



promise that it would become U.S.'s responsibility to store the waste, but currently the U.S. has no plans or implementations in place for what will be done with their reactors waste. The government has spent nearly billions of dollars on the Yucca Mountain project, as a solution for storage of spent nuclear fuel in America, which failed due to political backlash about the state of their sites geological integrity for storage and the state of Nevada's apprehension on not consenting to hosting the site. Currently there is \$24 billion waiting in a nuclear waste management fund held by the DOE for a final solution on the matter.

What are the risks and the payoffs?

The risks predominantly involved in this are not storage, environmental, transportation or even non-proliferation issues, as these very well studied subjects. The main challenges are derived from licensing, state and local governmental issues. The science of nuclear waste management is a *very* well studied field, but some of the major factors in the failures of nuclear waste management in the past (with regard to the failure of the Yucca Mountain Project), are more of a political issue than a technical one. Success in the field of nuclear waste management has been achieved by the SKB (Swedish Nuclear Waste Management Company), where they were able to begin construction on the first geological repository for spent nuclear fuel in the world through a consent based siting project. Where a community will volunteer to be the host site for the fuel, and it won't be pushed on a municipality as was the case with Yucca Mountain, which is why it received so much political backlash. The success in Sweden came

mostly from volunteering communities that already held nuclear reactors in their areas, as the locations were more comfortable with the thought of nuclear energy and is the approach Lumos believes is right to take.

Cost? Time?

According to our research done on the construction costs of solar thermal updraft towers, this facility would cost on the order of \$75 million. Licensing costs were advised on the order of \$20 to \$50 million. The time constraint is to be derived from the continuation of the development on the technology, which is expected to be less than 5 years with funding. The licensing process is expected to take between 2 and 5 years according to Lumos' most trusted advisors. Costs of traditional interim storage facilities, like the Swedish CLAB (Central Interim Storage Facilities for Spent Nuclear Fuel) were on the order of \$2 billion, and then continued expenses were procured from the need for continuous cooling of the spent nuclear fuel during its operation. Compared to a total of less than \$200 million for the initiative that Lumos is trying to push for.

Figure 2: Solar Thermal Radionuclide Updraft Tower next nuclear reactor.

(Figure not drawn to scale)





LUMOS INDUSTRIES INC.

614 N. OGDEN AVE. STE 100, CHICAGO IL 60642

WHY CYCLOTRON ROAD?

What most attracts you to Cyclotron Road?

At Lumos' Industries we place immense value on protecting the environment, and working with people who value diversity and innovation in energy. We want to bridge the gap between nuclear and normal. A quick scroll through the "Team" tab on Cyclotron Road's website will boast profiles of people who similarly yearn to see clean energy initiatives come to fruition. We are confident that with the guidance and resources this team will provide us, our STRUT technology will attract strategic partnerships and additional funding.

Why would this be the ideal home for you and your project (vs. alternative paths)?

Berkeley Lab's state of the art equipment, and dedicated researchers make Cyclotron Road the ideal home for our company and our technology. The new model for energy R&D addresses a major issue that MIT Energy Initiative raises in cleantech lacking appeal to traditional venture capital investors. Thus, making it an unlikely alternative path. STRUT technology demands collaborative effort on behalf of the DOE and the private sector.

Cyclotron Road has managed to harness the innovative spirit of Silicon Valley. Silicon Valley is the perfect location for our company to thrive. In a market like Chicago we do not have access to the network of our fellow clean tech innovators. Though, there are a number of organizations that support clean energy, many of which we avidly support including, _____. Through Cyclotron Road we will have access to a new, extensive support network of organizations like _____.

Which people and facilities at Berkeley Lab could be particularly valuable in supporting your work?

