

LG&E - KU Mill Creek Unit 4 Wet FGD & PJFF Arrangement "B" 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 525
		Engr Equip	Commodities	Labor	Manhours	Other		
		Material \$	Material \$	Labor \$	Manhours	Other	TOTAL \$	

ESTIMATE SUMMARY

Purchase Contracts:

61.0000	Civil / Structural	\$1,902,592	\$50,000	\$0	0	\$1,737,190	\$3,689,782	1.15%	\$7.03
61.3801	Ductwork and Breeching	\$2,192,400	\$286,635	\$0	0	\$750,000	\$3,229,035	1.01%	\$6.15
62.0000	Mechanical - Balance of Plant (BOP)	\$96,500	\$0	\$0	0	\$0	\$96,500	0.03%	\$0.18
63.0000	Electrical - BOP, Equipment, Raceway	\$350,000	\$3,104,351	\$0	0	\$0	\$3,454,351	1.08%	\$6.58
63.1202	Bus Duct	\$0	\$3,640,040	\$0	0	\$0	\$3,640,040	1.13%	\$6.93
63.3002	VFDs, Motors and Couplings	\$3,086,000	\$0	\$0	0	\$0	\$3,086,000	0.96%	\$5.88
63.3603	Switchgear & MCCs	\$3,084,000	\$0	\$0	0	\$0	\$3,084,000	0.96%	\$5.87
63.3802	SUS Transformers	\$479,504	\$0	\$0	0	\$0	\$479,504	0.15%	\$0.91
63.3803	Aux Transformer	\$1,432,000	\$0	\$0	0	\$0	\$1,432,000	0.45%	\$2.73
64.0000	Control - DCS, Instrumentation	\$1,332,100	\$161,400	\$0	0	\$0	\$1,493,500	0.47%	\$2.84
64.0407	On-line Performance Monitoring - Neural Network	\$570,000	\$0	\$0	0	\$0	\$570,000	0.18%	\$1.09
65.3120	Fabric Filter	\$18,000,000	\$0	\$0	0	\$0	\$18,000,000	5.61%	\$34.29
65.3210	Scrubber FGD	\$50,300,000	\$0	\$0	0	\$0	\$50,300,000	15.68%	\$95.81
65.3230	Sorbent Injection System	\$2,000,000	\$0	\$0	0	\$0	\$2,000,000	0.62%	\$3.81
65.3500	H-PAC Mercury Control System	\$1,000,000	\$0	\$0	0	\$0	\$1,000,000	0.31%	\$1.90
65.3600	CEMs	\$850,000	\$0	\$0	0	\$0	\$850,000	0.26%	\$1.62
66.1000	Piping & Tubing	\$988,147	\$10,000	\$0	0	\$0	\$998,147	0.31%	\$1.90
66.2070	Pipe Supports	\$0	\$540,000	\$0	0	\$0	\$540,000	0.17%	\$1.03
66.3000	Valves and Accessories	\$2,104,000	\$0	\$0	0	\$0	\$2,104,000	0.66%	\$4.01
67.0414	Fly Ash Transfer System	\$0	\$0	\$0	0	\$6,800,000	\$6,800,000	2.12%	\$12.95
67.9300	Air Compressors, Dryers, & Air Receivers	\$250,000	\$0	\$0	0	\$0	\$250,000	0.08%	\$0.48
67.9532	ID Booster Fans	\$2,100,000	\$0	\$0	0	\$0	\$2,100,000	0.65%	\$4.00
Subtotal Purchase Contracts:		\$92,117,243	\$7,792,426	\$0	0	\$9,287,190	\$109,196,859	34.03%	\$207.99

Construction Contracts:

71.0100	Demolition works	\$0	\$0	\$0	0	\$460,000	\$460,000	0.14%	\$0.88
71.0203	Civil / Structural Construction - Site finishes	\$0	\$0	\$82,096	1,600	\$0	\$82,096	0.03%	\$0.16
71.0402	Civil / Structural Construction - Super Structures	\$0	\$249,380	\$4,702,740	67,949	\$5,718,750	\$10,670,870	3.33%	\$20.33
71.0403	Civil / Structural Construction - Sub-Structures	\$0	\$1,952,594	\$5,778,732	99,993	\$3,466,182	\$11,197,507	3.49%	\$21.33
71.0411	Civil / Structural Construction - Chimney	\$0	\$0	\$0	0	\$19,000,000	\$19,000,000	5.92%	\$36.19
72.0000	Mechanical / Chemical Construction	\$0	\$0	\$25,347,212	411,646	\$6,125,350	\$31,472,562	9.81%	\$59.95
73.0000	Electrical / Control Construction	\$0	\$264,200	\$9,835,249	157,414	\$383,400	\$10,482,849	3.27%	\$19.97
78.0000	Service Contracts & Construction Indirects	\$0	\$5,015,771	\$6,217,016	132,437	\$19,790,777	\$31,023,564	9.67%	\$59.09
Subtotal Construction Contracts:		\$0	\$7,481,945	\$51,963,045	871,039	\$54,944,459	\$114,389,449	35.65%	\$217.88

