

Noah and I negate, Resolved: The United States should increase its use of nuclear energy for commercial energy production.

Contention 1: Indigenous People

The NIRS in 2001 explains that Native Americans have borne the brunt of both the front and back ends of the nuclear fuel cycle.

In the past, **Bienkowski of Environmental Health News in 2016** finds that 90 percent of uranium milling in the United States took place on or just outside the boundaries of Native American reservations, leaving a legacy of dirty water, leftover toxic waste, and health problems such as lung cancer and developmental delays for children in many Western tribes.

However, **Romero of Socialism in 2013** reports that the deadly threat is far from over with the mining industry now lobbying to lift bans and regulations on uranium mining. Their efforts being prompted by the increased demand for uranium by the nuclear energy industry.

Mccombs of Time in 2020 continues that the nuclear industry and current administration are seeking to increase U.S. uranium mining by 1.5 billion dollars in order to increase the U.S. nuclear energy market.

Overall, **Romero** summarizes that the immediate drive for profits has guided the mining industry to disregard the lives of Native Americans.

The impact is uranium poisoning

Ballesteros of Newsweek in 2017 concludes that hundreds of Navajo have died from conditions tied to uranium contamination. 27 percent of the Navajo citizens have high levels of uranium in their urine, compared with five percent of the entire U.S. population. High uranium can cause lung cancer, pneumoconiosis, tuberculosis, and chronic obstructive pulmonary disease. The effects of contamination also reached the children and grandchildren as Navajo children ingested water with uranium levels at least five times greater than safe drinking water standards, leading to children developing a neurological disorder called Navajo neuropathy.

Contention 2: Destroying Wildlife

The U.S. Fish and Wildlife Service in 2018 writes that nuclear power plants are located along lakes, rivers or sea coasts because the facilities use water to cool the reactors.

Dickson of The Atlantic in 2011 furthers that it takes the same amount of water required by a city of 5 million to fuel a typical U.S. nuclear power plant for one hour.

Overall, **Styles of Stanford** reports that 320 billion gallons of water were consumed by the United States nuclear power plant electricity generation in 2015.

There are two ways in which nuclear plants' use of water destroys aquatic life.

First, filtration systems

Sovacool of the Virginia Polytechnic Institute in 2008 reports that nuclear plants bring water into the cycle through filtering screens. Marine organisms are frequently killed as they are trapped against the screens and organisms can be swept up in the water flow where they are subject to toxic stress. Billions of organisms, essential to the food web, are sucked into reactor systems. Organisms are pulverized and discharged as sediment that clouds the water, blocking light, which further kills plants and animal life.

Sovacool furthers that along the Ohio river 11 million fish were killed through impingement and 24 million from entrainment.

Second, thermal pollution

Miller of UNESCO in 2019 reports that of many cooling water systems, the best efficiencies and the lowest capital and operational costs of cooling systems are achieved with once-through cooling with the power plant sited on large natural water bodies.

Which is why **MacFarlane Stanford in 2018** quantifies that 86 percent of plants drawing water from the sea used once-through cooling.

This is problematic as **Fleischli of the NRDC in 2014** explains that as water passes through a once-through cooling system, it gets warmer than the source water. Discharging that warmer water stresses and kills fish and other wildlife because of decreased oxygen.

WISE in 2013 furthers that fish also die from 'cold stunning' because some fish acclimatize to the warm water but die when the reactor is taken off-line and warm water is no longer expelled.

The impact is killing marine life

Theilman of The Guardian in 2016 writes that just one nuclear plant in the United States kills 1 billion fish and other aquatic organisms a year.

Fortunately, as nuclear facilities have continued to shut down in the status quo, we have seen marine life begin to revive once again as **The Associated Press in 2019** reports that in New Jersey, creatures such as stinging jellyfish began thriving again as a result of the recent closure of a nuclear power plant.

