

LG&E - KU- Mill Creek Unit 1 PJFF & SCR rev. B

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

LOCATION: Jefferson 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 330
		Engr Equip	Commodities					
		Material \$	Material \$	Labor \$	Manhours	Other		

ESTIMATE SUMMARY

Purchase Contracts:

61.0000	Civil / Structural	\$3,722,400	\$110,160	\$0	0	\$7,114,779	\$10,947,339	4.09%	\$33.17
61.3801	Ductwork and breeching	\$4,145,800	\$0	\$0	0	\$2,000,000	\$6,145,800	2.30%	\$18.62
62.0000	Mechanical - Balance of Plant (BOP)	\$400,000	\$0	\$0	0	\$50,000	\$450,000	0.17%	\$1.36
63.0000	Electrical - BOP, Equipment, Raceway	\$290,000	\$6,983,225	\$0	0	\$5,000,000	\$12,273,225	4.59%	\$37.19
63.3002	VFDs, Motors and Couplings	\$3,974,000	\$0	\$0	0	\$0	\$3,974,000	1.49%	\$12.04
63.3603	Switchgear and MCCs	\$2,276,500	\$0	\$0	0	\$0	\$2,276,500	0.85%	\$6.90
63.3802	SUS Transformers	\$452,482	\$0	\$0	0	\$0	\$452,482	0.17%	\$1.37
63.3803	Aux Transformer	\$562,000	\$0	\$0	0	\$0	\$562,000	0.21%	\$1.70
64.0000	Control - DCS, Instrumentation	\$996,000	\$205,525	\$0	0	\$0	\$1,201,525	0.45%	\$3.64
64.0407	On-line Performance Monitoring - Neural Network	\$0	\$0	\$0	0	\$570,000	\$570,000	0.21%	\$1.73
65.3120	Fabric Filter	\$13,000,000	\$0	\$0	0	\$0	\$13,000,000	4.86%	\$39.39
65.3210	Sorbent Injection	\$2,000,000	\$0	\$0	0	\$0	\$2,000,000	0.75%	\$6.06
65.3310	Selective Catalytic Reduction System	\$16,750,000	\$0	\$0	0	\$0	\$16,750,000	6.27%	\$50.76
65.3500	H-PAC Mercury Control	\$1,000,000	\$0	\$0	0	\$0	\$1,000,000	0.37%	\$3.03
66.1000	Piping and Tubing	\$0	\$633,981	\$0	0	\$0	\$633,981	0.24%	\$1.92
66.2070	Pipe Supports	\$0	\$579,250	\$0	0	\$0	\$579,250	0.22%	\$1.76
66.3000	Valves and Accessories	\$0	\$523,200	\$0	0	\$0	\$523,200	0.20%	\$1.59
67.0414	Fly Ash Handling System	\$0	\$0	\$0	0	\$900,000	\$900,000	0.34%	\$2.73
67.9300	Compressors	\$250,000	\$0	\$0	0	\$0	\$250,000	0.09%	\$0.76
67.9532	ID Fans	\$2,156,000	\$0	\$0	0	\$0	\$2,156,000	0.81%	\$6.53
Subtotal Purchase Contracts:		\$51,975,182	\$9,035,341	\$0	0	\$15,634,779	\$76,645,302	28.67%	\$232.26

Construction Contracts:

71.0100	Demolition Works	\$0	\$0	\$247,314	4,820	\$4,270,000	\$4,517,314	1.69%	\$13.69
71.0401	Civil / Structural Construction - Cast in-place Piling	\$0	\$0	\$0	0	\$1,281,000	\$1,281,000	0.48%	\$3.88
71.0402	Civil / Structural Construction - Super Structures	\$0	\$75,000	\$5,904,189	85,308	\$3,344,400	\$9,323,589	3.49%	\$28.25
71.0403	Civil / Structural Construction - Sub-Structures	\$0	\$391,094	\$1,484,832	26,317	\$153,754	\$2,029,680	0.76%	\$6.15
72.0000	Mechanical / Chemical Construction	\$0	\$0	\$17,726,605	287,782	\$4,683,250	\$22,409,855	8.38%	\$67.91
73.0000	Electrical / Control Construction	\$0	\$638,818	\$13,984,531	223,824	\$26,100	\$14,649,449	5.48%	\$44.39
75.3200	Mechanical - Scrubber Refurbishment	\$0	\$0	\$0	0	\$20,428,467	\$20,428,467	7.64%	\$61.90
78.0000	Service Contracts & Construction Indirects	\$0	\$5,865,181	\$6,602,448	142,206	\$19,760,371	\$32,228,000	12.06%	\$97.66
Subtotal Construction Contracts:		\$0	\$6,970,093	\$45,949,919	770,258	\$53,947,342	\$106,867,354	39.97%	\$323.84

