

LG&E - KU- Mill Creek Unit 2 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 Material \$	Commodities Material \$	Labor \$	Manhours	Other		

ESTIMATE SUMMARY

Purchase Contracts:

61.0000	Civil / Structural	\$1,875,600	\$39,460	\$0	0	\$6,872,635	\$8,787,695	3.31%	\$26.63
61.3801	Ductwork and breaching	\$4,153,340	\$0	\$0	0	\$2,800,000	\$6,953,340	2.62%	\$21.07
62.0000	Mechanical - Balance of Plant (BOP)	\$830,400	\$0	\$0	\$0	\$50,000	\$880,400	0.33%	\$2.67
63.0000	Electrical - BOP, Equipment, Raceway	\$240,000	\$7,133,229	\$0	0	\$5,000,000	\$12,373,229	4.66%	\$37.49
63.3002	VFDs, Motors and Couplings	\$3,974,000	\$0	\$0	0	\$0	\$3,974,000	1.50%	\$12.04
63.3603	Switchgear and MCCs	\$2,276,500	\$0	\$0	0	\$0	\$2,276,500	0.86%	\$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
63.4400	345 kV Transmission Lines Relocation	\$0	\$0	\$0	0	\$1,000,000	\$1,000,000	0.38%	\$3.03
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	4.89%	\$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	6.30%	\$50.76
65.3500	H-PAC Mercury Control	\$1,000,000	\$0	\$0	0	\$0	\$1,000,000	0.38%	\$3.03
66.1000	Piping & Tubing	\$291,381	\$0	\$0	\$0	\$0	\$291,381	0.11%	\$0.88
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	\$4,700,000	\$4,700,000	1.77%	\$14.24
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 Purchase Contracts:		\$50,807,703	\$8,480,664	\$0	0	\$20,992,635	\$80,281,001	30.21%	\$243.28

Construction Contracts:

71.0100	Demolition works	\$0	\$0	\$247,314	4,820	\$4,570,000	\$4,817,314	1.81%	\$14.60
71.0401	Civil / Structural Construction - Cast in -place Piling	\$0	\$0	\$0	0	\$1,543,500	\$1,543,500	0.58%	\$4.68
71.0402	Civil / Structural Construction - Super Structures	\$0	\$75,000	\$2,966,418	42,861	\$3,929,400	\$6,970,818	2.62%	\$21.12
71.0403	Civil / Structural Construction - Sub-Structures	\$0	\$557,425	\$2,098,059	36,921	\$150,899	\$2,806,383	1.06%	\$8.50
72.0000	Mechanical / Chemical Construction	\$0	\$0	\$16,983,176	275,286	\$4,689,250	\$21,672,426	8.16%	\$65.67
73.0000	Electrical / Control Construction	\$0	\$641,988	\$13,497,248	216,025	\$26,100	\$14,165,335	5.33%	\$42.93
75.3200	Mechanical - Scrubber Refurbishment	\$0	\$0	\$0	0	\$20,567,445	\$20,567,445	7.74%	\$62.33
78.0000	Service Contracts & Construction Indirects	\$0	\$5,602,259	\$6,306,476	135,832	\$18,341,623	\$30,250,358	11.38%	\$91.67
Subtotal Construction Contracts:		\$0	\$6,876,671	\$42,098,691	711,745	\$53,818,217	\$102,793,579	38.68%	\$311.50

Total Direct Costs

\$50,807,703	\$15,357,335	\$42,098,691	711,745	\$74,810,852	\$183,074,580	68.89%	\$554.77
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Indirect Costs:

99.1100	Engineering Costs (Includes G&A)	\$0	\$0	\$7,052,000	172,000	\$10,479,272	\$17,531,272	6.60%	\$53.13
99.1200	EPC Construction Management (Includes G&A)	\$0	\$3,990,625	\$8,486,572	189,624	\$8,013,892	\$20,491,089	7.71%	\$62.09
99.1500	Project Insurance	\$0	\$0	\$0	0	\$3,211,409	\$3,211,409	1.21%	\$9.73
99.1600	Performance Bond	\$0	\$0	\$0	0	\$1,376,318	\$1,376,318	0.52%	\$4.17
99.1900	Sales Tax 6% on indirect materials and services	\$0	\$90,809	\$0	0	\$0	\$90,809	0.03%	\$0.28
99.2500	Project Contingency 10%	\$0	\$0	\$0	0	\$22,577,548	\$22,577,548	8.50%	\$68.42
99.2600	EPC Profit	\$0	\$0	\$0	0	\$17,385,000	\$17,385,000	6.54%	\$52.68
Total Indirect Costs		\$0	\$4,081,434	\$15,538,572	361,624	\$63,043,438	\$82,663,444	31.11%	\$250.50

