

CLIMATE CHANGE AND THE ROLE OF NUCLEAR ENERGY

Tom Eggert
March, 2023



We need nuclear power to avoid catastrophic climate change.

Why We Need Nuclear	Nuclear Power Facts



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3. Living near a nuclear plant is dangerous.

Fact: Eating **some bananas** would give a person an equivalent dose of radiation as residing near a nuclear power plant **for a year**. See **Facts** and **Radiation** on our web site for much more information on this topic.

4. Nuclear power produces dangerous "waste."

Fact: After the fuel is used in a reactor, it is removed and placed into secure storage casks. This unspent fuel (only 2% consumed) will be fully used in advanced reactors when they begin to operate in a decade. There are hundreds of years of potential energy remaining in these "leftovers." See **Facts** and **Nuclear Waste** on our web site for images that demonstrate this clearly.


5. Terrorists could get their hands on nuclear material and make bombs.

Fact: First, all nuclear material is kept under strict security. Many levels of security exist at all existing nuclear power plants for our stored spent fuel. It would be extraordinarily difficult to mount an assault on a nuclear power plant and make off with any radioactive material. Secondly, to make a nuclear bomb requires using highly concentrated, nearly pure Uranium-235, virtually impossible for a rogue state to manufacture. While a simple "dirty bomb" can be made of radioactive material, there are far easier ways to wreak havoc than going this route.

6. Nuclear power is expensive.

Fact: When nuclear power is not hampered by unfair market forces we can make a lot of energy quite cheaply. It is also the only energy source that can run 24/7 at full power without producing greenhouse gas emissions.

These are some of the common myths about nuclear power. If you agree with our "facts" – and there are plenty more, then you may wish to help us spread the word and reverse the years of misinformation that is holding fission power back.

PODCAST EPISODE 1.63 

Do we need nuclear power to solve climate change? Amory Lovins says no

In 2017, the V.C. Summer Nuclear Plant expansion – meant to hail the renaissance of nuclear power in the US – came screeching to a halt. The project, to build two new reactors at an existing South Carolina facility, was canceled after being delayed more than a year, costing \$9 billion USD, and still being only 40% complete. Now, the only new nuclear project in the works in the U.S. is the Vogtle Plant expansion in Georgia; a project also more than a year behind schedule, and billions of dollars over budget. Still, nuclear projects remain a focus of government and think tank decarbonization strategies. Why?

Dr. Amory Lovins, adjunct professor of Civil and Environmental Engineering at Stanford University, and international authority on the clean energy transition, joins Climate Now to explain why he thinks nuclear should no longer be considered as a source of energy. For Amory, it's not just the chance of environmental catastrophe or nuclear proliferation that make it a non-starter, it's the economics.

RUNNING TIME: 26 min



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Clean Energy

In Georgia, Bloated Costs Take Over a Nuclear Power Plant and a Fight Looms Over Who Pays

Vogtle's two new nuclear reactors are six years late and at least \$16 billion over their original budget. The plant will have no direct carbon footprint, but critics say there are much cheaper ways to reduce emissions.

By James Bruggers January 21, 2022



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Vogtle 3 & 4

First new nuclear units to be built in the U.S. in over 30 years

MILESTONE UPDATE – March 6, 2023

Unit 3: Vogtle Unit 3 reaches initial criticality

Vogtle Unit 3 has safely reached initial criticality. This is a key step during the startup testing sequence and demonstrates that operators have safely started the nuclear reaction inside the reactor for the first time. This means atoms are being split and nuclear heat is being made, which will be used to produce steam.

[Read press release](#) ▶



Learn more about Vogtle Unit 3 initial criticality.

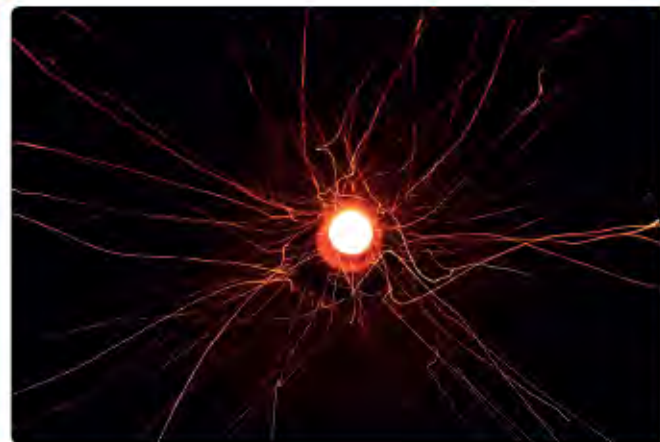
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The nuclear option

Does a decarbonising world need atomic energy?



