

Stage 2: Research

Due beginning of class May 18th

Fill this out for each solution

What is your problem (at least 2 paragraph)? More detail the better

The energy crisis is the problem that we are going to solve. More specifically research into more efficient nuclear power. Uranium nuclear reactors have been popular because uranium is more volatile than thorium and uranium is used because of the Cold War and development of nuclear weapons. Thorium is an element, that is more abundant than uranium, has better fuel properties, is superior physically, and has much reduced nuclear waste. For all of these reasons, thorium should be used more than uranium, but why is it not? As stated earlier, when nuclear technology was new, uranium was used because research needed to be done in order to develop nuclear weapons to threaten the Soviets with.

One of the main reasons thorium is better is that it produces much less nuclear waste than uranium power plants. Radioactive waste can be hazardous to the surrounding area for thousands of years. Most nuclear waste has a very long half life, meaning it will stay around for much longer and have much more profound long term effects. It is also very difficult to store, and even when properly stored it can affect nature and have hazardous effects. Many mutations can occur and things most often end badly.

Current limitations, why has it not been solved already?

People don't want to switch because nuclear power plants dangerous and uranium is important for nuclear weapons, and having nuclear power plants allows them to continue that research.

Proposed solution. More detail the better

Transition uranium power plants to thorium power plants.

Mentor, why did you choose them, their credentials and contact info.

Oak Ridge National Laboratory

- Government funded program for research in all things
- One of the few places to support research into thorium reactors

Citations

<http://www.world-nuclear.org/information-library/current-and-future-generation/thorium.aspx>

Proposed solution. More detail the better

We want to consider using solar power to charge home appliances and energy needs while at home. Large companies propose that solar panels on all houses in a community will take care off all the communities energy needs. According to *Project Sunroof*, on average, energy needs will go away for alternate sources and people will individually save \$10,000 a year. Environmentally, solar panels save space and do not pollute, cleaning the environment around it. For example, solar energy decreases reliance on fossil fuels, helping the environment. Most alternative methods have a Carbon footprint, but solar energy uses only the sun and has mostly all benefits.

Mentor, why did you choose them, their credentials and contact info.
Clean Solar energy company, huge supplier of solar energy in the bay area alone.

Address: 1445 Koll Cir, San Jose, CA 95112

Phone: (408) 217-8876

Ciations

<http://news.energysage.com/health-environmental-benefits-of-solar-energy/>

<http://www.alternative-energy-news.info/technology/solar-power/>

Proposed solution. More detail the better

Make the use of algae biofuels more accessible and viable. Currently, these biofuels are already being researched and are found to be far more effective than petroleum based fuels. They have the ability to reduce CO₂ emissions by about 80%, when compared with traditional fuels. Algae can also be grown in lands useless for agriculture and with the salt water collected from aquifers. This would allow us to basically have clean energy for only a little bit more research into. Using this would also allow us to reduce the amount of other biofuels such as corn and palm, allowing them to be put to use in more effective ways. Furthermore, the by products of farming corn and palm and other things can be directly used as the main nutrient force for algae.

Mentor, why did you choose them, their credentials and contact info.

NREL (National Renewable Energy Laboratory)

-They are one of the few places that have worked with algae

-Even though they are government owned, they are one of the only places with funding

Citations