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Argument: Nuclear is the energy source of our present and future.

Pro - Yes, nuclear energy should be the energy source of the present and future.	Con - No, nuclear energy should not be the energy source of the present and future.
COST **Claim:** The coast to run nuclear energy is fairly cheap. **Evidence (include a source):** Although the costs of setting up a nuclear power plant are extremely high, the electricity produced afterward is very cheap. To start with, the cost of uranium, the raw material for the production of nuclear energy, is not expensive. When the plant is up and running, the maintenance cost will hardly be felt. Even if market shifts occur and the cost of uranium shoots up, the effect on the cost of power will hardly be felt. Mark Cooper, from the University of Vermont Law School, said earlier this year that the overnight cost might be in the $7,000-to-$8,000 per kilowatt range, with the all-in cost of a 2-gigawatt nuclear plant, in other words, $10 or more per watt. www.world-nuclear.org **Reasoning:** This energy has a lot of pros to it, it doesn't reals a large amount of carbon dioxid and it isn't expensive in the long run.	**COST** **Claim:** There's a lot of money that goes into making a nuclear power plant. **Evidence (include a source):** A 2011 UCS analysis of new nuclear projects in Florida and Georgia shows that the power provided by the new plants would be more expensive per kilowatt than several alternatives, like renewable energy sources such as biomass and wind, and new natural gas plants. The industry has responded to escalating costs with escalating demands for government support. A 2009 UCS report estimated that taxpayers could be on the hook for anywhere from $360 billion to $1.6 trillion if then-current proposals for nuclear expansion were realized. Public financing for energy alternatives should be focused on fostering innovation, not on promoting the growth of an industry that has repeatedly shown itself to be a highly risky investment. www.ucsusa.org **Reasoning:** This energy is very costly and is costing our taxpayer a lot of money for something that is all that good for our environment because of all the waste that we don't know where to put.
ENVIRONMENT **Claim:** Nuclear energy is good for the environment because it has little to no carbon emissions **Evidence (include a source):** http://www.world-nuclear.org/nuclear-basics/greenhouse-gas-emissions-avoided.aspx Nuclear energy has the same amount of carbon emissions as most renewable energies because the process of fission and fusion to fuel a steam engine does not burn or release any carbon. **Reasoning:** This shows that nuclear energy is very good for the environment because it does not put greenhouse gasses into the air which is the main	**ENVIRONMENT** **Claim:** Nuclear energy is bad for the environment because it creates toxic nuclear waste. **Evidence (include a source):** http://large.stanford.edu/courses/2011/ph241/madres1/ Nuclear waste is extremely toxic and radioactive. We currently have no means of storing or disposing of it safely. In 1970, US cumulative nuclear waste was only at 45 tonnes, but with the growth of nuclear energy, it is predicted to grow to 104,000 tonnes by 2035. http://large.stanford.edu/courses/2016/ph241/dong1/ Because of the fukushima disaster in 2011, Cs-137, a radioactive isotope of Caesium and one of the

