Plutonium (Pu) Modernization Spending, Actual and Proposed by Site, $M, from FY23 CBR, 5/6/22, Los Alamos Study Group

	Prior years	2019	2020	2021	2022 enacted	Through 2022	2023 Request	FYNSP 2024	FYNSP 2025	FYNSP 2026	FYNSP 2027	Total 2023-2027	2028	Total 2023-2028	Total through 2028	LASG, 5 outyears	Total through 2033	Notes
Los Alamos National Laboratory (LANL) Pu Operations (pp.); from 2029 on, $1,000 M indefinitely		271.6	287.0	610.6	660.4	1,829.6	767.4	814.5	820.9	873.8	906.9	4183.5	950.0	5,133.5	6,963.1	5,000.0	11,963.1	
LANL Plutonium Pit Production Project (LAP4), 21-D-512 (pp.)		5.0	55.0	226.0	350.0	636.0	588.2	670	660	625	365	2,908.2	54.3	2962.5	3598.5	-	3,598.5	FY23 CBR; high-end CD-1 est.
Subtotal LANL Pu Modernization		276.6	342.0	836.6	1010.4	2,465.6	1355.6	1484.5	1480.9	1498.8	1271.9	7091.7	**1,004.3**	8,096.0	10,561.6	**5,000.0**	15,561.6	13,096.00 FY23-33
Major supporting infrastructure not included in the above:																		
LANL Chemistry Metallurgy Research Replacement (CMRR) Project, 04-D-125)	1,713.00	237.0	168.4	169.4	138.1	2,425.9	162	248.9	167.9	0	0	578.8	0	578.80	2,778.60	0.0	2,778.60	FY23 CBR
LANL Transuranic (TRU) Liquid Waste Facility, 07-D-220-04 (pp.)	93.3	1.0	1.7	37.7	33	166.7	28.8	15.2	4.6	0	0	48.6	0	48.60	215.30	0.0	215.30	FY23 CBR
LANL TA-55 Reinvestment Phase III (TRP-III), 15-D-302 (pp.)	43.7	1.8	0.0	32.0	32.0	109.5	41	41.8	40.2	2.5	0	125.5	0	125.50	235.00	0.0	235.10	FY23 CBR
Subtotal LANL Pu Modernization, incl. line item construction listed	1850	516.4	512.1	1,075.7	1213.5	5,167.7	1587.4	1790.4	1693.6	1501.3	1271.9	7844.6	**1,004.3**	8,848.9	13,790.5	**5,000.0**	**18,790.56**	**13,622.9 FY23-33**
Pu-supporting small capital projects not included above (omitted for now)						-						0		0.0	0.0		0	
Pu-supporting pro-rata site-wide infrastructure (not included)						-						0		0.0	0.0		0	
Pu-supporting, non-Pu project and program costs (not included)						-						0		0.0	0.0		0	
Pu-supporting line item construction (see below); 2028 on, assume $50M/year; omits any Sigma Replacement or Radiography complex (see SSMP), possible Pit Disassembly and Processing ($1.0-$3.4 B), or PF-4 replacement/augmentation					0	-	48.5	48.5	48.5	48.7	48.7	242.9	50	292.9	292.9	300	592.9	
Total LANL Pu Modernization	1,850.0	516.4	512.1	1,075.7	1,213.5	5,167.7	1635.9	1838.9	1742.1	1550	1320.6	8087.5	**1,054.3**	9,141.8	14,083.4	**5,300.0**	**19,383.5**	**14,215.8 FY23-33**
Savannah River Site (SRS) Pu Operations (pp.); 2028 - 2033, average $340 M year		76.4	410.5	200.0	128	814.9	58.3	70.0	81.6	120	170	499.9	210.0	709.9	1,524.8	1,700.0	3,224.8	
Savannah River Plutonium Processing Facility (SRPPF) Design & Construction, 21-D-511 (pp.). Completed by 2033.		70.0	246.0	241.9	475	1,032.9	700.0	858.2	1,014.5	1,051.3	952.0	4576	1,000.0	5,576.0	6,608.9	4,491.1	11,100.0	FY23 CBR, = high-end CD-1 est.
Total SRS Pu Modernization		146.4	656.5	441.9	603.0	1,847.8	758.3	928.2	1,096.1	1,171.3	1,122.0	5075.9	1,210.0	6,285.9	8,133.7	6,191.1	14,324.8	**12,477.0 FY23-33**
Enterprise plutonium support, multiple sites, (pp.); 2029 and after, $100 M/year		53.7	79.2	90.8	107.1	330.8	89.0	87.9	94.8	90.4	91.3	453.4	95.0	548.4	879.2	**500.0**	1,379.2	**1,048.4 FY23-33**
Total Complex-wide Pu Modernization	1850	716.5	1,247.8	1,608.4	1,923.6	7,346.3	2,483.2	2,855.0	2,933.0	2,811.7	2,533.9	13616.8	**2,359.3**	15,976.1	23,096.3	**11,991.1**	35,087.5	**27,741.2 FY23-33**

