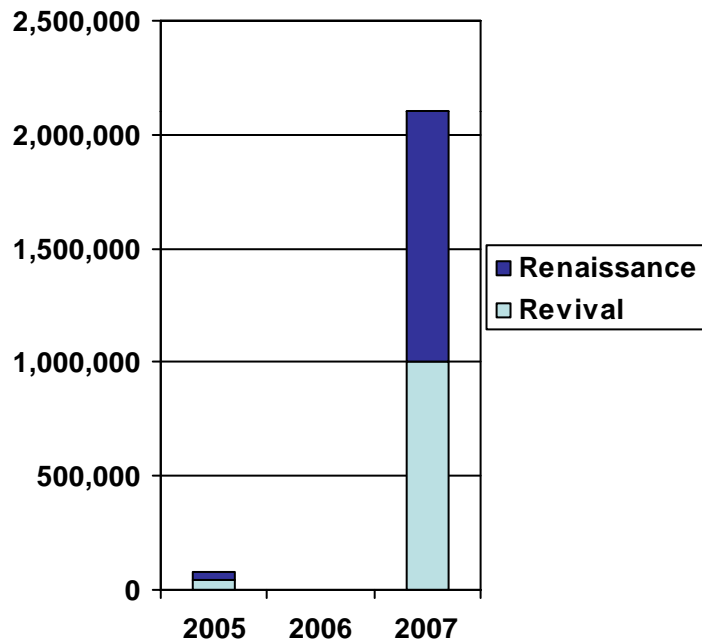
Current status of nuclear power

Country	Nuclear capacity GW (plants)	Percent of electric production	Plants under construction
United States	100.3 (104)	20	1
France	63.3 (59)	79	0
Great Britain	11.0 (19)	18	0
Japan	47.6 (55)	34	1
Russia	22 (31)	14	7
Canada	12.6 (18)	13	0
Germany	20.3 (17)	29	0
South Korea	17.5 (20)	40	2
India	3.8(17)	03	6
Ukraine	13.1 (15)	48	2
China	8.6 (11)	02	5
World total	372 (439)	16	32

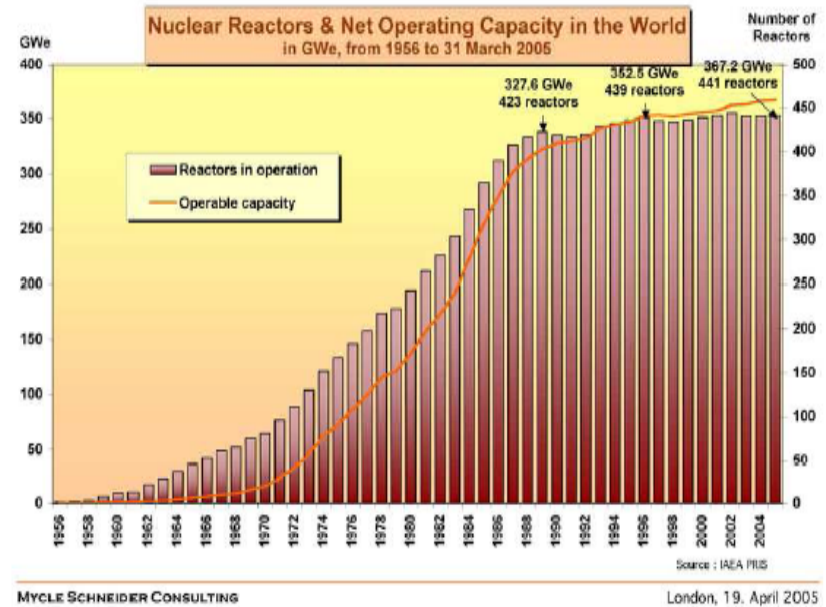
Data from the International Atomic Energy Agency, <http://www.iaea.org/programmes/a2/index.html>.