concern currently because of global warming.	common fission products of Uranium 235, now covers all surrounding land near the accident. Levels are up to 100,000 MBq km^-2, compared to the limit in Japan for this particular element's concentration: 5,000, or the limit in order for food to be grown: 2,500. In addition, these isotopes as well as others have been detected 600 km offshore, exceeding what happened in Chernobyl. Not to mention that the half life of this element is over 30 years, which means that this extremely toxic element will keep life out of the area for a long long time. **Reasoning:** Nuclear waste poses a threat to humans and wildlife and is therefore a threat to the environment.
HEALTH EFFECTS **Claim:** Radiation has it's benefits where we can use it to enhance our studies. **Evidence (include a source):** Nuclear engery produces less greenhouse gases which are harmful to our environment. Rain can wash out the radionuclides that are attached to the atmosphere's particles, this is the small non harmful dose that is transferred to the public. The nuclear power plants have become safer and they have decreased in the amount of meltdowns over the past years due to a new cooling system. There have been only three major nuclear meltdowns from Fukuchima to Chernobyl to Three Mile Island. Although Chernobyl caused cancerous problems to some people, Fukuchima and Three Mile Island never severly effected anyone. **https://www.forbes.com/sites/jamesconca/2013/04/01/do-nuclear-power-plants-cause-cancer/#1226c9d93898** **Reasoning:** Therefore nuclear power has become safer and they have decreased in the amount of meltdowns and are unharmful in polluting our air over the past years.	**HEALTH EFFECTS** **Claim:** Nuclear radiation can cause cancer. **Evidence (include a source):** Much like the X-Rays, nuclear power has an outflow of radiation. Where studies in the 1990's has shown that locals near a reactor have had high cancer rates. Increasing levels of radiation can negatively affect the human body and damage our cells. In 1986, Chernobyl was the name of a city in which there was a nuclear disaster which cause leukaemia, thyroid cancer and deformation, to babies, children or adults do to long exposure. **http://www.huffingtonpost.com/samuel-s-epstein/nuclear-power-causes-canc_b_251057.html** **Reasoning:** Nuclear energy can and is harmful to the human body. Where research from scientists have studied that they can lead to cancer, do long periods of exposure.
INFRASTRUCTURE **Claim: Nuclear energy is the energy of the future** **Evidence (include a source):** Once a nuclear reactor has been built it practically pays for itself in	**INFRASTRUCTURE** **Claim:** Nuclear reactors need to be near an large water source and away from populated areas. **Evidence: CON** **1.**"requires about 20.5 km2 (7.9 mi2) of land to

energy, Nuclear power once working generates energy at a low cost and very low co2 emissions. Also we have an abundance of uranium to keep us going, we have about another 200 years of nuclear energy at our current rate of use, this males nuclear energy perfect to use. PRO **Reasoning:** Nuclear reactors while expensive end up paying for themselves in the long run, nuclear reactors make cheap energy and low co2 emissions.	accommodate the nuclear power station itself, its exclusion zone, its enrichment plant, ore processing, and supporting infrastructure."**2.** The world would require about 15,000 nuclear reactors to be fully powered.**3.**Right now it takes 6-12 years to build a nuclear station, and to decommission one it takes up to 20 years **4.**"Every nuclear power station needs to be decommissioned after 40-60 years of operation due to neutron embrittlement - cracks that develop on the metal surfaces due to radiation. If nuclear stations need to be replaced every 50 years on average" **5.** there have been 11 nuclear accidents so far worldwide. **Reasoning:** The world does not have enough ideal locations to provide for nuclear reactors.
SUSTAINABILITY/LONGEVITY **Claim:** it is good and it's one of our main energy sources. **Evidence (include a source):** Sustainable development is based on three aspects: economic, social and environmental. The nuclear part remains in an energy choice motivated by economic interest. It allows to supply a very cheap electricity. In the end of 2011 there was 435 reactors in operating, representing about 13% of world electricity production. In France, 58 reactors produce approximately 78% of the country's total electricity production. Also, there have been many advances in nuclear energy such as smaller nuclear power plants of the size of a truck and this is a great advance because now we are able to provide energy in places that didn't had that advance. http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1754web-26894285.pdf **Reasoning:** Its one of our main energy sources and its advancing so fast that now we are able to use it more efficiently.	**SUSTAINABILITY/LONGEVITY** **Claim:** it is dangerous and above from that it's expensive **Evidence (include a source):** Recall disasters both from nuclear plant explosions (Chernobyl) and from big amounts of radioactive waste.Also the cost of producing electricity through nuclear power is on the order of $ 6.50 per watt. This does not include the costs associated with operations, maintenance of facilities, raw material and management and disposal of radioactive waste. In contrast, photovoltaic energy is reducing annually its costs on average we could speak of a scale of 3 to 5 dollars per watt the cost of installing a solar plant. A study reveals that uranium will last from 150 to 200 years so we should start using it less. http://www.everde.cl/2011/03/10-razones-para-decir-no-la-energia.html **Reasoning:** It's dangerous and even when we know nuclear energy produces a big percentage of the US energy, nuclear energy it's expensive and it's going to end in a future.

