

LG&E - KU- E.W. Brown Unit 2 PJFF Without SCR Rev. A

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

ESTIMATE SUMMARY

Purchase Contracts:

61.0000	Civil / Structural	\$723,600	\$0	\$0	0	\$185,400	\$909,000	0.93%	\$5.05
61.3801	Ductwork and breeching	\$1,846,850	\$0	\$0	0	\$0	\$1,846,850	1.89%	\$10.26
62.0000	Mechanical - Balance of Plant (BOP)	\$176,150	\$0	\$0	0	\$50,000	\$226,150	0.23%	\$1.26
63.0000	Electrical - BOP, Equipment, Raceway	\$317,500	\$3,426,642	\$0	0	\$0	\$3,744,142	3.84%	\$20.80
63.3002	ID Fan Motors	\$430,000	\$0	\$0	0	\$0	\$430,000	0.44%	\$2.39
63.3603	Switchgear and MCCs	\$1,109,000	\$0	\$0	0	\$5,400	\$1,114,400	1.14%	\$6.19
63.3802	SUS Transformers	\$294,376	\$0	\$0	0	\$0	\$294,376	0.30%	\$1.64
63.3803	Aux Transformer	\$278,500	\$0	\$0	0	\$0	\$278,500	0.29%	\$1.55
64.0000	Control - DCS, Instrumentation	\$996,000	\$64,350	\$0	0	\$0	\$1,060,350	1.09%	\$5.89
64.0407	On-line Performance Monitoring - Neural Network	\$0	\$0	\$0	0	\$570,000	\$570,000	0.58%	\$3.17
65.3120	Fabric filter	\$5,300,000	\$0	\$0	0	\$0	\$5,300,000	5.43%	\$29.44
65.3210	Sorbent Injection	\$750,000	\$0	\$0	0	\$0	\$750,000	0.77%	\$4.17
65.3500	H-PAC Mercury Control	\$500,000	\$0	\$0	0	\$0	\$500,000	0.51%	\$2.78
66.1000	Piping & Tubing	\$166,918	\$0	\$0	0	\$0	\$166,918	0.17%	\$0.93
66.2070	Pipe Supports	\$0	\$434,438	\$0	0	\$0	\$434,438	0.45%	\$2.41
66.3000	Valves and Accessories	\$0	\$23,200	\$0	0	\$0	\$23,200	0.02%	\$0.13
67.0414	Fly Ash Handling System	\$0	\$0	\$0	0	\$4,600,000	\$4,600,000	4.71%	\$25.56
67.9300	Air Compressors, Dryers, & Air Receivers	\$250,000	\$0	\$0	0	\$0	\$250,000	0.26%	\$1.39
67.9532	ID Fans	\$1,000,000	\$0	\$0	0	\$0	\$1,000,000	1.02%	\$5.56
Subtotal Purchase Contracts:		\$14,138,894	\$3,948,630	\$0	0	\$5,410,800	\$23,498,324	24.08%	\$130.55

Construction Contracts:

71.0100	Demolition works	\$0	\$25,000	\$207,135	4,500	\$220,000	\$452,135	0.46%	\$2.51
71.0401	Civil / Structural Construction - Cast in -place Piling	\$0	\$0	\$0	0	\$1,848,000	\$1,848,000	1.89%	\$10.27
71.0402	Civil / Structural Construction - Super Structures	\$0	\$82,500	\$1,003,726	16,278	\$946,250	\$2,032,476	2.08%	\$11.29
71.0403	Civil / Structural Construction - Sub-Structures	\$0	\$483,045	\$1,299,720	26,166	\$128,422	\$1,911,187	1.96%	\$10.62
72.0000	Mechanical / Chemical Construction	\$0	\$0	\$9,057,620	182,834	\$2,641,250	\$11,698,870	11.99%	\$64.99
73.0000	Electrical / Control Construction	\$0	\$180,000	\$5,621,846	106,133	\$10,800	\$5,812,646	5.96%	\$32.29
78.0000	Service Contracts & Construction Indirects	\$0	\$3,416,750	\$3,884,823	88,544	\$8,114,953	\$15,416,526	15.80%	\$85.65
Subtotal Construction Contracts:		\$0	\$4,187,295	\$21,074,869	424,455	\$13,909,675	\$39,171,839	40.14%	\$217.62

Total Direct Costs

\$14,138,894	\$8,135,924	\$21,074,869	424,455	\$19,320,475	\$62,670,163	64.21%	\$348.17
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Indirect Costs:

