

From: [Paul Gunter](#)
To: [RulemakingComments Resource](#)
Subject: [External_Sender] Beyond Nuclear comments on Docket ID NRC-2015- 0225
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Hello,

Attached please find the comments of Beyond Nuclear on Docket ID NRC-2015- 0225 pertaining to small modular reactors and proposed changes to require emergency planning and preparedness for offsite radiological consequences.

Thanks,
Paul

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Ms. Annette Vietti-Cook
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Beyond Nuclear Comments on “Emergency Preparedness for Small Modular Reactors and Other New Technologies” (Docket ID NRC-2015- 0225)

On behalf of Beyond Nuclear, I am providing comments in opposition to Docket ID NRC-2015- 0225, NRC draft Regulatory Guide (DG-1350), “Performance-Based Emergency Preparedness for Small Modular Reactors, Non-Light-Water Reactors, and Non-power Production or Utilization Facilities.”

The U.S. Nuclear Regulatory Commission (NRC) is proposing to amend its regulations to include a new alternative for “risk informed” emergency preparedness requirements for small modular reactors (SMRs) and other new nuclear technologies based on unproven, undemonstrated and uncertified designs that essentially constitute a mirage at this time. This is the classic case of “putting the cart before the horse” that unjustifiably places the public health and safety as well as environmental quality at unknown and uncertain risk from its proposed end product.

In our view, this proposed rule is designed to bolster a theoretical certainty to the NRC design certification and licensing process with claims of “inherent safety” and “passive safety” by changing the public, investor and political perception of nuclear power as something that is not yet established with high confidence. The industry and the regulator are looking to return us to the pre-Three Mile Island, pre-Chernobyl, pre-Fukushima perception that a severe nuclear accident with significant offsite consequences is not mathematically credible. The no offsite emergency planning and preparedness model is more an effort to change the perception of nuclear power.

In reality, “inherent safety” and “passive safety” are not necessarily the top priority on the list of every designer, investor, manufacturer and owner of SMRs. In fact, it is cost and “inherent cost control” has proven to be even more elusive than nuclear safety for the atomic power business model throughout many uneconomical generations. SMRs are likely to be just as vulnerable to cost uncertainty as their behemoth predecessors, if not more. In fact, as nuclear power was originally envisioned in the 1950s and 1960s, the first small modular reactors meant less electricity production per unit at more cost per kilowatthour. The industry and the regulator transitioned to large capacity reactors to capitalize on electricity production through an “economy of scale.” However, financial meltdowns of this business model in the 1970’s preceded the most notable nuclear reactor meltdowns. This was eventually followed by the so-called “Nuclear Renaissance” commencing in 2006 resulting in a nuclear financial relapse. Of the applications for 30+ units ordered, only two units remain under construction 14 years later, behind schedule and grossly exceeding their projected cost of completion. The remaining units have been suspended, cancelled, withdrawn and abandoned at tremendous cost without a watt of benefit.

In fact, nuclear safety and cost reduction inherently drive reactor designs in opposite directions. The return to small reactors and unpredictably higher electricity production cost per unit presents cost cutting as a control that arguably can reduce safety margins. This does not support the premise of the proposed rulemaking to shrink and eliminate offsite emergency preparedness particularly where still uncertified SMRs will have just as much and more combined radiological source term at multi-unit reactor sites.

Beyond Nuclear offers a recent example of the NRC and industry rush to “put the cart before the horse”, that is to say, to abandon long established the offsite emergency preparedness feature of the NRC defense-in-depth philosophy on claims of high confidence in “passive safety” or “inherent safety” of uncertified designs still at the conceptual stage. At the July 21, 2020 NRC Advisory Committee on Reactor Safeguards (ACRS) open meeting on the NuScale design certification application (ML20205Q953) the members of the ACRS took up a line of questioning on their still open concerns in this design regarding a Loss Of Coolant Accidents (LOCA), boron dilution and recriticality that reveal professional doubt that the NuScale design’s inherent safety claim can reliably and passively shutdown with no operation actions. It is this questionable “walk away safety” as now widely claimed among SMR designers and advocates that raises the public concerns for the present rush to eliminate offsite emergency planning licensing reviews for SMR and novel unproven nuclear technologies.

The proposed NRC rulemaking thus represents an unreliable and radical departure from more than four decades of the federal agency’s established defense-in-depth philosophy to incorporate offsite emergency planning and preparedness to address uncertainty in inherently dangerous atomic power. The proposed rule goes in the wrong direction and is a further departure by failing to offer protection of the public health and

safety from the offsite radiological consequences and incorporate those lessons learned and unlearned from the nuclear accidents documented at Three Mile Island, Chernobyl and Fukushima Daiichi.