Total Overnight (Mar. 2011) EPC Capital Costs:

\$50,807,703	\$19,438,769	\$57,637,263	1,073,369	\$137,854,290	\$265,738,024	100.00%	\$805.27
\$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	\$5,925,296
2	SCR	\$65,251,995
3	Scrubber Refurbishment	\$24,269,585
4	Scrubber Steel Refurbishment	\$7,978,446

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B&V PROJECT #: 168908
 PROJECT ESTIMATOR: Ron Fields
 PROJECT MANAGER: Tim Hillman
 PURPOSE OF ESTIMATE: Budgetary
 ESTIMATE DATE: March 4, 2011

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 Material \$	Commodities Material \$	Labor \$	Manhours	Other		

ESTIMATE SUMMARY

Purchase Contracts:

61.0000	Civil / Structural	\$6,028,940	\$39,460	\$0	0	\$9,672,635	\$15,741,035	5.92%	\$47.70
62.0000	Mechanical	\$3,527,781	\$1,102,450	\$0	0	\$4,750,000	\$9,380,231	3.53%	\$28.42
63.0000	Electrical	\$7,504,982	\$7,133,229	\$0	0	\$6,000,000	\$20,638,211	7.77%	\$62.54
64.0000	Control	\$996,000	\$205,525	\$0	0	\$570,000	\$1,771,525	0.67%	\$5.37
65.0000	Chemical	\$32,750,000	\$0	\$0	0	\$0	\$32,750,000	12.32%	\$99.24

Subtotal Purchase Contracts: \$50,807,703 \$8,480,664 \$0 0 \$20,992,635 \$80,281,001 30.21% \$243.28

Construction Contracts:

71.0000	Civil / Structural Construction	\$0	\$632,425	\$5,311,792	84,603	\$10,193,799	\$16,138,015	6.07%	\$48.90
72.0000	Mechanical / Chemical Construction	\$0	\$0	\$16,983,176	275,286	\$25,256,695	\$42,239,871	15.90%	\$128.00
73.0000	Electrical / Control Construction	\$0	\$641,988	\$13,497,248	216,025	\$26,100	\$14,165,335	5.33%	\$42.93
78.0000	Service Contracts & Construction Indirects	\$0	\$5,602,259	\$6,306,476	135,832	\$18,341,623	\$30,250,358	11.38%	\$91.67

Subtotal Construction Contracts: \$0 \$6,876,671 \$42,098,691 711,745 \$53,818,217 \$102,793,579 38.68% \$311.50

Total Direct Costs \$50,807,703 \$15,357,335 \$42,098,691 711,745 \$74,810,852 \$183,074,580 68.89% \$554.77

Indirect Costs:

99.1100	Engineering Costs (With G&A)	\$0	\$0	\$7,052,000	172,000	\$10,479,272	\$17,531,272	6.60%	\$53.13
99.1200	Construction Management (With G&A)	\$0	\$3,990,625	\$8,486,572	189,624	\$8,013,892	\$20,491,089	7.71%	\$62.09
99.1500	Project Insurance	\$0	\$0	\$0	0	\$3,211,409	\$3,211,409	1.21%	\$9.73
99.1600	Performance Bond	\$0	\$0	\$0	0	\$1,376,318	\$1,376,318	0.52%	\$4.17
99.1900	Sales Tax 6% on indirect materials and services	\$0	\$90,809	\$0	0	\$0	\$90,809	0.03%	\$0.28
99.2500	Project Contingency	\$0	\$0	\$0	0	\$22,577,548	\$22,577,548	8.50%	\$68.42
99.2600	EPC Profit	\$0	\$0	\$0	0	\$17,385,000	\$17,385,000	6.54%	\$52.68

