Section 180(c) Policy Implementation Exercise: Multiple Views - 17383

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ABSTRACT

The Department of Energy (DOE) Office of Nuclear Energy's Office of Integrated Waste Management (formerly the Nuclear Fuels Storage and Transportation Planning Project) recently completed a two-year Section 180(c) Proposed Policy Implementation Exercise (the Exercise) with volunteers from eight states and one Native American Tribe. Under Section 180(c) of the Nuclear Waste Policy Act of 1982, as amended (NWPA), DOE is responsible for providing technical and financial assistance to states and Tribes for training of local public safety officials through whose jurisdictions the Secretary of Energy plans to transport spent nuclear fuel (SNF) or high-level radioactive waste to a NWPA-authorized facility. In the 2000s, DOE staff worked closely with state and tribal representatives to develop a revised proposed policy to implement Section 180(c), including grants for assessment and planning activities, as well as grants for training public safety officials. This revised proposed policy was published in a Federal Register Notice in 2008 (2008 FRN) (73 Federal Register 64933, Oct. 31, 2008). The purpose of the Exercise was to evaluate the efficacy of DOE's 2008 revised proposed policy for implementing Section 180(c), and identify outstanding issues to be resolved. DOE presented an interim update on the Exercise at the 2016 Waste Management Symposium and the Exercise concluded in June 2016. This paper describes the remaining activities of the Exercise that occurred since the 2016 Waste Management Symposium, and presents the perspectives of one state and one Tribal participant in the Exercise as well as DOE's perspective. The paper concludes with a discussion of the lessons learned from the Exercise, what steps are next, and how the Exercise may inform and improve future consultations between DOE and state, tribal, and local public safety officials.

INTRODUCTION

The paper presented at the 2016 Waste Management Symposium on this topic provides details of how the Exercise was designed and carried out [Bickford and Helvey, 2016]. This paper focuses on the final lessons learned on selected aspects of the Exercise and is co-authored by one DOE, one contractor, one state, and one tribal participant to help ensure a more comprehensive perspective on what worked and what was learned from the Exercise.

Section 180(c) of the Nuclear Waste Policy Act states:

> "The Secretary [of Energy] shall provide technical assistance and funds to States for training for public safety officials of appropriate units of local government and Indian tribes through whose jurisdiction the Secretary plans to transport spent nuclear fuel or high-level radioactive waste [to a NWPA-authorized facility]. Training shall cover procedures required for safe routine transportation of these materials, as well as procedures for dealing with emergency response situations."

In 2013, DOE's Office of Nuclear Energy formed the Section 180(c) Ad Hoc Working Group (AHWG) under the auspices of DOE's National Transportation Stakeholders Forum (NTSF) to pursue issues related to policy for implementing Section 180(c). The AWHG members included DOE staff and state and tribal representatives interested in preparing for future shipments of SNF and high-level radioactive waste.

The suggestion was made at a meeting of the Section 180(c) AHWG, held in conjunction with the 2013 annual meeting of the NTSF, that an exercise could help the AHWG evaluate the proposed policy language in the 2008 FRN. The following year at the 2014 NTSF annual meeting, the Section 180(c) AHWG met again and decided to pursue designing and implementing the Exercise.

BACKGROUND

DOE designed the scope and schedule for the Exercise in cooperation with state and tribal participants who expressed an interest in Section 180(c) implementation. The discussions were conducted by email, webinars, and one in-person meeting held in the fall of 2014.

During these meetings, DOE staff and state and tribal participants each developed goal statements representing their own perspectives. From DOE's perspective, the primary goal of the Exercise was to test the operability of the policy framework described in the 2008 FRN and identify any areas that needed further clarification or adjustments. Additional goals included comparing policy options and implementation logistics, where appropriate; enhancing DOE staff's and stakeholders' understanding of issues related to Section 180(c) implementation; generating an experiential basis to inform future Section 180(c) policy decisions; and building strong working relationships among the parties involved since many staff at the state, tribal, and federal level were relatively new and had not worked together on these issues.

The states' goals were developed by an interim committee they formed in 2013-2014 to work on Section 180(c) called the Inter-regional Team (IRT). In sum, their goals were:

1) To better understand how the recommendations of the 180(c) IRT will apply to the Grant Program.

2) To gain experience and obtain feedback from the mock merit review panel on the budget justification process (e.g., the level of detail required in application budget justifications).
3) To evaluate the efficiency and effectiveness of the communication process between DOE and the applicants in the exercise and provide feedback to DOE.
4) To evaluate the draft funding allocation method proposed by the IRT.