Total Direct Costs **\$51,975,182** **\$16,005,434** **\$45,949,919** **770,258** **\$69,582,121** **\$183,512,656** **68.65%** **\$556.10**

Indirect Costs:

99.1100	Engineering Costs (Includes G&A)	\$0	\$0	\$7,052,000	172,000	\$10,479,272	\$17,531,272	6.56%	\$53.13
99.1200	EPC Construction Management (Includes G&A)	\$0	\$4,177,911	\$8,884,859	198,523	\$8,389,995	\$21,452,764	8.02%	\$65.01
99.1500	Project Insurance	\$0	\$0	\$0	0	\$3,179,078	\$3,179,078	1.19%	\$9.63
99.1600	Performance Bond	\$0	\$0	\$0	0	\$1,362,462	\$1,362,462	0.51%	\$4.13
99.1900	Sales Tax 6% of Indirect materials and Services	\$0	\$95,071	\$0	0	\$0	\$95,071	0.04%	\$0.29
99.2500	Project Contingency 10%	\$0	\$0	\$0	0	\$22,713,330	\$22,713,330	8.50%	\$68.83
99.2600	EPC Profit	\$0	\$0	\$0	0	\$17,489,000	\$17,489,000	6.54%	\$53.00
Total Indirect Costs		\$0	\$4,272,982	\$15,936,859	370,523	\$63,613,137	\$83,822,977	31.35%	\$254.01

Total Overnight (Mar. 2011) EPC Capital Costs: **\$51,975,182** **\$20,278,415** **\$61,886,778** **1,140,781** **\$133,195,258** **\$267,335,633** **100.00%** **\$810.11**

\$0 \$0 \$0 0 \$0 \$0 0.00% \$0.00

Separate Line Item Cost Break Out (Items listed below are included in the above EPC estimate)

1	Demolition	\$5,556,296
2	SCR	\$64,708,846
3	Scrubber Refurbishment	\$24,105,591
4	Scrubber Steel Refurbishment	\$7,978,446

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 PROJECT MANAGER: Tim Hillman
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 ESTIMATE DATE: March-11

