

Big Sandy Unit 2 FGD WBS

BS2 WBS Codes			Description	Material \$	Labor \$				
1.			STRUCTURAL & AREA (CIVIL/STRUCTURAL/ARCHITECTURAL)						
1.A			Site Preparation						
1.A.5			FGD Area Site Preparation						
1.A.5.01			Engineering	\$57,750	\$0				
1.A.5.04			Clearing & Grubbing	\$0	\$26,607				
1.A.5.05			Grading	\$0	\$1,802				
1.A.5.06			Excavation/Backfill	\$1,297,296	\$655,922				
1.A.5.07			Earth/Soil/Rock Removal & Disposal	\$0	\$22,287				
1.A.5.08			Earth/Soil/Rock Removal & Stockpile	\$0	\$51,836				
1.A.5.10			Fencing/Gates	\$18,040	\$26,654				
			Paving/Curb/Gutter	\$70,355	\$14,513				
			Gravel & Sand	\$368,525	\$190,378				
			Topsoil	\$0	\$26,040				
			Storm Drainage	\$371,531	\$1,098,449				
			Finish Landscaping (grass, shrubs, trees)	\$28,227	\$18,854				
			Boundary/Perimeter Barricades	\$54,096	\$0				
			Piles/Caissons	\$39,127	\$123,364				
			Rip Rap	\$45,689	\$69,601				
			Subtotal	\$2,350,636	\$2,326,307				
1.B			Site Improvements						
1.B.1			Roads, Parking, and other Surface Areas						
1.B.1.04			Paving/Curb/Gutter	\$827,112	\$206,222				
1.B.1.05			Gravel & Sand	\$738,513	\$282,511				
1.B.1.06			Grading	\$0	\$54,651				
1.B.1.07			Excavation/Backfill	\$0	\$46,250				
1.B.1.08			Compaction	\$0	\$1,340				
			Fencing/Gates	\$729	\$831				
			Storm Drainage	\$60,939	\$24,461				
			Rip Rap	\$2,683	\$4,088				
			Subtotal	\$1,629,976	\$620,354				
1.B.4			Storm Water Management						
1.B.1.04			Storm Drainage	\$34,839	\$39,364				
1.B.1.05			Gravel & Sand	\$6,145	\$8,593				
1.B.1.06			Excavation/Backfill	\$0	\$50,105				
1.B.1.07			Earth/Soil/Rock Removal & Disposal	\$0	\$2,600				
			Subtotal	\$40,984	\$100,662				
1.C			Stacks						
1.C.0			Concrete Stack						
1.C.0.07			Foundation/Pedestals	\$1,797,997	\$2,528,641				
1.C.0.08			Excavation/Backfill	\$0	\$340,263				
			Earth/Soil/Rock Removal & Disposal	\$0	\$126,018				
			Piles/Caissons	\$1,487,193	\$0				
			Subtotal	\$3,285,190	\$2,994,922				
1.D			Site Erected Buildings						
1.D.2			Service Building (Admin, Maintenance) (Site Erected)						
1.D.2.04			Excavation/Backfill	\$0	\$34,719				
1.D.2.06			Foundation/Pedestals	\$82,866	\$196,828				
1.D.2.07			Embeds	\$2,426	\$8,135				
1.D.2.13			Siding/Insulated Panels	\$1,103,603	\$0				
			Gravel & Sand	\$1,715	\$232				
			Grading	\$0	\$2,071				
			Earth/Soil/Rock Removal & Disposal	\$0	\$10,171				
			Subtotal	\$1,190,610	\$252,156				
1.D.5			Buildings - FGD Pumphouse						

