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Comment On: NRC-2019-0062-0310 Risk-Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors

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General Comment

See attached file(s)

Attachments

Rulemaking assignment

I am writing today to express my concerns regarding the environmental impact of nuclear power plants. I believe that the step being made to enforce more specific requirements in regards to regulating nuclear plants is a necessary and effective one. Though I am delighted to see action being taken on this issue, I have a couple questions about some aspects of this proposed rule. As a college student studying Environmental Economics: Management and Policy, hopeful to have a long and bright future ahead, I feel a sense of responsibility to voice my opinion on a topic that has significant implications for both public health and the environment in my future.

While nuclear energy is often touted as a low-carbon alternative to fossil fuels, it is not without significant pollution risks. According to the U.S. Energy Information Administration, "Nuclear reactors do not produce direct carbon dioxide emissions...However, the processes for mining and refining uranium ore and making reactor fuel all require large amounts of energy." Though there is not a huge contribution to greenhouse gases emissions, nuclear energy still presents several environmental concerns that cannot be overlooked. The extraction and processing of uranium not only consume vast amounts of energy but also generate hazardous waste and contribute to habitat destruction The US Department of Energy explains in their article *Nuclear Fuel Cycle* that, "In open pit mining, where deposits are close to the surface, overlying rock is stripped out, creating the open pit. For deeper deposits of uranium, underground mines are dug, with smaller surface disturbance and much less material being removed to access the ore. Underground mines require special precautions for increased ventilation to protect against airborne radon exposure." Though they explain that there is minimal surface damage, the miles of mining that expand underneath the surface is more damaging than a larger scale of surface disturbance. Given these concerns, why now? Why is this the moment regulators are choosing to take action?

Additionally, nuclear plants produce radioactive waste that remains dangerous for thousands of years, requiring careful management and long-term storage solutions to address issues such as the risk of accidental radiation leaks. While modern reactors are designed with safety measures, past incidents such as Chernobyl highlight the catastrophic consequences of failures in nuclear facilities. Even smaller-scale leaks, such as those involving tritium-contaminated water, can pose long-term risks to groundwater and ecosystems.

To continue, in the section Cost and Benefits section, it is stated that the NRC conducted a study to estimate the costs and benefits of a proposed rule and its related guidelines. Their analysis shows that the rule would save money for both the industry and the NRC, with expected savings ranging from \$53.6 million (using a 7% discount rate) to \$68.2 million (using a 3% discount rate), assuming one applicant follows the new regulation. If more applicants participate, the savings would increase. In addition to financial savings, the NRC considered other benefits, such as making the licensing process more stable, predictable, and clear. The rule would incorporate modern risk assessment methods and existing regulatory improvements, helping ensure safety while allowing companies more flexibility in meeting requirements. How does the NRC account

for potential uncertainties in its cost savings estimates, especially if more applicants than expected apply or if unforeseen regulatory challenges arise?

Furthermore, while nuclear energy is often considered a stable power source, the high costs and long construction times of new plants make it less adaptable in response to the urgent climate crisis. Investing in nuclear infrastructure may divert resources from faster-deploying renewable energy sources such as wind and solar, which do not carry the same waste management and accident risks.

In the proposed rule, it is mentioned in the Major Provisions section B that "A new alternative technology-inclusive, risk-informed, performance-based framework that includes requirements for licensing and regulating nuclear plants during the various stages of their life cycles." This is a crucial step, but does it go far enough to address the long-term risks? Nuclear plants generate radioactive waste, which remains hazardous for thousands of years and poses a severe threat to ecosystems and human health if not properly managed. Additionally, the routine release of tritium and other radioactive isotopes into water sources raises concerns about long-term contamination. Jeff Donn of AP Media reports that "Tritium, which is a radioactive form of hydrogen, has leaked from at least 48 of 65 sites, according to the U.S. Nuclear Regulatory Commission records reviewed as part of the AP's yearlong examination of safety issues at aging nuclear power plants. Leaks from at least 37 of those facilities contained concentrations exceeding the federal drinking water standard — sometimes at hundreds of times the limit." Considering both the regulated routine release levels and the rates of leakage mentioned above, Can one feel confident that this proposed rule will allow for pollution levels from nuclear plants to decrease in 10 years? Will these new regulations make a measurable difference in reducing contamination, or will the slow accumulation of radioactive waste and leaks continue to harm the environment and public health?

Regulatory agencies must enforce stricter waste disposal and cooling water management policies to minimize environmental harm. Increased transparency, investment in safer waste storage solutions, and independent monitoring of radiation levels near plants are essential to protecting public health and the environment. Additionally, policymakers must consider the long-term environmental consequences and whether nuclear energy is truly a sustainable option. I urge regulators to prioritize these concerns in policy decisions regarding nuclear energy and ensure that any steps taken now genuinely lead to a safer, cleaner future. Are we setting ourselves up for a future where water contamination and long-term waste storage issues become unmanageable?

Citation(s):

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