

**Comments on Department Of Energy Loan Guarantee Solicitation Announcement,
Federal Loan Guarantees for Advanced Nuclear Energy Projects
Solicitation Number: DE-SOL-000___**

Summary

The referenced DOE Loan Guarantee Solicitation Announcement should be withdrawn in its entirety. It is unnecessary and as written could be used to fund projects in violation of 42 USC 16513. An illegal loan guarantee program is obviously unacceptable. But an unnecessary loan guarantee program—especially one that places billions of taxpayer dollars at risk to artificially prop up a failing, obsolete industry—is also unacceptable.

Background

The Energy Policy Act of 2005 gave the Department of Energy the authority to provide taxpayer loans from the Federal Financing Bank and loan guarantees for commercial lenders for the construction of new “Advanced Nuclear Energy Facilities.” In 2007, Congress authorized appropriations sufficient to provide \$18.5 Billion in loans under this program. Numerous efforts to increase the available funding for the program failed to pass Congress from 2009-2012; since then no attempt has been made to raise the program’s funding.

At the time the program was authorized and funded, the nuclear power industry was in the midst of a major public relations program espousing a so-called “nuclear renaissance.” That “renaissance” didn’t happen. While the Nuclear Regulatory Commission reported receiving 30+ license applications or intents to submit applications for new reactor construction during 2007-2009, nearly all of those supposed projects have been abandoned. Only four reactors initiated during that period—two at the Vogtle site in Georgia and two at the Summer site in South Carolina—are under construction. Both projects are behind schedule and over-budget.

Seven years later, the DOE nuclear loan program is an abject failure. Only \$6.5 Billion has been handed out (through the Federal Financing Bank, not commercial lenders) so far—all for the Vogtle project. The lead utility in that project is Southern Company, whose executives publicly stated for years that they didn’t need the loan. And they didn’t—Southern Company already was, and still is, collecting funds from ratepayers in advance of reactor operation in a pernicious scheme sometimes called Construction Work in Progress (CWIP) and sometimes Early Cost Recovery. DOE apparently still expects to provide another \$1.8 Billion for this project to smaller project partners.

DOE apparently approved a loan for the ill-fated Calvert Cliffs-3 reactor project, but that proved to be a case study in the pitfalls of a nuclear loan program. The DOE and Office of Management and Budget (OMB) settled on a credit subsidy cost reportedly of \$880 million for this project, based on the fact that it would have been a merchant reactor with substantial uncertainty over whether it could sell electricity cheaply enough to compete with other sources and thus earn enough to be able to repay the loan (which also would have been made through the Federal Financing Bank, not commercial lenders).

One of the Calvert Cliffs project's lead sponsors, Constellation Energy, dropped out of the project at that time and publicly complained about the high subsidy cost. But Constellation already had serious reservations about the economics of the project and was unlikely to continue with it even had the credit subsidy cost been zero (as the cost for Vogtle ultimately and inexplicably was). Constellation Energy's withdrawal from the project left a foreign entity, Electricite de France (EDF), as the sole owner of Calvert Cliffs-3—and, as an NRC Administrative Law panel and the Commissioners themselves later ruled—that made EDF ineligible to receive a construction/operating license from the NRC in any case.

To the best of our, and the public's in general, knowledge, no other new nuclear reactor project has been seriously considered for a loan or loan guarantee. Of course, given the complete lack of transparency that has permeated this program from its inception, we could be wrong in that statement. Nevertheless, it is undeniably true that no other loans or guarantees have been granted by this program.

Thus, after seven years, the DOE's nuclear loan program has succeeded only in providing one loan to a project that didn't need it and offering a loan to another project for which it would have been illegal for its principal to receive it. This record can hardly be considered a wise use of taxpayer dollars.

Current Solicitation Agreement as it applies to nuclear reactors

Having failed to fund a nuclear "renaissance," and failed even to find any takers for the remaining \$10.6 Billion authorized for reactors, DOE would be well-advised to go back to Congress and tell it that the program is a failure. It did not and could not accomplish what Congress envisioned. DOE should return the remaining funds to the general treasury, or at least recommend to Congress that they be transferred to DOE's similar program for renewable energy projects, which has been somewhat more successful than the nuclear loan program.