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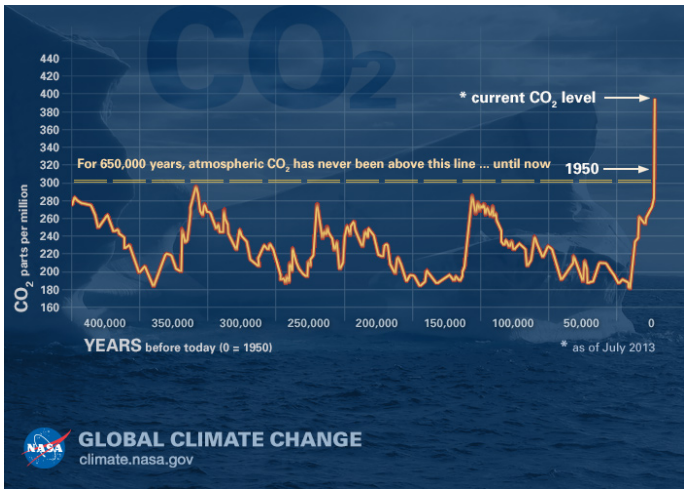
Argument: Fossil fuels are the energy source of our present and future.

Pro - Yes, fossil fuels should be the energy source of the present and future.	Con - No, fossil fuels should not be the energy source of the present and future.
COST **Claim:** Fossil Fuels can help the lower class that dont have the luxury of efforts solar and cleaner energy sources. **Evidence (include a source):** There's no question that burning fossil fuels is leading to a warmer climate and that addressing this problem is important. But doing so is a question of timing and priority. For many parts of the world, fossil fuels are still vital and will be for the next few decades, more than 1.2 billion people around the world have no access to electricity, according to the International Energy Agency's World Energy Outlook for 2012.What those living in energy poverty need are reliable, low-cost fossil fuels, at least until we can make a global transition to a greener energy future. This is not just about powering stoves and refrigerators to improve billions of lives but about powering agriculture and industry that will improve lives. www.sciencedaily.com **Reasoning:** This energy gives back to the community that use this fossil fuel as it is their main source of energy today.	**COST** **Claim:** Fossil fuels are expensive. **Evidence (include a source):** We are dependent on fossil fuels at a time of growing demand and dwindling supply, fossil fuel use continues to impose massive environmental and economic costs.The costs of continuing on our current energy path are steep. American consumers and businesses already spend roughly $700 billion to $1 trillion each year on coal, oil and natural gas, and suffer the incalculable costs of pollution from fossil fuels through damage to our health and environment. If America continues along a business-as-usual energy path, U.S. fossil fuel spending is likely to grow, totaling an estimated $23 trillion between 2010 and 2030. www.sciencedaily.com **Reasoning:** Fossil Fuels can/are damaging our environment and economy and as time goes on it will only worsen.
ENVIRONMENT **Claim:** Fossil fuels are good for the environment because they release carbon into the atmosphere and carbon helps plants grow. **Evidence (include a source):** http://www.plantsneedco2.org/default.aspx?menuitemid=225 Many experiments have shown that with more CO2, plants grow better. CO2 can stimulate a plant to help it use more water and CO2 is what plants use during photosynthesis. **Reasoning:** They are called greenhouse gasses for a reason! Greenhouses are where plants	**ENVIRONMENT** **Claim:** Fossil fuels are bad for the environment because they release CO2, a greenhouse gas that is a major contributor to global warming. **Evidence (include a source):**