Total Indirect Costs \$0 \$4,081,434 \$15,538,572 361,624 \$63,043,438 \$82,663,444 31.11% \$250.50

Total Overnight (Mar. 2011) EPC Capital Costs: \$50,807,703 \$19,438,769 \$57,637,263 1,073,369 \$137,854,290 \$265,738,024 100.00% \$805.27

LG&E - KU- Mill Creek Unit 2 PJFF & SCR rev. B

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 PROJECT MANAGER: Tim Hillman
 PURPOSE OF ESTIMATE: Budgetary
 ESTIMATE DATE: March 4, 2011

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 Material \$	Commodities Material \$	Labor \$	Manhours	Other			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	\$20,200	\$0	0	\$0	\$20,200	0.01%	\$0.06
61.3801	Ductwork and Breeching	\$4,153,340	\$0	\$0	0	\$2,800,000	\$6,953,340	2.62%	\$21.07
61.4001	Structural Steel	\$1,875,600	\$0	\$0	0	\$6,761,395	\$8,636,995	3.25%	\$26.17
61.4015	Handrail and stairs	\$0	\$19,260	\$0	0	\$0	\$19,260	0.01%	\$0.06
61.4052	Sheet Piling and Cofferdam	\$0	\$0	\$0	0	\$30,240	\$30,240	0.01%	\$0.09
Subtotal - Civil / Structural Purchase Contracts:		\$6,028,940	\$39,460	\$0	0	\$9,672,635	\$15,741,035	5.92%	\$47.70
Mechanical Purchase Contracts:									
62.0205	Continuous Emissions Monitoring (CEM)	\$0	\$0	\$0	0	\$0	\$0	0.02%	\$0.15
62.2201	Large Bore Pipe (Hot Systems)	\$430,400	\$0	\$0	0	\$0	\$430,400	0.16%	\$1.30
62.2418	Primary Flow elements	\$400,000	\$0	\$0	0	\$0	\$400,000	0.15%	\$1.21
66.1000	Piping & Tubing	\$291,381	\$0	\$0	0	\$0	\$291,381	0.11%	\$0.88
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	\$4,700,000	\$4,700,000	1.77%	\$14.24
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:		\$3,527,781	\$1,102,450	\$0	\$0	\$4,750,000	\$9,380,231	3.53%	\$28.42
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	\$180,993	\$0	0	\$0	\$180,993	0.07%	\$0.55
63.0801	Cable - 8-15KV Power	\$0	\$670,923	\$0	0	\$0	\$670,923	0.25%	\$2.03
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	\$2,019,665	\$0	0	\$0	\$2,019,665	0.76%	\$6.12
63.1201	Iso-Phase Bus Duct	\$180,000	\$0	\$0	0	\$0	\$180,000	0.07%	\$0.55
63.1202	Cable Bus	\$0	\$2,921,560	\$0	0	\$0	\$2,921,560	1.10%	\$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	1.50%	\$12.04
63.3603	Switchgear & MCCs	\$2,276,500	\$0	\$0	0	\$0	\$2,276,500	0.86%	\$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
63.4400	345 kV Transmission Lines Relocation	\$0	\$0	\$0	0	\$1,000,000	\$1,000,000	0.38%	\$3.03
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	2.02%	\$16.29
63.5022	Raceway - General	\$0	\$277,200	\$0	0	\$0	\$277,200	0.10%	\$0.84
Subtotal - Electrical Purchase Contracts:		\$7,504,982	\$7,133,229	\$0	0	\$6,000,000	\$20,638,211	7.77%	\$62.54
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	0.67%	\$5.37
Chemical Purchase Contracts:									
65.3120	Fabric Filter	\$13,000,000	\$0	\$0	0	\$0	\$13,000,000	4.89%	\$39.39
65.3210	Sorbent Injection	\$2,000,000	\$0	\$0	0	\$0	\$2,000,000	0.75%	\$6.06
65.3310	Selective Catalytic Redcution system	\$16,750,000	\$0	\$0	0	\$0	\$16,750,000	6.30%	\$50.76
65.3500	H -PAC Mecury Control	\$1,000,000	\$0	\$0	0	\$0	\$1,000,000	0.38%	\$3.03
Subtotal - Chemical Purchase Contracts:		\$32,750,000	\$0	\$0	0	\$0	\$32,750,000	12.32%	\$99.24
Subtotal Purchase Contracts:		\$50,807,703	\$8,480,664	\$0	0	\$20,992,635	\$80,281,001	30.21%	\$243.28