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

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Contract Number	Description	PROJECT - TOTAL COSTS					% OF TOTAL C.V.	\$ PER KW 330	
		Engr Equip Material \$	Commodities Material \$	Labor \$	Manhours	Other			TOTAL \$
ESTIMATE SUMMARY									
Purchase Contracts:									
61.0000	Civil / Structural	\$7,868,200	\$110,160	\$0	0	\$9,114,779	\$17,093,139	6.39%	\$51.80
62.0000	Mechanical	\$2,806,000	\$1,736,431	\$0	0	\$950,000	\$5,492,431	2.05%	\$16.64
63.0000	Electrical	\$7,554,982	\$6,983,225	\$0	0	\$5,000,000	\$19,538,207	7.31%	\$59.21
64.0000	Control	\$996,000	\$205,525	\$0	0	\$570,000	\$1,771,525	0.66%	\$5.37
65.0000	Chemical	\$32,750,000	\$0	\$0	0	\$0	\$32,750,000	12.25%	\$99.24
Subtotal Purchase Contracts:		\$51,975,182	\$9,035,341	\$0	0	\$15,634,779	\$76,645,302	28.67%	\$232.26
Construction Contracts:									
71.0402	Civil / Structural Construction -Substructures	\$0	\$466,094	\$7,636,335	116,446	\$9,049,154	\$17,151,583	6.42%	\$51.97
71.0403	Civil / Structural Construction -Superstructures	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
72.0000	Mechanical / Chemical Construction	\$0	\$0	\$17,726,605	287,782	\$25,111,717	\$42,838,322	16.02%	\$129.81
73.0000	Electrical / Control Construction	\$0	\$638,818	\$13,984,531	223,824	\$26,100	\$14,649,449	5.48%	\$44.39
78.0000	Service Contracts & Construction Indirects	\$0	\$5,865,181	\$6,602,448	142,206	\$19,760,371	\$32,228,000	12.06%	\$97.66
Subtotal Construction Contracts:		\$0	\$6,970,093	\$45,949,919	770,258	\$53,947,342	\$106,867,354	39.97%	\$323.84
Total Direct Costs		\$51,975,182	\$16,005,434	\$45,949,919	770,258	\$69,582,121	\$183,512,656	68.65%	\$556.10
Indirect Costs:									
99.1100	Engineering Costs (With G&A)	\$0	\$0	\$7,052,000	172,000	\$10,479,272	\$17,531,272	6.56%	\$53.13
99.1200	Construction Management (With G&A)	\$0	\$4,177,911	\$8,884,859	198,523	\$8,389,995	\$21,452,764	8.02%	\$65.01
99.1500	Project Insurance	\$0	\$0	\$0	0	\$3,179,078	\$3,179,078	1.19%	\$9.63
99.1600	Performance Bond	\$0	\$0	\$0	0	\$1,362,462	\$1,362,462	0.51%	\$4.13
99.1900	Sales Tax 6% of Indirect materials and Services	\$0	\$95,071	\$0	0	\$0	\$95,071	0.04%	\$0.29
99.2500	Project Contingency @ 10%	\$0	\$0	\$0	0	\$22,713,330	\$22,713,330	8.50%	\$68.83
99.2600	EPC profit @ 7%	\$0	\$0	\$0	0	\$17,489,000	\$17,489,000	6.54%	\$53.00
Total Indirect Costs		\$0	\$4,272,982	\$15,936,859	370,523	\$63,613,137	\$83,822,977	31.35%	\$254.01
Total Overnight (Mar. 2011) EPC Capital Costs:		\$51,975,182	\$20,278,415	\$61,886,778	1,140,781	\$133,195,258	\$267,335,633	100.00%	\$810.11

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LOCATION: Jefferson County, KY
 PLANT TYPE: PC Fired Boiler
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 PARTNER: N/A
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BLACK AND VEATCH CONFIDENTIAL AND PROPRIETARY INFORMATION