The members of the Tribal Caucus also submitted a list of goals for the Exercise. In sum, their goals were:

1. To look at similarities and differences between states and Tribes, and among individual Tribes.
    a. Tribes are of the opinion that DOE assumes states and Tribes have equal emergency management capabilities, and therefore only that increment of readiness related to shipments of spent nuclear fuel (SNF) and high-level radioactive waste (HLW) will be allowed/funded. The needs assessment will be very important in determining whether DOE's allowable activities are adequate to prepare Tribes for shipments of spent nuclear fuel (SNF) and high-level radioactive waste (HLW).
2. To explore flexible funding options for Tribes.
    a. The possibility of establishing grantee/sub-grantee relationships with states.
    b. Identifying whether a needs assessment approach is better, or if a formula/set aside approach is better.
3. To gain a better understanding of the needs assessment process:
    a. How will states calculate routing miles on tribal lands in their respective needs assessments?
    b. How will DOE evaluate needs assessments for Tribes with limited routing miles or in rural areas?
    c. Will there be assurances that the states will assist Tribes that don't apply for 180(c) funding?
4. To better understand the training needs and requirements.
    a. This is especially important to Tribes with little or no emergency management capability or personnel. Who will be trained if there are limited or no tribal responders?
5. To determine how DOE will consider its Trust obligation to Indian Tribes.
6. To evaluate the effectiveness of the overall process, including looking at the communications process between DOE and the states and Tribes who volunteer for the exercise.
7. To identify and understand potential jurisdictional issues between Tribes, states and federal governments.
8. To ensure that tribal lessons learned will be incorporated into a future DOE 180(c) program, including policy revisions and decision-making.
9. To be sure Tribes receive feedback from DOE on how the grant application process is working.

10. To make sure Tribes actively engage in the 180(c) exercise to act as a catalyst for expanded tribal involvement in DOE programs.
11. To identify information gaps in DOE's START tool and determine whether there is sufficient information for routing decisions.
12. To determine how best to fill information gaps.
13. To define Tribes' ability and authority to influence routing decisions.
14. For DOE to formally request participation of Tribes in 180(c) exercise and for information to include in the START tool.

In addition, the Tribes expressed their expectation that DOE will consult with them on a government-to-government basis to work out any identified issues or concerns starting with the Tribes who volunteer for the exercise but eventually extending to all Tribes involved in the transportation of SNF and HLW.

The primary question this paper examines is whether the Exercise fulfilled the goals of the participants. To evaluate whether the goals were met, the rest of this paper will examine eight selected aspects of the Exercise and attempt to answer that question from the perspective of a DOE staff member, a DOE contractor, a state representative (Wisconsin), and a tribal representative (the Prairie Island Indian Community) who participated in the Exercise and co-authored this paper.

A full report on the Exercise is being prepared that will address 17 aspects of the Exercise and discuss the lessons learned from each. That report is expected to be released to the public by DOE in 2017. The length of this paper could not accommodate a discussion on all 17 aspects of the Exercise. The eight aspects, divided under two headings, discussed here are:

1) Exercise Design:
    a. The Scope of the Exercise and the Time Commitment Required
    b. Adequacy of the Information Provided to the Volunteers
    c. Different Levels of State/Tribal Preparedness to Undertake Planning Activities

2) Design of the Section 180(c) Policy:
    a. One Phase versus Two Phases of Grants
    b. Covering the Cost of Operational Activities
    c. Tribal-Specific Issues
    d. Base Grant Awards
    e. Variable Award Amounts (Allocation of Funds by Formula)

EXERCISE DESIGN

The Scope of the Exercise and the Time Commitment Required

Summary of key feedback:

The Exercise was originally planned as a six-month paperwork exercise designed to walk the participants through the steps of completing a mock needs assessment and writing a mock grant application for a Training grant. But it grew into an 18-month effort with a more in-depth mock needs assessment and multiple mock grant

applications – one Assessment and Planning grant and up to four Training grant applications.

DOE anticipated that the volunteers would use their existing expertise and knowledge to complete the documentation and would not need to involve, at least not extensively, officials from other agencies or local governments within their jurisdiction. But once the Exercise was underway, many volunteers concluded that they needed to involve other officials and offices because they did not individually have the depth or range of knowledge necessary to complete the mock needs assessment. This more in-depth approach to the Exercise required that the timetable be extended by a year and that the components of the application be broken down into smaller pieces. The volunteers requesting this expanded scope wanted to both increase their knowledge base, and create an action plan their state/Tribe could use to implement a Section 180(c) program in the future.

The expanded scope of the Exercise increased the time commitment required of the state and tribal volunteers. DOE staff originally estimated 40 to 60 hours of volunteer time per volunteer state or Tribe. This estimate was based on the experience described by a state representative who was in the process of preparing in the exercise for a DOE highway route controlled quantity (HRCQ) shipping campaign through their state. The expanded hours of the Exercise caused, in some cases, upper-level management within the state to ask why their staff were supporting a volunteer effort if shipments were not imminent.

