We negate.

Contention 1 is Accidents.

Increasing the use of nuclear energy would cause a nuclear accident for four reasons.

First, building new plants.

Lochbaum of the Bulletin explains that new nuclear reactors have a higher risk of meltdowns because of imperfections in their design or assembly errors. Thus, Shrader of MIT quantifies that tripling the number of nuclear reactors in the US would lead to four nuclear accidents.

Second, natural disasters.

Kamps '08 of Beyond Nuclear writes that global warming induced natural disasters like tornadoes and hurricanes makes nuclear plant meltdowns inevitable because they cause station blackouts. Unfortunately, Lyman of Stanford finds that expanding nuclear power in the US would increase the risk of such a disaster.

Third, keeping old plants alive.

NPR explains that the majority of domestic nuclear reactors are planned to close in the near future. Unfortunately, affirming likely means that we keep them producing to maximize output. Problematically, Lochbaum explains that America's old reactors are more likely to melt down because they wear down over time. In fact, a 60 year old fleet of reactors has a 45 percent chance of a nuclear meltdown.

Fourth, a lack of skilled workers.

CBS News reports that new nuclear plants simply don't have enough skilled workers. Problematically, the Energy Defense League finds that a shortage of skilled workers increases the chance of an accident because most meltdowns are caused by human error.

For these four reasons, Columbia University finds that nuclear meltdowns are inevitable. Shrader quantifies that just one accident could cause 140,000 deaths due to lethal radiation. Beale of the Guardian impacts that just one accident would cause public and investor backlash that would kill the industry.

Contention 2 is Going Nowhere with Nuclear

Currently, the US is paving a successful path to combat climate change. According to Bloomberg Energy News, public and private actors have spent over 2 trillion dollars on solar and wind investment since

2007. The World Resource Institute explains that right now the US is on track to meet 80% renewable production by 2050.

The reason behind the current trend of renewable investment is federal subsidies. Shellenberger 18 quantifies that renewable energies such as solar and wind have received 94x as many subsidies as coal and nuclear.

Problematically, Manhattan Institute '19 concludes that the only feasible way to increase the production of nuclear energy would be to remove current subsidies and disincentivize the production of wind and solar. Thus, Gravitz of Green America notes that investment in nuclear plants would directly draw funding away from investment in cleaner sources such as wind and solar because nuclear energy is widely seen to be a direct alternative.

History proves this tradeoff as Siciliano 19 writes that the last time the US increased spending on nuclear energy, the Department of Energy slashed funding to renewable energy sources by an astounding 71%.

Problematically, a shift to nuclear energy will take too long in the fight against climate change for three key reasons:

1. Human Capital. APS Physics finds that there is a severe shortage of nuclear scientists, engineers, and technicians. For this reason, the World Business Academy finds that no matter how fast we try to build new nuclear plants, there aren't enough workers with the required expertise to build the number of nuclear plants needed during the next 30 years.

2. Research and Development. Stein 17 empirically finds that government funding of nuclear energy has led to over-regulation which has pushed nuclear innovation overseas. Thus, Beillo 13 concludes that the US is decades behind on nuclear R&D, and, as a result, all attempts to build new nuclear reactors have drastically failed.

3. Public Perception. Medium News reports in 2019 that a mere 38% of people approve the expansion of nuclear energy. Thus, Groskopf 16 concludes that in the most recent nuclear plants, projects have taken exceptionally long to construct primarily due to public safety concerns and exceptionally strict regulatory expectations.

   Unfortunately, for these three reasons, Groskopf observes that the most recent nuclear reactor built in the US took 43 years to complete from start to finish.

For these three reasons, Beyond Nuclear concludes that every dollar spent on nuclear energy would save six times as much carbon if it was spent on renewables. Overall, The Scientific American finds that it would take over 30 years to replace fossil fuels with nuclear energy.

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Unfortunately, Fountain '19 of the New York Times finds that climate change is accelerating, with disasters becoming more frequent as temperatures continually rise. Thus, The UN Secretary General 19 quantifies that, as a society, we only have 11 more years to prevent the irreversible damage of climate change, where millions die.