grow! **Counter argument:** http://www.bbc.com/news/science-environment-36130346	 Above: Since the industrial revolution, CO2 ppm have shown a rapid increase, far more than has been shown in Earth's recent history. Its effects are now deemed irreversible. http://www.nationalgeographic.com/environment/global-warming/global-warming-effects/ Greenhouse gasses are directly impacting our world through global warming. Already, ice is melting at both poles, species are becoming endangered or extinct, and our climate is becoming much more extreme. Global warming could in the near future displace millions of people due to rising sea levels, cause the spread of many diseases such as malaria and zika, make hurricanes and storms much more intense, cause flooding and droughts, and lead to a lesser availability of fresh water. **Reasoning:** The scientific community has come to a consensus that global warming is real and is a threat, meaning that any perceived positives are by far outweighed by the negatives. With so much scientific data showing that greenhouse gasses, especially those coming from industrial facilities and fossil fuels, are the root cause of such a threat, any continuation of this harmful energy source would be at great risk of the livelihood of our environment.
HEALTH EFFECTS **Claim:** Burning fossil fuels are not harmful to humans. **Evidence (include a source):** Electrification is making a big impact on saving lives against air pollution. Lowering the emissions of the US' carbon	**HEALTH EFFECTS** **Claim:** Burning fossil fuels is harmful to people and pollutes the air. **Evidence (include a source):** Fossil fuel air submissions are a large impact to air pollution (cars). Emissions such as sulfur dioxide and nitrogen oxides, contains side effects which include asthma,

footprint can lead to everlasting changes for the better to our planet. Fossil fuels are warming the planet because of the increase in the atmosphere's concentration on carbon dioxide. Emissions from carbon dioxide have fallen 12 persent since 2007 due to switching from burning coal to natural gases. **http://www.conserve-energy-future.com/pros-and-cons-of-fossil-fuels.php** **Reasoning:** These emissions are very useful and reliable to our everyday usage. The natural gases and plants that are burned into the air generates carbon, which is useful to us humans.	respiratory diseases, nasal congestion, etc. These elements mixed with the oxygen, water, can create acidic. Acidic can flow into lakes and streams. **http://www.ucsusa.org/clean-energy/coal-and-other-fossil-fuels/hidden-cost-of-fossils#.WS0LO-vyvIU** **Reasoning:** These emissions can be transmitted and harmful to the aquatic life such as fish. These can also damage the trees and weaken the forest ecosystems.
INFRASTRUCTURE **Claim:** Our countries infrastructure depends upon fossil fuels to run, the cars we drive, the electricity in our houses, all of that relies upon fossil fuels to work. **Evidence:** Fossil fuels are very easily available to us and very cheap. Now that fracking has been allowed we also have a large supply in the US, so transportation is relatively easy as well. Since we have fossil fuels at hand and we can get them from both in and outside of the country. PRO **Reasoning:** Since fossil fuels are so cheap and easy to obtain we should keep using them.	**INFRASTRUCTURE** **Claim:** Cooling towers for fossil fuel electricity power plants require large amounts of water. If not cooled properly, it can cause thermal water pollution. **Evidence (include a source):CON** Fossil fuels are not sustainable and produce tons of CO2 emissions.The cooling towers for the fossil fuels require lots of water and if not cooled properly can harm the environment by releasing thermal water pollution. **Reasoning:** If not taken care of properly it can cause pollution.
SUSTAINABILITY/LONGEVITY **Claim:** it's one of our main energy sources actually **Evidence (include a source):** The fossil fuels are coal, oil and natural gas. They have been the main energy sources of the industrial impulse from the invention of the steam engine to our days. Of these, most of the industry and transportation depend on today. Among the three, they account for almost 90% of the commercial energy used in the world. But we aren't able to use forever because they aren't renewable. **https://unchronicle.un.org/es/article/el-papel-de-l**	**SUSTAINABILITY/LONGEVITY** **Claim:** its not renewable **Evidence (include a source):** This fossil fuels have given a positive advance in human history, but this are sources of energy that are non renewable. This means that quantities that have taken thousands of years to form are consumed in minutes and the fuel reserves are decreasing at an increasing rate, adding we are spending our resources from which you can get valuable products, such as plastics, medicines, etc .; Simply to burn it and get energy. **https://unchronicle.un.org/es/article/el-papel-de-los-combustibles-f-siles-en-un-sistema-energ-tico-sostenible**

os-combustibles-f-siles-en-un-sistema-energ-tico-sostenible **Reasoning:** they produce a massive amount of energy to this planet and we can say we depend on it for the fact is the 90% of the planet's energy.	**Reasoning:** fossil fuels are a great way to get big amounts of energy but they are going to end in a future as well as they damage the planet.

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Argument: Renewables are the energy source of our present and future.