Total Direct Costs

\$92,117,243	\$15,274,370	\$51,963,045	871,039	\$64,231,649	\$223,586,307	69.68%	\$425.88
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Indirect Costs:

99.1100	Engineering Costs (With G&A)	\$0	\$0	\$8,036,000	196,000	\$11,941,496	\$19,977,496	6.23%	\$38.05
99.1200	EPC Construction Management (With G&A)	\$0	\$123,640	\$9,537,417	209,982	\$13,515,383	\$23,176,441	7.22%	\$44.15
99.1500	Project Insurance	\$0	\$0	\$0	0	\$4,045,918	\$4,045,918	1.26%	\$7.71
99.1600	Performance Bond	\$0	\$0	\$0	0	\$1,733,965	\$1,733,965	0.54%	\$3.30
99.1900	Sales Tax 6% of Indirect materials and Services	\$0	\$0	\$0	0	\$93,229	\$93,229	0.03%	\$0.18
99.2500	Project Contingency 10%	\$0	\$0	\$0	0	\$27,261,335	\$27,261,335	8.50%	\$51.93
99.2600	EPC Profit	\$0	\$0	\$0	0	\$20,991,000	\$20,991,000	6.54%	\$39.98
Total Indirect Costs		\$0	\$123,640	\$17,573,417	405,982	\$79,582,326	\$97,279,383	30.32%	\$185.29

Total Overnight (April 2011) EPC Captial Costs:

\$92,117,243	\$15,398,011	\$69,536,462	1,277,022	\$143,813,975	\$320,865,690	100.00%	\$611.17
\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00

LG&E - KU- Mill Creek Unit 4 Wet FGD & PJFF- Arrangement "B" 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 525
		Engr Equip	Commodities					
		Material \$	Material \$	Labor \$	Manhours	Other		

ESTIMATE SUMMARY

Purchase Contracts:

61.0000	Civil / Structural	\$4,094,992	\$336,635	\$0	0	\$2,487,190	\$6,918,817	2.16%	\$13.18
62.0000	Mechanical	\$5,538,647	\$550,000	\$0	0	\$6,800,000	\$12,888,647	4.02%	\$24.55
63.0000	Electrical	\$8,431,504	\$6,744,391	\$0	0	\$0	\$15,175,895	4.73%	\$28.91
64.0000	Control	\$1,332,100	\$161,400	\$0	0	\$570,000	\$2,063,500	0.64%	\$3.93
65.0000	Chemical	\$72,150,000	\$0	\$0	0	\$0	\$72,150,000	22.49%	\$137.43
Subtotal Purchase Contracts:		\$91,547,243	\$7,792,426	\$0	0	\$9,857,190	\$109,196,859	34.03%	\$207.99

Construction Contracts:

71.0402	Civil / Structural Construction - Substructures	\$0	\$2,201,974	\$10,563,567	169,542	\$28,644,932	\$41,410,473	12.91%	\$78.88
71.0403	Civil / Structural Construction - Superstructures	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
72.0000	Mechanical / Chemical Construction	\$0	\$0	\$25,347,212	411,646	\$6,125,350	\$31,472,562	9.81%	\$59.95
73.0000	Electrical / Control Construction	\$0	\$264,200	\$9,835,249	157,414	\$383,400	\$10,482,849	3.27%	\$19.97
78.0000	Service Contracts & Construction Indirects	\$0	\$5,015,771	\$6,217,016	132,437	\$19,790,777	\$31,023,564	9.67%	\$59.09
Subtotal Construction Contracts:		\$0	\$7,481,945	\$51,963,045	871,039	\$54,944,459	\$114,389,449	35.65%	\$217.88

Total Direct Costs

\$91,547,243	\$15,274,370	\$51,963,045	871,039	\$64,801,649	\$223,586,307	69.68%	\$425.88
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Indirect Costs:

