

LG&E - KU- Mill Creek Unit 2 PJFF Rev. B (Without SCR)

B&V PROJECT #: 168908
 PROJECT ESTIMATOR: Ron Fields
 PROJECT MANAGER: Tim Hillman
 PURPOSE OF ESTIMATE: Budgetary
 ESTIMATE DATE: April-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	\$653,400	\$39,460	\$0	0	\$6,791,635	\$7,484,495	4.28%	\$22.68
61.3801	Ductwork and breeching	\$1,087,200	\$0	\$0	0	\$0	\$1,087,200	0.62%	\$3.29
62.0000	Mechanical - Balance of Plant (BOP)	\$244,850	\$0	\$0	0	\$50,000	\$294,850	0.17%	\$0.89
63.0000	Electrical - BOP, Equipment, Raceway	\$240,000	\$5,663,266	\$0	0	\$5,000,000	\$10,903,266	6.24%	\$33.04
63.3002	VFDs, Motors and Couplings	\$3,179,200	\$0	\$0	0	\$0	\$3,179,200	1.82%	\$9.63
63.3603	Switchgear and MCCs	\$2,164,000	\$0	\$0	0	\$0	\$2,164,000	1.24%	\$6.56
63.3802	SUS Transformers	\$452,482	\$0	\$0	0	\$0	\$452,482	0.26%	\$1.37
63.3803	Aux Transformer	\$562,000	\$0	\$0	0	\$0	\$562,000	0.32%	\$1.70
63.4400	345 kV Transmission Lines Relocation	\$0	\$0	\$0	0	\$1,000,000	\$1,000,000	0.57%	\$3.03
64.0000	Control - DCS, Instrumentation	\$876,000	\$64,350	\$0	0	\$0	\$940,350	0.54%	\$2.85
64.0407	On-line Performance Monitoring - Neural Network	\$0	\$0	\$0	0	\$570,000	\$570,000	0.33%	\$1.73
65.3120	Fabric filter	\$13,000,000	\$0	\$0	0	\$0	\$13,000,000	7.44%	\$39.39
65.3210	Sorbent Injection	\$2,000,000	\$0	\$0	0	\$0	\$2,000,000	1.14%	\$6.06
65.3500	H-PAC Mercury Control	\$1,000,000	\$0	\$0	0	\$0	\$1,000,000	0.57%	\$3.03
66.1000	Piping & Tubing	\$166,918	\$0	\$0	0	\$0	\$166,918	0.10%	\$0.51
66.2070	Pipe Supports	\$0	\$434,438	\$0	0	\$0	\$434,438	0.25%	\$1.32
66.3000	Valves and Accessories	\$0	\$23,200	\$0	0	\$0	\$23,200	0.01%	\$0.07
67.0414	Fly Ash Handling System	\$0	\$0	\$0	0	\$4,600,000	\$4,600,000	2.63%	\$13.94
67.9300	Air Compressors, Dryers, & Air Receivers	\$250,000	\$0	\$0	0	\$0	\$250,000	0.14%	\$0.76
67.9532	ID Fans	\$1,800,000	\$0	\$0	0	\$0	\$1,800,000	1.03%	\$5.45
Subtotal Purchase Contracts:		\$27,676,050	\$6,224,714	\$0	0	\$18,011,635	\$51,912,399	29.72%	\$157.31

Construction Contracts:

71.0100	Demolition works	\$0	\$0	\$124,170	2,420	\$620,000	\$744,170	0.43%	\$2.26
71.0401	Civil / Structural Construction - Cast in -place Piling	\$0	\$0	\$0	0	\$1,487,500	\$1,487,500	0.85%	\$4.51
71.0402	Civil / Structural Construction - Super Structures	\$0	\$0	\$1,075,601	15,541	\$3,465,000	\$4,540,601	2.60%	\$13.76
71.0403	Civil / Structural Construction - Sub-Structures	\$0	\$653,415	\$2,102,925	36,995	\$148,474	\$2,904,814	1.66%	\$8.80
72.0000	Mechanical / Chemical Construction	\$0	\$0	\$12,349,762	200,354	\$2,689,250	\$15,039,012	8.61%	\$45.57
73.0000	Electrical / Control Construction	\$0	\$501,212	\$9,258,965	148,191	\$26,100	\$9,786,277	5.60%	\$29.66
75.3200	Mechanical - Scrubber Refurbishment	\$0	\$0	\$0	0	\$23,032,467	\$23,032,467	13.18%	\$69.80
78.0000	Service Contracts & Construction Indirects	\$0	\$2,739,383	\$3,395,447	72,331	\$10,732,310	\$16,867,140	9.66%	\$51.11
Subtotal Construction Contracts:		\$0	\$3,894,010	\$28,306,871	475,832	\$42,201,101	\$74,401,981	42.59%	\$225.46