99.1100	Engineering Costs (Includes G&A)	\$0	\$0	\$2,221,380	54,180	\$3,300,971	\$5,522,351	5.66%	\$30.68
99.1200	EPC Construction Management (Includes G&A)	\$0	\$69,482	\$5,627,211	122,492	\$7,536,830	\$13,233,523	13.56%	\$73.52
99.1500	Project Insurance	\$0	\$0	\$0	0	\$992,326	\$992,326	1.02%	\$5.51
99.1600	Performance Bond	\$0	\$0	\$0	0	\$425,283	\$425,283	0.44%	\$2.36
99.1900	Sales Tax 6% on indirect materials and services	\$0	\$73,910	\$0	0	\$0	\$73,910	0.08%	\$0.41
99.2500	Project Contingency 10%	\$0	\$0	\$0	0	\$8,291,756	\$8,291,756	8.50%	\$46.07
99.2600	EPC Profit	\$0	\$0	\$0	0	\$6,385,000	\$6,385,000	6.54%	\$35.47
Total Indirect Costs		\$0	\$143,392	\$7,848,591	176,672	\$26,932,166	\$34,924,149	35.79%	\$194.02

Total Overnight (April 2011) EPC Capital Costs:

\$14,138,894	\$8,279,317	\$28,923,460	601,126	\$46,252,641	\$97,594,313	100.00%	\$542.19
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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 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	\$2,570,450	\$0	\$0	0	\$185,400	\$2,755,850	2.82%	\$15.31
62.0000	Mechanical	\$1,593,068	\$457,638	\$0	0	\$4,650,000	\$6,700,706	6.87%	\$37.23
63.0000	Electrical	\$2,429,376	\$3,426,642	\$0	0	\$5,400	\$5,861,418	6.01%	\$32.56
64.0000	Control	\$996,000	\$64,350	\$0	0	\$570,000	\$1,630,350	1.67%	\$9.06
65.0000	Chemical	\$6,550,000	\$0	\$0	0	\$0	\$6,550,000	6.71%	\$36.39

Subtotal Purchase Contracts: \$14,138,894 \$3,948,630 \$0 0 \$5,410,800 \$23,498,324 24.08% \$130.55

Construction Contracts:

71.0000	Civil / Structural Construction	\$0	\$590,545	\$2,510,581	46,944	\$3,142,672	\$6,243,798	6.40%	\$34.69
72.0000	Mechanical / Chemical Construction	\$0	\$0	\$9,057,620	182,834	\$2,641,250	\$11,698,870	11.99%	\$64.99
73.0000	Electrical / Control Construction	\$0	\$180,000	\$5,621,846	106,133	\$10,800	\$5,812,646	5.96%	\$32.29
78.0000	Service Contracts & Construction Indirects	\$0	\$3,416,750	\$3,884,823	88,544	\$8,114,953	\$15,416,526	15.80%	\$85.65

Subtotal Construction Contracts: \$0 \$4,187,295 \$21,074,869 424,455 \$13,909,675 \$39,171,839 40.14% \$217.62

Total Direct Costs \$14,138,894 \$8,135,924 \$21,074,869 424,455 \$19,320,475 \$62,670,163 64.21% \$348.17

Indirect Costs:

99.1100	Engineering Costs (With G&A)	\$0	\$0	\$2,221,380	54,180	\$3,300,971	\$5,522,351	5.66%	\$30.68
99.1200	Construction Management (With G&A)	\$0	\$69,482	\$5,627,211	122,492	\$7,536,830	\$13,233,523	13.56%	\$73.52
99.1500	Project Insurance	\$0	\$0	\$0	0	\$992,326	\$992,326	1.02%	\$5.51
99.1600	Performance Bond	\$0	\$0	\$0	0	\$425,283	\$425,283	0.44%	\$2.36
99.1900	Sales Tax 6% on indirect materials and services	\$0	\$73,910	\$0	0	\$0	\$73,910	0.08%	\$0.41
99.2500	Project Contingency	\$0	\$0	\$0	0	\$8,291,756	\$8,291,756	8.50%	\$46.07
99.2600	EPC Profit	\$0	\$0	\$0	0	\$6,385,000	\$6,385,000	6.54%	\$35.47

Total Indirect Costs \$0 \$143,392 \$7,848,591 176,672 \$26,932,166 \$34,924,149 35.79% \$194.02

Total Overnight (April 2011) EPC Capital Costs: \$14,138,894 \$8,279,317 \$28,923,460 601,126 \$46,252,641 \$97,594,313 100.00% \$542.19

