



Mississippi Doesn't Need New Reactors at Grand Gulf

Entergy is in the process of applying for an Early Site Permit to site up to two new reactors at the Grand Gulf site in western Mississippi. The Grand Gulf site sits on the shores of the Mississippi River. Despite a long process of public intervention, serious issues remain. Building new reactors will have negative impacts on the local community and the region, and are not necessary to meet Mississippi's electricity needs.

NEW LICENSING PROCESS COMPROMISES NRC REVIEW

NRC has created a new licensing scheme which arbitrarily separates the approval of new nuclear reactors into two processes – the Early Site Permit (ESP) and the Combined Construction and Operating License (COL).¹ Under this licensing system—designed to “provide stability in the licensing process” (EIS, § 1.3)—far too many environmental impact analyses have been deferred to the COL stage and if the ESP is approved, the issues it covers are considered resolved for up to twenty years without further analysis. The U.S. Environmental Protection Agency has expressed concern about these changes to the licensing process saying, “The 20-year horizon under the proposed ESP does not take into consideration unforeseen population growth and/or additional stressors on air or water resources. Typically, an action which has not occurred within five years of an EIS requires a re-evaluation to determine whether significant changes have occurred, and whether a supplemental EIS is required.”² According to EPA, the new licensing scheme also inappropriately ignores the justification for the power plant addition in the early stage of project development.

UNRESOLVED WASTE AND SECURITY RISKS

Waste not adequately evaluated in ESP process

NRC fails to thoroughly examine the environmental and security impacts of additional radioactive waste generated from new reactors. This includes both the onsite storage and eventual permanent “disposal” of this waste. The NRC’s “Waste Confidence Decision” is unreasonable in declaring that the waste issues are resolved. Despite this decision, there continue to be unresolved questions about whether the only national repository site under consideration, Yucca Mountain in Nevada, can safely store waste. The NRC’s assumption that “no [radioactive] release to the environment is expected” at deep repositories like Yucca Mountain is unfounded, as the geologic integrity of this site is far from proven. Moreover, the Department of Energy (DOE) has not yet submitted its license application for Yucca Mountain to the NRC and is not likely to meet its revised goal of accepting waste by 2017. The environmental impacts of indefinite onsite storage of radioactive waste should have been thoroughly evaluated in NRC’s Final Environmental Impact Statement (FEIS).

More waste will pile up at Grand Gulf

Building new reactors at Grand Gulf will mean additional waste will be generated and stored onsite around the facility. Each reactor generates over 20 metric tons of highly radioactive waste per year – material that is extremely dangerous to human health. Concerns about storing waste onsite include problems with leaking casks and fuel pools, and intentional attacks on these structures. Over 54,000 metric tons of irradiated fuel has already accumulated at commercial nuclear reactors across the United States, and is expected to remain at these sites for the foreseeable future.

No solution for nuclear waste

No country in the world, including the United States, has a solution for permanently and safely managing its nuclear waste. Yucca Mountain - the only proposed permanent repository for nuclear waste in the United States - is beset

with numerous unresolved scientific problems concerning its geologic and hydrologic suitability, and may never open. Recently, a scandal erupted over the possible falsification of scientific studies used to justify the geologic suitability of the site.³ Reprocessing - the chemical process of extracting plutonium from irradiated fuel after it is removed from a reactor – also is not a solution to the waste problem. Reprocessing is extremely expensive, poses a security threat, contaminates the environment, and does not eliminate the need for a repository.

Radioactive waste leaks

France - the world leader in nuclear power - has waste leaking storage sites in the Normandy and Champagne regions threatening wine and dairy production. In the U.S., tritium - a radioactive isotope of hydrogen – has leaked from nuclear power plants into the groundwater at the Braidwood, Byron, and Dresden reactors in Illinois, the Palo Verde reactors in Arizona, and the Indian Point nuclear plant near New York City. In some cases, the nuclear industry knew about these leaks years in advance, but did not tell the Nuclear Regulatory Commission or the local communities near the plants.