Thus we negate

C1 Cards:

[Nuclear Information and Resource Center in 2001](#)

“Nevadans and Utahans living downwind and downstream from nuclear weapons testing, uranium mining, and radioactive waste dumping have suffered immensely during the Nuclear Age. But even in the “nuclear sacrifice zones” of the desert Southwest, **it is Native Americans—from Navajo uranium miners to tribal communities targeted with atomic waste dumps—who have borne the brunt of both the front and back ends of the nuclear fuel cycle.**”

[Bienkowski of the Environmental Health News in 2016](#)

“Most of the mines were on federal land—managed by the Forest Service or Bureau of Land Management. But tribes, namely the Navajo, were swept into the uranium-mining boom for both their labor and land and are still dealing with the mess it left. More than 521 abandoned uranium mines pocket Navajo land alone. **Some 90 percent of uranium milling in the United States took place on or just outside the boundaries of Native American reservations, according to a 2015 study. This left a legacy of dirty water, leftover toxic waste and health problems such as lung cancer and developmental delays for children in many Western tribes. Such pollution becomes a force multiplier for Native Americans—on the Crow reservation it adds to economic, health and historical burdens, and further complicates the ability to cultivate and sustain their culture.**”

[Romero of Socialism in 2013](#)

“Uniting with other environmentalists, Native resistance to new mining proposals and the buildup of nuclear power plants intensified in the 1970s and ‘80s. During the 1990s, the Western Shoshone and Paiute led protests to stop a nuclear waste dump on Yucca Mountain. In 2008, the Spokane won a complaint against Newmont, which was ordered to pay a share of the multimillion-dollar cleanup. **The deadly threat is far from over, however, with the mining industry now lobbying to lift bans and regulations on uranium mining. Their efforts are prompted by the increased demand for uranium by the global nuclear energy industry.** Uranium surpluses are drying up in Europe, and U.S. corporations are looking for ways to commence their highly profitable toxic exploitation once again. Their well-funded propaganda machine is at it again, cynically trying to convince people that nuclear energy is “safe and sanitary” compared to noxious, climate-change-inducing fossil fuels. I’m reminded of a merry Disney cartoon that was shown to my class in grade school, which showcased characters from the Magic Kingdom telling us about the promise of atomic power as an abundant and clean source of energy. The film left out, of course, the destructive nature of this energy. In its goal of finding ways to make buckets of money, the capitalist market system does not plan for disastrous long-term impacts. **Without a doubt, the immediate drive for profits has guided the mining industry to disregard the lives of Native Americans,** communities of color, and a growing list of poor and working people. Their shortsightedness will impact everyone who lives on this one and only planet of ours for generations to come.”

[Mccombs of Time in 2020](#)

“(SALT LAKE CITY) — **The Trump administration is asking Congress for \$1.5 billion over 10 years to create a new national stockpile of U.S.-mined uranium, saying that propping up U.S. uranium production in the face of cheaper imports is a matter of vital energy security.** But some Democratic lawmakers, and market analysts across the political spectrum, charge that the Trump administration’s overall aim is really about helping a few uranium companies that can’t compete in the global market. Demand for the nuclear fuel has languished worldwide since Japan’s 2011 Fukushima disaster. U.S. uranium production has plummeted 96% in the last five years, the U.S. Energy Information Administration reported Thursday.”

[Ballesteros of Newsweek in 2017](#)

“According to the Environmental Protection Agency, private companies extracted nearly 30 million tons of uranium ore from Navajo lands from 1944 to 1986, primarily for nuclear weapons. Once the Cold War ended, the uranium industry started collapsing, leaving 521 abandoned mines throughout the Navajo Nation. Since then, **hundreds of Navajo have died from conditions tied to uranium contamination. A report by the Center for Disease Control in 2016 also found that 27 percent of the study's Navajo participants "have high levels of uranium in their urine," compared with five percent of the entire U.S. population. High uranium can cause lung cancer, pneumoconiosis, tuberculosis, and chronic obstructive pulmonary disease. The effects of contamination also reached the children and grandchildren of miners: NPR reported that Navajo children ingested water with uranium levels at least five times greater than safe drinking water standards, leading to their children developing a neurological disorder called Navajo neuropathy.**”

C2 Cards:

[Fish and Wildlife Service in 2018](#)

