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Notes for Tables 6.1, 6.1a, 6.1b and 6.1c

- 1) Numbers may not total due to rounding
- 2) Column L represents the Unit 1 costs from Column A, plus 1/3 of the shared facilities costs totals from columns D through J
- 3) Column M represents the Unit 2 costs from Column B, plus 1/3 of the shared facilities costs totals from columns D through J
- 4) Column N represents the Unit 3 costs from Column C, plus 1/3 of the shared facilities costs totals from columns D through J

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7. REFERENCES

1. NRC issued Operating Licenses; NPF-41, NPF-51, NPF-74 through Amendment No. 180 issued September 29, 2010.
2. U.S. Code of Federal Regulations, Title 10, Parts 30, 40, 50, 51, 70 and 72, "General Requirements for Decommissioning Nuclear Facilities," Nuclear Regulatory Commission, Federal Register Volume 53, Number 123 (p 24018 et seq.), June 27, 1988. [\[Open\]](#)
3. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.159, "Assuring the Availability of Funds for Decommissioning Nuclear Reactors," Rev. 2, October 2011. [\[Open\]](#)
4. "Regulatory Improvement for Power Reactors Transitioning to Decommissioning," NRC Regulatory Basis Document, Docket ID NRC-2015-0070, RIN Number 3150-AJ59, November 20, 2017 [\[Open\]](#)
5. U.S. Code of Federal Regulations, Title 10, Parts 2, 50 and 51, "Decommissioning of Nuclear Power Reactors," Nuclear Regulatory Commission, Federal Register Volume 61 (p 39278 et seq.), July 29, 1996. [\[Open\]](#)
6. U.S. Code of Federal Regulations, Title 10, Parts 20, 30, 40, 50, 70, and 72, "Decommissioning Planning," Nuclear Regulatory Commission, Federal Register Volume 76, (p 35512 et seq.), June 17, 2011. [\[Open\]](#)
7. "Nuclear Waste Policy Act of 1982," 42 U.S. Code 10101, et seq. [\[Open\]](#)
8. Charter of the Blue Ribbon Commission on America's Nuclear Future, "Objectives and Scope of Activities," [\[Open\]](#)
9. "Blue Ribbon Commission on America's Nuclear Future, Report to the Secretary of Energy," p. 27, 32, January 2012 [\[Open\]](#)
10. "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste," U.S. DOE, January 11, 2013. [\[Open\]](#)
11. United States Court of Appeals for the District of Columbia Circuit, In Re: Aiken County, Et Al., August 2013, [\[Open\]](#)

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7. REFERENCES
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12. In 2008, the DOE issued a report to Congress in which it concluded that it did not have authority, under present law, to accept spent nuclear fuel for interim storage from decommissioned commercial nuclear power reactor sites. However, the Blue Ribbon Commission, in its final report, noted that: “[A]ccepting spent fuel according to the OFF [Oldest Fuel First] priority ranking instead of giving priority to shutdown reactor sites could greatly reduce the cost savings that could be achieved through consolidated storage if priority could be given to accepting spent fuel from shutdown reactor sites before accepting fuel from still-operating plants. The magnitude of the cost savings that could be achieved by giving priority to shutdown sites appears to be large enough (i.e., in the billions of dollars) to warrant DOE exercising its right under the Standard Contract to move this fuel first.” For planning purposes only, the estimates do not assume that PVNGS, as permanently shutdown units, will receive priority; the fuel removal schedule assumed in this estimate is based upon DOE acceptance of fuel according to the “Oldest Fuel First” priority ranking. The OA will seek the most expeditious means of removing fuel from the site when DOE commences performance. [\[Open\]](#)
13. U.S. Code of Federal Regulations, Title 10, Part 50, “Domestic Licensing of Production and Utilization Facilities,” Subpart 54 (bb), “Conditions of Licenses.” [\[Open\]](#)
14. U.S. Code of Federal Regulations, Title 10, Part 72, Subpart K, “General License for Storage of Spent Fuel at Power Reactor Sites.” [\[Open\]](#)
15. “Low-Level Radioactive Waste Policy,” Public Law 96-573, 1980. [\[Open\]](#)
16. “Low-Level Radioactive Waste Policy Amendments Act of 1985,” Public Law 99-240, January 15, 1986. [\[Open\]](#)
17. U.S. Code of Federal Regulations, Title 10, Part 61, “Licensing Requirements for Land Disposal of Radioactive Waste” [\[Open\]](#)
18. U.S. Code of Federal Regulations, Title 10, Part 20, Subpart E, “Radiological Criteria for License Termination,” Federal Register, Volume 62, Number 139 (p 39058 et seq.), July 21, 1997. [\[Open\]](#)

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19. "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination," EPA Memorandum OSWER No. 9200.4-18, August 22, 1997. [\[Open\]](#)
20. U.S. Code of Federal Regulations, Title 40, Part 141.66, "Maximum contaminant levels for radionuclides." [\[Open\]](#)
21. "Memorandum of Understanding Between the Environmental Protection Agency and the Nuclear Regulatory Commission: Consultation and Finality on Decommissioning and Decontamination of Contaminated Sites," OSWER 9295.8-06a, October 9, 2002. [\[Open\]](#)
22. "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)," NUREG-1575, Rev. 1, EPA 402-R-97-016, Rev. 1, August 2000. [\[Open\]](#)
23. T.S. LaGuardia et al., "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," AIF/NESP-036, May 1986. [\[Open\]](#)
24. W.J. Manion and T.S. LaGuardia, "Decommissioning Handbook," U.S. Department of Energy, DOE/EV/10128-1, November 1980. [\[Open\]](#)
25. "Building Construction Cost Data 2019," RSMeans (From the Gordian Group), Rockland, Massachusetts. [\[Open\]](#)
26. "Decommissioning of Nuclear Power Reactors," Regulatory Guide 1.184, Nuclear Regulatory Commission, October 2013 [\[Open\]](#)
27. "Standard Format and Content of Decommissioning Cost Estimates for Nuclear Power Reactors," Regulatory Guide 1.202, Nuclear Regulatory Commission, February 2005 [\[Open\]](#)
28. Project and Cost Engineers' Handbook, Second Edition, p. 239, American Association of Cost Engineers, Marcel Dekker, Inc., New York, New York, 1984.
29. "Technical Position Paper for Establishing an Appropriate Contingency Factor for Inclusion in the Decommissioning Revenue Requirements", Study Number: DECON-POS-H002, Revision A, Status: Preliminary. [\[Open\]](#)

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7. REFERENCES

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30. Public Utility Commission of Texas' Substantive Rule §25.231(b)(1)(F)(i). [\[Open\]](#)
31. U.S. Department of Transportation, Title 49 of the Code of Federal Regulations, "Transportation," Parts 173 through 178. [\[Open\]](#)
32. Tri-State Motor Transit Company, Radioactive Materials Tariffs, TSMT 7000, January 2019. [\[Open\]](#)
33. J.C. Evans et al., "Long-Lived Activation Products in Reactor Materials" NUREG/CR-3474, Pacific Northwest Laboratory for the Nuclear Regulatory Commission. August 1984. [\[Open\]](#)
34. R.I. Smith, G.J. Konzek, W.E. Kennedy, Jr., "Technology, Safety and Costs of Decommissioning a Reference Pressurized Water Reactor Power Station," NUREG/CR-0130 and addenda, Pacific Northwest Laboratory for the Nuclear Regulatory Commission. June 1978. [\[Open Main Report\]](#) [\[Open Appendices\]](#)
35. H.D. Oak, et al., "Technology, Safety and Costs of Decommissioning a Reference Boiling Water Reactor Power Station," NUREG/CR-0672 and addenda, Pacific Northwest Laboratory for the Nuclear Regulatory Commission. June 1980. [\[Open Main Report\]](#) [\[Open Appendices\]](#)
36. "Microsoft Project Professional," Microsoft Corporation, Redmond, WA.
37. "Atomic Energy Act of 1954," (68 Stat. 919). [\[Open\]](#)

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2021 TEXAS RATE CASE FILING
SCHEDULE H-10: NUCLEAR DECOMMISSIONING COST STUDIES
SPONSOR: RODERICK W. KNIGHT
PREPARER: RODERICK W. KNIGHT
FOR TEST YEAR ENDED DECEMBER 31, 2020

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APPENDIX A
SUMMARY OF 1998 STUDY
COST REDUCTION ALTERNATIVES

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**Excerpt from 1998 Palo Verde Decommissioning Cost Study - Executive
Summary:**

**EXECUTIVE SUMMARY APPENDIX
COST ALTERNATIVE STUDY**

A study prepared for the Operating Agent (OA) of the Palo Verde Nuclear Generating Station (PVNGS) by TLG Services, Inc. (TLG), evaluates the costs associated with decommissioning cost reduction alternatives. A baseline estimate for Unit 1 of PVNGS using the DECON decommissioning alternative was prepared for use as a comparison of cost savings. The following is a summary of the ten alternatives evaluated. A breakdown of cost savings and associated comments is reported in the Summary Table herein.

1. Removal of the reactor vessel and internals as an integrated package, transported for intact disposal.
2. Use of a second shift in the decontamination and dismantling of PVNGS, assessing the ultimate impact on the decommissioning schedule and associated costs.
3. Use of alternative disposal sites for clean waste. This evaluation will consider expanding the current on-site waste disposal facility. Each alternative will be ranked based on feasibility and overall cost.
4. Evaluation of alternative burial sites for LLW. This evaluation will consider development of an on-site, Part 61 licensed facility. Each alternative will be ranked based on feasibility and overall cost.
5. Incremental decontamination and dismantling costs of a single unit with secondary-side contamination at two levels: (1) Current Unit 1, and (2) Unit 2 immediately after 1989 tube rupture event.
6. Establishment of an on-site LLW decontamination, processing, and salvage facility. Three cases will be established for a 70%, 80%, and 90% reduction in the volume of LLW that will require controlled disposal.
7. Disposal of all LLW at the Chem-Nuclear Systems, Inc., Barnwell, S.C., disposal facility. Costs will be based on the November 1, 1996, CNSI instituted weight-based cost schedule.

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8. The assumption of responsibility for the management of all decommissioning operations by the OA (currently assumed to be performed by a DOC).
9. Based on item 8 above, evaluation of decommissioning planning being initiated early, so as to have the required approvals at or shortly after (3-6 months) final shutdown. (Decontamination and dismantling would begin as soon as possible for Unit 1. Schedules for Units 2 and 3 would follow so as to maximize the use of rented, leased, or purchased equipment.)
10. Isolation of the fuel building from the remainder of the facility (electrical, thermal, and hydraulic) so as not to impede D&D operations. This will include alternatives to monitor and control the fuel building activities from other than the current location.

The alternatives were evaluated and grouped into three categories to better define their cost impact.

Cost Bounding: These alternatives change the base scope of the study by adding assumptions that currently should be considered, and further bound the cost estimate by identifying changes that will add to the scope or further define the level of detail required.

Cost Reductions: Changes to the base case that reduce the overall cost of the decommissioning project. This category can be further defined by cost reductions that can occur under current regulatory requirements and those which would require modifications to current requirements.

Not Cost-Effective: Those alternatives that showed no cost benefit, or that increase the base cost.

After reviewing each alternative and evaluating the cost impacts and savings to the original decommissioning cost estimate, TLG has developed a list of three recommendations for inclusion into the base case study.

TLG recommends three of the cost reduction alternatives. Alternative #8, the OA management of the decommissioning project (serving as DOC) is the highest ranked alternative for cost reduction. Of all the current options, it is the most feasible and easiest to adopt and offers a potential cost savings of \$18.5 million. The next two recommendations are waste-related. Alternative # 3, the on-site disposition of clean construction debris rather than shipment to a local vendor would result in substantial savings of approximately \$7.6 million. Similarly, Alternative # 6 the on-

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site processing of low-level waste is a viable alternative. A review of state-of-the-art processes in processing and volume reduction is recommended; TLG feels the potential of 90% volume reduction is not unrealistic and should be investigated prior to the planning of such a facility. Although even 70% reduction could yield \$.9 million dollars in savings, a 90% reduction could result in savings of up to \$5.5 million.

TLG also recommends further investigation into one of the cost savings alternatives that would require regulatory revisions for the OA -- that being to create an on-site facility for the storage of low-level waste. While the cost for such a facility might not be economical for a single unit, the money to be saved with three units would be substantial. The site's remote location, its stable profile as a nuclear area, and the fact that Arizona is the next host state for the Southwest Compact all contribute to the potential for a successful and profitable venture. TLG recommends that the OA consider a feasibility study to determine the technical and political viability of obtaining a Part 61 license. A feasibility study would not only examine the financial aspects (startup, operation, maintenance) of such a venture, but would also consider such environmental aspects as community involvement and licensing issues/requirements.

Two cost reduction alternatives were approved by the OA to be utilized in the development of this cost study:

Alternative # 8 in which the OA will act as Decommissioning Operations Contractor (DOC), providing contract management of the decommissioning labor force and subcontractors, directing all decontamination and dismantling activities. Other activities that are included but not limited to, are engineering services for such items as writing activity specifications, detailed procedures, detailed activation analyses, and structural modifications.

Alternative # 3 in which an on-site facility will be used for clean construction debris disposal is the second alternative utilized in the study. Environmental closure requirements will need to be defined before selection of the on-site location is determined.

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SUMMARY TABLE: COST REDUCTION ALTERNATIVES

(Millions of 1998 Dollars)

Alternative	Category	Potential Cost Impact/Savings	TLG Rec	Comments
1 One-Piece Vessel Lift	C	(35.2)		Regulation revisions required, several utilities submitting similar scenario. Until NRC approves scenario, alternative remains unlikely.
2 Alternative Shift Schedule	NC	3.0		Fuel storage restricts schedule reduction, savings are offset by cost of second shift operations.
3 Alternative Disposal Site - Clean fill	C	(7.6)	Yes	Existing voids created by Evaporator Ponds and Water Make-up utilized for clean fill disposal, acceptable per Arizona Revised Statute.
4 Alternative Burial Site- On-site Part 61 Licensed LLW Facility	C	(220)	Yes *	Regulation revision required, on-site development highly speculative, greatest potentials for savings with highest risk
5 Secondary-Side Contamination	B	20.7	Yes	Major cost impact, should be added to cost estimate. Further characterization should be performed to verify extent of contamination.
6 On-Site Recycling				
-70% Vol. Reduction	C	(0.9)	Yes *	On-site facility capital and operating cost (70% reduction) is within 1% of off-site vendor cost. Due to responsibilities assumed by vendor and potential of achieving similar savings, recommend further investigation. New technologies yet to be proven must be evaluated as they become available.
-80% Vol. Reduction		(7.0)		
-90% Vol. Reduction		(5.5)		
7 Weight-Based Burial	B	(3.7)	*	Savings less than 1% of total decommissioning cost to utilize Barnwell. Recommend cost estimate to assume Southwest Compact burial will be available.
8 OA Assumes DOC Responsibilities	C	(18.5)	Yes	Most feasible and easiest to adopt. Minimal risk with good record indicated at other utilities.
9 Pre-Planning	NC	(1.2)		Cost savings are offset by delay in fuel storage pool decommissioning. \$4.2 million savings offset by \$3 million additional cost due to lengthening of schedule caused by fuel storage delay. Savings in period not worth increase in schedule.
10 Fuel Building Isolation	B	0		Base estimate allocates \$2.1 million (21,000 man-hours) for license and related document modifications. This is equal to several current utility allocations. Including building modification cost of \$1.1 million, base estimate allocates \$3.2 million. No savings are indicated.

Legend: * Further investigation required.
B = Cost Bounding C = Cost Reduction NC = Not Cost-Effective

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APPENDIX B

SCHEDULE OF ANNUAL EXPENDITURES

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TABLE B-1
SCHEDULE OF ANNUAL EXPENDITURES
DECON, UNIT 1
 (thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2040	363	0	0	0	0	363
2041	619	0	0	0	0	619
2042	619	0	0	0	0	619
2043	3,501	0	0	0	0	3,501
2044	5,550	0	0	0	0	5,550
2045	60,536	1,142	1,567	13	4,408	67,666
2046	84,200	14,005	4,000	11,408	21,967	135,581
2047	66,378	29,431	2,539	27,795	7,976	134,118
2048	65,719	28,558	2,515	27,402	7,941	132,135
2049	51,766	12,858	2,004	19,646	6,992	93,266
2050	51,766	12,858	2,004	19,646	6,992	93,266
2051	35,021	9,492	1,347	15,448	6,030	67,338
2052	5,167	210	0	4	2,307	7,688
2053	5,153	210	0	4	2,301	7,667
2054	18,624	1,161	332	11	2,034	22,163
2055	14,691	9,198	305	2	603	24,800
2056	12,712	10,466	268	0	394	23,839
2057	382	315	8	0	12	716
2058-96	0	0	0	0	0	0
2097	0	3,227	0	0	29,260	32,486
Total	482,769	133,129	16,889	121,378	99,218	853,384

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TABLE B-2
SCHEDULE OF ANNUAL EXPENDITURES
DECON, UNIT 2
 (thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2046	82,381	2,122	1,911	675	5,727	92,816
2047	65,827	29,184	3,415	33,993	17,045	149,463
2048	69,354	30,951	2,545	37,350	8,278	148,479
2049	56,028	17,893	2,186	23,422	7,092	106,620
2050	49,268	11,218	2,004	16,309	6,493	85,292
2051	49,268	11,218	2,004	16,309	6,493	85,292
2052	29,444	7,675	1,138	12,361	5,268	55,886
2053	5,349	262	0	4	2,174	7,789
2054	18,699	1,180	332	11	1,849	22,071
2055	14,644	9,156	305	2	572	24,680
2056	12,657	10,417	268	0	394	23,735
2057	380	313	8	0	12	713
2058-96	0	0	0	0	0	0
2097	0	3,227	0	0	29,260	32,486
Total	453,299	134,816	16,117	140,435	90,656	835,323

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TABLE B-3
SCHEDULE OF ANNUAL EXPENDITURES
DECON, UNIT 3
 (thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2047	12,324	227	271	2	713	13,538
2048	95,352	12,959	3,566	12,753	17,022	141,652
2049	69,361	30,651	2,539	36,513	8,114	147,176
2050	68,834	29,346	2,500	35,246	8,004	143,930
2051	61,962	12,332	2,004	18,728	6,580	101,605
2052	62,131	12,366	2,010	18,779	6,598	101,884
2053	59,856	12,041	1,909	18,368	6,398	98,573
2054	39,607	4,790	736	5,749	2,775	53,657
2055	26,058	15,556	305	2	2,127	44,048
2056	24,033	17,866	268	0	2,229	44,395
2057	722	537	8	0	67	1,334
2058-96	0	0	0	0	0	0
2097	0	3,227	0	0	29,260	32,486
Total	520,239	151,895	16,117	146,141	89,887	924,279

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TABLE B-4
SCHEDULE OF ANNUAL EXPENDITURES
STORED STEAM GENERATORS & STORAGE FACILITY
 (thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2045	399	196	0	0	0	594
2046	3,371	10,007	0	12,597	2,072	28,047
2047	3,371	10,007	0	12,597	2,072	28,047
2048	0	0	0	0	0	0
2049	0	0	0	0	0	0
2050	0	0	0	0	0	0
2051	0	0	0	0	0	0
2052	0	0	0	0	0	0
2053	0	0	0	0	0	0
2054	0	0	0	0	0	0
2055	78	308	0	0	0	386
Total	7,219	20,518	0	25,194	4,144	57,074

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TABLE B-5
SCHEDULE OF ANNUAL EXPENDITURES
WATER RECLAMATION FACILITY
 (thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2047	1,603	293	0	0	0	1,896
2048	809	65	0	0	0	874
2049	809	65	0	0	0	874
2050	809	65	0	0	0	874
2051	809	65	0	0	0	874
2052	809	65	0	0	0	874
2053	809	65	0	0	0	874
2054	809	65	0	0	0	874
2055	946	2,069	0	0	0	3,014
Total	8,208	2,819	0	0	0	11,027

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TABLE B-6
SCHEDULE OF ANNUAL EXPENDITURES
WATER RECLAMATION SUPPLY SYSTEM PIPELINE & STRUCTURES
 (thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2047	425	293	0	0	0	719
2048	6,981	563	0	0	0	7,544
2049	6,981	563	0	0	0	7,544
2050	6,981	563	0	0	0	7,544
2051	6,981	563	0	0	0	7,544
2052	6,981	563	0	0	0	7,544
2053	6,981	563	0	0	0	7,544
2054	6,981	563	0	0	0	7,544
2055	156	341	0	0	0	497
Total	49,446	4,578	0	0	0	54,024

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TABLE B-7
SCHEDULE OF ANNUAL EXPENDITURES
EVAPORATION PONDS
 (thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2045	12,476	10,195	0	0	0	22,670
2046	0	0	0	0	0	0
2047	0	0	0	0	0	0
2048	2,998	2,998	0	0	0	5,996
2049	2,998	2,998	0	0	0	5,996
2050	2,998	2,998	0	0	0	5,996
2051	2,998	2,998	0	0	0	5,996
2052	2,998	2,998	0	0	0	5,996
2053	2,998	2,998	0	0	0	5,996
2054	2,998	2,998	0	0	0	5,996
2055	684	684	0	0	0	1,369
Total	34,145	31,864	0	0	0	66,009

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TABLE B-8
SCHEDULE OF ANNUAL EXPENDITURES
MAKE-UP WATER RESERVOIRS
 (thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2045	0	0	0	0	0	0
2046	0	0	0	0	0	0
2047	253	0	0	0	0	253
2048	333	333	0	0	0	666
2049	333	333	0	0	0	666
2050	333	333	0	0	0	666
2051	333	333	0	0	0	666
2052	333	333	0	0	0	666
2053	333	333	0	0	0	666
2054	333	333	0	0	0	666
2055	76	76	0	0	0	152
Total	2,661	2,408	-	-	-	5,069

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TABLE B-9
SCHEDULE OF ANNUAL EXPENDITURES
DECON, ISFSI
(thousands, 2019 dollars)

Year	ISFSI Operations (Each Unit's Shut Down through End of DOE ISFSI Pickup)	ISFSI License Termination	ISFSI Demolition and Site Restoration	Total
2047	1,288	-	-	1,288
2048	4,510	-	-	4,510
2049	3,221	-	-	3,221
2050	4,832	-	-	4,832
2051	3,221	-	-	3,221
2052	3,221	-	-	3,221
2053	3,221	-	-	3,221
2054	2,255	-	-	2,255
2055	2,255	-	-	2,255
2056	2,255	-	-	2,255
2057	2,255	-	-	2,255
2058	1,933	-	-	1,933
2059	2,255	-	-	2,255
2060	2,255	-	-	2,255
2061	2,255	-	-	2,255
2062	2,255	-	-	2,255
2063	2,255	-	-	2,255
2064	2,255	-	-	2,255
2065	2,255	-	-	2,255
2066	1,933	-	-	1,933
2067	2,255	-	-	2,255
2068	2,255	-	-	2,255
2069	2,255	-	-	2,255
2070	2,255	-	-	2,255
2071	2,255	-	-	2,255
2072	2,255	-	-	2,255
2073	2,255	-	-	2,255
2074	1,933	-	-	1,933

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TABLE B-9 (continued)
SCHEDULE OF ANNUAL EXPENDITURES
DECON, ISFSI
(thousands, 2019 dollars)

Year	ISFSI Operations (Each Unit's Shut Down through End of DOE ISFSI Pickup)	ISFSI License Termination	ISFSI Demolition and Site Restoration	Total
2075	2,255	-	-	2,255
2076	2,255	-	-	2,255
2077	2,255	-	-	2,255
2078	2,255	-	-	2,255
2079	2,255	-	-	2,255
2080	2,255	-	-	2,255
2081	2,255	-	-	2,255
2082	1,933	-	-	1,933
2083	2,255	-	-	2,255
2084	2,255	-	-	2,255
2085	2,255	-	-	2,255
2086	2,255	-	-	2,255
2087	2,255	-	-	2,255
2088	2,255	-	-	2,255
2089	2,255	-	-	2,255
2090	1,933	-	-	1,933
2091	2,255	-	-	2,255
2092	2,255	-	-	2,255
2093	2,255	-	-	2,255
2094	2,255	-	-	2,255
2095	1,288	-	-	1,288
2096	3,865	-	-	3,865
2097	1,933	-	-	1,933
2098	-	15,848	8,706	24,554
2099	-	-	-	-
Total	121,440	15,848	8,706	145,994

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TABLE B-10
SCHEDULE OF ANNUAL EXPENDITURES
STORED REACTOR CLOSURE HEADS & STORAGE FACILITY
 (thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2045	393	293	0	0	0	686
2046	138	138	0	1,024	1,014	2,314
2047	138	138	0	1,024	1,014	2,314
2048						0
2049						0
2050						0
2051						0
2052						0
2053						0
2054	54	36	0	0	0	90
2055	0	0	0	0	0	0
Total	723	606	0	2,048	2,028	5,405

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APPENDIX C
DETAILED COST ANALYSIS
DECON

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Table C-1
Palo Verde NGS Unit 1
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	OTCC Cu. Feet	Burial / Processed Mt., Lbs.	Craft Manhours	Utility and Construction Manhours
PERIOD 0a - Pre-Shutdown Early Planning																					
Period 0a Direct Decommissioning Activities																					
Period 0a Collateral Costs																					
0a 3	Subtotal Period 0a Collateral Costs																				
Period 0a Period Dependent Costs																					
0a 4 1	Insurance																				
0a 4 2	Property taxes																				
0a 4 3	Plant energy budget																				
0a 4 4	Utility Staff Cost																				
0a 4	Subtotal Period 0a Period Dependent Costs							1,616	242	1,858	1,858										20,280
0a 0	TOTAL PERIOD 0a COST							1,616	242	1,858	1,858										20,280
PERIOD 0b - Pre-Shutdown Preparations																					
Period 0b Direct Decommissioning Activities																					
0b 1 1	Prepare preliminary decommissioning cost							98	15	114	114										1,300
0b 1 2	Notification of Cessation of Operations																				
0b 1 3	Remove fuel & source material																				
0b 1 4	Notification of Permanent Defueling																				
0b 1 5	Deactivate plant systems & process waste																				
0b 1 6	Prepare and submit PSDAR							152	23	175	175										2,900
0b 1 7	Review plant dwgs & specs							149	52	402	402										1,600
0b 1 8	Perform detailed rad survey							76	11	87	87										1,000
0b 1 9	Estimate by product inventory							76	11	87	87										1,000
0b 1 10	End product description							99	15	114	114										1,300
0b 1 11	Detailed by-product inventory							570	85	655	655										7,500
0b 1 12	Define major work sequence							256	35	271	271										3,100
0b 1 13	Perform SER and EA							570	85	655	655										7,500
0b 1 14	Prepare submittal Defueling Technical Specifications							380	57	437	437										5,000
0b 1 15	Perform Site-Specific Cost Study							76	11	87	87										1,000
0b 1 16	Prepare submittal Irradiated Fuel Management Plan																				
Activity Specifications																					
0b 1 17 1	Plant & temporary facilities							374	56	430	387		43								4,920
0b 1 17 2	Plant systems							317	47	364	328		36								4,167
0b 1 17 3	WSSS Decontamination Flush							38	6	44	44										500
0b 1 17 4	Reactor internals							538	81	620	620										7,100
0b 1 17 5	Reactor vessel							494	74	568	568										6,500
0b 1 17 6	Biological shield							38	6	44	44										500
0b 1 17 7	Steam generators							237	36	273	273										3,120
0b 1 17 8	Reinforced concrete							122	18	140	70		70								1,600
0b 1 17 9	Main Turbine							30	5	35	-		35								400
0b 1 17 10	Main Condensers							30	5	35	-		35								400
0b 1 17 11	Plant structures & buildings							237	36	273	136		136								3,120
0b 1 17 12	Waste management							349	52	402	402										4,600
0b 1 17 13	Facility & site closeout							68	10	79	19		39								900
0b 1 17	Total							2,874	431	3,305	2,910		393								17,827
0b 1	Subtotal Period 0b Activity Costs							6,555	833	6,389	5,994		395								73,127
Period 0b Collateral Costs																					
0b 3	Subtotal Period 0b Collateral Costs																				
Period 0b Period Dependent Costs																					
0b 4 1	Insurance																				
0b 4 2	Property taxes																				
0b 4 3	Plant energy budget																				
0b 4 4	Utility Staff Cost																				
0b 4	Subtotal Period 0b Period-Dependent Costs							4,083	613	4,696	4,696										47,906
0b 0	TOTAL PERIOD 0b COST							9,639	1,446	11,085	10,690		395								121,032

Table C-1
Palo Verde NGS Unit 1
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	On Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Burial Volumes	Burial/Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
														Class A Cu Feet	Class B Cu Feet	Class C Cu Feet	GTCC Cu Feet	
PERIOD 1a - Shutdown through Transition																		
Period 1a Direct Decommissioning Activities																		
Planning & Site Preparations																		
1a 1.1	Prepare dewatering sequence							182	27	210	210							2 400
1a 1.2	Plant prep & temp moves							3 400	310	3 910	3 910							
1a 1.3	Design water clean up system							106	16	122	122							1 400
1a 1.4	Rigging/Coat Cont Equip/tooling/etc							2 400	360	2 760	2 760							
1a 1.5	Procure cask/liners & containers							93	14	107	107							1 230
1a 1	Subtotal Period 1a Activity Costs							6 182	927	7 109	7 109							5 030
Period 1a Additional Costs																		
1a 2.1	Staff Transition							39 981	5 892	45 173	45 173							
1a 2	Subtotal Period 1a Additional Costs							39 981	5 892	45 173	45 173							
Period 1a Collateral Costs																		
1a 3	Subtotal Period 1a Collateral Costs																	
Period 1a Period Dependent Costs																		
1a 4.1	Insurance							3 479	348	1 827	3 827							
1a 4.2	Property taxes							533	33	366	366							
1a 4.3	Health physics supplies		513						128	641	641							
1a 4.4	Heavy equipment rental		546						82	628	628							
1a 4.5	Disposal of DAW generated						18		7	46	46			610			12 190	20
1a 4.6	Plant energy budget			11	10			2 324	349	2 672	2 672							
1a 4.7	NRC Fees							1 098	110	1 208	1 208							
1a 4.8	Emergency Planning Fees							1 050	105	1 155		1 155						
1a 4.9	Spent Fuel Pool/DAM							828	124	952		952						
1a 4.10	Security Staff Cost							9 522	1 428	10 951	10 951							
1a 4.11	Utility Staff Cost							31 981	4 797	36 778	36 778							173 215
1a 4	Subtotal Period 1a Period Dependent Costs	1 059		11	10		18	50 614	7 511	59 223	57 116	2 107		610			12 190	20
1a 0	TOTAL PERIOD 1a COST	1 059		11	10		18	96 078	14 331	111 506	109 399	2 107		610			12 190	20
PERIOD 1b - Decommissioning Preparations																		
Period 1b Direct Decommissioning Activities																		
Detailed Work Procedures																		
1b 1.1.1	Plant systems							360	54	414	372		41					4 133
1b 1.1.2	NSSS Decontamination Flush							76	11	87	87							1 000
1b 1.1.3	Reactor internals							190	28	218	218							2 500
1b 1.1.4	Remaining buildings							103	15	118	29		88					1 350
1b 1.1.5	CRD cooling assembly							76	11	87	87							1 000
1b 1.1.6	CRD housings & ICI tubes							76	11	87	87							1 000
1b 1.1.7	Incore instrumentation							76	11	87	87							1 000
1b 1.1.8	Reactor vessel							276	41	317	317							3 630
1b 1.1.9	Facility closure							91	14	105	52		52					1 200
1b 1.1.10	Missile shields							74	5	79	39							450
1b 1.1.11	Biological shield							91	14	105	105							1 200
1b 1.1.12	Steam generators							349	52	402	402							4 600
1b 1.1.13	Reinforced concrete							76	11	87	44		44					1 000
1b 1.1.14	Main Turbine							119	18	136			136					1 560
1b 1.1.15	Main Condensers							119	18	136			136					1 560
1b 1.1.16	Auxiliary building							207	31	239	215							2 730
1b 1.1.17	Reactor building							207	31	239	215							2 730
1b 1.1	Total							2 525	379	2 904	2 358		548					33 243
1b 1.2	Decon primary loop	1 047							523	1 570	1 570							
1b 1	Subtotal Period 1b Activity Costs	1 047						2 525	902	4 475	3 928		548				1 067	33 243
Period 1b Additional Costs																		
1b 2.1	Spent Fuel Pool Isolation							12 325	1 849	14 174	14 174							
1b 2.2	Site Characterization							5 991	1 797	7 788	7 788							30 500
1b 2	Subtotal Period 1b Additional Costs							18 316	3 646	21 963	21 963							10 852