Contract Number	Description	PROJECT - TOTAL COSTS					% OF TOTAL C.V.	\$ PER KW 330	
		Engr Equip	Commodities	Labor \$	Manhours	Other			
		Material \$	Material \$				TOTAL \$		
Civil / Structural Purchase Contracts:									
61.0200	Buildings - Insulated panels	\$0	\$0	\$0	0	\$81,000	\$81,000	0.03%	\$0.25
61.0300	Grating	\$0	\$29,700	\$0	0	\$0	\$29,700	0.01%	\$0.09
61.3801	Ductwork and Breeching	\$4,145,800	\$0	\$0	0	\$2,000,000	\$6,145,800	2.30%	\$18.62
61.4001	Structural Steel	\$3,722,400	\$0	\$0	0	\$6,761,395	\$10,483,795	3.92%	\$31.77
61.4015	Handrail and stairs	\$0	\$80,460	\$0	0	\$0	\$80,460	0.03%	\$0.24
61.4052	Sheet Piling and Cofferdam	\$0	\$0	\$0	0	\$272,384	\$272,384	0.10%	\$0.83
Subtotal - Civil / Structural Purchase Contracts:		\$7,868,200	\$110,160	\$0	0	\$9,114,779	\$17,093,139	6.39%	\$51.80
Mechanical Purchase Contracts:									
62.0205	Continuous Emissions Monitoring (CEM)	\$0	\$0	\$0	0	\$0	\$0	0.02%	\$0.15
62.2418	Primary Flow elements	\$400,000	\$0	\$0	0	\$0	\$400,000	0.15%	\$1.21
66.1000	Piping and Tubing	\$0	\$633,981	\$0	0	\$0	\$633,981	0.24%	\$1.92
66.2070	Pipe Supports	\$0	\$579,250	\$0	0	\$0	\$579,250	0.22%	\$1.76
66.3000	Valves and Accessories	\$0	\$523,200	\$0	0	\$0	\$523,200	0.20%	\$1.59
67.0414	Fly Ash Handling System	\$0	\$0	\$0	0	\$900,000	\$900,000	0.34%	\$2.73
67.9300	Air Compressors, Dryers, & Air receivers	\$250,000	\$0	\$0	0	\$0	\$250,000	0.09%	\$0.76
67.9532	ID Fans	\$2,156,000	\$0	\$0	0	\$0	\$2,156,000	0.81%	\$6.53
Subtotal - Mechanical Purchase Contracts:		\$2,806,000	\$1,736,431	\$0	0	\$950,000	\$5,492,431	2.05%	\$16.64
Electrical Purchase Contracts:									
63.0000	Electrical Equipment & Materials	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.01
63.0500	Lightning Protection Equipment and Materials	\$0	\$2,800	\$0	0	\$0	\$2,800	0.00%	\$0.02
63.0601	Plant Communication System	\$0	\$7,220	\$0	0	\$0	\$7,220	0.00%	\$0.08
63.0601	Plant Communication System	\$0	\$25,000	\$0	0	\$0	\$25,000	0.01%	\$0.08
63.0801	Cable - 8-15KV Power	\$0	\$677,700	\$0	0	\$0	\$677,700	0.25%	\$2.05
63.0804	Cable - 300-600V Instrument & T/C	\$0	\$37,125	\$0	0	\$0	\$37,125	0.01%	\$0.11
63.0802	Cable and Raceway	\$0	\$2,018,877	\$0	0	\$0	\$2,018,877	0.76%	\$6.12
63.1201	Iso-Phase Bus Duct	\$230,000	\$0	\$0	0	\$0	\$230,000	0.09%	\$0.70
63.1202	Cable Bus	\$0	\$2,921,560	\$0	0	\$0	\$2,921,560	1.09%	\$8.85
63.2000	Metering & Relaying	\$60,000	\$0	\$0	0	\$0	\$60,000	0.02%	\$0.18
63.2802	Batteries - DC Equipment	\$0	\$442,750	\$0	0	\$0	\$442,750	0.17%	\$1.34
63.2805	PanelBoards	\$0	\$60,000	\$0	0	\$0	\$60,000	0.02%	\$0.18
63.3002	Variable Frequency Drives	\$3,974,000	\$0	\$0	0	\$0	\$3,974,000	1.49%	\$12.04
63.3603	Switchgear & MCCs	\$2,276,500	\$0	\$0	0	\$0	\$2,276,500	0.85%	\$6.90
63.3802	SUS Transformers	\$452,482	\$0	\$0	0	\$0	\$452,482	0.17%	\$1.37
63.3803	Aux Transformer	\$562,000	\$0	\$0	0	\$0	\$562,000	0.21%	\$1.70
63.5000	Junction Boxes	\$0	\$20,000	\$0	0	\$0	\$20,000	0.01%	\$0.06
63.5010	Grounding Materials and Equipment	\$0	\$117,993	\$0	0	\$0	\$117,993	0.04%	\$0.36
63.5021	Raceway - Cable Tray	\$0	\$375,000	\$0	0	\$5,000,000	\$5,375,000	2.01%	\$16.29
63.5022	Raceway - General	\$0	\$277,200	\$0	0	\$0	\$277,200	0.10%	\$0.84
Subtotal - Electrical Purchase Contracts:		\$7,554,982	\$6,983,225	\$0	0	\$5,000,000	\$19,538,207	7.31%	\$59.21
Control Purchase Contracts:									
64.0202	DCS / PLC mods	\$696,000	\$0	\$0	0	\$0	\$696,000	0.26%	\$2.11
64.0407	On-line Performance Monitoring - Neural Network	\$0	\$0	\$0	0	\$570,000	\$570,000	0.21%	\$1.73
64.1003	Instrumentation	\$300,000	\$100,000	\$0	0	\$0	\$400,000	0.15%	\$1.21
64.1602	Instr. Racks and Enclosures	\$0	\$9,000	\$0	0	\$0	\$9,000	0.00%	\$0.03
64.5010	Tubing	\$0	\$96,525	\$0	0	\$0	\$96,525	0.04%	\$0.29
Subtotal - Control Purchase Contracts:		\$996,000	\$205,525	\$0	0	\$570,000	\$1,771,525	0.66%	\$5.37
Chemical Purchase Contracts:									
65.3120	Fabric Filter	\$13,000,000	\$0	\$0	0	\$0	\$13,000,000	4.86%	\$39.39
65.3210	Sorbent Injection	\$2,000,000	\$0	\$0	0	\$0	\$2,000,000	0.75%	\$6.06
65.3310	Selective Catalytic Redcuton system	\$16,750,000	\$0	\$0	0	\$0	\$16,750,000	6.27%	\$50.76
65.3500	H -PAC Mecury Control	\$1,000,000	\$0	\$0	0	\$0	\$1,000,000	0.37%	\$3.03
Subtotal - Chemical Purchase Contracts:		\$32,750,000	\$0	\$0	0	\$0	\$32,750,000	12.25%	\$99.24
Subtotal Purchase Contracts:		\$51,975,182	\$9,035,341	\$0	0	\$15,634,779	\$76,645,302	28.67%	\$232.26

