

# PUBLIC SUBMISSION

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10 CFR Part 53: Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors

**Comment On:** NRC-2019-0062-0012

Preliminary Proposed Rule Language: Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors

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## General Comment

See attached file(s)

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## Attachments

Notice and Comment

## **Rule Changes Regarding Nuclear Energy**

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POS 3641: Administrative Law

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15 April 2021

When it comes to any form of regulations it is important to remember that the purpose of the regulations is not to hinder, but to help keep a safe environment. This is important when it comes to the proposed rule of developing new requirements for the licensing and regulation of advanced nuclear reactors (regulations.gov). The rule itself is of substantive in that the laws be related to the purpose intended or that the government has some substantial reason for the regulation (Hall, 2020, p. 76). This is important in that rules and laws changes over time depending on the changing circumstance with one or many laws changing to meet the depending on society. The reasons for my support of this rule change are the procedures, the focus on making nuclear energy efficient and safe, and the need of making the most out of nuclear energy through objective reasoning. The proposed rule itself is one that is rational from the start to the finish.

The procedures are essential in keeping nuclear energy as a power source. This would be done through the use of technology and other means to ensure safety as seen from this quote, “The new rulemaking would adopt technology-inclusive approaches and include the appropriate use of risk-informed and performance-based techniques, to provide the necessary flexibility for licensing and regulating a variety of advanced nuclear reactor technologies and designs” from the regulation.gov website on the proposed rule. This means that the procedures would be precise and accurate. The other part would be that of the objectives as seen from the U.S. Nuclear Industry Council (USNIC) who give their input on the subject such as having structures that are stable and sound. The procedures would improve the reactor itself as seen from this quote, “Each advanced nuclear plant must be designed, constructed, operated, and

decommissioned such that there is reasonable assurance of adequate protection of the public health and safety and the common defense and security” by U.S. Nuclear Industry Council (USNIC). The word that is really important to look at is “adequate protection” meaning that changing procedures when it comes to nuclear energy is necessary. Nuclear energy itself is hard to control and it is true that fossil fuel and other renewable energies are used most, but one of the ways that one can harness nuclear energy’s is through various methods like gravitational confinement, magnetic confinement, and internal confinement. Nuclear energy needs various procedures, especially when it comes to technology.

The other important aspect of this policy change is that of technology. Technology is important in that it adds new ways of doing nuclear energy. This is important in that the areas that will be looked at are the role of Probabilistic Risk Assessments (PRA), or the organization of documentation and technical requirements leading to them being prepared for any mistakes. This would not only increase efficiency, but that of safety. The reason being is that the new approach will continue to provide reasonable assurance of adequate protection of public health and safety and the common defense and security (regulation.gov). Technology would help advance this by having them become efficient. The fact is that even though renewable energy has benefits there is ways to get rid of the waste that is produced from the reactor in a safe manner, which is highly important as seen from this quote, “In addition to properties of nuclear decay such as radioactive half-life and type of radiation, there are chemical properties that affect the behavior of the radioactive substance in the environment or the human body” (Ferguson, 2011, p. 192-193). This also has to do with the fact that keeping technology up to date is essential in order to keep improvement and efficiency.

The second part of this paragraph is that when discussing this proposed rule, they want to establish new requirements to address non-light-water reactor through technology. Creating and getting energy is easy, but disposing of the nuclear waste is harder due to public health concerns. This mainly has to do with having “reasonable assurance” as described by the Socio-Technical Risk Analysis (SoTeRiA) Research Laboratory and their comment on the proposed rule change. The reason being is that if the reactors are not disposed of properly that can lead to a lawsuit leading to a possible court hearing. The other part too is that by having better licensing not only would that improve the technology and safety, but it could lead to better practices. The practice is where it really is at in that even with technology you still need to have people that practice what is right, rather than wrong.

The second half of this is that of the cost and the benefit. The cost is significantly lower for nuclear energy as seen by this quote, “That is, the total generation costs are approximately \$1.70 billion for the nuclear power and \$3.97 billion for renewable energy to mitigate 1% of CO<sub>2</sub> emissions at the average amount of electricity generation of 0.56 billion MWh in 2014 in the sample countries” from the *Comparison of cost efficiencies of nuclear power and renewable energy generation in mitigating CO<sub>2</sub> emissions* article by Hyun Seok Kim. This is good in that by showing that there is a benefit to the cost than that would want to make improvements happen. The only downside would be the disposing of used reactors due to the decay. This however is not a problem in that it produces less CO<sub>2</sub> and depending on the president he would either put environmental regulations or none depending on the party. I would also like to point out that finding a cost-effective way to dispose of the reactors is important, which would change depending on the licensing not for the worst, but rather for the better. This becomes apparent in that knowing how to be effective is essential when dealing with nuclear power. The important

aspect of this is that even though nuclear energy is not the most commonly used energy source it still has benefits like cost and being able to supply power to a wide variety of area.

The last part would be that of the objective itself. This is important because of trend as seen in this quote, “Over the past few years, investment in fusion technology and research grew on a dramatic scale” by Igniting the Fusion Revolution In America research article. When it comes to this rule the reason why it is a substantive rule is that of property. Property plays a big role in that you have employees that are working the reactors, while having to be safe. This means that passing the exam is essential in knowing what company is practicing safe procedures. The other part is that the nuclear reactor is a utility itself when used to power a house or car that a person drives on a daily basis. The other approach that the NRC is focusing on the response of advanced nuclear reactors to postulated accidents, including slower transient response times and relatively small and slow release of fission products. The importance of this is that nuclear fusion itself is radioactive and can be dangerous, so having rules that focus on future accidents would be essential.

This comes even more apparent in that licensing play a role. Licensing is essential in that it allow governmental entities to produce a maintain nuclear energy. The reason being is that the government would know who or what is responsible and make sure that they take responsibility. You than could ask, “What about the other licenses”? The other licenses are included, but by including alternative requirements or approaches it allows the licenses to be further improved. My point is further emphasized by this quote,” Various sections of the 10 CFR part 53 preliminary proposed rule language will be released to stakeholders during the development of the proposed rule” (Federal Register, 2020). The need to stay objective is not just important from

a safety standard and the wellbeing of the of the community, but also by the stockholders that work with the government when it comes to nuclear energy.

There are many ways to get energy through fossil fuel, wind, and water, but with the proposed rule change nuclear energy would become attractive. The reason being is that it would be safe to handle and practice. Critics would oppose this but because the rules would be updated, and outdated practices would not be taken place meaning that they would not be able to criticize. Technology encompasses this debate in that it allows for new ways of changing and replacing old reactors. Th objective of is described clearly in that it would allow for better licensing requirements by expanding rules that need to be checked and create better judgments as a whole from the various stockholders. The need for a rule change is necessary and the rule change that is proposed for nuclear energy is sound and reasonable.

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