NNSA's Risk-Based Nuclear Security Enterprise-wide Facility Disposition Program – 14108

Deborah Couchman-Griswold, Jefferson Underwood, PMP
National Nuclear Security Administration, Office of Infrastructure and Operations

ABSTRACT

National Nuclear Security Administration (NNSA) facility disposition efforts have historically measured success based on the square footage eliminated by the project. This focus met critical footprint reduction goals but led to a focus on disposing of facilities that were low cost-per-square-foot to demolish. More expensive, contaminated, or otherwise complicated facilities were seldom addressed. These facilities remain in NNSA's inventory with minimal surveillance and maintenance due to constrained budgets. This has led to continued degradation of the buildings and steadily increasing risks to workers, the public, environment, and NNSA mission. To address NNSA's growing excess facility backlog, the Facility Disposition Program and the Facilities Disposition Working Group were established. The Program's mission is the stewardship and disposition of excess facilities to reduce or minimize risks and costs. To ensure an understanding of the risks being accepted by not actively reducing the excess facilities backlog NNSA developed a listing of facilities that require more than the current level of Surveillance and Maintenance to protect the mission, workers, public, or the environment. Facilities that were identified as the most "at risk" have been prioritized for funding, with the initial funding request made in the Fiscal Year 2014 budget. Because the majority of NNSA's highest risk facilities are process-contaminated and will eventually become the Office of Environmental Management's (EM's) responsibility to decontaminate and demolish, an active dialogue is ongoing with EM regarding the eventual disposition of these facilities.

INTRODUCTION

In February 2013 the National Nuclear Security Administration (NNSA) successfully completed the Facilities and Infrastructure Recapitalization Program (FIRP). FIRP was created to reduce a substantial accumulation of backlogged facility maintenance, repair and demolition projects across NNSA's eight sites. A priority metric for this program was the reduction of footprint which led to the demolition of 145 facilities, removing 3.5 million square feet of excess footprint from NNSA's inventory. However, at the completion of this effort there remained a number of excess facilities across the Nuclear Security Enterprise with no specific program or approach to address them. NNSA's disposition requirement continues to grow as shown in Figure 1 [1].

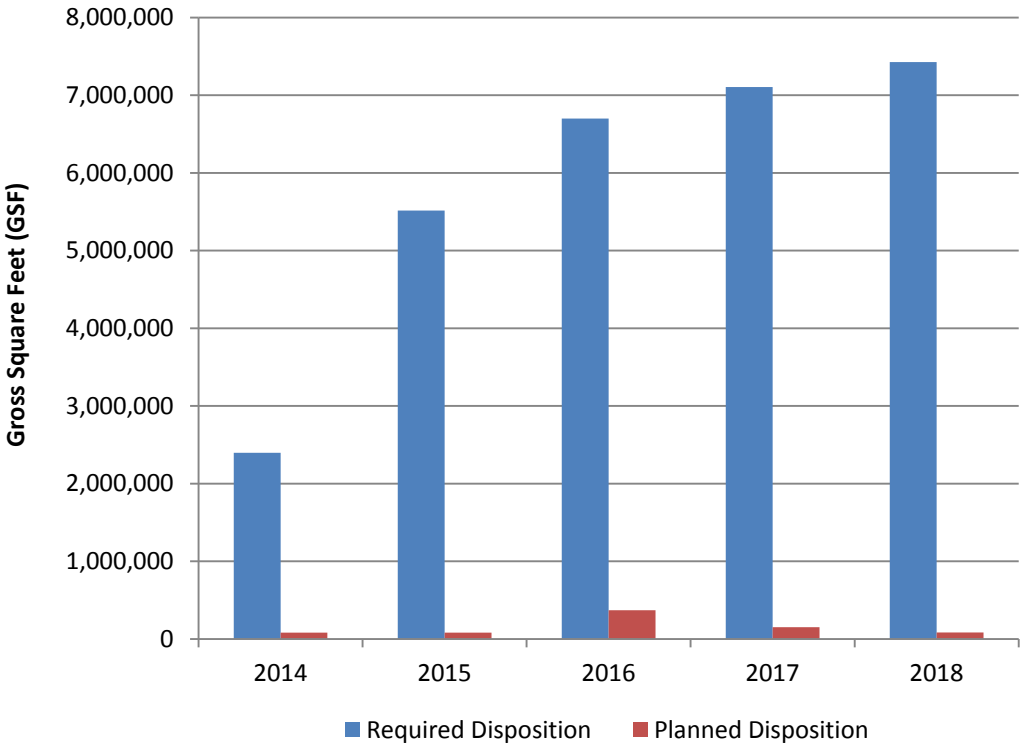

Figure 1. NNSA's Funded Facilities Disposition Compared to the Cumulative Requirement.

