You Shlax, Silas
Speech and Debate: 1:30pm
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More Nuclear Power Plants!

Nuclear Fission, it's truly a wonderful feat for mankind, but as many global warming activists are trying to argue, “It's dangerous, we need to shut it down”! While I will leave the playing with highly reactive elements to the professionals, I ask you this. How come? To the uninformed eye, Nuclear energy seems like a dangerous process, but isn’t the same true for most other forms of “clean energy”? Common conceptions of “clean energy or fuel” includes; wind, solar, tidal, hydroelectric, bio, and hydrogen. But are any of these truly safe and clean? Is there such a thing as a clean energy source? With the power shortages across the United States, and the world, something needs to be done, I propose the increase of Nuclear energy over other clean or unclean energy sources.

Proof 1:

First, what is nuclear fission? Nuclear fission is the process where a large atom like Uranium is split into smaller and smaller atoms until it reaches a Hydrogen atom, where is can no longer be split. Not to confuse nuclear fission with nuclear fusion which is taking a small atom like Hydrogen and forcing the atoms together to make a larger atom, this is also how the sun works.

Second, energy is created by steam, yes steam. When the atoms are splitting they create a great deal of heat, and to prevent a core meltdown, cold water is pumped on and around the core constantly, but this heats up the water creating steam which then travels through pipes to

turbines, these turbines then spin creating energy and the steam is released out the top to create clouds, this is why it always looks like a nuclear plant is on fire!

Third, the design, the plant's design is very important. Not only to prevent terrorist attacks, but also to contain any possible radiation exposure. The core is placed underground with the iconic dome over it, this dome is reinforced with rebar and concrete, the design can prevent a passenger plane hitting it at full speed from penetrating the dome and damaging the core. Other safety features include 1 entrance, which is an underground tunnel. All the water and steam are brought in through 2 pipes in the base of the dome, this is the only thing that goes through the dome itself. The turbines are held off to the side in the towers you see.

Proof 2:

Next, are there any other substitutes for Nuclear energy? First, biofuels, which are made using corn and other grown crops. All the crops needed for making these fuels could instead be used to feed those in need solving another world problem, instead of making an inefficient fuel that does not work with most motors. Second, Tidal, the first reason that it's impractical, as there are very few places in the world where these can be set up, and once the energy is collected, it is hard to get it back to land. Third, wind, while there are many places in the world where we can set these up, it is hard to get the energy from the windmills to people, as you can't build around them. You also have to factor in energy loss over long distance travel. Fourth, solar, while solar is a fairly good energy source during the day, it takes up a lot of space to make sufficient energy. Its only practical use is for residential homes and small businesses, as large solar farms have similar energy loss as wind. These are all cleaner sources of energy, but not very practical, both economically and practically.

But there are also some energy sources that clean, efficient, and effective. Like, hydroelectric which is generally built closer to cities and doubles as a water pumping facility, but again are very limited in where they can be placed. Second, hydrogen fuel, which is THE best replacement for fossil fuels, as it is renewable, no emissions, and is more efficient. But with it being such a small molecule it is hard to contain, not to mention its high combustion rate resulting in very dangerous crashes. While all these energy sources have their downsides, Nuclear with its flaws is the superior energy source.

Yet still there are those who believe they have the solution, and that solution is batteries. While yes, batteries seam like a solution in principle, they are not practical nor clean. To create lithium-ion batteries, you first need lithium, and the only way to efficiently collect lithium is to demolish an entire mountain wasting trillion of gallons of fuel to mine and process it all. But scientists are clever, and some have proposed using a natural battery. Natural batteries would be a good solution, but are again limited in locations. They work by having an energy farm close to a mountain that has a lake up high and down low, all the excess power–generally from solar–is used to pump all the water from the lower lake to the upper lake, then when there is a need for power, like say at night with solar energy, the pumps used to move the water up and released and turn into a hydroelectric dam or sorts, as all the water from the top lake flow down through the pumps spinning the turbines creating energy to the bottom lake. But even with natural batteries, we need an effective, efficient, clean, and affordable energy source.