The Prairie Island Indian Community (PIIC) volunteer noted that for Tribes, resources can be particularly limited compared to states and the time commitment becomes difficult without compensation. Their staff person recommended that for the final Section 180(c) policy, DOE fund the staff time spent writing the initial grant application.

One volunteer noted that most states and the Tribe had to make assumptions when answering the questions in the model needs assessment that DOE provided as a template for volunteers. The length of time needed to complete the needs assessment will depend on the robustness of the program and associated level of knowledge and experience within each state and Tribe. In response to being asked whether any states kept track of their hours for the Exercise, one volunteer responded that the initial 40 to 60 hour estimate was about right, while another stated that they spent hundreds of hours on the Exercise.

Two state volunteers had staffing and funding challenges, which made their ability to participate more limited than initially expected. In one case, an alternate volunteer state stepped in when the original volunteer state was no longer able to participate. Several volunteers asked if funding for staff time was available from DOE's cooperative agreements with State Regional Groups (SRGs) and the Tribal Caucus. DOE approved the use of funds, but some states decided the paperwork required relative to the amount of funding was not worthwhile. Funding of staff time would have reduced the financial impact of the exercise on states and Tribes whose personnel volunteered.

What We Learned:
The 40 to 60 hours estimate was reasonable if the Exercise had remained largely a paperwork exercise relying on existing knowledge of the state and tribal participants, but the estimate was too low when the Exercise became a more data driven exercise intended to create a template for future officials responsible for this work. If the gap had been better understood and expectations better aligned between DOE's intentions that the Exercise be more of a paperwork activity and the volunteers' desire for a more in-depth study of their planning and training needs, then design of the Exercise would have been more in line with the actual hours spent completing the exercise. The volunteers recommended that "[t]he actual time required to participate in the 180(c) exercise needs to be considered' in the actual implementation of Section 180(c) because the original estimate of 40-60 hours was insufficient once the scope and schedule of the Exercise was expanded.

Many state and Tribal officials have multiple demands on their time and often lack the time or the funding to volunteer for an exercise such as this. In addition, many state and Tribal staff positions are supported by federal grants that may not allow this type of work activity. Nevertheless, because of the value of the information provided through this type of exercise, one volunteer requested that DOE consider making small grants available to states and Tribes to compensate for staff time when participating in activities similar to this exercise.

Adequacy of the Information Provided to the Volunteers

Summary of key feedback: The DOE staff provided guidance to the volunteers on conducting their mock needs assessment and training grant activities and how to write their mock grant applications. It turned out some of the information was confusing and the volunteers had questions that DOE was not able to answer because policy and planning decisions have not yet been made. It took a while for everyone to recognize that the confusion was caused by a difference between what information DOE expected was necessary to complete the applications and what information the volunteers actually needed.

Also, because the group did not sufficiently discuss planning assumptions beforehand, there was confusion about which information was relevant. A few areas where more discussion about planning assumptions would have been useful:

- Providing a mock shipment scenario and shipment description,
- Clarifying what role casks play in shipment safety,
- Explaining what role safeguards and security plays in safety,
- Providing examples of training levels and response capabilities needed to respond appropriately to an incident or accident involving SNF and HLW.
- Establishing the mechanisms for interfacing (roles and responsibilities, lines of communication) between local responders, state and tribal officials, and railroad officials during training and during an accident or incident.

In addition, there was confusion around which state agencies and personnel should participate in the mock needs assessment and what types of questions should be asked. Regarding the training, there was uncertainty about what type of training would be needed for local and other responders, who would conduct the training, and what options would be available for delivery of the training. States inquired about whether the federal government had a minimum training requirement and whether every responder along a route would need to be trained. With respect to the tribal government involved, it was much easier to determine which agencies (within the Tribe) and personnel would be involved in training because the institutional structure of the Tribe is smaller.

Other volunteers had questions regarding the information in DOE's routing tool, Stakeholder Tool of Assessing Radioactive Transportation (START). Volunteers used START to identify mock routes through their jurisdictions for the Exercise. The tool includes a route buffer zone of 800 m (1/2 mile) to capture critical infrastructure, sensitive populations, and environmental resources in proximity to the generated routes. This buffer distance is typical for environmental assessments, and is included in START to potentially support future transportation-related environmental analyses. The volunteers, however, were unsure if their needs assessments were limited to that 800 m buffer distance and DOE was not clear in its communication about that. Similarly, a buffer distance of 2500 m was used to calculate total population for the funding allocation formula described in the 2008 FRN. The buffer distances in START were never intended to limit a state or Tribe's assessment of its emergency response assets or training levels. The state and tribal needs assessments did not need to stay within the 800 or 2500 m buffers, and all volunteers did assess all or most of the potential response capabilities along their selected mock routes.