New reactors mean additional safety risks

New reactors at Grand Gulf would also bring increased security risks to the region, including the possibility of attacks and accidents. Grand Gulf's location on the Mississippi River could make it an attractive strategic target. Considering the devastation that could result from a successful terrorist attack on a nuclear plant, ensuring their protection should be a priority in a post-September 11th environment. However, the U.S. Nuclear Regulatory Commission (NRC) and nuclear industry are leaving plants vulnerable. Reactors still have inadequate defenses and security tests.⁴ Investigations have also found a serious mismanagement at several reactor facilities, such as the Davis Besse reactor in Ohio and Hope Creek station in New Jersey, where the emphasis was put on the corporate bottom line and not safety, and the NRC was found to be complicit.⁵

Recent court decision ruled NRC must evaluate the environmental impacts of a terrorist attack

NRC has refused to evaluate the environmental impacts of a terrorist attack on new reactors at Grand Gulf, calling the threat “highly speculative”. In June 2006, the United States Court of Appeals for the Ninth Circuit ruled that the NRC acted unreasonably in declining to assess the environmental impact of a terrorist attack in its environmental review of a proposed radioactive waste storage facility in California.⁶ This may set precedent for other licensing proceedings.

RENEWABLE ENERGY CAN BETTER MEET MISSISSIPPI'S NEEDS

NRC's review of alternatives is insufficient and misleading

Renewable energy technologies are dismissed by NRC as “unviable replacements for a new nuclear facility at the ESP site”, and NRC limits the bulk of its analysis to coal and natural gas alternatives. This conclusion, however, is based on minimal analysis, an underestimate of Mississippi's wind and solar resources, and a limited understanding of what can generate baseload power. While we agree that an analysis of alternatives should be based on “those power generation technologies that are technically reasonable and commercially viable”, NRC's review has not met this standard.

NRC, for instance, states that “Mississippi does not have sufficient wind resources to use large-scale wind turbines”, but minimal mapping has been done of Mississippi's wind resources, and what has been done shows several class 4 and 5 areas suitable for commercial wind production offshore. A Stanford study on U.S. wind resources in 2003 found that the Gulf of Mexico has a potential bounty of coastal and offshore wind energy – much more so than previously believed.⁷ NRC also states that photovoltaic technologies (PV) “cannot currently compete with conventional nuclear and fossil fuel technologies because of solar power's higher capital cost per kilowatt of capacity”. Recently, however, major breakthroughs have been announced in the cost of solar PV cells, with companies in California and South Africa beginning production of high efficiency thin film solar cells at a fourth or fifth the cost of present panels.⁸ This would make these panels cost competitive with new nuclear reactors, and these developments should be incorporated into the NRC analysis.

NRC also mistakenly asserts that the “construction of solar generating facilities has substantial impacts on natural resources”, and would have large land requirements. NRC fails to understand the solar PV would be installed and integrated into the existing buildings and infrastructure over the area that the proposed Grand Gulf reactor would supply electricity. There are also ways to deal with intermittency and variability of wind and solar that go unmentioned by NRC. Recently, the International Energy Agency (IEA) - an intergovernmental body of twenty-six

countries committed to advancing security of energy supply, economic growth, and environmental sustainability- concluded that *intermittency is not a technical barrier to renewable energy*. IEA recommends distributed generation, links across geographic areas, a diverse mix of technologies harnessing different resources, and the continued development of storage technologies.⁹ One such storage technology in Mississippi would be pumped hydroelectric storage.

Mississippi does have alternatives to new nuclear and coal plants

It is technically and economically feasible for a diverse mix of existing renewable energy technologies to meet Mississippi's electricity needs over the coming decades. These renewable resources can be harnessed effectively and reliably without producing carbon emissions or the burdens of nuclear power. According to recent studies from Stanford University, the National Renewable Energy Laboratory, and the Energy Foundation, Mississippi's electricity needs can be fully met in the coming decades by solar, wind, advanced hydroelectric power, and geothermal heat pumps. According to the data from these studies:

- * Mississippi's PV solar potential is 14,642 megawatts by 2025, which would generate over 27 million MWh annually – about 59% of Mississippi's electricity use. This is a low estimate, as it uses a modest value for Mississippi's hours of sunshine, only includes available residential and commercial roof space, and does not take into account the available space for PV from parking lots, awnings, windows, highway medians, and industrial buildings.
- * Mississippi also has useful wind resources, particularly offshore. A Stanford study on U.S. wind resources in 2003 found that the Gulf of Mexico has a potential bounty of coastal and offshore wind energy – much more so than previously believed.¹⁰ No complete mapping of Mississippi's wind resources has been completed, but there are at least two significant areas of class 4 and 5 offshore wind, capable of commercial generation.
- * Geothermal heat pumps are systems that use the relatively constant temperature of the earth to heat and cool buildings, reducing the energy typically used for these purposes. These pumps could also be used in Mississippi to reduce a building's energy use by 30 to 60%. A significant percent of building energy use in Mississippi comes from the electricity used to run air-conditioning.

