

SOCIOECONOMIC IMPACTS OF A FEDERAL USED NUCLEAR FUEL STAGING FACILITY THE U.S.



Socioeconomic Impacts of a Federal Used Nuclear Fuel Staging Facility in the U.S.

**Prepared for
U.S. Department of Energy
Office of Nuclear Energy
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December 31, 2025

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DISCLAIMER

This is a technical report that does not take into account contractual limitations or obligations under the Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste (Standard Contract) (10 CFR Part 961).

To the extent discussions or recommendations in this report conflict with the provisions of the Standard Contract, the Standard Contract governs the obligations of the parties, and this report in no manner supersedes, overrides, or amends the Standard Contract.

This report reflects technical work which could support future decision making by the U.S. Department of Energy (DOE or Department). No inferences should be drawn from this report regarding future actions by DOE, which are limited both by the terms of the Standard Contract and Congressional appropriations for the Department to fulfill its obligations under the Nuclear Waste Policy Act including licensing and construction of a used nuclear fuel¹ repository.

² The term “used nuclear fuel” is intended to be synonymous with the term “spent nuclear fuel” as used and defined in the Nuclear Waste Policy Act of 1982, as amended, and the Standard Contract for the Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste (10 CFR Part 961).

EXECUTIVE SUMMARY

SUMMARY

The purpose of this analysis is to estimate the potential economic and social impacts that would likely arise from the construction and subsequent operation of a new Federal used fuel staging facility (hereafter “Federal staging facility”) in different locations throughout the U.S. This includes estimates that detail the total local economic activity generated by a Federal staging facility over its lifespan along with all associated job and income creation. In addition, the analysis highlights the potential social impacts on local communities, including possible effects on local housing and labor markets as well as the demand for social services. The U.S. Department of Energy Office of Nuclear Energy (DOE-NE) is currently exploring the possibility of supporting the construction and operation of such a facility, and this study will support efforts by DOE-NE and its stakeholders to identify an appropriate location for the Federal staging facility.

The key findings of this analysis are as follows:

- DOE-NE is currently considering two hypothetical scenarios for a new Federal staging facility in the U.S.: (1) a large base case (LBC) with an 80-year lifespan and a maximum capacity of 70,000 metric tons of heavy metal (MTHM) and (2) a small base case (SBC) with a 40-year lifespan and a 15,000 MTHM maximum capacity. DOE-NE projects that the LBC would require a total of \$7.6 billion in capital investment and generate \$5.3 billion in total direct operational expenditures during its lifespan, while the SBC is projected to require a total of \$2.7 billion in capital investment and generate \$1.6 billion in total direct operational expenditures during its lifespan.
 - The economic impacts of the LBC and SBC scenarios were modeled in each of the four U.S. Census Bureau Regions: Northeast, Midwest, South, and West. The model results provide DOE-NE with data illustrating how the economic impact of a new Federal staging facility would vary depending on the U.S. region in which it is constructed and operated. The largest impacts generally arise in the Northeast region, followed by the Midwest, the West, and the South.
 - The investments in construction and site development of a Federal staging facility, along with all subsequent operations, are estimated to have a cumulative economic impact of between \$5.1 billion and \$18.7 billion, depending on the specific scenario and the selected U.S. region. This impact, in turn, would likely generate an average of between 670 and 1,079 jobs per year across the total Federal staging facility lifespan, which corresponds to between \$1.5 billion and \$5.5 billion in labor income.
 - This study also models the economic impact of a hypothetical Center for Used Fuel Research (CUFR) that could be built and operated alongside the new Federal staging facility. Depending on the size and location, the construction and site development of such a CUFR would, on its own, be estimated to generate between \$348.8 million and \$894.3 million in total economic activity, along with between 2,198 and 6,128 temporary jobs during the construction phase. The operations of a CUFR are estimated to generate annual economic activity of between \$13.6 million and \$24.2 million, along with between 66 and 119 jobs and between \$4.2 million and \$8.0 million in labor income.
 - This analysis also assesses the extent to which a new Federal staging facility would increase the local demand for public services and amenities (e.g., hospital capacity, law enforcement, housing) due to a potential influx of new workers and their families.
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Documenting the likely increased use of these public resources, in addition to the economic impacts, can help provide a broader perspective on the total community impact (both economic and social) of a new Federal staging facility within its local region.

CONTENTS

Summary.....	iii
Acronyms	ix
1 Introduction	1
2 Methodology.....	2
2.1 Federal Staging Facility System Design.....	2
2.2 Economic Impact Overview	3
2.3 Regional Definitions	4
2.4 Federal Staging Facility Scenario Descriptions	5
2.5 Modeling Using IMPLAN Software	7
3 Results	9
3.1 Economic Impacts	9
3.1.1 Large Base Case Scenario.....	9
3.1.2 Small Base Case Scenario	12
3.1.3 Center for Used Fuel Research.....	15
3.2 Potential Impacts on Infrastructure and Public Amenities	20
3.3 Comparisons to other Staging Facility Empirical Analyses	23

LIST OF FIGURES

Figure 1.	Layout of the hypothetical Federal staging facilities.	2
Figure 2.	Federal staging facility visualizations.	3
Figure 3.	U.S. Census regions and associated used nuclear fuel by state.	5

LIST OF TABLES

Table 1.	Parameters of modeled Federal staging facilities.....	5
Table 2.	Total Federal staging facility construction expenditures by scenario across 5-year time periods of the full lifespan (in millions, 2025 dollars).	6
Table 3.	Total Federal staging facility operational expenditures categorized by scenario across 5-year time periods of the full lifespan (in millions, 2025 dollars).....	6
Table 4.	Cumulative economic impact: Years 1–80, West Region (\$ in millions).	9
Table 5.	Cumulative economic impact: Years 1–80, Midwest Region (\$ in millions).	9
Table 6.	Cumulative economic impact: Years 1–80, Northeast Region (\$ in millions).	9
Table 7.	Cumulative economic impact: Years 1–80, South Region (\$ in millions).	10
Table 8.	Peak annual economic impact: Years 1–5, West Region (\$ in millions).	10
Table 9.	Peak annual economic impact: Years 1–5, Midwest Region (\$ in millions).	10
Table 10.	Peak annual economic impact: Years 1–5, Northeast Region (\$ in millions).	11
Table 11.	Peak annual economic impact: Years 1–5, South Region (\$ in millions).	11
Table 12.	Annual average employment impacts by 5-year period.	11
Table 13.	Annual average labor income impacts by 5-year period (\$ in millions).	11
Table 14.	Annual average output impacts by 5-year period (\$ in millions).	12
Table 15.	Cumulative economic impact: Years 1–40, West Region (\$ in millions).	13
Table 16.	Cumulative economic impact: Years 1–40, Midwest Region (\$ in millions).	13
Table 17.	Cumulative economic impact: Years 1–40, Northeast Region (\$ in millions).	13
Table 18.	Cumulative economic impact: Years 1–40, South Region (\$ in millions).	13
Table 19.	Peak annual economic impact: Years 1–5, West Region (\$ in millions).	14
Table 20.	Peak annual economic impact: Years 1–5, Midwest Region (\$ in millions).	14
Table 21.	Peak annual economic impact: Years 1–5, Northeast Region (\$ in millions).	14
Table 22.	Peak annual economic impact: Years 1–5, South Region (\$ in millions).	14
Table 23.	Annual average employment impacts by 5-year period.	15
Table 24.	Annual average labor income impacts by 5-year period (\$ in millions).	15
Table 25.	Annual average output impacts by 5-year period (\$ in millions).	15
Table 26.	Cumulative economic impact: Construction (lower bound), West Region (\$ in millions).	16
Table 27.	Cumulative economic impact: Operations (lower bound), West Region (\$ in millions).	16
Table 28.	Cumulative economic impact: Construction (lower bound), Midwest Region (\$ in millions).	17
Table 29.	Cumulative economic impact: Operations (lower bound), Midwest Region (\$ in millions).	17