Although the NNSA sites have identified the need to disposition their excess facilities in planning documents, funding priorities related to mission and operating facilities take precedent. As documented in the Department of Energy's (DOE's) Facilities Information Management System the NNSA has over 2700 operating buildings, of which over 200 are mission critical with over $800 million in deferred maintenance [2]. In addition to the requirements associated with direct mission activities, the high capital investment needed to disposition facilities, particularly those that are process-contaminated, has made the status quo attractive.

Nearly 400 NNSA facilities are currently shutdown or excess. Of these facilities over 50% where built prior to 1967 [2]. As these 40-year-old plus buildings continue to degrade the work necessary to keep them in a safe shutdown condition increases. Figure 2 illustrates the amount of unfunded disposition anticipated at each of the NNSA sites over the next 25 years.

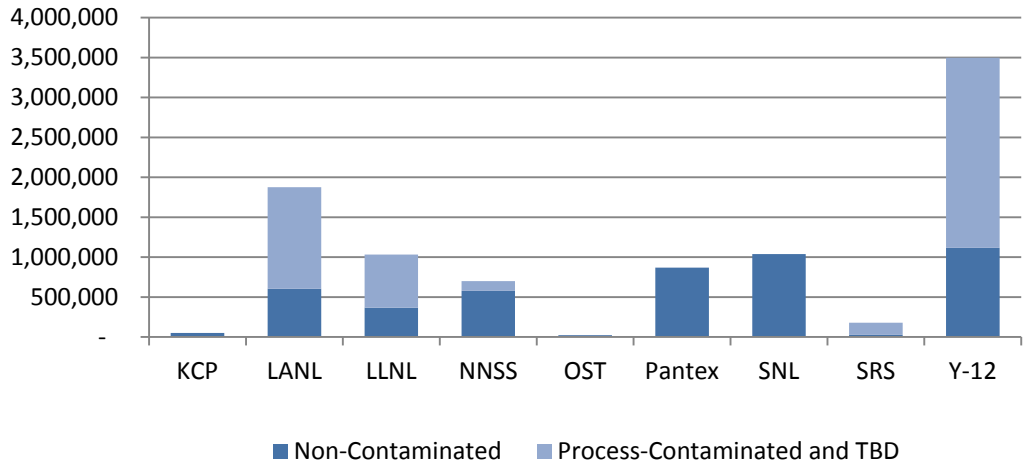

Figure 2. Square Feet of NNSA Unfunded Disposition by Site (25-Year Plan).

The surveillance and maintenance costs for these unneeded facilities are sometimes significant. For example, the Alpha 5 building at NNSA's Y-12 plant requires nearly $5,000,000 a year for surveillance and maintenance. Even with this amount of funding the facility continues degrade, potentially leading to higher eventual demolition costs and increased risk to demolition workers.

DISCUSSION

The Facilities Disposition Program (FDP) was established in July 2011 to address NNSA's growing excess facility backlog. In support of this effort NNSA formed the Facilities Disposition Working Group (FDWG), which was formally chartered on October 29, 2013. The FDWG's purpose is to collect, disseminate and coordinate requirements, provide technical insight, and resolve issues pertaining to facility disposition. The FDWG is led by Deborah Couchman-Griswold of NNSA's Office of Infrastructure and Capital Planning (505-845-4752, deborah.couchman-griswold@nnsa.doe.gov). Membership in the FDWG includes representatives from all eight of the NNSA sites, several NNSA program offices, and EM. The Program's Vision is to support a modern and efficient NNSA enterprise through the management and disposition of excess facilities and its Mission is the stewardship and disposition of excess facilities to minimize or eliminate associated risks and costs. The following objectives were developed by the members for the FDWG:

- NNSA's budgeting process considers the entire NNSA inventory of excess facilities baseline.
- NNSA facility disposition priorities are based on risk uniformly determined across the Nuclear Security Enterprise (NSE)
- Barriers to funding facility disposition are recognized and strategies implemented for their removal.
- Other program offices and agencies, such as EM and the Office of Acquisition and

Project Management (OAPM) support NNSA's priorities.
- FDP success is determined through metrics flowing from NSE-wide risk and cost avoidance measures.
- NNSA's core message is that the mission, workers, stakeholders, and environment of NNSA sites and NNSA's credibility with Congress are placed at risk by not addressing the growing liabilities of unmet disposition requirements.

