

SUNI Review Complete
 Template=ADM-013
 E-RIDS=ADM-03
 ADD: Jack Cushing

As of: 6/11/20 2:54 PM Received: June 11, 2020 Status: Pending_Post Tracking No. 1k4-9h74-edq4 Comments Due: June 30, 2020 Submission Type: Web
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PUBLIC SUBMISSION

Comment (1)
 Publication Date: 4/30/2020
 CITATION 85 FR 24040

Docket: NRC-2020-0101

Notice to Conduct Scoping and Prepare an Advanced Nuclear Reactor Generic Environmental Impact Statement

Comment On: NRC-2020-0101-0002

Notice To Conduct Scoping and Prepare an Advanced Nuclear Reactor Generic Environmental Impact Statement

Document: NRC-2020-0101-DRAFT-0004

Comment on FR Doc # 2020-08798

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General Comment

I am writing in opposition to the U.S. Nuclear Regulatory Commission's proposal to produce a "generic" environmental impact statement (GEIS) for "small-scale advanced nuclear reactors." This would contradict NRC's primary mission to protect the public health and safety, not to promote the commercial nuclear energy industry, for the following reasons:

- 1) NRC has no experience regulating "advanced" nuclear reactors (ANRs). There have been no commercial "non-light-water reactors" in operation in the US since the 1980s. In fact, only three were ever built, and all were licensed before the NRC was created in 1975. The NRC's lack of experience in regulating such a wide variety of possible reactor designs requires rigorous study and experience. NRC has only issued GEIS's for other issues (such as decommissioning and license renewal) after years of real-world industry and regulatory experience. NRC has no such basis for generically evaluating small-scale ANRs.
- 2) There is no such thing as a "generic" ANR. In fact, the whole category of "advanced reactors" covers a far wider variety of potential reactor designs than exist today. There are potentially dozens of different combinations of fuel sources, fuel designs, moderators, and coolants. Each type of ANR would have different possible safety issues and possible ways to release radiation. They would also rely on wholly different fuel cycles, with a variety of environmental impacts.

- 3) There is no basis for assuming accidents with "small-scale" ANRs would not be able to cause significant offsite radiation releases. History shows there is no such thing as an accident-proof nuclear reactor. Studies have shown that meltdowns and large releases of radiation were, in fact, possible in small scale ANRs, requiring major design changes and resulting in significantly increased costs for licensing, construction, regulation, emergency planning, security, etc.
- 4) There is no basis for determining that the "microreactors" contemplated in the GEIS would have a "small environmental footprint" or that there would be no offsite radiation releases in the case of an accident. Even "small-scale" reactors would contain large amounts of radioactive material, and generate power at very high density. Such a conclusion could only be drawn based on a detailed review of each individual reactor design, including its fuel, moderator, coolant, and engineered safety and containment systems, as well as the site size, location, and seismic, and climatic conditions.
- 5) Non-light water reactors have been known to have significant safety risks for decades. For instance, sodium-cooled reactors have had fires and partial meltdowns (e.g., Fermi unit 1 in 1966), and carry the risk of catastrophic sodium-water explosions. Molten salt reactors generally have only one major barrier to releasing radiation, because the fuel within the reactor vessel is already in liquid form. Graphite-moderated reactors become extremely radioactive due to carbon-14 production, and they can catch fire in a loss of coolant accident.
- 6) Advanced reactors would generate many different kinds and forms of radioactive waste that would be even more difficult to manage than produced by the current light-water reactors. Some ANR designs could require on-site reprocessing of irradiated nuclear fuel, which entails enormous environmental impacts, releases of gaseous radioisotopes, and liquid radioactive waste streams that are extremely polluting and difficult to manage.
- 7) All of the environmental impacts of small-scale ANRs will have significant environmental justice impacts, from siting and construction, to reactor operations, leaks, and accidents; from fuel extraction and processing, to decommissioning, waste storage, and disposal. At every stage of the nuclear fuel cycle, polluting facilities and activities have been located disproportionately on indigenous peoples' lands and in African-American, Latinx, and other communities of color. There is no reason to expect that to change with ANRs, although new vectors of environmental injustice may result.

In addition, NRC must consider the futility of streamlining the environmental review and licensing process for ANRs due to the realities of climate change and the evolution of energy alternatives.

The NRC must abandon the proposal for a streamlined environmental review and licensing process for small-scale advanced nuclear reactors (and ANRs of any size). Pursuit of the GEIS proposal is a waste of NRC's resources, and would compromise NRC's public health and safety mission.

Thank you for doing what only you can do: protect the public from radiation exposure.