“**Most nuclear power plants are located along lakes, rivers or seacoasts because the facilities use water to cool the reactors. Cooling water discharged from a plant can affect the ambient habitat conditions for aquatic species.** Fish, freshwater mussels and aquatic macroinvertebrates such as mayflies may be affected by altered water temperature changes. **Water that is too hot or too cold can** harm or **kill aquatic species**, affect their health or **[and] impact their habitats**. Fish may not swim in rivers with altered temperature that can compromise their spawning activities. Water temperature changes can also affect prey or other food items, reducing prey availability and diversity. Nuclear energy involves mining for uranium ore to use in the reactors. Mining activities may result in impacts to streams and other habitats. Habitat may be lost, disturbed or fragmented. Streams may be crossed or buried. Soil placed in streams may change the water chemistry, affecting aquatic species. Uranium-bearing formations are usually associated with strata containing high concentrations of selenium. Pit lakes formed in open pit uranium mines can contain very high levels of selenium in the water. Waterborne selenium concentrations greater than two micrograms per liter are known to impair the reproduction and survival of aquatic birds. When found, these concentrations are likely caused by selenium concentrating in aquatic organisms higher in the food chain (bioaccumulation). Older mines may be associated with releases of uranium and other radionuclides, metals and other contaminants.”

[Dickson of The Atlantic in 2011](#)

“**It takes the same amount of water required by a city of 5 million to fuel a typical U.S. nuclear power plant for one hour: 30 million gallons**, Fast Company reports. Charles Fishman, author of the book The Big Thirst, notes that “the U.S. has 104 nuclear power plants—more than any other country, a quarter of all plants worldwide.” As the world's largest energy consumer, “49% of the water used in the U.S. goes to generate electricity,” Fishman notes. That's “the single largest use of water” in the country.”

[Styles of Stanford in 2017](#)

“As of 2015, nuclear energy accounted for roughly 20% (797.2bn kWh) of total U.S. electricity generation in 2015. [3] **With Nuclear Energy consuming roughly 400 gallons of water per megawatt-hour, 320 billion gallons of water were consumed by United States nuclear power plant electricity generation in 2015.** [2] To put that into perspective, that is enough water freshwater to fill over 480,000 Olympic pools. In addition, in order to satisfy the energy consumption needs of the global population in 2015, nuclear power plants would have had to consume a volume of water equivalent to roughly 1.5 times that of Lake Tahoe. While that might seem like a large number, nuclear power plant water consumption dwarfs in comparison to other consumer sectors.”

Filtration Systems:

Nuclear power kills billions of aquatic creatures.

Sovacool and Cooper ⁸ Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globalization, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the **Virginia Polytechnic Institute** & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) "Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges" William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 <http://scholarship.law.wm.edu/wmelp/vol33/iss1/2>

Nuclear plants do not just use water-they also contaminate it at multiple points of the cooling cycle: at the point of intake, at the point of discharge, and during unexpected accidents. **At the point of intake, nuclear plants bring water into the cooling cycle through filtering structures.** To minimize the entry of debris, **water is often drawn through screens.**³⁷⁴ **Seals, sea lions, endangered manatees, American crocodiles, sea turtles, fish, larvae, shellfish, and other** riparian or **marine organisms are frequently killed as they are trapped against the screens** in a process known as impingement.³⁷⁵ **Organisms** small enough to pass through the screens **can be swept up in the water flow where they are subject to mechanical, thermal and toxic stress** in a process known as entrainment.³⁷⁶ **Billions of smaller marine organisms, essential to the food web, are sucked into nuclear reactor systems and destroyed.** Smaller fish, fish larvae, spawn, and a tremendous volume of other **marine organisms are** frequently **pulverized by reactor condenser systems.** One study estimated that more than 90% are scalded **and discharged back into the water as lifeless sediment that clouds the water** around the discharge area, **blocking light** from reaching the ocean or river floor, **which further kills plant and animal life** by curtailing photosynthesis and the production of oxygen.³⁷⁷ **During periods of low water levels, power plants induce** even **more** environmental **damage.** **Nuclear plants** must **extend intake pipes further into rivers and lakes** but as they approach the bottom of the water source, **"they [often] suck up** sediment, **fish,** and other debris..."³⁷¹ Impingement and **entrainment** consequently **account for substantial losses of fish** and exact severe environmental consequences during the riparian environment's most vulnerable times. For example, **federal environmental studies of entrainment** during the a1980s at five power plants on the Hudson River in New York **estimated grave year-class reductions in fish populations**-the percent offish killed within a given age class.³⁷⁹ One study concluded that **the power plants were responsible for age reductions as high as 79%for some species.**⁸ "An updated analysis [of entrainment] completed in 2000 at three of these plants estimated year-class reductions of 20 percent for striped bass, 25 percent for bay anchovy, and 43 percent for Atlantic tom cod. . . ." Another study "evaluated entrainment and impingement impacts at nine . . . facilities **along** a 500 mile stretch of **the Ohio River.**"³ ² The authors estimated that approximately **11.6 million fish were killed** annually **through impingement and 24.4 million fish from entrainment.**³ The study calculated recreational related losses at about \$8.1 million per year.³ ⁴ The U.S. Environmental Protection Agency ("EPA") calculated impingement losses at the Delaware Estuary Watershed at more than 9.6 million age-one equivalents of fish every year, or a loss of 332,000 pounds offishery yield.³⁸⁵ The EPA calculated that entrainment related losses were even larger at 616 million fish, or a loss of sixteen million pounds of catch.³⁸ Put into monetary value, the recreational fishing loss from impingement and entrainment at nuclear facilities was estimated to be about \$5 million per year.³⁸ ¹ Scientists also calculated that the cooling intake systems at the Crystal River Power Plant in Florida, a joint nuclear and coal facility, kill about twenty-three tons offish and shellfish every year.⁸⁸ **Top predators,** such as gulf flounder and stingray **"have** either **disappeared** or changed their feeding patterns.³ ⁸ ⁹ In other parts of Florida, the economic losses induced from four power plants-Big Bend, PL Bartow, FJ Gannon, and Hookers Point-are estimated to be as high as \$18.1 million.^{3s} Similarly, **in So**uthern **Cal**ifornia, marine biologists and ecologists found "that **the San Onofre nuclear plant impinged** nearly **3.5 million fish in 2003**³⁹¹ As a less noticed but equally important impact, **water intake and discharge often alter natural patterns of water levels and flows.** Such flows, part of the hydrological cycle, have a natural variability that differs daily, weekly, and seasonally.³⁹² **Plants and animals have adapted to these fluctuations,** and **such variability is a key component of**

