Comprehensive Fuel Cycle - Community Perspective – 13093

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ABSTRACT

Should a five-county region surrounding the Department of Energy's Savannah River Site ("SRS") use its assets to help provide solutions to closing the nation's nuclear fuel cycle? That question has been the focus of a local ad hoc multi-disciplinary community task force (Tier I) that has been at work in recent months outlining issues and identifying unanswered questions to determine if assuming a leadership role in closing the nuclear fuel cycle is in the community's interest. If so, what are the terms and conditions under which we the community would agree to participate?

Our starting point was the President's Blue Ribbon Commission on America's Nuclear Future ("Commission") which made a total of eight (8) recommendations in its final report[1]. There are several recommendations that are directly relevant to the Tier I group and potential efforts of the Region. These are the "consent-based approach," the creation of an independent nuclear waste management entity funded from the existing nuclear waste fee; the "prompt efforts to develop one or more consolidated storage facilities," and "continued U.S. innovation in nuclear energy technology and for workforce development[2]."

INTRODUCTION

The entire Tier I group (described as a local ad hoc multi-disciplinary community task force) did not want to consider HOSTING ONLY a storage facility. Consolidated storage by itself brings limited economic benefits and is construed by many as a negative image factor for the region. Therefore any community role must include job-creating activities, including Research & Development and manufacturing associated with closing the nuclear fuel cycle. It must include legally binding commitments to a final disposition plan and provide opportunities for ultimate disposition of nuclear materials and wastes already stored at SRS.

The community task force believes that additional study is required before a broader community consensus (Tier II, Tier III, etc.) can be pursued, including determining how this initiative would impact other economic development in the region. Throughout its deliberations, the Tier I group has stressed the desirability of public/private partnerships and strong multi-jurisdictional support if an initiative advances.

The Savannah River Site Community Reuse Organization ("SRSCRO") was selected by the Region as the logical entity to commission a comprehensive study of potential national solutions to management of the back-end of the fuel cycle and the potential of new fuel cycle facilities in the Region. The solutions being evaluated include expanded research, development, and demonstration ("RD&D"), consolidated storage facility (together with ancillary support facilities, manufacturing, etc.) followed in the future by a reprocessing facility to recover valuable resources from SNF ,sometimes referred to as used nuclear fuel which is generated principally by the civilian nuclear power sector.

The 501(c) (3) private non-profit, SRSCRO, has a community based Board of Directors which includes community leaders from education, industry, business, banking, area economic development organizations, and state and local governments. The 22-person Board members are selected equally, eleven from Georgia and eleven from South Carolina.

The SRSCRO's region of responsibility covers the five counties of Richmond and Columbia in Georgia, and Aiken, Allendale, and Barnwell in South Carolina. The SRSCRO serves as the community interface organization for DOE-SR with respect to local supported area economic development initiatives. The SRSCRO mission also includes serving as an informed, unified community voice for the five-county, two-state region. Through the SRSCRO, Dickstein Shapiro LLP has been retained to do this research study. The lead on the effort at the firm is Tim Frazier, who prior to joining the firm managed the Blue Ribbon Commission on America's Nuclear Future for the Department of Energy.

Community impacts – including impacts on economic development – and public sentiment are key elements of consideration and will be an area of focus in the study. This is only a comprehensive fuel cycle research study to inform and provide needed information – at this time no decisions or definitive plans have been made by the "community" on the role or roles it wishes to play in solving the issues related to the back-end of the nation's nuclear fuel cycle.

BACKGROUND

The Commission was appointed following the Obama Administration's decision, formally announced in February 2010, to halt construction on the nation's only planned waste repository at Yucca Mountain in Nevada. That decision essentially leaves commercial spent fuel and high-level defense waste stranded at their current locations across the country, including SRS. DOE already uses SRS as an "interim" storage facility for several types of nuclear materials and wastes. Originally, this material came to SRS for the sole purpose of being processed in SRS facilities before permanent disposal elsewhere. However, with very few exceptions, once the materials arrived at SRS, they remain indefinitely with no clear plan for ultimate disposition, which makes SRS a de facto long-term storage site.

There have been several successful and unsuccessful efforts to site a storage and/or disposal facility for nuclear waste. In the United States, the Waste Isolation Pilot Plant ("WIPP") located in southeast New Mexico is a success story and a potential model to be followed. WIPP benefited from an increasingly supportive host community and a State that was willing to participate in discussions with the host community and DOE. Internationally, Sweden and Finland are the best examples of successful siting efforts for nuclear waste facilities. Both efforts had the benefit of supportive host communities.