Table C-1
Palo Verde NGS Unit 1
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	On-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Burial Volumes Class A Cu Feet	Burial Volumes Class B Cu Feet	Burial Volumes Class C Cu Feet	OTUC Cu Feet	Burial/Processed Wt. Lbs.	Craft Manhours	Utility and Construction Manhours
Period 1b Collateral Costs																					
1b 3.1	Decon equipment	1,026							154	1,180	1,180										
1b 3.2	Staff relocation expenses																				
1b 3.3	Process decommissioning water waste	70		42	61		99		71	333	333				429				25,760	84	
1b 3.4	Process decommissioning chemical flush waste	4		125	378		7,130		1,854	9,490	9,490					1,329			141,637	249	
1b 3.5	Small tool allowance								0	2	2										
1b 3.6	Pipe cutting equipment		1,200						180	1,380	1,380										
1b 3.7	Decon rig	2,093							314	2,407	2,407										
1b 3	Subtotal Period 1b Collateral Costs	3,193	1,201	166	438		7,220		2,572	14,791	14,791				429	1,329			167,397	332	
Period 1b Period Dependent Costs																					
1b 4.1	Decon supplies	37							9	46	46										
1b 4.2	Insurance							1,744	174	1,919	1,919										
1b 4.3	Property taxes							167		184	184										
1b 4.4	Health physics supplies		290						72	362	362										
1b 4.5	Heavy equipment rental		274						41	315	315										
1b 4.6	Disposal of DAW generated			6	6		11		4	27	27										
1b 4.7	Plant energy budget							2,330	349	2,679	2,679				359				7,183	12	
1b 4.8	NRC Fees							305	31	336	336										
1b 4.9	Emergency Planning Fees							506	53	559											
1b 4.10	Spent Fuel Pool O&M							415	62	477		579									
1b 4.11	Security Staff Cost							4,774	716	5,490	5,490										86,837
1b 4.12	Utility Staff Cost							21,234	3,185	24,419	24,419										278,441
1b 4	Subtotal Period 1b Period Dependent Costs	37	564	6	6		11	31,495	4,714	36,832	35,776	1,056			359				7,183	12	365,277
1b 0	TOTAL PERIOD 1b COST	4,276	1,765	173	444		7,231	52,337	11,835	78,061	76,458	1,056	546		789	1,329			174,580	31,911	409,372
PERIOD 1 TOTALS																					
PERIOD 2a - Large Component Removal																					
Period 2a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
2a 1.1.1	Reactor/Coolant Piping	142	137	90	17		387		210	943	943				1,789				124,853	6,464	
2a 1.1.2	Pressurizer Quench Tank	8	7	3	4		44		18	84	84				201				14,051	375	
2a 1.1.3	Reactor/Coolant Pumps & Motors	133	70	335	359		888		395	2,197	2,197				10,637				1,108,000	5,539	100
2a 1.1.4	Pressurizer	32	41	480	58		235		149	1,039	1,039				2,879				324,870	2,373	625
2a 1.1.5	Steam Generators	210	3,028	8,030	1,201		6,761		3,536	22,769	22,769				49,515				4,415,357	43,354	958
2a 1.1.6	CRD/Yard Outservice Structure Removal	132	536	414	80		1,032		462	2,457	2,457				9,222				333,327	10,581	
2a 1.1.7	Reactor Vessel Interlocks	113	6,757	19,204	1,018		8,196	511	14,351	50,143	50,143				2,379	671	224		365,755	43,357	1,893
2a 1.1.8	Reactor Vessel	102	8,117	3,899	882		3,621	511	9,221	26,353	26,353				17,963				1,269,528	43,357	1,893
2a 1.1	Totals	872	18,495	32,414	3,680		21,161	1,021	28,342	105,985	105,985				93,585	673	224		7,955,740	157,799	5,459
Removal of Major Equipment																					
2a 1.2	Main Turbine/Generator		119						18	137			137							3,424	
2a 1.3	Main Condensers		1,281	1,223	699		12,914		3,776	19,893	19,893				65,575				4,165,812	35,411	
Cascading Costs from Clean Building Demolition																					
2a 1.4.1	Auxiliary Building		156						23	179	179									1,303	
2a 1.4.2	Containment		408						51	470	470									4,270	
2a 1.4.3	Main Steam Support Structure		31						5	36	36									274	
2a 1.4.4	Radiation Building		164						25	188	188									2,404	
2a 1.4.5	Fuel Building		70						10	80	80									632	
2a 1.4	Totals		829						124	953	953									8,883	
Disposal of Plant Systems																					
2a 1.5.1	Auxiliary Feedwater (AF)		39						6	45			45							1,309	
2a 1.5.2	Auxiliary Steam (AS)		44						7	51			51							1,500	
2a 1.5.3	Auxiliary Steam (AS) RCA		168	36	17		315		125	660	660				1,069				100,889	3,888	
2a 1.5.4	CT Makeup & Blowdown (TB)		16	3	2		3		14	71	74				185				11,785	451	
2a 1.5.5	Chemical Production (CC)		17						2	19										630	
2a 1.5.6	Chlorine Injection (CI)		8						8	64										1,820	
2a 1.5.7	Circulating Water (CW)		107						16	124										3,545	
2a 1.5.8	Condensate (CD)		191						29	219										6,510	
2a 1.5.9	Condensate Storage & Transfer (CT)		248						143	749	749				1,542				99,005	6,046	
2a 1.5.10	Condenser Air Removal (AR)		39		17				6	43										1,316	
2a 1.5.11	Demineralized Water (DW)		64						10	73										2,085	
2a 1.5.12	Diesel Fuel Oil & Transfer (DF)								7	56										1,492	
2a 1.5.13	Diesel Generator (DG)		58						9	67										1,862	
2a 1.5.14	FW Heater Exhaust Steam & Drains (ED)		442						66	508										14,838	
2a 1.5.15	Feedwater (FW)		93						14	107										3,094	

Table C-1
Palo Verde NGS Unit 1
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Class A Cu Feet	Class B Cu Feet	Class C Cu Feet	OTCR Cu Feet	Burial/Processed Wt. Lbs	Craft Manhours	Utility and Construction Manhours
Disposal of Plant Systems (Continued)																					
2a 1 5 16	Feedwater (FW) RCA		21	12			129		40	209	209				656				41 735	541	
2a 1 5 17	Generator Hydrogen & CO2 (G H)		3						0	3			3							102	
2a 1 5 18	Generator Seal Oil (SO)		7						1	8			8							236	
2a 1 5 19	HVAC - Misc Site Structures (HS)		16						2	18			18							530	
2a 1 5 20	Lube Oil (LO)		96						5	42			42							1 188	
2a 1 5 21	Lube Oil Sump & Tanks & Purification (OS)		32						5	36			36							1 038	
2a 1 5 22	Main Steam (S G)		233						35	268			268							8 032	
2a 1 5 23	Main Steam (S G) RCA		94	37	20		371		123	647	617				1 878				119 916	2 297	
2a 1 5 24	Main Turbine (MT)		370	572	332		6 127		1 731	9 133	9 133				31 043				1 976 452	10 489	
2a 1 5 25	Main Turbine Control Oil (CO)		6						1	6			6							176	
2a 1 5 26	Secondary Chemical Control (SC)		171						86	197			197							5 637	
2a 1 5 27	Stator Cooling (CE)		4						1	5			5							139	
2a 1 5 28	Steam Gen Feedwater Pump Turbine (FT)		184	72	38		701		234	1 229	1 229				3 530				226 098	4 717	
2a 1 5 29	Turbine Cooling Water (TC)		140						21	161			161							4 678	
2a 1 5 30	Turbine Steam Seal & Drain (GS)		109	19	10		184		77	400	400				927				59 477	2 731	
2a 1 5	Totals		1 060	785	442		8 171		2 768	15 225	13 100		2 125		41 531				2 635 358	92 914	
2a 1 6	Scaffolding in support of decommissioning		2 995	18	10		192		800	4 017	4 017				978				62 159	33 763	
2a 1	Subtotal Period 2a Activity Costs		872	26 779	34 441	4 832	42 438	1 021	35 828	146 211	143 948		2 263		201 470	673	224		14 819 070	332 194	5 469
Period 2a Collateral Costs																					
2a 3 1	Process decommissioning water waste		119		73	106	157		122	677	577				749				44 939	146	
2a 3 2	Process decommissioning chemical flush waste																				
2a 3 3	Small tool allowance		253						38	291	262		29								
2a 3	Subtotal Period 2a Collateral Costs		119	253	73	106	157		160	868	839		29		749				44 939	146	
Period 2a Period Dependent Costs																					
2a 4 1	Decon supplies		148						37	185	185										
2a 4 2	Insurance							1 693	189	1 883	1 883										
2a 4 3	Property taxes							676	68	744	744										
2a 4 4	Health physics supplies		2 642						660	3 302	3 302										
2a 4 5	Heavy equipment rental		4 332						650	4 982	4 982										
2a 4 6	Disposal of DAW generated			110	100		184		672	5 154	5 154				6 230				124 603	203	
2a 4 7	Plant energy budget							4 481	650	5 131	5 131										
2a 4 8	NRC Fees							1 123	112	1 236	1 236										
2a 4 9	Emergency Planning Fees							1 709	171	1 880	1 880		1 880								
2a 4 10	Spent Fuel Fuel O&M							1 680	252	1 932	1 932		1 932								
2a 4 11	Remedial Actions Surveys							2 555		2 555	2 555										
2a 4 12	Security Staff Cost							17 177	2 577	19 754	19 754										309 452
2a 4 13	Utility Staff Cost							70 563	10 584	81 147	81 147										914 120
2a 4	Subtotal Period 2a Period-Dependent Costs		148	6 974	110	100	184	101 658	16 025	125 199	121 388	3 812			6 230				124 603	203	1 223 572
2a 0	TOTAL PERIOD 2a COST		1 140	34 006	34 624	5 038	42 779	102 679	52 013	272 278	266 175	1 812	2 292		208 449	673	224		14 988 610	332 543	1 229 040
PERIOD 2b - Site Decontamination																					
Period 2b Direct Decommissioning Activities																					
Disposal of Plant Systems																					
2b 1 1	Chemical & Volume Control (CH)		1 658	2 075	424	209		3 864	2 388	10 619	10 619				19 442				1 246 683	80 047	
2b 1 1 2	Chemical Waste (CW)		348	174	66	34		625	451	2 007	2 007				3 149				207 501	18 894	
2b 1 1 3	Containment Building (CB)			1	0	0		0	0	1	1				2				118	15	
2b 1 1 4	Containment Hydrogen Control (HP)			92	17	8		149	63	329	329				748				48 116	2 154	
2b 1 1 5	Containment Leakage Test (CL)			30	12	7		156	44	229	229				690				43 834	818	
2b 1 1 6	Containment Purge (CP)			31	11	6		114	38	201	201				577				36 798	827	
2b 1 1 7	Domestic Water (DS)			109					16	125			125							3 675	
2b 1 1 8	Electrical (Clean)			986					148	1 136			1 136							30 887	
2b 1 1 9	Electrical (Clean) RCA			754	128	78		1 447	570	2 957	2 957				7 349				466 835	16 187	
2b 1 1 10	Electrical (Contaminated)			4 960	430	275		5 681	2 419	12 465	12 465				25 739				1 638 951	97 755	
2b 1 1 11	Essential Chilled Water (EC)			16					2	18			18							547	
2b 1 1 12	Essential Chilled Water (EC) RCA			168	27	12		217	101	521	521				1 082				69 840	3 797	
2b 1 1 13	Essential Cooling Water (EW)			57					9	65			65							1 903	
2b 1 1 14	Essential Cooling Water (EW)-RCA			83	26	14		264	92	479	479				1 334				85 125	1 997	
2b 1 1 15	Essential Spray Pond (SP)			287					43	330			330							9 865	
2b 1 1 16	Fire Protection (FP)			106					16	122			122							3 645	
2b 1 1 17	Fire Protection (FP) RCA			327	131	62		1 103	442	2 114	2 114				5 788				371 572	12 003	
2b 1 1 18	Oil Waste (OW)			220	31	14		265	127	659	659				1 327				85 623	5 181	
2b 1 1 19	HVAC - Auxiliary Building (HA)			409	255	114		2 090	669	3 546	3 546				10 477				677 114	10 352	
2b 1 1 20	HVAC - Containment Building (HC)			421	192	74		1 362	472	2 481	2 481				6 829				439 280	9 571	
2b 1 1 21	HVAC - Control Building (HB)			88					13	102			102							3 112	

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Palo Verde NGS Unit 1
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Class A Cu Feet	Class B Cu Feet	Class C Cu Feet	OTCC Cu Feet	Burial/Processed Wt, Lbs	Craft Manhours	Utility and Contractor Manhours
Disposal of Plant Systems (Continued)																					
2b 1 1 22	HVAC Diesel Generator Building (HD)		9						1	10			10							295	
2b 1 1 23	HVAC Radwaste SR		123	35	19		359		127	663			663		1 812				115 774	2 861	
2b 1 1 24	HVAC Turbine Building (HT)		165						25	190			190							6 322	
2b 1 1 25	Instrument & Service Air (IA)		35						5	41			41							1 213	
2b 1 1 26	Instrument & Service Air (IA) - RCA		716	118	41		757		387	2 022					3 734				244 352	14 791	
2b 1 1 27	Liquid Radwaste (L) - RCA	451	731	105	49		905		652	2 894					4 538				291 979	27 224	
2b 1 1 28	Normal Chilled Water (WC)		70						10	80			80							2 362	
2b 1 1 29	Normal Chilled Water (WC) - RCA		199	38	19		347		143	746					1 747				112 038	4 562	
2b 1 1 30	Nuclear Cooling Water (NC)		53						8	61										1 746	
2b 1 1 31	Nuclear Cooling Water (NC) - RCA		473	218	114		2 111		685	3 691					10 647				680 829	11 451	
2b 1 1 32	Nuclear Sampling (S)		225	26	10		176		104	541					867				56 786	5 121	
2b 1 1 33	Off-Waste & Nonradioactive Waste (OW)		552	65	35		653		311	1 619					3 292				210 616	13 291	
2b 1 1 34	Plant Cooling Water (PW)		115						17	132										3 929	
2b 1 1 35	Post-Accident Sampling		11	1	1		10		5	27					50				3 169	275	
2b 1 1 36	Radiation Monitoring (SQ)		32	4	2		34		17	89					167				10 820	782	
2b 1 1 37	Radioactive Waste Drain (RD)	438	164	32	28		514		473	1 971					2 591				165 934	19 457	
2b 1 1 38	Reactor Coolant (RC)	16	171	17	6		118		83	412					585				38 217	4 444	
2b 1 1 39	Safety Injection (SI)		1 659	576	283		5 219		1 819	9 556					26 194				1 683 405	41 385	
2b 1 1 40	Service Gases (GA) - RCA		202	33	12		222		111	580					1 097				71 533	4 164	
2b 1 1 41	Solid Radwaste (SR)	122	211	34	16		304		196	863					1 528				98 132	1 907	
2b 1 1 42	Decommissioning Crew Set-up		3 428						514	3 942			3 942							83 075	
2b 1 1	Totals	1 034	20 819	3 015	1 541		28 504		17 830	70 766			64 413		143 437				9 194 866	569 828	
2b 1 2	Scaffolding in support of decommissioning		3 744	23	13		241		1 000	5 021			5 021		1 223				77 698	42 204	
Decontamination of Site Buildings																					
2b 1 3 1	Auxiliary Building		549	361	65		96		544	2 248			2 248						488 398	22 059	
2b 1 3 2	Containment		1 180	1 730	269		482		2 492	11 633					58 640				2 623 131	67 811	
2b 1 3 3	Decontamination & Laundry Facility		62	23	16		7		66	278					629				37 732	2 123	
2b 1 3 4	Holdup Tank & Pump House		313	315	73		25		378	1 598					2 283				149 929	16 083	
2b 1 3 5	Radwaste Building		717	993	211		91		1 386	3 556					8 651				622 790	22 150	
2b 1 3 6	Refueling Water Storage Tank		473	382	79		28		508	1 942					2 496				163 942	21 062	
2b 1 3	Totals		3 354	3 105	713		728		4 778	21 256					82 559				3 985 921	151 348	
2b 1 4	Prepare/submit License Termination Plan								311	47		358	358								
2b 1 5	Receive NRC approval of termination plan																				4 096
2b 1	Subtotal Period 2b Activity Costs	6 388	27 668	3 771	2 285		37 323	311	19 656	97 401		91 018		6 354	227 220				13 258 580	763 377	4 096
Period 2b Additional Costs																					
2b 2 1	Excavation of Underground Services		1 624					339		457		2 419	2 419								10 228
2b 2	Subtotal Period 2b Additional Costs		1 624					339		457		2 419	2 419								10 228
Period 2b Collateral Costs																					
2b 3 1	Process decommissioning water waste		287		182		263		391		299		1 422		1 862				111 707	363	
2b 3 2	Process decommissioning chemical flush waste		7		215		652		855		337		2 066		2 293				244 381	429	
2b 3 3	Small tool allowance			462						69		531	531								
2b 3	Subtotal Period 2b Collateral Costs	294	462	397	915		1 246			705		4 019	4 019		4 155				356 088	792	
Period 2b Period Dependent Costs																					
2b 4 1	Decon supplies		1 821							455		2 276	2 276								
2b 4 2	Insurance								2 064	295		2 270	2 270								
2b 4 3	Property taxes								824	82		907	907								
2b 4 4	Health physics supplies		4 829							1 207		6 036	6 036								
2b 4 5	Heavy equipment rental		5 444							817		6 261	6 261								
2b 4 6	Disposal of DAW generated			186	170			313		122		792	792		10 580				211 595	345	
2b 4 7	Plant energy budget								4 511	647		4 958	4 958								
2b 4 8	NRC Fees								1 369	137		1 506	1 506								
2b 4 9	Emergency Planning Fees								2 082	208		2 291	2 291		2 291						
2b 4 10	Spent Fuel Pool O&M								2 047	307		2 354			2 354						
2b 4 11	Liquid Radwaste Processing Equipment/Services								515	77		593	593								
2b 4 12	Remedial Action Surveys								3 114	314		3 114	3 114								
2b 4 13	Security Staff Cost								20 933	3 140		24 072	24 072								377 106
2b 4 14	Utility Staff Cost								60 408	9 061		69 469	69 469								805 328
2b 4	Subtotal Period 2b Period Dependent Costs	1 821	10 273	186	170		313	97 667	16 468	126 899		122 254	4 645			10 580			211 595	345	1 182 433
2b 0	TOTAL PERIOD 2b COST	8 503	40 027	4 354	3 370		38 882	38 317	37 285	230 738		219 739	4 645	6 354	241 955				13 826 260	774 742	1 186 529

Table C-1
Palo Verde NGS Unit 1
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Class A Cu Feet	Class B Cu Feet	Class C Cu Feet	OTUC Cu Feet	Burnoff Processed Wt, lbs	CraH Manhours	Utility and Contractor Manhours
PERIOD 2d - Decontamination Following Wet Fuel Storage																					
Period 2d Direct Decommissioning Activities																					
2d 1.1	Remove spent fuel racks		310	51	128	37		692	354	1,553	1,553				3,515				223,325	968	
Disposal of Plant Systems																					
2d 1.2.1	Electrical Spent Fuel			184	31	19		348	139	720	720				1,766				112,106	4,048	
2d 1.2.2	Fuel Pool Coohog & Cleanup (PC)		191	393	138	67		1,237	527	2,855	2,855				6,204				399,088	19,370	
2d 1.2.3	HVA C Fuel Building (HFB)			59	88	46		147	241	1,276	1,276				3,736				240,570	3,820	
2d 1.2.4	Sanitary Drainage & Treatment (ST)			85					2	19	1,276			19							577
2d 1.2	Totals		391	753	257	125		2,132	1,010	4,869	4,869				11,706				75,222	21,816	
Decontamination of Site Buildings																					
2d 1.3.1	Fuel Building		414	493	54	22		361	430	1,776	1,776				2,151				12,821	22,125	
2d 1.3	Totals		414	493	54	22		361	430	1,776	1,776				2,151				12,821	22,125	
2d 1.4	Scaffolding in support of decommissioning			749	5	3		18	200	1,004	1,004				245				15,540	8,441	
2d 1	Subtotal Period 2d Activity Costs		1,115	2,025	435	188		3,495	1,994	9,202	9,183		19		17,617				1,119,304	53,350	
Period 2d Additional Costs																					
2d 2.1	Operational Equipment				21	67		911	240	1,239	1,239				11,760				294,000	32	
2d 2	Subtotal Period 2d Additional Costs				21	67		911	240	1,239	1,239				11,760				294,000	32	
Period 2d Collateral Costs																					
2d 3.1	Process decommissioning water waste		74		47	68		102	78	370	370				485				29,108	95	
2d 3.2	Process decommissioning chemical flush waste		2		69	208		273	107	659	659				77,950				77,950	137	
2d 3.3	Small tool allowance			38					6	44	44										
2d 3.4	Decommissioning Equipment Disposition				99	36		1,042	279	1,476	1,476				5,230				336,079	147	
2d 3	Subtotal Period 2d Collateral Costs		77	38	215	333		1,417	470	2,548	2,548				6,507				440,147	378	
Period 2d Period Dependent Costs																					
2d 4.1	Decon supplies		115						29	144	144										
2d 4.2	Insurance							400	40	440	440										
2d 4.3	Property taxes							160	16	176	176										
2d 4.4	Health physics supplies			460					115	576	576										
2d 4.5	Heavy equipment rental			1,055					158	1,213	1,213										
2d 4.6	Disposal of DAW generated				29	27		49	19	123	123				1,648				32,963	54	
2d 4.7	Plant energy budget							446	67	512	512										
2d 4.8	NRC Fees							253	25	278	278										
2d 4.9	Emergency Planning Fees							404	40	444	444										
2d 4.10	Liquid Radwaste Processing Equipment/Services							200	30	230	230	444									
2d 4.11	Remedial Actions Surveys							603	603	603	603										
2d 4.12	Security Staff Cost							1,440	216	1,656	1,656									25,911	
2d 4.13	Utility Staff Cost							7,231	1,085	8,315	8,315									98,729	
2d 4	Subtotal Period 2d Period Dependent Costs		115	15,16	29	27		49	11,126	1,840	11,711	14,257	444		1,648				32,963	54	124,640
2d 0	TOTAL PERIOD 2d COST		1,507	3,578	707	615		5,911	11,126	45,44	27,700	27,238	444		37,532				1,889,414	53,814	124,640
PERIOD 2e - Delay before License Termination																					
Period 2e Direct Decommissioning Activities																					
Period 2e Additional Costs																					
2e 2.1	License Termination Survey Planning							842	213	1,095	1,095										4,160
2e 2	Subtotal Period 2e Additional Costs							842	223	1,095	1,095										4,160
Period 2e Collateral Costs																					
2e 3	Subtotal Period 2e Collateral Costs																				
Period 2e Period Dependent Costs																					
2e 4.1	Insurance							2,073	207	2,280	2,280										
2e 4.2	Property taxes							828	83	911	911										
2e 4.3	Health physics supplies			230					57	287	287										
2e 4.4	Disposal of DAW generated				4	4		7	3	19	19				248				4,954	8	
2e 4.5	Plant energy budget																				
2e 4.6	NRC Fees							622	62	684	684										

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Palo Verde NGS Unit 1
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Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Cost	Transport Cost	Off-Site Processing Cost	LLRW Disposal Cost	Other Cost	Total Contingency	Total Cost	NRC Lic. Term Cost	Spent Fuel Management Cost	Site Restoration Cost	Processed Volume Cu Feet	Class A Cu Feet	Class B Cu Feet	Class C Cu Feet	GYCC Cu Feet	Burned / Processed Wt. Lbs	Craft Manhours	Utility and Contractor Manhours
Period 2e Period Dependent Costs (Continued)																					
2e 4 7	Emergency Planning Fees	-	-	-	-	-	-	1,671	167	1,838	-	1,838	-	-	-	-	-	-	-	-	-
2e 4 8	Security Staff Cost	-	-	-	-	-	-	7,462	1,119	8,581	8,581	-	-	-	-	-	-	-	-	-	134,293
2e 4 9	Utility Staff Cost	-	-	-	-	-	-	2,919	438	3,357	3,357	-	-	-	-	-	-	-	-	-	36,181
2e 4	Subtotal Period 2e Period Dependent Costs	-	230	4	4	-	7	15,076	2,137	17,957	16,119	1,838	-	-	248	-	-	-	4,954	8	170,474
2e 0	TOTAL PERIOD 2e COST	-	230	4	4	-	7	16,417	2,390	19,052	17,214	1,838	-	-	248	-	-	-	4,954	8	174,634
PERIOD 2f - License Termination																					
Period 2f Direct Decommissioning Activities																					
2f 1 1	ORISE confirmatory survey	-	-	-	-	-	-	170	51	221	221	-	-	-	-	-	-	-	-	-	-
2f 1 2	Terminate license	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2f 1	Subtotal Period 2f Activity Costs	-	-	-	-	-	-	170	51	221	221	-	-	-	-	-	-	-	-	-	-
Period 2f Additional Costs																					
2f 2 1	License Termination Survey	-	-	-	-	-	-	8,465	2,540	11,005	11,005	-	-	-	-	-	-	-	-	187,642	2,080
2f 2	Subtotal Period 2f Additional Costs	-	-	-	-	-	-	8,465	2,540	11,005	11,005	-	-	-	-	-	-	-	-	187,642	2,080
Period 2f Collateral Costs																					
2f 3 1	Staff relocation expenses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2f 3	Subtotal Period 2f Collateral Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Period 2f Period Dependent Costs																					
2f 4 1	Insurance	-	-	-	-	-	-	638	64	701	701	-	-	-	-	-	-	-	-	-	-
2f 4 2	Property taxes	-	-	-	-	-	-	255	25	280	280	-	-	-	-	-	-	-	-	-	-
2f 4 3	Health physics supplies	-	839	-	-	-	-	-	210	1,049	1,049	-	-	-	-	-	-	-	-	-	-
2f 4 4	Disposal of DAW generated	-	-	6	5	-	10	-	4	24	24	-	-	-	324	-	-	-	6,482	11	-
2f 4 5	Plant energy budget	-	-	-	-	-	-	355	53	409	409	-	-	-	-	-	-	-	-	-	-
2f 4 6	NRC fees	-	-	-	-	-	-	403	40	444	444	-	-	-	-	-	-	-	-	-	-
2f 4 7	Security Staff Cost	-	-	-	-	-	-	2,235	344	2,640	2,640	-	-	-	-	-	-	-	-	-	41,310
2f 4 8	Utility Staff Cost	-	-	-	-	-	-	6,004	901	6,904	6,904	-	-	-	-	-	-	-	-	-	77,906
2f 4	Subtotal Period 2f Period Dependent Costs	-	839	6	5	-	10	9,950	1,681	12,451	12,451	-	-	-	324	-	-	-	6,482	11	119,216
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18,585	4,232	23,677	23,677	-	-	-	324	-	-	-	6,482	187,652	121,296</

Table C-1
Palo Verde NGS Unit 1
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	OR-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term Costs	Spent Fuel Newsgovernment Costs	Site Restoration Costs	Processed Volume Cu Feet	Class A Cu Feet	Class B Cu Feet	Class C Cu Feet	GTCC Cu Feet	Burnall Processed Wt. Lbs.	Craft Manhours	Utility and Overseer Manhours
Site Closeout Activities																					
3b 1.2	Grade & landscape/piste		59						9	68			68							325	
3b 1.3	Final report to NRC							119	18	136		136									1 560
3b 1	Subtotal Period 3b Activity Costs		17 256					119	2 606	19 981		136	19 845							206 516	1 560
Period 3b Additional Costs																					
3b 2.1	Concrete Crushing		1 133					3	170	13 07			13 07							5 508	
3b 2.2	Construction Debris							40	6	46			46								
3b 2	Subtotal Period 3b Additional Costs		1 133					43	176	13 53			13 53							5 508	
Period 3b Collateral Costs																					
3b 3.1	Small tool allowance		123						18	141			141								
3b 3	Subtotal Period 3b Collateral Costs		123						18	141			141								
Period 3b Period Dependent Costs																					
3b 4.1	Insurance																				
3b 4.2	Property taxes							630	63	693			693								
3b 4.3	Heavy equipment rental								850	6 320			6 320								
3b 4.4	Plant energy budget	5 669						439	66	505			505								
3b 4.5	Security Staff Cost							5 677	851	6 328			6 328								102 164
3b 4.6	Utility Staff Cost							8 019	1 203	9 222			9 222								104 200
3b 4	Subtotal Period 3b Period Dependent Costs		5 669					14 765	3 074	23 468			23 468								206 263
3b 0	TOTAL PERIOD 3b COST		24 182					14 926	5 835	44 943		136	44 806							212 023	207 323
PERIOD 3c - Fuel Storage Operations/Shipping																					
Period 3c Direct Decommissioning Activities																					
Period 3c Collateral Costs																					
3c 3	Subtotal Period 3c Collateral Costs																				
Period 3c Period Dependent Costs																					
3c 4.1	Insurance																				
3c 4.2	Property taxes																				
3c 4.3	Plant energy budget																				
3c 4.4	Utility Staff Cost																				
3c 4	Subtotal Period 3c Period Dependent Costs																				
3c 0	TOTAL PERIOD 3c COST																				
PERIOD 3d - GTCC shipping																					
Period 3d Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
3d 1.1.1	Vessel & Internals GTCC Disposal			2 581			25 443		4 462	32 486	32 486							4 433	905 513		
3d 1.1	Totals			2 581			25 443		4 462	32 486	32 486							4 433	905 513		
3d 1	Subtotal Period 3d Activity Costs			2 581			25 443		4 462	32 486	32 486							4 433	905 513		
Period 3d Collateral Costs																					
3d 3	Subtotal Period 3d Collateral Costs																				
Period 3d Period Dependent Costs																					
3d 4.1	Insurance																				
3d 4.2	Property taxes																				
3d 4.3	Plant energy budget																				
3d 4.4	Utility Staff Cost																				
3d 4	Subtotal Period 3d Period Dependent Costs																				
3d 0	TOTAL PERIOD 3d COST			2 581			25 443		4 462	32 486	32 486							4 433	905 513		
PERIOD 3 TOTALS																					
TOTAL COST TO DECOMMISSION																					

Table C-1
Palo Verde NGS Unit 1
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	OR Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Burial Volumes				Burial / Processed Wt. Lbs	Craft Manhours	Utility and Construction Manhours	
															Class A Cu Feet	Class B Cu Feet	Class C Cu Feet	GTCC Cu Feet				
TOTAL COST TO DECOMMISSION WITH 19.39% CONTINGENCY						\$453,264	thousands of 2019 dollars															
TOTAL NRC LICENSE TERMINATION COST IS 92% OR						\$785,071	thousands of 2019 dollars															
SPENT FUEL MANAGEMENT COST IS 1.83% OR						\$13,902	thousands of 2019 dollars															
NON-NUCLEAR DEMOLITION COST IS 0.38% OR						\$54,411	thousands of 2019 dollars															
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC)						492,132	Cubic Feet															
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED						4,413	Cubic Feet															
TOTAL SCRAP METAL REMOVED						61,344	Tons															
TOTAL CRAFT LABOR REQUIREMENTS						1,082,712	Man-hours															

End Notes:
n/a - indicates that this activity not charged as decommissioning expense
s - indicates that this activity performed by decommissioning staff
0 - indicates that this value is less than 0.5 but is not zero
A cell containing " " indicates a zero value

EL PASO ELECTRIC COMPANY
2021 TEXAS RATE CASE FILING
SCHEDULE H-10 NUCLEAR DECOMMISSIONING COST STUDIES
SPONSOR: RODERICK W. KNIGHT
PREPARED: RODERICK W. KNIGHT
FOR TEST YEAR ENDED DECEMBER 31, 2020