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71.0100	Demolition Works	\$0	\$0	\$0	0	\$0	\$4,517,314	1.69%	\$13.69
71.0401	Cast In place Piling	\$0	\$0	\$247,314	4,820	\$4,270,000	\$1,281,000	0.48%	\$3.88
71.0402	General Construction - Substructures	\$0	\$391,094	\$1,484,832	26,317	\$153,754	\$2,029,680	0.76%	\$6.15
71.0403	General Construction - Superstructures	\$0	\$75,000	\$5,904,189	85,308	\$3,344,400	\$9,323,589	3.49%	\$28.25
Subtotal - Civil / Structural Construction Contracts:		\$0	\$466,094	\$7,636,335	116,446	\$9,049,154	\$17,151,583	6.42%	\$51.97
Mechanical Construction Contracts:									
72.0401	Plant Piping Installation	\$0	\$0	\$0	0	\$0	\$4,316,802	1.61%	\$13.08
72.0403	Duct and Reactor Insulation	\$0	\$0	\$4,316,802	68,488	\$0	\$4,000,000	1.50%	\$12.12
72.0800	Fire Protection & Detection Systems	\$0	\$0	\$0	0	\$683,250	\$683,250	0.26%	\$2.07
75.3200	Mechanical - Scrubber Refurbishment	\$0	\$0	\$0	0	\$20,428,467	\$20,428,467	7.64%	\$61.90
77.0000	Mechanical Construction	\$0	\$0	\$13,409,804	219,294	\$0	\$13,409,804	5.02%	\$40.64
Subtotal - Mechanical Construction Contracts:		\$0	\$0	\$17,726,605	287,782	\$25,111,717	\$42,838,322	16.02%	\$129.81
Electrical / Control Construction Contracts:									
73.0201	Electrical Equipment Erection	\$0	\$0	\$0	0	\$0	\$13,519,982	5.06%	\$40.97
74.0201	Control & Instrumentation Installation	\$0	\$638,818	\$12,855,065	205,747	\$26,100	\$1,129,467	0.42%	\$3.42
Subtotal - Electrical / Control Construction Contracts:		\$0	\$638,818	\$13,984,531	223,824	\$26,100	\$14,649,449	5.48%	\$44.39
Construction Indirects & Service Contracts:									
78.0000	Service Contracts & Construction Indirects	\$0	\$0	\$0	0	\$0	\$31,938,000	11.95%	\$96.78
78.4000	Warranty	\$0	\$5,865,181	\$6,602,448	142,206	\$19,470,371	\$290,000	0.11%	\$0.88
Subtotal - Construction Indirects & Service Contracts:		\$0	\$5,865,181	\$6,602,448	142,206	\$19,760,371	\$32,228,000	12.06%	\$97.66
Subtotal - Construction Costs:		\$0	\$6,970,093	\$45,949,919	770,258	\$53,947,342	\$106,867,354	39.97%	\$323.84
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99.1600	Performance Bond	\$0	\$0	\$0	0	\$3,179,078	\$1,362,462	0.51%	\$4.13
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99.2500	Project Contingency	\$0	\$95,071	\$0	0	\$0	\$22,713,330	8.50%	\$68.83
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