Pro - Yes, renewables should be the energy source of the present and future.	Con - No, renewables should not be the energy source of the present and future.
COST **Claim:** Renewables can help our environment and bring us money. **Evidence (include a source):** UCS analysis found that a 25 by 2025 national renewable electricity standard would stimulate $263.4 billion in new capital investment for renewable energy technologies, $13.5 billion in new landowner income biomass production and/or wind land lease payments, and $11.5 billion in new property tax revenue for local communities. Renewable energy projects therefore keep money circulating within the local economy, and in most states renewable electricity production would reduce the need to spend money on importing coal and natural gas from other places. Thirty-eight states were net importers of coal in 2008—from other states and, increasingly, other countries: 16 states spent a total of more than $1.8 billion on coal from as far away as Colombia, Venezuela, and Indonesia, and 11 states spent more than $1 billion each on net coal imports http://www.renewable-energysources.com **Reasoning:** This is a great way for us to get energy because it is not imported it is created right here in the US. It is also safe and it generates a lot of energy in a lot of different way like wind, solar, thermal, and hydro.	**COST** **Claim:** To create renewable energy can be very expensive if you are creating a plant. **Evidence (include a source):** Many governments are pumping money into renewable sources of electricity, such as wind turbines, solar farms, hydroelectric and geothermal plants. But countries with large amounts of renewable generation, such as Denmark and Germany, face the highest energy prices in the rich world. In Britain electricity from wind farms costs twice as much as that from traditional sources; solar power is even more dear. Many common types of renewable generators only produce power intermittently—when the sun shines or when the wind blows. Wind turbines, for example, spin only about a third of the time. That means countries which have a lot of renewable generation must still pay to maintain traditional kinds of power stations ready to fire up when demand peaks.One danger is that sharp rises in energy prices will drive manufacturers to set up in less “green” countries, which might mean citizens end up consuming more carbon, through imports. http://www.renewable-energysources.com **Reasoning:** These things can cost billions of dollars so while they might bring energy they also bring down the economy.
ENVIRONMENT **Claim:** Renewables are good for the environment because they do not create waste or	**ENVIRONMENT** **Claim:** Renewable energy is bad for the environment because it interferes with nature.

carbon emissions. **Evidence (include a source):** http://www.ucsusa.org/clean-energy/renewable-energy/public-benefits-of-renewable-power#.WSz-tRPytD0 A recent study showed that by increasing the US standard for renewable energy by 25%, we could eliminate 277 million metric tons of CO2 emissions per year by 2025. Renewable energies do not involve the release of any greenhouse gasses into the environment because they use natural energy sources to begin with. The only emissions created come from building the power plants, but those can be beat by how much the plant will save in the long run. **Reasoning:** What better way to create energy than by using what is already there? Renewables work with the environment, not against. This is what will save us from global warming and keep our environment strong and resilient.	**Evidence (include a source):** https://www.nationalcenter.org/NPA582.html Renewable energy takes up a lot of space and the spaces where solar, wind, and hydro plants are being put are where wildlife once lived. Renewables pollute the air, light, and sound, and also use up resources such as water (thermoelectricity cooling). By disrupting natural habitats, animals, birds in the case of wind energy (20,000 to 40,000 in 2003) and fish in the case of hydro, are losing their habitats and their migration patterns are being disrupted. http://www.batteryrecycling.org.au/environmental-impact-of-lithium-ion-batteries https://www.theguardian.com/vital-signs/2015/jun/10/tesla-batteries-environment-lithium-elon-musk-powerwall Renewable energy requires battery storage because it has limitations to its efficiency. These batteries, for example the Tesla Powerwall, are, while being less effective than advertised, incredibly harmful for our environment. Lithium-ion batteries require lots of mining which depletes resources, contribute to global warming because of their processing, and pollute our earth additionally because we have no way of disposing of them properly. **Reasoning:** Environmentalists often claim that renewable energy is good for the environment, but it has a more direct negative impact than any other energy source currently used.
HEALTH EFFECTS **Claim:** Renewable energy is most efficient and unharmful. **Evidence (include a source):** Wind power is most used in the US because of it's no toxic pollution or global warming emissions. Another would be known as solar power, this generates cleanly and most efficiently as well. Geothermal energy "the hot spots" uses their technology to convert the resources around them into a hot or cold cooling system. **http://www.ucsusa.org/clean-energy/renewable-energy/environmental-impacts#.WS0d5OsrLIU** **Reasoning:** Renewable energy has taken over for the better and is currently our largest electric supply. These energy sources contain to toxins to us	**HEALTH EFFECTS** **Claim:** Renewable energy is harmful to humans. **Evidence (include a source):** Energy such as wind power has deceases in their usage for the past few years due to the wind turbines and the changes within the air pressure from the spinning turbines result in deaths to birds and bats. As for geothermal energy, this contains poisonous gases that can escape the holes in which they drill to change the temperatures. **http://www.altenergymag.com/article/2015/08/the-dark-side-of-renewable-energy-negative-impacts-of-renewables-on-the-environment/20963/** **Reasoning:** Wind energy can harm the marine natural life. Also the renewable energies being used and in extreme circumstances can cause death to