99.1100	Engineering Costs (With G&A)	\$0	\$0	\$8,036,000	196,000	\$11,941,496	\$19,977,496	6.23%	\$38.05
99.1200	Construction Management (With G&A)	\$0	\$123,640	\$9,537,417	209,982	\$13,515,383	\$23,176,441	7.22%	\$44.15
99.1500	Project Insurance	\$0	\$0	\$0	0	\$4,045,918	\$4,045,918	1.26%	\$7.71
99.1600	Performance Bond	\$0	\$0	\$0	0	\$1,733,965	\$1,733,965	0.54%	\$3.30
99.1900	Sales Tax 6% of Indirect materials and Services	\$0	\$0	\$0	0	\$93,229	\$93,229	0.03%	\$0.18
99.2500	Project Contingency	\$0	\$0	\$0	0	\$27,261,335	\$27,261,335	8.50%	\$51.93
99.2600	EPC Profit	\$0	\$0	\$0	0	\$20,991,000	\$20,991,000	6.54%	\$39.98
Total Indirect Costs		\$0	\$123,640	\$17,573,417	405,982	\$79,582,326	\$97,279,383	30.32%	\$185.29

Total Overnight (April 2011) EPC Captial Costs:

\$91,547,243	\$15,398,011	\$69,536,462	1,277,022	\$144,383,975	\$320,865,690	100.00%	\$611.17
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LG&E - KU- Mill Creek Unit 4 Wet FGD & PJFF- Arrangement "B" 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 525	
		Engr Equip Material \$	Commodities Material \$	Labor \$	Manhours	Other			TOTAL \$
Civil / Structural Purchase Contracts:									
61.0200	Buildings - Insulated panels	\$0	\$40,000	\$0	0	\$1,687,190	\$1,727,190	0.54%	\$3.29
61.3601	Chain Link Fence	\$0	\$10,000	\$0	0	\$50,000	\$60,000	0.02%	\$0.11
61.3801	Ductwork and Breeching	\$2,192,400	\$286,635	\$0	0	\$750,000	\$3,229,035	1.01%	\$6.15
Subtotal - Civil / Structural Purchase Contracts:		\$4,094,992	\$336,635	\$0	0	\$2,487,190	\$6,918,817	2.16%	\$13.18
Mechanical Purchase Contracts:									
62.2418	Primary Flow elements	\$56,500	\$0	\$0	0	\$0	\$56,500	0.02%	\$0.11
62.2613	Pumps -FGD	\$40,000	\$0	\$0	0	\$0	\$40,000	0.01%	\$0.08
66.1000	Piping & Tubing	\$988,147	\$10,000	\$0	0	\$0	\$998,147	0.31%	\$1.90
66.2070	Pipe Supports	\$0	\$540,000	\$0	0	\$0	\$540,000	0.17%	\$1.03
66.3000	Valves and Accessories	\$2,104,000	\$0	\$0	0	\$0	\$2,104,000	0.66%	\$4.01
67.0414	Fly Ash Transfer System	\$0	\$0	\$0	0	\$6,800,000	\$6,800,000	2.12%	\$12.95
67.9300	Air Compressors, Dryers, & Air Receivers	\$250,000	\$0	\$0	0	\$0	\$250,000	0.08%	\$0.48
67.9532	ID Booster Fans	\$2,100,000	\$0	\$0	0	\$0	\$2,100,000	0.65%	\$4.00
Subtotal - Mechanical Purchase Contracts:		\$5,538,647	\$550,000	\$0	\$0	\$6,800,000	\$12,888,647	4.02%	\$24.55
Electrical Purchase Contracts:									
63.0000	Electrical Equipment & Materials	\$0	\$3,000	\$0	0	\$0	\$3,000	0.00%	\$0.01
63.0601	Plant Communication System	\$0	\$50,000	\$0	0	\$0	\$50,000	0.02%	\$0.10
63.0801	Cable - 8-15KV Power	\$0	\$1,567,800	\$0	0	\$0	\$1,567,800	0.49%	\$2.99
63.0804	Cable - 300-600V Instrument & T/C	\$0	\$17,923	\$0	0	\$0	\$17,923	0.01%	\$0.03