SCHEDULE H-10
Page 116 of 183

Table C-2
Palo Verde NGS Unit 2
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processment Volume Cu. Feet	Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt. Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a 1.1	Prepare preliminary decommissioning cost	-	-	-	-	-	-	42	6	49	19	-	-	-	-	-	-	-	-	-	556
1a 1.2	Notification of Cessation of Operations	-	-	-	-	-	-	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-
1a 1.3	Remove fuel & source material	-	-	-	-	-	-	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-
1a 1.4	Notification of Permanent Defueling	-	-	-	-	-	-	n/a	-	-	-	-	-	-	-	-	-	-	-	-	-
1a 1.5	Decontaminate plant systems & process waste	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1a 1.6	Prepare and submit PSDAR	-	-	-	-	-	-	65	10	75	75	-	-	-	-	-	-	-	-	-	856
1a 1.7	Review plant design & specs	-	-	-	-	-	-	150	22	172	172	-	-	-	-	-	-	-	-	-	1,969
1a 1.8	Perform detailed rad survey	-	-	-	-	-	-	33	5	37	37	-	-	-	-	-	-	-	-	-	428
1a 1.9	Estimate by product inventory	-	-	-	-	-	-	33	5	37	37	-	-	-	-	-	-	-	-	-	428
1a 1.10	End product description	-	-	-	-	-	-	33	5	37	37	-	-	-	-	-	-	-	-	-	556
1a 1.11	Detailed by product inventory	-	-	-	-	-	-	42	6	49	49	-	-	-	-	-	-	-	-	-	3,210
1a 1.12	Define major work sequence	-	-	-	-	-	-	244	37	280	280	-	-	-	-	-	-	-	-	-	1,327
1a 1.13	Perform SSR and EA	-	-	-	-	-	-	161	16	116	116	-	-	-	-	-	-	-	-	-	3,210
1a 1.14	Prepare/submit Defueled Technical Specifications	-	-	-	-	-	-	244	37	280	280	-	-	-	-	-	-	-	-	-	2,140
1a 1.15	Perform Site Specific Cost Study	-	-	-	-	-	-	165	24	187	187	-	-	-	-	-	-	-	-	-	428
1a 1.16	Prepare/submit Irradiated Fuel Management Plan	-	-	-	-	-	-	33	5	37	37	-	-	-	-	-	-	-	-	-	-
Activity Specifications																					
1a 1.17.1	Plant & temporary facilities	-	-	-	-	-	-	160	24	184	184	-	18	-	-	-	-	-	-	-	2,106
1a 1.17.2	Plant systems	-	-	-	-	-	-	135	20	156	140	-	16	-	-	-	-	-	-	-	1,783
1a 1.17.3	SSSS Decontamination Flush	-	-	-	-	-	-	16	2	19	19	-	-	-	-	-	-	-	-	-	214
1a 1.17.4	Reactor internals	-	-	-	-	-	-	231	15	265	265	-	-	-	-	-	-	-	-	-	3,039
1a 1.17.5	Reactor vessel	-	-	-	-	-	-	211	12	243	213	-	-	-	-	-	-	-	-	-	2,782
1a 1.17.6	Biological shield	-	-	-	-	-	-	16	2	19	19	-	-	-	-	-	-	-	-	-	214
1a 1.17.7	Steam generators	-	-	-	-	-	-	101	15	117	117	-	-	-	-	-	-	-	-	-	1,335
1a 1.17.8	Reinforced concrete	-	-	-	-	-	-	52	8	60	50	-	30	-	-	-	-	-	-	-	685
1a 1.17.9	Main Turbine	-	-	-	-	-	-	13	2	15	15	-	15	-	-	-	-	-	-	-	171
1a 1.17.10	Main Condensers	-	-	-	-	-	-	13	2	15	15	-	15	-	-	-	-	-	-	-	171
1a 1.17.11	Plant structures & buildings	-	-	-	-	-	-	101	15	117	58	-	58	-	-	-	-	-	-	-	1,335
1a 1.17.12	Waste management	-	-	-	-	-	-	150	22	172	172	-	-	-	-	-	-	-	-	-	1,969
1a 1.17.13	Facility & site closure	-	-	-	-	-	-	29	4	34	17	-	17	-	-	-	-	-	-	-	385
1a 1.17	Total	-	-	-	-	-	-	1,230	184	1,414	1,245	-	169	-	-	-	-	-	-	-	16,190
Planning & Site Preparations																					
1a 1.18	Prepare dismantling sequence	-	-	-	-	-	-	78	12	90	90	-	-	-	-	-	-	-	-	-	1,027
1a 1.19	Plant prep & temp moves	-	-	-	-	-	-	3,400	510	3,910	3,910	-	-	-	-	-	-	-	-	-	-
1a 1.20	Design water clean up system	-	-	-	-	-	-	46	7	52	52	-	-	-	-	-	-	-	-	-	599
1a 1.21	Rigging/Cont. Control Equipment/etc.	-	-	-	-	-	-	2,400	360	2,760	2,760	-	-	-	-	-	-	-	-	-	-
1a 1.22	Procure cask liners & containers	-	-	-	-	-	-	40	6	46	46	-	-	-	-	-	-	-	-	-	526
1a 1	Subtotal Period 1a Activity Costs	-	-	-	-	-	-	8,341	1,251	9,592	9,424	-	169	-	-	-	-	-	-	-	33,451
Period 1a Additional Costs																					
1a 2.1	Staff Transition	-	-	-	-	-	-	39,281	5,892	45,173	45,173	-	-	-	-	-	-	-	-	-	-
1a 2	Subtotal Period 1a Additional Costs	-	-	-	-	-	-	39,281	5,892	45,173	45,173	-	-	-	-	-	-	-	-	-	-
Period 1a Collateral Costs																					
1a 3	Subtotal Period 1a Collateral Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Period 1a Period-Dependent Costs																					
1a 4.1	Insurance	-	-	-	-	-	-	2,316	232	2,548	2,548	-	-	-	-	-	-	-	-	-	-
1a 4.2	Property taxes	-	-	-	-	-	-	222	22	244	244	-	-	-	-	-	-	-	-	-	-
1a 4.3	Health physics supplies	-	-	-	-	-	-	40	40	40	40	-	-	-	-	-	-	-	-	-	-
1a 4.4	Heavy equipment rental	-	-	-	-	-	-	55	416	416	416	-	-	-	-	-	-	-	-	-	-
1a 4.5	Disposal of DAW generated	-	-	-	-	-	-	11	4	28	28	-	-	-	376	-	-	7,522	12	-	-
1a 4.6	Plant energy budget	-	-	-	-	-	-	1,547	232	1,779	1,779	-	-	-	-	-	-	-	-	-	-
1a 4.7	NRC Fees	-	-	-	-	-	-	502	50	552	552	-	-	-	-	-	-	-	-	-	-
1a 4.8	Emergency Planning Fees	-	-	-	-	-	-	769	17	845	845	-	-	-	-	-	-	-	-	-	-
1a 4.9	Spent Fuel Pool O&M	-	-	-	-	-	-	551	83	634	634	-	-	-	-	-	-	-	-	-	-
1a 4.10	Security Staff Cost	-	-	-	-	-	-	6,340	951	7,291	7,291	-	-	-	-	-	-	-	-	-	115,318
1a 4.11	Utility Staff Cost	-	-	-	-	-	-	17,000	2,550	19,550	19,550	-	-	-	-	-	-	-	-	-	229,871
1a 4	Subtotal Period 1a Period-Dependent Costs	-	-	-	-	-	-	29,246	4,336	34,290	32,811	-	1,479	-	376	-	-	-	7,522	12	345,190
1a 0	TOTAL PERIOD 1a COST	-	-	-	-	-	-	76,868	11,479	89,065	87,407	-	1,479	-	376	-	-	-	7,522	12	378,641

Table C-2
Palo Verde NGS Unit 2
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt. Lbs	Craft Manhours	Utility and Contractor Manhours
PERIOD 1b - Decommissioning Preparations																					
Period 1b Direct Decommissioning Activities																					
Detailed Work Procedures																					
1b 1.1	Plant systems							154	23	177	159		18							-	2 026
1b 1.2	NSSS Decontamination Flush							33	5	37	31									-	428
1b 1.3	Reactor Internals							81	12	93	93									-	1 070
1b 1.4	Remaining buildings							44	7	50	13		38							-	578
1b 1.5	CRD cooling assembly							33	5	37	37									-	428
1b 1.6	CRD housings & ICI tubes							33	5	37	37									-	428
1b 1.7	Incore instrumentation							33	5	37	37									-	428
1b 1.8	Reactor vessel							118	18	136	136									-	1 554
1b 1.9	Facility closeout							39	6	45	22		22							-	514
1b 1.10	Mass shields							15	2	17	17									-	193
1b 1.11	Biological shield							39	6	45	45									-	514
1b 1.12	Steam generators							150	22	172	172									-	1 969
1b 1.13	Reinforced concrete							33	5	37	19		19							-	428
1b 1.14	Main Turbine							51	8	58	58		58							-	668
1b 1.15	Main Condensers							51	8	58	58		58							-	668
1b 1.16	Auxiliary building							89	13	102	92		10							-	1 168
1b 1.17	Reactor building							89	13	102	92		10							-	1 168
1b 1.1	Total							1 081	162	1 243	1 009		234							-	14 228
1b 1.2	Decon primary loop	1 047							523	1 570	1 570									1 067	
1b 1	Subtotal Period 1b Activity Costs	1 047						1 081	686	2 813	2 580		234							1 067	14 228
Period 1b Additional Costs																					
1b 2.1	Spent Fuel Pool Isolation							8 217	1 233	9 449	9 449									-	-
1b 2.2	Site Characterization							2 562	769	3 330	3 330									13 042	4 640
1b 2	Subtotal Period 1b Additional Costs							10 779	2 001	12 780	12 780									13 042	4 640
Period 1b Collateral Costs																					
1b 3.1	Decon equipment	1 026							154	1 180	1 180									-	-
1b 3.2	Staff relocation expenses																			-	-
1b 3.3	Process decommissioning water waste	74		41	64		95		75	352	352				453				27 199	88	-
1b 3.4	Process decommissioning chemical flush waste	4		125	378		7 130		1 854	9 490	9 490						1 329		141 637	249	-
1b 3.5	Small tool allowance								0	2	2									-	-
1b 3.6	Pipe cutting equipment		1 200						180	1 380	1 380									-	-
1b 3.7	Decon rig	2 093							311	2 407	2 407									-	-
1b 3	Subtotal Period 1b Collateral Costs	3 197	1 201	169	442		7 225		2 576	14 810	14 810				453	1 329			168 836	337	-
Period 1b Period Dependent Costs																					
1b 4.1	Decon supplies	25							6	31	31									-	-
1b 4.2	Insurance							1 172	117	1 290	1 290									-	-
1b 4.3	Property taxes							112	11	123	123									-	-
1b 4.4	Health physics supplies		182						46	228	228									-	-
1b 4.5	Heavy equipment rental		184						28	212	212									-	-
1b 4.6	Disposal of DAW generated			4	4		7		3	17	17				224				4 488	7	-
1b 4.7	Plant energy budget								1 566	235	1 801	1 801								-	-
1b 4.8	NRC Fees								131	15	144	144								-	-
1b 4.9	Emergency Planning Fees							388	39	427		427								-	-
1b 4.10	Spent Fuel Pool O&M							279	42	321		321								-	-
1b 4.11	Security Staff Cost							3 269	481	3 690	3 690									-	58 371
1b 4.12	Utility Staff Cost							11 054	1 658	12 713	12 713									-	149 238
1b 4	Subtotal Period 1b Period Dependent Costs	25	366	4	4		7	17 911	2 678	20 995	20 247	748			224				4 488	7	207 669
1b 0	TOTAL PERIOD 1b COST	4 268	1 568	173	445		7 232	29 771	7 941	51 398	50 417	748	234		678	1 329			173 324	14 453	226 538
PERIOD 1 TOTALS																					
PERIOD 2a - Large Component Removal																					
Period 2a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
2a 1.1	Reactor Coolant Piping	142	137	30	37		387		210	943	943				1 789				124 853	6 464	-
2a 1.2	Pressurizer Quench Tank	8	7	3	4		44		18	84	84				291				14 051	375	-
2a 1.3	Reactor Coolant Pumps & Motors	133	70	355	350		885		395	2 197	2 197				10 637				1 108 000	5 539	100
2a 1.4	Pressurizer	32	41	480	98		239		149	1 039	1 039				2 879				324 870	2 378	625
2a 1.5	Steam Generators	210	3 029	8 030	1 201		6 762		3 536	22 769	22 769				49 515				4 415 357	45 354	958

Table C-2
Palo Verde NGS Unit 2
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Clear A Cu Feet	Burial Volume Class B Cu Feet	Burial Volume Class C Cu Feet	GYOC Cu Feet	Burial / Processed Wt. Lbs	Craft Manhours	Utility and Contractor Manhours
Nuclear Steam Supply System Removal (Continued)																					
2a 1.16	CRDMs/Cladding Structure Removal	132	336	414	80		1,033		462	2,457	2,457				8,222	-	-		333,327	10,981	-
2a 1.17	Reactor Vessel Internals	113	6,757	19,204	1,018		8,190	511	14,351	50,143	50,143				2,379	673	224		365,755	43,357	1,893
2a 1.18	Reactor Vessel	102	8,117	3,899	882		3,621	511	9,221	26,353	26,353				17,963	-	-		1,269,528	43,357	1,893
2a 1.1	Totals	872	18,405	32,414	3,660		21,161	1,021	29,342	106,985	106,985				93,585	673	224		7,955,740	157,799	5,469
Removal of Major Equipment																					
2a 1.2	Main Turbine/Generator	119							18	137			137							3,424	
2a 1.3	Main Condensers	1,281		1,223	699		12,914	-	3,776	19,893	19,893				65,575	-	-		4,165,812	36,411	
Cascading Costs from Clean Building Demolition																					
2a 1.41	Auxiliary Building	156							23	179	179									1,308	
2a 1.42	Containment	498							61	470	470									4,270	
2a 1.43	Main Steam Support Structure	51							5	36	36									274	
2a 1.44	Radwaste Building	164							25	188	188									2,404	
2a 1.45	Fuel Building	70							10	80	80									632	
2a 1.4	Totals	829							124	963	963									8,883	
Disposal of Plant Systems																					
2a 1.5.1	Auxiliary Feedwater (AF)	39							6	45			45							1,309	
2a 1.5.2	Auxiliary Steam (AS)	44							7	51			51							1,500	
2a 1.5.3	Auxiliary Steam (AS) - RCA	168	36	17			313		126	660	660				1,569				100,889	3,888	
2a 1.5.4	CT Makeup & Blowdown (TB)	18	3	2			37		14	74	74				185				11,785	451	
2a 1.5.5	Chemical Production (CC)	17							2	19										630	
2a 1.5.6	Chlorine Injection (CI)	56							8	64										1,820	
2a 1.5.7	Circulating Water (CW)	107							16	124			124							3,545	
2a 1.5.8	Condensate (CD)	943	357	191			3,521		1,180	6,191	6,191				17,742				1,139,825	24,161	
2a 1.5.9	Condensate Storage & Transfer (C/T)	248	33	17			307		145	749	749				1,542				99,905	6,046	
2a 1.5.10	Condensate Air Removal (AR)	39							6	45			45							1,316	
2a 1.5.11	Demineralized Water (DW)	64							10	73			73							2,085	
2a 1.5.12	Diesel Fuel Oil & Transfer (DF)	49							7	56			56							1,492	
2a 1.5.13	Diesel Generator (DG)	58							9	67			67							1,862	
2a 1.5.14	FW Heater Exhaust Steam & Drains (ED)	2,098	650	359			6,637		2,303	12,047	12,047				33,505				2,140,957	54,662	
2a 1.5.15	Feedwater (FW)	382	155	97			1,784		572	2,990	2,990				9,050				575,585	10,447	
2a 1.5.16	Feedwater (FW) - eRCA	29	11	7			129		42	218	218				656				41,735	773	
2a 1.5.17	Generator Hydrogen & CO2 (GH)	3							0	3			3							102	
2a 1.5.18	Generator Seal Oil (SO)	7							1	8			8							236	
2a 1.5.19	HVAC - Misc Site Structures (HS)	16							2	18			18							530	
2a 1.5.20	Lube Oil (LO)	32							5	42			42							1,188	
2a 1.5.21	Lube Oil Slop & Trace & Purification (OS)	860	334	182			3,352		1,111	5,828	5,828				16,938				1,081,291	20,710	
2a 1.5.23	Main Steam (SG) - RCA	128	35	20			372		132	687	687				1,878				119,916	3,293	
2a 1.5.24	Main Turbine (MT)	370	572	332			6,127		1,731	9,133	9,133				31,043				1,976,452	10,489	
2a 1.5.25	Main Turbine Control Oil (CO)	6							1	6			6							176	
2a 1.5.26	Secondary Chemical Control (SC)	171							26	197			197							5,637	
2a 1.5.27	Stator Cooling (CE)	4							1	5			5							139	
2a 1.5.28	Steam Gen Feedwater Pump Turbine (FT)	184	72	38			701		234	1,229	1,229				3,530				226,098	4,717	
2a 1.5.29	Turbine Cooling Water (TC)	140							21	161										4,675	
2a 1.5.30	Turbine Steam Seal & Drain (SD)	109	19	10			184		77	400	400				927				59,477	2,791	
2a 1.5	Totals	6,416	2,279	1,271			23,464		7,800	41,229	40,207		1,022		118,569				7,569,015	171,649	
2a 1.6	Seafolding in support of decommissioning	2,995	18	10			393		840	4,017	4,017				978				62,159	33,763	
2a 1	Subtotal Period 2a Activity Costs	872	30,135	35,935	5,960		57,732	1,021	40,880	172,214	171,055		1,159		278,705	673	224		19,752,720	410,929	5,469
Period 2a Collateral Costs																					
2a 3.1	Process decommissioning water waste	130		79	115		171		133	628	628				814				48,846	159	
2a 3.2	Process decommissioning chemical flush waste																				
2a 3.3	Small tool allowance	301							45	346	312			35							
2a 3	Subtotal Period 2a Collateral Costs	430	301	79	115		171		178	974	940			35	814				48,846	159	
Period 2a Period Dependent Costs																					
2a 4.1	Decon supplies	148							37	185	185										
2a 4.2	Insurance						1,693		169	1,863	1,863										
2a 4.3	Property taxes						676		68	744	744										
2a 4.4	Health physics supplies	3,021							755	3,776	3,776										
2a 4.5	Heavy equipment rental	4,332							650	4,982	4,982										
2a 4.6	Disposal of DAW generated		137	125			229		90	581	581				7,753				155,054	253	
2a 4.7	Plant energy budget							4,481	672	5,154	5,154										
2a 4.8	NRC Fees							738	74	812	812										
2a 4.9	Emergency Planning Fees							1,109	171	1,880		1,880									

Table C-2
Palo Verde NGS Unit 2
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	On-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	Lic Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Burial Volumes	Burial / Processed Wt. Lbs.	Craft Manhours	Utility and Construction Manhours		
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet		
Period 2a Period Dependent Costs (Continued)																				
2a 4 10	Spent Fuel Pool O&M	-	-	-	-	-	-	1 680	252	1 932	-	1 932	-	-	-	-	-	-	-	-
2a 4 11	Remedial Actions Surveys	-	-	-	-	-	-	2 555	-	2 555	-	-	-	-	-	-	-	-	-	-
2a 4 12	Security Staff Cost	-	-	-	-	-	-	17 640	2 646	20 286	-	-	-	-	-	-	-	-	-	318 747
2a 4 13	Utility Staff Cost	-	-	-	-	-	-	71 889	10 783	82 672	-	-	-	-	-	-	-	-	-	928 615
2a 4	Subtotal Period 2a Period-Dependent Costs	148	7 353	137	125	-	229	103 061	16 367	127 420	-	123 608	3 812	-	7 753	-	-	-	155 054	253 1 245 261
2a 0	TOTAL PERIOD 2a COST	1 151	37 768	36 151	5 900	-	58 132	104 082	57 405	300 609	-	295 603	3 812	1 194	287 271	673	224	-	19 956 620	411 341 1 250 730
PERIOD 2b - Site Decontamination																				
Period 2b Direct Decommissioning Activities																				
Disposal of Plant Systems																				
2b 1 11	Chemical & Volume Control (CH)	1 658	2 075	424	209	-	3 965	2 388	10 619	10 619	-	-	-	-	19 442	-	-	-	1 246 683	80 047
2b 1 12	Chemical Waste (CW)	348	474	66	34	-	125	461	2 007	2 007	-	-	-	-	3 149	-	-	-	201 501	18 894
2b 1 13	Containment Building (CB)	-	-	0	0	-	0	-	0	1	-	-	-	-	2	-	-	-	118	15
2b 1 14	Containment Hydrogen Control (HP)	-	-	92	17	8	149	-	63	329	-	329	-	-	748	-	-	-	48 116	2 154
2b 1 15	Containment Leakage Test (CL)	-	-	30	12	1	136	-	44	229	-	229	-	-	890	-	-	-	43 834	812
2b 1 16	Containment Purge (CP)	-	-	31	11	6	114	-	38	201	-	201	-	-	577	-	-	-	36 798	827
2b 1 17	Domestic Water (DW)	-	-	109	-	-	-	-	16	125	-	-	-	-	-	-	-	-	-	3 675
2b 1 18	Electrical (Clean)	-	-	988	-	-	148	1 136	-	-	-	-	125	-	-	-	-	-	30 827	-
2b 1 19	Electrical (Clean) RCA	-	-	734	128	78	-	1 447	570	2 957	-	2 957	-	-	-	-	-	-	466 835	16 187
2b 1 10	Electrical (Contaminated)	-	-	4 260	430	275	-	5 081	2 419	12 465	-	12 465	-	-	-	-	-	-	25 799	1 638 951
2b 1 11	Essential Chilled Water (EC)	-	-	16	-	-	-	-	2	18	-	-	-	18	-	-	-	-	-	547
2b 1 12	Essential Chilled Water (EC) RCA	-	-	168	27	12	-	17	101	524	-	524	-	-	1 082	-	-	-	69 840	3 797
2b 1 13	Essential Cooling Water (EW)	-	-	57	-	-	-	-	8	65	-	-	-	65	-	-	-	-	-	1 903
2b 1 14	Essential Cooling Water (EW)-RCA	-	-	83	26	14	-	264	92	479	-	479	-	-	1 334	-	-	-	85 126	1 997
2b 1 15	Essential Spray Pond (SP)	-	-	287	-	-	-	-	43	530	-	-	-	330	-	-	-	-	-	9 865
2b 1 16	Fire Protection (FP)	-	-	106	-	-	-	-	16	122	-	-	-	122	-	-	-	-	-	3 645
2b 1 17	Fire Protection (FP) RCA	-	-	527	131	62	-	1 352	442	2 314	-	2 314	-	-	-	-	-	-	5 785	371 572
2b 1 18	Gaseous Redwaste (GR)	-	-	220	33	14	-	263	127	659	-	659	-	-	1 327	-	-	-	85 625	5 181
2b 1 19	HVAC Auxiliary Building (HA)	-	-	409	255	114	-	2 999	669	3 546	-	3 546	-	-	10 477	-	-	-	677 114	10 352
2b 1 20	HVAC Containment Building (HC)	-	-	421	152	74	-	1 362	472	2 481	-	2 481	-	-	5 829	-	-	-	439 260	9 073
2b 1 21	HVAC - Control Building (H4)	-	-	88	-	-	-	-	13	102	-	-	-	102	-	-	-	-	-	3 112
2b 1 22	HVAC - Diesel Generator Building (HD)	-	-	9	-	-	-	-	1	10	-	-	-	10	-	-	-	-	-	295
2b 1 23	HVAC - Redwaste (HR)	-	-	123	35	19	-	359	127	663	-	663	-	-	1 812	-	-	-	115 774	2 861
2b 1 24	HVAC - Turbine Building (HT)	-	-	165	-	-	-	-	25	190	-	-	-	190	-	-	-	-	-	6 322
2b 1 25	Instrument & Service Air (IA)	-	-	35	-	-	-	-	5	41	-	-	-	41	-	-	-	-	-	1 213
2b 1 26	Instrument & Service Air (IA) RCA	-	-	718	118	41	-	57	387	2 022	-	2 022	-	-	3 754	-	-	-	244 352	14 791
2b 1 27	Liquid Redwaste (LR)	-	-	451	731	105	-	905	552	2 894	-	2 894	-	-	4 538	-	-	-	291 979	27 224
2b 1 28	Normal Chilled Water (WC)	-	-	76	-	-	-	-	10	80	-	-	-	80	-	-	-	-	-	2 352
2b 1 29	Normal Chilled Water (WC) RCA	-	-	199	38	19	-	347	143	746	-	746	-	-	1 747	-	-	-	112 038	4 562
2b 1 30	Nuclear Cooling Water (NC)	-	-	53	-	-	-	-	8	61	-	-	-	61	-	-	-	-	-	1 746
2b 1 31	Nuclear Cooling Water (NC) RCA	-	-	473	218	114	-	2 111	685	3 601	-	3 601	-	-	10 647	-	-	-	680 829	11 451
2b 1 32	Nuclear Sampling (SS)	-	-	225	26	10	-	176	104	541	-	541	-	-	867	-	-	-	56 786	5 121
2b 1 33	Oil Waste & Nonradioactive Waste (OW)	-	-	562	65	35	-	653	313	1 619	-	1 619	-	-	3 292	-	-	-	210 616	13 291
2b 1 34	Plant Cooling Water (PW)	-	-	115	-	-	-	-	17	132	-	-	-	132	-	-	-	-	-	3 929
2b 1 35	Post Accident Sampling	-	-	11	-	1	-	10	5	27	-	27	-	-	60	-	-	-	3 169	276
2b 1 36	Radiation Monitoring (RM)	-	-	32	4	2	-	34	17	89	-	89	-	-	167	-	-	-	10 820	782
2b 1 37	Radioactive Waste Drain (RD)	-	-	438	464	52	-	514	173	1 971	-	1 971	-	-	2 251	-	-	-	166 934	19 457
2b 1 38	Reactor Coolant (RC)	-	-	16	171	17	-	118	83	412	-	412	-	-	585	-	-	-	38 217	4 434
2b 1 39	Safety Injection (SI)	-	-	1 659	576	283	-	5 219	1 819	9 556	-	9 556	-	-	26 194	-	-	-	1 683 405	41 385
2b 1 40	Service Gases (GA) RCA	-	-	202	33	12	-	222	111	580	-	580	-	-	1 097	-	-	-	71 533	4 164
2b 1 41	Solid Redwaste (SR)	-	-	122	211	34	-	304	196	883	-	883	-	-	1 508	-	-	-	95 132	7 907
2b 1 42	Decommissioning Crew Set up	-	-	3 428	-	-	-	-	514	3 942	-	-	3 942	-	-	-	-	-	-	83 075
2b 1 1	Totals	3 034	20 819	3 035	1 543	-	28 504	13 830	70 766	64 413	-	64 413	6 354	-	143 437	-	-	-	9 194 956	569 825
2b 1 2	Scaffolding in support of decommissioning	-	-	3 744	23	13	-	241	1 000	5 021	-	5 021	-	-	1 223	-	-	-	77 698	42 204
Decommissioning of Site Buildings																				
2b 1 3 1	Auxiliary Building	-	-	549	361	65	-	634	544	2 248	-	2 248	-	-	9 861	-	-	-	488 398	22 059
2b 1 3 2	Containment	-	-	1 180	1 730	269	-	5 479	2 492	11 633	-	11 633	-	-	58 640	-	-	-	2 623 131	67 811
2b 1 3 3	Holdup Tank & Pump House	-	-	343	315	79	-	737	378	1 598	-	1 598	-	-	12 283	-	-	-	149 929	16 083
2b 1 3 4	Redwaste Building	-	-	747	299	211	-	1 366	828	3 556	-	3 556	-	-	6 651	-	-	-	65 590	22 190
2b 1 3 5	Refueling Water Storage Tank	-	-	473	382	79	-	508	471	1 942	-	1 942	-	-	163 942	-	-	-	21 082	-
2b 1 3	Totals	-	-	3 292	3 082	697	-	8 172	4 713	20 978	-	20 978	-	-	81 930	-	-	-	3 948 189	149 225

Table C-2
Palo Verde NGS Unit 2
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LI RW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Burial Volume				GTCC Cu Feet	Burial / Processed Wt. Lbs	Craft Manhours	Utility and Contractor Manhours
															Class A Cu Feet	Class B Cu Feet	Class C Cu Feet					
2b 1.1	Prepare/submit License Termination Plan							133	20	153	153								-			
2b 1.5	Receive NRC approval of termination plan																				1 753	
2b 1	Subtotal Period 2b Activity Costs		6 326	27 645	3 755	2 278	37 218	133	19 563	96 918	90 565		6 354		226 591	-				13 220 840	761 254	1 753
Period 2b Additional Costs																						
2b 2.1	Excavation of Underground Services		1 624		-			339	457	2 419	2 419										10 228	
2b 2	Subtotal Period 2b Additional Costs		1 624					339	457	2 419	2 419										10 228	
Period 2b Collateral Costs																						
2b 3.1	Process decommissioning water waste	286		181	262		390		298	1 417	1 417		-		1 856				111 386	362		
2b 3.2	Process decommissioning chemical flush waste	7	-	215	652		855		337	2 066	2 066				2 293					429		
2b 3.3	Small tool allowance			461	-					69	530	530										
2b 3	Subtotal Period 2b Collateral Costs	293		461	396	914	1 245		704	4 013	4 013				4 150	-			355 767	791		
Period 2b Period Dependent Costs																						
2b 4.1	Decon supplies	1 833					-		458	2 292	2 292											
2b 4.2	Insurance							2 480	248	2 728	2 728											
2b 4.3	Property taxes							990	99	1 089	1 089											
2b 4.4	Health physics supplies		5 056						1 264	6 319	6 319											
2b 4.5	Heavy equipment rental		6,542						981	7 523	7 523											
2b 4.6	Disposal of DAW generated			191	174		320		125	811	811		-		10 826				216 529	353		
2b 4.7	Plant energy budget							5 180	777	5 957	5 957											
2b 4.8	NRC Fees							1 080	108	1 188	1 188											
2b 4.9	Emergency Planning Fees							2 502	250	2 752			2 752									
2b 4.10	Spent Fuel Pool O&M							2 450	369	2 829			2 829									
2b 4.11	Liquid Radwaste Processing Equipment/Services							619	93	712	712											
2b 4.12	Remedial Actions Surveys							3 741	374	4 115												
2b 4.13	Security Staff Cost							25 023	3 753	28 777	28 777										451 051	
2b 4.14	Utility Staff Cost							72 583	10 887	83 471	83 471										967 642	
2b 4	Subtotal Period 2b Period Dependent Costs	1 833	11 597	191	174		320	116 659	19 414	150 189	144 608	5 581			10 826				216 529	353	1 418 693	
2b 0	TOTAL PERIOD 2b COST	8 453	41 326	4 341	3 366		38 783	117 131	10 138	253,540	241 605	5 581	6 354	-	241 567				13 795 140	772 626	1 420 446	
PERIOD 2d - Decontamination Following Wet Fuel Storage																						
Period 2d Direct Decommissioning Activities																						
2d 1.1	Remove spent fuel racks		310	31	128	37		692	354	1 553	1 553				3 515				223 325	968	-	
Disposal of Plant Systems																						
2d 1.2.1	Electrical Spent Fuel		-	184	31	19		348	-	139	720	720			1 766	-			112 166	4 048	-	
2d 1.2.2	Fuel Pool Cooling & Cleanup (F/C)		391	393	138	67		1 237	-	627	2 855	2 855			-				399 088	13 370	-	
2d 1.2.3	HVAC - Fuel Building (HF)			159	88	40		747		241	1 276	1 276			-				240 970	3 820	-	
2d 1.2.4	Sanitary Drainage & Treatment (ST)			16						2	19	19			-					577	-	
2d 1.2	Totals		391	753	257	126		2 332		1 010	4 869	4,850			19				11 706			
Decontamination of Site Buildings																						
2d 1.3.1	Fuel Building		414	493	54	22		364		430	1 776	1 776			2 151	-			128 216	22 125	-	
2d 1.3	Totals		414	493	54	22		364		430	1 776	1 776			2 151	-			128 216	22 125	-	
2d 1.4	Scaffolding in support of decommissioning			749	5	3		48		200	1 004	1 004							245	15 540	8 441	
2d 1	Subtotal Period 2d Activity Costs		1 115	2 025	443	188		7 436		1 994	9,202	9 183	19	-	17 617				1 119 304	53 350	-	
Period 2d Additional Costs																						
2d 2.1	Operational Equipment		-		21	67		911		240	1 239	1,239			11 760				294 000	32	-	
2d 2	Subtotal Period 2d Additional Costs		-		21	67		911		240	1 239	1,239			11 760				294 000	32	-	
Period 2d Collateral Costs																						
2d 3.1	Process decommissioning water waste		74	-	47	68		102		78	370	370			485	-			29 108	95	-	
2d 3.2	Process decommissioning chemical flush waste		2		69	208		273		107	659	659			732	-				137	-	
2d 3.3	Small tool allowance			38						6	44	44									-	
2d 3.4	Decommissioning Equipment Disposition				99	56		1 042		279	1 476	1,476			5 290				336 079	147	-	
2d 3	Subtotal Period 2d Collateral Costs		77	38	215	333		1 417		470	2,548	2 548			6 507				443 147	378	-	
Period 2d Period Dependent Costs																						
2d 4.1	Decon supplies		115						29	144	144										-	
2d 4.2	Insurance							400	40	440	440										-	
2d 4.3	Property taxes							160	16	176	176										-	
2d 4.4	Health physics supplies			460					115	576	576										-	
2d 4.5	Heavy equipment rental			1 055					158	1,213	1 213										-	