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BS2 WBS Codes		Description	Material \$	Labor \$				
1.D.5.04		Excavation/Backfill	\$0	\$40,030				
1.D.5.06		Foundation/Pedestals	\$229,512	\$471,423				
1.D.5.07		Embeds	\$7,600	\$25,489				
1.D.5.08		Structural Steel	\$309,086	\$317,352				
1.D.5.09		Access Steel (grating, handrail, ladders, stairs)	\$6,100	\$9,434				
1.D.5.10		Roofing	\$22,767	\$52,984				
1.D.5.11		Walls	\$10,256	\$60,643				
1.D.5.13		Siding/Insulated Panels	\$241,164	\$0				
1.D.5.14		Windows/Doors	\$4,978	\$4,043				
		Earth/Soil/Rock Removal & Disposal	\$0	\$13,552				
		Gravel & Sand	\$12,679	\$30,590				
		Piles/Caissons	\$239,781	\$0				
		Protective Coating/Painting	\$36,750	\$0				
		Mechanical Equipment (General)	\$77,000	\$30,714				
		Subtotal	\$1,197,673	\$1,056,254				
1.D.6		Buildings - Limestone Prep Bldg						
1.D.6.04		Excavation/Backfill	\$0	\$83,595				
1.D.6.06		Foundation/Pedestals	\$403,072	\$1,011,261				
1.D.6.07		Embeds	\$15,685	\$52,606				
1.D.6.08		Structural Steel	\$2,068,581	\$2,154,008				
1.D.6.09		Access Steel (grating, handrail, ladders, stairs)	\$112,696	\$128,114				
1.D.6.10		Roofing	\$36,791	\$85,620				
1.D.6.11		Walls	\$14,604	\$82,842				
1.D.6.13		Siding/Insulated Panels	\$834,750	\$0				
1.D.6.14		Windows/Doors	\$20,957	\$11,302				
		Earth/Soil/Rock Removal & Disposal	\$0	\$14,583				
		Gravel & Sand	\$14,917	\$35,991				
		Building Elevators & Man-Lifts	\$77,000	\$21,350				
		Piles/Caissons	\$264,886	\$0				
		Protective Coating/Painting	\$95,235	\$0				
		Subtotal	\$3,959,174	\$3,681,272				
1.D.9		Miscellaneous Site Erected Buildings						
1.D.9.04		Excavation/Backfill	\$0	\$2,450				
1.D.9.06		Foundation/Pedestals	\$28,380	\$51,743				
1.D.9.07		Embeds	\$445	\$1,491				
1.D.9.08		Structural Steel	\$204,238	\$211,034				
1.D.9.10		Roofing	\$62,790	\$0				
1.D.9.13		Siding/Insulated Panels	\$41,937	\$0				
1.D.9.14		Windows/Doors	\$6,711	\$4,594				
1.D.9.16		Protective Coating/Painting	\$7,501	\$135,639				
		Earth/Soil/Rock Removal & Disposal	\$0	\$633				
		Subtotal	\$352,002	\$407,584				
1.E		Pre-Engineered Buildings						
1.E.1		Control Room						
1.E.1.04		Excavation/Backfill	\$0	\$58,259				
1.E.1.06		Foundation/Pedestals	\$321,892	\$525,009				
1.E.1.07		Embeds	\$2,547	\$8,542				
1.E.1.08		Structural Steel	\$1,165,906	\$1,268,971				
1.E.1.09		Access Steel (grating, handrail, ladders, stairs)	\$213,889	\$209,620				
1.E.1.10		Roofing	\$35,703	\$83,088				
1.E.1.11		Walls	\$24,359	\$124,440				
1.E.1.12		Flooring	\$6,322	\$12,552				
1.E.1.13		Siding/Insulated Panels	\$676,368	\$0				
1.E.1.14		Windows/Doors	\$78,090	\$42,634				
1.E.1.21		Building Elevators & Man-Lifts	\$77,000	\$21,350				
		Earth/Soil/Rock Removal & Disposal	\$0	\$10,039				
		Compressors	\$66,150	\$8,775				
		Subtotal	\$2,668,226	\$2,373,279				
1.E.2		CEMS Shelter						
		CEMS (by AEP)	\$0	\$0				
		Subtotal	\$0	\$0				