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 PROJECT MANAGER: Tim Hillman
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 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			TOTAL \$
Civil / Structural Purchase Contracts:									
61.0200	Buildings - Insulated panels	\$0	\$0	\$0	0	\$185,400	\$185,400	0.19%	\$1.03
61.0300	Grating	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
61.3801	Ductwork and Breeching	\$1,846,850	\$0	\$0	0	\$0	\$1,846,850	1.89%	\$10.26
61.4001	Structural Steel	\$723,600	\$0	\$0	0	\$0	\$723,600	0.74%	\$4.02
61.4015	Handrail and stairs	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
61.4052	Sheet Piling and Cofferdam	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
Subtotal - Civil / Structural Purchase Contracts:		\$2,570,450	\$0	\$0	0	\$185,400	\$2,755,850	2.82%	\$15.31
Mechanical Purchase Contracts:									
62.0205	Continuous Emissions Monitoring (CEM)	\$0	\$0	\$0	0	\$0	\$0	0.05%	\$0.28
62.2201	Large Bore Pipe (Hot Systems)	\$176,150	\$0	\$0	0	\$0	\$176,150	0.18%	\$0.98
66.1000	Piping & Tubing	\$166,918	\$0	\$0	0	\$0	\$166,918	0.17%	\$0.93
66.2070	Pipe Supports	\$0	\$434,438	\$0	0	\$0	\$434,438	0.45%	\$2.41
66.3000	Valves and Accessories	\$0	\$23,200	\$0	0	\$0	\$23,200	0.02%	\$0.13
67.0414	Fly Ash Handling system	\$0	\$0	\$0	0	\$4,600,000	\$4,600,000	4.71%	\$25.56
67.9300	Air Compressors, Dryers, & Air Receivers	\$250,000	\$0	\$0	0	\$0	\$250,000	0.26%	\$1.39
67.9531	FD Fans	\$0	\$0	\$0	0	\$0	\$0	0.00%	\$0.00
67.9532	ID Fans	\$1,000,000	\$0	\$0	0	\$0	\$1,000,000	1.02%	\$5.56
Subtotal - Mechanical Purchase Contracts:		\$1,593,068	\$457,638	\$0	\$0	\$4,650,000	\$6,700,706	6.87%	\$37.23
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	\$2,000	\$0	0	\$0	\$2,000	0.00%	\$0.01
63.0601	Plant Communication System	\$0	\$52,996	\$0	0	\$0	\$52,996	0.05%	\$0.29
63.0801	Cable - 8-15KV Power	\$0	\$214,605	\$0	0	\$0	\$214,605	0.22%	\$1.19
63.0804	Cable - 300-600V Instrument & T/C	\$0	\$24,750	\$0	0	\$0	\$24,750	0.03%	\$0.14
63.0802	Cable and Raceway	\$0	\$1,293,943	\$0	0	\$0	\$1,293,943	1.33%	\$7.19
63.1201	Iso-Phase Bus Duct	\$257,500	\$0	\$0	0	\$0	\$257,500	0.26%	\$1.43
63.1202	Cable Bus	\$0	\$1,263,960	\$0	0	\$0	\$1,263,960	1.30%	\$7.02
63.2000	Metering & Relaying	\$60,000	\$0	\$0	0	\$0	\$60,000	0.06%	\$0.33
63.2802	Batteries - DC Equipment	\$0	\$221,375	\$0	0	\$0	\$221,375	0.23%	\$1.23
63.2805	PanelBoards	\$0	\$60,000	\$0	0	\$0	\$60,000	0.06%	\$0.33
63.3002	ID & FD Fan Motors	\$430,000	\$0	\$0	0	\$0	\$430,000	0.44%	\$2.39
63.3603	Switchgear & MCCs	\$1,109,000	\$0	\$0	0	\$5,400	\$1,114,400	1.14%	\$6.19
63.3802	SUS Transformers	\$294,376	\$0	\$0	0	\$0	\$294,376	0.30%	\$1.64
63.3803	Aux Transformer	\$278,500	\$0	\$0	0	\$0	\$278,500	0.29%	\$1.55
63.5010	Grounding Materials and Equipment	\$0	\$105,993	\$0	0	\$0	\$105,993	0.11%	\$0.59
63.5022	Raceway - General	\$0	\$184,800	\$0	0	\$0	\$184,800	0.19%	\$1.03
Subtotal - Electrical Purchase Contracts:		\$2,429,376	\$3,426,642	\$0	0	\$5,400	\$5,861,418	6.01%	\$32.56
Control Purchase Contracts:									
64.0202	DCS / PLC mods	\$696,000	\$0	\$0	0	\$0	\$696,000	0.71%	\$3.87
64.0407	On-line Performance Monitoring - Neural Network	\$0	\$0	\$0	0	\$570,000	\$570,000	0.58%	\$3.17
64.1003	Instrumentation	\$300,000	\$0	\$0	0	\$0	\$300,000	0.31%	\$1.67
64.5010	Tubing	\$0	\$64,350	\$0	0	\$0	\$64,350	0.07%	\$0.36
Subtotal - Control Purchase Contracts:		\$996,000	\$64,350	\$0	0	\$570,000	\$1,630,350	1.67%	\$9.06
Chemical Purchase Contracts:									
65.3120	Fabric Filter	\$5,300,000	\$0	\$0	0	\$0	\$5,300,000	5.43%	\$29.44
65.3210	Sorbent Injection	\$750,000	\$0	\$0	0	\$0	\$750,000	0.77%	\$4.17
65.3500	H -PAC Mecury Control	\$500,000	\$0	\$0	0	\$0	\$500,000	0.51%	\$2.78
Subtotal - Chemical Purchase Contracts:		\$6,550,000	\$0	\$0	0	\$0	\$6,550,000	6.71%	\$36.39
Subtotal Purchase Contracts:		\$14,138,894	\$3,948,630	\$0	0	\$5,410,800	\$23,498,324	24.08%	\$130.55

