**The issue of energy independence is one that many Americans have grown to see as the essential political, social, and economic issue of our time. Since the 1970’s, the State of Connecticut has led the way for the rest of America in seeking a balanced energy policy. Recently, the state assembly has looked into plans for helping rid the state of its dependence on oil & coal. Many companies have come up with plans to assist the state in achieving its goals of energy independence. One company, United Illuminating, has presented plans to build a new nuclear power station in Haddam. For the residence of Connecticut and scholars on both sides of the green technology revolution, the building of nuclear plants like the one currently being purposed is a topic of very heated debate and prognostication.**

**The state assembly of Connecticut will be meeting to debate the issue of building the nuclear power plant in the next few weeks. A definitive answer to this debate for the state of Connecticut would sway national opinion and potentially alter the creation of nuclear power plants in several states over the next decade. Your local state representatives, Christine Palm (Haddam), Jesse MacLachlan (Killingworth), and local senators Norm Needleman (Haddam), Christine Cohen (Killingworth) would like your input into how they should vote on the matter. As part of your initial research, you have found the following sources about nuclear power.**

**PART ONE: The Sources**

*You will now examine several sources. You can re-examine any of the sources as often as you would like. After looking at the sources, use the rest of the time in PART ONE to answer the questions about them. Your answers to these questions will be scored. Also, your answers will help you think about the information you have read and looked at, which should help you write your argumentative essay. Feel free to highlight the sources or take any notes down that you want.*

**Source One**: **“Nuclear Energy Pros and Cons”**

**Mathias Aarre Maehlum** is an energy and environmental engineering graduate student from Norway. He currently writes a blog for EnergyInformative.org.

Last updated May 3, 2013 by [Mathias Aarre Maehlum](https://plus.google.com/107996559739279792274)

Below you will find a nuclear energy pros and cons list, which covers the most important aspects of typical nuclear power plants. There are 104 commercial nuclear power plants in the United States producing a whopping 806.2 TWh of electricity, in other words about 20 % of the entire electricity generation (2008). There is no doubt that the potential of nuclear energy is huge, but there are also downsides. Before we get further into the pros and cons list, what exactly is nuclear energy? The basic gist is this: By separating an atom into two lighter atoms, there is a net loss of mass. This mass is not exactly lost, but rather transformed into massive amounts of energy. This is what is referred to as nuclear fission. By controlling these reactions we can harness the energy.

Advantages of Nuclear Energy

1. Relatively Low Costs

The initial construction costs of nuclear power plants are large. On top of this, when the power plants first have been built, we are left with the costs to enrich and process the nuclear fuel (e.g. uranium), control and get rid of nuclear waste, as well as the maintenance of the plant.  The reason this is under advantages is that nuclear energy is cost-competitive. Generating electricity in nuclear reactors is cheaper than electricity generating from oil, gas and coal, not to speak of the renewable energy sources!

1. Provides Base Load Energy\*/ Provides high-density energy

Nuclear power plants provide a stable base load of energy. This can work synergistic with renewable energy sources such as wind and solar. The electricity production from the plants can be lowered when good wind and solar resources are available and cranked up when the demand is high.

*(\*Base load = on a power grid the minimum level of demand on an electrical grid over a span of time. The minimum amount of power needed to reasonably meet customer requirements.)*

1. Low Pollution/ Emission free power

It is in most cases more beneficial, in terms of the climate crisis, to replace other energy harnessing methods we use today with nuclear power. The environmental effects of nuclear power are relatively light compared to those.

1. Thorium

Reports show that with the yearly fuel consumption of today’s nuclear power plants, we have enough uranium for 80 years. It is possible to fuel nuclear power plants with other fuel types than uranium. Thorium, which also is a greener alternative, has lately been given an increased amount of attention. China, Russia and India have already plans to start using thorium to fuel their reactors in the near future. It looks like nuclear fuel is of good availability if we combine the reserves of the different types together. In other words, hopefully enough time for us to find cost-competitive greener ways of harnessing energy.