There was also confusion about how to complete the mock grant application. Most of the volunteers had no or little previous experience writing grant applications and were not sure what information was needed. Most states have grant writers who are responsible for compiling and submitting federal grant applications, but those resources were not available for this Exercise. A state advisor on the mock merit review panel noted that DOE grant applications require significantly more justification for the scope and cost than other federal agencies. He speculated that some states (also true for Tribes) may decide to not apply for Section 180(c) funds given the amount of work required compared to the amount of funding likely available. The state advisor also noted that since these grants are not competitive (eligibility is determined by whether shipments traverse your jurisdiction) the application process can be more streamlined.

What We Learned:

The volunteers' feedback was that the information provided for the Exercise was not fully adequate. They noted that the state and tribal officials who would be the program managers typically would not be the grant writers. The program managers likely would be assigned an experienced grant writer and would provide the writer with the technical information needed to complete the grant application. For the

Exercise, it was difficult to write the mock grants because most of the volunteers had never completed a federal grant application before. Several volunteers asked if DOE could develop a grant template for the actual implementation of Section 180(c).

DOE personnel were unclear on the precise information needs of the volunteers. DOE staff shared estimated numbers of shipments, the elements of a likely rail consist for the shipments, and they gave direction on the level and type of detail needed for a DOE grant application. One reason for the confusion was that several states were unsure of the planning basis they should use. Some questions posed were "do we plan for a [radioactive] release?", "does the number of shipments make a difference in the level of preparedness?", and "if responders along a route have never seen HRCQ shipments shouldn't they receive generic hazardous materials training?" The debate on what training should be offered, to whom, and by what means is an ongoing topic for the Exercise participants. One difficulty in answering those questions is that training modules have yet to be developed specifically for rail SNF shipments.

Because the training modules specific to the SNF rail shipping program have not been developed yet, there was confusion about the training that might be offered. The following are key takeaways:

- Instruction will be needed on how to complete the needs assessment and the grant forms.
- Discussion will be needed between the states, Tribes, and DOE regarding the appropriate training levels for the different types of public safety officials. The level of training offered depends on what the responders are expected to do and how their responsibilities differ, if at all, because of the contents of shipments.
- Explicit direction will be needed about the purpose of provided tools and data, their source, and limitations.

Different Levels of State/Tribal Preparedness to Undertake Planning Activities

Summary of key feedback:

There was a significant knowledge gap between states that had experienced recent Waste Isolation Pilot Plant (WIPP) or other DOE HRCQ shipping campaigns in their jurisdictions and those that had not experienced DOE shipping campaigns. States that had recent DOE HRCQ shipments mostly completed the mock grant applications in line with the original time estimates, while states without routine WIPP or HRCQ shipping routes had to start from scratch to identify: the appropriate state agencies and personnel involved, which regulatory authorities in their state apply to these shipments, what level of training was appropriate to carry out those authorities, the gap between the training needed for SNF shipments and the current training levels, identify what training was available, and then analyze the cost and schedule of delivering the training to write their mock grant proposal. While more experienced states had to complete the same steps, they had an existing body of

knowledge readily available. While there are Tribes that have experienced WIPP and other shipments, the one tribal volunteer for this Exercise had not. The tribal volunteer worked to identify current resources and capabilities and regulatory authorities, analyze what level of readiness was appropriate for the Tribe, and then develop the mock grant application. This was complicated by the fact that the tribal officials who had this information were not paid to participate and had little time available to support a volunteer effort.

What We Learned:
There will be a notable learning curve regarding the development of a work plan, conducting a needs assessment, and completing a grant application if an applicant has had no prior or recent experience with HRCQ shipments. The volunteers suggested several remedies that could help states and Tribes, including developing a template for the grant application, providing a guidance document to explain each step, and providing technical assistance to support the process in conducting a needs assessment.

One Phase versus Two Phases of Grants

Summary of key feedback:
The proposed Section 180(c) policy in the 2008 FRN states there will be two grants—one for Assessment and Planning activities and another for Training. As stated in the 2008 FRN: "Subject to the availability of appropriated funds, DOE expects to begin making Assessment and Planning grants available to a State or Tribe approximately four years prior to the first shipment to a NWPA-authorized facility through that State or Tribe's jurisdiction. DOE intends to issue training grants in each of the three years prior to a scheduled shipment through a State or Tribe's jurisdiction and every year that shipments are scheduled."

