

MOX Misses the Mark



Despite the ever-increasing price tag, incessant delays in progress, and known safety risks, the Department of Energy continues to pour federal subsidies into the Mixed Oxide Fuel (MOX) program year after year. In 2012 the program received over \$500 million toward the development of a \$4.8 billion production facility called the Savannah River Site – only the first step in a program that is expected to cost at least \$15 billion within 25 years.ⁱ

The MOX program is part of the United States' strategy to dispose of our plutonium-based nuclear weapons as required by the Plutonium Management and Disposition Agreement of 2000.ⁱⁱ The weapons-grade plutonium is blended with depleted uranium, creating MOX fuel, which can then be processed in nuclear reactors. Usable energy is derived, and the end-products of the reaction are no longer usable in weapons. It seems like a win-win: we can dispose of plutonium while simultaneously creating energy.



Photo: NNSA <http://nnsa.energy.gov/blog/view/201202?page=0%2C1>

Unfortunately, the MOX program is completely bogged down in economic and logistical problems. For example:

- The financial cost of the MOX program is not worth the energy derived. Converting weapons-grade plutonium to usable fuel requires the construction of a special facility, and once the MOX fuel is produced, existing nuclear facilities will need to be updated in order to handle MOX fuel because the actual processing breaks down reactors much more quickly than conventional nuclear fuel.ⁱⁱⁱ
- Because of the danger inherent in transporting and processing weapons-grade plutonium, the MOX program requires heightened safety and security to prevent nuclear proliferation, further adding to the overall cost.
- MOX technology has not been properly tested. The design of the program is based on similar technology already in place in Europe and Japan, but the MOX fuel they process uses a plutonium byproduct of conventional reactors, as opposed to the weapons-grade plutonium that we plan to use.^{iv} Accordingly, if and when the facility is completed, its first few operational years will be spent merely running tests.

The MOX program has been repeatedly delayed as its cost continuously increases.^v The Savannah River Site, where MOX would be produced, was originally supposed to be operational

by 2007 at a cost of \$1.6 billion; now the plant's completion is expected in 2016 at a cost of \$4.8 billion, plus annual operation costs of \$499 million, up from an estimated \$156 million in just 2010.^{vi} Over the 20 years the plant will be licensed,^{vii} these annual operation costs would add up to nearly \$10 billion.

In late 2008 the contract between Duke Energy and MOX Services committing Duke to buying the MOX produced at the Savannah River Site was terminated, leaving the DOE without a buyer for the fuel.^{viii} Since MOX will carry a much higher price tag than conventional fuel, the DOE will have to pay companies to take the fuel off their hands--if, that is, they can find any companies interested in processing the volatile substance.

Here's how it all adds up:

1 production facility	\$4.8 billion
20 years of operational costs	\$10 billion
Years and years of subsidized MOX sales	\$\$\$
Updates to the facilities that agree to buy it	+ \$\$\$
The Total Cost of MOX	\$Too much for taxpayers

MOX carries a hefty price tag, especially considering that safer disposal alternatives exist. We could reach the same ends in terms of both disposal and energy production in easier and less risky ways. The costs are already high and only getting higher, so the threshold at which this program became fiscally irresponsible was crossed long ago. It's time to end the MOX handouts.

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ⁱ Senate Energy and Water Development Appropriations Bill 2012. <http://www.gpo.gov/fdsys/pkg/CRPT-112srpt75/pdf/CRPT-112srpt75.pdf>

ⁱⁱ 2000 PMDA info from the State Department at <http://www.state.gov/r/pa/prs/ps/2010/04/140097.htm>

ⁱⁱⁱ Nuclear Decommissioning Authority <http://www.nda.gov.uk/documents/upload/Plutonium-Options-for-Comment-August-2008.pdf>

^{iv} Nuclear Regulatory Commission <http://www.nrc.gov/materials/fuel-cycle-fac/mox/faq.html>

^v Senate Energy and Water Development Appropriations Bill 2012. <http://www.gpo.gov/fdsys/pkg/CRPT-112srpt75/pdf/CRPT-112srpt75.pdf>

^{vi} National Journal <http://www.nti.org/gsn/article/senate-faults-nnsa-rising-cost-savannah-mox-site/>

^{vii} Mox Project <http://www.moxproject.com/about/>

^{viii} Duke Energy <http://www.duke-energy.com/pdfs/DukeEnergy10K.pdf>