Table 30.	Cumulative economic impact: Construction (lower bound), Northeast Region (\$ in millions).	17
Table 31.	Cumulative economic impact: Operations (lower bound), Northeast Region (\$ in millions).	17
Table 32.	Cumulative economic impact: Construction (lower bound), South Region (\$ in millions).	17
Table 33.	Cumulative economic impact: Operations (lower bound), South Region (\$ in millions).	18
Table 34.	Cumulative economic impact: Construction (upper bound), West Region (\$ in millions).	18
Table 35.	Cumulative economic impact: Operations (upper bound), West Region (\$ in millions).	18
Table 36.	Cumulative economic impact: Construction (upper bound), Midwest Region (\$ in millions).	19
Table 37.	Cumulative economic impact: Operations (upper bound), Midwest Region (\$ in millions).	19
Table 38.	Cumulative economic impact: Construction (upper bound), Northeast Region (\$ in millions).	19
Table 39.	Cumulative economic impact: Operations (upper bound), Northeast Region (\$ in millions).	19
Table 40.	Cumulative economic impact: Construction (upper bound), South Region (\$ in millions).	19
Table 41.	Cumulative economic impact: Operations (upper bound), South Region (\$ in millions).	20
Table 42.	Effects on infrastructure and public services during peak impacts, large base case (LBC).	21
Table 43.	Effects on infrastructure and public services during peak impacts, small base case (SBC).	22
Table 44.	Public service metrics and associated data sources.	22

ACRONYMS

CUFR	Center for Used Fuel Research
LB	lower bound
LBC	large base case
MSA	metropolitan statistical area
MTHM	metric ton(s) of heavy metal
DOE-NE	U.S. Department of Energy Office of Nuclear Energy
NGSAM	Next Generation Systems Analysis Model
PNNL	Pacific Northwest National Laboratory
RPC	regional purchase coefficient
SBC	small base case
SNF	spent nuclear fuel
UB	upper bound
UNF	used nuclear fuel

1 INTRODUCTION

The U.S. Department of Energy (DOE) Office of Nuclear Energy (DOE-NE) is tasked with the long-term management of commercial used nuclear fuel (UNF), which is currently stored at multiple sites across the U.S. Under the guidance of the Congress, DOE-NE has launched a Collaboration-Based Siting process as part of its Office of Spent Fuel and High-Level Waste Disposition's effort to identify a Federal staging facility for UNF from commercial nuclear reactors.

The primary advantage of this Collaboration-Based Siting process is that it facilitates stakeholder engagement, taking into account the priorities, needs, and concerns of affected individuals and communities. In collaboration with stakeholders, DOE will explore potential locations for a Federal staging facility through each phase of the siting process.

The purpose of this analysis is to estimate the potential economic and social impacts of the construction and subsequent operations of a Federal staging facility in different locations throughout the U.S. This will include estimates that detail the total local economic activity generated by a Federal staging facility over its lifespan, along with all associated job and income creation. In addition, the analysis will highlight the potential social impacts on local communities, including possible effects on local housing and labor markets as well as the demand for social services. The findings from this report provide actionable information to support efforts by DOE-NE and its stakeholders to identify a location for a Federal staging facility. All estimates in this analysis are based on facility design, operating scenarios, and general locations provided by DOE-NE.

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2 METHODOLOGY

2.1 FEDERAL STAGING FACILITY SYSTEM DESIGN

This report analyzes the socioeconomic impacts of two hypothetical Federal staging facility scenarios. This section describes the main design assumptions of the Federal staging facility system for both scenarios. Differences between the two scenarios (e.g., staging capacity, annual throughput, years of operation) are described in Section 2.4.

Both hypothetical Federal staging facility scenarios assume aboveground staging, concrete staging pads, and a mixture of horizontal and vertical dry staging casks (Figure 1; Figure 2). The main onsite components would include a concrete batch plant, a staging cask fabrication facility, a cask handling and transfer facility for offloading casks from railcars and moving them to the staging casks, railroads, railways (for staging and maintenance), and checkpoints for inspection and security. Support facilities would include administrative and security buildings, roads, parking lots, substations, backup generators, and facilities for storing low-level waste.

The costs of the Federal staging facility system (i.e., labor and material expenditures) required for building and operating a Federal staging facility were modeled by the national labs using the Next Generation Systems Analysis Model (NGSAM). These Federal staging facility system costs served as the basis for calculating the total economic multiplier effects, consisting of direct, indirect, and induced effects (see Section 2.5).

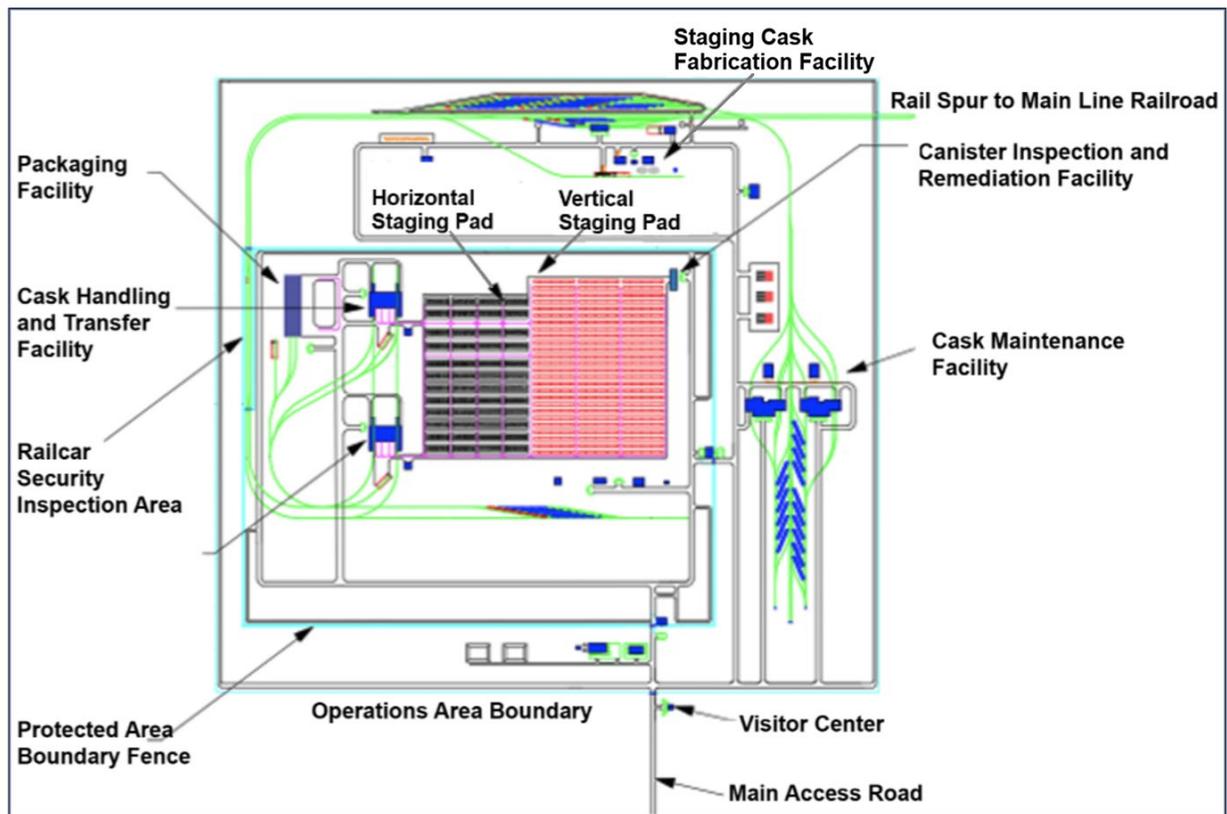


Figure 1. Layout of the hypothetical Federal staging facilities.