Total Direct Costs

\$27,676,050	\$10,118,723	\$28,306,871	475,832	\$60,212,736	\$126,314,380	72.31%	\$382.77
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Indirect Costs:

99.1100	Engineering Costs (Includes G&A)	\$0	\$0	\$2,460,000	60,000	\$3,655,560	\$6,115,560	3.50%	\$18.53
99.1200	EPC Construction Management (Includes G&A)	\$0	\$67,527	\$5,208,897	114,683	\$7,381,479	\$12,657,902	7.25%	\$38.36
99.1500	Project Insurance	\$0	\$0	\$0	0	\$2,298,392	\$2,298,392	1.32%	\$6.96
99.1600	Performance Bond	\$0	\$0	\$0	0	\$985,025	\$985,025	0.56%	\$2.98
99.1900	Sales Tax 6% on indirect materials and services	\$0	\$50,917	\$0	0	\$0	\$50,917	0.03%	\$0.15
99.2500	Project Contingency 10%	\$0	\$0	\$0	0	\$14,842,218	\$14,842,218	8.50%	\$44.98
99.2600	EPC Profit	\$0	\$0	\$0	0	\$11,429,000	\$11,429,000	6.54%	\$34.63
Total Indirect Costs		\$0	\$118,444	\$7,668,897	174,683	\$40,591,673	\$48,379,014	27.69%	\$146.60

Total Overnight (April 2011) EPC Capital Costs:

\$27,676,050	\$10,237,167	\$35,975,768	650,515	\$100,804,409	\$174,693,394	100.00%	\$529.37
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\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
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B&V PROJECT #: 168908
 PROJECT ESTIMATOR: Ron Fields
 PROJECT MANAGER: Tim Hillman
 PURPOSE OF ESTIMATE: Budgetary
 ESTIMATE DATE: April-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	\$1,740,600	\$39,460	\$0	0	\$6,791,635	\$8,571,695	4.91%	\$25.97
62.0000	Mechanical	\$2,461,768	\$457,638	\$0	0	\$4,650,000	\$7,569,406	4.33%	\$22.94
63.0000	Electrical	\$6,597,682	\$5,663,266	\$0	0	\$6,000,000	\$18,260,948	10.45%	\$55.34
64.0000	Control	\$876,000	\$64,350	\$0	0	\$570,000	\$1,510,350	0.86%	\$4.58
65.0000	Chemical	\$16,000,000	\$0	\$0	0	\$0	\$16,000,000	9.16%	\$48.48

Subtotal Purchase Contracts: \$27,676,050 \$6,224,714 \$0 0 \$18,011,635 \$51,912,399 29.72% \$157.31

Construction Contracts:

71.0000	Civil / Structural Construction	\$0	\$653,415	\$3,302,696	54,957	\$5,720,974	\$9,677,085	5.54%	\$29.32
72.0000	Mechanical / Chemical Construction	\$0	\$0	\$12,349,762	200,354	\$25,721,717	\$38,071,479	21.79%	\$115.37
73.0000	Electrical / Control Construction	\$0	\$501,212	\$9,258,965	148,191	\$26,100	\$9,786,277	5.60%	\$29.66
78.0000	Service Contracts & Construction Indirects	\$0	\$2,739,383	\$3,395,447	72,331	\$10,732,310	\$16,867,140	9.66%	\$51.11

Subtotal Construction Contracts: \$0 \$3,894,010 \$28,306,871 475,832 \$42,201,101 \$74,401,981 42.59% \$225.46

