Nuclear Power - flawed Greenhouse Solution

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● PSR’s contribution to stopping the “Nuclear Renaissance”
PSR history advocating against nuclear power

Full page ad taken out in New England Journal of Medicine, highlighting danger of nuclear power - by chance, a few days after the accident at Three Mile Island plant, March 1979.
No New Plants for Decades

- 1959 to early 1970s, 112 reactors constructed
- Average capital costs increased nearly 10X
- Three Mile Island 1979 accident: $2 billion costs
- Chernobyl accident 1986
- None ordered since
Urgent Climate Crisis

- We must address climate change with the fastest, cheapest and cleanest solutions.
- Nuclear power meets none of these criteria.
  One nuclear reactor would:
  - take at least 10 years to license and construct;
  - cost about $10 billion and costs are going up, not down;
  - produce 800 tons of spent nuclear fuel over its operating lifetime.

- For significant reduction of carbon emissions, 800 large reactors must be built globally by 2050, or 1 reactor every 18 days for 40 years.
2008 – PSR’s new Safe Energy program
Fatal Flaws of Nuclear Power

No country has solved the problems of nuclear power:

- Cost
- Radioactive Waste
- Safety
- Security
- Proliferation
What is going to determine whether new reactors are built in the US?

- Unsolved waste disposal problem?
- Health & safety concerns?
- Security / terrorism fears?
- Proliferation risks?
- Biggest obstacle is economic
  - Industry’s goal: shift the risk from the nuclear industry to taxpayers and ratepayers
## Historical Construction Costs of Nuclear Power

<table>
<thead>
<tr>
<th>Year Reactor Construction Started</th>
<th>Estimated Cost (1990$)</th>
<th>Actual Cost (1990$)</th>
<th>Percentage Over</th>
</tr>
</thead>
<tbody>
<tr>
<td>1966-67</td>
<td>$560/kW</td>
<td>$1,170/kW</td>
<td>209%</td>
</tr>
<tr>
<td>1968-69</td>
<td>$679/kW</td>
<td>$2,000/kW</td>
<td>296%</td>
</tr>
<tr>
<td>1970-71</td>
<td>$760/kW</td>
<td>$2,650/kW</td>
<td>348%</td>
</tr>
<tr>
<td>1972-73</td>
<td>$1,117/kW</td>
<td>$3,555/kW</td>
<td>318%</td>
</tr>
<tr>
<td>1974-75</td>
<td>$1,156/kW</td>
<td>$4,410/kW</td>
<td>381%</td>
</tr>
<tr>
<td>1976-77</td>
<td>$1,493/kW</td>
<td>$4,008/kW</td>
<td>269%</td>
</tr>
</tbody>
</table>

David Schlissel, Synapse Energy
Trends continue currently

- **Finland: Areva building a 1,600 MW reactor**
  - Already 3.5 years behind schedule (started in 2007)
  - Cost overruns are at $2.7 billion so far
  - Same design that Constellation Energy wants to build in 4 US states

- **France: Areva building the same design in France**
  - Experiencing the same technical errors and safety flaws
  - Already 2 years behind schedule and at least 20 percent over budget

More than $13 billion in subsidies for nuclear power:
- R&D Subsidies
- Construction Subsidies
- Operating Subsidies
- Shut-Down Subsidies
  (note: $8.3 billion recently of those loan guarantees awarded to build two new reactors in Georgia. However reactor designs not yet approved by NRC.)

Only $3.2 billion for renewable energy tax breaks and $2.1 billion for efficiency and clean vehicles
Result of EPACT - 2005

- No new licenses had been applied for in the US in the prior 30 years, even after licensing process was “streamlined” in 1992
- After Energy Policy Act passed in 2005, 17 companies or consortia of companies applied for licenses to build 26 new reactors
- Most of the proposed reactors are in the Southeastern US and in Texas
So, what’s happening with the proposed new reactor projects?

Nearly all proposed reactor projects have experienced one or more of the following: cancellation, suspension, delay, utility credit downgrade, and increased costs.

- **3 Projects Cancelled:** ID, MO, AL (3 of 4 reactors)
- **3 Projects Suspended:** MS, LA, NY
- **7 Projects Delayed:** FL (2 projects), MD, AL, SC, NC, PA, TX
- **Utility Credit Downgrade:** FPL (Florida), Progress (Florida), SCG&E (South Carolina), PPL (Pennsylvania)
Why so many cancellations, suspensions, delays and utility credit downgrades?