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 PLANT TYPE: PC Fired Boiler
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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	\$220,000	\$452,135	0.46%	\$2.51
71.0401	Cast In place Piling	\$0	\$0	\$0	0	\$1,848,000	\$1,848,000	1.89%	\$10.27
71.0402	General Construction - Substructures	\$0	\$483,045	\$1,299,720	26,166	\$128,422	\$1,911,187	1.96%	\$10.62
71.0403	General Construction - Superstructures	\$0	\$82,500	\$1,003,726	16,278	\$946,250	\$2,032,476	2.08%	\$11.29
Subtotal - Civil / Structural Construction Contracts:		\$0	\$590,545	\$2,510,581	46,944	\$3,142,672	\$6,243,798	6.40%	\$34.69
Mechanical Construction Contracts:		\$0	\$0	\$0	0	\$0			
72.0401	Plant Piping Installation	\$0	\$0	\$2,299,301	43,026	\$0	\$2,299,301	2.36%	\$12.77
72.0403	Duct and Reactor Insulation	\$0	\$0	\$0	0	\$2,006,000	\$2,006,000	2.06%	\$11.14
72.0800	Fire Protection & Detection Systems	\$0	\$0	\$0	0	\$635,250	\$635,250	0.65%	\$3.53
77.0000	Mechanical Construction	\$0	\$0	\$6,758,319	139,808	\$0	\$6,758,319	6.92%	\$37.55
Subtotal - Mechanical Construction Contracts:		\$0	\$0	\$9,057,620	182,834	\$2,641,250	\$11,698,870	11.99%	\$64.99
Electrical / Control Construction Contracts:		\$0	\$0	\$0	0	\$0			
73.0201	Electrical Equipment Erection	\$0	\$180,000	\$5,046,525	95,271	\$10,800	\$5,237,325	5.37%	\$29.10
74.0201	Control & Instrumentation Installation	\$0	\$0	\$575,320	10,861	\$0	\$575,320	0.59%	\$3.20
Subtotal - Electrical / Control Construction Contracts:		\$0	\$180,000	\$5,621,846	106,133	\$10,800	\$5,812,646	5.96%	\$32.29
Construction Indirects & Service Contracts:		\$0	\$0	\$0	0	\$0			
78.0000	Service Contracts & Construction Indirects	\$0	\$3,416,750	\$3,884,823	88,544	\$7,769,453	\$15,071,026	15.44%	\$83.73
78.4000	Warranty	\$0	\$0	\$0	0	\$345,500	\$345,500	0.35%	\$1.92
Subtotal - Construction Indirects & Service Contracts:		\$0	\$3,416,750	\$3,884,823	88,544	\$8,114,953	\$15,416,526	15.80%	\$85.65
Subtotal - Construction Costs:		\$0	\$4,187,295	\$21,074,869	424,455	\$13,909,675	\$39,171,839	40.14%	\$217.62
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