

LG&E - KU- E.W. Brown Unit 2 PJFF & SCR Rev. B

B&V PROJECT #: 168908
 PROJECT ESTIMATOR: Ron Fields
 PROJECT MANAGER: Tim Hillman
 PURPOSE OF ESTIMATE: Budgetary
 ESTIMATE DATE: April-11

LOCATION: Mercer County, KY
 PLANT TYPE: PC Fired Boiler
 CLIENT: LG&E - KU
 PARTNER: N/A
 CURRENCY: US Dollars

BLACK AND VEATCH CONFIDENTIAL AND PROPRIETARY INFORMATION

Contract Number	Description	PROJECT - TOTAL COSTS					% OF TOTAL C.V.	\$ PER KW 180	
		Engr Equip Material \$	Commodities Material \$	Labor \$	Manhours	Other			TOTAL \$
ESTIMATE SUMMARY									
Purchase Contracts:									
61.0000	Civil / Structural	\$2,071,800	\$27,405	\$0	0	\$309,600	\$2,408,805	1.41%	\$13.38
61.3801	Ductwork and breeching	\$4,706,730	\$0	\$0	0	\$0	\$4,706,730	2.76%	\$26.15
62.0000	Mechanical - Balance of Plant (BOP)	\$1,136,950	\$0	\$0	0	\$50,000	\$1,186,950	0.69%	\$6.59
63.0000	Electrical - BOP, Equipment, Raceway	\$317,500	\$4,707,439	\$0	0	\$0	\$5,024,939	2.94%	\$27.92
63.3002	ID & FD Fan Motors	\$430,000	\$0	\$0	0	\$0	\$430,000	0.25%	\$2.39
63.3603	Switchgear and MCCs	\$1,158,300	\$0	\$0	0	\$5,400	\$1,163,700	0.68%	\$6.47
63.3802	SUS Transformers	\$294,376	\$0	\$0	0	\$0	\$294,376	0.17%	\$1.64
63.3803	Aux Transformer	\$278,500	\$0	\$0	0	\$0	\$278,500	0.16%	\$1.55
64.0000	Control - DCS, Instrumentation	\$996,000	\$205,525	\$0	0	\$0	\$1,201,525	0.70%	\$6.68
64.0407	On-line Performance Monitoring - Neural Network	\$0	\$0	\$0	0	\$570,000	\$570,000	0.33%	\$3.17
65.3120	Fabric filter	\$5,300,000	\$0	\$0	0	\$0	\$5,300,000	3.10%	\$29.44
65.3210	Sorbent Injection	\$750,000	\$0	\$0	0	\$0	\$750,000	0.44%	\$4.17
65.3310	Selective Catalytic Reduction System	\$17,111,140	\$0	\$0	0	\$0	\$17,111,140	10.02%	\$95.06
65.3500	H-PAC Mercury Control	\$500,000	\$0	\$0	0	\$0	\$500,000	0.29%	\$2.78
66.1000	Piping & Tubing	\$291,381	\$0	\$0	0	\$0	\$291,381	0.17%	\$1.62
66.2070	Pipe Supports	\$0	\$579,250	\$0	0	\$0	\$579,250	0.34%	\$3.22
66.3000	Valves and Accessories	\$0	\$523,200	\$0	0	\$0	\$523,200	0.31%	\$2.91
67.0414	Fly Ash Handling System	\$0	\$0	\$0	0	\$4,700,000	\$4,700,000	2.75%	\$26.11
67.9300	Air Compressors, Dryers, & Air Receivers	\$250,000	\$0	\$0	0	\$0	\$250,000	0.15%	\$1.39
67.9531	FD Fans	\$250,000	\$0	\$0	0	\$0	\$250,000	0.15%	\$1.39
67.9532	ID Fans	\$1,000,000	\$0	\$0	0	\$0	\$1,000,000	0.59%	\$5.56
Subtotal Purchase Contracts:		\$36,842,677	\$6,042,819	\$0	0	\$5,635,000	\$48,520,495	28.40%	\$269.56
Construction Contracts:									
71.0100	Demolition works	\$0	\$25,000	\$207,135	4,500	\$320,000	\$552,135	0.32%	\$3.07
71.0401	Civil / Structural Construction - Cast in -place Piling	\$0	\$0	\$0	0	\$1,946,000	\$1,946,000	1.14%	\$10.81
71.0402	Civil / Structural Construction - Super Structures	\$0	\$90,000	\$2,897,166	46,986	\$1,221,250	\$4,208,416	2.46%	\$23.38
71.0403	Civil / Structural Construction - Sub-Structures	\$0	\$527,236	\$1,419,478	28,535	\$128,422	\$2,075,135	1.21%	\$11.53
72.0000	Mechanical / Chemical Construction	\$0	\$0	\$14,517,401	292,518	\$4,641,250	\$19,158,651	11.22%	\$106.44
73.0000	Electrical / Control Construction	\$0	\$641,988	\$9,747,893	184,027	\$10,800	\$10,400,681	6.09%	\$57.78
78.0000	Service Contracts & Construction Indirects	\$0	\$4,198,004	\$6,124,968	134,201	\$13,590,291	\$23,913,264	14.00%	\$132.85
Subtotal Construction Contracts:		\$0	\$5,482,227	\$34,914,041	690,766	\$21,858,013	\$62,254,282	36.44%	\$345.86
Total Direct Costs		\$36,842,677	\$11,525,046	\$34,914,041	690,766	\$27,493,013	\$110,774,777	64.85%	\$615.42
Indirect Costs:									
99.1100	Engineering Costs (Includes G&A)	\$0	\$0	\$6,346,800	154,800	\$9,431,345	\$15,778,145	9.24%	\$87.66
99.1200	EPC Construction Management (Includes G&A)	\$0	\$81,026	\$6,746,629	147,560	\$9,086,012	\$15,913,667	9.32%	\$88.41
99.1500	Project Insurance	\$0	\$0	\$0	0	\$1,826,192	\$1,826,192	1.07%	\$10.15
99.1600	Performance Bond	\$0	\$0	\$0	0	\$782,654	\$782,654	0.46%	\$4.35
99.1900	Sales Tax 6% on indirect materials and services	\$0	\$61,112	\$0	0	\$0	\$61,112	0.04%	\$0.34
99.2500	Project Contingency 10%	\$0	\$0	\$0	0	\$14,513,655	\$14,513,655	8.50%	\$80.63
99.2600	EPC Profit	\$0	\$0	\$0	0	\$11,176,000	\$11,176,000	6.54%	\$62.09
Total Indirect Costs		\$0	\$142,138	\$13,093,429	302,360	\$46,815,857	\$60,051,424	35.15%	\$333.62
Total Overnight (April 2011) EPC Capital Costs:		\$36,842,677	\$11,667,183	\$48,007,471	993,126	\$74,308,870	\$170,826,201	100.00%	\$949.03
		\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00