The Yucca Mountain project stands in stark contrast to the successful efforts of the WIPP, Finland and Sweden. While there was and still are willing and supportive host communities in Nevada for Yucca Mountain, key state leaders and the Nevada Congressional delegation are vehemently opposed to the repository at Yucca Mountain. In late 2009, the Obama Administration withdrew the license application from the Nuclear Regulatory Commission ("NRC") and terminated the project (a decision still under review in the federal courts).

Community support is vital to the success of any effort to develop and establish fuel cycle facilities like consolidated storage, reprocessing, or disposal facilities.

Community involvement must ensure that all elements of the community are involved and their voices are heard. This community involvement should be focused on addressing the perceived risks, as well as the real risks associated with fuel cycle activities – including the risks of transportation, radioactive material release, and possible acts of terrorism. Conversely, the community needs to fully evaluate and understand the substantial benefits that the community will realize, primarily in the form of new skilled jobs and incremental economic revenues.

LOCAL CONSENT-BASED APPROACH

A "consent-based approach" is a process for group decision-making. It is a modified democratic method by which an entire group of people can come to an agreement. The input and ideas of all participants are gathered and synthesized to arrive at a final decision acceptable to all. Through consensus, we are not only working to achieve better solutions, but also to promote the growth of community and trust. An important reminder: A "consent-based approach" does not mean everyone agrees that a decision is optimal or best for their individual objectives. It means a decision is reached that everyone can live with; in other words, the decision addresses stakeholders' most important issues. Engaging the community and key stakeholders can be accomplished in various manners.

For this effort, the Region supported a modified consensus-building model proposed by Susskind [3]. Instead of the identified five step (convening, clarifying, deliberating, deciding, and implementing) Susskind model, a more simplified four step process has been proposed.

Step 1: **Introduce and clarify the issue**

Step 2: **Explore the issue and look for ideas**

Step 3: **Discuss, clarify and amend your proposal**

Step 4: **Implementation**

The Region is currently finishing Step 1 -Introduce and clarify the issue - This is the very initial stage where a potentially controversial opportunity is identified and a decision to consider trying consensus building as a resolution process is made. This decision may be made by one or more of the stakeholders, or by a third party who believes that consensus would be a good way to bring the stakeholders together.

Both Step 2 and Step 3 can be described broadly as - Substantive Discussions – This stage begins with the first face-to-face meeting among parties and ends, ideally, with an agreement. Substantive discussions are characterized by direct exchange of views and information.

The Region proposes to accomplish these substantive discussions toward consensus building in an "out & up" approach. The Tier I Task Force will reach "out" to the surrounding local communities, economic development groups, nuclear advocacy and technical organizations, civic clubs and others with an interest in nuclear energy and economic growth. The concept will also be advanced "up" to local, state, and federal elected officials and regulatory entities. Additional "Tiers" of stakeholders will be added as the consensus building process moves forward. And, they can be categorized into four broad groups in terms of their influence on or power to affect the outcome, stake in the outcome, and knowledge.

1. *Decision makers* include those with a major stake in the outcome and considerable power but with differing levels of knowledge. Decision makers will include representatives from organizations with a mandate to manage some part of the system or issue a permit for a new project. This group also includes local, state, and federal elected officials.

2. *Stakeholders with economic or political impact* are characterized by major stakes in the outcome, a medium to high degree of power to affect the outcome, and differing levels of knowledge. They include affected industry, private corporations, local general public and other communities across the nation, nationally recognized and highly organized NGOs, and other groups with strong political influence.

3. *Knowledge-producers* do not have much stake in the outcome or any power to affect it, but they possess valuable knowledge on which decisions may be based. They include scientists,

engineers, and consultants working in academia; technical consulting firms; local, state, and federal science agencies; the scientific and technical offices of government agencies; and scientific arms of NGOs that have a stake, but no specific mandate, in the process.

4. *Other affected stakeholders* may have a major stake in the outcome, but little power to affect the outcome and differing levels of knowledge. These include smaller groups of stakeholders directly or indirectly affected by the proposed project.

The final step is Step 4 - Implementation – If parties are to achieve the results they are seeking, implementation is critical. Planning for implementation should occur during each of the preceding stages. Anticipating obstacles to successful implementation, creating incentives for all sides to comply with the terms of an agreement, and establishing mechanisms for ongoing communication and negotiation can all contribute to the long-term durability and stability of consensus building.