The Nuclear Renaissance: Rhetoric v. Reality

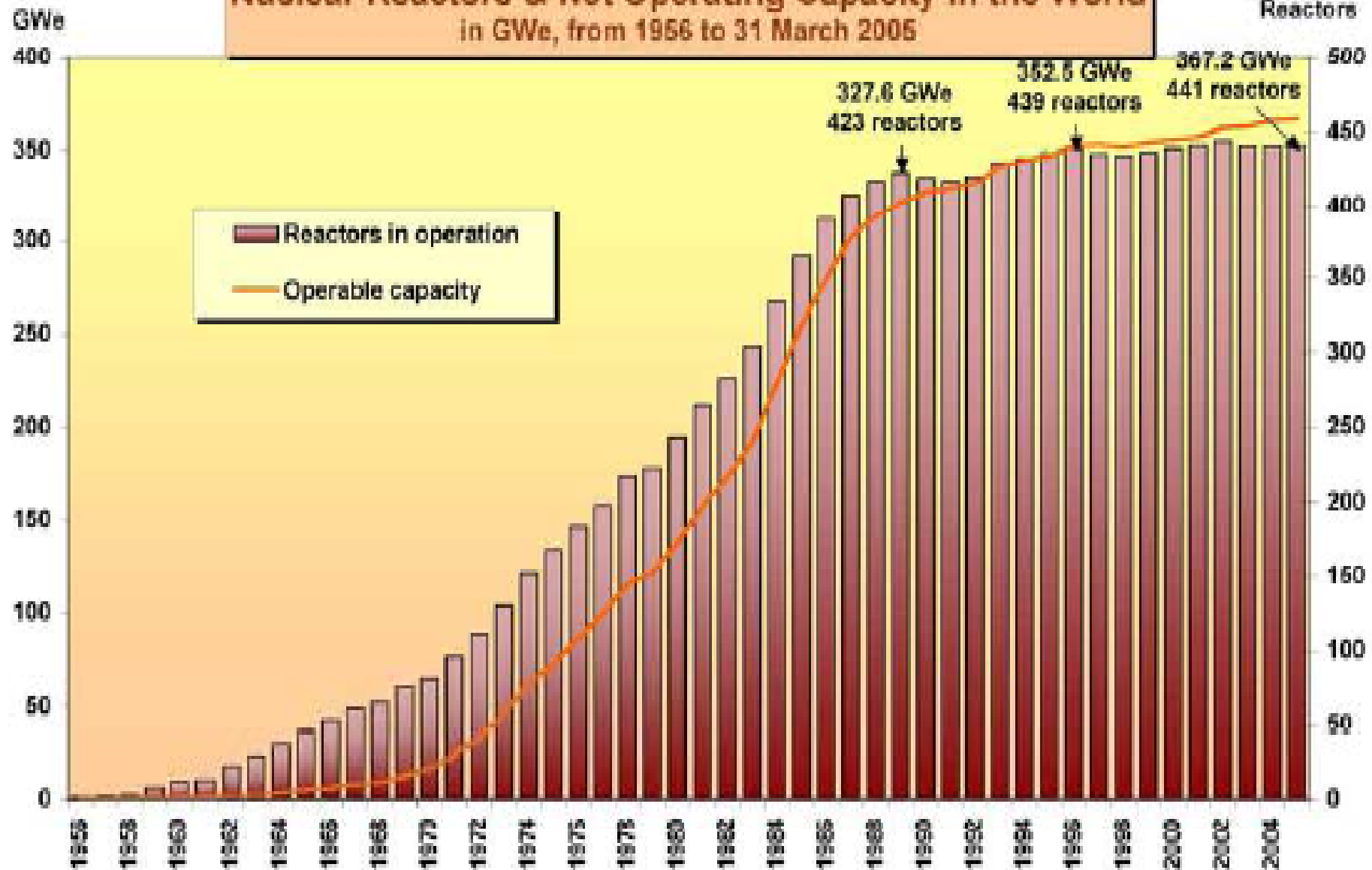
Mentions Per Google



MW Per Reality



Nuclear Reactors & Net Operating Capacity in the World in GWe, from 1956 to 31 March 2005



Source : IAEA PRIS

In a Real Renaissance, the Masterpieces Precede the Applause



What Would Unlimited Nuclear Loan Guarantees Accomplish?

- Extraordinary nature of unlimited loan guarantees
 - Reversal of 30 years of electric power market experience
 - Large exposure of customers
 - Unwise approach to climate change
 - Abandonment of “a few first movers”
 - Largest nuclear cost overrun ever, and in just two years!