Total Direct Costs \$27,676,050 \$10,118,723 \$28,306,871 475,832 \$60,212,736 \$126,314,380 72.31% \$382.77

Indirect Costs:

99.1100	Engineering Costs (With G&A)	\$0	\$0	\$2,460,000	60,000	\$3,655,560	\$6,115,560	3.50%	\$18.53
99.1200	Construction Management (With G&A)	\$0	\$67,527	\$5,208,897	114,683	\$7,381,479	\$12,657,902	7.25%	\$38.36
99.1500	Project Insurance	\$0	\$0	\$0	0	\$2,298,392	\$2,298,392	1.32%	\$6.96
99.1600	Performance Bond	\$0	\$0	\$0	0	\$985,025	\$985,025	0.56%	\$2.98
99.1900	Sales Tax 6% on indirect materials and services	\$0	\$50,917	\$0	0	\$0	\$50,917	0.03%	\$0.15
99.2500	Project Contingency	\$0	\$0	\$0	0	\$14,842,218	\$14,842,218	8.50%	\$44.98
99.2600	EPC Profit	\$0	\$0	\$0	0	\$11,429,000	\$11,429,000	6.54%	\$34.63

Total Indirect Costs \$0 \$118,444 \$7,668,897 174,683 \$40,591,673 \$48,379,014 27.69% \$146.60

Total Overnight (April 2011) EPC Capital Costs: \$27,676,050 \$10,237,167 \$35,975,768 650,515 \$100,804,409 \$174,693,394 100.00% \$529.37

LG&E - KU- Mill Creek Unit 2 PJFF Rev. B (Without SCR)