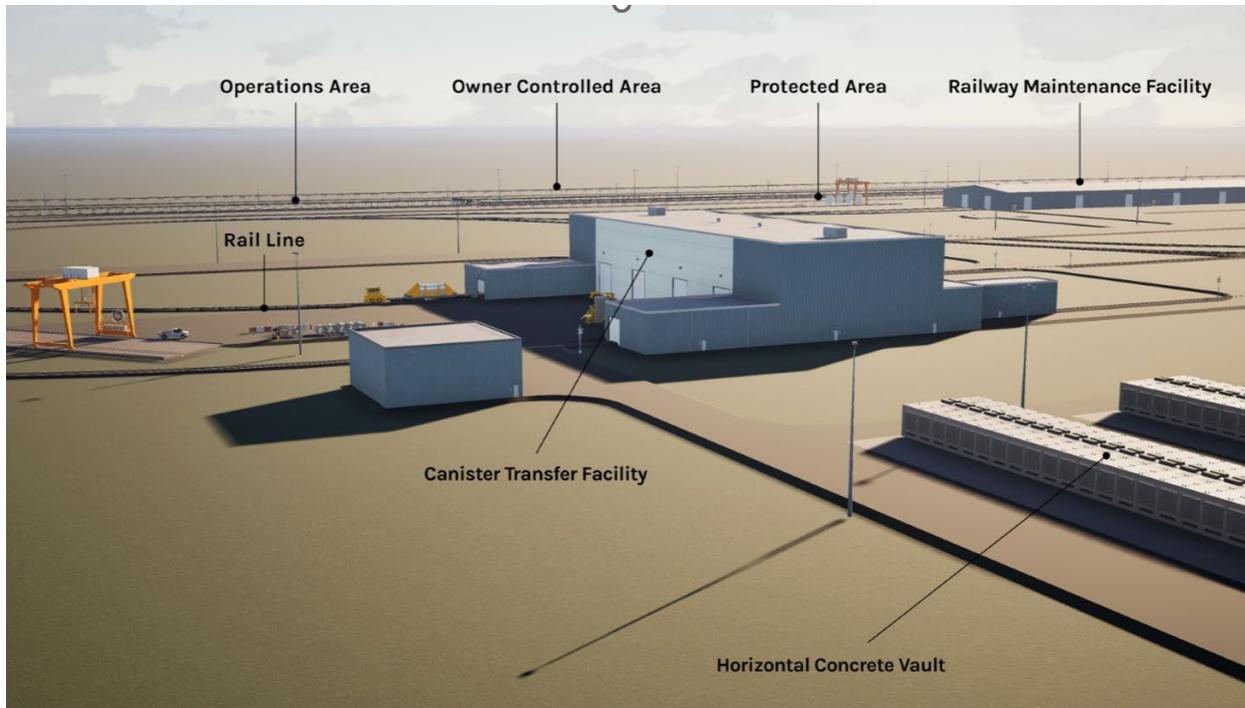


Figure 2. Federal staging facility visualizations.

2.2 ECONOMIC IMPACT OVERVIEW

The economic impact of any facility is generated by the new spending it introduces into its local community through both labor and non-labor expenditures, including any new Federal staging facility that is built and operated within the U.S. A new Federal staging facility, for example, would directly employ a sizable workforce and also support additional demand for local suppliers to purchase raw materials and services to facilitate their ongoing operations. These expenditures made by the Federal staging facility through local businesses and through the wages and salaries paid to employees introduce new spending activity at the State, County, and regional levels that would not exist otherwise.

Yet, this initial spending activity does not represent the cumulative impact of a new Federal staging facility. The expenditures that are part of the facility's ongoing operations represent direct economic activity within the region. Operation expenditures also lead to additional job creation and economic activity throughout the local region via the economic multiplier effect (or economic ripple effect).

Economic multiplier effects can be divided into *direct*, *indirect*, and *induced* impacts. The direct effect represents the initial change in economic activity. Direct effects include, for example, the initial dollars that are directly injected into the local economy through the construction and site development of the Federal staging facility. Direct effects also include any employee wages and benefits, construction materials purchased, transportation equipment, and other overhead and administrative costs. This spending increases demand for goods and services, leading to the creation of new jobs and potentially higher income for employees and suppliers of the construction firms.

The indirect effect reflects all the additional economic impacts resulting from inter-industry linkages between other local businesses in the region. For example, an equipment purchase made for the Federal staging facility to support the construction of horizontal and vertical staging

casks would lead to an increase in demand for the equipment provider. This would require the equipment provider to purchase additional raw materials to accommodate the increased demand and potentially hire more employees to meet the higher demands. The vendors of the equipment providers would, in turn, experience an increase in demand and purchase additional inputs. These indirect effects ripple through the regional economy.

The induced effect reflects additional economic activity resulting from increases in household income spending. For example, when equipment providers hire new workers to meet an increase in demand, these workers earn income and spend part of it locally on food, entertainment, or housing. These local industries would then experience an increase in demand for their goods and services, leading to the hiring of additional employees and potentially higher incomes for some, part of which would also be spent locally.

These successive rounds of indirect and induced spending do not continue forever, which is why a specific value can be calculated for each impact. In each round, money is “leaked out” for a variety of reasons. For example, firms may purchase some of their supplies from vendors located outside of the local area. Additionally, employees may save part of their income or spend it outside their local region. An economic multiplier can be used to determine the cumulative impact (direct, indirect, and induced) from an initial change in economic activity (the direct impact). Multipliers vary across different sectors of the economy and are primarily determined by the size of the local supplier network, as well as the specific region being examined. Economic multipliers are also available to calculate the cumulative employment and labor income impacts associated with the cumulative economic impact.

2.3 REGIONAL DEFINITIONS

Given that multiplier effects can vary widely depending on the location of the Federal staging facility within the U.S., this study independently modeled the economic impact of a Federal staging facility in four hypothetical composite communities. These communities were built using data from U.S. Counties that met the following criteria:

- Located outside of a metropolitan statistical area (MSA).
- Heavy duty rail presence within the County.
- High percentage of local workers³.

To ensure broad geographic representation, a hypothetical community was built for each of the four U.S. Census Bureau regions, as shown in Figure 3.

³ The percentage of local workers in each county had to be at least 80 percent to be considered.

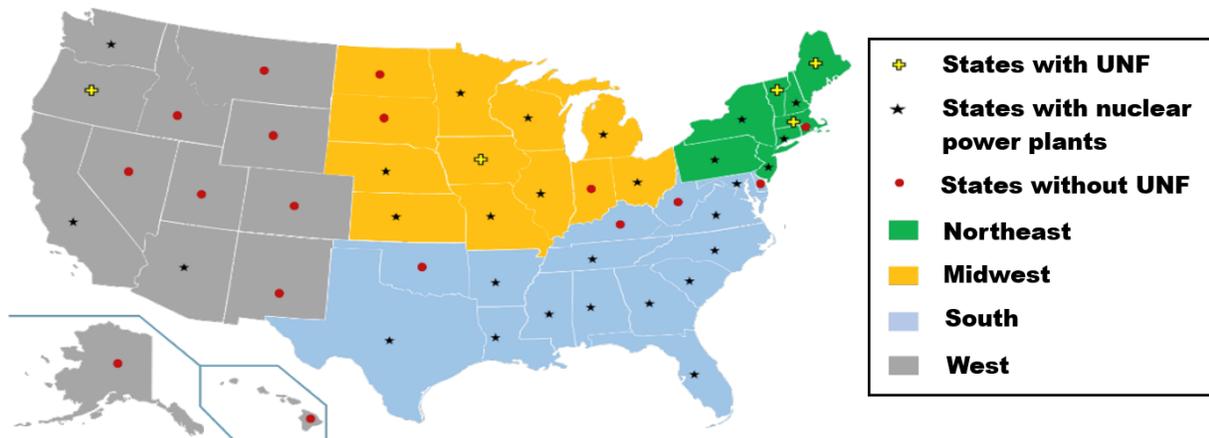


Figure 3. U.S. Census regions and associated used nuclear fuel by state⁴.

Using information from the U.S. Census Bureau (MSA and labor market data) and the U.S. Bureau of Transportation Statistics (rail), 24 U.S. Counties were identified as meeting these criteria (3 counties in the Northeast, 9 in the Midwest, 4 in the South, 8 in the West).