Distortion of power markets

- To investors nuclear power will be less risky and will promise higher returns (because the equity owners will need to put up less capital).
 - All other alternatives will seem riskier and less attractive
- To regulators and to market operators, nuclear power will seem less expensive because risks have been shifted to taxpayers
- Thus both public and private investment will be disproportionately shifted toward nuclear power

Other Recent Nuclear Subsidies

- 1.8 cent/kwh production tax credit
- Accident liability limit renewal
- Delay insurance (.7-.8¢/kWh for 1st tier)
- All this plus licensing cost sharing and the evisceration of public involvement

The Loan Guarantee Cost Overrun

- In 2005, Congress believed that the EPA Act support package (including a few billion for loan guarantees) would be enough to allow a few “first mover” nuclear units to demonstrate the new designs and the new licensing process
- Now, we are told that unless the industry gets its way, the "nuclear renaissance" will be stillborn because "there is not going to be any financing."

The Hill, May 24, 2007

- This jump in two years from a few billion to \$50 billion is the greatest nuclear cost escalation in history, and no one has even broken ground yet.

Are the Default Risks Real?

- In the 1990s, nuclear power was the largest beneficiary of a rescue that Moody's estimated at "between \$50 billion and \$300 billion" and necessary to avoid bankruptcy for several major utilities.
 - These were the "stranded cost" surcharges that accompanied electric restructuring and charged the unrecoverable costs of nuclear power to the customers
 - The pending legislation would charge the next rescue to the taxpayers instead of the customers, and would do so before the fact.

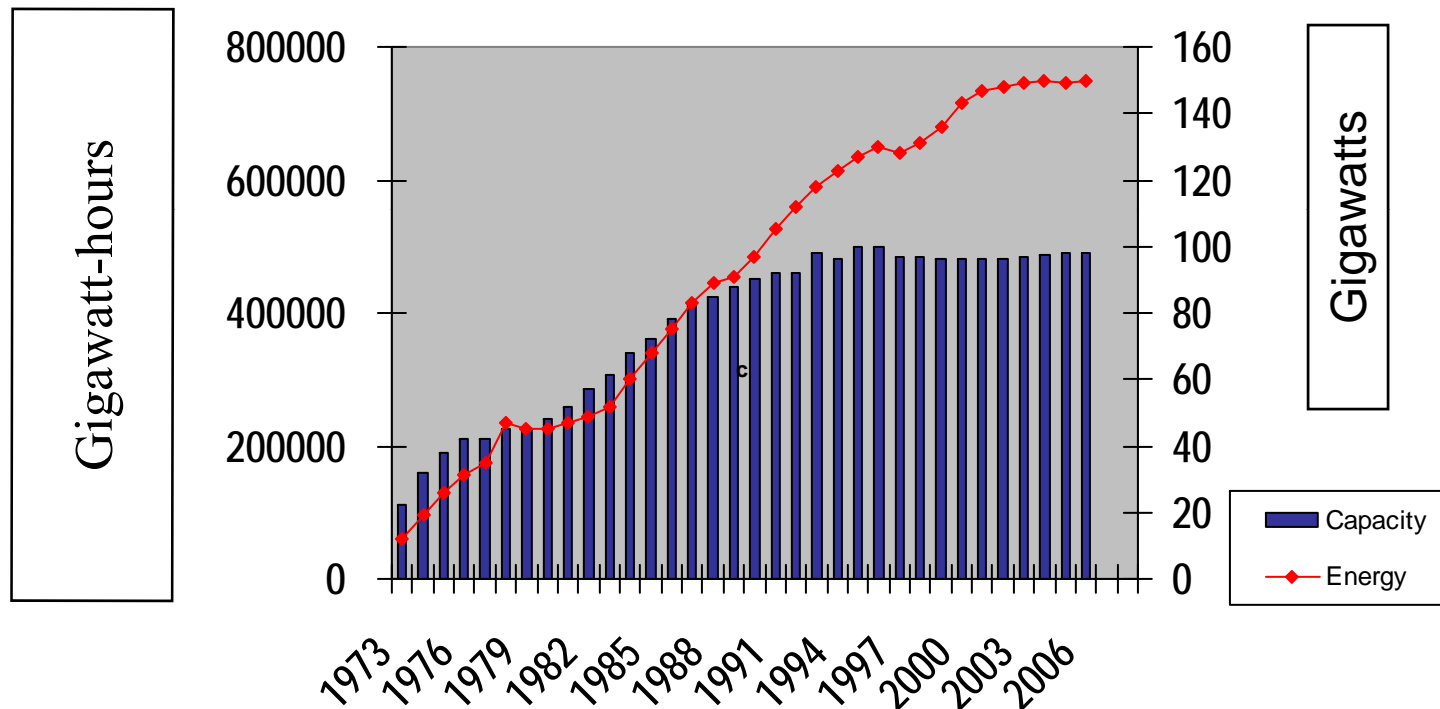
Are the Default Risks Real?