Instead, DOE has issued the new draft loan solicitation agreement in an obvious effort to use up those funds whether or not it serves the original purpose of the creating legislation.

In the most relevant section, DOE says it will consider providing loans or guarantees to:

a) Nuclear reactors. Projects with state-of-the-art design improvements. These improvements are in the areas of fuel technology, thermal efficiency, modularized construction, safety systems (especially the use of passive rather than active systems), and standardized design;

b) Small Modular Reactors. Projects with state-of-the-art design improvements. These improvements are in the areas of fuel technology, thermal efficiency, modularized construction, safety systems (especially the use of passive rather than active systems), and standardized design and are nominally 300 MWe or smaller in size;

c) Upgrades. Projects consisting of improvements and/or modifications to an existing reactor that is operating but that due to such improvements and/or modifications will operate more efficiently;

and

d) Upgrades. Projects consisting of improvements and/or modifications to an existing reactor that is not operating and cannot operate without such improvements and/or modifications or an existing reactor that is operating but would be required to cease operating unless such improvements and/or modifications are made.

Of these four categories, only a)—the exact part of the current loan program that has failed so drastically—is both legal and theoretically, at least, viable. The problem for DOE is that there seem to be no utilities wishing, at this point, to embark on new reactor construction. And the most popular reactor design even considered by U.S. utilities for construction is the Westinghouse AP-1000, which DOE already has funded and thus can no longer be considered having “state-of-the-art design improvements.” The potential market for a DOE loan or loan guarantee is quite small, perhaps vanishingly small would be a better description.

Category b), Small Modular Reactors, would meet the requirements stated in the solicitation and in the underlying legislation. The problem is that no designs for a Small Modular Reactor (SMR) have yet been submitted to the Nuclear Regulatory Commission for certification—a process that historically has taken years. Nor have any utilities applied for a license application to build and operate an SMR, or announced plans to do so. Thus, there is no possibility for a viable SMR project in the foreseeable future. And the idea that DOE would risk taxpayer money on a project that has not even begun design certification—much less completed it—and for which no license application even has been submitted, is unfathomable. If, at some future date, SMRs become a commercially-viable technology, then DOE presumably could offer loans or guarantees under its existing authority (assuming the current program still exists at that unknown date), but it is drastically premature to include SMRs in a solicitation at this point.

Categories c) and d) must be dropped from this and any future solicitation. These categories are nothing more than an attempt to prop up—at taxpayer risk—current reactors that have become uneconomical due to age-related deterioration, poor reactor design, or simply lower-cost competition from electricity generation sources like solar and wind power.

The Act clearly states, “The Secretary may make guarantees under this section *only* for projects that (1) avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases; *and* (2) employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued.” (emphasis added)

Because these reactors already exist, whatever reduction or avoidance of greenhouse gases they can provide is already in place. Upgrading and/or upgrading nuclear reactors does not increase reduction or avoidance of greenhouse gases. The industry has extensive experience with power uprates dating from before the loan guarantee program was

created. It does not represent new or improved technologies. In any case, the commercial viability of power uprates is dubious at best, considering the recent cancellation of several power uprate projects, significant cost overruns on others that have been or are being implemented, and the economic strain facing several reactors that previously implemented power uprates. Thus, existing reactors cannot possibly meet requirement (1).

Nor can DOE argue that closing existing reactors would lead to an increase in greenhouse gas emissions, since DOE does not and cannot know what would replace any particular closed reactor—if indeed replacement power is needed at all in any given case. Given the soaring growth of clean renewable energy, especially solar and wind power, it is highly possible such renewable energy could and in fact would be the primary replacement of any closed nuclear reactors. And renewable energy is responsible for even lower carbon emissions than nuclear when the entire nuclear fuel chain is taken into account.¹

Energy efficiency programs, which are even lower-carbon than renewables, can and likely will play a major role in any replacement power needs as well.