NATIONAL SOLUTIONS - CRADLE-TO-GRAVE APPROACH

The solutions being evaluated by the Region, under Step 1, include expanded RD&D, consolidated storage facility (together with ancillary support facilities, manufacturing, etc.) followed in the future by a reprocessing facility to recover valuable resources from SNF, sometimes referred to as used nuclear fuel which is generated principally by the civilian nuclear power sector. Fuel cycle facilities and other resources would be required to implement these solutions.

Research, Development and Demonstration

The ability to contribute to nuclear RD&D and the advancement of the nuclear industry is an important effort for the Region. The continued use and operation of H-Canyon at the SRS are keys to an operating RD&D program. H-Canyon has a unique niche and should be maintained and utilized as a processing and a demonstration facility well into the future.

Additional areas of R&D are contained in the DOE's Office of Nuclear Energy R&D Roadmap from April 2010. Of the areas identified in the Roadmap, there are several that have some promise for the Region and potential facilities that could be developed as part of a broader RD&D program.

Storage

This Study assumes that any consolidated storage would start SNF from the seven operating nuclear generating plants in South Carolina and Georgia – approximately 6,650 MT. The 20,000 MT of SNF in the southeastern U.S. would be included after the SNF in South Carolina and Georgia was consolidated. Subsequent phases – if pursued – would broaden the effort to

include Virginia and the northeastern States, which together have slightly more than 14,000 MT of SNF. There are also opportunities to work with DOE to meet its needs for dry storage of various fuels and vitrified defense high-level waste currently in storage at the SRS.

Reprocessing

Given the SRS's long history with and involvement in reprocessing, establishing a reprocessing capability in the general area should be well accepted by the local communities. Clearly there are substantial economic benefits to siting a reprocessing facility in the Region.

However, there are technical hurdles that will need to be overcome in order to establish a SNF reprocessing facility. In order to make reprocessing acceptable in the U.S., it is generally acknowledged that the PUREX process should be abandoned. PUREX is considered by many non-proliferation proponents to be a substantial proliferation risk because it separates pure plutonium from the uranium and fission products. There are several other separation processes that could be used that address that concern by not separating pure plutonium.

Federal Legislation

Comprehensive legislation is required to fully implement the recommendations of the Commission. This legislation would create a Nuclear Waste Management Corporation ("NWMC") with assured access to adequate funding (by redirection of the existing nuclear waste fee), and specify a process by which host communities would apply to host fuel cycle facilities, consolidated storage and/or disposal facilities. The NWMC would also have the authority to reprocess SNF if it was determined to be beneficial to managing the back-end of the fuel cycle.

Economic Opportunities

The Study looked at economic impacts for three levels of consolidated storage, each with and without reprocessing. There are economic benefits associated with consolidated storage on a standalone basis, but the economic benefits of incorporating reprocessing into equation are dramatically more significant and are independent of the size of the consolidated storage.

Opportunities for Development Funding

A significant amount of funding will be required to move forward with specific proposals for consolidated storage and/or permanent disposal. During this period, the federal government will continue to collect the Nuclear Waste Fees at a rate of approximately $750 million per year. An appropriate use of these funds is to support the development of proposals which will form the backbone of the comprehensive national plan, and support the communities hosting facilities

while they wait a decade or more for revenue and other economic benefits to start flowing from facility operations.

Compensation and Incentives

The Commission recognized that compensation and incentives that are generous and not prescribed up front can very positively impact the willingness of a community and state to volunteer to host a consolidated storage and/or disposal facility. The siting effort in Finland and Sweden supported this notion. The stakeholders in the local municipalities – working with the waste management authority – were able to craft meaningful incentive and compensation packages.

To that end, the proposed Federal legislation would include general guidelines for compensation and incentives for a host community that sites, constructs, and operates a consolidated storage facility while allowing for maximum flexibility so that details could be guided by the host community

CONCLUSION

Given the substantial projected benefits for a region from increased employment, increased tax revenue, increased standard of living, and direct compensation and incentives from the NWMC, there is a large and growing number of host communities interested in being involved in some aspect.

Comprehensive legislation is vital to moving forward and solving on a national scale the management of the back-end of the nuclear fuel cycle. The enacted legislation would enable a national solution; encourage communities to get involved; and limit the interference by both the Executive Branch and the Legislative Branch.

REFERENCES

1. http://cybercemetery.unt.edu/archive/brc/20120620220235/; or http://brc.gov/sites/default/files/documents/brc_finalreport_jan2012.pdf

2. Commission Final Report Sections 5, 6, 7, 8 and 11

3. Susskind, L., McKearnen, S., & Thomas-Lamar, J. (Eds.). (1999). *The Consensus building handbook: A comprehensive guide to reaching agreement*. Thousand Oaks, CA: Sage Publications.