- Because cost estimates have soared since 2008 (costs are for 2 reactors unless specified):
  - Texas ($5.8B to $18.2B)
  - Alabama ($6.4B to $10.4B)
  - South Carolina ($5B to $11B)
  - North Carolina ($4.4B to $9.3B)
  - Florida ($5.6B to $22.5B)
  - Florida ($8B to $24B)
  - Maryland ($2B to $9.6B) – one reactor
  - Pennsylvania ($4B to $13-15B) – one reactor
Citigroup analysis:  
*(Nov 2009)*

“At no time, anywhere in the world, has a utility built a new nuclear power station and taken the full construction, power price, and operational risk”

&

Risks from new reactors “could each bring even the largest utility company to its knees financially”
Nuclear Power in the U.S. - 2010

- Three companies awarded Early Site Permits
  - Dominion at its North Anna, Virginia site
  - Exelon at itsClinton, Illinois site
  - Entergy at its Grand Gulf, Mississippi site

- One company - $8.3 billion loan guarantee
  - Southern at its Vogtle, Georgia site
What Nuclear Industry Wants

- Increased research and development subsidies
- Increased construction subsidies
- Increased operating subsidies
- More streamlined licensing
- $100 billion more government loan guarantees
  - Private investors weren’t interested even before current credit crisis
  - Risk of default for a nuclear reactor is “very high – well above 50 percent” (Cong. Budget Office)
Congress generally supports nuclear subsidies

- **Republicans in favor of more nuclear subsidies**
  - Republican energy plan platform: 45 to 100 new reactors by 2030

- **Democrats are split, but largely in favor**
  - Fiscally conservative Democrats tend to be uncomfortable with loan guarantees generally
  - Liberal Democrats tend to oppose
  - Democrats from states where new reactors are proposed strongly support
  - More support when nuclear subsidies packaged with renewable energy subsidies
Why Does the Nuclear Industry Have So Much Support in Congress?

- Spent $600 million (!!!) on lobbying and nearly $63 million on campaign contributions over the past decade
- Increased campaign contributions to Democrats (they donated $9.6 million in 2008)
- Got support of 21 unions by promising future union jobs
- Recruited new champions – such as Sen. Murkowski (R-AK); highest recipient of campaign contributions
- Continuing to package nuclear subsidies with renewable subsidies
Even up against all that.... significant success include:

- No new loan guarantee authority yet adopted this year
- Previously authorized $18.5 billion in loan guarantees won’t go as far because of escalation of construction costs (will only cover 2 projects, instead of 4 originally planned)
- Defeated $50 billion in nuclear loan guarantees in stimulus bill earlier this year
- Congressional action has been stalled on climate and energy legislation; not good for the climate crisis, however a relative success for nuclear power opponents
Where to from here? - Timing issues

- Little time left to pass a climate or energy-only bill this year
  - Summer recess: August 7 – September 12
- With elections in November, Fall session will be short; little political will to pass legislatLion
  - Senate action in “Lame Duck” unlikely
- New Congress next year: Political will to take up climate change again?
Do we need nuclear power to address climate change?

- **No!!** Low-cost, low-carbon technologies are more than ample to meet electricity needs and carbon reductions.
- **New reactors will take resources** (time, money, attention) away from real solutions.
- **Climate and energy legislation stalled**
  - Dept of Energy unsuccessful in getting more loan guarantee authority.
Electricity production

Challenges ahead for PSR

• Vastly out spent by nuclear industry
• President Obama’s support for new “safe” nuclear reactors
• Jobs issue: short term gain vs long term costs & risks
• Integrating health, economic and non-proliferation arguments
Dirty, Dangerous and Expensive: The Truth about Nuclear Power

The nuclear industry seeks to revitalize itself by manipulating the public’s concerns about global warming and energy insecurity to promote nuclear power as a clean and safe way to curb emissions of greenhouse gases and reduce dependence on foreign energy resources. Despite these claims by industry proponents, a thorough examination of the full life-cycle of nuclear power generation reveals nuclear power to be a dirty, dangerous and expensive form of energy that poses serious risks to human health, national security and U.S. taxpayers.

Nuclear Power is Dirty

Each year, enormous quantities of radioactive waste are created during the nuclear fuel process, including 2,000 metric tons of high-level radioactive waste¹ and 12 million cubic feet of low-level radioactive waste² in the U.S. alone. More than 58,000 metric tons of highly radioactive spent fuel already has accumulated at reactor sites around the U.S. for which there currently is no permanent repository. Even without new nuclear production, the inventory of commercial spent fuel in the U.S. already exceeds the 63,000 metric ton statutory capacity of the controversial Yucca Mountain repository, which has yet to receive a license to operate. Even if Yucca Mountain is licensed, the Department of Energy has stated that it would not open before 2017.

Uranium, which must be removed from the ground, is used to fuel nuclear reactors. Uranium mining, which creates serious health and environmental problems, has disproportionately impacted indigenous people because much of the world’s uranium is located under indigenous land. Uranium miners experience higher rates of lung cancer, tuberculosis and other respiratory diseases. The production of 1,000 tons of uranium fuel generates approximately 100,000 tons of radioactive tailings and nearly one million gallons of liquid waste containing heavy metals and arsenic in addition to radioactivity.³ These uranium tailings have contaminated rivers and lakes. A new method of uranium mining, known as in-situ leaching, does not produce tailings but it does threaten contamination of groundwater water supplies.

Serious Safety Concerns

Despite proponents’ claims that it is safe, the history of nuclear energy is marked by a number of disasters and near disasters. The 1986 Chernobyl disaster in Ukraine is one of the most frightening examples of the potentially catastrophic consequences of a nuclear accident. An estimated 320,000 people were displaced from their homes and the radiation fallout from the