63.0802	Cable - 600V Power	\$0	\$106,408	\$0	0	\$0	\$106,408	0.03%	\$0.20
63.1001	Welding System	\$0	\$28,600	\$0	0	\$0	\$28,600	0.01%	\$0.05
63.1201	Iso-Phase Bus Duct	\$230,000	\$0	\$0	0	\$0	\$230,000	0.07%	\$0.44
63.1202	Non-Seg or SegregatedPhase Bus Duct	\$0	\$3,640,040	\$0	0	\$0	\$3,640,040	1.13%	\$6.93
63.2000	Metering & Relaying	\$120,000	\$0	\$0	0	\$0	\$120,000	0.04%	\$0.23
63.2802	Batteries - DC Equipment	\$0	\$442,750	\$0	0	\$0	\$442,750	0.14%	\$0.84
63.2805	PanelBoards	\$0	\$60,000	\$0	0	\$0	\$60,000	0.02%	\$0.11
63.3002	VFDs, Motors and Couplings	\$3,086,000	\$0	\$0	0	\$0	\$3,086,000	0.96%	\$5.88
63.3603	Switchgear & MCCs	\$3,084,000	\$0	\$0	0	\$0	\$3,084,000	0.96%	\$5.87
63.3802	SUS Transformers	\$479,504	\$0	\$0	0	\$0	\$479,504	0.15%	\$0.91
63.3803	Aux Transformer	\$1,432,000	\$0	\$0	0	\$0	\$1,432,000	0.45%	\$2.73
63.5000	Junction Boxes	\$0	\$13,100	\$0	0	\$0	\$13,100	0.00%	\$0.02
63.5010	Grounding Materials and Equipment	\$0	\$127,600	\$0	0	\$0	\$127,600	0.04%	\$0.24
63.5020	Raceway - Duct Bank Materials	\$0	\$155,000	\$0	0	\$0	\$155,000	0.05%	\$0.30
63.5021	Raceway - Cable Tray	\$0	\$132,170	\$0	0	\$0	\$132,170	0.04%	\$0.25
63.5022	Raceway - General	\$0	\$400,000	\$0	0	\$0	\$400,000	0.12%	\$0.76
Subtotal - Electrical Purchase Contracts:		\$8,431,504	\$6,744,391	\$0	0	\$0	\$15,175,895	4.73%	\$28.91
Control Purchase Contracts:									
64.0202	Distribution Control System	\$1,100,000	\$0	\$0	0	\$0	\$1,100,000	0.34%	\$2.10
64.0206	Instrument Valves	\$0	\$56,400	\$0	0	\$0	\$56,400	0.02%	\$0.11
64.0407	On-line Performance Monitoring - Neural Network	\$0	\$0	\$0	0	\$570,000	\$570,000	0.18%	\$1.09
64.1001	Transmitters - Pressure	\$61,500	\$0	\$0	0	\$0	\$61,500	0.02%	\$0.12
64.1003	Switches - Pressure	\$150,600	\$0	\$0	0	\$0	\$150,600	0.05%	\$0.29
64.1203	Thermocouple Assemblies & TWS	\$20,000	\$0	\$0	0	\$0	\$20,000	0.01%	\$0.04
64.1602	Instr. Racks and Enclosures	\$0	\$15,000	\$0	0	\$0	\$15,000	0.00%	\$0.03
64.5010	Tubing	\$0	\$90,000	\$0	0	\$0	\$90,000	0.03%	\$0.17
Subtotal - Control Purchase Contracts:		\$1,332,100	\$161,400	\$0	0	\$570,000	\$2,063,500	0.64%	\$3.93
Chemical Purchase Contracts:									
65.3120	Fabric Filter	\$18,000,000	\$0	\$0	0	\$0	\$18,000,000	5.61%	\$34.29
65.3210	Scrubber FGD	\$50,300,000	\$0	\$0	0	\$0	\$50,300,000	15.68%	\$95.81
65.3230	Sorbent Injection System	\$2,000,000	\$0	\$0	0	\$0	\$2,000,000	0.62%	\$3.81
65.3500	H -PAC Mercury Control	\$1,000,000	\$0	\$0	0	\$0	\$1,000,000	0.31%	\$1.90
65.3600	CEMs	\$850,000	\$0	\$0	0	\$0	\$850,000	0.26%	\$1.62
Subtotal - Chemical Purchase Contracts:		\$72,150,000	\$0	\$0	0	\$0	\$72,150,000	22.49%	\$137.43
Subtotal Purchase Contracts:		\$91,547,243	\$7,792,426	\$0	0	\$9,857,190	\$109,196,859	34.03%	\$207.99