The NTSF Section 180(c) Ad Hoc Working Group, the IRT, and the Tribal Caucus recommended that DOE have one grant, not two, because the application process should not be burdensome for the applicant. The IRT specifically recommended in their *Path Forward Proposal*[1] that "Each year, the grants would be available for planning, assessment, training, and operations. There would not be separate grants or phases." For purposes of the Exercise, DOE agreed to design the Exercise for one grant with two phases. The first phase would be the Assessment and Planning and the second phase would be Training. In practice, some volunteers did include training in the first phase. Discussions during the Exercise made it clear that the two phases seemed clumsy because each state and Tribe is unique in its level of preparedness, and work plans do not fit neatly into these phases.

For the purposes of the Exercise, the nine volunteers were instructed to assume the first year of funding availability would be used for planning and assessment activities and subsequent years (years two through five for the Exercise) would be for training activities. There were questions from the volunteers about how much detail would be required in training grant applications for later years (funding would continue as long as shipments were traveling through a jurisdiction, not only in the

[1] Section 180(c) Inter-Regional Team, Path Forward Proposal, October, 2015.

years leading up to the commencement of shipments). They noted it may be difficult to identify some equipment and/or training needs until further into the process.

What We Learned:
Having two grants as proposed in the proposed Section 180(c) policy would result in unnecessary duplication of effort. Both DOE staff participants and the volunteers agree that a single initial grant covering a five-year funding period would be preferable. Awardees could then submit annual or biannual funding requests to DOE under the umbrella of the original five-year grant.

With one grant, awardees could make annual or bi-annual adjustments to their statements of work. The volunteers asked for more guidance on the level of detail required for the statements of work because it can be difficult to know what training and equipment may be needed three or more years in advance.

Covering the Cost of Operational Activities

Summary of key feedback:
The participating states and Tribe requested that operational costs associated with these shipments be included as allowable activities/costs in a final Section 180(c) policy and in the Exercise. The state of Oregon wrote that "States will have operational costs associated with these shipments and do have a full expectation that those costs somehow will be covered by DOE."[2]

DOE staff explained that, while they understood the importance of this issue for states and Tribes and the historical practice of WIPP and some foreign research reactor shipping campaigns to cover those costs, the statutory language in the NWPA does not include operational activities and is specific about providing funding for *training* of public safety officials. In order for DOE to pay for operational costs associated with these shipments under section 180(c), an amendment to the NWPA would be required. DOE staff also noted that Senate legislation pending at the time of the Exercise (S. 854, introduced in 2015) addressed this issue.

For purposes of the Exercise, DOE staff agreed to have the volunteers include operational costs in their grant applications to provide data for future DOE policy discussions, but asked that the operational costs be accounted for in a separate budget category in order to clearly identify operational activities and costs separate from training costs.

During the Exercise there was some discussion of reimbursing costs associated with responding to an incident with the shipments. There are contractual and legal considerations around this issue that the exercise did not address. More research and discussion will be needed to fully answer questions about liability and cost recovery resulting from an accident.

[2] Comments provided by the State of Oregon on Section 180(c) Lessons Learned, email sent from Ken Niles to Erica Bickford on September 11, 2015.

What We Learned:
Four states included operational activities in their mock grant applications: North Carolina, Oregon, Indiana, and Texas. The activities and costs they proposed were mostly related to conducting inspections and monitoring the shipments. Two states included off-setting the salary of the inspector(s). Others asked for reimbursement for the cost of conducting an inspection. The activities and costs they proposed are as follows:

North Carolina:
- Rail Inspector Salary at $57,195 a year
- Inspections of each shipment, costing $3,279 for all ten shipments over the course of a year

Oregon:
- Point-of-origin inspections of each shipment costing from $54 to $135 per inspection
- Tracking each shipment
- Route assessment for security/safety via unmanned aerial vehicle (under contract) prior to and during each shipment [Note: requires Federal Aviation Administration approval]
- Weather assessment of route prior to and during shipment

Texas:
- Salary of rail inspector and travel at $226,983 for two years ($112,367 for FY18 and $114,616 for FY19).

Indiana:
- Assign three individuals to monitor TRANSCOM (Transportation Tracking and Communication) during each shipment, one each at the Emergency Operations Center, the Radiation Transportation Program, and the Commercial Vehicle Enforcement Division.

Tribal-Specific Issues

Summary of key feedback:
One tribal volunteer representing the PIIC participated in the Exercise. While that Tribe's experience would not necessarily apply to other Tribes, which may have considerably different circumstances, the participation and experience of PIIC in the Exercise did reinforce some key points about tribal preparedness for shipments of SNF. Each tribal government is unique and there is no "one size fits all" approach when working with tribal governments. While the PIIC has no fire department and a small police department (12 staff) with limited hazardous materials training, other Tribes may have very well-developed fire departments and hazardous materials response capabilities. Generally, staff members fill multiple roles in their tribal government. With respect to Prairie Island, for example, the tribal president at the time of the exercise was a trained emergency medical technician and, because of

this, would participate in the planning and training activities both as president and as an emergency responder.