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BS2 WBS Codes		Description	Material \$	Labor \$				
1.E.3		Warehouse						
1.E.3.04		Excavation/Backfill	\$0	\$62,737				
1.E.3.06		Foundation/Pedestals	\$273,607	\$501,740				
1.E.3.07		Embeds	\$4,649	\$15,592				
1.E.3.13		Siding/Insulated Panels	\$2,028,062	\$252,718				
		Grading	\$0	\$1,802				
		Earth/Soil/Rock Removal & Disposal	\$0	\$18,052				
		Gravel & Sand	\$9,443	\$3,417				
		Subtotal	\$2,315,761	\$856,058				
1.F		Common Piping & Utility Systems - Structural Support Systems						
1.F.1		U/G Piping Trench						
1.F.1.04		Excavation/Backfill	\$0	\$301,426				
1.F.1.05		Earth/Soil/Rock Removal & Disposal	\$0	\$4,899				
1.F.1.06		Earth/Soil/Rock Removal & Stockpile	\$0	\$4,964				
1.F.1.08		Gravel & Sand	\$23,062	\$32,250				
		Subtotal	\$23,062	\$343,539				
1.F.2		A/G Piping Supports						
1.F.2.04		Excavation/Backfill	\$0	\$104,865				
1.F.2.05		Foundation/Pedestals	\$78,150	\$185,569				
1.F.2.06		Structural Steel	\$604,763	\$668,511				
		Access Steel (grating, handrail, ladders, stairs)	\$81,163	\$92,270				
		Earth/Soil/Rock Removal & Disposal	\$0	\$3,093				
		Embeds	\$1,617	\$5,423				
		Piping, Hangers, Specialties	\$1,734,912	\$1,116,292				
		Piles/Caissons	\$443,250	\$0				
		Subtotal	\$2,943,855	\$2,176,023				
1.G.0		Site Area Removal & Relocation						
		Clearing & Grubbing	\$0	\$1,904,636				
		U/G Utilities Removal	\$0	\$297,417				
		Tanks	\$173,250	\$0				
		Subtotal	\$173,250	\$2,202,053				
2.		STEAM GENERATOR & AUXILIARIES						
2.A.0		Supercritical Steam Generator						
2.A.0.08		Structural Steel	\$26,048	\$26,454				
2.A.0.09		Access Steel (grating, handrail, ladders, stairs)	\$71,421	\$103,322				
2.A.0.16		Instruments	\$78,281	\$112,119				
2.A.0.18		Mechanical Equipment (General)	\$4,410	\$33,649				
		Subtotal	\$180,160	\$275,544				
2.B		Combustion Air/Gas Systems						
2.B.3		Flue Gas System						
2.B.3.04		Excavation/Backfill	\$0	\$542,694				
2.B.3.06		Foundation/Pedestals	\$181,579	\$427,731				
2.B.3.07		Embeds	\$11,481	\$38,505				
2.B.3.08		Structural Steel	\$2,841,915	\$3,192,648				
2.B.3.09		Access Steel (grating, handrail, ladders, stairs)	\$335,506	\$381,537				
2.B.3.12		Ductwork & Expansion Joints	\$5,805,146	\$21,881,312				
2.B.3.14		Insulation & Lagging	\$4,059,674	\$0				
		Earth/Soil/Rock Removal & Disposal	\$0	\$6,990				
		Piles/Caissons	\$2,129,570	\$0				
		Subtotal	\$15,364,871	\$26,471,417				
2.E		S0x Gas Treatment						
2.E.0		Wet FGD						
2.E.0.01		Engineering	\$15,000	\$0				
2.E.0.04		Excavation/Backfill	\$0	\$78,947				