ecosystem health.^{39 3} **Withdrawals and discharges alter this natural cycle by removing water during drought conditions or discharging it at different times of the year with potentially serious,** albeit not well-understood, **consequences to eco- system and habitat health.**^{39 4} Interestingly, in some cases **the environment has fought back, literally.** "In September 1984, **a flotilla of jellyfish 'attacked' the St. Lucie nuclear plant in Florida, forcing both of its reactors to shut down** for several days due to lack of cooling water."^{39 5} At the point of discharge, **nuclear plant operators often treat cooling water with chlorine, anti-fouling, anti-microbial, and water conditioning agents** "to limit the growth of mineral and microbial deposits that reduce... [its] heat transfer efficiency,"^{39 6} while "re-circulating water is treated with chlorine and biocides" to improve efficiency and eliminate nuisance organisms.^{39 7} What makes such **treated water** so effective in killing unwanted species, however, also **makes it a potent "kill[er] of non- target organisms** as well."^{39 8} Chlorine, biocides, and "their **byproducts**... present **in discharged water plumes**... [**are** often] **toxic to aquatic life** even at low concentrations."^{39 9} In addition, **discharged cooling water is usually higher in temperature** than intake waters, "making electric utilities the largest thermal discharger in the U.S."^{40 0} **Significant temperature differences** between the intake water and its discharge, or temperature deltas, "**can contribute to destruction of vegetation, increased algae growth, oxygen depletion and strain the temperature range tolerance of organisms.**"^{40 1} Further, "**impacts can be multiple and widespread, affecting numerous species at numerous life cycle stages.**"^{40 2} "In some cases, plants and animals are not able to survive in or adapt to higher temperature waters ..^{40 3} In other cases, "warmer temperatures can send the wrong signals to species," disrupting natural cycles, while some species that thrive in warmer waters "move into the plume and then become susceptible to the 'cold shocks' that occur during periodic plant shutdowns."^{40 4} "In still other cases, the warmer temperature plumes attract invasive or unwanted species that drive out indigenous species and alter habitats, sometimes irreparably."^{40 5} Both spikes of high temperature and the persistent, increasing stress of fluctuations in temperature affect aquatic organisms.^{40 6} The problem is especially acute in "shallower waters that turn over more slowly [and therefore] have a harder time absorbing thermal impact[s]."^{40 7} In some cases, the thermal pollution from nuclear plants can induce eutrophication—a process where the warmer temperature alters the chemical composition of the water, resulting in a rapid increase of nutrients such as nitrogen and phosphorous.^{40 8} Rather than improving the ecosystem, such alterations usually cause "algal blooms, surface scums, floating plant mats" and other weedy growths that severely reduce water quality.^{40 9} In riparian environments, the enhanced growth of such choking algae and vegetation can collapse entire ecosystems.⁴¹⁰ "This form of thermal pollution has been known to decrease the aesthetic and recreational value of rivers, lakes, and estuaries and complicate drinking water treatment."⁴¹¹