and no pollution therefore they are very efficient.	not only humans but the animals as well.
INFRASTRUCTURE **Claim:** Renewable energy is unlimited,requires low maintenance, and creates tons of jobs. **Evidence (include a source):** PRO 1 highlight stuff from these articles. PRO 2 PRO 3 • The cost of producing energy from renewable energy sources depends on the amount spend on infrastructure • Fossil fuels are affected by the amount,war, trade disputes. Renewables aren't • Will create tons of jobs. • Run longer and require less maintenance **Reasoning:**It is very cheap and creates tons of jobs so its good.	**INFRASTRUCTURE** **Claim:** It can't be stored and can only be put in some places. Wind needs to be put somewhere where the wind is perfect.Wind requires large land fields. **Evidence (include a source): CONS** **WIND** • No wind=no power • Wind tower=noisy • + it is harmful to any nearby wildlife. also requires a lot of land. **BIOMASS POWER** • Can result in air pollution • a lot of energy is required to produce energy • competes with food production. **HYDRO:** requires a lot of water **SOLAR:**can't be used at night.no storage system Large geographical footprint to produce. **Reasoning:** Since renewable energy requires a lot of land and can't be stored anywhere it is only useful for the day that it is produced.
SUSTAINABILITY/LONGEVITY **Claim:** they don't damage the planet as much as other types of energies. **Evidence (include a source):** Renewable energies are generated by processes and natural sources that are continuously regenerated. Different renewables energies include wind, sunlight, water, geothermal heat,and other forms of biomass. This type of energy is inexhaustible and is constantly renewed so we can say it's unlimited, renewable energy is getting better because with our current advances we can take our more energy than we used to take out of. Also, with new innovation such as artificial photosynthesis, the process of creating fuel from water, sunlight, and CO2, solar thermophotovoltaics and perovskite solar cells, new attempts at making solar energy more efficient, and carbon storage, the process of turning carbon emissions into stone, renewable energy is looking more and more feasible as a replacement for fossil fuels every day. **https://www.technologyreview.com/s/603275/the-**	**SUSTAINABILITY/LONGEVITY** **Claim:** it is difficult to generate really big quantities of it comparing to other types of energies. **Evidence (include a source):** A problem we have with renewable energy is that it is difficult to generate big amounts of electricity comparing to the amount of energy the nuclear and fossil fuels generate and this means we are not fully ready to completely use renewables. A comparison would be that renewables produce a 10% of world energy while fossil fuels produce a 80 % both percentages according to 2010. **http://www.solarschools.net/resources/stuff/advantages_and_disadvantages.aspx** **Reasoning:** We may take a lot of years to figure out how to use our renewable source at a 100% efficiency and this is stopping us from use totally renewables.

biggest-clean-energy-advances-in-2016/ **http://www.solarschools.net/resources/stuff/advantages_and_disadvantages.aspx** **Reasoning:** Renewable energies are good for the environment and they can save the world in a future if we start getting more into renewable energy as well as we scientifically advance so we can take more energy about.	