Currently-estimated pit production costs at Los Alamos National Laboratory and the Savannah River Site

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Los Alamos National Laboratory (LANL)

Through these fiscal years:	FY32	FY35	FY39
Total cost, no further escalation or failures, $B*	**22.1**	**27.2**	**35.1**
Lower bound, $M per pit (176, 296, & 456 pits)	126	92	77
Upper bound, $M per pit (142, 250, & 394 pits)	156	109	89
Forward cost after FY24, no escalation, $B	**13.6**	**18.6**	**26.6**
Lower bound, $M per pit (176, 296, & 456 pits)	77	63	58
Upper bound, $M per pit (142, 250, & 394 pits)	96	74	68
Average annual cost, FY32-FY39, including operations plus $150 M/yr recapitalization: $1.9 B. Implied cost/pit over this period: ~$50 M.			

*Includes costs from FY2019 onward only; does not include ~$3 B in pit production program costs over the 2005-2019 period at LANL. See GAO-23-104661, pp. 11-12.

For details see Overview of Pit Production Challenges at Los Alamos National Laboratory, presentation to the Governor's Nuclear Advisory Council (GNAC), Columbia, SC, Apr 29, 2024 (video here).

NNSA expects to baseline the cost and schedule for the Los Alamos Plutonium Pit Production Project (LAP4) by 4Q FY26 (p. 232). LAP4 is the core (although only about 25% of the total cost) of the LANL pit production startup effort. Costs related to production of up to 10 pits per year (ppy) at LANL are funded via the Plutonium Modernization Program (p. 231).

The pit production longevity of Building PF-4 (~50 years old this year) is unknown ("Risks for Sustainment of PF-4 at LANL, 2020). Large investments are being made to bring this older building up to modern safety standards if possible and to extend its working life. Other LANL facilities supporting pit production will also need large investments. The above costs continue the present trend of one $50 M capital line-item per year supporting pit production, plus an assumed $1B project to replace LANL's Sigma Building in the 2030s (included in all of NNSA's recent Stockpile Stewardship and Management Plans, e.g. p. 6-19 here). No other capital projects, site-wide infrastructure, or investment in PF-4 replacement or augmentation, or any off-site campus costs however necessary, are included. It is not possible to estimate life-cycle costs at LANL because the scope of the new infrastructure needed is not bounded and the longevity of PF-4 is unknown.

Savannah River Site (SRS)

Using two different estimates of SRPPF cost:	2024 SRNS bottom-up estimate		2024 NNSA high-end (of "$18-25 B")	
Capacity:	**≥50 ppy**	**≥80 ppy**	**≥50 ppy**	**≥80 ppy**
SRPPF capital cost, $B	**18.5**	**18.5**	**25**	**25**
50-yr operating cost, $B	**33.1**	**36.8**	**33.1**	**36.8**
Total 50-yr life-cycle cost	**51.6**	**55.3**	**58.1**	**61.8**
Average cost/pit, $M	**12.3**	**10.7**	**13.8**	**12.0**
Marginal cost/pit (total $ for ≥80 ppy minus $ for ≥50 ppy/950 pits), $M	**3.9**		**3.9**	

The 50-year operating cost of an ≥80 ppy Savannah River Plutonium Processing Facility (SRPPF) was estimated in the 2018 Engineering Assessment (EA) at $26.0 B in 2018 dollars (p. 3-18), assuming 1,807 staff (p. 3-7). The 2020 SRPPF Final Environmental Impact Statement (FEIS) predicted 1,830 staff for ≥50 ppy and 2,015 for ≥80 ppy (10% more) (FEIS, p. S-27). (Compare "~2,000 employees" in "Plutonium Pit Production at SRS," July 2024.) We assume operating costs scale with personnel and we also inflate 2018 costs to 2024 with the consumer price index (CPI), i.e. by 1.27x, to arrive at these estimates. Higher assumed inflation over the past 6 years would increase estimated costs (e.g. assuming 10%/yr inflation 2018-2024 would give 39% higher operating costs than shown above).

NNSA modeled these two production rates in 2017, getting expected mean annual production rates of 84 and 103 ppy (Analysis of Alternatives [AoA] p. 13). We use these to estimate total 50-year SRPPF production at 4,200 and 5,150 pits.

We assume the capital costs for ≥50 ppy and ≥80 ppy are only trivially different if ≥80 ppy is not in fact already the present (unstated) requirement. The additional 30 ppy capacity requires only 22 additional pieces of equipment and 6,350 ft^2 of space, 2% of the available 400,000 ft^2 of Hazard Category II space in SRPPF (AoA, p. 45). (The EA space requirement per piece of equipment is half the AoA's.)

Producing ≥80 ppy in SRPPF requires 133 pieces of equipment in total, vs. 201 pieces in the "30/50" split-production strategy that NNSA eliminated in 2017 but then chose in 2018, despite its roughly doubled cost (AoA, p. 46).

Although the capital cost of SRPPF is higher than at LANL, the per-pit cost at LANL (even excluding sunk costs through 2024), will be roughly 4 times as much as at SRS due to LANL's much higher operating costs and lower capacity. Investing in the temporary LANL pit production capability roughly doubles NNSA's pit production start-up costs over that of the enduring, fully-adequate SRPPF alone. No NNSA study supports the present two-site strategy.