Table C-2
Palo Verde NGS Unit 2
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Demon Cost	Removal Costs	Packaging Costs	Transport Costs	O&E Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Class A Cu Feet	Class B Cu Feet	Class C Cu Feet	STCC Cu Feet	Burial/Processed Wt. Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2d Period Dependent Costs (Continued)																					
2d 4 6	Disposal of DAW generated	-	-	29	27	-	49	-	19	123	123	-	-	-	-	1 648	-	-	32 963	54	-
2d 4 7	Plant energy budget	-	-	-	-	-	-	446	67	512	512	-	-	-	-	-	-	-	-	-	-
2d 4 8	NRC Fees	-	-	-	-	-	-	163	17	182	182	-	-	-	-	-	-	-	-	-	-
2d 4 9	Emergency Planning Fees	-	-	-	-	-	-	40	40	444	444	-	-	-	-	-	-	-	-	-	-
2d 4 10	Liquid Radioactive Processing Equipment/Services	-	-	-	-	-	-	200	30	230	230	-	-	-	-	-	-	-	-	-	-
2d 4 11	Remedial Actions Surveys	-	-	-	-	-	-	603	603	603	603	-	-	-	-	-	-	-	-	-	-
2d 4 12	Security Staff Cost	-	-	-	-	-	-	1 440	216	1 656	1 656	-	-	-	-	-	-	-	-	-	25 911
2d 4 13	Utility Staff Cost	-	-	-	-	-	-	7 211	1 085	8 315	8 315	-	-	-	-	-	-	-	-	-	98 729
2d 4	Subtotal Period 2d Period Dependent Costs	115	1 516	29	27	-	49	11 048	1 832	14 614	14 771	444	-	-	1 648	-	-	-	32 963	54	124 640
2d 0	TOTAL PERIOD 2d COST	1 307	3 578	707	615	-	5 813	11 048	4 535	27 604	27 141	444	19	-	37 532	-	-	-	1 889 414	53 814	124 640
PERIOD 2e - Delay before License Termination																					
Period 2e Direct Decommissioning Activities																					
Period 2e Additional Costs																					
2e 2 1	License Termination Survey Planning	-	-	-	-	-	-	842	253	1 095	1 095	-	-	-	-	-	-	-	-	-	4 160
2e 2	Subtotal Period 2e Additional Costs	-	-	-	-	-	-	842	253	1 095	1 095	-	-	-	-	-	-	-	-	-	4 160
Period 2e Collateral Costs																					
2e 3	Subtotal Period 2e Collateral Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Period 2e Period Dependent Costs																					
2e 4 1	Insurance	-	-	-	-	-	-	1 326	133	1 458	1 458	-	-	-	-	-	-	-	-	-	-
2e 4 2	Property taxes	-	-	-	-	-	-	529	53	582	582	-	-	-	-	-	-	-	-	-	-
2e 4 3	Health physics supplies	-	147	-	-	-	-	57	184	184	184	-	-	-	-	-	-	-	-	-	-
2e 4 4	Disposal of DAW generated	-	-	3	3	-	5	2	12	12	12	-	-	-	-	158	-	-	3 168	5	-
2e 4 5	Plant energy budget	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2e 4 6	NRC Fees	-	-	-	-	-	-	359	36	394	394	-	-	-	-	-	-	-	-	-	-
2e 4 7	Emergency Planning Fees	-	-	-	-	-	-	925	92	1 017	1 017	-	-	-	-	-	-	-	-	-	-
2e 4 8	Security Staff Cost	-	-	-	-	-	-	477 2	716	5 487	5 487	-	-	-	-	-	-	-	-	-	85 877
2e 4 9	Utility Staff Cost	-	-	-	-	-	-	2 867	380	2 147	2 147	-	-	-	-	-	-	-	-	-	23 136
2e 4	Subtotal Period 2e Period Dependent Costs	-	147	3	3	-	5	9 777	1 348	11 282	10 264	1 017	-	-	158	-	-	-	3 168	5	109 013
2e 0	TOTAL PERIOD 2e COST	-	147	3	3	-	5	10 619	1 601	12 377	11 359	1 017	-	-	158	-	-	-	3 168	5	115 173
PERIOD 2f - License Termination																					
Period 2f Direct Decommissioning Activities																					
2f 1 1	ORISE confirmatory survey	-	-	-	-	-	-	170	51	221	221	-	-	-	-	-	-	-	-	-	-
2f 1 2	Terminate license	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2f 1	Subtotal Period 2f Activity Costs	-	-	-	-	-	-	170	51	221	221	-	-	-	-	-	-	-	-	-	-
Period 2f Additional Costs																					
2f 2 1	License Termination Survey	-	-	-	-	-	-	8 465	2 540	11 005	11 005	-	-	-	-	-	-	-	-	187 642	2 080
2f 2	Subtotal Period 2f Additional Costs	-	-	-	-	-	-	8 465	2 540	11 005	11 005	-	-	-	-	-	-	-	-	187 642	2 080
Period 2f Collateral Costs																					
2f 3 1	Staff relocation expenses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2f 3	Subtotal Period 2f Collateral Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Period 2f Period-Dependent Costs																					
2f 4 1	Insurance	-	-	-	-	-	-	638	64	701	701	-	-	-	-	-	-	-	-	-	-
2f 4 2	Property taxes	-	-	-	-	-	-	255	25	280	280	-	-	-	-	-	-	-	-	-	-
2f 4 3	Health physics supplies	-	839	6	5	-	10	210	1 049	1 049	1 049	-	-	-	-	-	-	-	-	-	-
2f 4 4	Disposal of DAW generated	-	-	-	-	-	-	4	24	24	24	-	-	-	-	924	-	-	6 482	11	-
2f 4 5	Plant energy budget	-	-	-	-	-	-	355	53	409	409	-	-	-	-	-	-	-	-	-	-
2f 4 6	NRC Fees	-	-	-	-	-	-	249	25	274	274	-	-	-	-	-	-	-	-	-	-
2f 4 7	Security Staff Cost	-	-	-	-	-	-	2 295	344	2 640	2 640	-	-	-	-	-	-	-	-	-	41 310
2f 4 8	Utility Staff Cost	-	-	-	-	-	-	991	6 904	6 904	6 904	-	-	-	-	-	-	-	-	-	77 908
2f 4	Subtotal Period 2f Period Dependent Costs	-	839	6	5	-	10	9 796	16 265	12 282	12 282	-	-	-	324	-	-	-	6 482	11	119 216
2f 0	TOTAL PERIOD 2f COST	-	839	6	5	-	10	18 431	4 216	23 507	23 507	-	-	-	324	-	-	-	6 482	187 652	121 296
PERIOD 1 TOTALS																					
		10 911	83 679	41 208	9 889	-	102 743	261 311	107 896	617 636	599 216	10 854	7 566	-	566 853	673	324	-	35 648 820	1 425 438	3 030 285

Table C-2
Palo Verde NGS Unit 2
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt. Lbs.	Craft Manhours	Utility and Contractor Manhours
PERIOD 1b - Site Restoration																					
Period 3b Direct Decommissioning Activities																					
Demolition of Remaining Site Buildings																					
3b 1 1 1	Auxiliary Building		1 403	-	-	-	-	-	210	1 614	-	-	1 614	-	-	-	-	-	-	11 728	-
3b 1 1 2	Chemical Injection Pump House		5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	63	-	-
3b 1 1 3	Condensate Storage Tank		108	-	-	-	-	-	16	124	-	-	124	-	-	-	-	-	1 787	-	-
3b 1 1 4	Containment		2 618	-	-	-	-	-	390	3 011	-	-	3 011	-	-	-	-	-	25 043	-	-
3b 1 1 5	Control Building		648	-	-	-	-	-	97	745	-	-	745	-	-	-	-	-	9 292	-	-
3b 1 1 6	Cooling Tower Electrical Equipment		16	-	-	-	-	-	2	18	-	-	18	-	-	-	-	-	388	-	-
3b 1 1 7	Cooling Towers		1 085	-	-	-	-	-	153	1 218	-	-	1 218	-	-	-	-	-	7 343	-	-
3b 1 1 8	Corridor Building		68	-	-	-	-	-	10	78	-	-	78	-	-	-	-	-	992	-	-
3b 1 1 9	Diesel Generator Building		266	-	-	-	-	-	40	306	-	-	306	-	-	-	-	-	2 158	-	-
3b 1 1 10	Holdup Tank & Pump House		37	-	-	-	-	-	6	42	-	-	42	-	-	-	-	-	266	-	-
3b 1 1 11	Intake Structure Canals & Circ. Tunnels		1 351	-	-	-	-	-	203	1 554	-	-	1 554	-	-	-	-	-	3 859	-	-
3b 1 1 12	Main Steam Support Structure		181	-	-	-	-	-	27	209	-	-	209	-	-	-	-	-	1 700	-	-
3b 1 1 13	Miscellaneous Structures & Foundations		175	-	-	-	-	-	26	201	-	-	201	-	-	-	-	-	1 256	-	-
3b 1 1 14	Nuclear Service Spray Ponds		1 089	-	-	-	-	-	163	1 252	-	-	1 252	-	-	-	-	-	7 151	-	-
3b 1 1 15	Operations Support Building		117	-	-	-	-	-	18	135	-	-	135	-	-	-	-	-	1 730	-	-
3b 1 1 16	Radiation Building		1 173	-	-	-	-	-	221	1 694	-	-	1 694	-	-	-	-	-	21 535	-	-
3b 1 1 17	Refueling Water Storage Tank		70	-	-	-	-	-	10	80	-	-	80	-	-	-	-	-	452	-	-
3b 1 1 18	Subsynchronous Resonance Protection		2	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	30	-	-
3b 1 1 19	Switchgear Building		21	-	-	-	-	-	4	25	-	-	25	-	-	-	-	-	322	-	-
3b 1 1 20	Transformer Area		69	-	-	-	-	-	10	79	-	-	79	-	-	-	-	-	447	-	-
3b 1 1 21	Turbine Building		1 737	-	-	-	-	-	261	1 997	-	-	1 997	-	-	-	-	-	37 106	-	-
3b 1 1 22	Turbine Building Pedestal		3 578	-	-	-	-	-	517	4 115	-	-	4 115	-	-	-	-	-	59 425	-	-
3b 1 1 23	Turbine Maintenance Facility		15	-	-	-	-	-	2	17	-	-	17	-	-	-	-	-	244	-	-
3b 1 1 24	Yard/Tunnels		331	-	-	-	-	-	50	380	-	-	380	-	-	-	-	-	5 290	-	-
3b 1 1 25	Fuel Building		641	-	-	-	-	-	96	738	-	-	738	-	-	-	-	-	6 150	-	-
3b 1 1	Totals		17 108	-	-	-	-	-	2 566	19 674	-	-	19 674	-	-	-	-	-	205 587	-	-
Site Closeout Activities																					
3b 1 2	Grade & Landscape site		59	-	-	-	-	-	9	68	-	-	68	-	-	-	-	-	325	-	-
3b 1 3	Final Report to NRC		-	-	-	-	-	-	51	51	-	-	51	-	-	-	-	-	-	668	-
3b 1	Subtotal Period 3b Activity Costs		17 167	-	-	-	-	-	51	2 583	19 800	58	19 742	-	-	-	-	-	205 913	668	668
Period 3b Additional Costs																					
3b 2 1	Concrete Crushing		1 121	-	-	-	-	-	3	169	1 292	-	1 292	-	-	-	-	-	-	5 446	-
3b 2 2	Construction Debris		-	-	-	-	-	-	10	6	46	-	46	-	-	-	-	-	-	-	-
3b 2	Subtotal Period 3b Additional Costs		1 121	-	-	-	-	-	43	175	1 338	-	1 338	-	-	-	-	-	-	5 446	-
Period 3b Collateral Costs																					
3b 3 1	Small tool allowance		122	-	-	-	-	-	18	110	-	-	110	-	-	-	-	-	-	-	-
3b 3	Subtotal Period 3b Collateral Costs		122	-	-	-	-	-	18	110	-	-	110	-	-	-	-	-	-	-	-
Period 3b Period-Dependent Costs																					
3b 4 1	Insurance		-	-	-	-	-	-	630	63	693	-	693	-	-	-	-	-	-	-	-
3b 4 2	Property taxes		-	-	-	-	-	-	850	6 520	-	-	6 520	-	-	-	-	-	-	-	-
3b 4 3	Heavy equipment rental		5 669	-	-	-	-	-	439	66	5 005	-	5 005	-	-	-	-	-	-	-	-
3b 4 4	Plant energy budget		-	-	-	-	-	-	5 677	851	6 528	-	6 528	-	-	-	-	-	-	-	-
3b 4 5	Security Staff Cost		-	-	-	-	-	-	8 019	1 203	9 222	-	9 222	-	-	-	-	-	-	102 164	-
3b 4 6	Utility Staff Cost		-	-	-	-	-	-	14 765	3 034	23 168	-	23 168	-	-	-	-	-	-	104 200	-
3b 4	Subtotal Period 3b Period-Dependent Costs		5 669	-	-	-	-	-	14 765	3 034	23 168	-	23 168	-	-	-	-	-	-	206 363	-
3b 0	TOTAL PERIOD 3b COST		24 079	-	-	-	-	-	14 859	5 809	44 747	58	44 689	-	-	-	-	-	211 358	207 031	-
PERIOD 3c - Fuel Storage Operations/Shipping																					
Period 3c Direct Decommissioning Activities																					
Period 3c Collateral Costs																					
3c 0	Subtotal Period 3c Collateral Costs		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table C-2
Palo Verde NGS Unit 2
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Class A Cu Feet	Class B Cu Feet	Class C Cu Feet	GTCC Cu Feet	Burnt/Processed Wt. Lbs.	Craft Manhours	Utility and Generator Manhours
Period 3c	Period Dependent Costs																				
3c 4.1	Insurance																				
3c 4.2	Property taxes																				
3c 4.3	Plant energy budget																				
3c 4.4	Utility Staff Cost																				
3c 4	Subtotal Period 3c Period Dependent Costs																				
3c 0	TOTAL PERIOD 3c COST																				
PERIOD 3d	GTCC shipping																				
Period 3d	Direct Decommissioning Activities																				
	Nuclear Steam Supply System Removal																				
3d 1.1.1	Vessel & Internals GTCC Disposal		2,581				25,143		4,462	32,486	32,486							4,433	905,513		
3d 1.1	Totals		2,581				25,143		4,462	32,486	32,486							4,433	905,513		
3d 1	Subtotal Period 3d Activity Costs		2,581				25,143		4,462	32,486	32,486							4,433	905,513		
Period 3d	Collateral Costs																				
3d 3	Subtotal Period 3d Collateral Costs																				
Period 3d	Period Dependent Costs																				
3d 4.1	Insurance																				
3d 4.2	Property taxes																				
3d 4.3	Plant energy budget																				
3d 4.4	Utility Staff Cost																				
3d 4	Subtotal Period 3d Period Dependent Costs																				
3d 0	TOTAL PERIOD 3d COST		2,581				25,143		4,462	32,486	32,486							4,433	905,513		
PERIOD 3 TOTALS			24,079	2,581			25,443	14,859	10,271	77,233	32,545		44,689					4,433	905,513	211,358	207,031
TOTAL COST TO DECOMMISSION		15,179	110,011	43,968	10,140		135,129	382,808	137,587	835,323	769,585	13,081	52,657		567,906	2,002	224	4,433	36,735,180	1,651,261	3,842,494

TOTAL COST TO DECOMMISSION WITH 19.72% CONTINGENCY	\$836,323 thousands of 2019 dollars
TOTAL NRC LICENSE TERMINATION COST IS 92.13% OR	\$769,685 thousands of 2019 dollars
SPENT FUEL MANAGEMENT COST IS 1.67% OR	\$13,081 thousands of 2019 dollars
NON-NUCLEAR DEMOLITION COST IS 0.2% OR	\$52,667 thousands of 2019 dollars
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC)	570,139 Cubic Feet
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED	4,433 Cubic Feet
TOTAL SCRAP METAL REMOVED	59,048 Tons
TOTAL CRAFT LABOR REQUIREMENTS	1,651,261 Man-hours

End Notes
n/a - indicates that this activity not charged as decommissioning expense
a - indicates that this activity performed by decommissioning staff
0 - indicates that this value is less than 0.5 but is non zero
A cell containing - indicates a zero value

EL PASO ELECTRIC COMPANY
2021 TEXAS RATE CASE FILING
SCHEDULE H-10 NUCLEAR DECOMMISSIONING COST STUDIES
SPONSOR: RODERICK W. KNIGHT
PREPARED BY: RODERICK W. KNIGHT
FOR TEST YEAR ENDED DECEMBER 31, 2020

Table C-3
Palo Verde NGS Unit 3
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt. Lbs	CrA# Manhours	Utility and Overhead Manhours
PERIOD 1a - Shutdown through Transition																					
Period 1a Direct Decommissioning Activities																					
1a 1.1	Prepare preliminary decommissioning cost						42	6	49	49											956
1a 1.2	Notification of Cessation of Operations							n/a													
1a 1.3	Remove fuel & source material							a													
1a 1.4	Notification of Permanent Defueling							a													
1a 1.5	Deactivate plant systems & process waste						65	10	75	75											856
1a 1.6	Prepare and submit PSDAR						150	22	172	172											1 969
1a 1.7	Review plant design & specs							a													
1a 1.8	Perform detailed rad survey							a													
1a 1.9	Estimate by product inventory						33	5	37	37											428
1a 1.10	End product description						33	5	37	37											428
1a 1.11	Detailed by-product inventory						42	6	49	49											556
1a 1.12	Define major work sequence						244	37	280	280											3 210
1a 1.13	Perform SER and EA						101	15	116	116											1 327
1a 1.14	Prepare/submit Defueled Technical Specifications						244	37	280	280											3 210
1a 1.15	Perform Site Specific Cost Study						163	24	187	187											2 140
1a 1.16	Prepare/submit Irradiated Fuel Management Plan						33	5	37	37											428
Activity Specifications																					
1a 1.17.1	Plant & temporary facilities						160	24	184	184			18								2 106
1a 1.17.2	Plant systems						135	20	156	140			16								1 763
1a 1.17.3	NSSS Decontamination Flush						36	2	19	19											214
1a 1.17.4	Reactor internals						231	35	265	265											3 039
1a 1.17.5	Reactor vessel						211	32	243	243											2 782
1a 1.17.6	Dual-loop shield						16	2	19	19											214
1a 1.17.7	Steam generators						101	15	117	117											1 335
1a 1.17.8	Reinforced concrete						52	8	60	30			30								685
1a 1.17.9	Main Turbine						13	2	15				15								171
1a 1.17.10	Main Condensers						13	2	15				15								171
1a 1.17.11	Plant structures & buildings						101	15	117	58			58								1 335
1a 1.17.12	Waste management						150	22	172	172											1 969
1a 1.17.13	Facility & site closure						29	4	34	17											385
1a 1.17	Total						1 230	184	1 414	1 245			169								16 190
Planning & Site Preparations																					
1a 1.18	Prepare damming sequence						78	12	90	90											1 027
1a 1.19	Plant prep. & temp. access						3 400	510	3 910	3 910											
1a 1.20	Design water clean up system						46	7	52	52											599
1a 1.21	Rigging/Cont. Control Equipment/etc						2 400	360	2 760	2 760											
1a 1.22	Procure cask/drum & containers						60	5	65	65											526
1a 1	Subtotal Period 1a Activity Costs						8 341	1 251	9 592	9 424			169								33 451
Period 1a Additional Costs																					
1a 2.1	Staff Transition						39 281	5 892	45 173	45 173											
1a 2	Subtotal Period 1a Additional Costs						39 281	5 892	45 173	45 173											
Period 1a Collateral Costs																					
1a 3	Subtotal Period 1a Collateral Costs																				
Period 1a Period Dependent Costs																					
1a 4.1	Insurance						2 316	232	2 548	2 548											
1a 4.2	Property taxes						222	22	244	244											
1a 4.3	Health physics supplies		321					80	401	401											
1a 4.4	Heavy equipment rental		364					55	418	418											
1a 4.5	Disposal of IDAW generated							4	28	28											
1a 4.6	Plant energy budget			7	6		11	1 547	232	1 779					376			7 522	12		
1a 4.7	NRC Fees							371	37	408											
1a 4.8	Emergency Planning Fees							719	77	845											
1a 4.9	Spent Fuel Pool O&M							501	83	631											
1a 4.10	Security Staff Cost							6 340	961	7 291											115 318
1a 4.11	Utility Staff Cost							17 000	2 550	19 550											229 871
1a 4	Subtotal Period 1a Period-Dependent Costs		685	7	6		11	20 115	4 323	34 145					376			7 522	12		345 190
1a 0	TOTAL PERIOD 1a COST		685	7	6		11	76 757	11 466	88 911			1 479		376			7 522	12		378 641
PERIOD 1b - Decommissioning Preparations																					
Period 1b Direct Decommissioning Activities																					
Detailed Work Procedures																					
1b 1.1.1	Plant systems						154	23	177	159			18								2 026
1b 1.1.2	NSSS Decontamination Flush						33	5	37	37											428
1b 1.1.3	Reactor internals						81	12	93	93											1 070
1b 1.1.4	Remaining buildings						44	7	50	13			38								578
1b 1.1.5	CRD cooling assembly						33	5	37	37											428
1b 1.1.6	CRD housings & ICI tubes						33	5	37	37											428

Table C-3
Palo Verde NGS Unit 3
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Construction Manhours
Detailed Work Procedures (Continued)																					
1b 1 1 7	Incore instrumentation	-	-	-	-	-	-	33	5	37	-	37	-	-	-	-	-	-	-	-	428
1b 1 1 8	Reactor vessel	-	-	-	-	-	-	118	18	136	-	136	-	-	-	-	-	-	-	-	1,564
1b 1 1 9	Facility closeout	-	-	-	-	-	-	39	6	45	-	45	-	-	-	-	-	-	-	-	514
1b 1 1 10	Visual shields	-	-	-	-	-	-	15	2	17	-	17	-	-	-	-	-	-	-	-	193
1b 1 1 11	Biological shield	-	-	-	-	-	-	39	6	45	-	45	-	-	-	-	-	-	-	-	514
1b 1 1 12	Steam generators	-	-	-	-	-	-	150	22	172	-	172	-	-	-	-	-	-	-	-	1,969
1b 1 1 13	Reinforced concrete	-	-	-	-	-	-	33	5	37	-	37	-	-	-	-	-	-	-	-	428
1b 1 1 14	Main Turbine	-	-	-	-	-	-	51	8	59	-	59	-	-	-	-	-	-	-	-	668
1b 1 1 15	Main Condensers	-	-	-	-	-	-	51	8	59	-	59	-	-	-	-	-	-	-	-	668
1b 1 1 16	Auxiliary building	-	-	-	-	-	-	89	13	102	-	102	-	-	-	-	-	-	-	-	1,168
1b 1 1 17	Reactor building	-	-	-	-	-	-	89	13	102	-	102	-	-	-	-	-	-	-	-	1,168
1b 1 1	Total	-	-	-	-	-	-	1,081	162	1,243	-	1,009	-	234	-	-	-	-	-	-	14,228
1b 1 2	Decon primary loop	1,047	-	-	-	-	-	-	523	1,570	-	1,570	-	-	-	-	-	-	-	1,067	-
1b 1	Subtotal Period 1b Activity Costs	1,047	-	-	-	-	-	1,081	686	2,813	-	2,580	-	234	-	-	-	-	-	1,067	14,228
Period 1b Additional Costs																					
1b 2 1	Spent Fuel Pool Isolation	-	-	-	-	-	-	8,217	1,233	9,449	-	9,449	-	-	-	-	-	-	-	-	-
1b 2 2	Site Characterization	-	-	-	-	-	-	2,582	769	3,330	-	3,330	-	-	-	-	-	-	-	13,042	4,640
1b 2	Subtotal Period 1b Additional Costs	-	-	-	-	-	-	10,779	2,001	12,780	-	12,780	-	-	-	-	-	-	-	13,042	4,640
Period 1b Collateral Costs																					
1b 3 1	Decon equipment	1,026	-	-	-	-	-	-	154	1,180	-	1,180	-	-	-	-	-	-	-	-	-
1b 3 2	Staff relocation expenses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1b 3 3	Process decommissioning water waste	74	-	-	-	-	-	95	75	352	-	352	-	-	-	-	-	-	27,199	88	-
1b 3 4	Process decommissioning chemical flush waste	4	-	125	378	-	7,130	-	1,854	9,490	-	9,490	-	-	453	-	-	-	141,637	249	-
1b 3 5	Small tool allowance	-	-	1	-	-	-	-	0	2	-	2	-	-	-	-	-	-	-	-	-
1b 3 6	Pipe cutting equipment	-	1,200	-	-	-	-	-	180	1,380	-	1,380	-	-	-	-	-	-	-	-	-
1b 3 7	Dewatering	2,093	-	-	-	-	-	-	314	2,407	-	2,407	-	-	-	-	-	-	-	-	-
1b 3	Subtotal Period 1b Collateral Costs	3,197	1,201	169	442	-	7,225	-	2,576	14,810	-	14,810	-	-	453	1,329	-	-	168,836	337	-
Period 1b Period Dependent Costs																					
1b 4 1	Decon supplies	25	-	-	-	-	-	-	6	31	-	31	-	-	-	-	-	-	-	-	-
1b 4 2	Insurance	-	-	-	-	-	-	1,172	117	1,290	-	1,290	-	-	-	-	-	-	-	-	-
1b 4 3	Property taxes	-	-	-	-	-	-	112	11	123	-	123	-	-	-	-	-	-	-	-	-
1b 4 4	Health plan supplies	-	182	-	-	-	-	-	46	228	-	228	-	-	-	-	-	-	-	-	-
1b 4 5	Heavy equipment rental	-	184	-	-	-	-	-	28	212	-	212	-	-	-	-	-	-	-	-	-
1b 4 6	Disposal of DAW generated	-	-	4	4	-	7	-	3	17	-	17	-	-	224	-	-	-	4,488	7	-
1b 4 7	Plant energy budget	-	-	-	-	-	-	1,566	235	1,801	-	1,801	-	-	-	-	-	-	-	-	-
1b 4 8	NRC Fees	-	-	-	-	-	-	95	19	105	-	105	-	-	-	-	-	-	-	-	-
1b 4 9	Emergency Planning Fees	-	-	-	-	-	-	388	39	427	-	427	-	-	-	-	-	-	-	-	-
1b 4 10	Spent Fuel Pool O&M	-	-	-	-	-	-	279	42	321	-	321	-	-	-	-	-	-	-	-	-
1b 4 11	Security Staff Cost	-	-	-	-	-	-	3,209	481	3,690	-	3,690	-	-	-	-	-	-	-	-	58,971
1b 4 12	Utility Staff Cost	-	-	-	-	-	-	11,054	1,558	12,713	-	12,713	-	-	-	-	-	-	-	-	149,298
1b 4	Subtotal Period 1b Period Dependent Costs	25	366	4	4	-	7	17,875	2,875	20,566	-	20,208	748	-	224	-	-	-	4,488	7	207,669
1b 0	TOTAL PERIOD 1b COST	4,268	1,568	173	445	-	7,232	29,736	7,938	51,359	-	50,378	748	234	-	678	1,329	-	173,324	14,453	226,538
PERIOD 1 TOTALS																					
		4,968	2,252	179	451	-	7,243	106,473	19,404	140,271	-	137,642	2,227	403	-	1,054	1,329	-	180,846	14,465	605,178
PERIOD 2a - Large Component Removal																					
Period 2a Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
2a 1 1 1	Reactor Coolant Piping	142	137	30	37	-	-	287	-	210	943	943	-	-	1,789	-	-	-	124,853	6,464	-
2a 1 1 2	Pressurizer Quench Tank	8	7	3	4	-	-	44	-	18	84	84	-	-	201	-	-	-	14,051	376	-
2a 1 1 3	Reactor Coolant Pumps & Motors	133	70	355	359	-	-	845	-	395	2,197	2,197	-	-	10,637	-	-	-	1,080,000	5,539	100
2a 1 1 4	Pressurizer	32	41	480	98	-	-	239	-	149	1,039	1,039	-	-	2,879	-	-	-	324,870	2,373	625
2a 1 1 5	Steam Generators	210	3,029	8,000	1,201	-	-	8,762	-	3,536	22,769	22,769	-	-	49,515	-	-	-	4,415,357	45,354	958
2a 1 1 6	CRDMs/InService Structure Removal	132	336	414	80	-	-	1,033	-	462	2,457	2,457	-	-	8,222	-	-	-	333,927	10,981	-
2a 1 1 7	Reactor Vessel Internals	110	6,757	19,284	1,018	-	-	8,190	-	14,351	50,143	50,143	-	-	2,379	673	-	-	395,755	43,357	1,893
2a 1 1 8	Reactor Vessel	102	8,117	3,899	882	-	-	3,421	-	9,221	26,353	26,353	-	-	17,963	-	-	-	1,269,628	43,357	1,893
2a 1 1	Totals	872	18,495	32,414	3,680	-	-	21,161	-	1,021	28,342	105,985	105,985	-	33,585	673	224	-	7,955,740	157,799	5,469
Removal of Major Equipment																					
2a 1 2	Main Turbine/Generator	-	119	-	-	-	-	-	-	18	137	-	137	-	-	-	-	-	-	-	3,424
2a 1 3	Main Condensers	-	1,281	1,223	699	-	-	-	-	3,776	19,893	19,893	-	-	65,575	-	-	-	4,165,812	35,411	-
Cascading Costs from Clean Building Demolition																					
2a 1 4 1	Auxiliary Building	-	156	-	-	-	-	-	-	23	179	179	-	-	-	-	-	-	-	-	1,303
2a 1 4 2	Containment	-	406	-	-	-	-	-	-	61	470	470	-	-	-	-	-	-	-	-	4,270
2a 1 4 3	Main Steam Support Structure	-	31	-	-	-	-	-	-	5	36	36	-	-	-	-	-	-	-	-	274
2a 1 4 4	Radiation Building	-	164	-	-	-	-	-	-	25	188	188	-	-	-	-	-	-	-	-	2,404
2a 1 4 5	Fuel Building	-	82	-	-	-	-	-	-	12	95	95	-	-	-	-	-	-	-	-	717
2a 1 4	Totals	-	842	-	-	-	-	-	-	126	968	968	-	-	-	-	-	-	-	-	8,967