Thermal Pollution:

[Miller of UNESCO in 1919](#)

"Included with engineering and economic considerations of these large power plants is a concern to minimize deleterious environmental effects of their construction and operation. One important environmental problem pertains to the power plant cooling system which requires vast quantities of water and rejects waste heat created in process of converting thermal energy to mechanical and finally to electrical. **Of many cooling water systems (dry and wet cooling towers, cooling ponds, and once-through systems), the best efficiencies and the lowest capital and operational costs of cooling systems are achieved with once-through cooling with the power plant sited on large natural water bodies.** As these power plants withdraw and pump cooling water through the condensers, there is the potential for the entrainment of large numbers of larval fish and invertebrates. There may also be the problem of entrapment of larger fish and other organisms at water intake structures. The potential for environmental damage due to thermal addition at the discharge is dependant on the capacity of the receiving water body to dilute and eventually dissipate waste heat to the atmosphere."

[MacFarlane of Stanford in 2018](#)

<http://large.stanford.edu/courses/2018/ph241/macfarlane1/>

"To some degree, power plant cooling systems match local water resources. We found that **86 percent of plants drawing water from the sea** in 2008 **used once-through cooling,** taking advantage of their access to an essentially limitless resource. Most inland power plants with once-through systems were located in the eastern half of the country, where surface water is generally more plentiful (Figure 3)."

[Fleischli of the NRDC in 2014](#)

“Thermoelectric power plants are one of the main causes of thermal pollution, the degradation of water quality by any process that changes ambient water temperature. As water passes through a once-through cooling system, it gets warmer than the source water. Discharging that warmer water to a river or lake can stress and kill fish and other wildlife. The presence of dissolved oxygen in water is critical to the survival and abundance of organisms in aquatic ecosystems. Elevated temperatures typically decrease the level of dissolved oxygen; this is one way in which discharging warmer water back to its original source can harm aquatic life. Moreover, thermal pollution may increase the metabolic rates of aquatic animals, causing these species to consume more food than they normally would in an unchanged environment. Thus, an increased metabolic rate may lead to food shortages, thereby resulting in the migration of organisms to other, more suitable habitats. In addition to forced migration, temperature changes may also cause immigration of fish and other aquatic organisms that normally live in warmer waters elsewhere.”

[WISE in 2013](#)

“A report by the by the US Nuclear Information and Resource Service (NIRS), US Humane Society and other groups, 'Licensed to Kill: How the Nuclear Power Industry Destroys Endangered Marine Wildlife and Ocean Habitat to Save Money', details the nuclear industry's destruction of delicate marine ecosystems and large numbers of animals, including endangered species. Most of the damage is done by water inflow pipes, while there are further adverse impacts from the expulsion of warm water. **Another problem is 'cold stunning' – fish acclimatize to warm water but die when the reactor is taken off-line and warm water is no longer expelled. For example, in New Jersey, local fishers estimated that 4,000 fish died from cold stunning when a reactor was shut down.** (See the report and 6-minute video at www.nirs.org/reactorwatch/licensedtokill and the video is also posted at www.youtube.com/watch?v=VVsw3rmCnnU)”

[Thielman of The Guardian in 2016](#)

“And in March, when the plant was being refueled, a breaker tripped and cut power in one of the reactors; when the diesel generators kicked in, they died while trying to restart the first electrical system. Fortunately, a second backup worked. **Because the plant is cooled in large part by water from the Hudson – up to 2.5bn gallons a day – it kills about 1 billion fish** and other aquatic organisms **a year.** Incidents such as these are among the reasons Cuomo wants it closed, and Indian Point is now in a vulnerable position.”

[The Associated Press in 2019](#)

“Stinging jellyfish suddenly thriving in Jersey Shore bay after nuclear plant closure. **The shutdown of one of the nation's oldest nuclear power plants last year is having a surprising, stinging consequence for a New Jersey bay** considered one of the nation's most fragile. **The environmental group** Save Barnegat Bay held a conference Wednesday where scientists **noted the increase of tiny jellyfish near the Oyster Creek nuclear power plant.**”