Cost Effectiveness Data

Basic Equipment	Control Equipment	Equipment Cost (EC)	Instrumentation[1] (0.10 x EC)	Equipment Cost + Instrumentation	Sales Tax [2] (.0825 x EC)	Freight [3] (.05 x EC)	Total Equipment Cost (TEC)	Retrofit [4] (.50 x TEC)	Total Capital investment (TCI)
FCCU	SCR	$5,258,200	$525,800	$5,784,000	$477,200	$289,200	$6,550,400	$3,275,200	$9,825,600

Equipment	Total Annual Costs[5] (TAC)	Number of equipment
SCR	$1,150,000	2

Notes:

1. Instrumentation = 10% of Equipment Cost (OAQPS Section 1, Chapter 2, page 2-27, table 2.4)
2. Sales Tax = 8.25% for Los Angeles
3. Freight = 5% of Equipment Cost (OAQPS Section 1, Chapter 2, page 2-27, table 2.4)
4. Retrofit = 50% of Equipment Cost (OAQPS Section 1, Chapter 2, page 2-28 to 2-30, paragraph 2.5.4.2) This cost includes engineering.
5. Annual Costs include cost of catalyst (5 year life), aqueous NH_3, power and routine maintenance.
6. Equipment Cost = the average for 2 FCCUs. Costs for the following equipment are included: SCR reactor, ammonia control skids, ammonia injection grids, catalyst, ESP purge blowers, switchgear, motor control, ammonia tanks and pumps, ducting and duct valves, hardware and CEMs system.

Cost Effectiveness Calculations (DCF)

10 Year Equipment Life

Present Value Factor (10 yr life, 4% real interest rate)	Present value of annual cost per FCCU	Total present value of the Capital investment per FCCU	Cost of control for 2 units	Total NOx reduction for 2 units (ton/10yr)	Cost Effectiveness ($/ton)
8.11	$9,326,500	$19,152,100	$38,304,200	2216	$17,300

15 Year Equipment Life

Present Value Factor (15 yr life, 4% real interest rate)	Present value of annual cost per FCCU	Total present value of the Capital investment per FCCU	Cost of control for 2 units	Total NOx reduction for 2 units (ton/15yr)	Cost Effectiveness ($/ton)
11.11	$12,776,500	$22,602,100	$45,204,200	3324	$13,600

25 Year Equipment Life

Present Value Factor (25 yr life, 4% real interest rate)	Present value of annual cost per FCCU	Total present value of the Capital investment per FCCU	Cost of control for 2 units	Total NOx reduction for 2 units (ton/25yr)	Cost Effectiveness ($/ton)
15.6	$17,940,000	$27,765,600	$55,531,200	5540	$10,000

Equation for DCF:

$$\$/\text{ton} = \frac{(\text{Present Value Factor} \times \text{TAC}) + \text{TCI}}{\text{Total NOx Reduction/year} \times \text{Equipment Life}}$$

TAC= Total Annual Costs
TCI = Total Capital Investment

Example using 10 year Equipment Life:

$$\$/\text{ton} = \frac{((8.11 \times 1{,}150{,}000) + 9{,}825{,}600) \times 2 \text{ units}}{2{,}216 \text{ tons/10 years for 2 units}}$$

$/ton = 17,300.00

Note:
Above calculations are based on total cost of control and emission reductions for 2 units