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BS2 WBS Codes		Description	Material \$	Labor \$				
2.E.0.06		Foundation/Pedestals	\$413,922	\$603,496				
2.E.0.07		Embeds	\$13,825	\$46,369				
2.E.0.10		Piping, Hangers, Specialties	\$532,062	\$857,100				
2.E.0.11		Valves & Actuators	\$417,286	\$110,494				
2.E.0.15		Power & Control Raceway & Cables	\$2,366,724	\$5,438,809				
2.E.0.16		Instruments	\$173,579	\$231,700				
2.E.0.18		Tanks	\$1,581,050	\$0				
		Fans	\$8,582,990	\$3,753,710				
		Mixers	\$330,880	\$39,490				
		Earth/Soil/Rock Removal & Disposal	\$0	\$23,642				
		Earth/Soil/Rock Removal & Stockpile	\$0	\$0				
		Gravel & Sand	\$226,327	\$324,396				
		Electrical	\$75,012	\$188,421				
		Welding Receptacles	\$16,967	\$9,205				
		Protective Coating/Painting	\$99,225	\$0				
		Transformers	\$343,319	\$105,915				
		Piles/Caissons	\$1,258,936	\$0				
		Subtotal	\$16,447,104	\$11,811,694				
2.E.4		SO3 Mitigation - Magnesium/Ammonia System						
2.E.4.04		Excavation/Backfill	\$0	\$15,848				
2.E.4.06		Foundation/Pedestals	\$114,940	\$366,366				
2.E.4.07		Embeds	\$3,274	\$10,982				
2.E.4.10		Piping, Hangers, Specialties	\$0	\$162,109				
2.E.4.11		Valves & Actuators	\$0	\$53,930				
2.E.4.18		Mechanical Equipment (General)	\$0	\$117,920				
2.E.4.18		Blowers	\$0	\$52,653				
2.E.4.18		Compressors	\$0	\$5,485				
		Siding/Insulated Panels	\$225,808	\$0				
		Earth/Soil/Rock Removal & Disposal	\$0	\$3,977				
		Gravel & Sand	\$980	\$133				
		Grading	\$0	\$772				
		LV Switchgear/MCCs	\$22,050	\$7,675				
		Material Handling	\$0	\$57,041				
		Subtotal	\$367,052	\$854,891				
2.G.1		Water Cannons & Pumps						
2.G.1.10		Piping, Hangers, Specialties	\$15,926	\$15,600				
2.G.1.18		Mechanical Equipment (General)	\$19,404	\$34,287				
2.G.1.18		Nozzles	\$877,811	\$78,865				
		Subtotal	\$913,141	\$128,752				
2.I.1		Furnace Seal Air System						
2.I.1.08		Structural Steel	\$9,453	\$9,962				
2.G.1.10		Piping, Hangers, Specialties	\$23,701	\$39,220				
		Subtotal	\$33,154	\$49,182				
4		BALANCE OF PLANT						
4.B.2		Sootblower Steam Supply System						
		Piping, Hangers, Specialties	\$20,832	\$49,644				
		Valves & Actuators	\$19,152	\$14,333				
		Insulation & Lagging	\$2,744	\$10,482				
		Subtotal	\$42,728	\$74,459				
4.C.3		Drips & Drains Systems						
4.C.3.10		Piping, Hangers, Specialties	\$25,450	\$41,582				
		Valves & Actuators	\$4,941	\$6,666				
		Subtotal	\$30,391	\$48,248				
4.C.9		Miscellaneous Process Water Systems						
4.C.9.10		Piping, Hangers, Specialties	\$69,873	\$74,907				
		U/G Utilities Removal	\$0	\$7,180				
		Electrical	\$2,772	\$4,985				
		Tanks	\$2,977,112	\$0				

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BS2 WBS Codes			Description	Material \$	Labor \$				
			Subtotal	\$3,049,757	\$87,072				
4.D			Cooling Water System						
4.E			Misc. Water Systems						
4.E.0			River/Lake Water						
4.E.0.10			Piping, Hangers, Specialties	\$329,233	\$542,910				
4.E.0.11			Valves & Actuators	\$125,005	\$67,107				
			Protective Coating/Painting	\$3,795	\$10,396				
			Insulation & Lagging	\$2,036	\$4,858				
			Pumps	\$25,641	\$13,163				
			Tanks	\$343,505	\$0				
			Subtotal	\$829,215	\$638,434				
4.E.1			Well Water						
			Electrical	\$12,999	\$23,376				
			Subtotal	\$12,999	\$23,376				
4.E.2			Service Water						
4.E.2.10			Piping, Hangers, Specialties	\$145,099	\$179,005				
			U/G Utilities Removal	\$0	\$1,596				
			Subtotal	\$145,099	\$180,601				
4.F			Compressed Air/Gas Systems						
4.F.1			Service Air System						
4.F.1.10			Piping, Hangers, Specialties	\$72,867	\$226,841				
4.F.1.11			Valves & Actuators	\$39,376	\$46,323				
4.F.1.14			Insulation & Lagging	\$11,681	\$45,513				
4.F.1.17			Protective Coating/Painting	\$676	\$1,851				
			Excavation/Backfill	\$0	\$14,893				
			Earth/Soil/Rock Removal & Disposal	\$0	\$268				
			Electrical	\$23,100	\$41,540				
			Gravel & Sand	\$783	\$1,096				
			Air Tanks/Receivers	\$14,443	\$2,742				
			Compressors	\$399,546	\$26,326				
			U/G Utilities Removal	\$0	\$4,388				
			Subtotal	\$562,472	\$411,781				
4.F.2			Control/Dry Air System						
4.F.2.11			Valves & Actuators	\$3,485	\$4,533				
4.F.2.18			Air Dryers	\$41,013	\$13,163				
			Piping, Hangers, Specialties	\$68,640	\$142,201				
			Subtotal	\$113,138	\$159,897				
4.F.4			Hydrogen Storage						
			U/G Utilities Removal	\$0	\$0				
			Mechanical Equipment (General)	\$0	\$0				
			Piping, Hangers, Specialties	\$1,109	\$3,127				
			Subtotal	\$1,109	\$3,127				
4.G			Waste Materials Handling Systems						
4.G.0			Fly Ash Handling						
			U/G Utilities Removal	\$0	\$3,989				
			Piping, Hangers, Specialties	\$70,726	\$73,637				
			Subtotal	\$70,726	\$77,626				
4.G.1			Bottom Ash Handling						
			Excavation/Backfill	\$0	\$0				
			U/G Utilities Removal	\$0	\$0				
			Protective Coating/Painting	\$0	\$0				