A question arose as to how to compensate for the tribal president's time and whether an honorarium[3] would be allowed (in this case, the honorarium is a small payment to off-set the time and cost associated with the tribal president and tribal council members involvement in under OMB Circular A-87 (OMB 2004) guidelines or by DOE procurement. The DOE procurement staff confirmed that honoraria are allowed as long as they are justified in the grant application.

What We Learned:
The experience of having one Tribe participate in the Exercise does not inform DOE about the needs or situation of other Tribes. Tribal resources are often stretched thin making it difficult to complete all work related to tribal governance and the Section 180(c) program could stretch resources even thinner for some Tribes. To address this, the tribal volunteer suggested that DOE pay for the staff time spent writing grant applications for Section 180(c) funding.

We learned that honoraria can be an allowable expense under a 180(c) grant if justified in the grant application. Also, Tribes may request funding to address issues unique to their traditions and culture such as the protection of sacred sites and the need to hire consultants if there is not sufficient tribal staff to apply for the grant and to conduct the activities.

Base Grant Awards

Summary of key feedback:
The 2008 FRN calls for a one-time Assessment and Planning grant of up to $200,000 per state and Tribe, adjusted annually for inflation, and an annual Training grant with a base amount of up to $100,000 per state and Tribe, adjusted annually for inflation. Each applicant would have to justify the need for the funds in order to receive the full amount. (The 2008 FRN also describes methods for allocating variable portions of states' and Tribes' annual training grants in addition to the base amounts.)

Before the Exercise began, the IRT recommended that, for the purposes of the Exercise, DOE increase the maximum funding levels as follows (IRT 2015): "the states would be eligible for base grants of up to $250,000 annually, plus a variable grant based on the 2008 FRN formula with the total DOE budget for grant awards to states to be determined by multiplying the number of eligible jurisdictions by $500,000."

[3] The mock grant application gave the following justification: "….. the tribal Council will be actively engaged in spent nuclear fuel transportation planning. Toward that end, a small honorarium ($250) will be made available for Council members participating in meetings and related activities. This will also facilitate an effective government-to-government relationship with the DOE and assist with community outreach. A total of $2,000 will be available for honoraria."

DOE did not accept this recommendation but instead suggested the volunteers apply for the funds in their mock grant applications based on their assessment of the cost of their Assessment and Planning activities and Training activities, not relying on a pre-determined amount.

What We Learned:
The state volunteer Mock Assessment and Planning Grants funding requests differed significantly among the applicants. Table 1 provides examples of the high and low dollar amounts requested compared to the population and route mileage for the requesting jurisdictions.

Table 1. Sample Range of Financial Requests

Assessment and Planning Grants		
Population within 2500 m (either side of route)	**Route Mileage**	**Year 1**
3,716,920	599.9	$120,943.00
1,376,900	434.2	$331,559.00
987	4.6	$67,068.00
Training Grants		
Population within 2500 m (either side of route)	**Route Mileage**	**Years 2-5**
4,219,830	312.6	Y2: $122,206 - Y4: $294,588
3,716,920	599.9	Y2: $120,943 – Y4: $490,671
1,936,314	430.2	Y1: $245,955 – Y3: $122,320**

**This state combined planning and training activities in year 1. Year 3 included only training activities.

The Training Grant funding requests ranged from $120,943 to $490,671 per year. The large difference depended on how much was requested for radiation detection equipment and the inclusion of salaries. The highest training request, at $490,671, is probably not instructive for corridor states because it came from a state that made the assumption they would host one of the SNF facilities. Any potential host state would likely negotiate additional terms with DOE beyond Section 180(c) assistance. There was some correlation between lower funding requests and states that were familiar with HRCQ or WIPP shipments versus those states that were not familiar with WIPP or other HRCQ shipments. Also, states without recent shipping campaigns were more likely to request pay for salaries for additional staff, which resulted in larger funding requests.

The significant variability in the funding requests stems from different views about how best to conduct the needs assessment, the type of training needed, how the training should be delivered, which public safety officials need equipment and what equipment would be appropriate. More discussions about these items might result in a more standardized approach to planning for these shipments, which could result in more consistent estimates of activities and their costs and make it easier for newly eligible states and Tribes to prepare along routes.

Variable Award Amounts (Allocation of Funds by Formula)

Summary of key feedback:
One of the goals for the Exercise was to evaluate the proposed formula described in the 2008 FRN for allocating funds to eligible states for the variable portion of the annual training grants. The formula was based on planning assumptions from the mid-2000s, primarily that the Section 180(c) program would be funded at $10 million[4] annually under full-scale operations. The Annual Priority Ranking and Annual Capacity Report[5], plus the need to prepare primary and alternate routes, meant that many of the routes across the nation would need to be ready in the first three years of the funding program.