LG&E - KU- E.W. Brown Unit 2 PJFF & SCR Rev. B

B&V PROJECT #: 168908
 PROJECT ESTIMATOR: Ron Fields
 PROJECT MANAGER: Tim Hillman
 PURPOSE OF ESTIMATE: Budgetary
 ESTIMATE DATE: April 21, 2011

LOCATION: Mercer County, KY
 PLANT TYPE: PC Fired Boiler
 CLIENT: LG&E - KU
 PARTNER: N/A
 CURRENCY: US Dollars

BLACK AND VEATCH CONFIDENTIAL AND PROPRIETARY INFORMATION

Contract Number	Description	PROJECT - TOTAL COSTS					% OF TOTAL C.V.	\$ PER KW 180
		Engr Equip Material \$	Commodities Material \$	Labor \$	Manhours	Other		

ESTIMATE SUMMARY

Purchase Contracts:

61.0000	Civil / Structural	\$6,778,530	\$27,405	\$0	0	\$309,600	\$7,115,535	4.17%	\$39.53
62.0000	Mechanical	\$2,928,331	\$1,102,450	\$0	0	\$4,750,000	\$8,780,781	5.14%	\$48.78
63.0000	Electrical	\$2,478,676	\$4,707,439	\$0	0	\$5,400	\$7,191,515	4.21%	\$39.95
64.0000	Control	\$996,000	\$205,525	\$0	0	\$570,000	\$1,771,525	1.04%	\$9.84
65.0000	Chemical	\$23,661,140	\$0	\$0	0	\$0	\$23,661,140	13.85%	\$131.45

Subtotal Purchase Contracts: \$36,842,677 \$6,042,819 \$0 0 \$5,635,000 \$48,520,495 28.40% \$269.56

Construction Contracts:

71.0000	Civil / Structural Construction	\$0	\$642,236	\$4,523,778	80,021	\$3,615,672	\$8,781,686	5.14%	\$48.79
72.0000	Mechanical / Chemical Construction	\$0	\$0	\$14,517,401	292,518	\$4,641,250	\$19,158,651	11.22%	\$106.44
73.0000	Electrical / Control Construction	\$0	\$641,988	\$9,747,893	184,027	\$10,800	\$10,400,681	6.09%	\$57.78
78.0000	Service Contracts & Construction Indirects	\$0	\$4,198,004	\$6,124,968	134,201	\$13,590,291	\$23,913,264	14.00%	\$132.85

Subtotal Construction Contracts: \$0 \$5,482,227 \$34,914,041 690,766 \$21,858,013 \$62,254,282 36.44% \$345.86

Total Direct Costs \$36,842,677 \$11,525,046 \$34,914,041 690,766 \$27,493,013 \$110,774,777 64.85% \$615.42

Indirect Costs:

99.1100	Engineering Costs (With G&A)	\$0	\$0	\$6,346,800	154,800	\$9,431,345	\$15,778,145	9.24%	\$87.66
99.1200	Construction Management (With G&A)	\$0	\$81,026	\$6,746,629	147,560	\$9,086,012	\$15,913,667	9.32%	\$88.41
99.1500	Project Insurance	\$0	\$0	\$0	0	\$1,826,192	\$1,826,192	1.07%	\$10.15
99.1600	Performance Bond	\$0	\$0	\$0	0	\$782,654	\$782,654	0.46%	\$4.35
99.1900	Sales Tax 6% on indirect materials and services	\$0	\$61,112	\$0	0	\$0	\$61,112	0.04%	\$0.34
99.2500	Project Contingency	\$0	\$0	\$0	0	\$14,513,655	\$14,513,655	8.50%	\$80.63
99.2600	EPC Profit	\$0	\$0	\$0	0	\$11,176,000	\$11,176,000	6.54%	\$62.09

Total Indirect Costs \$0 \$142,138 \$13,093,429 302,360 \$46,815,857 \$60,051,424 35.15% \$333.62

Total Overnight (April 2011) EPC Capital Costs: \$36,842,677 \$11,667,183 \$48,007,471 993,126 \$74,308,870 \$170,826,201 100.00% \$949.03

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 PURPOSE OF ESTIMATE: Budgetary
 ESTIMATE DATE: April 21, 2011

LOCATION: Mercer County, KY
 PLANT TYPE: PC Fired Boiler
 CLIENT: LG&E - KU
 PARTNER: N/A
 CURRENCY: US Dollars