The economic impact of each Federal staging facility scenario was initially estimated for each of the 24 U.S. counties. Within each U.S. Census region, the County-level results were then averaged. This generated four sets of results for each of the Federal staging facility scenarios, illustrating the scale of economic and social impacts that might be anticipated for a Federal staging facility host community within each of the four U.S. Census regions.

2.4 FEDERAL STAGING FACILITY SCENARIO DESCRIPTIONS

The first step toward assessing the potential economic impact of a new Federal staging facility located within one of the four hypothetical communities in the U.S. is to identify the specific parameters surrounding the Federal staging facility system design. In this analysis, DOE-NE has identified two scenarios for the construction and operation of a Federal staging facility that are modeled in this report: (1) a large base case (LBC) of 70,000 metric tons of heavy metal (MTHM) with an 80-year facility lifespan and (2) a small base case (SBC) of 15,000 MTHM with a 40-year facility lifespan. These are summarized in Table 1.

Table 1. Parameters of modeled Federal staging facilities. MTHM = metric ton(s) of heavy metal.

Scenario Name	Max. Capacity (MTHM)	Max. Throughput (MTHM/yr)		Phase Duration (years)				Total Lifespan (years)
		In	Out	Construction	Receipt	Hold	Drawdown	
Large base case (LBC)	70,000	3,000	3,000	5	25	25	25	80
Small base case (SBC)	15,000	3,000	3,000	5	5	25	5	40

⁴ Source: Idaho National Laboratory, *Equity Considerations in Siting Consolidated Interim Storage Facilities for Commercial Spent Nuclear Fuel*, March 2024

For each scenario, all Federal staging facility system costs were provided by Pacific Northwest National Laboratory (PNNL). Costs consisted of expenditures for specific activities that were allocated to different sectors of the local economy (e.g., construction, concrete manufacturing, warehousing). Total construction and operating costs are presented in Tables 2 and 3, respectively. Note that the total cost associated with the LBC over its 80-year projected lifespan is \$12.9 billion (\$7.6 billion in construction/decommissioning and \$5.3 billion in operations). The total cost associated with the SBC over its 40-year projected lifespan is \$4.3 billion (\$2.7 billion in construction/decommissioning and \$1.6 billion in operations).

Table 2. Total Federal staging facility construction expenditures by scenario across 5-year time periods of the full lifespan (in millions, 2025 dollars).

5-year Period-End	Large Base Case Scenario	Small Base Case Scenario
5	\$1,649.7	\$2,009.6
10	\$1,155.9	\$496.9
15	\$1,196.4	-
20	\$1,208.5	-
25	\$1,210.0	-
30	\$490.6	-
35	-	\$52.6
40	-	\$198.1
45	-	-
50	-	-
55	\$16.2	-
60	\$112.2	-
65	\$117.2	-
70	\$125.2	-
75	\$123.3	-
80	\$197.1	-
TOTAL	\$7.6B	\$2.7B

Table 3. Total Federal staging facility operational expenditures categorized by scenario across 5-year time periods of the full lifespan (in millions, 2025 dollars).

5-year Period-End	Large Base Case Scenario	Small Base Case Scenario
5	\$42.9	\$61.8
10	\$289.9	\$298.7
15	\$352.3	\$189.7
20	\$387.3	\$189.7
25	\$422.0	\$189.7
30	\$426.0	\$189.7
35	\$316.6	\$217.5
40	\$316.6	\$245.4
45	\$316.6	-
50	\$316.6	-
55	\$328.4	-

5-year Period-End	Large Base Case Scenario	Small Base Case Scenario
60	\$422.2	-
65	\$412.7	-
70	\$378.0	-
75	\$343.0	-
80	\$249.0	-
TOTAL	\$5.3B	\$1.6B

2.5 MODELING USING IMPLAN SOFTWARE

To enable direct comparisons of results in this report to previous work facilitated by PNNL, all economic impact estimates in this study were generated using the input-output modeling software IMPLAN. IMPLAN is among the most widely cited and used modeling tools by economists and statisticians in the U.S. and is the industry standard for estimating the macroeconomic impacts of introducing new economic activities to a local region. These types of changes can include the opening (or closing) of a manufacturing plant, an increase in local tourism, the impacts of a natural disaster, or major changes in a local supply chain.

The first step in estimating the economic impact of a hypothetical Federal staging facility is to model the new labor and non-labor expenditures that would be introduced to the local region as part of the facility's construction and subsequent operations. IMPLAN, in turn, uses input-output analysis to estimate how these initial expenditures affect other sectors in the local economy through a ripple effect. One important element of this process is the use of regional purchase coefficients (RPCs), which denote the proportion of local demand for a specific commodity that is satisfied by local production. For example, an RPC of 0.3 for concrete manufacturing in a County would indicate that approximately 30 percent of all concrete purchased in that County was produced locally. Conversely, it would also imply that 70 percent of all concrete purchased in the County was produced elsewhere. The baseline RPC values that IMPLAN establishes for each County are based on data collected from the U.S. Bureau of Economic Analysis (and other public data resources) on output, employment, labor income, value added, personal consumption, industrial production, and other measures.

Higher RPCs translate into greater local economic impacts. For example, if \$100 million were spent on concrete as part of the Federal staging facility construction process, this would generate a much larger local impact if the concrete manufacturing were taking place in the County where the Federal staging facility was located than if it were manufactured elsewhere and shipped to the County for use by the Federal staging facility. Local concrete manufacturing would stimulate additional local job and income creation (part of the economic multiplier effect) beyond the direct economic activities of the construction and site development of the Federal staging facility.

The baseline IMPLAN industry characteristics were used as a starting point for modeling the economic impact of the hypothetical Federal staging facility scenarios in each County. However, in some counties, one or more local sectors that the Federal staging facility would have otherwise supported did not exist. This was primarily due to the rural nature of the modeled counties, where both the number and size of local industries were often relatively small. If an industry does not exist within a County, any expenditures made in that industry by the Federal staging facility would be with firms outside of the County and would yield no local economic impact. For example, suppose a Federal staging facility must purchase all concrete from non-local firms. In that case, this represents "lost" economic activity for the County because no local suppliers exist to satisfy this demand.

Although it is appropriate to model such expenditures as being “lost” in the short run, the Federal staging facility scenarios in this study represent long-term investments. The two scenarios modeled in this report assume lifespans of 40 and 80 years. During this long-term period, the Federal staging facility could attract suppliers to the host County over time to serve the Federal staging facility. Thus, despite an industry sector not existing in a County during the first year the Federal staging facility is under construction and/or operation, the industry could grow over time. To account for such a possibility, national spending patterns were used to create customized values for each industry that the Federal staging facility was assumed to stimulate through direct local expenditures. In other words, nationwide averages were used for industry sectors with no current local activity. Although this may lead to overestimating annual impacts during the early years of the Federal staging facility timeline, this would likely be offset by underestimating annual impacts during the later years and would ensure that cumulative estimates capture any growth in the local economy resulting from expanding supply chains.

3 RESULTS

3.1 ECONOMIC IMPACTS

3.1.1 LARGE BASE CASE SCENARIO

Under the LBC scenario, a Federal staging facility would be projected to invest approximately \$7.6 billion in construction-related activities over its 80-year lifespan with an accompanying \$5.3 billion in ongoing operations. The direct impact of the Federal staging facility is generated from expenditures made toward all wages and salaries to support this total level of economic activity, combined with all associated non-labor expenditures (e.g., capital equipment, professional services, ongoing maintenance).

These direct impacts also lead to significant multiplier effects that substantially increase the cumulative economic impact of the Federal staging facility. The structural input-output models used in this analysis estimate impacts in terms of three specific measures: economic output, employment, and labor income. Economic output reflects the dollar value of all final goods and services that can be attributed (directly or indirectly) to the Federal staging facility. It can also be thought of as an aggregate measure of total spending activity that results from all the Federal staging facility’s direct expenditures within the local economy. Because economic output includes all spending by consumers and businesses on both goods and services, it is an all-inclusive measure of the impact on cumulative economic activity. Employment measures the total number of full-time equivalent positions associated with total economic output. Labor income reflects all employee compensation associated with total employment estimates, including wages, salaries, and benefits. Tables 4 through 7 highlight these estimates for the cumulative impact of the Federal staging facility over its 80-year lifespan in each of the four U.S. regions.