The National Geographic finds that just a 0.5 degree increase in global warming would lead to 153 **million** deaths worldwide.

https://www.manhattan-institute.org/nuclear-power-emissions-free-solution //TP

Whither nuclear power? That question has become more important as energy policies evolve to emphasize emissions-free "green" energy and an increased electrification of the U.S. economy. Some environmentalists consider nuclear power to be crucial to reducing carbon emissions; others continue to vehemently oppose nuclear power and believe that our energy must come solely from renewable sources. Asked whether they favor or oppose nuclear power, the public is split.* **Meanwhile, the nuclear power industry itself is in a parlous state for a variety of reasons. These include: (i) decades of construction cost overruns and plant delays because of poor designs, lack of manufacturing expertise, and changing regulations; (ii) political squabbling over spent nuclear fuel disposal; (iii) energy policies, including renewable energy subsidies and mandates, that have distorted electric power markets and made it harder for nuclear plants to compete; and (iv) lower natural gas prices and more efficient gas-fired generators.** In the past few years, threatened plant closures have led state policymakers to award subsidies to a number of existing plants, and more such subsidies are likely forthcoming. Nevertheless, nuclear power provides valuable benefits. It is highly reliable and emissions-free. It provides generation diversity, which can reduce the adverse impacts of fuel price shocks. It does not require backup and storage, unlike wind and solar power generation. New designs for nuclear plants promise lower costs and improved safety. **This paper thus concludes that saving nuclear power is crucial to this country's energy future, especially if that future is based on increased electrification. Several policies are necessary to preserve this power source.** They include: **Eliminating subsidies for renewable energy at the state and federal level, including federal production tax credits, state renewable portfolio standards, and feed-in tariffs for renewable resources that are increasingly distorting wholesale electric markets.** Linking subsidies for existing nuclear plants to wholesale market prices of electricity and combining them with performance incentives that require improved operating efficiency over time. However, before subsidies are granted to prevent a nuclear plant's closure, a comprehensive cost-benefit analysis should be performed to ensure that the grant is not a futile exercise or is so costly that building replacement generating capacity is a lower-cost alternative.Providing government loan guarantees for the construction of new nuclear plants. But these guarantees must require investors to bear a portion of the financial risk and require developers to prove that their reactors are safer and more reliable than existing ones. Developing public-private partnerships that will leverage existing nuclear-focused Department of Energy (DOE) facilities like the Idaho National Laboratory and the Oak Ridge National Laboratory. Those labs can be used to test and evaluate new nuclear technologies. Test reactor sites can also be used to validate more efficient manufacturing techniques. Solving the current political logjam over a permanent spent-fuel repository by identifying communities near geologically suitable sites that wish to host such a depository with the promise of local jobs and improved economic growth.

David Stein. https://strata.org/pdf/2017/us-nuclear-power.pdf //TP

Nuclear energy is a reliable, safe, and environmentally-friendly energy source that has had almost no new developments in the United States over the past 30 years. One possible explanation for this is that regulatory barriers for nuclear energy may make new construction prohibitively costly. Still, nuclear power accounted for 20 percent of the electricity generated in the U.S. in 2016 while producing no greenhouse gas emissions.1 Construction of new state-of-the-art reactors in Georgia and South Carolina are ushering in a new era of nuclear energy in the U.S.2 These plants are the first to be

constructed in over three decades, and are expected to come online in 2019 and 2020.3 Most nuclear power plants in use today were constructed in the 1960s and '70s.**4 The long lapse in new construction can be attributed to a strict and overly-cautious regulatory environment for the licensing and operation of nuclear power plants, as well as the lack of permanent nuclear waste disposal solutions. The over-regulation of nuclear energy has not only led to missed opportunities with a promising energy source, but has also pushed nuclear innovation overseas.** For example, the U.S. nuclear company TerraPower created a reactor design, and recently choose to partner with the China National Nuclear Corporation.5 James Conca, a nuclear energy expert, suggests that "the regulatory environment in America is so glacial that TerraPower and CNNC will build the first unit in China then deploy commercial versions of this new reactor to global markets within fifteen years."6 This report focuses on existing nuclear reactor technologies and begins by examining the history and science behind nuclear energy, as well as its potential benefits. It then reviews government policies that affect nuclear development, construction, and waste disposal. In closing, the report examines how recent legislation impacts the growth of the nuclear industry and suggests opportunities to change the regulatory process impacting its expansion.