1. Sustainable?

Is nuclear energy renewable or non-renewable? This is a good question. By definition, nuclear energy is not a renewable energy source. As I mentioned above, there is a limited amount of fuel for nuclear power available. On the other hand, you could argue that nuclear energy is potentially sustainable by the use of breeder reactors and fusion reactors. Nuclear fusion is the holy grail of harnessing energy. If we can learn to control atomic fusion, the same reactions as those that fuel the sun, we have practically unlimited energy. At the moment, these two methods both have serious challenges that need to be dealt with if we are to start using them on larger scale.

**Question:**

Which of these advantages do you feel would be the **best** reason to invest in Nuclear energy? Why?

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Disadvantages of Nuclear Energy

While the advantages of using nuclear energy seem to be many, there are also plenty of negative effects of nuclear energy. The following are the most important ones:

1. Accidents Happen

The radioactive waste can possess a threat to the environment and is dangerous for humans. We all remember the Chernobyl accident, where the harmful effects of nuclear radiation on humans can even be witnessed today. Estimates conclude that somewhere between 15,000 and 30,000 people lost their life’s in the Chernobyl aftermath and more than 2.5 million Ukrainians are still struggling with health problems related to nuclear waste. Not long ago, a major nuclear crisis happened again in Japan. While the casualties were not as high as with the Chernobyl accident, the environmental effects were disastrous. History shows that we can never really protect us 100% against these disasters. Accidents do happen. Benjamin K. Sovacool has reported that worldwide there have been 99 accidents at nuclear power plants.Fifty-seven accidents have occurred since the Chernobyl disaster, and 57% (56 out of 99) of all nuclear-related accidents have occurred in the USA

 2. Radioactive Waste and the negative environmental impact

Does nuclear power cause air pollution? The nuclear power plants emit negligible amounts, if any, carbon dioxide into the atmosphere.  However, the processes in the nuclear fuel chain such as mining, enrichment and waste management does. The world's nuclear fleet creates about 10,000 metric tons of high-level spent nuclear fuel each year.

1. Nuclear power is not cost efficient

In the dawn of the nuclear era, cost was expected to be one of the technology's advantages, not one of its drawbacks. The first chairman of the Atomic Energy Commission, Lewis Strauss, predicted in a 1954 speech that nuclear power would someday make electricity “too cheap to matter.” A half century later, we have learned that nuclear power is, instead, too expensive to finance.

The first generation of nuclear power plants proved so costly to build that half of them were abandoned during construction. Those that were completed saw huge cost overruns, which were passed on to utility customers in the form of rate increases. By 1985, Forbes had labeled U.S. nuclear power "the largest managerial disaster in business history.”

The industry has failed to prove that things will be different this time around: soaring, uncertain costs continue to plague nuclear power in the 21st century. Between 2002 and 2008, for example, cost estimates for new nuclear plant construction rose from between $2 billion and $4 billion per unit to $9 billion per unit, according to a 2009 UCS report, while experience with new construction in Europe has seen costs continue to soar.

1. Nuclear proliferation and concerns over terrorism

According to Mark Z. Jacobson, Professor at Stanford University, the growth of nuclear power has "historically increased the ability of nations to obtain or enrich uranium for nuclear weapons, and a large-scale worldwide increase in nuclear energy facilities would exacerbate this problem, putting the world at greater risk of a nuclear war or terrorism catastrophe".The historic link between energy facilities and weapons is evidenced by the secret development or attempted development of weapons capabilities in nuclear power facilities in Pakistan, India, Iraq (prior to 1981), Iran, and to some extent in North Korea.

**Question:**

Which of these problems do you feel would be the **best** reason **not** to invest in Nuclear energy? Why?