One of the first tasks the FDWG took on was the development of a standardized approach for prioritizing the disposition of facilities. The goal was to develop a uniform process for ranking the facilities based on risk and other factors that took into consideration risk as well as other critical factors. Using a pairwise comparison technique the group arrived at the following five criteria and their weights:

1. Mission/Environment, Safety, & Health Risk (40%)
2. DOE Goals/Mission Need (25%)
3. Investment (20%)
4. Deferred Maintenance Reduction (10%)
5. Reinvestment Impact (5%)

Based on the criteria listed above the entire scope of NNSA facilities anticipated to become excess in a 25-year period were evaluated and assigned a numerical score. This score was used to rank the facilities by relative priority. This scope not only included facilities that are the NNSA's responsibility to disposition but also facilities at NNSA sites owned by other organizations and process-contaminated facilities that require disposition EM.

While this approach was effective for prioritizing NNSA's large and diverse disposition scope it did not provide a focus on the facilities that pose an imminent risk human health and the environment. To ensure that the risks NNSA are accepting by not actively reducing the excess facilities backlog are fully understood, NNSA requested that the sites identify any facilities that require more than the current level of Surveillance and Maintenance to protect the mission, workers, public, or the environment. The Y-12 National Security Complex (Y-12), Savannah River Site, Lawrence Livermore National Laboratory (LLNL), and Los Alamos National Laboratory (LANL) responded with information on nineteen facilities that met these criteria. The sites provided a summary of the risks posed by each facility and activities necessary to manage these risks using a "Facilities Risk Information Sheet" that was provided with the request.

Examples of the types of risks identified by the sites for these facilities include the following:

- Leaking roofs leading to the spread contaminants and mold
- Exposure or spread of contaminants in the case of a fire

- Inability to address subsurface contamination beneath buildings
- Impact to nearby workers and mission activities from significantly deteriorated structures

The pictures in Figure 3 and 4 illustrate the condition of a two of the at risk facilities LLNL and Y-12.

Figure 3. Water Capture in LLNL's Building 251.

Figure 4. Y-12's Building 9206 Ceiling Degradation

The facilities that were identified as the most “at risk” have been prioritized for funding, with the initial funding request of $5 million made in the Fiscal Year 2014 budget. Several facilities at the Y-12 National Security Complex pose the highest risk and these facilities will be the first

addressed with Facilities Disposition Program funds. As the Program funds are increased or as the highest priority work is completed funding will be moved to the other "at risk" facilities.

Because a majority of NNSA's highest risk facilities are process-contaminated they will become EM's responsibility to decontaminate and demolish. The NNSA funding will be used to address the risks at these facilities through facility characterization, rerouting or termination of utilities, and removal of materials. These activities also support meeting the anticipated conditions of transfer that will be documented in a Memorandum of Agreement between NNSA and EM. NNSA and EM have been discussing approaches for addressing these facilities and their eventual disposition.

CONCLUSIONS

The NNSA has over 7 million square feet of facilities proposed as excess to current and future mission requirements over the next 5 years with minimal funding for disposition.

The continued degradation of shutdown facilities poses a risk to NNSA's mission, its workers, and the surrounding community. However, the high initial investment necessary to eliminate excess facilities, particularly those that are process-contaminated, allows the status quo to appear attractive. Focusing on the human health and environmental risk posed by the degradation of excess facilities provides a compelling driver that can compete with mission activities.

To facilitate addressing these facilities NNSA, requested in March of 2013 that the sites identify the risks being accepted for excess facilities and the investment needed to address them. The information submitted by the sites in response to the request provided compelling reasons for the need to disposition a number of high risk facilities. This information proved valuable in briefing decision makers on the NNSA budget and will be updated annually. Although funding continues to be tight NNSA has a plan that, regardless of the level of funding, will be focused on addressing the highest risks posed by excess facilities. The small amount of funding must be prioritized in order to maximize risk reduction. This risk-based approach allows for NNSA to make decisions that best support the enterprise and mission across the Nuclear Security Enterprise. Once the highest risk facilities are addressed, NNSA will pursue efforts at other facilities on a priority basis.

REFERENCES

1. U.S. Department of Energy, "Fiscal Year 2013 National Nuclear Security Administration Facilities Disposition Report", Report to Congress, June 2013.
2. U.S. Department of Energy Facilities Information Management System, Standard Report 115b-DOE Owned Deferred Maintenance and Ad Hoc reports, November 2013.