Renewable alternatives can provide local jobs and prosperity

Significant investments in these renewable technologies can bring just as much local economic benefit to Claiborne County and the western Mississippi region as building new reactors at Grand Gulf. The jobs however will be safer and would also be more supportive of other local businesses, with more of the profits remaining in the community.

For more information on how renewable energy can meet Mississippi's electricity needs in the coming decades, see <http://www.citizen.org/documents/RenewableEnergyMississippi.pdf>.

WHAT SHOULD YOU ASK OF THE NUCLEAR REGULATORY COMMISSION?

NRC should not grant Entergy an Early Site Permit for new reactors at Grand Gulf. Issues like waste and security must be thoroughly evaluated in the ESP process, and NRC should reexamine the potential of renewable energy resources in Mississippi.

REFERENCES

- ¹ The ESP approves a site for more nuclear power facilities, while a COL grants permission for the reactors to be built.
- ² United States Environmental Protection Agency, “Comments to the Draft Environmental Impact Statement for an Early Site Permit (ESP) at the Grand Gulf ESP Site, http://www.citizen.org/cmep/energy_enviro_nuclear/newnukes/grandgulf/articles.cfm?ID=13833
- ³ See, for example, a press release from Congressman Jon Porter, “Chairman Jon Porter’s Initial Probe into Allegations that Federal Scientists Falsified Data Used to Establish the Safety of the Yucca Mountain Nuclear Waste Repository Reveals Disturbing Results,” April 1, 2005.
- ⁴ Public Citizen, “Nuclear Power Fatal Flaws – Security”, http://www.citizen.org/cmep/energy_enviro_nuclear/nuclear_power_plants/articles.cfm?ID=13451#_edn6
- “Nuclear Reactor Security,” *Union of Concerned Scientists*, http://www.ucsusa.org/clean_energy/nuclear_safety/page.cfm?pageID=176.
- ⁵ Public Citizen, “Nuclear Power Fatal Flaws – Safety”, http://www.citizen.org/cmep/energy_enviro_nuclear/nuclear_power_plants/articles.cfm?ID=13452
- ⁶ United States Court of Appeals for the Ninth Circuit, “San Luis Obispo Mothers For Peace V Nuclear Regulatory Commission” , [http://www.ca9.uscourts.gov/ca9/newopinions.nsf/2BFBC6088AF13AA98825718000723C79/\\$file/0374628.pdf?openelement](http://www.ca9.uscourts.gov/ca9/newopinions.nsf/2BFBC6088AF13AA98825718000723C79/$file/0374628.pdf?openelement)
- ⁷ Archer, Christina and Mark Jacobson, “The Spatial and Temporal Distributions of U.S. Winds and Windpower at 80m Derived from Measurements”, Stanford University, *Journal of Geophysical Research*, Vol. 108, No. D9, May 16, 2003, http://www.stanford.edu/group/efmh/winds/us_winds.html, p 19.
- ⁸ Freeman, Dave and Jim Harding, “Solar cells change electricity distribution”, www.energybulletin.net/19262.html
- ⁹ Gul Timur and Till Stenzel, “Variability of Wind Power and Other Renewables: Management Options and Strategies,” International Energy Agency (IEA), June 2005.
- ¹⁰ Archer, Christina and Mark Jacobson, “The Spatial and Temporal Distributions of U.S. Winds and Windpower at 80m Derived from Measurements”, Stanford University, *Journal of Geophysical Research*, Vol. 108, No. D9, May 16, 2003, http://www.stanford.edu/group/efmh/winds/us_winds.html, p 19.

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Public Citizen’s Energy Program
Phone: (202) 588-1000
cmep@citizen.org
www.energyactivist.org