

Capital Cost of Control Options

	SCR System	
	90% Reduction	Basis
DIRECT COSTS:		
PURCHASED EQUIPMENT		
(a) Basic Equipment (BE)	\$738,889	Vendor Quote Nationwide Boiler Inc.
(b) Auxiliaries	included	
(c) Instrumentation & Controls	73,900	10% of BE
(d) Tax & Freight	65,000	8% of (1a) -> (1c)
TOTAL PURCHASED EQUIPMENT (PE):	\$877,789	
DIRECT INSTALLATION		
(a) Foundations and Support	70,223	8% of PE
(b) Handling and Erection	122,890	14% of PE
(c) Electrical	35,112	4% of PE
(d) Piping	17,556	2% of PE
(e) Insulation for Ductwork	8,778	1% of PE
(f) Painting	8,778	1% of PE
(g) Building		Contractor quote for 4'x40' building addition
TOTAL DIRECT INSTALLATION (DI):	\$263,337	
TOTAL DIRECT COST (TDC):	\$1,141,126	
INDIRECT COSTS:		
INDIRECT INSTALLATION		
(a) Engineering & Supervision	87,800	10% of PE
(b) Construction & Field Expenses	43,900	5% of PE
(c) Contractor Fees	87,800	10% of PE
(d) Contingencies	26,300	3% of PE
OTHER INDIRECT COSTS		
(a) Startup & Performance Tests	26,300	3% of PE
(b) Working Capital	7,000	30 days O&M cost
TOTAL INDIRECT COST:	\$279,100	
TOTAL CAPITAL COST:	\$1,420,000	

Annualized Costs of Control Options

	SCR System 90% Reduction	Basis
DIRECT OPERATING COSTS:		
DIRECT LABOR (DL)		
(a) Operators	1,900	0.5 hour/shift @\$35/hr
(b) Supervisors	300	15% of operating labor
MAINTENANCE		
(a) Labor	2,500	0.5 hour/shift @\$45/hr
(b) Material	2,500	100% of maintenance labor
MEDIA REPLACEMENT	75,000	3 year life, 10% interest
UTILITIES		
(a) Natural Gas		
(b) Electricity	329	\$ 0.05 kwhr
(c) Steam		
(d) Ammonia	2,625	\$350.00 ton ENSR Estimate
INDIRECT OPERATING COSTS:		
OVERHEAD	1,300	44% of OL + 12% ML
PROPERTY TAX	14,200	1% of Total Capital Cost
INSURANCE	14,200	1% of Total Capital Cost
ADMINISTRATION	28,400	2% of Total Capital Cost
CAPITAL RECOVERY	231,100	10 yr life, 10% interest rate
TOTAL ANNUALIZED COST:	\$374,354	
BASE EMISSION RATE (TON/YR)	8.30	
CONTROL EFFICIENCY (%)	90	
OVERALL TONS/YR CONTROLLED	7.47	
OVERALL COST EFFECTIVENESS (\$/TON):	\$50,100	
Notes:		