Table C-3
Palo Verde NGS Unit 3
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Class A Cu Feet	Class B Cu Feet	Class C Cu Feet	GTCC Cu Feet	Burial/Processed Wt. Lbs.	Cr#R Manhours	Utility and Contractor Manhours	
Disposal of Plant Systems																						
2a 1.5.1	Auxiliary Feedwater (AF)		39						6	45			45							1,309	-	
2a 1.5.2	Auxiliary Steam (AS)		44						7	51			51							1,500	-	
2a 1.5.3	Auxiliary Steam (AS) - RCA		168	36	17		113		126	660	660				1,569	-	-		100,889	3,888	-	
2a 1.5.4	Auxiliary Steam - Common (AS)		269						40	309			309							9,211	-	
2a 1.5.5	CT Makeup & Blowdown (FB)		18	3	2		37		14	74	74				183				11,785	451	-	
2a 1.5.6	CT Makeup & Blowdown - Common (FB)		2,219	1,230	764		14,101		4,318	22,631	22,631				71,516				454,807	60,430	-	
2a 1.5.7	Chemical Production (CQ)		17						2	19			19							530	-	
2a 1.5.8	Chemical Production - Common (CC)		166						25	191			191							5,381	-	
2a 1.5.9	Chlorine Injection (CI)		56						8	64			64							1,820	-	
2a 1.5.10	Chlorine Injection - Common (CI)		62						9	72			72							2,189	-	
2a 1.5.11	Circulating Water (CW)		107						16	124			124							3,545	-	
2a 1.5.12	Condensate (CD)		191						29	219			219							6,510	-	
2a 1.5.13	Condensate Storage & Transfer (CT)		248	33	17		307		145	749	749				1,542				99,005	6,046	-	
2a 1.5.14	Condensate Air Removal (AR)		79						6	45			45							1,316	-	
2a 1.5.15	Demineralized Water (DW)		64						10	73			73							2,085	-	
2a 1.5.16	Demineralized Water - Common (DW)		118						18	135			135							3,754	-	
2a 1.5.17	Diesel Fuel Oil & Trans - Common (DF)		22						3	25			25							861	-	
2a 1.5.18	Diesel Fuel Oil & Transfer (DF)		49						7	56			56							1,492	-	
2a 1.5.19	Diesel Generator (DG)		58						9	67			67							1,862	-	
2a 1.5.20	FW Heater Extract Steam & Drains (ED)		442						66	508			508							14,838	-	
2a 1.5.21	Feedwater (FW)		93						14	107			107							3,094	-	
2a 1.5.22	Feedwater (FW) - RCA		21	12	7		129		40	209	209				656				41,735	541	-	
2a 1.5.23	Generator Hydrogen & CO2 (GH)		3						0	3			3							102	-	
2a 1.5.24	Generator Seal Oil (SO)		7						1	8			8							236	-	
2a 1.5.25	HVAC - MacSite Structures (HS)		10						2	18			18							523	-	
2a 1.5.26	HVAC - Miscellaneous Common (HS)		11						2	13			13							346	-	
2a 1.5.27	Lube Oil (LO)		36						5	42			42							1,188	-	
2a 1.5.28	Lube Oil Separator & Trans & Purification (OS)		32						5	36			36							1,038	-	
2a 1.5.29	Main Steam (SG)		233						35	268			268							8,032	-	
2a 1.5.30	Main Steam (SG) - RCA		94	37	20		312		123	647	647				1,878				119,916	2,297	-	
2a 1.5.31	Main Turbine (MT)		370	572	332		6,127		1,131	9,133	9,133				31,043				1,976,452	10,489	-	
2a 1.5.32	Main Turbine Control Oil (CO)		6						1	6			6							176	-	
2a 1.5.33	Secondary Chemical Control (SC)		171						26	197			197							5,637	-	
2a 1.5.34	Sewage Treatment Plant		4						1	5			5							131	-	
2a 1.5.35	Stator Cooling (CB)		4						1	5			5							139	-	
2a 1.5.36	Steam Gen Feedwater Pump Turbine (PT)		184	72	38		701		234	1,229	1,229				3,530				226,098	4,717	-	
2a 1.5.37	Turbine Cooling Water (T C)		140						21	161			161							4,675	-	
2a 1.5.38	Turbine Steam Seal & Drain (GS)		109	19	10		184		77	400	400				927				59,477	2,731	-	
2a 1.5	Totals		5,931	2,015	1,206		22,271		7,183	38,606	35,731		2,875		112,847					7,184,165	175,208	-
2a 1.6	Scarfolding in support of decommissioning		3,259	20	11		210		871	4,372	4,372				1,068				67,837	36,748	-	
2a 1	Subtotal Period 2a Activity Costs		872	29,926	35,673	5,596	56,557	1,021	40,316	169,961	166,949		3,012		273,075	673	224		19,373,550	417,558	5,469	
Period 2a Collateral Costs																						
2a 3.1	Process decommissioning water waste		130		80	115		171		133	630	630			816				48,973	159	-	
2a 3.2	Process decommissioning chemical flush waste																				-	
2a 3.3	Small tool allowance			300					45	345		311	35								-	
2a 3	Subtotal Period 2a Collateral Costs		130	300	80	115		171		178	975	941	35		816				48,973	159	-	
Period 2a Period Dependent Costs																						
2a 4.1	Decon supplies		148						37	185	185										-	
2a 4.2	Insurance							1,693		1,693	1,863	1,863									-	
2a 4.3	Property taxes								68	744	744										-	
2a 4.4	Health/physician supplies		3,054						763	3,817	3,817										-	
2a 4.5	Heavy equipment rental								650	4,982	4,982										-	
2a 4.6	Disposal of DAW generated			126	115		211			83	534				7,132				142,635	233	-	
2a 4.7	Plant energy budget							4,481		672	5,154	5,154									-	
2a 4.8	NRC Fees							55	608		608										-	
2a 4.9	Emergency Planning Fees							1,709	171	1,880		1,880									-	
2a 4.10	Spent Fuel Pool O&M							1,680	252	1,932		1,932									-	
2a 4.11	Remedial Actions Surveys								2,555	2,555											-	
2a 4.12	Security Staff Cost							17,706	2,656	20,362	20,362										319,808	
2a 4.13	Utility Staff Cost							72,379	10,857	83,236	83,236										931,102	
2a 4	Subtotal Period 2a Period Dependent Costs		148	7,386	126	115	211	103,433	16,433	127,852	124,040		3,812		7,132				142,635	233	1,250,910	
2a 0	TOTAL PERIOD 2a COST		1,151	37,612	35,878	5,826	56,927	104,454	56,927	258,788	231,930	3,812	3,046		281,025	673	224		19,565,160	417,949	1,256,379	

Table C-3
Palo Verde NGS Unit 3
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	On-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Class A Cu Feet	Class B Cu Feet	Class C Cu Feet	OTCC Cu Feet	Burial / Processed Wt. Lbs.	Craft Manhours	Utility and Support Manhours	
PERIOD 2b - Site Decontamination																						
Period 2b Direct Decommissioning Activities																						
Disposal of Plant Systems																						
2b 1 11	Chemical & Volume Control (CH)	1 658	1 075	124	209	-	1 863	-	2 388	10 619	10 619	-	-	-	19 442	-	-	-	1 246 683	80 047	-	
2b 1 12	Chemical Waste (CW)	348	474	66	34	-	625	-	461	2 007	2 007	-	-	-	-	-	-	-	201 501	18 684	-	
2b 1 13	Chemical Waste - Common (CM)	199	185	24	15	-	271	-	218	911	911	-	-	-	1 374	-	-	-	87 388	6 766	-	
2b 1 14	Containment Building (CB)	-	1	0	0	-	0	-	0	1	1	-	-	-	2	-	-	-	118	15	-	
2b 1 15	Containment Hydrogen Control (HP)	92	17	8	-	-	110	-	63	329	329	-	-	-	748	-	-	-	48 116	2 154	-	
2b 1 16	Containment Leakage Test (CL)	30	12	7	-	-	196	-	44	229	229	-	-	-	690	-	-	-	43 834	812	-	
2b 1 17	Containment Purge (CP)	31	11	6	-	-	1 4	-	38	201	201	-	-	-	571	-	-	-	36 798	827	-	
2b 1 18	Domestic Water (DS)	-	109	-	-	-	-	-	16	125	-	-	-	125	-	-	-	-	-	3 675	-	
2b 1 19	Domestic Water - Common (DS)	-	249	-	-	-	-	-	37	286	-	-	-	286	-	-	-	-	-	8 284	-	
2b 1 110	Electrical (Clean)	968	-	-	-	-	148	-	136	-	-	-	1 136	-	-	-	-	-	-	30 827	-	
2b 1 111	Electrical (Clean) - Common	232	-	-	-	-	35	-	266	-	-	-	266	-	-	-	-	-	-	7 220	-	
2b 1 112	Electrical (Clean) - Common - RCA	160	25	15	-	-	280	-	115	596	596	-	-	-	1 424	-	-	-	99 478	3 446	-	
2b 1 113	Electrical (Clean) - RCA	734	128	78	-	-	1 447	-	570	2 957	2 957	-	-	-	7 349	-	-	-	466 835	16 187	-	
2b 1 114	Electrical (Contaminated)	4 260	430	275	-	-	5 081	-	2 419	12 465	12 465	-	-	-	25 799	-	-	-	1 638 951	97 755	-	
2b 1 115	Essential Chilled Water (EC)	-	16	-	-	-	2	-	18	-	-	-	18	-	1 082	-	-	-	69 840	547	-	
2b 1 116	Essential Chilled Water (EC) - RCA	-	168	27	12	-	217	-	9	65	524	-	-	65	-	-	-	-	-	1 917	-	
2b 1 117	Essential Cooling Water (EW)	-	57	-	-	-	-	-	92	479	479	-	-	-	-	-	-	-	-	1 997	-	
2b 1 118	Essential Cooling Water (EW)-RCA	-	83	26	14	-	264	-	43	330	-	-	-	330	-	1 334	-	-	-	9 855	-	
2b 1 119	Essential Spray Pond (SP)	-	287	-	-	-	-	-	16	122	-	-	-	122	-	-	-	-	-	3 446	-	
2b 1 120	Fire Protection (FP)	-	106	-	-	-	-	-	412	2 314	2 314	-	-	-	5 785	-	-	-	371 672	12 003	-	
2b 1 121	Fire Protection (FP) - RCA	527	131	62	-	-	1 152	-	1 259	6 583	6 583	-	-	-	18 977	-	-	-	1 207 135	23 632	-	
2b 1 122	Fire Protection - Common (FP) - RCA	1 037	342	203	-	-	1 742	-	127	659	659	-	-	-	1 327	-	-	-	85 625	5 181	-	
2b 1 123	Gaseous Radwaste (GR)	-	220	33	14	-	265	-	1	9	-	-	-	-	-	-	-	-	-	248	-	
2b 1 124	HVAC - Ancillary Building (HN)	-	8	-	-	-	-	-	669	3 546	3 546	-	-	-	-	-	-	-	-	10 477	-	
2b 1 125	HVAC - Auxiliary Building (HA)	-	409	255	114	-	2 099	-	472	2 481	2 481	-	-	-	8 829	-	-	-	439 260	9 573	-	
2b 1 126	HVAC - Containment Building (HC)	-	421	152	74	-	1 362	-	13	102	-	-	-	102	-	-	-	-	-	3 112	-	
2b 1 127	HVAC - Control Building (HB)	-	88	-	-	-	-	-	1	10	-	-	-	-	-	-	-	-	-	295	-	
2b 1 128	HVAC - Diesel Generator Building (HD)	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2b 1 129	HVAC - Radwaste (HR)	-	123	35	19	-	359	-	127	653	653	-	-	-	1 812	-	-	-	115 774	2 861	-	
2b 1 130	HVAC - Turbine Building (HT)	-	165	-	-	-	25	-	190	-	-	-	190	-	-	-	-	-	-	6 322	-	
2b 1 131	Instrument & Service Air (IA)	-	35	-	-	-	-	-	5	41	-	-	-	-	-	-	-	-	-	1 213	-	
2b 1 132	Instrument & Service Air (IA) - RCA	-	718	118	41	-	757	-	387	2 022	2 022	-	-	-	41	-	-	-	-	244 352	-	
2b 1 133	Liquid Radwaste (LR)	451	731	105	49	-	905	-	652	2 894	2 894	-	-	-	-	-	-	-	-	14 791	-	
2b 1 134	Normal Chilled Water (WC)	-	70	-	-	-	10	-	80	-	-	-	-	80	-	-	-	-	-	2 362	-	
2b 1 135	Normal Chilled Water (WC) - RCA	-	199	38	19	-	317	-	143	746	746	-	-	-	1 747	-	-	-	112 038	4 562	-	
2b 1 136	Nuclear Cooling Water (NC)	-	-	-	-	-	8	-	61	-	-	-	-	-	-	-	-	-	-	1 746	-	
2b 1 137	Nuclear Cooling Water (NC) - RCA	-	473	218	114	-	2 111	-	685	3 601	3 601	-	-	-	10 647	-	-	-	680 829	11 451	-	
2b 1 138	Nuclear Sampling (SS)	-	225	26	10	-	176	-	104	541	541	-	-	-	867	-	-	-	56 786	5 121	-	
2b 1 139	Oil Waste & Nonradioactive Waste - Common (OW)	-	425	87	53	-	946	-	372	1 934	1 934	-	-	-	4 999	-	-	-	318 135	10 386	-	
2b 1 140	Oil Waste & Nonradioactive Waste (OW)	-	552	65	35	-	653	-	313	1 619	1 619	-	-	-	3 292	-	-	-	210 616	13 291	-	
2b 1 141	Plant Cooling Water (PW)	-	115	-	-	-	17	-	132	-	-	-	132	-	-	-	-	-	-	3 929	-	
2b 1 142	Post Accident Sampling	-	11	1	1	-	10	-	3	27	27	-	-	-	50	-	-	-	3 169	275	-	
2b 1 143	Radiation Monitoring (SM)	-	32	4	2	-	34	-	17	89	89	-	-	-	167	-	-	-	10 820	762	-	
2b 1 144	Radioactive Waste Drain (RD)	-	438	461	52	28	514	-	473	1 971	1 971	-	-	-	2 591	-	-	-	166 334	19 457	-	
2b 1 145	Radioactive Waste Drain - Common (RD)	-	15	16	2	1	17	-	15	65	65	-	-	-	86	-	-	-	5 533	639	-	
2b 1 146	Reactor Coolant (RC)	-	16	171	17	6	118	-	83	412	412	-	-	-	585	-	-	-	38 217	4 444	-	
2b 1 147	Safety Injection (SI)	-	1 659	516	283	-	5 219	-	1 819	9 556	9 556	-	-	-	26 194	-	-	-	1 683 406	41 385	-	
2b 1 148	Service Gases (GA) - RCA	-	202	33	12	-	222	-	111	580	580	-	-	-	1 097	-	-	-	71 533	4 164	-	
2b 1 149	Solid Radwaste (SR)	-	122	211	34	16	394	-	196	883	883	-	-	-	1 528	-	-	-	98 132	7 907	-	
2b 1 150	Decommissioning Crew Set up	-	-	-	-	-	566	-	4 338	-	-	-	4 338	-	-	-	-	-	-	91 492	-	
2b 1 1	Totals	3 246	23 486	3 514	1 830	-	33 801	-	15 335	81 813	74 502	-	7 312	-	170 297	-	-	-	10 903 620	638 879	-	
2b 1 2	Scuffing in support of decommissioning	-	4 074	25	14	-	263	-	1 089	5 465	5 465	-	-	-	1 335	-	-	-	84 796	45 935	-	
Decommissioning of Site Buildings																						
2b 1 3 1	Auxiliary Building	549	361	95	96	-	634	-	544	2 248	2 248	-	-	-	9 861	-	-	-	488 398	22 059	-	
2b 1 3 2	Containment	1 180	1 730	289	-	-	5 479	-	2 492	11 633	11 633	-	-	-	58 640	-	-	-	2 823 131	67 811	-	
2b 1 3 3	Dry Active Waste Processing & Storage	-	86	4	-	-	64	-	240	-	-	-	-	-	1 208	-	-	-	57 060	3 029	-	
2b 1 3 4	Holdup Tank & Pump House	343	715	73	25	-	1 65	-	378	1 598	1 598	-	-	-	2 283	-	-	-	149 929	16 083	-	
2b 1 3 5	Hot Instrument Calibration Facility	-	3	1	0	-	2	-	8	-	-	-	-	-	39	-	-	-	1 830	97	-	
2b 1 3 6	LLRW Storage Facility	-	119	53	-	-	64	-	92	352	352	-	-	-	1 765	-	-	-	82 181	4 250	-	
2b 1 3 7	Outage Support Facility	-	381	157	16	51	166	-	270	1 020	1 020	-	-	-	5 248	-	-	-	247 820	12 687	-	
2b 1 3 8	Radwaste Building	-	747	283	211	91	1 586	-	828	3 556	3 556	-	-	-	8 651	-	-	-	522 790	22 190	-	
2b 1 3 9	Refueling Water Storage Tank	-	473	382	79	28	208	-	471	1 942	1 942	-	-	-	2 496	-	-	-	163 942	21 082	-	
2b 1 3	Totals	3 861	3 329	722	802	-	8 742	-	5 141	22 597	22 597	-	-	-	90 190	-	-	-	4 357 180	169 288	-	
2b 1 4	Prepare/submit License Termination Plan	-	-	-	-	-	-	-	20	153	153	-	-	-	-	-	-	-	-	-	1 753	-
2b 1 5	Receive NRC approval of termination plan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2b 1	Subtotal Period 2b Activity Costs	7 107	30 888	4 263	2 646	-	42 806	133	22 185	110 028	102 717	-	7 312	-	261 822	-	-	-	15,325 600	854 101	1 753	

Table C-3
Palo Verde NGS Unit 3
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Period 2b Additional Costs																					
2b 2.1	Excavation of Underground Services		1,624					339	457	2,419	2,419									10,228	
2b 2	Subtotal Period 2b Additional Costs		1,624					339	457	2,419	2,419									10,228	
Period 2b Collateral Costs																					
2b 3.1	Process decommissioning water waste	296		187	270		402		308	1,463	1,463				1,916				114,934	373	
2b 3.2	Process decommissioning chemical flush waste	8		244	740		970		382	2,344	2,344				2,602				277,267	487	
2b 3.3	Small tool allowance		514					77	591	591											
2b 3	Subtotal Period 2b Collateral Costs	304	514	431	1,010		1,373		767	4,357	4,357				4,518				392,201	860	
Period 2b Period Dependent Costs																					
2b 4.1	Demon supplies	2,367						2,480	592	2,958	2,958										
2b 4.2	Insurance							990	248	2,728	2,728										
2b 4.3	Property taxes								99	1,089	1,089										
2b 4.4	Health physics supplies	5,631							1,408	7,038	7,038										
2b 4.5	Heavy equipment rental	6,542							981	7,523	7,523										
2b 4.6	Disposal of D/AW generated			213	194		357		140	904	904			12,074					241,479	394	
2b 4.7	Plant energy budget							5,180	777	5,957	5,957										
2b 4.8	NRC Fees							809	81	890	890										
2b 4.9	Emergency Planning Fees							2,502	250	2,752		2,752									
2b 4.10	Spent Fuel Pool O&M							2,460	369	2,829		2,829									
2b 4.11	Liquid Radwaste Processing Equipment/Services							619	93	712	712										
2b 4.12	Remedial Action Surveys							3,741	3,741	3,741											
2b 4.13	Security Staff Cost							28,151	3,713	28,924	28,924										
2b 4.14	Utility Staff Cost							101,861	15,279	117,141	117,141										
2b 4	Subtotal Period 2b Period Dependent Costs	2,367	12,172	213	194		357	145,795	24,089	185,187	179,606	5,581		12,074					241,479	394	453,111
2b 0	TOTAL PERIOD 2b COST	9,777	45,198	4,906	1,851		44,636	146,267	47,497	302,032	289,139	5,581	7,312	278,414					15,959,280	865,583	1,762,571
PERIOD 2d - Decontamination Following Wet Fuel Storage																					
Period 2d Direct Decommissioning Activities																					
2d 1.1	Remove spent fuel racks	910	31	128	37		692		354	1,553	1,553			3,515					223,325	968	
Disposal of Plant Systems																					
2d 1.2.1	Electrical Spent Fuel		184	31	19		348		139	720	720			1,766					112,166	4,048	
2d 1.2.2	Fire Protection Common (FP)		205						31	236			236							7,001	
2d 1.2.3	Fuel Pool Cooling & Cleanup (PC)	391	393	138	67		1,237		627	2,855	2,855			6,204					399,088	13,370	
2d 1.2.4	HVAC Fuel Building (HF)		159	88	10		747		241	1,276	1,276			3,736					240,970	3,820	
2d 1.2.5	Sanitary Drain & Treatment Common (ST)		245						37	282			282							8,002	
2d 1.2.6	Sanitary Drainage & Treatment (ST)		16						2	19			19							577	
2d 1.2	Totals	391	1,203	257	126		2,132		1,077	5,386	4,850		536	11,706					752,223	36,819	
Decontamination of Site Buildings																					
2d 1.3.1	Fuel Building	414	493	54	22		964		430	1,776	1,776			2,151					128,216	22,125	
2d 1.3	Totals	414	493	54	22		964		430	1,776	1,776			2,151					128,216	22,125	
2d 1.4	Scaffolding in support of decommissioning		815	5	3		83		218	1,093	1,093			267					16,959	9,187	
2d 1	Subtotal Period 2d Activity Costs	1,115	2,541	443	189		3,141		2,079	9,808	9,272		536	17,639					1,120,723	69,099	
Period 2d Additional Costs																					
2d 2.1	Operational Equipment						931		240	1,239	1,239								294,000	32	
2d 2.2	License Termination Survey Planning						842		253	1,095	1,095										4,160
2d 2	Subtotal Period 2d Additional Costs						911		493	2,334	2,334								294,000	32	4,160
Period 2d Collateral Costs																					
2d 3.1	Process decommissioning water waste	75		48	69		105		78	372	372				489				29,322	96	
2d 3.2	Process decommissioning chemical flush waste	2		69	208		273		107	659	659				732				77,960	137	
2d 3.3	Small tool allowance		46						7	53	53										
2d 3.4	Decommissioning Equipment Deposition			99	86		1,042		279	1,476	1,476				5,290				336,079	147	
2d 3	Subtotal Period 2d Collateral Costs	77	46	215	333		1,417		171	2,560	2,560				6,511				443,361	379	
Period 2d Period Dependent Costs																					
2d 4.1	Demon supplies	115							29	144	144										
2d 4.2	Insurance							400	40	440	440										
2d 4.3	Property taxes							160	16	176	176										
2d 4.4	Health physics supplies	654							139	693	693										
2d 4.5	Heavy equipment rental	1,055							158	1,213	1,213										
2d 4.6	Disposal of D/AW generated			31	28		52		20	131	131				1,754				35,078	57	
2d 4.7	Plant energy budget							446	67	512	512										
2d 4.8	NRC Fees							124	12	136	136										
2d 4.9	Liquid Radwaste Processing Equipment/Services							200	30	230	230										

Table C-3
Palo Verde NGS Unit 3
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	OffSite Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRG Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Class A Cu Feet	Class B Cu Feet	Class C Cu Feet	OPCC Cu Feet	Burial / Processed Wt., Lbs.	CraR Manhours	Utility and Contractor Manhours
Period 2d	Period Dependent Costs(Continued)																				
2d 4 10	Remedial Action Surveys	-	-	-	-	-	603	603	603	603	-	-	-	-	-	-	-	-	-	-	25 911
2d 4 11	Security Staff Cost	-	-	-	-	-	1 440	1 440	216	1 656	1 656	-	-	-	-	-	-	-	-	-	147 096
2d 4 12	Utility Staff Cost	-	-	-	-	-	11 945	11 945	1 792	13 736	13 736	-	-	-	-	-	-	-	-	-	173 007
2d 4	Subtotal Period 2d Period Dependent Costs	115	1 609	31	28	52	15 516	2 519	19 671	19 671	-	-	-	1 754	-	-	-	35 078	57	-	173 007
2d 0	TOTAL PERIOD 2d COST	1 308	4 197	710	617	5 821	16 159	5 562	34 373	33 837	-	-	536	37 664	-	-	-	1 893 162	69 567	-	177 167
PERIOD 2f - License Termination																					
Period 2f	Direct Decommissioning Activities																				
2f 1 1	ORISE confirmatory surveys	-	-	-	-	-	170	51	221	221	-	-	-	-	-	-	-	-	-	-	-
2f 1 2	Terminate license	-	-	-	-	-	170	51	221	221	-	-	-	-	-	-	-	-	-	-	-
2f 1	Subtotal Period 2f Activity Costs	-	-	-	-	-	170	51	221	221	-	-	-	-	-	-	-	-	-	-	-
Period 2f	Additional Costs																				
2f 2 1	License Termination Survey	-	-	-	-	-	9 931	2 979	12 910	12 910	-	-	-	-	-	-	-	-	-	222 202	2 080
2f 2	Subtotal Period 2f Additional Costs	-	-	-	-	-	9 931	2 979	12 910	12 910	-	-	-	-	-	-	-	-	-	222 202	2 080
Period 2f	Collateral Costs																				
2f 3 1	Staff relocation expenses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2f 3	Subtotal Period 2f Collateral Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Period 2f	Period Dependent Costs																				
2f 4 1	Insurance	-	-	-	-	-	638	64	701	701	-	-	-	-	-	-	-	-	-	-	-
2f 4 2	Property taxes	-	-	-	-	-	255	25	280	280	-	-	-	-	-	-	-	-	-	-	-
2f 4 3	Health physics supplies	965	-	-	-	-	-	241	1 207	1 207	-	-	-	-	-	-	-	-	-	-	-
2f 4 4	Disposal of DAW generated	-	6	6	6	11	-	4	27	27	-	-	-	362	-	-	-	-	7 237	12	-
2f 4 5	Plant energy budget	-	-	-	-	-	355	53	409	409	-	-	-	-	-	-	-	-	-	-	-
2f 4 6	NRG Fees	-	-	-	-	-	181	18	199	199	-	-	-	-	-	-	-	-	-	-	-
2f 4 7	Security Staff Cost	-	-	-	-	-	2 295	344	2 640	2 640	-	-	-	-	-	-	-	-	-	-	41 310
2f 4 8	Utility Staff Cost	-	-	-	-	-	12 209	1 831	14 040	14 040	-	-	-	-	-	-	-	-	7 237	12	143 093
2f 4	Subtotal Period 2f Period Dependent Costs	965	6	6	6	11	15 932	2 582	19 502	19 502	-	-	-	362	-	-	-	-	-	-	184 402
2f 0	TOTAL PERIOD 2f COST	965	6	6	6	11	26 013	5 612	32 634	32 634	-	-	-	362	-	-	-	-	7 237	222 214	186 482
PERIOD 2f TOTALS		12 236	87 972	41 500	10 300	107 107	292 913	115 598	667 827	647 530	-	9 393	10 896	597 462	673	224	-	37 424 830	1 575 314	-	3 182 599
PERIOD 3b - Site Restoration																					
Period 3b	Direct Decommissioning Activities																				
Demolition of Remaining Site Buildings																					
3b 1 1 1	Administrative Bldg A	284	-	-	-	-	-	43	326	326	-	-	326	-	-	-	-	-	-	4 394	-
3b 1 1 2	Administrative Bldg B	275	-	-	-	-	-	11	316	316	-	-	316	-	-	-	-	-	-	4 211	-
3b 1 1 3	Administrative Bldg D	84	-	-	-	-	-	13	97	97	-	-	97	-	-	-	-	-	-	550	-
3b 1 1 4	Administrative Bldg E	247	-	-	-	-	-	37	284	284	-	-	284	-	-	-	-	-	-	3 433	-
3b 1 1 5	Administrative Bldg F	292	-	-	-	-	-	44	336	336	-	-	336	-	-	-	-	-	-	3 355	-
3b 1 1 6	Auxiliary Boiler Foundations	15	-	-	-	-	-	2	17	17	-	-	17	-	-	-	-	-	-	108	-
3b 1 1 7	Auxiliary Building	1 403	-	-	-	-	-	210	1 614	1 614	-	-	1 614	-	-	-	-	-	-	11 728	-
3b 1 1 8	Calibration Lab	6	-	-	-	-	-	1	7	7	-	-	7	-	-	-	-	-	-	38	-
3b 1 1 9	Chemical Injection Pump House	5	-	-	-	-	-	1	6	6	-	-	6	-	-	-	-	-	-	63	-
3b 1 1 10	Chemical Storage Building	72	-	-	-	-	-	11	82	82	-	-	82	-	-	-	-	-	-	1 148	-
3b 1 1 11	Condensate Storage Tank	108	-	-	-	-	-	16	124	124	-	-	124	-	-	-	-	-	-	1 787	-
3b 1 1 12	Containment	2 618	-	-	-	-	-	353	3 011	3 011	-	-	3 011	-	-	-	-	-	-	23 043	-
3b 1 1 13	Control Building	648	-	-	-	-	-	97	745	745	-	-	745	-	-	-	-	-	-	9 292	-
3b 1 1 14	Cooling Tower Electrical Equipment	15	-	-	-	-	-	2	18	18	-	-	18	-	-	-	-	-	-	180	-
3b 1 1 15	Cooling Towers	1 085	-	-	-	-	-	163	1 248	1 248	-	-	1 248	-	-	-	-	-	-	7 343	-
3b 1 1 16	Corridor Building	68	-	-	-	-	-	10	78	78	-	-	78	-	-	-	-	-	-	922	-
3b 1 1 17	Diesel Generator Building	266	-	-	-	-	-	40	306	306	-	-	306	-	-	-	-	-	-	2 158	-
3b 1 1 18	Dry Active Waste Processing & Storage	65	-	-	-	-	-	10	75	75	-	-	75	-	-	-	-	-	-	1 338	-
3b 1 1 19	Energy Information Center	51	-	-	-	-	-	8	59	59	-	-	59	-	-	-	-	-	-	1 003	-
3b 1 1 20	Fire Pumphouse	19	-	-	-	-	-	3	21	21	-	-	21	-	-	-	-	-	-	253	-
3b 1 1 21	Flex Buildings	328	-	-	-	-	-	49	378	378	-	-	378	-	-	-	-	-	-	5 014	-
3b 1 1 22	Holdup Tank & Pump House	37	-	-	-	-	-	6	42	42	-	-	42	-	-	-	-	-	-	266	-
3b 1 1 23	Hot Instrument Calibration Facility	9	-	-	-	-	-	1	10	10	-	-	10	-	-	-	-	-	-	57	-
3b 1 1 24	Intake Structure Canals & Corr Tunnels	1 351	-	-	-	-	-	200	1 554	1 554	-	-	1 554	-	-	-	-	-	-	3 858	-
3b 1 1 25	LLRW Storage Facility	162	-	-	-	-	-	24	187	187	-	-	187	-	-	-	-	-	-	1 056	-
3b 1 1 26	Main Steam Support Structure	181	-	-	-	-	-	27	209	209	-	-	209	-	-	-	-	-	-	1 700	-
3b 1 1 27	Miscellaneous Structures & Foundations	1 840	-	-	-	-	-	277	2 127	2 127	-	-	2 127	-	-	-	-	-	-	17 910	-
3b 1 1 28	North Admin Annex Building	140	-	-	-	-	-	22	172	172	-	-	172	-	-	-	-	-	-	2 096	-
3b 1 1 29	Nuclear Service Spray Ponds	1 089	-	-	-	-	-	163	1 252	1 252	-	-	1 252	-	-	-	-	-	-	7 361	-
3b 1 1 30	Operations Support Building	117	-	-	-	-	-	18	135	135	-	-	135	-	-	-	-	-	-	1 730	-
3b 1 1 31	Outage Support Facility	815	-	-	-	-	-	122	937	937	-	-	937	-	-	-	-	-	-	8 714	-
3b 1 1 32	Protected Area Security Blast Wall	-	3 251	-	-	-	-	488	3 739	3 739	-	-	3 739	-	-	-	-	-	-	20 960	-
3b 1 1 33	Redwaste Building	1 473	-	-	-	-	-	221	1 694	1 694	-	-	1 694	-	-	-	-	-	-	21 636	-