- Fifty-one nuclear plants have shut down for a year or longer;
- As many plants have been canceled as completed, some after billions spent;
 - Much maligned “old” NRC licensing process licensed more plants (200+) than next four countries combined. No rejections.
- Some cost overruns bankrupted N-plant builders in the 1970’s/1980’s; several others nearly did so.

Are the Safety Risks Real

- Nuclear safety risks increase when we behave as though the plants will be safe because they are needed.
- All of the reviews of the Three Mile Island accident cautioned that the NRC was putting too much emphasis on licensing rather than overseeing the existing plants
 - Nuclear power develops best when it grows apart from politically driven mandates and expectations

U.S. Nuclear Output and Nuclear Capacity, 1973-2006: Productivity Improvement in the Face of Competition



Are Loan Guarantees for Nuclear Power Crucial to Fighting Climate Change?

- On the contrary – They divert public and private money and attention from the several measures that will provide greater returns more quickly.

The 15 Wedges (Scientific American, 9/06)



A Wedge

- Prevent 1 billion tons carbon per year by 2054;
- Scaling up only of technologies already deployed on an industrial scale;
- Seven needed to stabilize CO₂ at 500ppm;
 - More may be needed

Wedges 1-5

- 1) Doubling fuel efficiency of 2 billion cars from 30 to 60 mpg
- 2) Decreasing the number of car miles traveled by half
- 3) Using best efficiency practices in all residential and commercial buildings
- 4) Produce twice today's coal power output at 60% instead of 40% efficiency (compared with 32% today)
- 5) Replacing 1400 coal electric plants with natural gas-powered facilities

Wedges 6-10

- 6) Capturing and storing emissions from 800 coal electric plants;
- 7) Producing hydrogen from coal at six times today's rate and storing the captured CO₂;
- 8) Capturing carbon from 180 coal-to-synfuels plants and storing the CO₂;
- 9) Adding double (i.e. tripling) the current global nuclear capacity to replace coal-based electricity;**
- 10) Increasing wind electricity capacity by 50 times relative to today, for a total of 2 million large windmills;

Wedges 11-15

- 11) Installing 700 times the current capacity of solar electricity
- 12) Using 40,000 square kilometers of solar panels (or 4 million windmills) to produce hydrogen for fuel cell cars
- 13) Increasing ethanol production 50 times by creating biomass plantations with area equal to 1/6th of world cropland;
- 14) Eliminating tropical deforestation and creating new plantations on non-forested land to quintuple current plantation area:
- 15) Adopting conservation tillage in all agricultural soils worldwide

The Nuclear Wedge

- Doubling of nuclear power really requires tripling the existing capacity (372GW/438plants) because today's plants must be replaced.
 - Probably 700-900 new plants needed to get 1100GW
- Assumes nuclear replaces all coal. In fact, nuclear will replace some gas and large hydro, requiring more new capacity to make a wedge.
- Prodigiously difficult and expensive, but so are many of the wedges.
 - Who gets to choose among them, on what criteria?

Ingredients of a Sustainable Nuclear Renaissance

- Significant number of new plants per year financed by private capital;
- Successful participation in competitive power supply markets;
- A waste disposal program decisively underway;
- A nonproliferation regime adequate to the nuclear fuel cycles in prospect;

Sensible Energy Policy that Might (or Might Not) Improve Nuclear Power Prospects

- Implement climate change policy that creates (or recognizes) value of all carbon reducing technologies, including carbon sequestration, energy efficiency and renewable energy
 - Carbon caps and markets
 - Carbon taxes
 - Carbon reducing set asides (portfolio standards) and/or production tax credits
 - Remove liability limitations for future projects
- Use neutral market mechanisms to choose least costly approaches among these
- Avoid “pin-the-tail-on-the-donkey energy policy making and repressive licensing practices
- Take the time to deal sensibly with waste, proliferation and safeguards;
- Rigorous prioritization of options for research purposes – effective, efficient, expeditious