



# Issue Primer

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## **Nuclear Power is Wrong for the Great Lakes**

The debate over nuclear energy is contentious and complicated, and infused with inaccurate and misleading information. Proponents tout nuclear power as a clean, safe, affordable, and climate-saving energy source. However, none of these assertions are true. Nuclear energy is unsafe and expensive, and not the solution to Michigan's energy needs nor the global warming crisis.

### **Nuclear is not carbon-free**

While the operation of nuclear plants is mostly carbon-free compared to coal, the entire nuclear process—including exploration, mining, milling, enrichment and transportation of uranium — causes significant greenhouse gas emissions. Also, construction of new reactors and radioactive storage facilities requires significant amounts of concrete, another major source of carbon emissions. But the most damaging to the climate is the enrichment process that emits CFC-114, a pollutant that is 9,800 times more potent as a greenhouse gas than Carbon Dioxide (CO<sub>2</sub>) and lasts for 300 years in the atmosphere.

### **Nuclear is too dangerous**

The accidents at Three Mile Island and Chernobyl are commonly known nuclear disasters. However, Michigan has had our own close calls. In 1966, Fermi 1, an experimental breeder reactor, experienced a meltdown, which was hushed up. It was subsequently documented in the book, "We Almost Lost Detroit" by John G. Fuller. In 1993, Enrico Fermi II was offline for more than a year after a turbine blade spun-off, causing immense damage as radioactive water built up in the turbine building and was gradually released into Lake Erie. In 2002, another nuclear catastrophe was barely averted. At the Davis-Besse plant in Ohio a mere 60 miles south of Detroit, inspectors found a football-sized hole in the reactor vessel. The inspectors claimed that the plant was only two months away from a core meltdown worse than Three Mile Island. In 2005, at the Palisades plant near South Haven, there was yet another near-miss when a crane holding nuclear waste over the spent fuel storage pool got stuck. If the crane dropped the waste, it could have released radioactive material over the state.

Aside from accidental releases of radioactive substances, normal reactor operations release radioactive tritium, and other radionuclides, to both air and water, some of which bio-concentrate in the food chain, just like DDT. Although the NRC claims that these releases are within safe parameters, a report by the National Academy of Sciences in 2006, "BEIR 7" stated there is no safe threshold of radiation when it comes to human health.

### **No safe place for nuclear waste**

Even if it is ever approved, 2017 is the earliest possible opening date for the proposed national depository for high-level nuclear waste storage at Yucca Mountain in Nevada. The waste that would be stored at Yucca Mountain will remain dangerous for at least 1 million years. If the U.S. were to double its nuclear power capacity, we would need to construct yet another Yucca Mountain-sized facility. This would necessitate tens of thousands of nuclear waste shipments that would be vulnerable to accidents and terrorist attacks. In the meantime, Michigan's four nuclear plants have created over 1,600 tons of highly radioactive waste, which is currently being stored in huge pools or dry cement casks along the shores of the Great Lakes.

**Nuclear is unaffordable**

When all costs are accounted for, nuclear power is the most expensive way to create electricity. New nuclear plants are estimated to cost at least \$7 – 10 billion each, and take 10-12 years to permit and construct. Furthermore, there is only an estimated 60-year supply of uranium ore, and the price of uranium has skyrocketed recently. Reprocessing nuclear fuel is a possible option, but the National Academy of Science has urged President Bush to halt the Department of Energy program to reprocess nuclear fuel, deeming it unsafe. Reprocessing cannot handle all the waste, and creates weapons-grade plutonium in the process.

Nuclear power is already heavily subsidized, and new Congressional bills could have the taxpayers underwrite nuclear power with \$50 billion in interest-free loans. The Congressional Budget Office estimates that 50% of these loans could default.

**Better alternatives to nuclear exist**

Constructing new dirty, dangerous, and expensive sources of nuclear power, such as the proposed Enrico Fermi III plant, is not the answer to our energy needs. Michigan should instead focus on implementing energy efficiency and its newly passed Renewable Portfolio Standard (RPS), and look to accelerate the development of renewable energy through a Feed-In Tariff (FIT) policy. Energy efficiency is the most cost-effective method of reducing carbon emissions and eliminating the need to construct new polluting energy sources, such as expensive nuclear plants.

Every \$1 spent on energy efficiency is seven times more effective at reducing CO2 emission than a dollar spent on nuclear energy. Furthermore, renewable energy, such as wind and solar, are quickly becoming more cost-competitive. While clean sources of energy are projected to become progressively cheaper, costs for coal and nuclear are expected to continue to increase. Nuclear power is clearly not the answer to saving either money or the climate.