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**Source Two: Excerpts in favor of Nuclear Power**

**Source 2A:** The Nuclear Energy Institute (NEI) stated the following in its article "Myths & Facts About Safety," available at www.nei.org (accessed Apr. 24, 2012):

"After more than a half-century of commercial nuclear energy production in the United States, including more than 3,500 reactor years of operation, there have been no radiation-related health effects linked to their operation. Studies by the National Cancer Institute, The United Nations Scientific Committee of the Effects of Atomic Radiation, the National Research Council’s BEIR VII study group and the National Council on Radiation Protection and Measurements all show that U.S. nuclear power plants effectively protect the public’s health and safety. Nuclear plants also are safe for workers. According to the U.S. Bureau of Labor Statistics, it is safer to work at a nuclear plant than at a fast food restaurant or a grocery store or in real estate...”

**Question**: How safe is nuclear energy according to the NEI? How do you know this?

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**Source 2B:** Tony Pietrangelo, MBA, Chief Nuclear Officer and Senior Vice President of the Nuclear Energy Institute, stated the following in his Mar. 21, 2011 article "Nuclear Power in America: Five Reasons Why It's Safe and Reliable,” published in the *Christian Science Monitor*:

"Commercial nuclear power plants in the United States have produced electricity for over half a century, and there have been no radiation-related deaths linked to their operation. Studies by numerous health entities, including the National Cancer Institute and the United Nations Scientific Committee on the Effects of Atomic Radiation, show that US nuclear power plants effectively protect the public's health and safety.

The US Nuclear Regulatory Commission (NRC) regulates the commercial and institutional uses of nuclear energy, including nuclear power plants. These plants are designed, licensed, constructed, and operated to rigorous requirements established by the NRC. Additionally, the NRC has a continuing inspection and oversight process with on-site resident inspectors and periodic inspection teams to ensure compliance with regulations and associated programs…While it will take some time to fully understand the events at the tsunami-stricken Fukushima Daiichi nuclear plant, we will evaluate the lessons from the events at Fukushima and apply them to make US nuclear plants even safer…As we increasingly emphasize a low-carbon economy, our need for clean electric generating capacity will grow. Nuclear energy fills this role.”

**Question**: According to the source, what makes Nuclear plants so safe?

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**Source 2C:** The US Department of Energy (DOE) stated the following in its publication “Nuclear Energy: Answers to Questions,” published on www.ne.doe.gov (accessed Apr. 24, 2012):

"Nuclear energy to produce electricity commercially began in the U.S. in 1957. Since then, it has proven itself as one of our safest energy technologies. Safety is a major consideration throughout the design, construction, and operation of a nuclear power plant. Hundreds of systems monitor, control, and support the safe operation of the reactor at each power plant. These systems provide maximum safety and reliability and reduce the chance of an accidental release of radioactivity into the environment…

The nuclear industry has rigid safety standards, which the NRC [Nuclear Regulatory Commission] sets and regulates. Utilities operating nuclear power plants must prove to the NRC that each plant can meet these stringent safety standards. Periodic inspections also ensure that each facility operates safely. Utilities face severe financial penalties if NRC inspections show that the plant is not operating in full compliance with federal regulations…

Since 1957, utilities in the U.S. have operated commercial nuclear power plants. During this time, no one in the U.S. has died or been injured as a result of operations at a commercial nuclear power plant. Efforts to ensure that nuclear power plants maintain this safety record are constantly emphasized, and the record compares favorably with all other ways of making electricity.”

**Question**: What safety features exist specifically in the US to protect workers and citizens from Nuclear power plants?

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**Source 2D:** “Climate change warriors: It’s time to go nuclear” by Thom Patterson, CNN

Four top environmental scientists raised the stakes Sunday in their fight to reverse climate change and save the planet. Climate and energy scientists James Hansen, Ken Caldeira, Kerry Emanuel and Tom Wigley have released an open letter calling on world leaders to support development of safer nuclear power systems. Embracing nuclear is the only way, the scientists believe, to reverse the looming threat of climate change which they blame on fossil fuels. The fear is that time is running out. Without nuclear, the scientists believe global energy consumption will overtake the planet's ability to reverse the buildup of carbon dioxide pollution from burning oil, coal and other fossil fuels. At risk, said Hansen, are disintegrating polar ice sheets and rising sea levels which will threaten coastal regions. The letter admits "today's nuclear plants are far from perfect." However, "... there is no credible path to climate stabilization that does not include a substantial role for nuclear power." A United Nations report released last month re-confirmed Hansen's fears. The study concluded that the planet is heating up, the oceans are rising and there's more evidence that neither development is natural.