Table 4. Cumulative economic impact: Years 1–80, West Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	781	\$3,679.6	\$12,900.4
Indirect Effect	150	\$662.2	\$2,186.1
Induced Effect	107	\$415.6	\$1,445.3
Total Impact	1,038	\$4,757.4	\$16,531.8

Table 5. Cumulative economic impact: Years 1–80, Midwest Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	654	\$4,072.7	\$12,900.4
Indirect Effect	176	\$799.0	\$2,731.9
Induced Effect	143	\$547.8	\$1,866.0
Total Impact	973	\$5,419.5	\$17,498.3

Table 6. Cumulative economic impact: Years 1–80, Northeast Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	700	\$3,706.6	\$12,900.4

	Employment	Labor Income	Economic Output
Indirect Effect	199	\$1,022.3	\$3,354.5
Induced Effect	180	\$768.6	\$2,421.3
Total Impact	1,079	\$5,497.5	\$18,676.2

Table 7. Cumulative economic impact: Years 1–80, South Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	741	\$3,906.2	\$12,900.4
Indirect Effect	88	\$352.2	\$1,365.5
Induced Effect	44	\$132.5	\$701.1
Total Impact	873	\$4,390.9	\$14,967.0

The approximately \$12.9 billion in construction and operational expenses are estimated to support an average of between 654 and 781 direct jobs annually during the Federal staging facility’s 80-year lifespan. This level of direct economic activity subsequently leads to additional rounds of local spending activity – known as the multiplier effect – which totals between \$2 billion and \$6 billion. These multiplier effects reflect the increased demand for goods and services of local suppliers resulting from local expenditures on the Federal staging facility and the local economic activity generated across all industries from increased household spending. The combination of all direct effects and their subsequent multiplier effects results in a total annual economic output of between \$15.0 billion and \$18.7 billion across the 80-year lifespan, which is estimated to support an average of between 873 and 1,079 jobs annually.

Due to the projected construction anticipated to occur during the early years, the peak impact of the Federal staging facility is expected to occur within the first 5 years of its activity. As Tables 8 through 11 illustrate, these impacts total between \$388.3 million and \$489.7 million annually during years 1–5, supporting an average of between 1,530 and 2,120 jobs depending on the U.S. region. These results demonstrate that approximately 13 percent of the total economic impact that the construction and operation of a Federal staging facility (LBC) with an 80-year lifespan would bring to its host County would occur within the first 6 percent of this lifespan. Tables 12 through 14 summarize 5-year estimates of the Federal staging facility’s economic impact across its full lifespan.

Table 8. Peak annual economic impact: Years 1–5, West Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	1,323	\$89.8	\$338.5
Indirect Effect	248	\$15.4	\$52.2
Induced Effect	210	\$10.2	\$35.4
Total Impact	1,781	\$115.4	\$426.1

Table 9. Peak annual economic impact: Years 1–5, Midwest Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	1,223	\$93.8	\$338.5
Indirect Effect	319	\$20.1	\$70.4
Induced Effect	272	\$13.1	\$44.5

	Employment	Labor Income	Economic Output
Total Impact	1,814	\$127.0	\$453.4

Table 10. Peak annual economic impact: Years 1–5, Northeast Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	1,370	\$92.9	\$338.5
Indirect Effect	377	\$26.4	\$88.5
Induced Effect	373	\$19.9	\$62.7
Total Impact	2,120	\$139.2	\$489.7

Table 11. Peak annual economic impact: Years 1–5, South Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	1,291	\$90.0	\$338.5
Indirect Effect	158	\$8.7	\$33.7
Induced Effect	81	\$3.1	\$16.1
Total Impact	1,530	\$101.8	\$388.3

Table 12. Annual average employment impacts by 5-year period.

5-year Period-End	West Region	Midwest Region	Northeast Region	South Region
1–5	1,780	1,814	2,120	1,530
6–10	1,706	1,577	1,747	1,407
11–15	1,807	1,673	1,853	1,487
16–20	1,856	1,718	1,903	1,527
21–25	1,894	1,753	1,942	1,557
26–30	1,152	1,069	1,178	967
31–35	552	503	554	489
36–40	552	503	554	489
41–45	552	503	554	489
46–50	552	503	554	489
51–55	559	509	560	494
56–60	751	702	766	648
61–65	739	695	756	639
66–70	878	872	964	617
71–75	673	633	687	615
76–80	764	740	818	672

Table 13. Annual average labor income impacts by 5-year period (\$ in millions).

5-year Period-End	West Region	Midwest Region	Northeast Region	South Region
1–5	\$115.4	\$127.0	\$139.2	\$101.7
6–10	\$101.2	\$115.7	\$116.3	\$95.0

5-year Period-End	West Region	Midwest Region	Northeast Region	South Region
11–15	\$107.8	\$123.3	\$123.9	\$101.2
16–20	\$110.9	\$126.8	\$127.4	\$104.1
21–25	\$113.2	\$129.5	\$130.1	\$106.3
26–30	\$66.8	\$76.1	\$76.7	\$62.3
31–35	\$27.9	\$31.7	\$32.1	\$25.8
36–40	\$27.9	\$31.7	\$32.1	\$25.8
41–45	\$27.9	\$31.7	\$32.1	\$25.8
46–50	\$27.9	\$31.7	\$32.1	\$25.8
51–55	\$28.3	\$32.2	\$32.5	\$26.2
56–60	\$41.9	\$47.4	\$48.1	\$38.6
61–65	\$41.6	\$46.9	\$47.6	\$38.2
66–70	\$48.8	\$55.8	\$59.7	\$36.6
71–75	\$37.5	\$42.1	\$42.9	\$33.2
76–80	\$43.9	\$48.9	\$51.1	\$39.4

Table 14. Annual average output impacts by 5-year period (\$ in millions).

5-year Period-End	West Region	Midwest Region	Northeast Region	South Region
1–5	\$426.1	\$453.5	\$489.7	\$388.3
6–10	\$368.0	\$390.2	\$416.8	\$333.9
11–15	\$394.0	\$417.8	\$446.1	\$357.6
16–20	\$405.8	\$430.4	\$459.6	\$368.4
21–25	\$414.9	\$440.1	\$470.0	\$376.7
26–30	\$234.8	\$248.5	\$264.8	\$212.6
31–35	\$83.6	\$87.8	\$93.5	\$74.9
36–40	\$83.6	\$87.8	\$93.5	\$74.9
41–45	\$83.6	\$87.8	\$93.5	\$74.9
46–50	\$83.6	\$87.8	\$93.5	\$74.9
51–55	\$85.1	\$89.4	\$95.2	\$76.2
56–60	\$138.5	\$146.1	\$155.0	\$124.9
61–65	\$137.4	\$144.9	\$153.5	\$123.9
66–70	\$160.8	\$174.9	\$191.0	\$117.8
71–75	\$121.4	\$127.9	\$135.2	\$109.6
76–80	\$144.3	\$152.3	\$161.9	\$130.2

3.1.2 SMALL BASE CASE SCENARIO

Under the SBC scenario, a Federal staging facility is projected to invest approximately \$2.7 billion in construction-related activities over its 40-year lifespan, with accompanying ongoing operations of \$1.6 billion. Expenditures made toward all wages and salaries to support this total level of economic activity, combined with all associated non-labor expenditures (e.g., capital equipment, professional services, ongoing maintenance), generate the direct impact of the Federal staging facility.