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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 \$
Civil / Structural Construction Contracts:		\$0	\$0	\$0	0	\$0			
71.0100	Demolition Works	\$0	\$0	\$247,314	4,820	\$4,570,000	\$4,817,314	1.81%	\$14.60
71.0401	Cast In place Piling	\$0	\$0	\$0	0	\$1,543,500	\$1,543,500	0.58%	\$4.68
71.0402	General Construction - Substructures	\$0	\$557,425	\$2,098,059	36,921	\$150,899	\$2,806,383	1.06%	\$8.50
71.0403	General Construction - Superstructures	\$0	\$75,000	\$2,966,418	42,861	\$3,929,400	\$6,970,818	2.62%	\$21.12
Subtotal - Civil / Structural Construction Contracts:		\$0	\$632,425	\$5,311,792	84,603	\$10,193,799	\$16,138,015	6.07%	\$48.90
Mechanical Construction Contracts:		\$0	\$0	\$0	0	\$0			
72.0401	Plant Piping Installation	\$0	\$0	\$5,010,837	79,499	\$0	\$5,010,837	1.89%	\$15.18
72.0403	Duct and Reactor Insulation	\$0	\$0	\$0	0	\$4,006,000	\$4,006,000	1.51%	\$12.14
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	\$20,567,445	\$20,567,445	7.74%	\$62.33
77.0000	Mechanical Construction	\$0	\$0	\$11,972,338	195,786	\$0	\$11,972,338	4.51%	\$36.28
Subtotal - Mechanical Construction Contracts:		\$0	\$0	\$16,983,176	\$275,286	\$25,256,695	\$42,239,871	15.90%	\$128.00
Electrical / Control Construction Contracts:		\$0	\$0	\$0	0	\$0			
73.0201	Electrical Equipment Erection	\$0	\$641,988	\$12,367,781	197,948	\$26,100	\$13,035,869	4.91%	\$39.50
74.0201	Control & Instrumentation Installation	\$0	\$0	\$1,129,467	18,077	\$0	\$1,129,467	0.43%	\$3.42
Subtotal - Electrical / Control Construction Contracts:		\$0	\$641,988	\$13,497,248	216,025	\$26,100	\$14,165,335	5.33%	\$42.93
Construction Indirects & Service Contracts:		\$0	\$0	\$0	0	\$0			
78.0000	Service Contracts & Construction Indirects	\$0	\$5,602,259	\$6,306,476	135,832	\$18,064,623	\$29,973,358	11.28%	\$90.83
78.4000	Warranty	\$0	\$0	\$0	0	\$277,000	\$277,000	0.10%	\$0.84
Subtotal - Construction Indirects & Service Contracts:		\$0	\$5,602,259	\$6,306,476	135,832	\$18,341,623	\$30,250,358	11.38%	\$91.67
Subtotal - Construction Costs:		\$0	\$6,876,671	\$42,098,691	711,745	\$53,818,217	\$102,793,579	38.68%	\$311.50
Subtotal - Direct Costs:		\$50,807,703	\$15,357,335	\$42,098,691	711,745	\$74,810,852	\$183,074,580	68.89%	\$554.77
Indirect Costs:		\$0	\$0	\$0	0	\$0			
99.1100	Engineering Costs (Includes G&A)	\$0	\$0	\$7,052,000	172,000	\$10,479,272	\$17,531,272	6.60%	\$53.13
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99.2500	Project Contingency	\$0	\$0	\$0	0	\$22,577,548	\$22,577,548	8.50%	\$68.42
99.2600	EPC Profit	\$0	\$0	\$0	0	\$17,385,000	\$17,385,000	6.54%	\$52.68
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