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Contract Number	Description	PROJECT - TOTAL COSTS					% OF TOTAL C.V.	\$ PER KW 525
		Engr Equip	Commodities	Labor	Manhours	Other		
		Material \$	Material \$	Labor \$	Manhours	Other	TOTAL \$	
Civil / Structural Construction Contracts:		\$0	\$0	\$0	0	\$0		
71.0100	Demolition Works	\$0	\$0	\$0	0	\$460,000	\$460,000	0.14%
71.0203	Site Finishing	\$0	\$0	\$82,096	1,600	\$0	\$82,096	0.03%
71.0402	General Construction - Substructures	\$0	\$1,952,594	\$5,778,732	99,993	\$3,466,182	\$11,197,507	3.49%
71.0403	General Construction - Superstructures	\$0	\$249,380	\$4,702,740	67,949	\$5,718,750	\$10,670,870	3.33%
71.0411	Concrete Chimney	\$0	\$0	\$0	0	\$19,000,000	\$19,000,000	5.92%
Subtotal - Civil / Structural Construction Contracts:		\$0	\$2,201,974	\$10,563,567	169,542	\$28,644,932	\$41,410,473	12.91%
Mechanical Construction Contracts:		\$0	\$0	\$0	0	\$0		
72.0201	Mechanical Equipment Erection	\$0	\$0	\$814,454	13,312	\$0	\$814,454	0.25%
72.0401	Plant Piping Installation	\$0	\$0	\$5,854,078	92,878	\$0	\$5,854,078	1.82%
72.0403	Piping & Equipment Insulation	\$0	\$0	\$0	0	\$2,526,000	\$2,526,000	0.79%
72.0800	Fire Protection & Detection Systems	\$0	\$0	\$0	0	\$1,949,350	\$1,949,350	0.61%
77.0000	Mechanical Construction	\$0	\$0	\$18,678,679	305,457	\$0	\$18,678,679	5.82%
77.5450	Field Erected Tanks	\$0	\$0	\$0	0	\$1,650,000	\$1,650,000	0.51%
Subtotal - Mechanical Construction Contracts:		\$0	\$0	\$25,347,212	\$411,646	\$6,125,350	\$31,472,562	9.81%
Electrical / Control Construction Contracts:		\$0	\$0	\$0	0	\$0		
73.0201	Electrical Equipment Erection	\$0	\$264,200	\$9,047,225	144,802	\$383,400	\$9,694,825	3.02%
74.0201	Control & Instrumentation Installation	\$0	\$0	\$788,024	12,612	\$0	\$788,024	0.25%
Subtotal - Electrical / Control Construction Contracts:		\$0	\$264,200	\$9,835,249	157,414	\$383,400	\$10,482,849	3.27%
Construction Indirects & Service Contracts:		\$0	\$0	\$0	0	\$0		
78.0000	Service Contracts & Construction Indirects	\$0	\$5,015,771	\$6,217,016	132,437	\$19,439,777	\$30,672,564	9.56%
78.4000	Warranty	\$0	\$0	\$0	0	\$351,000	\$351,000	0.11%
Subtotal - Construction Indirects & Service Contracts:		\$0	\$5,015,771	\$6,217,016	132,437	\$19,790,777	\$31,023,564	9.67%
Subtotal - Construction Costs:		\$0	\$7,481,945	\$51,963,045	871,039	\$54,944,459	\$114,389,449	35.65%
Subtotal - Direct Costs:		\$91,547,243	\$15,274,370	\$51,963,045	871,039	\$64,801,649	\$223,586,307	69.68%
Indirect Costs:		\$0	\$0	\$0	0	\$0		
99.1100	Engineering Costs (With G&A)	\$0	\$0	\$8,036,000	196,000	\$11,941,496	\$19,977,496	6.23%
99.1200	EPC Construction Management (With G&A)	\$0	\$123,640	\$9,537,417	209,982	\$13,515,383	\$23,176,441	7.22%
99.1500	Project Insurance	\$0	\$0	\$0	0	\$4,045,918	\$4,045,918	1.26%
99.1600	Performance Bond	\$0	\$0	\$0	0	\$1,733,965	\$1,733,965	0.54%
99.1900	Sales Tax 6% of Indirect materials and Services	\$0	\$93,229	\$0	0	\$0	\$93,229	0.03%
99.2500	Project Contingency 10%	\$0	\$0	\$0	0	\$27,261,335	\$27,261,335	8.50%
99.2600	EPC Profit	\$0	\$0	\$0	0	\$20,991,000	\$20,991,000	6.54%
Subtotal - Indirect Costs:		\$0	\$216,869	\$17,573,417	405,982	\$79,489,097	\$97,279,383	30.32%
Total Overnight (April 2011) EPC Captial Costs:		\$91,547,243	\$15,491,239	\$69,536,462	1,277,022	\$144,290,746	\$320,865,690	100.00%