Table C-3
Palo Verde NGS Unit 3
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Containment	Total Costs	VRC Lic Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Burial Volumes Class A Cu Feet	Burial Volumes Class B Cu Feet	Burial Volumes Class C Cu Feet	GTCC Cu Feet	Burial/Processed Wt., Lbs	Craft Manhours	Utility and Contractor Manhours
Demolition of Remaining Site Buildings (Continued)																					
3b 1 1 34	Refueling Water Storage Tank		70						10	80			80	-	-	-	-	-		452	
3b 1 1 35	Retention Tanks		163						24	188			188	-	-	-	-	-		1 211	
3b 1 1 36	50 Voltage Regulator Building		28						4	32			32	-	-	-	-	-		261	
3b 1 1 37	Security Headquarters and Guard House		45						7	51			51	-	-	-	-	-		473	
3b 1 1 38	Service Building		135						20	155			155	-	-	-	-	-		2 614	
3b 1 1 39	Sewage Treatment Plant		4						1	5			5	-	-	-	-	-		39	
3b 1 1 40	Site Fencing & Paving & Railroad		1 705						255	1 960			1 960	-	-	-	-	-		29 521	
3b 1 1 41	Spare Turbine Rotor Laydown Pad								1	5			5	-	-	-	-	-		26	
3b 1 1 42	Station Blackout Gas Turbine Generator		17						2	19			19	-	-	-	-	-		107	
3b 1 1 43	Subsynchronous Resonance Protection		2						0	3			3	-	-	-	-	-		30	
3b 1 1 44	Switchgear Building		24						4	28			28	-	-	-	-	-		322	
3b 1 1 45	Technical Support Center		228						34	262			262	-	-	-	-	-		1 540	
3b 1 1 46	Transformer Area		69						10	79			79	-	-	-	-	-		447	
3b 1 1 47	Turbine Building		1 787						261	1 997			1 997	-	-	-	-	-		37 106	
3b 1 1 48	Turbine Building Pedestal		3 518						537	4 115			4 115	-	-	-	-	-		59 425	
3b 1 1 49	Turbine Maintenance Facility		15						2	17			17	-	-	-	-	-		244	
3b 1 1 50	Vehicle Maintenance Facility		60						9	69			69	-	-	-	-	-		1 188	
3b 1 1 51	WRP Train 7		2						0	3			3	-	-	-	-	-		22	
3b 1 1 52	Wabash Furniture Storage Building #64		140						15	115			115	-	-	-	-	-		1 095	
3b 1 1 53	Warehouse								133	1 062			1 062	-	-	-	-	-		16 547	
3b 1 1 54	Warehouse Office Facility		665						100	765			765	-	-	-	-	-		7 370	
3b 1 1 55	Yard Tunnel		331						50	380			380	-	-	-	-	-		5 290	
3b 1 1 56	Fuel Building		757						111	871			871	-	-	-	-	-		6 910	
3b 1 1	Totals		29 100						4 365	33 465			33 465	-	-	-	-	-		342 762	
Site Cleanup Activities																					
3b 1 2	Remove Rubble		4 235						635	4 870			4 870	-	-	-	-	-		26 159	
3b 1 3	Grade & Landscaping		59						9	68			68	-	-	-	-	-		325	
3b 1 4	Final Report to NRC								51	58			58	-	-	-	-	-			668
3b 1	Subtotal Period 3b Activity Costs		33 394						51	38 462			38 404	-	-	-	-	-		369 247	668
Period 3b Additional Costs																					
3b 2 1	Concrete Crushing		2 252						6	339			2 596	-	-	-	-	-		10 940	
3b 2 2	Construction Debris								2 820	423			3 243	-	-	-	-	-			
3b 2 3	Piling Range Closure		221						225	67			514	-	-	-	-	-		1 848	
3b 2	Subtotal Period 3b Additional Costs		2 473						3 051	829			6 353	-	-	-	-	-		12 788	
Period 3b Collateral Costs																					
3b 3 1	Smalltool allowance		217						33	250			250	-	-	-	-	-			
3b 3	Subtotal Period 3b Collateral Costs		217						33	250			250	-	-	-	-	-			
Period 3b Period-Dependent Costs																					
3b 4 1	Insurance													-	-	-	-	-			
3b 4 2	Property taxes								630	63			693	-	-	-	-	-			
3b 4 3	Heavy equipment rental		5 669							850			6 520	-	-	-	-	-			
3b 4 4	Plant energy budget								459	66			505	-	-	-	-	-			
3b 4 5	Security Staff Cost								5 677	851			6 528	-	-	-	-	-		102 164	
3b 4 6	Utility Staff Cost								21 204	3 181			24 385	-	-	-	-	-		248 703	
3b 4	Subtotal Period 3b Period-Dependent Costs		5 669						27 950	5 011			38 631	-	-	-	-	-		350 866	
3b 0	TOTAL PERIOD 3b COST		41 754						31 052	10 889			83 695	-	-	-	-	-		382 035	351 534
PERIOD 3c - Fuel Storage Operations/Shipping																					
Period 3c Direct Decommissioning Activities																					
Period 3c Collateral Costs																					
3c 3	Subtotal Period 3c Collateral Costs													-	-	-	-	-			
Period 3c Period-Dependent Costs																					
3c 4 1	Insurance													-	-	-	-	-			
3c 4 2	Property taxes													-	-	-	-	-			
3c 4 3	Plant energy budget													-	-	-	-	-			
3c 4 4	Utility Staff Cost													-	-	-	-	-			
3c 4	Subtotal Period 3c Period-Dependent Costs													-	-	-	-	-			
3c 0	TOTAL PERIOD 3c COST													-	-	-	-	-			
PERIOD 3d - GTCC shipping																					
Period 3d Direct Decommissioning Activities																					
Nuclear Steam Supply System Removal																					
3d 1 1	Vessel & Internal GTCC Disposal		2 581						25 443	4 462			32 486	-	-	-	-	-		4 433	905 513
3d 1	Totals		2 581						25 443	4 462			32 486	-	-	-	-	-		4 433	905 513
3d 1	Subtotal Period 3d Activity Costs		2 581						25 443	4 462			32 486	-	-	-	-	-		4 433	905 513

Table C-3
Palo Verde NGS Unit 3
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	On-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Class A Cu Feet	Class B Cu Feet	Class C Cu Feet	GTCC Cu Feet	Burial/Processed Wt., Lbs	Craft Manhours	Utility and Contractor Manhours
Period 3d Collateral Costs																					
3d.3	Subtotal Period 3d Collateral Costs																				
Period 3d Period Dependent Costs																					
3d.4.1	Insurance																				
3d.4.2	Property taxes																				
3d.4.3	Plant energy budget																				
3d.4.4	Utility Staff Cost																				
3d.4	Subtotal Period 3d Period Dependent Costs																				
3d.0	TOTAL PERIOD 3d COST			2 581	-		25 443		4 462	12 486	32 486							4 433	905 513	-	-
PERIOD 3 TOTALS			41 754	2 581			25 443	31 052	15 351	116 181	32 545	-	83 637					4 433	905 513	382 035	351 534
TOTAL COST TO DECOMMISSION			16 505	131 978	44 281	10 751	139 994	430 437	150 353	924 279	817 726	11 620	94 934	-	598 516	2 002	224	4 433	38 511 190	1 971 814	4 539 311

TOTAL COST TO DECOMMISSION WITH 18.4% CONTINGENCY	\$924,278 thousands of 2019 dollars
TOTAL NRC LICENSE TERMINATION COST IS 88.47% OR	\$517,726 thousands of 2019 dollars
SPENT FUEL MANAGEMENT COST IS 1.26% OR	\$11,620 thousands of 2019 dollars
NON-NUCLEAR DEMOLITION COST IS 10.27% OR	\$94,934 thousands of 2019 dollars
TOTAL LOW-LEVEL RADIOACTIVE WASTE VOLUME BURIED (EXCLUDING GTCC)	800 743 Cubic Feet
TOTAL GREATER THAN CLASS C RADWASTE VOLUME GENERATED	4 433 Cubic Feet
TOTAL SCRAP METAL REMOVED	77,658 Tons
TOTAL CRAFT LABOR REQUIREMENTS	1,971,814 Man-hours

End Notes
n/a indicates that this activity not charged as decommissioning expense
a indicates that this activity performed by decommissioning staff
0 indicates that this value is less than 0.5 but is non zero
A cell containing " " indicates a zero value

EL PASO ELECTRIC COMPANY
2021 TEXAS RATE CASE FILING
SCHEDULE H-10 NUCLEAR DECOMMISSIONING COST STUDIES
SPONSOR RODERICK W KNIGHT
PREPARED RODERICK W KNIGHT
FOR TEST YEAR ENDED DECEMBER 31, 2020

EL PASO ELECTRIC COMPANY
2021 TEXAS RATE CASE FILING
SCHEDULE H-10: NUCLEAR DECOMMISSIONING COST STUDIES
SPONSOR: RODERICK W. KNIGHT
PREPARER: RODERICK W. KNIGHT
FOR TEST YEAR ENDED DECEMBER 31, 2020

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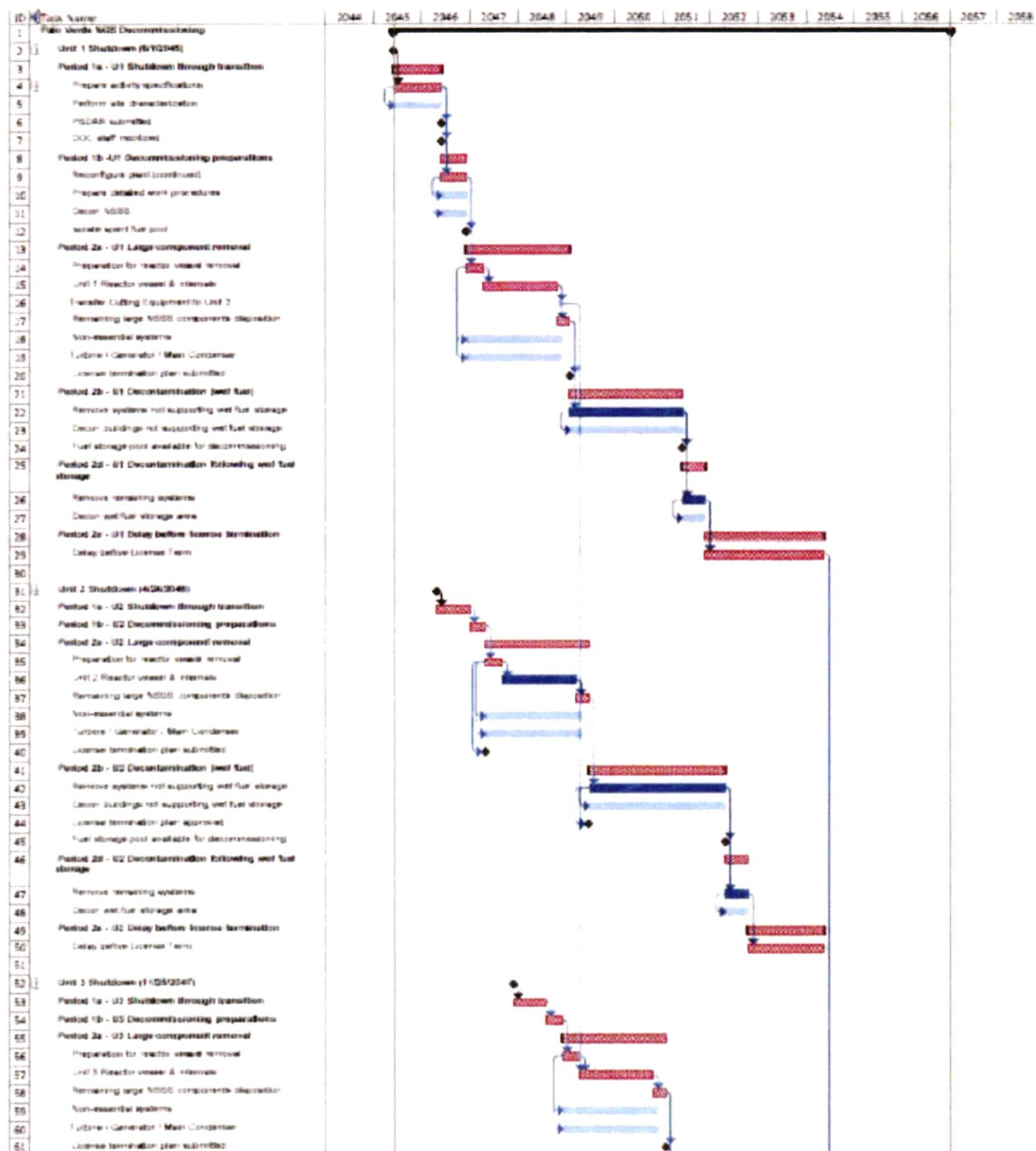
APPENDIX D
DECOMMISSIONING SCHEDULE

TLG Services, Inc.

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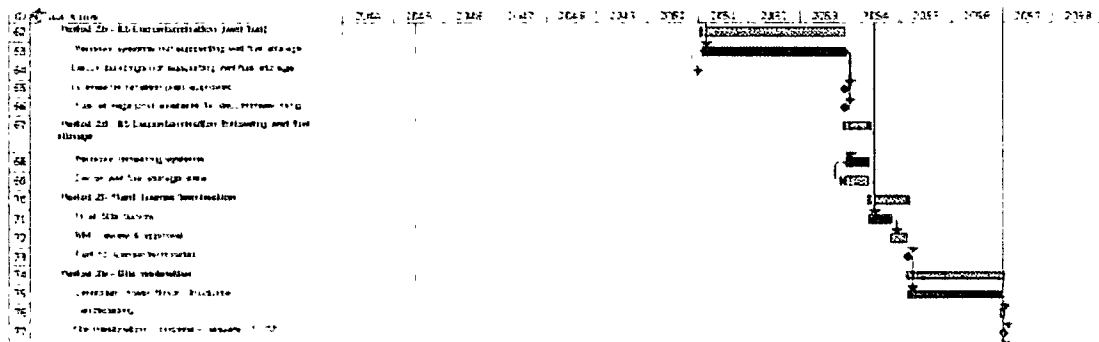
DECOMMISSIONING SCHEDULE



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DECOMMISSIONING SCHEDULE (continued)



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APPENDIX E

UNIT COST FACTOR DEVELOPMENT

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APPENDIX E

UNIT COST FACTOR DEVELOPMENT

Example: Unit Factor for Removal of Contaminated Heat Exchanger < 3,000 lbs.

1. SCOPE

Heat exchangers weighing < 3,000 lbs. will be removed in one piece using a crane or small hoist. They will be disconnected from the inlet and outlet piping. The heat exchanger will be sent to the packing area.

2. CALCULATIONS

Activity Description	Critical Duration (minutes)
-----	-----
Install contamination controls, remove insulation, and mount pipe cutters	60
Disconnect inlet and outlet lines, cap openings	60
Rig for removal	30
Unbolt from mounts	30
Remove contamination controls	15
Remove heat exchanger, wrap in plastic, and send to packing area	<u>60</u>
Critical Duration	255

Work Adjustments (Work Difficulty Factors)

+ Respiratory Protection (50% of Critical Duration)	128
+ Radiation/ALARA (37.08333% of Critical Duration)	<u>95</u>
Adjusted Work Duration	478
+ Protective Clothing (30% of Adjusted Work Duration)	<u>143</u>
Productive Work Duration	621
+ Work break adjustment (8.33 % of Productive Work Duration)	<u>52</u>
Total Work Duration	673

***** Total Work Duration = 673 minutes or 11.217 hours *****

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**APPENDIX E
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3. LABOR REQUIRED

Crew	Number	Duration (hours)	Rate (\$/hr)	Cost
Laborers	3.00	11.217	\$20.78	\$698.93
Craftsmen	2.00	11.217	\$40.68	\$912.62
Foreman	1.00	11.217	\$43.95	\$492.99
General Foreman	0.25	11.217	\$47.02	\$131.86
Fire Watch	0.05	11.217	\$20.77	\$11.65
Health Physics Technician	1.00	11.217	\$60.55	<u>\$679.19</u>
Total labor cost				\$2,927.24

4. EQUIPMENT & CONSUMABLES COSTS

Equipment Costs	none
Consumables/Materials Costs	
-Gas torch consumables 1 @ \$19.49/hour x 1 hour {1}	\$19.49
-Blotting paper 50 @ \$0.61/sq. ft {2}	\$30.50
-Tarpaulin 7.5 mils 50 @ \$0.47/sq. ft {3}	<u>\$23.50</u>
Subtotal cost of equipment and materials	\$73.49
Overhead & sales tax on equipment and materials @ 16.300%	<u>\$11.98</u>
Total costs, equipment & material	\$85.47
TOTAL COST: Removal of contaminated heat exchanger <3000 pounds:	\$3,012.71
Total labor cost:	\$2,927.24
Total equipment/material costs:	\$85.47
Total craft labor man-hours required per unit:	81.884

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5. NOTES AND REFERENCES

- Work difficulty factors were developed in conjunction with the AIF (now NEI) program to standardize nuclear decommissioning cost estimates and are delineated in Volume 1, Chapter 5 of the "Guidelines for Producing Commercial Nuclear Power Plant Decommissioning Cost Estimates," AIF/NESP-036, May 1986.
- References for equipment & consumables costs:
 1. R.S. Means (2019) Division 01 54 33, Section 40-6360, page 734
 2. www.mcmaster.com online catalog (7193T88)
 3. R.S. Means (2019) Division 01 56, Section 13.60-0600, page 22
- Material and consumable costs were adjusted using the regional indices for Phoenix, Arizona

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APPENDIX F

UNIT COST FACTOR LISTING (DECON: Power Block Structures Only)

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APPENDIX F

UNIT COST FACTOR LISTING (DECON: Power Block Structures Only)

Unit Cost Factor	Cost/Unit (\$)
Removal of clean instrument and sampling tubing, \$/linear foot	0.27
Removal of clean pipe 0.25 to 2 inches diameter, \$/linear foot	2.71
Removal of clean pipe >2 to 4 inches diameter, \$/linear foot	4.11
Removal of clean pipe >4 to 8 inches diameter, \$/linear foot	8.67
Removal of clean pipe >8 to 14 inches diameter, \$/linear foot	16.01
Removal of clean pipe >14 to 20 inches diameter, \$/linear foot	21.01
Removal of clean pipe >20 to 36 inches diameter, \$/linear foot	30.86
Removal of clean pipe >36 inches diameter, \$/linear foot	36.59
Removal of clean valve >2 to 4 inches	56.86
Removal of clean valve >4 to 8 inches	86.74
Removal of clean valve >8 to 14 inches	160.14
Removal of clean valve >14 to 20 inches	210.07
Removal of clean valve >20 to 36 inches	308.63
Removal of clean valve >36 inches	365.88
Removal of clean pipe hanger for small bore piping	21.13
Removal of clean pipe hanger for large bore piping	66.87
Removal of clean pump, <300 pound	150.24
Removal of clean pump, 300-1000 pound	427.54
Removal of clean pump, 1000-10,000 pound	1,641.76
Removal of clean pump, >10,000 pound	3,188.62
Removal of clean pump motor, 300-1000 pound	175.93
Removal of clean pump motor, 1000-10,000 pound	678.14
Removal of clean pump motor, >10,000 pound	1,525.83
Removal of clean heat exchanger <3000 pound	891.06
Removal of clean heat exchanger >3000 pound	2,261.74
Removal of clean feedwater heater/deaerator	6,308.94
Removal of clean moisture separator/reheater	12,881.23
Removal of clean tank, <300 gallons	192.78
Removal of clean tank, 300-3000 gallon	600.45
Removal of clean tank, >3000 gallons, \$/square foot surface area	5.30

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UNIT COST FACTOR LISTING (DECON: Power Block Structures Only)

Unit Cost Factor	Cost/Unit (\$)
Removal of clean electrical equipment, <300 pound	78.92
Removal of clean electrical equipment, 300-1000 pound	286.43
Removal of clean electrical equipment, 1000-10,000 pound	572.86
Removal of clean electrical equipment, >10,000 pound	1,393.12
Removal of clean electrical transformer < 30 tons	967.51
Removal of clean electrical transformer > 30 tons	2,786.24
Removal of clean standby diesel generator, <100 kW	988.22
Removal of clean standby diesel generator, 100 kW to 1 MW	2,205.77
Removal of clean standby diesel generator, >1 MW	4,566.39
Removal of clean electrical cable tray, \$/linear foot	7.60
Removal of clean electrical conduit, \$/linear foot	3.33
Removal of clean mechanical equipment, <300 pound	78.92
Removal of clean mechanical equipment, 300-1000 pound	286.43
Removal of clean mechanical equipment, 1000-10,000 pound	572.86
Removal of clean mechanical equipment, >10,000 pound	1,393.12
Removal of clean HVAC equipment, <300 pound	95.44
Removal of clean HVAC equipment, 300-1000 pound	344.17
Removal of clean HVAC equipment, 1000-10,000 pound	685.93
Removal of clean HVAC equipment, >10,000 pound	1,393.12
Removal of clean HVAC ductwork, \$/pound	0.28
Removal of contaminated instrument and sampling tubing, \$/linear foot	1.12
Removal of contaminated pipe 0.25 to 2 inches diameter, \$/linear foot	16.77
Removal of contaminated pipe >2 to 4 inches diameter, \$/linear foot	26.87
Removal of contaminated pipe >4 to 8 inches diameter, \$/linear foot	45.27
Removal of contaminated pipe >8 to 14 inches diameter, \$/linear foot	83.31
Removal of contaminated pipe >14 to 20 inches diameter, \$/linear foot	99.09
Removal of contaminated pipe >20 to 36 inches diameter, \$/linear foot	134.87
Removal of contaminated pipe >36 inches diameter, \$/linear foot	158.27
Removal of contaminated valve >2 to 4 inches	334.31
Removal of contaminated valve >4 to 8 inches	396.32

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UNIT COST FACTOR LISTING (DECON: Power Block Structures Only)

Unit Cost Factor	Cost/Unit (\$)
Removal of contaminated valve >8 to 14 inches	770.33
Removal of contaminated valve >14 to 20 inches	972.89
Removal of contaminated valve >20 to 36 inches	1,285.94
Removal of contaminated valve >36 inches	1,519.93
Removal of contaminated pipe hanger for small bore piping	111.24
Removal of contaminated pipe hanger for large bore piping	339.35
Removal of contaminated pump, <300 pound	713.07
Removal of contaminated pump, 300-1000 pound	1,630.72
Removal of contaminated pump, 1000-10,000 pound	4,844.88
Removal of contaminated pump, >10,000 pound	11,796.29
Removal of contaminated pump motor, 300-1000 pound	724.22
Removal of contaminated pump motor, 1000-10,000 pound	2,005.65
Removal of contaminated pump motor, >10,000 pound	4,503.23
Removal of contaminated heat exchanger <3000 pound	3,012.71
Removal of contaminated heat exchanger >3000 pound	8,835.79
Removal of contaminated tank, <300 gallons	1,192.65
Removal of contaminated tank, >300 gallons, \$/square foot	22.34
Removal of contaminated electrical equipment, <300 pound	536.98
Removal of contaminated electrical equipment, 300-1000 pound	1,308.32
Removal of contaminated electrical equipment, 1000-10,000 pound	2,521.76
Removal of contaminated electrical equipment, >10,000 pound	4,976.78
Removal of contaminated electrical cable tray, \$/linear foot	25.99
Removal of contaminated electrical conduit, \$/linear foot	13.79
Removal of contaminated mechanical equipment, <300 pound	596.68
Removal of contaminated mechanical equipment, 300-1000 pound	1,442.28
Removal of contaminated mechanical equipment, 1000-10,000 pound	2,775.33
Removal of contaminated mechanical equipment, >10,000 pound	4,976.78
Removal of contaminated HVAC equipment, <300 pound	596.68
Removal of contaminated HVAC equipment, 300-1000 pound	1,442.28
Removal of contaminated HVAC equipment, 1000-10,000 pound	2,775.33

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UNIT COST FACTOR LISTING (DECON: Power Block Structures Only)

Unit Cost Factor	Cost/Unit (\$)
Removal of contaminated HVAC equipment, >10,000 pound	4,976.78
Removal of contaminated HVAC ductwork, \$/pound	1.71
Removal/plasma arc cut of contaminated thin metal components, \$/linear in.	2.74
Additional decontamination of surface by washing, \$/square foot	5.56
Additional decontamination of surfaces by hydrolasing, \$/square foot	27.18
Decontamination rig hook up and flush, \$/ 250 foot length	4,979.27
Chemical flush of components/systems, \$/gallon	20.23
Removal of clean standard reinforced concrete, \$/cubic yard	61.96
Removal of grade slab concrete, \$/cubic yard	70.42
Removal of clean concrete floors, \$/cubic yard	293.58
Removal of sections of clean concrete floors, \$/cubic yard	852.26
Removal of clean heavily rein concrete w/#9 rebar, \$/cubic yard	89.23
Removal of contaminated heavily rein concrete w/#9 rebar, \$/cubic yard	1,616.80
Removal of clean heavily rein concrete w/#18 rebar, \$/cubic yard	120.89
Removal of contaminated heavily rein concrete w/#18 rebar, \$/cubic yard	2,135.15
Removal heavily rein concrete w/#18 rebar & steel embedments, \$/cubic yard	341.16
Removal of below-grade suspended floors, \$/cubic yard	169.36
Removal of clean monolithic concrete structures, \$/cubic yard	661.04
Removal of contaminated monolithic concrete structures, \$/cubic yard	1,598.97
Removal of clean foundation concrete, \$/cubic yard	523.51
Removal of contaminated foundation concrete, \$/cubic yard	1,490.51
Explosive demolition of bulk concrete, \$/cubic yard	38.36
Removal of clean hollow masonry block wall, \$/cubic yard	21.60
Removal of contaminated hollow masonry block wall, \$/cubic yard	57.81
Removal of clean solid masonry block wall, \$/cubic yard	21.60
Removal of contaminated solid masonry block wall, \$/cubic yard	57.81
Backfill of below-grade voids, \$/cubic yard	28.49
Removal of subterranean tunnels/voids, \$/linear foot	78.21
Placement of concrete for below-grade voids, \$/cubic yard	131.85
Excavation of clean material, \$/cubic yard	2.54

TLG Services, Inc.

*Palo Verde Nuclear Generating Station
 2019 Decommissioning Cost Study*

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APPENDIX F

UNIT COST FACTOR LISTING (DECON: Power Block Structures Only)

Unit Cost Factor	Cost/Unit (\$)
Excavation of contaminated material, \$/cubic yard	35.14
Removal of clean concrete rubble (tipping fee included), \$/cubic yard	22.18
Removal of contaminated concrete rubble, \$/cubic yard	21.49
Removal of building by volume, \$/cubic foot	0.24
Removal of clean building metal siding, \$/square foot	0.89
Removal of contaminated building metal siding, \$/square foot	3.63
Removal of standard asphalt roofing, \$/square foot	1.25
Removal of transite panels, \$/square foot	1.46
Scarifying contaminated concrete surfaces (drill & spall), \$/square foot	10.32
Scabbling contaminated concrete floors, \$/square foot	5.72
Scabbling contaminated concrete walls, \$/square foot	14.70
Scabbling contaminated ceilings, \$/square foot	50.08
Scabbling structural steel, \$/square foot	4.94
Removal of clean overhead crane/monorail < 10 ton capacity	422.44
Removal of contaminated overhead crane/monorail < 10 ton capacity	1,390.90
Removal of clean overhead crane/monorail >10-50 ton capacity	1,013.87
Removal of contaminated overhead crane/monorail >10-50 ton capacity	3,337.56
Removal of polar crane > 50 ton capacity	4,308.89
Removal of gantry crane > 50 ton capacity	15,556.49
Removal of structural steel, \$/pound	0.14
Removal of clean steel floor grating, \$/square foot	3.49
Removal of contaminated steel floor grating, \$/square foot	11.03
Removal of clean free standing steel liner, \$/square foot	7.95
Removal of contaminated free standing steel liner, \$/square foot	25.98
Removal of clean concrete-anchored steel liner, \$/square foot	3.97
Removal of contaminated concrete-anchored steel liner, \$/square foot	30.30
Placement of scaffolding in clean areas, \$/square foot	14.37
Placement of scaffolding in contaminated areas, \$/square foot	22.03
Landscaping with topsoil, \$/acre	21,951.61
Cost of CPC B-88 LSA box & preparation for use	1,965.10

TLG Services, Inc.

*Palo Verde Nuclear Generating Station
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APPENDIX F

UNIT COST FACTOR LISTING (DECON: Power Block Structures Only)

Unit Cost Factor	Cost/Unit (\$)
Cost of CPC B-25 LSA box & preparation for use	1,587.36
Cost of CPC B-12V 12 gauge LSA box & preparation for use	1,515.77
Cost of CPC B-144 LSA box & preparation for use	10,114.94
Cost of LSA drum & preparation for use	198.67
Cost of cask liner for CNSI 8 120A cask (resins)	11,710.61
Cost of cask liner for CNSI 8 120A cask (filters)	8,283.95
Decontamination of surfaces with vacuuming, \$/square foot	0.58

EL PASO ELECTRIC COMPANY
2021 TEXAS RATE CASE FILING
SCHEDULE H-10. NUCLEAR DECOMMISSIONING COST STUDIES
SPONSOR: RODERICK W. KNIGHT
PREPARER: RODERICK W. KNIGHT
FOR TEST YEAR ENDED DECEMBER 31, 2020

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APPENDIX G

STORED STEAM GENERATORS & STORAGE FACILITY, DECON DECOMMISSIONING COST ESTIMATE

TLG Services, Inc.

Table G
Palo Verde Nuclear Generating Station - Stored Steam Generators & Storage Facility
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes Class A Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
1	Review plant dwgs & specs	-	-	-	-	-	-	35	3	40	40	-	-	-	-	-	460
2	Define major work sequence	-	-	-	-	-	-	57	9	66	66	-	-	-	-	-	750
Activity Specifications																	
3	Steam generators	-	-	-	-	-	-	24	4	27	27	-	-	-	-	-	312
4	Reinforced concrete	-	-	-	-	-	-	12	2	14	14	-	-	-	-	-	160
5	Plant structures & buildings	-	-	-	-	-	-	24	4	27	-	27	-	-	-	-	312
6	Facility & site close-out	-	-	-	-	-	-	7	1	8	-	8	-	-	-	-	90
Planning & Site Preparations																	
7	Prepare dismantling sequence	-	-	-	-	-	-	18	3	21	21	-	-	-	-	-	240
8	Plant prep & temp svces	-	-	-	-	-	-	340	51	391	391	-	-	-	-	-	-
Detailed Work Procedures																	
9	Remaining buildings	-	-	-	-	-	-	10	2	12	12	-	-	-	-	-	135
10	Facility closeout	-	-	-	-	-	-	9	1	10	10	-	-	-	-	-	120
11	Steam generators	-	-	-	-	-	-	35	5	40	40	-	-	-	-	-	460
12	Reinforced concrete	-	-	-	-	-	-	8	1	9	9	-	-	-	-	-	100
Nuclear Steam Supply System Removal																	
13	Retired Steam Generator Units	-	-	24,089	3,603	-	20,155	-	7,988	55,835	55,835	-	-	146,958	13,246,071	107,355	2,875
Demolition of Remaining Site Buildings																	
14.1	Steam Generator Storage Facility	-	164	-	-	-	-	-	25	189	-	189	-	-	-	1,087	-
14	Totals	-	164	-	-	-	-	-	25	189	-	189	-	-	-	1,087	-
Site Closeout Activities																	
15	Remove Rubble	-	59	-	-	-	-	-	9	68	-	68	-	-	-	325	-
16	Concrete Crushing	-	26	-	-	-	-	9	5	40	-	40	-	-	-	125	-
17	Small tool allowance	-	242	-	-	-	-	-	36	278	-	278	-	-	-	-	-
TOTAL COST TO DECOMMISSION																	
		-	490	24,089	3,603	-	20,155	587	8,150	57,074	56,465	609	-	146,958	13,246,071	108,893	6,014

TOTAL COST TO DECOMMISSION WITH 16.66 % CONTINGENCY:	\$57,074 thousands of 2019 dollars
TOTAL NRC LICENSE TERMINATION COST	\$56,465 thousands of 2019 dollars
NON-NUCLEAR DEMOLITION COST	\$609 thousands of 2019 dollars
TOTAL SCRAP METAL REMOVED:	222 tons
TOTAL CRAFT LABOR REQUIREMENTS:	108,893 man-hours

EL PASO ELECTRIC COMPANY
2021 TEXAS RATE CASE FILING
SCHEDULE H-10: NUCLEAR DECOMMISSIONING COST STUDIES
SPONSOR: RODERICK W. KNIGHT
PREPARER: RODERICK W. KNIGHT
FOR TEST YEAR ENDED DECEMBER 31, 2020

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APPENDIX H

WATER RECLAMATION FACILITY, DECON DECOMMISSIONING COST ESTIMATE

TLG Services, Inc.