These direct impacts also lead to significant multiplier effects that substantially increase the total economic impact of the Federal staging facility. The structural input-output models used in this

analysis estimate impacts in terms of three specific measures: economic output, employment, and labor income. Economic output reflects the dollar value of all final goods and services that can be attributed (directly or indirectly) to the Federal staging facility. It can also be thought of as an aggregate measure of total spending activity that results from all of the Federal staging facility's direct expenditures within the local economy. Because it includes all spending by consumers and businesses on both goods and services, economic impact is an all-inclusive measure of the impact on total economic activity. Employment measures the total number of full-time equivalent positions associated with total economic output. Labor income reflects all employee compensation associated with total employment estimates, including wages, salaries, and benefits. Tables 15 through 18 highlight these estimates for the cumulative impact of the Federal staging facility over its 40-year lifespan in each of the four U.S. regions.

Table 15. Cumulative economic impact: Years 1–40, West Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	591	\$1,315.0	\$4,339.3
Indirect Effect	98	\$224.7	\$740.6
Induced Effect	78	\$148.1	\$514.5
Total Impact	767	\$1,687.8	\$5,594.4

Table 16. Cumulative economic impact: Years 1–40, Midwest Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	513	\$1,430.8	\$4,339.3
Indirect Effect	115	\$267.3	\$917.9
Induced Effect	103	\$192.3	\$656.4
Total Impact	731	\$1,890.4	\$5,913.6

Table 17. Cumulative economic impact: Years 1–40, Northeast Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	556	\$1,356.4	\$4,339.3
Indirect Effect	130	\$339.3	\$1,112.4
Induced Effect	134	\$277.3	\$873.9
Total Impact	820	\$1,973.0	\$6,325.6

Table 18. Cumulative economic impact: Years 1–40, South Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	576	\$1,360.7	\$4,339.3
Indirect Effect	62	\$122.1	\$470.9
Induced Effect	32	\$46.5	\$243.8
Total Impact	670	\$1,529.3	\$5,054.0

The approximately \$4.3 billion in construction and operational expenses are estimated to support an average of between 513 and 591 direct jobs annually during the Federal staging facility's 40-year lifespan. This level of direct economic activity subsequently leads to additional

rounds of local spending activity – known as the multiplier effect – which totals between roughly \$1.3 billion and \$2.0 billion. These multiplier effects reflect the increased demand for goods and services from local suppliers resulting from local expenditures on the Federal staging facility, as well as the local economic activity generated across all industries from increased household spending. The combination of all direct effects and their subsequent multiplier effects results in a total annual economic impact of between \$5.1 billion and \$6.3 billion across the 40-year lifespan, which is estimated to support an average of between 670 and 820 jobs each year.

Due to the projected construction anticipated to occur during the early years, the peak impact of the Federal staging facility is expected to occur within the first 5 years of its activity. As Tables 19 through 22 illustrate, these impacts total between \$475.2 million and \$598.3 million annually during years 1–5, supporting an average of between 1,843 and 2,525 jobs depending on the U.S. region. Put another way, approximately 47 percent of the total economic impact that the construction and operation of a Federal staging facility (SBC) with a 40-year lifespan would bring to its host County would occur within the first 13 percent of this lifespan. Tables 23 through 25 summarize 5-year estimates of the Federal staging facility’s economic impact across its full lifespan.

Table 19. Peak annual economic impact: Years 1–5, West Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	1,611	\$108.5	\$414.3
Indirect Effect	308	\$19.1	\$64.4
Induced Effect	254	\$12.4	\$42.8
Total Impact	2,173	\$140.0	\$521.5

Table 20. Peak annual economic impact: Years 1–5, Midwest Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	1,450	\$114.5	\$414.3
Indirect Effect	395	\$24.7	\$86.3
Induced Effect	331	\$16.0	\$54.3
Total Impact	2,176	\$155.2	\$554.9

Table 21. Peak annual economic impact: Years 1–5, Northeast Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	1,612	\$111.1	\$414.3
Indirect Effect	466	\$32.5	\$108.9
Induced Effect	447	\$23.9	\$75.1
Total Impact	2,525	\$167.5	\$598.3

Table 22. Peak annual economic impact: Years 1–5, South Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	1,545	\$110.7	\$414.3
Indirect Effect	197	\$10.6	\$41.1

	Employment	Labor Income	Economic Output
Induced Effect	101	\$3.8	\$19.8
Total Impact	1,843	\$125.1	\$475.2

Table 23. Annual average employment impacts by 5-year period.

5-year Period-End	West Region	Midwest Region	Northeast Region	South Region
1–5	2,172	2,176	2,525	1,843
6–10	1,025	952	1,048	733
11–15	419	381	417	341
16–20	419	381	417	341
21–25	419	381	417	341
26–30	419	381	417	341
31–35	496	456	499	391
36–40	761	737	815	575

Table 24. Annual average labor income impacts by 5-year period (\$ in millions).

5-year Period-End	West Region	Midwest Region	Northeast Region	South Region
1–5	\$140.0	\$155.2	\$167.5	\$125.1
6–10	\$58.9	\$67.0	\$67.6	\$54.8
11–15	\$19.7	\$22.2	\$22.6	\$18.0
16–20	\$19.7	\$22.2	\$22.6	\$18.0
21–25	\$19.7	\$22.2	\$22.6	\$18.0
26–30	\$19.7	\$22.2	\$22.6	\$18.0
31–35	\$24.9	\$28.1	\$28.5	\$22.8
36–40	\$43.7	\$48.6	\$50.8	\$39.2

Table 25. Annual average output impacts by 5-year period (\$ in millions).

5-year Period-End	West Region	Midwest Region	Northeast Region	South Region
1–5	\$521.5	\$554.9	\$598.3	\$475.2
6–10	\$204.3	\$216.1	\$230.1	\$184.8
11–15	\$51.6	\$53.8	\$57.0	\$45.7
16–20	\$51.6	\$53.8	\$57.0	\$45.7
21–25	\$51.6	\$53.8	\$57.0	\$45.7
26–30	\$51.6	\$53.8	\$57.0	\$45.7
31–35	\$71.9	\$75.4	\$79.9	\$64.2
36–40	\$143.5	\$151.4	\$160.9	\$129.5

3.1.3 CENTER FOR USED FUEL RESEARCH

In addition to the hypothetical LBC and SBC Federal staging facility scenarios, this study also models the cumulative impacts of a Center for Used Fuel Research (CUFR) that may accompany the building and subsequent operation of a Federal staging facility. If the development of a CUFR proceeds, PNNL projects that this investment will consist of an initial

capital expenditure in construction and site development, totaling between \$300 million and \$600 million. Upon completion, all temporary economic impacts from these capital expenditures would be followed by permanent impacts associated with the ongoing operations of the CUFR. Specifically, PNNL projects that a CUFR would employ between 40 and 60 full-time staff. The cumulative economic impacts from both the temporary, construction-related activities and all subsequent operations are broken down and displayed in Tables 26 through 41. Two sets of results are specifically presented – a lower bound and an upper bound – based on the range of possible capital expenditures and full-time employment levels.

3.1.3.1 ECONOMIC IMPACT OF CUFR, LOWER BOUND ESTIMATES

Tables 26 through 33 summarize the lower bound of the temporary, construction-related impacts along with the permanent impacts associated with the ongoing operations of a CUFR across all four U.S. regions. In sum, a \$300 million capital investment is estimated to generate a total of between \$348.8 million and \$447.2 million in economic activity during construction and site development, depending on the U.S. region where the facility is located. This, in turn, would generate – either directly or indirectly – between 2,198 and 3,064 temporary jobs and between \$117.8 million and \$171.5 million in labor income.

Following the completion of all construction and site development, the temporary economic impacts outlined above would be followed by permanent impacts associated with the ongoing business operations of a CUFR. Specifically, PNNL projects that the lower bound on direct employment levels at a CUFR would be approximately 40 workers.

The economic impact of all ongoing operations of a CUFR is estimated to total between \$13.6 million and \$16.2 million annually, depending on the U.S. region in which the center is located. These figures reflect the dollar value representing all final goods and services produced in the local economy that can be attributed (directly or indirectly) to the permanent operations of a CUFR. This level of economic activity is also estimated to generate a total of between 66 and 79 jobs that will, in turn, generate between \$4.2 million and \$5.1 million in labor income.