The formula does not account for Tribes; per the 2008 FRN, the variable portion of the training grant for Tribes would be determined based on the results from each Tribe's needs assessment conducted with funds from the Assessment and Planning Grant. For the purposes of the Exercise, the formula was evaluated by gathering the applicable data inputs for each jurisdiction (route miles, population within 2500m of the route), and assuming a total Section 180(c) grant program funding amount of $1,153,845.00[6]. This amount was calculated based on the $10 million assumption from the early 2000's for a full-scale program, adjusted for inflation and the number of eligible jurisdictions in the Exercise. The sum of the base grant amounts[7] were deducted from the total $1,153,845.00 and the formula was applied to the remaining funds. The results of the formula assessments are shown in Table 2. The variable funds calculated here were relatively small. There is uncertainty at this stage as to whether the calculated amounts are an accurate reflection of likely variable funding levels during a future SNF shipping campaign, or if the limited scope of the Exercise significantly skewed the results. In addition, uncertainty remains as to what total funding might be appropriated by Congress for a future 180(c) program, which further complicates estimating individual grant award amounts. Given that the focus of the Exercise was more on the needs assessment, the volunteers and DOE staff decided not to assess the formula further in the Exercise.

[4] The $10 million cost estimate came from the May 2001 *Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program*, DOE/RW-0533. Since the OCRWM program no longer exists, NFST will eventually evaluate previous data and decisions from OCRWM to see which ones apply to current planning efforts. So far, no work has been done to update the life cycle cost of the current program.

[5] U.S. Department of Energy, Office of Civilian Radioactive Waste Management, *Annual Priority Ranking and Annual Capacity Report*, DOE/RW-0567, 2004.

[6] This amount was calculated using 8 states and 1 Tribal volunteer.

[7] Assumes all mock awardees were awarded the full $110,000 amount for the base training grant.

Table 2. Calculation of Funding Formula

State	Route Miles	Population	# Shipments	# Shipping Sites	Allocation	Funding Amount
OR	430.2	1,936,314	5	1	15%	$24,554
NE	443.0	1,365,037	5	0	12%	$18,877
PA	312.6	4,219,830	5	1	16%	$26,052
WI	315.1	1,856,708	5	2	16%	$14,822
IN	165.8	867,592	5	0	7%	$29,653
TX	599.9	3,716,920	5	0	19%	$ 8,679
NC	114.2	277,367	5	0	5%	$25,429
CT	30.4	14,127	5	1	6%	$10,222
PIIC	4.6	978	5	0[8]	3%	$ 5,558
Totals					*100%*	*$163,845.00*

Note: Route mileage and population data has been updated since the conclusion of the Exercise to reflect recent improvements made to START's data and methodology.

The volunteers were not satisfied with the estimations of the funding formula conducted in the Exercise, and wrote in the lessons learned document transmitted to DOE on October 20, 2015, that "… the 2008 funding formula was not tested; and questions remain on how operational activities will be funded.
Testing the proposed funding formula was one of the states' specific goals, largely because the IRT had found it difficult to reach consensus on the approach to funding allocation. Going into the exercise, it was hoped that testing the allocation formula would help the IRT and, ultimately, the SRGs [State Regional Groups], reach agreement on a single approach to allocating 180(c) funding."

The feedback from the volunteers also noted, "From the survey, it is also clear that some feel definitions and interpretations of funding mechanisms and terms are not universally understood among all participants in the 180(c) exercise." Oregon noted separately that "[t]he exercise provided no clarity on whether the funding formula previously endorsed by three of the regional groups would meet the states' needs. The exercise did provide useful information to DOE to help better understand the level of need that exists to prepare for a large spent nuclear fuel transport campaign."

Several volunteers also commented that the $10 million annual cost estimate for Section 180(c) likely will not be adequate and they would like to have a more accurate cost estimate developed. They also expressed their expectation that there would be adequate funding for all impacted states and Tribes. DOE staff noted that

[8] While there is no SNF currently stored on the lands of the PIIC, the Prairie Island Nuclear Generating Plant ISFSI is approximately 600 feet from tribal residences.

the annual cost will be impacted by how many states and Tribes are eligible each year, and, until a destination is known with a schedule for shipments, there will be uncertainty. Lastly, Congressional appropriators will ultimately determine funding available for a future Section 180(c) program. DOE can develop revised cost estimates to propose a funding level, but will not have the final word.