Nick is the Head of Commodity Research at Legal & General Investment Management (LGIM). He joined in 2013 as a Fund Manager in LGIM's Global Equity team, focused on energy and natural resources.



- Does expensive, complex and potentially dangerous nuclear power have a role to play in the energy mix of the future?
- In the US and Europe, probably not. It's too expensive
- However, we think investors who write off nuclear altogether are missing a renaissance taking place in Asia, enabled by the structural market differences

of disasters; Germany, Taiwan and South Korea have all either expressed significant reservations about the role of nuclear power in their economies, or actively rejected it. Even in Europe's nuclear powerhouse – France – policy and public perception appears to be hardening.



7 reasons why nuclear energy is not the answer to solve climate change

Renewable Energy

Climate

Industry



Mark Z. Jacobson

Professor of Civil and Environmental Engineering, Director, Atmosphere/Energy Program, Stanford University

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One nuclear power plant takes on average about 14-1/2 years to build, from the planning phase all the way to operation. According to the World Health Organization, about 7.1 million people die from air pollution each year, with more than 90 percent of these deaths from energy-related combustion. So switching out our energy system to nuclear would result in about 93 million people dying, as we wait for all the new nuclear plants to be built in the all-nuclear scenario.

Utility-scale wind and solar farms, on the other hand, take on average only 2 to 5 years, from the planning phase to operation. Rooftop solar PV projects are down to only a 6-month timeline. So transitioning to 100% renewables as soon as possible would result in tens of millions fewer deaths.



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Next-gen nukes

Scores of nuclear startups are aiming to solve the problems that plague nuclear power.



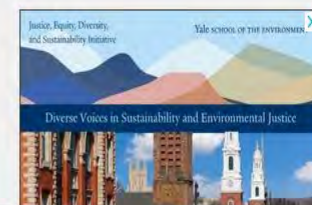
Grist / Adrian Burke / Getty Images

Nathanael Johnson
Sr. Staff Writer

Published Jul 18, 2018

Topic Climate + Technology

Back in 2009, Simon Irish, an investment manager in New York, found the kind of opportunity that he thought could transform the world while – in the process – transforming dollars into riches.





Vogtle 3 & 4

First new nuclear units to be built in the U.S. in over 30 years

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[Learn more about Vogtle Unit 3 initial criticality.](#)



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Plant Vogtle Update: Further Behind Schedule, Still Billions Over Budget

May 17, 2019 11:15 AM | Updated: August 13, 2020 11:28 PM

By: [Amy Kiley](#) and [Virginia Prescott](#)

Heard on [On Second Thought](#)



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The only nuclear power project under construction in the country, Plant Vogtle's expansion is billions of dollars over budget and now another month behind schedule.. / GPB News

Georgia Power customers and taxpayers have been helping foot the bill for the expansion project at Plant Vogtle, which is billions of dollars over budget and years behind schedule.

[Steven Biegalski speaks with On Second Thought host Virginia Prescott about progress on Plant Vogtle and the future of the project.](#)

The state's largest utility is building two new nuclear reactors at the facility south of Augusta. It's a massive project, the only nuclear power project under construction in the country, and it's been plagued by equally massive problems.

The Georgia Public Service Commission has been reviewing the status of the project this week after receiving a required update from Georgia Power.



Home Page > Latest Thinking > Energy Transition Requires Nuclear Foundation

FEBRUARY 2, 2023

Energy transition requires nuclear foundation

ClearBridge Investments: While misconceptions surrounding its risks have made it controversial, we believe nuclear energy is a safe, reliable, efficient and environmentally-friendly base power source to complement greater renewables penetration.



Key Takeaways

- We believe nuclear energy is the ideal foundation for the energy transition, offering a safe, reliable, efficient and environmentally-friendly base power source to complement greater renewables penetration.
- While misconceptions surrounding the risks of nuclear power have made it controversial, greater fiscal support and understanding of its benefits are helping clear the way for increased usage.
- New innovations in nuclear power design and operations, such as small modular reactors (SMRs), are creating compelling long-term investment opportunities, in our view.