**Question**: Why do scientists support the use of Nuclear power?

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**Source 2E:** How Nuclear Power can stop Global Warming by David Biello December 12, 2013 in Scientific American

During the past 20 years more than 19,000 Russian warheads have been dismantled and processed to make fuel for U.S. nuclear reactors. In fact, during that period more than half the uranium fuel that powered the more than 100 reactors in the U.S. came from such reprocessed nuclear weapons.

In addition to reducing the risk of nuclear war, U.S. reactors have also been staving off another global challenge: climate change. The [low-carbon electricity](https://www.scientificamerican.com/article.cfm?id=reactivating-nuclear-reactors-to-fight-climate-change) produced by such reactors provides 20 percent of the nation's power and, by the estimates of climate scientist James Hansen of Columbia University, avoided 64 billion metric tons of greenhouse gas pollution. They also avoided spewing soot and other air pollution like coal-fired power plants do and thus have [saved some 1.8 million lives](https://blogs.scientificamerican.com/the-curious-wavefunction/2013/04/02/nuclear-power-may-have-saved-1-8-million-lives-otherwise-lost-to-fossil-fuels-may-save-up-to-7-million-more/). And that's why Hansen, among others, such as former Secretary of Energy Steven Chu, thinks that nuclear power is a key energy technology to fend off catastrophic climate change. "We can't burn all these fossil fuels," Hansen told a group of reporters on December 3, noting that as long as fossil fuels are the cheapest energy source they will continue to be burned. "Coal is almost half the [global] emissions. If you replace these power plants with [modern, safe nuclear](https://www.scientificamerican.com/article.cfm?id=nuclear-power-plant-safety) reactors you could do a lot of [pollution reduction] quickly."

Indeed, he has evidence: the speediest drop in greenhouse gas pollution on record occurred in France in the 1970s and ‘80s, when that country transitioned from burning fossil fuels to nuclear fission for electricity, lowering its greenhouse emissions by roughly 2 percent per year. The world needs to drop its global warming pollution by 6 percent annually to [avoid "dangerous" climate change](https://www.scientificamerican.com/article.cfm?id=dangerous-climate-change-imminent) in the estimation of Hansen and his co-authors in a [recent paper in *PLoS One*](http://www.plosone.org/article/info%3Adoi/10.1371/journal.pone.0081648). "On a global scale, it's hard to see how we could conceivably accomplish this without nuclear," added economist and co-author Jeffrey Sachs, director of the Earth Institute at Columbia University, where Hansen works.

**Question**: According to this source, why is Nuclear energy the most efficient way to fight climate change?

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**Source Three: Excerpts against the use of Nuclear Power**

**Source 3A:** Jeffrey Patterson, DO, Professor Emeritus of Family Medicine at the University of Wisconsin School of Medicine and Public Health, stated the following in his Apr. 26, 2011 article "Radiation Exposure and the Power of Zero,” published in the *Bulletin of the Atomic Scientists*:

“The real issue is that the use of nuclear power and nuclear weapons is forcing humankind, and indeed the whole ecosystem, to participate in a particularly cruel and totally uncontrolled experiment. Given the scientific evidence that there is no safe dose of radiation, this is an experiment that has already gone awry…

The real question is whether we, as a human race, can afford in good conscience to risk annihilation with our continued reliance on nuclear technology. Can we continue to despoil our environment with long-lived radioactive materials that are scattered to the wind and embedded in our precious soil, randomly exposing large populations, and foisting health impacts on unsuspecting future generations who have no choice in this matter?