B&V PROJECT #: 168908
 PROJECT ESTIMATOR: Ron Fields
 PROJECT MANAGER: Tim Hillman
 PURPOSE OF ESTIMATE: Budgetary
 ESTIMATE DATE: April-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			TOTAL \$
Civil / Structural Purchase Contracts:									
61.0200	Buildings - Insulated panels	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
61.0300	Grating	\$0	\$20,200	\$0	0	\$0	\$20,200	0.01%	\$0.06
61.3801	Ductwork and Breeching	\$1,087,200	\$0	\$0	0	\$0	\$1,087,200	0.62%	\$3.29
61.4001	Structural Steel	\$653,400	\$0	\$0	0	\$6,761,395	\$7,414,795	4.24%	\$22.47
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	0.02%	\$0.09
Subtotal - Civil / Structural Purchase Contracts:		\$1,740,600	\$39,460	\$0	0	\$6,791,635	\$8,571,695	4.91%	\$25.97
Mechanical Purchase Contracts:									
62.0205	Continuous Emissions Monitoring (CEM)	\$0	\$0	\$0	0	\$0	\$0	0.03%	\$0.15
62.2201	Large Bore Pipe (Hot Systems)	\$244,850	\$0	\$0	0	\$0	\$244,850	0.14%	\$0.74
62.2418	Primary Flow elements	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
66.1000	Piping & Tubing	\$166,918	\$0	\$0	0	\$0	\$166,918	0.10%	\$0.51
66.2070	Pipe Supports	\$0	\$434,438	\$0	0	\$0	\$434,438	0.25%	\$1.32
66.3000	Valves and Accessories	\$0	\$23,200	\$0	0	\$0	\$23,200	0.01%	\$0.07
67.0414	Fly Ash Handling system	\$0	\$0	\$0	0	\$4,600,000	\$4,600,000	2.63%	\$13.94
67.9300	Air Compressors, Dryers, & Air Receivers	\$250,000	\$0	\$0	0	\$0	\$250,000	0.14%	\$0.76
67.9532	ID Fans	\$1,800,000	\$0	\$0	0	\$0	\$1,800,000	1.03%	\$5.45
Subtotal - Mechanical Purchase Contracts:		\$2,461,768	\$457,638	\$0	\$0	\$4,650,000	\$7,569,406	4.33%	\$22.94
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	\$2,220	\$0	0	\$0	\$2,220	0.00%	\$0.01
63.0601	Plant Communication System	\$0	\$105,993	\$0	0	\$0	\$105,993	0.06%	\$0.32
63.0801	Cable - 8-15KV Power	\$0	\$447,282	\$0	0	\$0	\$447,282	0.26%	\$1.36
63.0804	Cable - 300-600V Instrument & T/C	\$0	\$24,750	\$0	0	\$0	\$24,750	0.01%	\$0.08
63.0802	Cable and Raceway	\$0	\$1,345,918	\$0	0	\$0	\$1,345,918	0.77%	\$4.08
63.1201	Iso-Phase Bus Duct	\$180,000	\$0	\$0	0	\$0	\$180,000	0.10%	\$0.55
63.1202	Cable Bus	\$0	\$2,921,560	\$0	0	\$0	\$2,921,560	1.67%	\$8.85
63.2000	Metering & Relaying	\$60,000	\$0	\$0	0	\$0	\$60,000	0.03%	\$0.18
63.2802	Batteries - DC Equipment	\$0	\$442,750	\$0	0	\$0	\$442,750	0.25%	\$1.34
63.2805	PanelBoards	\$0	\$60,000	\$0	0	\$0	\$60,000	0.03%	\$0.18
63.3002	Variable Frequency Drives	\$3,179,200	\$0	\$0	0	\$0	\$3,179,200	1.82%	\$9.63
63.3603	Switchgear & MCCs	\$2,164,000	\$0	\$0	0	\$0	\$2,164,000	1.24%	\$6.56
63.3802	SUS Transformers	\$452,482	\$0	\$0	0	\$0	\$452,482	0.26%	\$1.37
63.3803	Aux Transformer	\$562,000	\$0	\$0	0	\$0	\$562,000	0.32%	\$1.70
63.4400	345 kV Transmission Lines Relocation	\$0	\$0	\$0	0	\$1,000,000	\$1,000,000	0.57%	\$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	\$105,993	\$0	0	\$0	\$105,993	0.06%	\$0.32
63.5021	Raceway - Cable Tray	\$0	\$0	\$0	0	\$5,000,000	\$5,000,000	2.86%	\$15.15
63.5022	Raceway - General	\$0	\$184,800	\$0	0	\$0	\$184,800	0.11%	\$0.56
Subtotal - Electrical Purchase Contracts:		\$6,597,682	\$5,663,266	\$0	0	\$6,000,000	\$18,260,948	10.45%	\$55.34
Control Purchase Contracts:									
64.0202	DCS / PLC mods	\$576,000	\$0	\$0	0	\$0	\$576,000	0.33%	\$1.75
64.0407	On-line Performance Monitoring - Neural Network	\$0	\$0	\$0	0	\$570,000	\$570,000	0.33%	\$1.73
64.1003	Instrumentation	\$300,000	\$0	\$0	0	\$0	\$300,000	0.17%	\$0.91
64.1602	Instr. Racks and Enclosures	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
64.5010	Tubing	\$0	\$64,350	\$0	0	\$0	\$64,350	0.04%	\$0.20
Subtotal - Control Purchase Contracts:		\$876,000	\$64,350	\$0	0	\$570,000	\$1,510,350	0.86%	\$4.58
Chemical Purchase Contracts:									
65.3120	Fabric Filter	\$13,000,000	\$0	\$0	0	\$0	\$13,000,000	7.44%	\$39.39
65.3210	Sorbent Injection	\$2,000,000	\$0	\$0	0	\$0	\$2,000,000	1.14%	\$6.06
65.3310	Selective Catalytic Redcution system	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
65.3500	H -PAC Mecury Control	\$1,000,000	\$0	\$0	0	\$0	\$1,000,000	0.57%	\$3.03
Subtotal - Chemical Purchase Contracts:		\$16,000,000	\$0	\$0	0	\$0	\$16,000,000	9.16%	\$48.48
Subtotal Purchase Contracts:		\$27,676,050	\$6,224,714	\$0	0	\$18,011,635	\$51,912,399	29.72%	\$157.31