What We Learned:
The funding allocation approach will need additional analysis. At the March 2016 meeting of the Section 180(c) Exercise volunteers, DOE staff said that the additional analysis would be conducted in fiscal year 2017. The results of the additional analysis are intended to help inform the discussions of the NTSF Section 180(c) Ad Hoc Working Group.

CONCLUSION: DID THE EXERCISE MEET THE GOALS?

Did the Exercise meet the goals determined at the outset? From DOE's perspective, the Exercise was successful, but did not meet all goals. For instance, several aspects such as the approach to allocate funds will require additional analysis and discussion to support future decisions. (Other topics not included in this paper that also need more analysis will be included in the final report on the Exercise such as revisiting the merit review criteria and improving the provision of technical assistance). The expansion of the Exercise's scope and timeframe strained state and tribal resources in ways DOE had not intended. The Exercise, however, resulted in valuable lessons learned that will assist DOE in revising the 1998 revised proposed 180(c) policy. Here is a summary of selected key lessons the authors drew from the Exercise:

One grant v. two grants: The two grant phases were cumbersome for the volunteers to complete and for DOE staff to review. Both the volunteers and the DOE procurement officials who participated suggested options for streamlining to one grant over 5 years with annual updates to the scope of work.

Differences in Governmental Structures: The Exercise resulted in a much greater understanding on the DOE staff's part about how varied the structures of different levels of government are, and how that creates great variability in the implementation of Section 180(c). For example, local government will have a larger role in home rule[9] states, whereas non-home rule states will likely retain more of the planning and preparing at the state level. And while only one Tribe participated in the Exercise, discussions about that Tribe's experience in forums with other Tribes has helped illuminate the varied levels of preparedness among Tribal nations and the unique traditional and cultural concerns they may have. Discussion of these issues brought forward many questions unique to tribal nations that DOE procurement and DOE transportation operations will need to consider as planning

[9] "Home rule is the power of a local city or county to set up its own system of self-government without receiving a charter from the state. Home rule is allowed under some state constitutions."
https://definitions.uslegal.com/h/home-rule/ In terms of emergency preparedness, under home rule, public safety is managed by individual county or municipal level governments, rather than at the state government level.

progresses. Equally important, the Tribes and the states learned about each other, how various states operate within their limitations and vice-versa.

Information Needs and Communications Channels Strengthened: One unexpected benefit of the Exercise was the improved communications among the participating states, Tribe, and DOE staff that resulted from the difficulties over refining the scope of the Exercise. When the Exercise began, many of the staff participants were relatively new to their positions. The struggle to find common ground around the scope of the Exercise resulted in people building stronger working relationships with each other and with each other's agencies. The greater understanding resulted in stronger lines of communication and clearer knowledge about each side's information needs. For example, DOE is considering forming a 'technical assistance' team of one DOE person and one state and one tribal person from each region of the country that would be available to brief state and tribal officials and support them through planning for SNF shipments. This is one option to aid transfer of the knowledge gained through the Exercise and through states and Tribes with mature SNF and HLW transportation programs to states and Tribes with less experience and knowledge.

State and tribal officials made it clear that more guidance from DOE would be helpful. Ideas they proposed included a grant guidance document and a technical assistance plan.

Operational Activities: The Exercise has helped clarify which specific operational activities states may request reimbursement for and gave data on potential costs. This issue will remain open for discussion until either Congress passes legislation addressing the concern or DOE makes a policy decision addressing it.

Funding Allocation Approach and Proposed Activities: The Exercise was very helpful in providing data on the proposed activities and associated costs that the volunteers proposed in their grant applications. More work remains to evaluate the funding formula and, based on those findings, decide the best path forward.

In summary, the Exercise did not achieve every goal listed at the beginning of this paper but it did achieve three primary goals that DOE and the volunteers can draw on for future interactions. First, the Exercise created a common body of knowledge and built familiarity between the DOE staff participants and state and tribal volunteers that can instruct the pace and shape of future interactions; two, it provided data to DOE for consideration in revision of the revised section 180(c) proposed policy; and three, it focused attention on as yet unresolved issues. The difficulties with the Exercise point to the need for early and extensive interactions prior to launching any new effort to test proposals to resolve issues associated with SNF and HLW transportation. Fully discussing how a project would proceed and learning what each volunteer needs to participate meaningfully is time well-spent. The differences in governance, preparedness, and approach among the states and among tribal nations are also better understood after the Exercise, not just by DOE, but by the state and tribal officials who participated. In addition, several policy and implementation issues now have stronger data that DOE can draw upon as it works

to implement Section 180(c) such as the type and cost of activities for which states and Tribes may request funding. And finally, DOE can take the unresolved issues identified through the Exercise and work with their state and tribal counterparts to design a path toward resolution and eventual implementation of the transportation system needed to move SNF and HLW.

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