

A Modest Proposal

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1 Protopark

The other day I ran across a conversation among nuclear advocates bemoaning the lack of US government funding of advanced nuclear concepts.

The last thing the US needs is more public money spent on nuclear “research”. We don’t need research. We need to start building. And even if there is an argument for still more research, it would bear no fruit in the current regulatory environment, regardless of how good the technology was. There’s no point in throwing still more public money down that toilet.

We need an entirely different approach. Here’s a modest proposal.

1. The Feds designate a portion of some unpopulated federal reserve as a nuclear prototype testing park. Hanford would be my choice, but there may be better locations. The park would be fitted with security, and infrastructure that is a common requirement for all or almost all concepts. This could include a heat sink for rejecting or better using the energy produced by the prototypes.
2. Here’s the key point. ***The park would be run on user pays basis.*** The tenants would pay rent and other usage fees based on how much of the park’s land and services they required. They would build the prototype entirely with their own money. They would also be required to leave their site in its former condition at the end of their tests. This would mean that the market and not politicians would choose which concepts would apply.¹ It would also mean that, if the park is successful, it will cost the taxpayer little or no money.
3. The decision as to which applicants would be allowed to test in the park would be made by a small group of independent experts who would function like the Reactor Safeguards Committee in the 1950’s. The tests and the results would be completely open to the NRC. The Safeguards committee would be responsible for determining if a concept is safe enough to start testing, approving the test protocols, monitoring each step in the tests as the power ramps up, and then approving the next step only if they were happy with the results so far. There would be no appeal from a Safeguards committee decision.
4. After a prototype has completed its tests, or been shut down by the Safeguards committee, the proponents would still need to apply to the NRC via the “normal” licensing process. But they would do on the basis of real data, not just computer models.

¹ It also avoids the ugly situation where the moocher takes taxpayer money but keeps the IP he developed with our money.

New technologies require test reactors/prototypes not just so the developers can learn about their design and fix/improve/abort as necessary, but also the regulators can learn about the technology. But this requires a kind of humility on the part of both developers and regulators. We don't know everything we need to know to license this technology for commercial use; so let's learn together.

But regulating such tests requires a step by step approach in which each step is approved based on the results of the tests so far. This is a sequential process that is totally different from normal licensing.² And this must be understood by the regulators.

² Other countries including Argentina, China and Russia recognize this. The KLT-40S, the HTR-PM, and the CAREM were given permission to begin building by their national regulators under special provisions that all demonstration plants to be built and operated.