We may choose to do so. But if we do, I am quite sure that our children and grandchildren will roundly condemn us for our lack of foresight and our selfishness. As they struggle to deal with a poisonous environment and waste that must be safeguarded for thousands of years, they will certainly wonder what possessed us to do this.

We must choose to halt this process. To do this we need to… make a dramatic and rapid retreat from the use of nuclear power to generate electricity.”

**Question**: According to Patterson, why is nuclear energy so unsafe? What does it produce that cannot be disposed of easily?

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**Source 3B:** Ten former Nobel Peace Laureates, including the Dalai Lama, Archbishop Desmond Tutu, and Rigoberta Menchú Tum, stated the following in an Apr. 21, 2011 letter to open letter to 31 heads of state whose countries are currently heavily invested in nuclear power production, or are considering investing in nuclear power, available at [www.nobelwomensinitiative.org](http://www.nobelwomensinitiative.org):

"On the twenty-fifth anniversary of the Chernobyl nuclear disaster in Ukraine - and more than two months after the massive earthquake and tsunami that devastated Japan... It is time to recognize that nuclear power is not a clean, safe or affordable source of energy. We are deeply disturbed that the lives of people in Japan are being endangered by nuclear radiation in the air, in the water and in the food as a result of the breakdown at the Fukushima nuclear plant. We firmly believe that if the world phases out its current use of nuclear power, future generations of people everywhere - and the Japanese people who have already suffered too much - will live in greater peace and security…

[R]adiation is not just a concern in a nuclear accident. Each link in the nuclear fuel chain releases radiation, starting with drilling for uranium; it then continues for generations because nuclear waste includes plutonium that will remain toxic for thousands of years. Despite years of research, countries with nuclear energy programs such as the United States have failed to solve the challenge of finding safe and secure storage for 'spent' nuclear fuel... There are presently over 400 nuclear power plants in the world - many, in places at high risk for natural disaster or political upheaval. These plants provide less than 7% of the world's total energy supply. As world leaders, you can work together to replace this small amount of energy from other readily available, very safe and affordable sources of energy to move us towards a carbon-free and nuclear-free future.”

**Question**: According to this source, why is nuclear power so risky?

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**Source 3C:** Helen Caldicott, MBBS, President of the Nuclear Policy Research Institute, wrote the following in her 2006 book *Nuclear Power Is Not the Answer*:

"Miners, workers, and residents in the vicinity of the mining and milling functions, and workers involved in the enrichment processes necessary to create nuclear fuel are at risk for exposure to unhealthy amounts of radiation and have increased incidences of cancer and related diseases as a result...

Relatively small but significant amounts of radiation are released on a daily basis into the air and water during the course of mining, milling, and enriching uranium for fuel to create the nuclear energy. Additionally, a nuclear power plant cannot operate without routinely releasing radioactivity into the air and water through the normal operation of nuclear reactors. Finally, and most frighteningly, accidental releases of even more radiation are commonplace in the nuclear industry…

Radioactive gases that leak from fuel rods are also routinely released or 'vented' into the atmosphere at every nuclear reactor. These gases are temporarily stored to allow the short-lived isotopes to decay and then released to the atmosphere through engineered holes in the reactor roof and from the steam generators. This process is called 'venting.' About 100 cubic feet of radioactive gases are also released hourly from the condensers at the reactor...