BLACK AND VEATCH CONFIDENTIAL AND PROPRIETARY INFORMATION

Contract Number	Description	PROJECT - TOTAL COSTS					TOTAL \$	% OF TOTAL C.V.	\$ PER KW 180
		Engr Equip Material \$	Commodities Material \$	Labor \$	Manhours	Other			
Civil / Structural Purchase Contracts:									
61.0200	Buildings - Insulated panels	\$0	\$0	\$0	0	\$309,600	\$309,600	0.18%	\$1.72
61.0300	Grating	\$0	\$14,040	\$0	0	\$0	\$14,040	0.01%	\$0.08
61.3801	Ductwork and Breeching	\$4,706,730	\$0	\$0	0	\$0	\$4,706,730	2.76%	\$26.15
61.4001	Structural Steel	\$2,071,800	\$0	\$0	0	\$0	\$2,071,800	1.21%	\$11.51
61.4015	Handrail and stairs	\$0	\$13,365	\$0	0	\$0	\$13,365	0.01%	\$0.07
61.4052	Sheet Piling and Cofferdam	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
Subtotal - Civil / Structural Purchase Contracts:		\$6,778,530	\$27,405	\$0	0	\$309,600	\$7,115,535	4.17%	\$39.53
Mechanical Purchase Contracts:									
62.0205	Continuous Emissions Monitoring (CEM)	\$0	\$0	\$0	0	\$0	\$0	0.03%	\$0.28
62.2201	Large Bore Pipe (Hot Systems)	\$426,950	\$0	\$0	0	\$0	\$426,950	0.25%	\$2.37
62.2418	Primary Flow elements	\$400,000	\$0	\$0	0	\$0	\$400,000	0.23%	\$2.22
66.1000	Piping & Tubing	\$291,381	\$0	\$0	0	\$0	\$291,381	0.17%	\$1.62
66.2070	Pipe Supports	\$0	\$579,250	\$0	0	\$0	\$579,250	0.34%	\$3.22
66.3000	Valves and Accessories	\$0	\$523,200	\$0	0	\$0	\$523,200	0.31%	\$2.91
67.0414	Fly Ash Handling system	\$0	\$0	\$0	0	\$4,700,000	\$4,700,000	2.75%	\$26.11
67.9300	Air Compressors, Dryers, & Air Receivers	\$250,000	\$0	\$0	0	\$0	\$250,000	0.15%	\$1.39
67.9531	FD Fans	\$560,000	\$0	\$0	0	\$0	\$560,000	0.33%	\$3.11
67.9532	ID Fans	\$1,000,000	\$0	\$0	0	\$0	\$1,000,000	0.59%	\$5.56
Subtotal - Mechanical Purchase Contracts:		\$2,928,331	\$1,102,450	\$0	\$0	\$4,750,000	\$8,780,781	5.14%	\$48.78
Electrical Purchase Contracts:									
63.0000	Electrical Equipment & Materials	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.02
63.0500	Lightning Protection Equipment and Materials	\$0	\$2,800	\$0	0	\$0	\$2,800	0.00%	\$0.04
63.0601	Plant Communication System	\$0	\$7,220	\$0	0	\$0	\$7,220	0.00%	\$0.04
63.0801	Cable - 8-15KV Power	\$0	\$90,496	\$0	0	\$0	\$90,496	0.05%	\$0.50
63.0804	Cable - 8-15KV Power	\$0	\$214,605	\$0	0	\$0	\$214,605	0.13%	\$1.19
63.0804	Cable - 300-600V Instrument & T/C	\$0	\$37,125	\$0	0	\$0	\$37,125	0.02%	\$0.21
63.0802	Cable and Raceway	\$0	\$2,019,665	\$0	0	\$0	\$2,019,665	1.18%	\$11.22
63.1201	Iso-Phase Bus Duct	\$257,500	\$0	\$0	0	\$0	\$257,500	0.15%	\$1.43
63.1202	Cable Bus	\$0	\$1,263,960	\$0	0	\$0	\$1,263,960	0.74%	\$7.02
63.2000	Metering & Relaying	\$60,000	\$0	\$0	0	\$0	\$60,000	0.04%	\$0.33
63.2802	Batteries - DC Equipment	\$0	\$221,375	\$0	0	\$0	\$221,375	0.13%	\$1.23
63.2805	PanelBoards	\$0	\$60,000	\$0	0	\$0	\$60,000	0.04%	\$0.33
63.3002	ID & FD Fan Motors	\$430,000	\$0	\$0	0	\$0	\$430,000	0.25%	\$2.39
63.3603	Switchgear & MCCs	\$1,158,300	\$0	\$0	0	\$5,400	\$1,163,700	0.68%	\$6.47
63.3802	SUS Transformers	\$294,376	\$0	\$0	0	\$0	\$294,376	0.17%	\$1.64
63.3803	Aux Transformer	\$278,500	\$0	\$0	0	\$0	\$278,500	0.16%	\$1.55
63.5000	Junction Boxes	\$0	\$20,000	\$0	0	\$0	\$20,000	0.01%	\$0.11
63.5010	Grounding Materials and Equipment	\$0	\$117,993	\$0	0	\$0	\$117,993	0.07%	\$0.66
63.5021	Raceway - Cable Tray	\$0	\$375,000	\$0	0	\$0	\$375,000	0.22%	\$2.08
63.5022	Raceway - General	\$0	\$277,200	\$0	0	\$0	\$277,200	0.16%	\$1.54
Subtotal - Electrical Purchase Contracts:		\$2,478,676	\$4,707,439	\$0	0	\$5,400	\$7,191,515	4.21%	\$39.95
Control Purchase Contracts:									
64.0202	DCS / PLC mods	\$0	\$0	\$0	0	\$0	\$0	0.41%	\$3.87
64.0407	On-line Performance Monitoring - Neural Network	\$696,000	\$0	\$0	0	\$0	\$696,000	0.41%	\$3.87
64.1003	Instrumentation	\$0	\$0	\$0	0	\$570,000	\$570,000	0.33%	\$3.17
64.1602	Instr. Racks and Enclosures	\$300,000	\$100,000	\$0	0	\$0	\$400,000	0.23%	\$2.22
64.5010	Tubing	\$0	\$9,000	\$0	0	\$0	\$9,000	0.01%	\$0.05
64.5010	Tubing	\$0	\$96,525	\$0	0	\$0	\$96,525	0.06%	\$0.54
Subtotal - Control Purchase Contracts:		\$996,000	\$205,525	\$0	0	\$570,000	\$1,771,525	1.04%	\$9.84
Chemical Purchase Contracts:									
65.3120	Fabric Filter	\$0	\$0	\$0	0	\$0	\$0	3.10%	\$29.44
65.3210	Sorbent Injection	\$5,300,000	\$0	\$0	0	\$0	\$5,300,000	0.44%	\$4.17
65.3310	Selective Catalytic Reduction system	\$750,000	\$0	\$0	0	\$0	\$750,000	0.44%	\$4.17
65.3500	H -PAC Mercury Control	\$17,111,140	\$0	\$0	0	\$0	\$17,111,140	10.02%	\$95.06
65.3500	H -PAC Mercury Control	\$500,000	\$0	\$0	0	\$0	\$500,000	0.29%	\$2.78
Subtotal - Chemical Purchase Contracts:		\$23,661,140	\$0	\$0	0	\$0	\$23,661,140	13.85%	\$131.45
Subtotal Purchase Contracts:		\$36,842,677	\$6,042,819	\$0	0	\$5,635,000	\$48,520,495	28.40%	\$269.56