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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	\$124,170	2,420	\$620,000	\$744,170	0.43%	\$2.26
71.0401	Cast In place Piling	\$0	\$0	\$0	0	\$1,487,500	\$1,487,500	0.85%	\$4.51
71.0402	General Construction - Substructures	\$0	\$653,415	\$2,102,925	36,995	\$148,474	\$2,904,814	1.66%	\$8.80
71.0403	General Construction - Superstructures	\$0	\$0	\$1,075,601	15,541	\$3,465,000	\$4,540,601	2.60%	\$13.76
Subtotal - Civil / Structural Construction Contracts:		\$0	\$653,415	\$3,302,696	54,957	\$5,720,974	\$9,677,085	5.54%	\$29.32
Mechanical Construction Contracts:		\$0	\$0	\$0	0	\$0			
72.0401	Plant Piping Installation	\$0	\$0	\$3,289,778	52,194	\$0	\$3,289,778	1.88%	\$9.97
72.0403	Duct and Reactor Insulation	\$0	\$0	\$0	0	\$2,006,000	\$2,006,000	1.15%	\$6.08
72.0800	Fire Protection & Detection Systems	\$0	\$0	\$0	0	\$683,250	\$683,250	0.39%	\$2.07
75.3200	Mechanical - Scrubber Refurbishment	\$0	\$0	\$0	0	\$23,032,467	\$23,032,467	13.18%	\$69.80
77.0000	Mechanical Construction	\$0	\$0	\$9,059,984	148,160	\$0	\$9,059,984	5.19%	\$27.45
Subtotal - Mechanical Construction Contracts:		\$0	\$0	\$12,349,762	\$200,354	\$25,721,717	\$38,071,479	21.79%	\$115.37
Electrical / Control Construction Contracts:		\$0	\$0	\$0	0	\$0			
73.0201	Electrical Equipment Erection	\$0	\$501,212	\$8,587,180	137,439	\$26,100	\$9,114,492	5.22%	\$27.62
74.0201	Control & Instrumentation Installation	\$0	\$0	\$671,785	10,752	\$0	\$671,785	0.38%	\$2.04
Subtotal - Electrical / Control Construction Contracts:		\$0	\$501,212	\$9,258,965	148,191	\$26,100	\$9,786,277	5.60%	\$29.66
Construction Indirects & Service Contracts:		\$0	\$0	\$0	0	\$0			
78.0000	Service Contracts & Construction Indirects	\$0	\$2,739,383	\$3,395,447	72,331	\$10,540,610	\$16,675,440	9.55%	\$50.53
78.4000	Warranty	\$0	\$0	\$0	0	\$191,700	\$191,700	0.11%	\$0.58
Subtotal - Construction Indirects & Service Contracts:		\$0	\$2,739,383	\$3,395,447	72,331	\$10,732,310	\$16,867,140	9.66%	\$51.11
Subtotal - Construction Costs:		\$0	\$3,894,010	\$28,306,871	475,832	\$42,201,101	\$74,401,981	42.59%	\$225.46
Subtotal - Direct Costs:		\$27,676,050	\$10,118,723	\$28,306,871	475,832	\$60,212,736	\$126,314,380	72.31%	\$382.77
Indirect Costs:		\$0	\$0	\$0	0	\$0			
99.1100	Engineering Costs (Includes G&A)	\$0	\$0	\$2,460,000	60,000	\$3,655,560	\$6,115,560	3.50%	\$18.53
99.1200	EPC Construction Management (Includes G&A)	\$0	\$67,527	\$5,208,897	114,683	\$7,381,479	\$12,657,902	7.25%	\$38.36
99.1500	Project Insurance	\$0	\$0	\$0	0	\$2,298,392	\$2,298,392	1.32%	\$6.96
99.1600	Performance Bond	\$0	\$0	\$0	0	\$985,025	\$985,025	0.56%	\$2.98
99.1900	Sales Tax 6% on indirect materials and services	\$0	\$50,917	\$0	0	\$0	\$50,917	0.03%	\$0.15
99.2500	Project Contingency	\$0	\$0	\$0	0	\$14,842,218	\$14,842,218	8.50%	\$44.98
99.2600	EPC Profit	\$0	\$0	\$0	0	\$11,429,000	\$11,429,000	6.54%	\$34.63
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