Although the nuclear industry claims it is ‘emission’ free, in fact it is collectively releasing millions of curies [the standard unit of radioactivity measurement] annually... By contrast, coal plants release some uranium and uranium daughter products in their smoke but very little radiation compared to atomic plants, and certainly no fission products… Quite apart from these routine radioactive releases is the almighty problem of radioactive waste. Each regular 1,000 megawatt nuclear power plant generates 30 tons of extremely potent radioactive waste annually... the nuclear industry has yet to determine how safely to dispose of this deadly material, which remains radioactive for tens of thousands of years…"

**Question**: According to this source, what impact does Nuclear energy have on the planet?

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**Source 3D:** How Nuclear Power Causes Global Warming, by Harvey Wasserman, September 21, 2016. In *The Progressive*

Supporters of nuclear power like to argue that nukes are the key to combatting climate change. Here’s why they are dead wrong. Every nuclear generating station spews about [two-thirds of the energy](http://www.ucsusa.org/sites/default/files/legacy/assets/documents/nuclear_power/fact-sheet-water-use.pdf) it burns inside its reactor core into the environment. Only one-third is converted into electricity. Another tenth of that is lost in transmission. [According to](http://www.ucsusa.org/sites/default/files/legacy/assets/documents/nuclear_power/fact-sheet-water-use.pdf) the[Union of Concerned Scientists](http://www.ucsusa.org/):

“[Nuclear fission](http://www.ucsusa.org/clean_energy/our-energy-choices/energy-and-water-use/water-energy-electricity-nuclear.html#.V97eCzvTwpo) *is the most water intensive method of the principal thermoelectric generation options in terms of the amount of water withdrawn from sources. In 2008, nuclear power plants withdrew eight times as much freshwater as natural gas plants per unit of energy produced, and up to 11 percent more than the average coal plant.”*

Every day, large reactors like the two at Diablo Canyon, California, individually dump [about 1.25 billion gallons of water into the ocean](http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/powerplants/diablo_canyon/docs/rc_dc_pres032811.pdf) at temperatures up to [20 degrees](http://www.nrc.gov/reactors/operating/licensing/renewal/applications/diablo-canyon/dcpp-er.pdf) Fahrenheit warmer than the [natural environment](http://www.nirs.org/reactorwatch/licensedtokill/executivesummary.htm).  Diablo’s “once-through cooling system” takes water out of the ocean and dumps it back [superheated, irradiated and laden with toxic chemicals](http://www.ucsusa.org/clean_energy/our-energy-choices/energy-and-water-use/water-energy-electricity-nuclear.html#.V97QgjvTwpo). Many U.S. reactors use cooling towers which emit huge quantities of steam and water vapor that also directly warm the atmosphere. These emissions are often [chemically treated to prevent algae and other growth](http://www.chemtreat.com/solutions/cooling-tower-water-treatment/) that could clog the towers. Those chemicals can then be carried downwind, along with radiation from the reactors. The [Union of Concerned Scientists](http://www.ucsusa.org/clean_energy/our-energy-choices/energy-and-water-use/water-energy-electricity-nuclear.html#.V97eCzvTwpo) [states](http://www.ucsusa.org/sites/default/files/legacy/assets/documents/nuclear_power/fact-sheet-water-use.pdf):

*The temperature increase in the bodies of water can have serious adverse effects on aquatic life. Warm water holds less oxygen than cold water, thus discharge from once-through cooling systems can create a “temperature squeeze” that elevates the metabolic rate for fish. Additionally, suction pipes that are used to intake water can draw plankton, eggs and larvae into the plant’s machinery, while larger organisms can be trapped against the protective screens of the pipes. Blocked intake screens have led to temporary shut downs and NRC fines at a number of plants.*

Atomic apologists argue that the disposal of high-level reactor wastes should be a relatively simple problem, lacking only the political will to proceed. The industry touts New Mexico’s [Waste Isolation Pilot Project](http://www.wipp.energy.gov/wipprecovery/recovery.html), or WIPP, which has long been the poster child for military attempts to deal with high-level trash from the nuclear weapons program. Accepting its first shipment of waste in 1999, WIPP was touted as the ultimate high-tech, spare-no-expense model that proved radioactive waste disposal “can be done.” But a series of disastrous events in February, 2014, led WIPP to stop accepting wastes—the sole function for which it was designed. Most significant was the [explosion of a single barrel of highly radioactive waste materials](http://www.wipp.energy.gov/wipprecovery/accident_desc.html) (it was mistakenly packed with organic rather than clay-based kitty litter). About a dozen WIPP workers were exposed to potentially harmful radiation. The entire facility remains closed. In a phone interview, facility management told me it may again accept some wastes before the end of this year. But at least part of the cavernous underground labyrinth may never be reopened. The *Los Angeles Times*[estimated](http://www.latimes.com/nation/la-na-new-mexico-nuclear-dump-20160819-snap-story.html) the cost of this single accident at $2 billion.