Assumed pits	$M/pit, LANL	Assumes no interruptions, no new PF-4 or modules
121	**116.4**	Through FY28, 30 ppy
121	**75.6**	FY23-FY28, 30 ppy
271	**71.5**	Through 2033, 30 ppy
271	**52.5**	FY23-FY33, 30 ppy
451	**56.9**	Through FY39, 30 ppy, $1,050 M/yr ops + capital
451	**45.5**	FY23-FY39, 30 ppy, no big new facilities (LOL)
451	**67.7**	FY23-FY39 + $10 B new LANL facility(ies)
	35	Marginal cost, 30 ppy, $1.05 B/yr
		$M/pit, other sites, add to main site costs
	5.1	Other sites' pit costs through FY33, 30 ppy
	3.9	Other sites' pit costs FY23-FY33,30 ppy
	3.3	Marginal pit cost, other sites, 30 ppy
		$M/pit, SRS, add in other sites' costs to these costs
300	**57.7**	SRS only 2034-2039, first 300 pits, 50 ppy
800	**27.9**	SRS only 2034-2049, first 800 pits, 50 ppy
1,280	**17.4**	SRS only 2034-2049, first 1280 pits, 80 ppy
1,600	**14.0**	SRS only 2034-2049, first 1600 pits, 100 ppy
1,000	**22.3**	SRS only 2040-2049, first 1000 pits, 100 ppy
	6.3	Marginal cost, 80 ppy, $500 M/year
	10	Marginal cost, 50 ppy, $500 M/year
	5	Marginal cost, 100 ppy, $500 M/year

Enterprise Plutonium Support (FY21 CBR numbers only at present)			
KCNSC	3.4	7.4	8.0
LLNL	31.2	36.8	51.4
National Energy Technology Lab	0.6	2.3	2.0
NNSS	5.1	8.9	13.6
NNSA Albuquerque Complex	7.5	7.2	0.4
Total	47.8	62.6	75.4

Worksheet	**$M**	
FY20 through FY30, LANL	**14,043.1**	**3,956.9 less than LANL estimate in the "Pu Integrated Strategy" ($18 billion).**
FY20 through FY30, SRS	**10,283.7**	
FY20 through FY30, other sites	**1,025.5**	
Total, all sites, FY20 through FY30	**25,352.3**	

See p. 13 AoA for average ppy for each production level. At http://lasg.org/MPF2/documents/NNSA_PuPitAoA_Oct2017_redacted.pdf

	pre-FY23 sunk costs		NNSA requested for FY23 and estimates from FYNSP and PDSs
	subtotals		NNSA CD-1 estimates
red numbers	LASG estimates		Totals including LASG estimates

Pu-supporting LANL line item construction outside the Pu Modernization Program, costs as shown above:

23-D-518. Plutonium Modernization Operations & Waste Management Office Building
24-D-XXX, Plutonium Production Building
25-D-XXX, Plutonium Mission Safety & Quality Building
26-D-XXX, Plutonium Program Accounting Building
27-D-XXX, Plutonium Engineering Support Building