Proof 3:

Is Nuclear energy safe? Simply put, yes, but the reason might surprise you. The large reason that Nuclear energy is safe is because of you. Yes, you, or more specifically the working

class. When Nuclear energy was first made implemented, the public was scared–as they should have been. This quickly led to thousands of safeguards and plant house redesigns. In the history of Nuclear energy only a handful have melted down and exploded, 3 due to natural disaster, and the others the negligence of the Russian government, I don't think I need to explain the last one further. Most of the minor incidents were 100% contained within the facility. The fact is, Nuclear energy is safe to use, as plants release about 0.01 millirem of radiation per year, which is 1 thirty thousandth the amount that every human is exposed to from nature and other man-made products every year. Compared to the radiation of coal plants, which produces 190 times more yearly, so Nuclear is safer.

Regardless are those who would say that Nuclear is expensive, limited, and harmful to nature. While yes Nuclear energy is limited as Uranium is non-renewable, by the time we run out, we will either have a way to make stable Uranium, or have a better alternative–Cold Fusion. As for harmfulness to nature, Nuclear power plants are always built on or near a river to get water to cool the reactor. The water that is taken in always comes out cleaner without chemicals in it. The land reserves of power plants are also a no hunting zone, allowing other animals to live, without harm from humans and zero effects from the plant. Price is a little hard to explain so I will take an average Nuclear power plant, and a Wind turbine. A Nuclear power plant costs ~$9 Billion to make, with an annual cost of $20 million for refueling and maintenance. A wind turbine cost $4 million to build with a $48,000 annual maintenance cost. You might look at this and think, yeah, Nuclear is expensive. But what you miss is 2 key points. First is that wind turbines are not always running, and second, 1 turbine produces a fraction of the energy a nuclear plant does. Without going into the math, it would take ~8,500 wind turbines to produce the same amount of power a Nuclear plant does, which would cost $34 Billion, with an annual

maintenance cost of $408 million. Still think Nuclear is worse? If you are still not convinced, what about the life expectancy of Nuclear plants vs wind turbines? On average, a nuclear plant is operated for 60–80 years, while a wind turbine only lasts about 20 years. Nuclear Fusion is not only safe, but it is a solution to our energy problems, and is cheaper than other energy sources.

The final reasons that Nuclear energy is the way to go is the Nuclear energy is sustainable, it runs 24/7 always at 100%, they can be build super close to cities, so there is less energy loss, and the Nuclear plants produce 5.1 billion kWh per year for an average size plant–which is about enough power to run 1/42 of all the lights in the United States. This is not the solution for all time, but will provide a temporary solution until we crack the code and industrialize cold fusion, which is truly the only clean, renewable, and efficient energy source, as it can run as long as earth has a hydrogen rich atmosphere, or in other words as long as humans are living on earth.

Conclusion:

Nuclear Energy is not of the future, nor the past, but it is of the present. Atomic bombs cause mass destruction, but Nuclear energy builds communities, feeds our electrical needs, and is “clean” in the process. While it's not a solution forever, it is a solution now, let us set aside our opinions about energy, and use the most effective source, so that we can put our energy into working together to create something better for the future. In conclusion, Nuclear energy is not something to be feared, and dismantled, but should be built and used with the intentions to create safe, reliable, and affordable energy.

Outline

Intro:

- **Memorize intro!!!**

Proof 1: What is nuclear energy

1. Explain nuclear fission
2. Explain the plant
3. Explain the design

Proof 2: Other energy

1. Other energy sources, pt 1
2. Other energy sources, pt 2
3. Batteries

Proof 3: Why is it better?

1. Is it safe?
2. To expensive
3. Its sustainable

Conclusion:

- It's of the present
- Not the forever solution
- Not feared, but used for good

Partner Introduction

Silas will be attempting to persuade you that there needs to be an increase in Nuclear energy, as it is safer, cleaner, cheaper, and sustainable. While it's not the long term solution, it is a solution we can implement now over waiting for the implementation of cold fusion, or nuclear fusion. As the great Benjamin Franklin once said; “Don’t put off till tomorrow what you can do today.”