Table 26. Cumulative economic impact: Construction (lower bound), West Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	1,948	\$117.4	\$300.0
Indirect Effect	193	\$11.4	\$37.5
Induced Effect	259	\$12.6	\$43.5
Total Impact	2,400	\$141.4	\$381.0

Table 27. Cumulative economic impact: Operations (lower bound), West Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	40	\$2.8	\$9.2
Indirect Effect	18	\$1.0	\$3.1
Induced Effect	8	\$0.4	\$1.3
Total Impact	66	\$4.2	\$13.6

Table 28. Cumulative economic impact: Construction (lower bound), Midwest Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	1,981	\$116.5	\$300.0
Indirect Effect	259	\$15.4	\$54.0
Induced Effect	322	\$15.5	\$52.7
Total Impact	2,562	\$147.4	\$406.7

Table 29. Cumulative economic impact: Operations (lower bound), Midwest Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	40	\$2.7	\$9.8
Indirect Effect	20	\$0.9	\$3.3
Induced Effect	9	\$0.4	\$1.4
Total Impact	69	\$4.0	\$14.5

Table 30. Cumulative economic impact: Construction (lower bound), Northeast Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	2,287	\$125.9	\$300.0
Indirect Effect	301	\$20.2	\$67.3
Induced Effect	476	\$25.4	\$79.9
Total Impact	3,064	\$171.5	\$447.2

Table 31. Cumulative economic impact: Operations (lower bound), Northeast Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	40	\$2.9	\$9.3
Indirect Effect	26	\$1.5	\$4.6
Induced Effect	13	\$0.7	\$2.3
Total Impact	79	\$5.1	\$16.2

Table 32. Cumulative economic impact: Construction (lower bound), South Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	1,942	\$105.8	\$300.0
Indirect Effect	162	\$8.3	\$30.1
Induced Effect	94	\$3.7	\$18.7
Total Impact	2,198	\$117.8	\$348.8

Table 33. Cumulative economic impact: Operations (lower bound), South Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	40	\$4.8	\$12.2
Indirect Effect	9	\$0.4	\$1.5
Induced Effect	5	\$0.2	\$0.8
Total Impact	54	\$5.4	\$14.5

3.1.3.2 ECONOMIC IMPACT OF CUFR, UPPER BOUND ESTIMATES

Tables 34 through 41 summarize the upper bound of the temporary, construction-related impacts along with the permanent impacts associated with the ongoing operations of a CUFR across all four U.S. regions. In sum, a \$600 million capital investment is estimated to generate a total of between \$697.5 million and \$894.3 million in economic activity during construction and site development, depending on the U.S. region where the facility is located. This activity, in turn, would generate – either directly or indirectly – between 4,394 and 6,128 temporary jobs and between \$235.3 million and \$342.8 million in labor income.

Following the completion of all construction and site development, the temporary economic impacts would be followed by permanent impacts associated with the ongoing business operations of a CUFR. Specifically, PNNL projects that the upper bound on direct employment levels at a CUFR would be approximately 60 workers.

The economic impact of all ongoing operations at a CUFR is estimated to total between \$20.5 million and \$24.2 million annually, depending on the U.S. region in which the center is located. These figures reflect the dollar value representing all final goods and services produced in the local economy that can be attributed (directly or indirectly) to the permanent operations of a CUFR. This level of economic activity is also estimated to generate a total of between 81 and 119 jobs that will, in turn, generate between \$6.1 million and \$8.0 million in labor income.

Table 34. Cumulative economic impact: Construction (upper bound), West Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	3,896	\$234.7	\$600.0
Indirect Effect	387	\$22.9	\$75.1
Induced Effect	517	\$25.3	\$87.1
Total Impact	4,800	\$282.9	\$762.2

Table 35. Cumulative economic impact: Operations (upper bound), West Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	60	\$4.3	\$13.8
Indirect Effect	27	\$1.5	\$4.7
Induced Effect	12	\$0.6	\$2.0
Total Impact	99	\$6.4	\$20.5

Table 36. Cumulative economic impact: Construction (upper bound), Midwest Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	3,963	\$233.0	\$600.0
Indirect Effect	518	\$30.7	\$107.9
Induced Effect	643	\$31.0	\$105.4
Total Impact	5,124	\$294.7	\$813.3

Table 37. Cumulative economic impact: Operations (upper bound), Midwest Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	60	\$4.1	\$14.7
Indirect Effect	30	\$1.4	\$4.9
Induced Effect	13	\$0.6	\$2.1
Total Impact	103	\$6.1	\$21.7

Table 38. Cumulative economic impact: Construction (upper bound), Northeast Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	4,575	\$251.8	\$600.0
Indirect Effect	601	\$40.3	\$134.5
Induced Effect	952	\$50.7	\$159.8
Total Impact	6,128	\$342.8	\$894.3

Table 39. Cumulative economic impact: Operations (upper bound), Northeast Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	60	\$4.3	\$13.9
Indirect Effect	39	\$2.3	\$6.9
Induced Effect	20	\$1.1	\$3.4
Total Impact	119	\$7.7	\$24.2

Table 40. Cumulative economic impact: Construction (upper bound), South Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	3,884	\$211.5	\$600.0
Indirect Effect	323	\$16.5	\$60.2
Induced Effect	187	\$7.3	\$37.3
Total Impact	4,394	\$235.3	\$697.5

Table 41. Cumulative economic impact: Operations (upper bound), South Region (\$ in millions).

	Employment	Labor Income	Economic Output
Direct Effect	60	\$7.2	\$18.3
Indirect Effect	14	\$0.6	\$2.3
Induced Effect	7	\$0.2	\$1.3
Total Impact	81	\$8.0	\$21.9

3.2 POTENTIAL IMPACTS ON INFRASTRUCTURE AND PUBLIC AMENITIES

In addition to all economic impacts previously outlined, the construction and subsequent operation of a Federal staging facility would likely generate a sizable influx of new workers and their families into the local region. This would increase the local demand for a variety of public services and amenities and also increase the usage of local infrastructure. As such, this study provides estimates detailing the impact from the maximum increase in demand (or usage) of these public resources – without a corresponding increase in supply – to provide perspective on how these resources could be affected. The increases in demand modeled correspond to the upper bound on all previous hypothetical investment scenarios. Note that such impacts would likely be reduced as the percentage of locally hired workers increases and – more generally – as revenue and tax dollars are reinvested and supply adjusts to meet demand.

The following analysis assumes that all new workers come from outside of the local region where the Federal staging facility will be located and bring their families with them. The potential impacts on key variables are compared to baseline levels of demand based on local economic conditions that existed before the construction and operation of any new Federal staging facility. For example, as illustrated in Table 42, in the modeled U.S. Northeast Census region, current law enforcement capacity is estimated to be 41.3 officers per 1,000 people. During the period of highest economic activity resulting from the previously outlined LBC scenario in which a Federal staging facility is built and operated within this Census region, law enforcement capacity is estimated to fall to 12.2 officers per 1,000 people. This result provides perspective on the extent to which demand for law enforcement resources would increase if a Federal staging facility were built and operated within this Census region.

Tables 42 through 44 highlight the effects (i.e., increased usage) and definitions for each of the eight public resources that are likely to arise during the peak years when the economic impacts associated with both the LBC and SBC scenarios are highest.

Table 42. Effects on infrastructure and public services during peak impacts, large base case (LBC).

Category	Description	South		West		Midwest		Northeast	
		Baseline	Peak LBC	Baseline	Peak LBC	Baseline	Peak LBC	Baseline	Peak LBC
Housing	Vacancy Rate %	26.4%	0.0%	23.9%	4.5%	12.0%	1.2%	21.8%	14.9%
Public Schools	Student/Teacher Ratio (number of students per teacher)	10.5	29.8	15.3	22.0	13.6	17.0	14.1	16.1
Hospital Capacity	Beds per 1,000 People	2.0	0.9	2.5	1.9	3.7	3.0	1.9	1.7
Law Enforcement	Police per 1,000 People	41.3	12.2	2.5	1.7	1.3	1.1	0.7	0.6
Fire	Fire Employees per 1,000 People	0.5	0.1	1.2	0.6	0.3	0.3	0.0	0.0
Emergency and Other Relief Services	Emergency and Other Relief Services Employees per 1,000 People	0.5	0.1	0.7	0.5	0.3	0.3	0.7	0.6
Hospital ER Visits	Hospital Emergency Room Visits (average annual)	1,685	3,209	10,529	12,302	10,569	12,377	27,446	29,558
Ambulance Calls	Ambulance Calls (average annual)	555	1,057	3,467	4,051	3,480	4,076	9,038	9,733

Table 43. Effects on infrastructure and public services during peak impacts, small base case (SBC).