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BS2 WBS Codes		Description	Material \$	Labor \$				
		Piping, Hangers, Specialties	\$0	\$0				
		Subtotal	\$0	\$0				
4.G.2		FGD Byproduct Handling						
4.G.2.04		Excavation/Backfill	\$0	\$46,224				
4.G.2.06		Foundation/Pedestals	\$209,395	\$543,417				
4.G.2.07		Embeds	\$12,006	\$40,268				
4.G.2.08		Structural Steel	\$773,420	\$856,605				
4.G.2.09		Access Steel (grating, handrail, ladders, stairs)	\$84,342	\$99,206				
4.G.2.10		Piping, Hangers, Specialties	\$7,393,584	\$6,941,325				
4.G.2.11		Valves & Actuators	\$379,575	\$107,661				
4.G.2.15		Power & Control Raceway & Cables	\$18,146	\$112,911				
4.G.2.16		Instruments	\$33,072	\$77,275				
4.G.2.18		Mechanical Equipment (General)	\$0	\$0				
4.G.2.18		Pumps	\$165,281	\$97,627				
		Roofing	\$10,284	\$23,933				
		Walls	\$19,316	\$91,369				
		Siding/Insulated Panels	\$419,265	\$0				
		Windows/Doors	\$10,967	\$5,789				
		Building Lighting & Receptacles	\$107,817	\$335,757				
		Earth/Soil/Rock Removal & Disposal	\$0	\$9,936				
		Earth/Soil/Rock Removal & Stockpile	\$0	\$582				
		Gravel & Sand	\$6,065	\$14,632				
		Lightning Protection	\$5,264	\$37,862				
		Electrical	\$3,047	\$15,945				
		Transformers	\$82,593	\$40,144				
		LV Switchgear/MCCs	\$52,920	\$18,420				
		Power/Lighting Panels	\$4,851	\$9,913				
		Welding Receptacles	\$2,610	\$1,416				
		Conveyors	\$16,500	\$17,551				
		Protective Coating/Painting	\$45,518	\$0				
		Piles/Caissons	\$212,157	\$0				
		Subtotal	\$10,067,995	\$9,545,768				
4.G.4		Station Drainage						
4.G.4.10		Piping, Hangers, Specialties	\$87,938	\$198,174				
4.G.4.11		Valves & Actuators	\$1,680	\$3,333				
		Protective Coating/Painting	\$3,014	\$8,256				
		Pumps	\$25,410	\$10,969				
		Subtotal	\$118,042	\$220,732				
4.H.4		Fuel Oil Handling System						
		Excavation/Backfill	\$0	\$4,833				
		U/G Utilities Removal	\$0	\$15,797				
		Subtotal	\$0	\$20,630				
4.I		Sorbent/Reagent Delivery/Storage/Handling Systems						
4.I.0		Limestone Handling System						
4.I.0.04		Excavation/Backfill	\$523,306	\$1,157,430				
4.I.0.06		Foundation/Pedestals	\$681,473	\$2,080,521				
4.I.0.07		Embeds	\$15,321	\$51,385				
4.I.0.08		Structural Steel	\$59,981	\$61,536				
4.I.0.09		Access Steel (grating, handrail, ladders, stairs)	\$26,781	\$37,146				
4.I.0.10		Piping, Hangers, Specialties	\$10,791	\$36,242				
4.I.0.11		Valves & Actuators	\$44,872	\$9,333				
4.I.0.15		Power & Control Raceway & Cables	\$43,364	\$352,393				
4.I.0.16		Instruments	\$30,452	\$54,390				
4.I.0.18		Mechanical Equipment (General)	\$46,316	\$11,172				
4.I.0.18		Pumps	\$15,015	\$6,582				
		Topsoil	\$0	\$4,752				
		Siding/Insulated Panels	\$222,390	\$0				
		Windows/Doors	\$8,281	\$3,675				
		Piles/Caissons	\$495,376	\$0				
		Fire Protection System Equipment/Hydrants	\$207,900	\$0				
		Grading	\$0	\$9,250				
		Earth/Soil/Rock Removal & Disposal	\$0	\$36,932				