CONTRIBUTORS

 **Reed Cassidy, CFA**
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Bill Gates' quixotic quest to revive nuclear power

The argument for building nukes, never mind subsidizing them, has lost its power.

By [Greg Kats](#)

February 7, 2019



[Greg Kats](#)

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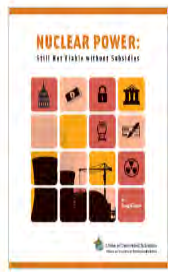
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Bill Gates has been lobbying Congress to secure federal financial support for nuclear power and for a nuclear company in which he is a large investor. This plea for federal largesse from a decabillionaire illustrates why further nuclear subsidies make no sense.

Nuclear power is already a heavily subsidized 60-year-old industry with over half a trillion dollars invested in several hundred large operating nuclear plants, including 99 in the United States. The cost of nuclear power has soared while the cost for other low-carbon power options — including wind, solar, batteries and energy efficiency — have plunged. This is why no U.S. utilities want to build nuclear plants unless they can get large additional subsidies.



REPORTS & MULTIMEDIA / REPORT

Nuclear Power: Still Not Viable without Subsidies

Published Feb 23, 2011

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Government subsidies to the nuclear power industry over the past fifty years have been so large in proportion to the value of the energy produced that in some cases it would have cost taxpayers less to simply buy kilowatts on the open market and give them away, according to a February 2011 report by the Union of Concerned Scientists.

The report, *Nuclear Power: Still Not Viable without Subsidies*, looks at the economic impacts and policy implications of subsidies to the nuclear power industry—past, present, and

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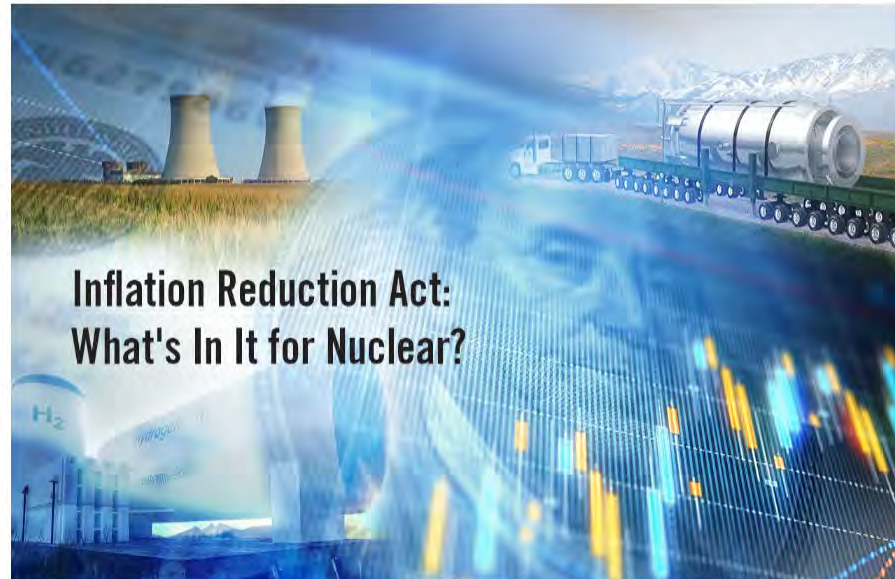
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WEBINAR

The IRA: Crediting nuclear energy

Wed, Sep 7, 2022, 3:03PM | Nuclear News



Inflation Reduction Act: What's In It for Nuclear?

While the Inflation Reduction Act of 2022 (IRA), recently signed into law, has created a good deal of buzz in the nuclear community, the thought of wading through its 730 pages of legislative language can be a bit intimidating. Which is why, on August 26, the American Nuclear Society offered an hour-long, members-only webinar on the legislation and its key provisions for nuclear energy.

Moderated by John Starkey, ANS's director of public policy, "Inflation Reduction Act: What's in It for Nuclear" featured Benton Arnett, director of markets and policy for the Nuclear Energy Institute; Josh Siegel, energy and climate change

ENERGYWIRE



DOE nuclear bailout faces legal threat

Environmental and public health groups are facing off against the Biden administration, which views nuclear as an effective carbon-free power source, along with two heavyweight Democratic governors.



BY: BRIAN DABBS | 01/30/2023 06:55 AM EST



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By [Greg Kats](#)

February 7, 2019



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