Category	Description	South		West		Midwest		Northeast	
		Baseline	Peak SBC	Baseline	Peak SBC	Baseline	Peak SBC	Baseline	Peak SBC
Housing	Vacancy Rate %	26.4%	0.0%	23.9%	3.7%	12.0%	1.0%	21.8%	13.5%
Public Schools	Student/Teacher Ratio (number of students per teacher)	10.5	33.7	15.3	23.5	13.6	17.7	14.1	16.5
Hospital Capacity	Beds per 1,000 People	2.0	0.8	2.5	1.8	3.7	2.9	1.9	1.7
Law Enforcement	Police per 1,000 People	41.3	10.8	2.5	1.6	1.3	1.1	0.7	0.6
Fire	Fire Employees per 1,000 People	0.5	0.1	1.2	0.5	0.3	0.2	0.0	0.0
Emergency and Other Relief Services	Emergency and Other Relief Services Employees per 1,000 People	0.5	0.1	0.7	0.5	0.3	0.3	0.7	0.6
Hospital ER Visits	Hospital Emergency Room Visits (average annual)	1,685	3,520	10,529	12,693	10,569	12,737	27,446	29,962
Ambulance Calls	Ambulance Calls (average annual)	555	1,159	3,467	4,180	3,480	4,194	9,038	9,867

Table 44. Public service metrics and associated data sources.

Category	Service (metric)	Data Source(s)
Housing	Vacancy Rate (%)	U.S. Census Bureau, 2020 Decennial Census
Public Schools	Student:Teacher Ratio (number of students per teacher)	National Center for Education Statistics
Hospital Capacity	Beds per 1,000 People	Urban Institute; Centers for Disease Control
Law Enforcement	Police per 1,000 People	U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages
Fire	Fire Employees per 1,000 People	U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages
Emergency and Other Relief Services	Emergency and Other Relief Services Employees per 1,000 People	U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages
Emergency and Other Relief Services	Hospital Emergency Room Visits (average annual)	Kaiser Family Foundation analyses of American Hospital Association annual surveys; U.S. Census Bureau, 2020 Decennial Census
Emergency and Other Relief Services	Ambulance Calls (average annual)	EMS World analyses of Firehouse National Run Survey data

3.3 COMPARISONS TO OTHER STAGING FACILITY EMPIRICAL ANALYSES

This analysis represents one of several in recent years that has quantified the potential impacts – both economic and social – from the construction and subsequent operations of a new Federal staging facility in the U.S. This section provides a brief overview of the major similarities and differences between this analysis and four existing studies that collectively represent a selection of empirical work that previously estimated the potential impact of a new staging facility for Federal and private initiatives. Such a comparison is designed to highlight the source of any major differences, including methodology, basic assumptions, and the region of analysis.

The first and most recent study, titled “Wyoming’s Nuclear Supply Chain Opportunities and Challenges: Spent Fuel,” was completed in February 2025 by the University of Wyoming’s Center for Energy Regulation and Policy Analysis. As part of a broader series of reports evaluating the feasibility of developing an integrated nuclear sector in Wyoming, this study specifically focuses on quantifying the impact of multiple Federal staging facility scenarios across the State of Wyoming. In addition to modeling economic impacts that quantify total output along with job and income creation, the Wyoming study provides a detailed evaluation of social and environmental impacts that go beyond the scope of this study. This includes, for example, quantifying the potential impacts of decreased tourism and water contamination. Moreover, it also attempts to quantify the potential community aversion to a new staging facility by estimating existing residents’ willingness-to-pay to avoid the construction of a new facility using survey data. All economic impact estimates were quantified using IMPLAN, with the results suggesting that the methodology used was comparable to that used in this report. This can perhaps be most easily observed by explicitly comparing employment multiplier effects. For example, in the modeled construction phase of a 20,000-ton facility, “...75% of the employment [comes] from the direct effect of hiring construction workers, engineers, and other jobs. The remaining 25% of impacts occur from spillover and induced effects, such as spending at restaurants.”⁵ This suggests an employment multiplier effect of approximately 1.3, which is not significantly different from the construction-related employment multiplier effects modeled in this study within the U.S. West region (at 1.2).

The second and third studies estimate the potential impacts of constructing and operating a staging facility in Andrews County, Texas, and Lea County, New Mexico. Following similar methodologies, these studies were produced by the U.S. Nuclear Regulatory Commission in July 2021 and July 2022.⁶ Both studies focus primarily on environmental impacts, including land use and transportation considerations, geology and soils, water resources, ecology, meteorology, environmental justice, public and occupational health, and waste management. All economic impact estimates were quantified using RIMS II, an input-output modeling system developed by the U.S. Bureau of Economic Analysis and one of the primary alternatives to IMPLAN. As with the Wyoming study, the economic impact methodology used in both studies was also similar. However, both the New Mexico and Texas studies produced results that were an order of magnitude smaller than those of this study. This difference is primarily driven by the variation in assumed input values resulting from differences in facility size and costs for both construction and operations. For example, the Texas study of a 5,000 MTU staging facility project yielded construction costs in the first 2.5 years estimated to total \$148.3 million. By

⁵ Source: *Wyoming’s Nuclear Supply Chain Opportunities and Challenges: Spent Fuel*, University of Wyoming’s Center for Energy Regulation and Policy Analysis, February 2025, pg. 77.

⁶ *Environmental Impact Statement for Interim Storage Partners LLC’s License Application for a Consolidated Interim Storage Facility for Spent Nuclear Fuel in Andrews County, Texas* (NUREG-2239); *Environmental Impact Statement for Interim Storage Partners LLC’s License Application for a Consolidated Interim Storage Facility for Spent Nuclear Fuel in Lea County, New Mexico* (NUREG-2237).

contrast, construction costs for the small scenario (15,000 MTU) modeled in this report were estimated to be at least \$859 million during the first 2.5 years. Thus, despite only a 3-fold increase in facility capacity, the construction costs were estimated to be approximately 6-fold higher. These higher direct construction costs, in turn, yielded higher corresponding direct employment estimates. Nevertheless, the multiplier effects in the New Mexico and Texas studies were comparable to those estimated in this study. Employment and output multipliers associated with construction and operations in both studies were estimated to be 1.5 and 1.4, respectively. Similarly, in this study, these multipliers were estimated to be between 1.1 and 1.3, respectively, in the U.S. South region. A primary reason for the difference in these multiplier effects is that the U.S. South region includes several small counties, which will decrease the average multiplier effect.

The fourth study, completed in December 2025 and titled *Potential Socioeconomic Effects of a Federal Used Nuclear Fuel Staging Facility*, was conducted by PNNL, Idaho National Laboratory, and Oak Ridge National Laboratory. The study was relatively unique in that it modeled Federal staging facility scenarios using a hypothetical region that represented the average of multiple U.S. counties that met the same criteria identified in Section 2.2 of this study. Except for the minor differences outlined in Section 2.4, this study followed the same general methodology and approach, generating broadly comparable estimates. The primary differences stemmed from the fact that this study modeled Federal staging facility scenarios across four U.S. regions, rather than just one.

In summary, this study generated estimates that were broadly consistent with the existing literature that modeled the potential economic impact of a new Federal staging facility in the U.S. The primary differences between the estimates generated in this study and from previous empirical work were due to the underlying assumptions about (1) the region where the facility would be built and operated, and (2) the size and capacity of the facility and the corresponding direct capital investment and employment requirements. They were not generally a result of any major difference in methodology associated with input-output modeling.



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