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BS2 WBS Codes		Description	Material \$	Labor \$				
		Material Handling	\$740,355	\$349,374				
		Fencing/Gates	\$47,296	\$26,307				
		Paving/Curb/Gutter	\$396,112	\$156,968				
		Gravel & Sand	\$143,871	\$34,995				
		Storm Drainage	\$42,383	\$66,511				
		Finish Landscaping (grass, shrubs, trees)	\$4,227	\$2,891				
		Lightning Protection	\$3,609	\$25,147				
		Electrical	\$2,780	\$14,546				
		Transformers	\$2,646	\$6,140				
		Welding Receptacles	\$2,610	\$1,416				
		Rip Rap	\$4,714	\$7,181				
		Conveyors	\$2,173,941	\$1,172,623				
		Subtotal	\$5,996,163	\$5,776,838				
4.I.1		Lime Handling System						
		LV Switchgear/MCCs	\$57,330	\$19,955				
		Subtotal	\$57,330	\$19,955				
4.J		Water Treatment Systems						
4.J.0		Raw Water Treatment System						
		Piping, Hangers, Specialties	\$1,242	\$4,278				
		Pumps	\$33,075	\$3,291				
		Subtotal	\$34,317	\$7,569				
4.J.4		Waste Water Treatment System						
4.J.4.18		Mechanical Equipment (General)	\$33,000	\$4,388				
4.J.4.18		Pumps	\$46,200	\$13,163				
		Subtotal	\$79,200	\$17,551				
4.K.0		Balanced Draft Fans						
		Excavation/Backfill	\$0	\$38,728				
		Earth/Soil/Rock Removal & Disposal	\$0	\$12,403				
		Dampers/Actuators	\$909,563	\$70,204				
		Foundation/Pedestals	\$378,451	\$671,918				
		Piles/Caissons	\$152,025	\$0				
		Embeds	\$6,468	\$21,693				
		Fans	\$2,436,940	\$640,610				
		Subtotal	\$3,883,447	\$1,455,556				
5		PLANT SERVICES SYSTEMS						
5.A		Fire Protection Systems						
5.A.0		Water Supply Systems						
5.A.0.04		Excavation/Backfill	\$0	\$3,962				
5.A.0.06		Foundation/Pedestals	\$7,000	\$24,614				
5.A.0.10		Piping, Hangers, Specialties	\$591,463	\$647,213				
5.A.0.11		Valves & Actuators	\$27,720	\$31,776				
		Earth/Soil/Rock Removal & Disposal	\$0	\$206				
		U/G Utilities Removal	\$0	\$23,535				
		Protective Coating/Painting	\$231	\$632				
		Fire Protection System Equipment/Hydrants	\$520,905	\$0				
		Subtotal	\$1,147,319	\$731,938				
5.A.1		Sprinkler System						
		Sprinkler System Equipment	\$49,896	\$35,752				
		Subtotal	\$49,896	\$35,752				
5.A.5		Fire Detection Systems						
		Electrical	\$114,596	\$355,320				
		Subtotal	\$114,596	\$355,320				
5.B		Sanitary Water Systems						

