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Developments in Nuclear Energy

Summary of Comments - September 27, 2023

On September 27, 2023, OurEnergyPolicy hosted a discussion on the current state of nuclear technology and small modular reactors. Find the recording here.

SPEAKERS

Kristy Hartman
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Our Energy Policy is a non-partisan organization. The following represents a summary of comments from the panelists.

Summary of Key Points

- According to the Advanced Nuclear Liftoff Report, advanced nuclear can play a critical role in strengthening energy security, reliability, and affordability, while generating high-quality, high-paying jobs and facilitating an equitable energy transition.
- Utilities say the United States needs 330 new advanced nuclear reactors in the next 25 years.
- Advanced reactors have less construction cost because they are factory-built, built on-site, and have advanced passive safety systems.
- It will take time and investment to rebuild the nuclear supply chain and workforce in the United States.

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Nuclear Technology In the Clean Energy Transition

- Nuclear energy provides clean base load energy for a relatively low land print in a way that can work in tandem with renewable energy sources.
- Nuclear can convert energy into other energy products like clean hydrogen.
- DOE has several opportunities to help support the development of nuclear:
  - The Advanced Reactor Demonstration Program (ARDP).
  - The Risk Reduction Program: Solving technical, operational, and regulatory challenges.
- New nuclear technologies like the AP1000 are far safer than previous models because they are less complex and studied thoroughly.
- Smaller modular reactors (SMRs) and microreactors require less capital investment, significantly de-risking projects.
  - SMRs suit industrial plants and Big Tech data centers looking for consistent, local energy.
  - SMRs are also great for powering remote communities that often pay premiums to access energy and heat.

Economics and History of Nuclear Energy in the U.S.

- The United States went 40-50 years without building new nuclear reactors.
- Since no investor wants the risk of investing in the first new reactor, they are joining consortiums to share both the risks and rewards of a nuclear reactor.
- Consistency in developing nuclear projects will improve success rates because they will support domestic workforce development, finance, and research.
- The longer lifespan of nuclear plants balances out the higher up-front costs.
- Studies show that coal plants converted into nuclear plants have increased economic benefits including: number of jobs, labor income, and local GDP.

Nuclear Waste

- Nuclear creates less waste per energy output versus fossil fuels.
- The nuclear industry is responsible for every gram of waste it produces.
- There are technologies available to reduce volume and longevity of waste, including reprocessing waste for reuse.
- Geological repositories are effective, safe, long-term solutions for nuclear waste.