Table H
Palo Verde Nuclear Generating Station - Water Reclamation Facility
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Class A Cu Feet	Class B Cu Feet	Class C Cu Feet	GTCC Cu Feet	Burial / Processed Wt. Lbs.	Craft Manhours	Utility and Contractor Manhours
1	Operations Shutdown	-	-	-	-	-	-	1,178	-	1,178	-	-	1,178	-	-	-	-	-	-	-	-
2	Review plant docs & specs	-	-	-	-	-	-	31	5	40	-	-	40	-	-	-	-	-	-	-	460
3	Define major work sequence	-	-	-	-	-	-	57	9	66	-	-	66	-	-	-	-	-	-	-	750
Activity Specifications																					
4	Plant & temporary facilities	-	-	-	-	-	-	17	6	43	-	-	43	-	-	-	-	-	-	-	492
5	Plant systems	-	-	-	-	-	-	32	5	36	-	-	36	-	-	-	-	-	-	-	417
6	Reinforced concrete	-	-	-	-	-	-	12	2	14	-	-	14	-	-	-	-	-	-	-	160
7	Plant structures & buildings	-	-	-	-	-	-	23	4	27	-	-	27	-	-	-	-	-	-	-	312
8	Facility & site closeout	-	-	-	-	-	-	7	1	8	-	-	8	-	-	-	-	-	-	-	90
Planning & Site Preparations																					
9	Prepare dismantling sequence	-	-	-	-	-	-	18	3	21	-	-	21	-	-	-	-	-	-	-	240
10	Plant prep & temp svcs	-	-	-	-	-	-	340	51	391	-	-	391	-	-	-	-	-	-	-	-
Detailed Work Procedures																					
11	Plant systems	-	-	-	-	-	-	36	5	41	-	-	41	-	-	-	-	-	-	-	473
12	Remaining buildings	-	-	-	-	-	-	10	2	12	-	-	12	-	-	-	-	-	-	-	135
13	Facility closeout	-	-	-	-	-	-	9	1	10	-	-	10	-	-	-	-	-	-	-	120
14	Reinforced concrete	-	-	-	-	-	-	8	1	9	-	-	9	-	-	-	-	-	-	-	100
Disposal of Plant Systems																					
15.1	Chlorination	-	3	-	-	-	-	-	0	3	-	-	3	-	-	-	-	-	-	81	-
15.2	Clarifier Feed Sump	-	22	-	-	-	-	-	3	25	-	-	25	-	-	-	-	-	-	674	-
15.3	Classification Centrifuge	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	53	-
15.4	Deaerating Centrifuge	-	3	-	-	-	-	-	0	4	-	-	4	-	-	-	-	-	-	101	-
15.5	Domestic Water	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	55	-
15.6	Fire Protection	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	68	-
15.7	First Stage Thickeners	-	111	-	-	-	-	-	17	128	-	-	128	-	-	-	-	-	-	3,214	-
15.8	Fuel Oil	-	37	-	-	-	-	-	6	43	-	-	43	-	-	-	-	-	-	1,076	-
15.9	Gravity Filters	-	1	-	-	-	-	-	0	1	-	-	1	-	-	-	-	-	-	33	-
15.10	LPG	-	9	-	-	-	-	-	1	11	-	-	11	-	-	-	-	-	-	278	-
15.11	Lime	-	192	-	-	-	-	-	29	221	-	-	221	-	-	-	-	-	-	5,643	-
15.12	Lime Reclamation	-	6	-	-	-	-	-	1	7	-	-	7	-	-	-	-	-	-	193	-
15.13	Polymar	-	21	-	-	-	-	-	3	24	-	-	24	-	-	-	-	-	-	625	-
15.14	Process Water	-	22	-	-	-	-	-	3	25	-	-	25	-	-	-	-	-	-	674	-
15.15	Pure Carbon Dioxide	-	35	-	-	-	-	-	5	40	-	-	40	-	-	-	-	-	-	1,008	-
15.16	Second Stage Thickeners	-	18	-	-	-	-	-	6	14	-	-	14	-	-	-	-	-	-	1,098	-
15.17	Soda Ash	-	130	-	-	-	-	-	19	149	-	-	149	-	-	-	-	-	-	3,790	-
15.18	Solids Contact Clarifiers	-	90	-	-	-	-	-	13	103	-	-	103	-	-	-	-	-	-	2,788	-
15.19	Spent Washwater Pump Station	-	13	-	-	-	-	-	2	15	-	-	15	-	-	-	-	-	-	405	-
15.20	Spent Washwater Thickeners	-	178	-	-	-	-	-	27	204	-	-	204	-	-	-	-	-	-	5,155	-
15.21	Stark Gas CO2	-	7	-	-	-	-	-	1	8	-	-	8	-	-	-	-	-	-	213	-
15.22	Sulfuric Acid	-	19	-	-	-	-	-	3	22	-	-	22	-	-	-	-	-	-	544	-
15.23	Supply	-	29	-	-	-	-	-	4	33	-	-	33	-	-	-	-	-	-	892	-
15.24	Trickling Filters	-	993	-	-	-	-	-	149	1,141	-	-	1,141	-	-	-	-	-	-	28,757	-
15.25	Waste Centrifuge	-	1	-	-	-	-	-	1	1	-	-	1	-	-	-	-	-	-	37	-
15.26	Waste Thickeners	-	71	-	-	-	-	-	11	81	-	-	81	-	-	-	-	-	-	2,071	-
15	Totals	-	2,035	-	-	-	-	-	305	2,340	-	-	2,340	-	-	-	-	-	-	59,524	-

Table H
Palo Verde Nuclear Generating Station - Water Reclamation Facility
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site	LLRW	Other Costs	Total 5	Total Costs	NRC Lic Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				GTCC Cu. Feet	Burial/ Processed Wt., Lbs	Craft Manhours	Limits and Contractor Manhours
						Processing Costs	Disposal Costs								Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet					
16	Scaffolding in support of decommissioning	-	215	-	-	-	-	-	32	247	-	-	247	-	-	-	-	-	-	-	8 650	-
17	Small tool allowance	-	22	-	-	-	-	-	1	26	-	-	26	-	-	-	-	-	-	-	682	-
Demolition of Remaining Site Buildings																						
18.1	1st & 2nd Stage Solids Contact Clarifier	-	187	-	-	-	-	-	71	560	-	-	560	-	-	-	-	-	-	-	1 704	-
18.2	1st & 2nd Stage Thickeners	-	54	-	-	-	-	-	8	62	-	-	62	-	-	-	-	-	-	-	458	-
18.3	Air Compressor	-	10	-	-	-	-	-	2	12	-	-	12	-	-	-	-	-	-	-	129	-
Demolition of Remaining Site Buildings (continued)																						
18.4	Carbon Dioxide Tank	-	8	-	-	-	-	-	1	10	-	-	10	-	-	-	-	-	-	-	63	-
18.5	Chemical Feed Area	-	35	-	-	-	-	-	5	40	-	-	40	-	-	-	-	-	-	-	369	-
18.6	Chemical Production Building	-	100	-	-	-	-	-	15	115	-	-	115	-	-	-	-	-	-	-	1 724	-
18.7	Chlorine Building	-	6	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	-	83	-
18.8	Clarifier & Thickener Walkway	-	105	-	-	-	-	-	16	121	-	-	121	-	-	-	-	-	-	-	2 250	-
18.9	Classification & Dewatering Centrifuge	-	46	-	-	-	-	-	7	53	-	-	53	-	-	-	-	-	-	-	731	-
18.10	Diesel Fuel Tanks	-	2	-	-	-	-	-	0	2	-	-	2	-	-	-	-	-	-	-	12	-
18.11	Electrical Building	-	15	-	-	-	-	-	2	17	-	-	17	-	-	-	-	-	-	-	220	-
18.12	Electrical Equipment Bldg & Foundation	-	84	-	-	-	-	-	11	96	-	-	96	-	-	-	-	-	-	-	933	-
18.13	Filters & Clarifiers Pump Station	-	32	-	-	-	-	-	5	37	-	-	37	-	-	-	-	-	-	-	401	-
18.14	Gravity Filters	-	155	-	-	-	-	-	23	179	-	-	179	-	-	-	-	-	-	-	1 618	-
18.15	I & C Shop	-	15	-	-	-	-	-	2	17	-	-	17	-	-	-	-	-	-	-	220	-
18.16	LPG Storage Tank	-	9	-	-	-	-	-	1	10	-	-	10	-	-	-	-	-	-	-	62	-
18.17	Lime Storage	-	79	-	-	-	-	-	12	91	-	-	91	-	-	-	-	-	-	-	773	-
18.18	Operations Building	-	143	-	-	-	-	-	22	165	-	-	165	-	-	-	-	-	-	-	2 515	-
18.19	Piping	-	516	-	-	-	-	-	82	628	-	-	628	-	-	-	-	-	-	-	1 444	-
18.20	Recalcinuating Furnace Area	-	68	-	-	-	-	-	10	78	-	-	78	-	-	-	-	-	-	-	1 275	-
18.21	Soda Ash Unloading & Storage	-	18	-	-	-	-	-	3	21	-	-	21	-	-	-	-	-	-	-	140	-
18.22	Spent Washwater Thickeners	-	223	-	-	-	-	-	33	257	-	-	257	-	-	-	-	-	-	-	1 999	-
18.23	Sulfuric Acid Building	-	25	-	-	-	-	-	4	29	-	-	29	-	-	-	-	-	-	-	457	-
18.24	TSD/MS/DDC Building	-	33	-	-	-	-	-	5	39	-	-	39	-	-	-	-	-	-	-	521	-
18.25	Trickling Filter-Walkway	-	1	-	-	-	-	-	1	5	-	-	5	-	-	-	-	-	-	-	96	-
18.26	Trickling Filters	-	576	-	-	-	-	-	86	662	-	-	662	-	-	-	-	-	-	-	4 666	-
18.27	WRF Warehouse	-	95	-	-	-	-	-	14	109	-	-	109	-	-	-	-	-	-	-	1 580	-
18.28	Waste Centrifuges	-	47	-	-	-	-	-	7	54	-	-	54	-	-	-	-	-	-	-	740	-
18.29	Waste Thickeners	-	26	-	-	-	-	-	4	30	-	-	30	-	-	-	-	-	-	-	260	-
18	Totals	-	3,047	-	-	-	-	-	457	3,504	-	-	3,504	-	-	-	-	-	-	-	29,335	-
Site Cleanup Activities																						
19	Concrete Crushing	-	221	-	-	-	-	10	35	265	-	-	265	-	-	-	-	-	-	-	1 073	-
20	Backfill Site	-	2 311	-	-	-	-	-	147	2,658	-	-	2,658	-	-	-	-	-	-	-	4 868	-
21	Grade & landscape site	-	59	-	-	-	-	-	9	68	-	-	68	-	-	-	-	-	-	-	325	-
22	Small tool allowance	-	20	-	-	-	-	-	3	23	-	-	23	-	-	-	-	-	-	-	-	-
TOTAL COST TO DECOMMISSION		-	7,930	-	-	-	-	1,812	1,285	11,027	-	-	11,027	-	-	-	-	-	-	-	104,458	3,749

TOTAL COST TO DECOMMISSION WITH 13.19 % CONTINGENCY	\$11,027 thousands of 2019 dollars
TOTAL SCRAP METAL REMOVED	10,415 tons
TOTAL CRAFT LABOR REQUIREMENTS	104,458 man-hours

EL PASO ELECTRIC COMPANY
2021 TEXAS RATE CASE FILING
SCHEDULE H-10. NUCLEAR DECOMMISSIONING COST STUDIES
SPONSOR: RODERICK W. KNIGHT
PREPARER: RODERICK W. KNIGHT
FOR TEST YEAR ENDED DECEMBER 31, 2020

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APPENDIX I

WATER RECLAMATION SUPPLY SYSTEM PIPELINE & STRUCTURES, DECON DECOMMISSIONING COST ESTIMATE

TLG Services, Inc.

Table I
Palo Verde Nuclear Generating Station - Water Reclamation Supply System Pipeline & Structures
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Burial Volumes				Burial/Processed Wt., Lbs	Craft Manhours	Utility and Contractor Manhours
															Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet			
1	Review plant dwgs & specs	-	-	-	-	-	-	35	5	40	-	-	40	-	-	-	-	-	-	-	460
2	Define major work sequence	-	-	-	-	-	-	57	4	66	-	-	66	-	-	-	-	-	-	-	750
Activity Specifications																					
3	Plant & temporary facilities	-	-	-	-	-	-	37	6	43	-	-	43	-	-	-	-	-	-	-	492
4	Plant systems	-	-	-	-	-	-	32	5	36	-	-	36	-	-	-	-	-	-	-	417
5	Reinforced concrete	-	-	-	-	-	-	12	2	14	-	-	14	-	-	-	-	-	-	-	160
6	Plant structures & buildings	-	-	-	-	-	-	24	4	27	-	-	27	-	-	-	-	-	-	-	312
7	Facility & site closeout	-	-	-	-	-	-	7	1	8	-	-	8	-	-	-	-	-	-	-	90
Planning & Site Preparations																					
8	Prepare dismantling sequence	-	-	-	-	-	-	18	3	21	-	-	21	-	-	-	-	-	-	-	240
9	Plant prep & temp specs	-	-	-	-	-	-	340	51	391	-	-	391	-	-	-	-	-	-	-	-
Detailed Work Procedures																					
10	Plant systems	-	-	-	-	-	-	36	5	41	-	-	41	-	-	-	-	-	-	-	473
11	Remaining buildings	-	-	-	-	-	-	10	2	12	-	-	12	-	-	-	-	-	-	-	135
12	Facility closeout	-	-	-	-	-	-	9	1	10	-	-	10	-	-	-	-	-	-	-	120
13	Reinforced concrete	-	-	-	-	-	-	8	1	9	-	-	9	-	-	-	-	-	-	-	100
Disposal of Plant Systems																					
14.1	91st Avenue Meter Vault Components	-	3	-	-	-	-	-	0.5	4	-	-	4	-	-	-	-	-	-	110	-
14.2	Chemical Waste	-	3	-	-	-	-	-	0.4	3	-	-	3	-	-	-	-	-	-	82	-
14.3	Fire Protection	-	0.2	-	-	-	-	-	0.02	0.2	-	-	0.2	-	-	-	-	-	-	5	-
14.4	HVAC-Misc Site Structures	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	166	-
14	Totals	-	12	-	-	-	-	-	2	13	-	-	13	-	-	-	-	-	-	363	-
15	Scaffolding in support of decommissioning	-	48	-	-	-	-	-	7	55	-	-	55	-	-	-	-	-	-	1,921	-
16	Small tool allowance	-	0.12	-	-	-	-	-	0.017	0.133	-	-	0.133	-	-	-	-	-	-	-	-
Demolition of Remaining Site Buildings																					
17.1	91st Avenue Meter Vault	-	34	-	-	-	-	-	5	40	-	-	40	-	-	-	-	-	-	176	-
17.2	91st Avenue Interface	-	14	-	-	-	-	-	3	19	-	-	19	-	-	-	-	-	-	406	-
17.3	B/C Interface	-	7	-	-	-	-	-	1	8	-	-	8	-	-	-	-	-	-	60	-
17.4	Buckeye Isolation Valve Structure	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	51	-
17.5	Hassayampa Isolation Valve Structure	-	4	-	-	-	-	-	1	4	-	-	4	-	-	-	-	-	-	24	-
17.6	Hassayampa Pumping Station	-	141	-	-	-	-	-	21	162	-	-	162	-	-	-	-	-	-	1,223	-
17.7	Influent Shutoff Valve Structure	-	3	-	-	-	-	-	0	4	-	-	4	-	-	-	-	-	-	37	-
17.8	Piping	-	45,623	-	-	-	-	-	6,843	52,467	-	-	52,467	-	-	-	-	-	-	111,544	-
17.9	RID Sump Structures	-	5	-	-	-	-	-	1	5	-	-	5	-	-	-	-	-	-	66	-
17.10	Tollson Interface Structures	-	5	-	-	-	-	-	1	6	-	-	6	-	-	-	-	-	-	89	-
17	Totals	-	45,861	-	-	-	-	-	6,879	52,740	-	-	52,740	-	-	-	-	-	-	113,676	-
Site Closeout Activities																					
18	Backfill Site	-	355	-	-	-	-	-	51	408	-	-	408	-	-	-	-	-	-	747	-
19	Concrete Crushing	-	21	-	-	-	-	1	3	25	-	-	25	-	-	-	-	-	-	102	-
20	Small tool allowance	-	56	-	-	-	-	-	8	64	-	-	64	-	-	-	-	-	-	-	-
TOTAL COST TO DECOMMISSION		-	46,351	-	-	-	-	626	7,047	54,024	-	-	54,024	-	-	-	-	-	-	116,809	3,749
TOTAL COST TO DECOMMISSION WITH 15% CONTINGENCY		\$64,024 thousands of 2019 dollars																			
TOTAL SCRAP METAL REMOVED		503 tons																			
TOTAL CRAFT LABOR REQUIREMENTS		116,809 man-hours																			

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APPENDIX J
**EVAPORATION PONDS,
DECON DECOMMISSIONING COSTS**

TLG Services, Inc.

Table J
Palo Verde Nuclear Generating Station - Evaporation Ponds
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Other Costs	Total Contingency	Total Costs ¹	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Class A Cu. Feet	Burial Volumes Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt. Lbs.	Craft Manhours	Utility and Contractor Manhours
1	Subtitle D Permitted Landfill (On Site)																		
1.1	Total Direct Cost					12,316	2,463	11,779			14,779								
1.2	Engineering					307	61	368											
1.3	Construction Quality Assurance					920	184	1,104			1,104								
1.4	Construction Mobilization and Demobilization @ 3%					369	74	443			443								
1.5	AFS Management Personnel Costs @ 10%					1,232	246	1,478			1,478								
1.6	Other Construction Items @ 15%					1,847	369	2,217			2,217								
	Total Subtitle D Permitted Landfill					16,991	3,398	20,389			20,389								
2	Evaporation Pond #1																		
2.1	Excavation, Hauling and Disposal of sludge/sediment					3,192	638	3,831			3,831								
2.2	Removal of Composite Liner System					3,289	654	3,923			3,923								
2.3	Removal of Inflow Piping System					19	4	22			22								
2.4	Cut Down Sumps, Soil Backfill					26	5	32			32								
2.5	Haul and Disposal of Composite Liner System and Inflow Piping System					1,367	273	1,641			1,641								
2.6	Confirmation Sampling					66	13	79			79								
2.7	Fill Pond Area in with Embankment Material, Regrade and Compact					3,069	614	3,682			3,682								
2.8	Revegetation					1,188	238	1,425			1,425								
2.9	Grouting of LCBS pipes					25	5	30			30								
2.10	Disposal of Concrete Structures					14	3	16			16								
	Subtotal Direct Activities					12,235	2,447	14,683			14,683								
2.11	Construction Mobilization and Demobilization @ 3%					367	73	440			440								
2.12	AFS Management Personnel Costs @ 10%					1,224	247	1,468			1,468								
	Total Evaporation Pond #1					13,826	2,765	16,591			16,591								
3	Evaporation Pond #2																		
3.1	Excavation, Hauling and Disposal of sludge/sediment					2,980	596	3,576			3,576								
3.2	Removal of Composite Liner System					2,997	599	3,596			3,596								
3.3	Removal of Inflow Piping System					19	4	22			22								
3.4	Cut Down Sumps, Soil Backfill					53	11	64			64								
3.5	Haul and Disposal of Composite Liner System and Inflow Piping System					1,262	252	1,515			1,515								
3.6	Confirmation Sampling					66	13	79			79								
3.7	Fill Pond Area in with Embankment Material, Regrade and Compact					2,772	554	3,326			3,326								
3.8	Revegetation					1,089	218	1,307			1,307								
3.9	Grouting of LCBS pipes					51	11	64			64								
3.10	Disposal of Concrete Structures					24	5	29			29								
	Subtotal Direct Activities					11,314	2,263	13,577			13,577								
3.11	Construction Mobilization and Demobilization @ 3%					339	68	407			407								
3.12	AFS Management Personnel Costs @ 10%					1,131	226	1,358			1,358								
	Total Evaporation Pond #2					12,785	2,557	15,342			15,342								
4	Evaporation Pond #3																		
4.1	Excavation, Hauling and Disposal of sludge/sediment					2,381	476	2,858			2,858								
4.2	Removal of Composite Liner System					1,034	207	1,241			1,241								
4.3	Removal of Inflow Piping System					-	-	-			-								
4.4	Cut Down Sumps, Soil Backfill					51	11	64			64								
4.5	Haul and Disposal of Composite Liner System and Inflow Piping System					455	91	546			546								
4.6	Confirmation Sampling					66	13	79			79								
4.7	Fill Pond Area in with Embankment Material, Regrade and Compact					5,160	1,032	6,191			6,191								
4.8	Revegetation					873	175	1,048			1,048								
4.9	Grouting of LCBS pipes					52	10	62			62								
4.10	Disposal of Concrete Structures					19	4	23			23								
	Subtotal Direct Activities					10,093	2,019	12,112			12,112								
4.11	Construction Mobilization and Demobilization @ 3%					303	61	363			363								

Table J
Palo Verde Nuclear Generating Station - Evaporation Ponds
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Other Costs	Total Contingency	Total Costs ¹	NRC Lic. Term. Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu Feet	Class A Cu Feet	Class B Cu Feet	Class C Cu Feet	GTCC Cu Feet	Burial / Processed Wt. Lbs	Craft Manhours	Utility and Contractor Manhours
4.12	APS Management Personnel Costs @ 10%					1,009	202	1,211			1,211								
	Total Evaporation Pond #3					11,405	2,281	13,686			13,686								
TOTAL COST TO DECOMMISSION		-	-	-	-	53,007	11,001	66,009	-	-	66,009	-	-	-	-	-	-	-	-
TOTAL COST TO DECOMMISSION WITH 20% CONTINGENCY						\$66,009													
TOTAL NRC LICENSE TERMINATION COST						\$0													
NON-NUCLEAR DEMOLITION COST						\$66,009													

Note 1 The Evaporation Pond closure and Subtitle D Permitted Landfill cost estimates were provided by APSC. TLG assumes that the costs provided for development of the permitted landfill and closure of the Evaporation Ponds to be all-inclusive. TLG escalated the Evaporation Pond closure costs from 2007 & 2009 \$'s to 2019 dollars. The Subtitle D Permitted Landfill costs were provided based upon waste volumes after 60 years of plant operation. Direct costs were reduced by 33% to reflect 40 years of operation.

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APPENDIX K

MAKE-UP WATER RESERVOIR, DECON DECOMMISSIONING COSTS

TLG Services, Inc.

Table K
Palo Verde Nuclear Generating Station - Make-up Water Reservoir
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Other Costs	Total Contingency	Total Costs ¹	NRC Lic Term Costs	Spent Fuel Management Costs	Site Restoration Costs
1	80 Acre Make-up Water Reservoir										
1.1	Excavation, Hauling and Disposal of sludge/sediment					1 158	232	1 389			1 389
1.2	Removal of Composite Liner System					79	16	95			95
1.3	Cut Down Sumps, Soil Backfill					159	32	191			191
1.4	Haul and Disposal of Composite Liner System and Inflow Piping System					159	32	191			191
1.5	Confirmation Sampling					40	8	48			48
1.6	Revegetation					434	87	521			521
1.7	Restoration of 36" Red Hawk Make-Up Water Line ²					891	178	1 069			1 069
	Subtotal Direct Activities					2 919	584	3 503			3 503
1.8	Construction Mobilization and Demobilization @ 3%					88	18	105			105
1.9	APS Management Personnel Costs @ 10%					292	58	350			350
	Total 80 Acre Make-up Water Reservoir					3 298	660	3 958			3,958
2	45 Acre Make-up Water Reservoir										
2.1	Excavation, Hauling and Disposal of sludge/sediment					302	60	363			363
2.2	Removal of Composite Liner System					196	39	235			235
2.3	Cut Down Sumps, Soil Backfill					71	14	85			85
2.4	Haul and Disposal of Composite Liner System and Inflow Piping System					101	20	121			121
2.5	Confirmation Sampling					21	4	26			26
2.6	Revegetation					128	26	153			153
	Subtotal Direct Activities					819	164	983			983
2.7	Construction Mobilization and Demobilization @ 3%					25	5	29			29
2.8	APS Management Personnel Costs @ 10%					82	16	98			98
	Total 45 Acre Make-up Water Reservoir					925	185	1,110			1 110
	TOTAL COST TO DECOMMISSION					4 224	845	5 069			5 069

TOTAL COST TO DECOMMISSION WITH 20% CONTINGENCY:	\$5,069
TOTAL NRC LICENSE TERMINATION COST	\$0
NON-NUCLEAR DEMOLITION COST	\$5,069

Note 1 The Make-up Water Reservoir closure cost estimates with the exception of line #1.7 were provided by APSC. TLG escalated these costs to 2019 dollars.
Note 2 TLG estimated the closure cost of the 36" makeup water line from the Red Hawk pipeline to the Make-up Water Reservoirs.

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APPENDIX L
ISFSI
DECON DECOMMISSIONING COSTS

TLG Services, Inc.

Table L
Palo Verde Nuclear Generating Station - ISFSI
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term Costs	Spent Fuel Management Costs	Site Restoration Costs	Processed Volume Cu. Feet	Class A Cu. Feet	Class B Cu. Feet	Class C Cu. Feet	GTCC Cu. Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
Start	ISFSI Operations / Spent Fuel Transfer (Unit 1, 2, & 3 Shutdown - End of Spent Fuel Transfer to DOE Unit 1 - June 1, 2046 Unit 2 - April 24, 2046 Unit 3 - November 26, 2047 December 31, 2098)																				
Finish																					
	ISFSI Operations Collateral / Period Dependent Costs																				
	Spent Fuel Transfer from Pool to DOE Transport Vehicle				-			20 448	3 067	23 515		23 515									-
	Spent Fuel Transfer from ISFSI to DOE Transport Vehicle				-			85 153	12 773	97 925	-	97 925	-	-	-	-	-	-			-
	Total ISFSI Operations / Spent Fuel Transfer Costs		-	-		-	-	105 600	15 840	121 440		121 440		-	-	-	-	-			-
	Radiological ISFSI License Termination																				
	ISFSI Planning							780	195	975		975									1 672
	ISFSI Decontamination		182	317	2 452		3 484	-	1 609	8 045		8 045		-	38 624	-	-	-	4 150 679	2 128	
	ISFSI License Termination							4 178	1 045	5 223	-	5 223								34 303	
	NRC and NRC Contractor							481	120	602		602									1 153
	ISFSI Insurance							98	25	123		123									-
	ISFSI Property Taxes							-	-	-		-									-
	Plant Energy Budget							96	24	120		120									-
	ISFSI Security (Industrial)							165	41	206		206									5 999
	ISFSI Oversight Staff							444	111	554		554									4 551
	TOTAL Radiological ISFSI License Termination COST		182	317	2 452		3 484	6 242	3 170	15 848	-	15 848		-	38 624	-	-	-	4 150 679	36 431	13 374
	Non-Radiological ISFSI Demolition and Site Restoration																				
	Direct Demolition / Site Restoration activities																				
	Demolition of Remaining Site Buildings & Site Closure (Including rail track paving buildings storage casks liners and ISFSI pad)			5 806				1 551	1 103 61	8 461		8 461								49 146	160
	ISFSI Demolition / Site Restoration Period-Dependent Collateral Costs																				
	Security Staff Costs							65	10	75		75									2 384
	Utility Staff Costs							148	22	170		170									1 479
	Subtotal Period Dependent Costs							213	32	245		245									3 863
	TOTAL Non-Radiological ISFSI Demolition and Site Restoration Cost		5 806					1 764	1 136	8 706		8 706								49 146	4 023
	TOTAL COST TO DECOMMISSION		5 989	317	2 452		3 484	113 607	20 145	145 994		145 994			38 624				4 150 679	85 577	17 397
	TOTAL COST TO OPERATE AND DECOMMISSION ISFSI WITH 16% CONTINGENCY							\$146,994	thousands of 2019 dollars												
	TOTAL CRAFT LABOR REQUIREMENTS							85,577	Man-hours												

End Notes
n/a indicates that this activity not charged as decommissioning expense
- indicates that this activity performed by decommissioning staff
0 - indicates that this value is less than 0.5 but is non-zero
a cell containing "-" indicates a zero value

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APPENDIX M

STORED REACTOR CLOSURE HEADS & STORAGE FACILITY, DECON DECOMMISSIONING COSTS

TLG Services, Inc.

Table M
Palo Verde Nuclear Generating Station - Stored Reactor Closure Heads & Storage Facility
DECON Decommissioning Cost Estimate
(Thousands of 2019 Dollars)

Activity Index	Activity Description	Decon Cost	Removal Cost	Packaging Costs	Transport Costs	Off-Site Processing Costs	LLRW Disposal Costs	Other Costs	Total Contingency	Total Costs	NRC Lic. Term. Costs	Site Restoration Costs	Processed Volume Cu Feet	Burial Volumes Class A Cu Feet	Burial / Processed Wt., Lbs.	Craft Manhours	Utility and Contractor Manhours
1	Review plant dwgs & specs	-	-	-	-	-	-	35	5	40	40	-	-	-	-	-	460
2	Define major work sequence	-	-	-	-	-	-	57	9	66	66	-	-	-	-	-	750
Activity Specifications																	
3	Reactor Vessel	-	-	-	-	-	-	49	7	57	57	-	-	-	-	-	650
4	Reinforced concrete	-	-	-	-	-	-	12	2	14	7	7	-	-	-	-	160
5	Plant structures & buildings	-	-	-	-	-	-	24	4	27	14	14	-	-	-	-	312
6	Facility & site closeout	-	-	-	-	-	-	7	1	8	4	4	-	-	-	-	90
Planning & Site Preparations																	
7	Prepare dismantling sequence	-	-	-	-	-	-	18	3	21	21	-	-	-	-	-	240
8	Plant prep & temp svces	-	-	-	-	-	-	340	51	391	391	-	-	-	-	-	-
Detailed Work Procedures																	
9	Remaining buildings	-	-	-	-	-	-	10	2	12	3	9	-	-	-	-	135
10	Facility closeout	-	-	-	-	-	-	9	1	10	5	5	-	-	-	-	120
11	Reactor Vessel	-	-	-	-	-	-	28	4	32	32	-	-	-	-	-	363
12	Reinforced concrete	-	-	-	-	-	-	8	1	9	4	4	-	-	-	-	100
Nuclear Steam Supply System Removal																	
13	Retired Reactor Closure Heads	-	-	502	1 763	-	1 638	-	724	4,628	4,628	-	-	15,216	924,428	6,295	6,000
Demolition of Remaining Site Buildings																	
14.1	Rx Closure Head Storage Facility	-	46	-	-	-	-	-	7	53	-	53	-	-	-	304	-
14	Totals	-	46	-	-	-	-	-	7	53	-	53	-	-	-	304	-
Site Closeout Activities																	
15	Remove Rubble	-	18	-	-	-	-	-	3	20	-	20	-	-	-	108	-
16	Concrete Crushing	-	7	-	-	-	-	3	1	11	11	-	-	-	-	35	-
17	Small tool allowance	-	5	-	-	-	-	-	1	6	6	1	-	-	-	-	-
TOTAL COST TO DECOMMISSION		-	76	502	1 763	-	1 638	599	826	5 405	5,288	117	-	15 216	924,428	6,742	9 380

TOTAL COST TO DECOMMISSION WITH 18 % CONTINGENCY:	\$ 5,405 thousands of 2019 dollars
TOTAL NRC LICENSE TERMINATION COST	\$ 5,288 thousands of 2019 dollars
NON-NUCLEAR DEMOLITION COST	\$ 117 thousands of 2019 dollars
TOTAL CRAFT LABOR REQUIREMENTS:	6,742 man-hours

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APPENDIX N

SCHEDULE OF ANNUAL EXPENDITURES - CONSOLIDATED

<u>Table</u>	<u>Page</u>
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TABLE N-1
SCHEDULE OF ANNUAL EXPENDITURES
UNIT 1 - CONSOLIDATED (INCLUDES SITE FACILITIES)
 (thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2040	363	0	0	0	0	363
2041	619	0	0	0	0	619
2042	619	0	0	0	0	619
2043	3,501	0	0	0	0	3,501
2044	5,550	0	0	0	0	5,550
2045	64,958	4,703	1,567	13	4,408	75,649
2046	85,370	17,386	4,000	15,949	22,996	145,702
2047	68,416	33,330	2,539	32,335	9,005	145,624
2048	69,802	31,005	2,515	27,402	7,941	138,665
2049	55,741	14,983	2,004	19,646	6,992	99,366
2050	55,875	15,386	2,004	19,646	6,992	99,903
2051	38,996	11,618	1,347	15,448	6,030	73,438
2052	9,142	2,335	0	4	2,307	13,788
2053	9,128	2,335	0	4	2,301	13,767
2054	22,537	3,056	332	11	2,034	27,971
2055	15,525	10,921	305	2	603	27,357
2056	12,899	11,030	268	0	394	24,591
2057	570	878	8	0	12	1,468
2058	161	483	0	0	0	644
2059	188	564	0	0	0	752
2060	188	564	0	0	0	752
2061	188	564	0	0	0	752
2062	188	564	0	0	0	752
2063	188	564	0	0	0	752
2064	188	564	0	0	0	752
2065	188	564	0	0	0	752
2066	161	483	0	0	0	644
2067	188	564	0	0	0	752
2068	188	564	0	0	0	752
2069	188	564	0	0	0	752
2070	188	564	0	0	0	752
2071	188	564	0	0	0	752
2072	188	564	0	0	0	752

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TABLE N-1 (continued)
SCHEDULE OF ANNUAL EXPENDITURES
UNIT 1 – CONSOLIDATED (INCLUDES SITE FACILITIES)
(thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2073	188	564	0	0	0	752
2074	161	483	0	0	0	644
2075	188	564	0	0	0	752
2076	188	564	0	0	0	752
2077	188	564	0	0	0	752
2078	188	564	0	0	0	752
2079	188	564	0	0	0	752
2080	188	564	0	0	0	752
2081	188	564	0	0	0	752
2082	161	483	0	0	0	644
2083	188	564	0	0	0	752
2084	188	564	0	0	0	752
2085	188	564	0	0	0	752
2086	188	564	0	0	0	752
2087	188	564	0	0	0	752
2088	188	564	0	0	0	752
2089	188	564	0	0	0	752
2090	161	483	0	0	0	644
2091	188	564	0	0	0	752
2092	188	564	0	0	0	752
2093	188	564	0	0	0	752
2094	188	564	0	0	0	752
2095	107	322	0	0	0	429
2096	322	966	0	0	0	1,288
2097	161	3,710	0	0	29,260	33,131
2098	1,974	2,861	0	1,452	1,898	8,185
2099	0	0	0	0	0	0
Total	528,998	187,281	16,889	131,910	103,173	968,251

Note: One third of the decommissioning cost of each of the Site Facilities (Stored Steam Generators and Storage Facility, Water Reclamation Facility, Water Reclamation Supply System Pipeline & Structures, Evaporation Ponds, Make-up Water Reservoir, Stored Reactor Closure Heads & Storage Facility, and ISFSI) has been allocated to each unit's cash flow.