Big Sandy Unit 2 FGD WBS

BS2 WBS Codes		Description	Material \$	Labor \$				
5.B.0		Potable Water Systems						
5.B.0.10		Piping, Hangers, Specialties	\$44,785	\$215,557				
5.B.0.11		Valves & Actuators	\$3,959	\$8,288				
		Mechanical/Pipe	\$840	\$3,333				
		Tanks	\$3,308	\$1,645				
		Pumps	\$20,790	\$5,485				
		Insulation & Lagging	\$13,320	\$65,258				
		U/G Utilities Removal	\$0	\$7,978				
		Subtotal	\$87,002	\$307,544				
5.B.1		Sewage Collection System						
5.B.1.10		Piping, Hangers, Specialties	\$4,598	\$14,023				
5.B.1.11		Valves & Actuators	\$1,176	\$3,333				
5.B.1.18		Protective Coating/Painting	\$1,931	\$5,290				
		U/G Utilities Removal	\$0	\$4,787				
		Subtotal	\$7,705	\$27,433				
5.D		HVAC Systems						
5.D.1		Electric Heating						
		Building HVAC	\$87,780	\$96,091				
		Subtotal	\$87,780	\$96,091				
5.D.4		Ventilation						
		Building HVAC	\$604,065	\$191,305				
		Subtotal	\$604,065	\$191,305				
5.E		Lighting						
5.E.3		Building Lighting						
		Building Lighting & Receptacles	\$156,245	\$347,760				
		Transformers	\$2,772	\$3,304				
		Power/Lighting Panels	\$1,617	\$3,304				
		Subtotal	\$160,634	\$354,368				
5.E.4		Exterior Lighting						
5.E.4.15		Power & Control Raceway & Cables	\$6,309	\$87,624				
		Building Lighting & Receptacles	\$127,287	\$453,028				
		Transformers	\$1,386	\$1,652				
		Power/Lighting Panels	\$1,617	\$3,304				
		Light Fixtures	\$44,468	\$33,043				
		Subtotal	\$181,067	\$578,651				
5.F		Miscellaneous Electrical Feeds						
5.F.3		Miscellaneous Buildings						
		Lightning Protection	\$2,644	\$21,416				
		Subtotal	\$2,644	\$21,416				
5.F.4		Exterior Miscellaneous Electrical Feeds						
5.F.4.15		Power & Control Raceway & Cables	\$290,296	\$2,418,095				
		Subtotal	\$290,296	\$2,418,095				
5.G		Communication System						
5.G.0		Public Address (PA) System						
		PA/Communications Equipment	\$135,930	\$291,167				
		Subtotal	\$135,930	\$291,167				
5.G.1		Telephone System						
		PA/Communications Equipment	\$14,091	\$56,557				

Big Sandy Unit 2 FGD WBS

BS2 WBS Codes			Description	Material \$	Labor \$				
			Subtotal	\$14,091	\$56,557				
5.G.2			Local Area Network System						
			PA/Communications Equipment	\$5,234	\$40,830				
			Subtotal	\$5,234	\$40,830				
5.H.1			Monorail Hoists						
5.H.1.18			Mechanical Equipment (General)	\$550,000	\$98,724				
			Subtotal	\$550,000	\$98,724				
6			ELECTRICAL & CONTROL						
6.A			Electrical						
6.A.0			High Voltage Systems (>4 kv)						
6.A.0.04			Excavation/Backfill	\$0	\$18,635				
6.A.0.06			Foundation/Pedestals	\$122,205	\$306,569				
6.A.0.07			Embeds	\$7,277	\$24,405				
6.A.0.08			Structural Steel	\$14,357	\$13,844				
6.A.0.09			Access Steel (grating, handrail, ladders, stairs)	\$40,292	\$65,649				
			Earth/Soil/Rock Removal & Disposal	\$0	\$3,071				
			Transformers	\$379,260	\$40,933				
			MV Switchgear	\$1,577,678	\$193,410				
			Subtotal	\$2,141,069	\$666,516				
6.A.2			LV Electrical System (600V and below)						
			Transformers	\$1,323	\$3,070				
			LV Switchgear/MCCs	\$1,312,416	\$210,551				
			Power/Lighting Panels	\$95,655	\$111,543				
			Welding Receptacles	\$2,610	\$1,416				
			Subtotal	\$1,412,004	\$326,580				
6.A.3			Essential Power System						
			Electrical	\$292,163	\$25,583				
			Subtotal	\$292,163	\$25,583				
6.A.4			Switchyard (include GSU Xfmsr here)						
			Electrical	\$927,300	\$535,204				
			Transformers	\$2,193,975	\$191,875				
			Subtotal	\$3,121,275	\$727,079				
6.B			Instrumentation & Control						
6.B.0			Control Systems						
			DCS (by AEP)	\$0	\$0				
			Subtotal	\$0	\$0				
6.B.1			Monitoring Systems						
6.B.1.18			Mechanical Equipment (General)	\$183,787	\$26,288				
			CEMS (by AEP)	\$0	\$0				
			Subtotal	\$183,787	\$26,288				
			Total	\$91,118,566	\$85,128,400				
7			MISCELLANEOUS SYSTEMS						
7.A			Commissioning		by AEP				
7.A.7			Operating Spares		by AEP				
7.B			Plant Acceptance Testing		by AEP				