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Contract Number	Description	PROJECT - TOTAL COSTS					% OF TOTAL C.V.	\$ PER KW 180	
		Engr Equip Material \$	Commodities Material \$	Labor \$	Manhours	Other			TOTAL \$
Civil / Structural Construction Contracts:		\$0	\$0	\$0	0	\$0			
71.0100	Demolition Works	\$0	\$25,000	\$207,135	4,500	\$320,000	\$552,135	0.32%	\$3.07
71.0401	Cast In place Piling	\$0	\$0	\$0	0	\$1,946,000	\$1,946,000	1.14%	\$10.81
71.0402	General Construction - Substructures	\$0	\$527,236	\$1,419,478	28,535	\$128,422	\$2,075,135	1.21%	\$11.53
71.0403	General Construction - Superstructures	\$0	\$90,000	\$2,897,166	46,986	\$1,221,250	\$4,208,416	2.46%	\$23.38
Subtotal - Civil / Structural Construction Contracts:		\$0	\$642,236	\$4,523,778	80,021	\$3,615,672	\$8,781,686	5.14%	\$48.79
Mechanical Construction Contracts:		\$0	\$0	\$0	0	\$0			
72.0401	Plant Piping Installation	\$0	\$0	\$3,951,399	73,941	\$0	\$3,951,399	2.31%	\$21.95
72.0403	Duct and Reactor Insulation	\$0	\$0	\$0	0	\$4,006,000	\$4,006,000	2.35%	\$22.26
72.0800	Fire Protection & Detection Systems	\$0	\$0	\$0	0	\$635,250	\$635,250	0.37%	\$3.53
77.0000	Mechanical Construction	\$0	\$0	\$10,566,003	218,577	\$0	\$10,566,003	6.19%	\$58.70
Subtotal - Mechanical Construction Contracts:		\$0	\$0	\$14,517,401	\$292,518	\$4,641,250	\$19,158,651	11.22%	\$106.44
Electrical / Control Construction Contracts:		\$0	\$0	\$0	0	\$0			
73.0201	Electrical Equipment Erection	\$0	\$641,988	\$8,790,342	165,949	\$10,800	\$9,443,129	5.53%	\$52.46
74.0201	Control & Instrumentation Installation	\$0	\$0	\$957,552	18,077	\$0	\$957,552	0.56%	\$5.32
Subtotal - Electrical / Control Construction Contracts:		\$0	\$641,988	\$9,747,893	184,027	\$10,800	\$10,400,681	6.09%	\$57.78
Construction Indirects & Service Contracts:		\$0	\$0	\$0	0	\$0			
78.0000	Service Contracts & Construction Indirects	\$0	\$4,198,004	\$6,124,968	134,201	\$13,187,391	\$23,510,364	13.76%	\$130.61
78.4000	Warranty	\$0	\$0	\$0	0	\$402,900	\$402,900	0.24%	\$2.24
Subtotal - Construction Indirects & Service Contracts:		\$0	\$4,198,004	\$6,124,968	134,201	\$13,590,291	\$23,913,264	14.00%	\$132.85
Subtotal - Construction Costs:		\$0	\$5,482,227	\$34,914,041	690,766	\$21,858,013	\$62,254,282	36.44%	\$345.86
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