Overall, the idea that [atomic power is “clean” or “carbon free” or “emission free” is a very expensive misconception](http://www.treehugger.com/clean-technology/ask-pablo-is-nuclear-power-really-carbon-neutral.html), especially when compared to renewable energy, efficiency, and conservation. Among conservation, efficiency, solar and wind power technologies, there are no global warming analogs to the heat, carbon, and radioactive waste impacts of nuclear power. No green technology kills anywhere near the number of [marine organisms that die through reactor cooling systems](https://www.nirs.org/reactorwatch/licensedtokill/summary.pdf). Rooftop solar panels do not lose ten percent of the power they generate to transmission, as happens with virtually all centralized power generators. S. David Freeman, former head of numerous large utilities and author of All Electric America: A Climate Solution and the Hopeful Future, says: “Renewables are cheaper and safer. That argument is winning. Let’s stick to it.” No terrorist will ever threaten one of our cities by blowing up a solar panel. But the nuclear industry that falsely [claims its dying technology doesn’t cause global warming](http://www.globalresearch.ca/nuclear-energy-causes-global-warming/20231) does threaten the future of our planet.

**Question**: According to Wasserman, how do Nuclear plants contribute to Climate Change? What alternative does he offer and why?

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**View the links and websites, answering the questions that follow.**

# Source 4: Nuclear Energy Explained: Risk or Opportunity

<https://www.youtube.com/watch?v=d7LO8lL4Ai4>

What information from your clip could you use to best support your thesis?

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**Source 5:** The Solutions Project

<http://thesolutionsproject.org/why-clean-energy/>

What are the energy alternatives the Solutions Project has for Connecticut? What are the benefits of these proposed programs?

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# Source 6: Look inside Fukushima's meltdown zone a year later

 <https://www.youtube.com/watch?v=-6oQAyunXqk>

Why does the tour guide at the Fukushima site feel remorse?

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**Source 7:** TED Debates: Does the World Need Nuclear Energy?

<https://www.ted.com/talks/debate_does_the_world_need_nuclear_energy>

Task: Identify the arguments of each of the presenters and evaluate these arguments

|  |  |  |
| --- | --- | --- |
|  | Pro Nuclear EnergyStewart Brand | Anti- Nuclear EnergyMark Z. Jacobson |
| Arguments |  |  |
| Supporting Details |  |  |
| Evaluations of Arguments |  |  |

How do you Evaluate an Argument?

An argument is a conclusion based on evidence. In order to evaluate an argument, you must take into account the following:

1. Judge the Evidence and Logic that the argument is based on.
2. Judge the Fairness of the argument. (does the argument contain bias? Is the argument on-sided or are their alternative points of view that the argument does not address?

**Complete the Brainstorm Sheet provided**

1. From the sources you have reviewed, summarize 3 major arguments that support, and 3 major arguments that oppose, the use of nuclear power for generating electricity. For each of the arguments, cite at least one source that supports this fact or point of view.

|  |  |
| --- | --- |
| Argument / Fact in Favor of Nuclear Power  | Source Supporting This Argument  |
| 1. \*  |
| 2. \*  |
| 3. \*  |
| Argument / Fact in Opposition to Nuclear Power  | Source Supporting This Argument  |
| 1. \*  |
| 2. \*  |
| 3. \*  |

2. Evaluate the credibility of the arguments and evidence presented by these sources. Which of the sources are more trustworthy and why? Which of the sources warrant some skepticism because of bias or insufficient evidence?