Nor can any existing reactor meet the requirements of (2). Except for the four reactors currently under construction, the U.S. nuclear fleet is composed of 99 reactors that originally were designed 40 to 50 years ago, and in some cases, perhaps longer. Improving safety at existing, but let's face it, old reactors is a laudable goal but hardly falls under the category of "new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued." The "new or significantly improved technologies" are represented by the four reactors now under construction. No uprates or upgrades to existing reactors can be defined as either newer or significantly improved from those. And, again, while improving safety is a laudable goal, some safety improvements identified as a result of the Fukushima disaster are already being required by the Nuclear Regulatory Commission.

A desire by the DOE to bail out nuclear utilities by risking taxpayer funds for mandated safety improvements to obsolete reactor designs like the GE Mark I and others is not even close to the intent of the Energy Policy Act, which aimed to spur new reactor construction using "advanced" reactor designs.

Should the DOE proceed with this idea, it will be litigated (yet another waste of taxpayer money), and it is highly unlikely DOE will prevail given the plain language of the Act.

The reality is that Categories c) and d) cannot meet *either* of the two requirements of the Act, and thus also cannot even come close to meeting the higher, but essential, need of meeting *both* of the two requirements.

¹ See, for example, the meta-study *Valuing the greenhouse gas emissions from nuclear power: A critical survey*, which pegs nuclear's carbon footprint at 6 times higher than wind power and twice as high as solar power (although advances in solar PV efficiency likely make the gap between solar and nuclear even higher).
http://www.nirs.org/climate/background/sovacoal_nuclear_ghg.pdf

Nuclear Fuel Cycle Facilities

Just as DOE has been unable to dole out the billions of dollars available in its reactor loan program—because of lack of interest among the utilities that would have to license, build and operate new reactors, so too has DOE been unable to hand out the \$2 Billion available in loans for new fuel cycle facilities.

The main reason for this is that, so far at least, even DOE has been unable to reach a favorable financial finding for the U.S. Enrichment Corporation (USEC), which—unable to borrow money from the commercial sector—needs a taxpayer-backed loan to build a new uranium enrichment plant.

There is little reason to believe this situation will change in the reasonably-foreseeable future. While USEC just emerged from bankruptcy, that's not exactly an indication of financial strength. And USEC (and anyone else wanting to build a new uranium enrichment plant) would have ample competition in a shrinking market (as evidenced by several reactor retirements in 2013-14 and the prospects for more in the relatively near future).

Again, rather than a well-directed effort to improve the prospects of nuclear power, this section appears instead to be another effort to bail out a failing entity.

Conclusion

The DOE's nuclear loan program has been an abject failure, even on its own terms. The reasons for that are many, and for the most part have been out of the control of DOE. They include increased competition in the electricity generation marketplace; the explosive growth in renewables as costs for renewable technology continue to plummet—a trend expected to continue for years if not decades; and, unfortunately, the rise in fracking-produced natural gas.

None of these factors are likely to change in the foreseeable future. Indeed, they are more likely to accelerate.

The nuclear loan program was established at a time when too many politicians believed nuclear industry hype that a nuclear power “renaissance” was just around the corner, and some government support would be extremely helpful in its launch. But the “renaissance” didn't materialize and nuclear power is back to where it was 15 years or so ago, except in worse position. Then, it was simply a moribund industry. Now, it is not only moribund but obsolete—new technologies, from rooftop solar with battery storage to smart grids to the unexpected effectiveness of energy efficiency programs and mandates, to the growing concept of distributed generation, which provides not only safer and cheaper power, but also a more secure grid; have risen to take nuclear's place.

Nuclear power is not only risky from a public health and safety perspective; it always has been financially risky as well. According to DOE's own study, the first 75 reactors in the U.S. were built with an average cost overrun of 207%--or more than three times their original expected cost. Those reactors that came later had even higher cost overruns.

There is no longer any need, if indeed there ever was, to force taxpayers to take those kinds of risks.

Rather than attempt to resuscitate its failed nuclear loan program, the DOE should acknowledge the program's failure and explain to policymakers that it failed not because of DOE's policies, but because of much larger market forces, the effect of multiple nuclear meltdowns, and the rise of new technologies.

DOE should not only withdraw its solicitation but should either simply end this program or seek to have its funds transferred to its renewable energy loan program, which has shown some evidence of genuine accomplishment.

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