Big Sandy Unit 2 FGD WBS

BS2 WBS Codes	Description	Material \$	Labor \$				
8	INDIRECT FIELD COSTS						
8.A	Temporary Construction Buildings and Facilities		incl above				
8.B	Construction Utilities						
8.B.1	Security		incl above				
8.B.2	Telephone/Cable		incl above				
8.B.3	Electricity		incl above				
8.B.4	Ice/Snow Removal		incl above				
8.B.5	Fire Protection		incl above				
8.C	Construction Equipment						
8.C.1	Cranes		\$3,000,000				
8.C.2	Construction Hoists, Tuggers, Monorails		incl above				
8.C.3	Scaffolding		incl above				
8.C.4	Cribbing		incl above				
8.D	Small Tools & Consumables		incl above				
8.E	Field Office Costs		incl above				
8.F	Travel, Relocation and Per Diem Allowance		not required				
8.G	Indirect and Auxiliary Labor		incl above				
8.H	Subcontracted Field Services						
8.H.0	Site Surveys		incl above				
8.H.1	Safety/Medical		incl above				
8.H.2	Construction Support		incl above				
8.H.3	Start-up Support		incl above				
8.H.4	Testing Services		incl above				
8.H.4.1	Soil/Concrete		incl above				
8.H.4.2	Welding/Preheat		incl above				
8.H.4.3	Asbestos Monitoring		incl above				
8.H.5	General Fabrication		incl above				
8.H.6	Cleaning		incl above				
9	PROFESSIONAL SERVICES, OTHER PROJECT SERVICES, AND RISK COSTS						
9.A	Construction Management		AEP/OEM/WP				
9.B	Start-up Services		AEP/OEM/WP				
9.C	Project Management	All project escalation is included by AEP. WP recommends 5% per year to the midpoint of equipment procurement, or \$3,373,731, for the scope estimated by WP.	AEP/OEM/WP				
9.D	Project Controls		AEP/OEM/WP				
9.E	Project Engineering		AEP/OEM/WP				
9.F	Environmental		AEP/OEM/WP				
9.G	Procurement		AEP/OEM/WP				
9.H	Contract Administration		AEP/OEM/WP				
9.I	Other Professional Services		AEP/OEM/WP				
9.R	Other Project Costs	All project escalation is included by AEP. WP recommends 3% per year to the midpoint of bulk material procurement, or \$5,180,779, for the scope estimated by WP.					
9.R.4	AEP Allocations						
9.R.5	AEP AFUDC						
	Equipment Escalation						
	Bulk Material Escalation						
	Labor Escalation						
	Contractor Markup on Bulk Materials		\$3,016,048				
9.U	Risk Costs	All project contingency is included by AEP. WP recommends 10%, or \$10,268,912, for the scope estimated by WP.					
9.U.0	Contingency (10%)						
	Allowances						
	Allowance for chromium/lead based paint removal		\$250,000				
	Allowance for asbestos abatement		\$250,000				
	TOTAL PROJECT		\$94,134,614		\$88,628,400		

4.75% per year to midpoint of construction. All project escalation is included by AEP. WP recommends 4.75% per year to the midpoint of equipment procurement, or \$8,341,926, for the scope of work estimated by WP.

All project contingency is included by AEP. WP recommends 10%, or \$9,647,033, for the scope estimated by WP.