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TABLE N-2
SCHEDULE OF ANNUAL EXPENDITURES
UNIT 2 – CONSOLIDATED (INCLUDES SITE FACILITIES)
 (thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2040	0	0	0	0	0	0
2041	0	0	0	0	0	0
2042	0	0	0	0	0	0
2043	0	0	0	0	0	0
2044	0	0	0	0	0	0
2045	4,422	3,561	0	0	0	7,983
2046	83,551	5,504	1,911	5,216	6,756	102,937
2047	67,864	33,083	3,415	38,533	18,074	160,969
2048	73,437	33,398	2,545	37,350	8,278	155,009
2049	60,003	20,019	2,186	23,422	7,092	112,721
2050	53,377	13,746	2,004	16,309	6,493	91,929
2051	53,243	13,344	2,004	16,309	6,493	91,392
2052	33,419	9,800	1,138	12,361	5,268	61,986
2053	9,324	2,387	0	4	2,174	13,889
2054	22,611	3,076	332	11	1,849	27,879
2055	15,479	10,879	305	2	572	27,237
2056	12,845	10,980	268	0	394	24,487
2057	568	877	8	0	12	1,465
2058	161	483	0	0	0	644
2059	188	564	0	0	0	752
2060	188	564	0	0	0	752
2061	188	564	0	0	0	752
2062	188	564	0	0	0	752
2063	188	564	0	0	0	752
2064	188	564	0	0	0	752
2065	188	564	0	0	0	752
2066	161	483	0	0	0	644
2067	188	564	0	0	0	752
2068	188	564	0	0	0	752
2069	188	564	0	0	0	752
2070	188	564	0	0	0	752
2071	188	564	0	0	0	752
2072	188	564	0	0	0	752

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TABLE N-2 (continued)
SCHEDULE OF ANNUAL EXPENDITURES
UNIT 2 – CONSOLIDATED (INCLUDES SITE FACILITIES)
(thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2073	188	564	0	0	0	752
2074	161	483	0	0	0	644
2075	188	564	0	0	0	752
2076	188	564	0	0	0	752
2077	188	564	0	0	0	752
2078	188	564	0	0	0	752
2079	188	564	0	0	0	752
2080	188	564	0	0	0	752
2081	188	564	0	0	0	752
2082	161	483	0	0	0	644
2083	188	564	0	0	0	752
2084	188	564	0	0	0	752
2085	188	564	0	0	0	752
2086	188	564	0	0	0	752
2087	188	564	0	0	0	752
2088	188	564	0	0	0	752
2089	188	564	0	0	0	752
2090	161	483	0	0	0	644
2091	188	564	0	0	0	752
2092	188	564	0	0	0	752
2093	188	564	0	0	0	752
2094	188	564	0	0	0	752
2095	107	322	0	0	0	429
2096	322	966	0	0	0	1,288
2097	161	3,710	0	0	29,260	33,131
2098	1,974	2,861	0	1,452	1,898	8,185
2099	0	0	0	0	0	0
Total	499,527	188,968	16,117	150,967	94,611	950,190

Note: One third of the decommissioning cost of each of the Site Facilities (Stored Steam Generators and Storage Facility, Water Reclamation Facility, Water Reclamation Supply System Pipeline & Structures, Evaporation Ponds, Make-up Water Reservoir, Stored Reactor Closure Heads & Storage Facility, and ISFSI) has been allocated to each unit's cash flow.

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TABLE N-3
SCHEDULE OF ANNUAL EXPENDITURES
UNIT 3 – CONSOLIDATED (INCLUDES SITE FACILITIES)
 (thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2040	0	0	0	0	0	0
2041	0	0	0	0	0	0
2042	0	0	0	0	0	0
2043	0	0	0	0	0	0
2044	0	0	0	0	0	0
2045	4,422	3,561	0	0	0	7,983
2046	1,170	3,382	0	4,540	1,029	10,120
2047	14,362	4,127	271	4,542	1,742	25,044
2048	99,435	15,406	3,566	12,753	17,022	148,182
2049	73,336	32,776	2,539	36,513	8,114	153,277
2050	72,943	31,873	2,500	35,246	8,004	150,567
2051	65,937	14,457	2,004	18,728	6,580	107,705
2052	66,107	14,491	2,010	18,779	6,598	107,984
2053	63,831	14,167	1,909	18,368	6,398	104,673
2054	43,519	6,685	736	5,749	2,775	59,466
2055	26,892	17,279	305	2	2,127	46,606
2056	24,221	18,429	268	0	2,229	45,146
2057	910	1,101	8	0	67	2,086
2058	161	483	0	0	0	644
2059	188	564	0	0	0	752
2060	188	564	0	0	0	752
2061	188	564	0	0	0	752
2062	188	564	0	0	0	752
2063	188	564	0	0	0	752
2064	188	564	0	0	0	752
2065	188	564	0	0	0	752
2066	161	483	0	0	0	644
2067	188	564	0	0	0	752
2068	188	564	0	0	0	752
2069	188	564	0	0	0	752
2070	188	564	0	0	0	752
2071	188	564	0	0	0	752
2072	188	564	0	0	0	752

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TABLE N-3 (continued)
SCHEDULE OF ANNUAL EXPENDITURES
UNIT 3 – CONSOLIDATED (INCLUDES SITE FACILITIES)
(thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2073	188	564	0	0	0	752
2074	161	483	0	0	0	644
2075	188	564	0	0	0	752
2076	188	564	0	0	0	752
2077	188	564	0	0	0	752
2078	188	564	0	0	0	752
2079	188	564	0	0	0	752
2080	188	564	0	0	0	752
2081	188	564	0	0	0	752
2082	161	483	0	0	0	644
2083	188	564	0	0	0	752
2084	188	564	0	0	0	752
2085	188	564	0	0	0	752
2086	188	564	0	0	0	752
2087	188	564	0	0	0	752
2088	188	564	0	0	0	752
2089	188	564	0	0	0	752
2090	161	483	0	0	0	644
2091	188	564	0	0	0	752
2092	188	564	0	0	0	752
2093	188	564	0	0	0	752
2094	188	564	0	0	0	752
2095	107	322	0	0	0	429
2096	322	966	0	0	0	1,288
2097	161	3,710	0	0	29,260	33,131
2098	1,974	2,861	0	1,452	1,898	8,185
2099	0	0	0	0	0	0
Total	566,467	206,047	16,117	156,673	93,842	1,039,146

Note: One third of the decommissioning cost of each of the Site Facilities (Stored Steam Generators and Storage Facility, Water Reclamation Facility, Water Reclamation Supply System Pipeline & Structures, Evaporation Ponds, Make-up Water Reservoir, Stored Reactor Closure Heads & Storage Facility, and ISFSI) has been allocated to each unit's cash flow.

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APPENDIX O
SCHEDULE OF ANNUAL EXPENDITURES
CONSOLIDATED
25% CONTINGENCY*

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* Calculated with 25% contingency as required to comply with the California Public Utility Commission as detailed in “Technical Position Paper for Establishing an Appropriate Contingency Factor for Inclusion in the Decommissioning Revenue Requirements”, Study Number: DECON-POS-H002, Revision A, Status: Preliminary

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TABLE O-1
SCHEDULE OF ANNUAL EXPENDITURES - 25% CONTINGENCY
UNIT 1 – CONSOLIDATED (INCLUDES SITE FACILITIES)
(thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2040	377	0	0	0	0	377
2041	643	0	0	0	0	643
2042	643	0	0	0	0	643
2043	3,633	0	0	0	0	3,633
2044	5,759	0	0	0	0	5,759
2045	67,435	4,908	1,626	14	4,531	78,513
2046	88,903	18,640	4,151	16,642	23,844	152,179
2047	71,835	35,742	2,634	34,283	9,339	153,834
2048	73,290	33,006	2,610	29,305	8,183	146,394
2049	58,347	15,779	2,080	20,782	7,176	104,163
2050	58,492	16,216	2,080	20,782	7,176	104,746
2051	40,872	12,240	1,398	16,341	6,183	77,035
2052	9,651	2,483	0	4	2,368	14,506
2053	9,636	2,482	0	4	2,361	14,484
2054	23,800	3,240	345	12	2,088	29,485
2055	16,208	11,430	317	2	619	28,576
2056	13,395	11,474	278	0	404	25,551
2057	601	939	8	0	12	1,560
2058	175	525	0	0	0	700
2059	204	613	0	0	0	817
2060	204	613	0	0	0	817
2061	204	613	0	0	0	817
2062	204	613	0	0	0	817
2063	204	613	0	0	0	817
2064	204	613	0	0	0	817
2065	204	613	0	0	0	817
2066	175	525	0	0	0	700
2067	204	613	0	0	0	817
2068	204	613	0	0	0	817
2069	204	613	0	0	0	817
2070	204	613	0	0	0	817
2071	204	613	0	0	0	817
2072	204	613	0	0	0	817

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TABLE O-1 (continued)
SCHEDULE OF ANNUAL EXPENDITURES - 25% CONTINGENCY
UNIT 1 – CONSOLIDATED (INCLUDES SITE FACILITIES)
(thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2073	204	613	0	0	0	817
2074	175	525	0	0	0	700
2075	204	613	0	0	0	817
2076	204	613	0	0	0	817
2077	204	613	0	0	0	817
2078	204	613	0	0	0	817
2079	204	613	0	0	0	817
2080	204	613	0	0	0	817
2081	204	613	0	0	0	817
2082	175	525	0	0	0	700
2083	204	613	0	0	0	817
2084	204	613	0	0	0	817
2085	204	613	0	0	0	817
2086	204	613	0	0	0	817
2087	204	613	0	0	0	817
2088	204	613	0	0	0	817
2089	204	613	0	0	0	817
2090	175	525	0	0	0	700
2091	204	613	0	0	0	817
2092	204	613	0	0	0	817
2093	204	613	0	0	0	817
2094	204	613	0	0	0	817
2095	117	350	0	0	0	466
2096	350	1,050	0	0	0	1,401
2097	175	3,938	0	0	30,363	34,477
2098	2,096	2,940	0	1,452	1,950	8,437
2099	0	0	0	0	0	0
Total	553,669	199,091	17,526	139,621	106,598	1,016,504

Note: One third of the decommissioning cost of each of the Site Facilities (Stored Steam Generators and Storage Facility, Water Reclamation Facility, Water Reclamation Supply System Pipeline & Structures, Evaporation Ponds, Make-up Water Reservoir, Stored Reactor Closure Heads & Storage Facility, and ISFSI) has been allocated to each unit's cash flow.

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TABLE O-2
SCHEDULE OF ANNUAL EXPENDITURES - 25% CONTINGENCY
UNIT 2 – CONSOLIDATED (INCLUDES SITE FACILITIES)
(thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2040	0	0	0	0	0	0
2041	0	0	0	0	0	0
2042	0	0	0	0	0	0
2043	0	0	0	0	0	0
2044	0	0	0	0	0	0
2045	4,616	3,715	0	0	0	8,331
2046	86,591	6,054	1,977	5,256	6,999	106,878
2047	70,902	35,236	3,534	40,572	18,705	168,949
2048	76,879	35,385	2,634	39,663	8,517	163,078
2049	62,679	21,120	2,262	24,783	7,275	118,120
2050	55,681	14,445	2,074	17,182	6,648	96,031
2051	55,535	14,007	2,074	17,182	6,648	95,447
2052	34,935	10,299	1,178	13,023	5,391	64,826
2053	9,830	2,537	0	4	2,227	14,597
2054	23,808	3,256	344	12	1,894	29,313
2055	16,114	11,360	316	2	586	28,379
2056	13,303	11,393	277	0	403	25,378
2057	598	937	8	0	12	1,555
2058	175	525	0	0	0	700
2059	204	613	0	0	0	817
2060	204	613	0	0	0	817
2061	204	613	0	0	0	817
2062	204	613	0	0	0	817
2063	204	613	0	0	0	817
2064	204	613	0	0	0	817
2065	204	613	0	0	0	817
2066	175	525	0	0	0	700
2067	204	613	0	0	0	817
2068	204	613	0	0	0	817
2069	204	613	0	0	0	817
2070	204	613	0	0	0	817
2071	204	613	0	0	0	817
2072	204	613	0	0	0	817

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TABLE O-2 (continued)
SCHEDULE OF ANNUAL EXPENDITURES - 25% CONTINGENCY
UNIT 2 – CONSOLIDATED (INCLUDES SITE FACILITIES)
(thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2073	204	613	0	0	0	817
2074	175	525	0	0	0	700
2075	204	613	0	0	0	817
2076	204	613	0	0	0	817
2077	204	613	0	0	0	817
2078	204	613	0	0	0	817
2079	204	613	0	0	0	817
2080	204	613	0	0	0	817
2081	204	613	0	0	0	817
2082	175	525	0	0	0	700
2083	204	613	0	0	0	817
2084	204	613	0	0	0	817
2085	204	613	0	0	0	817
2086	204	613	0	0	0	817
2087	204	613	0	0	0	817
2088	204	613	0	0	0	817
2089	204	613	0	0	0	817
2090	175	525	0	0	0	700
2091	204	613	0	0	0	817
2092	204	613	0	0	0	817
2093	204	613	0	0	0	817
2094	204	613	0	0	0	817
2095	117	350	0	0	0	467
2096	350	1,050	0	0	0	1,401
2097	175	3,925	0	0	30,282	34,382
2098	2,096	2,940	0	1,452	1,950	8,437
2099	0	0	0	0	0	0
Total	521,620	200,243	16,680	159,131	97,537	995,212

Note: One third of the decommissioning cost of each of the Site Facilities (Stored Steam Generators and Storage Facility, Water Reclamation Facility, Water Reclamation Supply System Pipeline & Structures, Evaporation Ponds, Make-up Water Reservoir, Stored Reactor Closure Heads & Storage Facility, and ISFSI) has been allocated to each unit's cash flow.

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TABLE O-3
SCHEDULE OF ANNUAL EXPENDITURES - 25% CONTINGENCY
UNIT 3 – CONSOLIDATED (INCLUDES SITE FACILITIES)
(thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2040	0	0	0	0	0	0
2041	0	0	0	0	0	0
2042	0	0	0	0	0	0
2043	0	0	0	0	0	0
2044	0	0	0	0	0	0
2045	4,616	3,715	0	0	0	8,331
2046	1,328	3,841	0	4,545	1,118	10,832
2047	15,023	4,644	281	4,547	1,851	26,346
2048	103,452	16,275	3,700	13,518	17,592	154,538
2049	76,970	34,849	2,633	38,942	8,365	161,759
2050	76,539	33,888	2,594	37,578	8,250	158,850
2051	68,877	15,219	2,079	19,802	6,751	112,727
2052	69,054	15,254	2,085	19,857	6,769	113,018
2053	66,688	14,915	1,981	19,422	6,563	109,568
2054	45,703	7,057	764	6,079	2,844	62,446
2055	28,005	18,023	317	3	2,201	48,548
2056	25,136	19,147	278	0	2,308	46,869
2057	954	1,170	8	0	69	2,201
2058	175	525	0	0	0	700
2059	204	613	0	0	0	817
2060	204	613	0	0	0	817
2061	204	613	0	0	0	817
2062	204	613	0	0	0	817
2063	204	613	0	0	0	817
2064	204	613	0	0	0	817
2065	204	613	0	0	0	817
2066	175	525	0	0	0	700
2067	204	613	0	0	0	817
2068	204	613	0	0	0	817
2069	204	613	0	0	0	817
2070	204	613	0	0	0	817
2071	204	613	0	0	0	817
2072	204	613	0	0	0	817

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TABLE O-3 (continued)
SCHEDULE OF ANNUAL EXPENDITURES - 25% CONTINGENCY
UNIT 3 – CONSOLIDATED (INCLUDES SITE FACILITIES)
 (thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2073	204	613	0	0	0	817
2074	175	525	0	0	0	700
2075	204	613	0	0	0	817
2076	204	613	0	0	0	817
2077	204	613	0	0	0	817
2078	204	613	0	0	0	817
2079	204	613	0	0	0	817
2080	204	613	0	0	0	817
2081	204	613	0	0	0	817
2082	175	525	0	0	0	700
2083	204	613	0	0	0	817
2084	204	613	0	0	0	817
2085	204	613	0	0	0	817
2086	204	613	0	0	0	817
2087	204	613	0	0	0	817
2088	204	613	0	0	0	817
2089	204	613	0	0	0	817
2090	175	525	0	0	0	700
2091	204	613	0	0	0	817
2092	204	613	0	0	0	817
2093	204	613	0	0	0	817
2094	204	613	0	0	0	817
2095	117	350	0	0	0	467
2096	350	1,050	0	0	0	1,401
2097	175	3,937	0	0	30,355	34,467
2098	2,096	2,940	0	1,452	1,950	8,437
2099	0	0	0	0	0	0
Total	592,492	218,509	16,720	165,743	96,985	1,090,449

Note:

One third of the decommissioning cost of each of the Site Facilities (Stored Steam Generators and Storage Facility, Water Reclamation Facility, Water Reclamation Supply System Pipeline & Structures, Evaporation Ponds, Make-up Water Reservoir, Stored Reactor Closure Heads & Storage Facility, and ISFSI) has been allocated to each unit's cash flow.

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APPENDIX P
SCHEDULE OF ANNUAL EXPENDITURES
CONSOLIDATED
10% CONTINGENCY*

<u>Table</u>	<u>Page</u>
P-1 Schedule of Palo Verde Annual Expenditures, Unit 1 – 10% contingency...	178
P-2 Schedule of Palo Verde Annual Expenditures, Unit 2 – 10% contingency...	180
P-3 Schedule of Palo Verde Annual Expenditures, Unit 3 – 10% contingency...	182

* Calculated with 10% contingency as required to comply with the
Public Utility Commission of Texas' Substantive Rule
§25.231(b)(1)(F)(i)

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TABLE P-1
SCHEDULE OF ANNUAL EXPENDITURES - 10% CONTINGENCY
UNIT 1 - CONSOLIDATED (INCLUDES SITE FACILITIES)
(thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2040	340	0	0	0	0	340
2041	580	0	0	0	0	580
2042	580	0	0	0	0	580
2043	3,280	0	0	0	0	3,280
2044	5,199	0	0	0	0	5,199
2045	60,775	4,327	1,468	12	4,203	70,785
2046	79,717	16,056	3,748	14,253	21,681	135,454
2047	63,001	30,117	2,378	28,536	8,550	132,582
2048	64,265	27,775	2,356	24,215	7,536	126,147
2049	51,673	13,740	1,877	17,743	6,684	91,717
2050	51,801	14,125	1,877	17,743	6,684	92,230
2051	36,150	10,663	1,262	13,951	5,773	67,799
2052	8,585	2,177	0	3	2,206	12,971
2053	8,572	2,177	0	3	2,200	12,951
2054	20,710	2,814	311	10	1,945	25,790
2055	14,455	10,254	286	2	576	25,573
2056	12,088	10,344	251	0	376	23,059
2057	538	834	8	0	11	1,390
2058	154	462	0	0	0	616
2059	180	539	0	0	0	719
2060	180	539	0	0	0	719
2061	180	539	0	0	0	719
2062	180	539	0	0	0	719
2063	180	539	0	0	0	719
2064	180	539	0	0	0	719
2065	180	539	0	0	0	719
2066	154	462	0	0	0	616
2067	180	539	0	0	0	719
2068	180	539	0	0	0	719
2069	180	539	0	0	0	719
2070	180	539	0	0	0	719
2071	180	539	0	0	0	719
2072	180	539	0	0	0	719

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TABLE P-1 (continued)
SCHEDULE OF ANNUAL EXPENDITURES - 10% CONTINGENCY
UNIT 1 – CONSOLIDATED (INCLUDES SITE FACILITIES)
(thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2073	180	539	0	0	0	719
2074	154	462	0	0	0	616
2075	180	539	0	0	0	719
2076	180	539	0	0	0	719
2077	180	539	0	0	0	719
2078	180	539	0	0	0	719
2079	180	539	0	0	0	719
2080	180	539	0	0	0	719
2081	180	539	0	0	0	719
2082	154	462	0	0	0	616
2083	180	539	0	0	0	719
2084	180	539	0	0	0	719
2085	180	539	0	0	0	719
2086	180	539	0	0	0	719
2087	180	539	0	0	0	719
2088	180	539	0	0	0	719
2089	180	539	0	0	0	719
2090	154	462	0	0	0	616
2091	180	539	0	0	0	719
2092	180	539	0	0	0	719
2093	180	539	0	0	0	719
2094	180	539	0	0	0	719
2095	103	308	0	0	0	411
2096	308	924	0	0	0	1,232
2097	154	3,376	0	0	27,411	30,942
2098	1,844	2,587	0	1,277	1,716	7,425
2099	0	0	0	0	0	0
Total	491,239	172,165	15,822	117,748	97,552	894,526

Note: One third of the decommissioning cost of each of the Site Facilities (Stored Steam Generators and Storage Facility, Water Reclamation Facility, Water Reclamation Supply System Pipeline & Structures, Evaporation Ponds, Make-up Water Reservoir, Stored Reactor Closure Heads & Storage Facility, and ISFSI) has been allocated to each unit's cash flow.

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TABLE P-2
SCHEDULE OF ANNUAL EXPENDITURES - 10% CONTINGENCY
UNIT 2 - CONSOLIDATED (INCLUDES SITE FACILITIES)
(thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2040	0	0	0	0	0	0
2041	0	0	0	0	0	0
2042	0	0	0	0	0	0
2043	0	0	0	0	0	0
2044	0	0	0	0	0	0
2045	4,063	3,270	0	0	0	7,333
2046	78,246	5,335	1,788	4,606	6,427	96,403
2047	62,619	30,033	3,195	34,245	17,032	147,124
2048	67,460	29,892	2,382	33,093	7,838	140,665
2049	55,422	18,102	2,045	20,919	6,754	103,242
2050	49,499	12,618	1,875	14,701	6,207	84,901
2051	49,370	12,233	1,875	14,701	6,207	84,387
2052	30,975	8,993	1,065	11,142	5,042	57,217
2053	8,740	2,223	0	3	2,077	13,042
2054	20,747	2,829	311	10	1,766	25,663
2055	14,393	10,204	286	2	546	25,430
2056	12,023	10,286	251	0	375	22,936
2057	536	832	8	0	11	1,387
2058	154	462	0	0	0	616
2059	180	539	0	0	0	719
2060	180	539	0	0	0	719
2061	180	539	0	0	0	719
2062	180	539	0	0	0	719
2063	180	539	0	0	0	719
2064	180	539	0	0	0	719
2065	180	539	0	0	0	719
2066	154	462	0	0	0	616
2067	180	539	0	0	0	719
2068	180	539	0	0	0	719
2069	180	539	0	0	0	719
2070	180	539	0	0	0	719
2071	180	539	0	0	0	719
2072	180	539	0	0	0	719

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TABLE P-2 (continued)
SCHEDULE OF ANNUAL EXPENDITURES - 10% CONTINGENCY
UNIT 2 – CONSOLIDATED (INCLUDES SITE FACILITIES)
(thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2073	180	539	0	0	0	719
2074	154	462	0	0	0	616
2075	180	539	0	0	0	719
2076	180	539	0	0	0	719
2077	180	539	0	0	0	719
2078	180	539	0	0	0	719
2079	180	539	0	0	0	719
2080	180	539	0	0	0	719
2081	180	539	0	0	0	719
2082	154	462	0	0	0	616
2083	180	539	0	0	0	719
2084	180	539	0	0	0	719
2085	180	539	0	0	0	719
2086	180	539	0	0	0	719
2087	180	539	0	0	0	719
2088	180	539	0	0	0	719
2089	180	539	0	0	0	719
2090	154	462	0	0	0	616
2091	180	539	0	0	0	719
2092	180	539	0	0	0	719
2093	180	539	0	0	0	719
2094	180	539	0	0	0	719
2095	103	308	0	0	0	411
2096	308	924	0	0	0	1,232
2097	154	3,371	0	0	27,379	30,904
2098	1,844	2,587	0	1,277	1,716	7,425
2099	0	0	0	0	0	0
Total	463,024	173,607	15,081	134,700	89,377	875,788

Note: One third of the decommissioning cost of each of the Site Facilities (Stored Steam Generators and Storage Facility, Water Reclamation Facility, Water Reclamation Supply System Pipeline & Structures, Evaporation Ponds, Make-up Water Reservoir, Stored Reactor Closure Heads & Storage Facility, and ISFSI) has been allocated to each unit's cash flow.

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TABLE P-3
SCHEDULE OF ANNUAL EXPENDITURES - 10% CONTINGENCY
UNIT 3 - CONSOLIDATED (INCLUDES SITE FACILITIES)
(thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2040	0	0	0	0	0	0
2041	0	0	0	0	0	0
2042	0	0	0	0	0	0
2043	0	0	0	0	0	0
2044	0	0	0	0	0	0
2045	4,063	3,270	0	0	0	7,333
2046	1,169	3,381	0	3,997	984	9,530
2047	13,558	4,088	254	3,999	1,664	23,563
2048	92,949	14,061	3,341	11,458	16,056	137,865
2049	67,489	29,360	2,378	32,405	7,688	139,319
2050	67,174	28,598	2,342	31,301	7,589	137,003
2051	61,264	13,259	1,877	16,910	6,291	99,602
2052	61,421	13,290	1,882	16,957	6,308	99,859
2053	59,300	12,992	1,788	16,585	6,119	96,785
2054	40,120	6,124	690	5,191	2,660	54,784
2055	25,083	16,207	286	2	2,003	43,581
2056	22,691	17,274	251	0	2,095	42,311
2057	856	1,042	8	0	63	1,969
2058	154	462	0	0	0	616
2059	180	539	0	0	0	719
2060	180	539	0	0	0	719
2061	180	539	0	0	0	719
2062	180	539	0	0	0	719
2063	180	539	0	0	0	719
2064	180	539	0	0	0	719
2065	180	539	0	0	0	719
2066	154	462	0	0	0	616
2067	180	539	0	0	0	719
2068	180	539	0	0	0	719
2069	180	539	0	0	0	719
2070	180	539	0	0	0	719
2071	180	539	0	0	0	719
2072	180	539	0	0	0	719

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TABLE P-3 (continued)
SCHEDULE OF ANNUAL EXPENDITURES - 10% CONTINGENCY
UNIT 3 – CONSOLIDATED (INCLUDES SITE FACILITIES)
(thousands, 2019 dollars)

Year	Labor	Equipment & Materials	Energy	Burial	Other	Total
2073	180	539	0	0	0	719
2074	154	462	0	0	0	616
2075	180	539	0	0	0	719
2076	180	539	0	0	0	719
2077	180	539	0	0	0	719
2078	180	539	0	0	0	719
2079	180	539	0	0	0	719
2080	180	539	0	0	0	719
2081	180	539	0	0	0	719
2082	154	462	0	0	0	616
2083	180	539	0	0	0	719
2084	180	539	0	0	0	719
2085	180	539	0	0	0	719
2086	180	539	0	0	0	719
2087	180	539	0	0	0	719
2088	180	539	0	0	0	719
2089	180	539	0	0	0	719
2090	154	462	0	0	0	616
2091	180	539	0	0	0	719
2092	180	539	0	0	0	719
2093	180	539	0	0	0	719
2094	180	539	0	0	0	719
2095	103	308	0	0	0	411
2096	308	924	0	0	0	1,232
2097	154	3,376	0	0	27,408	30,937
2098	1,844	2,587	0	1,277	1,716	7,425
2099	0	0	0	0	0	0
Total	526,068	189,705	15,097	140,083	88,643	959,596

Note: One third of the decommissioning cost of each of the Site Facilities (Stored Steam Generators and Storage Facility, Water Reclamation Facility, Water Reclamation Supply System Pipeline & Structures, Evaporation Ponds, Make-up Water Reservoir, Stored Reactor Closure Heads & Storage Facility, and ISFSI) has been allocated to each unit's cash flow.

TLG Services, Inc.

EL PASO ELECTRIC COMPANY
2021 TEXAS RATE CASE FILING
SCHEDULE H-11.1 O&M EXPENSES PER PRODUCTION PLANT EXPENSES
SPONSOR J KYLE OLSON/ DAVID C. HAWKINS
PREPARER MYRNA A. ORTIZ
FOR THE TEST YEAR ENDED DECEMBER 31, 2020

SCHEDULE H-11.1
PAGE 1 of 1

Line No	Plant	(a) Period	(b)	(c)	(d)
			Production O&M Expenses Excluding Fuel (1)	Production O&M Expenses Including Fuel (2)	O&M/PPE Ratio
1	Coal:	Test Year	n/a	660,532	n/a
2	Four Corners (3)	2019	n/a	660,532	n/a
3		2018	n/a	660,532	n/a
4		2017	n/a	575,148	n/a
5		2016	7,414,088	13,567,897	54.64%
6		2015	8,869,722	22,783,005	38.93%
7	Natural Gas	Test Year	971,819	2,336,362	41.60%
8	Copper	2019	515,121	1,953,093	26.37%
9		2018	383,902	2,707,980	14.18%
10		2017	219,172	1,490,229	14.71%
11		2016	772,260	2,548,411	30.30%
12		2015	522,076	1,999,949	26.10%
13	Newman	Test Year	33,366,169	82,382,058	40.50%
14		2019	27,428,079	77,861,181	35.23%
15		2018	28,927,465	110,256,612	26.24%
16		2017	30,429,823	100,912,625	30.15%
17		2016	21,074,939	88,959,821	23.69%
18		2015	22,824,894	118,083,292	19.33%
19	Rio Grande	Test Year	12,293,735	25,101,999	48.98%
20		2019	11,296,083	22,969,370	49.18%
21		2018	13,962,534	32,799,050	42.57%
22		2017	10,632,358	49,104,851	21.65%
23		2016	11,865,917	40,189,120	29.53%
24		2015	9,439,140	35,164,034	26.84%
25	Montana	Test Year	8,582,510	23,033,440	37.26%
26		2019	6,748,380	21,857,300	30.87%
27		2018	6,044,348	33,224,689	18.19%
28		2017	5,511,597	37,620,684	14.65%
29		2016	3,449,424	29,289,886	11.78%
30		2015	2,908,118	14,987,091	19.40%
31	Nuclear	Test Year	91,419,502	132,678,048	68.90%
32	Palo Verde	2019	73,011,596	114,412,931	63.81%
33		2018	75,815,225	115,110,182	65.86%
34		2017	76,273,743	118,753,734	64.23%
35		2016	76,978,000	121,009,189	63.61%
36		2015	76,889,580	117,234,536	65.59%
37	Wind	Test Year	n/a	n/a	n/a
38	Hueco Mountain (4)	2019	n/a	n/a	n/a
39		2018	n/a	n/a	n/a
40		2017	n/a	n/a	n/a
41		2016	199,893	199,893	100.00%
42		2015	2,341	2,341	100.00%
43	Solar	Test Year	167,841	167,842	100.00%
44		2019	133,826	133,826	100.00%
45		2018	52,754	52,754	100.00%
46		2017	23,108	23,108	100.00%
47		2016	n/a	n/a	n/a
48		2015	936	936	100.00%

Note

- (1) FERC Account Nos 500, 502, 505-507, 510-514, 517, 519-520, 523-525, 528-532, 546, and 548-554, per respective plant FERC Account Nos 555-557 are not included
- (2) FERC Account Nos 500-502, 505-507, 510-514, 517-520, 523-525, 528-532, 546-554, per respective plant FERC Account Nos 555-557 are not included
- (3) EPE sold its ownership in Four Corners in July 2016. The cost included in 2017 - 2019 represents the amortization of deferred coal mine reclamation obligations
- (4) The Company's Hueco Mountain Wind Ranch consisted of two wind turbines which were decommissioned in June 2016

Amounts may not add or tie to other schedules due to rounding.