We support and echo many of the same concerns and comments as submitted by NRC Commissioner Jeff Baran in his Response Sheet of November 14, 2019 as was included in the Commission Voting Record of December 17, 2019 (ML19351C278). As Commissioner Baran points out, the NRC-EPA task force (NUREG-0396) established that radiological emergency planning and preparedness is not based on the probabilities of a nuclear accident. While the probabilities can be mathematically projected to be very low, they will never in reality be zero. As mathematically close to 0% as the probabilities for an unprecedented earthquake and tsunami were on the eve of the March 11, 2011, the unpredictable catastrophe occurred resulting in the Fukushima Daiichi nuclear catastrophe in Japan.

Commissioner Baran points out that the Federal Emergency Management Agency (FEMA) has raised concerns that diminishing and eliminating offsite radiological preparedness leaves state and federal emergency response agencies with only an “all hazards” approach to responding to a severe and potentially catastrophic nuclear accident which in their professional expertise would be inadequate. FEMA has commented that it is unrealistic to assume that an all hazards plan could be effectively scaled up at the time of a nuclear accident noting that the lack of prepositioned equipment and trained personnel would likely doom the task to failure.

The proposed rulemaking further creates a critical failing in preparedness by effectively removing FEMA from the licensing process by eliminating offsite emergency planning. Commissioner Baran and the NRC Advisory Committee on Reactor Safeguards additionally raised the concern that the proposed rule opens the door to applying the same risk informed methodology to shrinking emergency planning zones around larger operational commercial nuclear power stations. While SMR designs provides for scalable power multiple modular reactors are intended to be collocated on the same site, Commissioner Baran comments raise the concern that the proposed rule does not account for the occurrence of more than one nuclear accident simultaneously at the same SMR facility. The SMR designs show that numerous SMR units would share the same control room on a single site. One control room for multiple sites raises the possibility for common mode failure accident(s) involving multiple units with increasingly larger radiological source term releases to the environment.

Finally, Commissioner Baran identifies that the proposed rule eliminates the “ingestion pathway zone” which extends out on a 50-mile radius around nuclear power plant sites to protect populations from the ingestion of radioactive contaminated food and water. Ingestion of food products and water contaminated by long-lived radioactive isotopes generated in SMRs and other unproven designs can constitute significant radiation exposure over time.

Beyond Nuclear further points out that the Price Anderson Act was established by Congress to principally benefit and protect the nuclear power industry designers, owners and operators from the uncertain but potentially large cost and financial consequences of public liability claims from a severe nuclear accident. Without the liability shelter of the Price Anderson Act, the first nuclear power station would never have been built and licensed to operate without federal indemnity and limited liability. Beyond Nuclear contends that proposed rule to shrink and eliminate offsite Emergency Planning Zones (EPZ) for SMR designs and other unproven nuclear technologies is contradicted by the fact that the NRC and the industry are retaining the act's statutory regulations for these designs. This constitutes an admission and recognition that the legal perception that offsite risks from a nuclear accident remain such that owners and operators of SMR sites still seek limited liability protection of the Price Anderson Act as renewed by Congress in 2005 with an extension of 20 years. Clearly, in 2025, the industry will be seeking an extension of Price Anderson to include SMR. This is envisioned in the Nuclear Energy Institute's Position Paper "Nuclear Insurance and Liability Requirements for Small Reactors," June 2011 (ML111590689).

The fact that industry and the NRC do not have sufficient confidence in claims of "walk away safety" for SMRs such to no longer need Price Anderson liability protection is reason enough that the agency cannot abandon its responsibility to plan and prepare for nuclear disaster and the public health and safety. The same mathematical models proposed to whittle away offsite emergency preparedness around SMRs arguably apply to financial risks to the owners and operators still seeking the legislated shelter from liability protection from presumably now non-existent offsite damages.

If according to industry and NRC claims that an "extraordinary nuclear occurrence" is now so miniscule, so incredible, that SMR and other novel nuclear technologies are essentially risk free to dramatically shrink and eliminate offsite radiological emergency preparedness, then those same criteria (planned size, moderator, coolant, fuel design, projected operational parameters, etc.) should be able to demonstrate that the designer/owner/operator have the confidence to come out of their liability fallout shelters. The fact that the industry and the NRC are unwilling to do so belies a lack of rational confidence in their financial exposure chasing after a mirage of risk-free nuclear technology.

For these stated reasons, the NRC should abandon this premature and inadequately supported proposed rulemaking.

---submitted by email certification---

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