

NIST BLCC 5.3-07: Detailed LCC Analysis

Consistent with Federal Life Cycle Cost Methodology and Procedures, 10 CFR, Part 436, Subpart A

General Information

File Name: C:\Program Files\BLCC5\projects\Dorm-Garrison Variation.xml
 Date of Study: Wed Jan 23 09:24:02 CST 2008
 Analysis Type: FEMP Analysis, Energy Project
 Project Name: Dorm - Garrison Variation
 Project Location: Texas
 Analyst: Travis Alexander
 Base Date: April 1, 2007
 Service Date: April 1, 2007
 Study Period: 25 years 0 months (April 1, 2007 through March 31, 2032)
 Discount Rate: 6%
 Discounting Convention: End-of-Year

Discount and Escalation Rates are NOMINAL (inclusive of general inflation)

Alternative: FP VAV

Initial Cost Data (not Discounted)

Initial Capital Costs

(adjusted for price escalation)

Initial Capital Costs for All Components: \$0

Component:

Cost-Phasing

Date	Portion	Yearly Cost
April 1, 2007	100%	\$0

Total (for Component)		\$0

Energy Costs: Electricity

(base-year dollars)

Average	Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Rebate
204,000.0 kWh	\$0.07700	\$15,708	\$0

Energy Costs: Chilled Water

(base-year dollars)

(base-year dollars)

Average		Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Demand	Annual Rebate
45,453.0 Therm	\$0.88750	\$40,340		\$0

Energy Costs: Steam

(base-year dollars)

Average		Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Demand	Annual Rebate
350.0 Therm	\$0.91400	\$320		\$0

Life-Cycle Cost Analysis

	Present Value	Annual Value
Initial Capital Costs	\$0	\$0
Energy Costs		
Energy Consumption Costs	\$718,659	\$56,219
Energy Demand Charges	\$0	\$0
Energy Utility Rebates	\$0	\$0

Subtotal (for Energy):	\$718,659	\$56,219
Water Usage Costs	\$0	\$0
Water Disposal Costs	\$0	\$0
Operating, Maintenance & Repair Costs		
Component:		
Annually Recurring Costs	\$2,527,269	\$197,702
Non-Annually Recurring Costs	\$0	\$0

Subtotal (for OM&R):	\$2,527,269	\$197,702
Replacements to Capital Components		
Component:		
	\$0	\$0

Subtotal (for Replacements):	\$0	\$0

Residual Value of Original Capital Components

Component:	\$0	\$0

Subtotal (for Residual Value):	\$0	\$0

Residual Value of Capital Replacements

Component:	\$0	\$0

Subtotal (for Residual Value):	\$0	\$0

Total Life-Cycle Cost	\$3,245,928	\$253,921
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Emissions Summary

Energy Name	Annual	Life-Cycle
Electricity:		
CO2	36,765.07 kg	919,101.60 kg
SO2	296.71 kg	7,417.44 kg
NOx	43.33 kg	1,083.24 kg
Chilled Water:		
CO2	240,072.53 kg	6,001,649.01 kg
SO2	1,937.46 kg	48,435.20 kg
NOx	282.95 kg	7,073.46 kg
Steam:		
CO2	1,848.62 kg	46,214.27 kg
SO2	14.92 kg	372.96 kg
NOx	2.18 kg	54.47 kg
Total:		
CO2	278,686.23 kg	6,966,964.87 kg
SO2	2,249.09 kg	56,225.61 kg
NOx	328.46 kg	8,211.17 kg

Alternative: Dual Duct
Initial Cost Data (not Discounted)
Initial Capital Costs

(adjusted for price escalation)

Initial Capital Costs for All Components: \$0

Component: Copy of:

Cost-Phasing

Date	Portion	Yearly Cost
April 1, 2007	100%	\$0

Total (for Component)		\$0

Energy Costs: Electricity

(base-year dollars)

Average		Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Demand	Annual Rebate
193,000.0 kWh	\$0.07700	\$14,861	\$0	\$0

Energy Costs: Chilled Water

(base-year dollars)

Average		Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Demand	Annual Rebate
45,100.0 Therm	\$0.88750	\$40,026	\$0	\$0

Energy Costs: Steam

(base-year dollars)

Average		Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Demand	Annual Rebate
300.0 Therm	\$0.91400	\$274	\$0	\$0

Life-Cycle Cost Analysis

	Present Value	Annual Value
Initial Capital Costs	\$0	\$0
Energy Costs		
Energy Consumption Costs	\$703,282	\$55,016
Energy Demand Charges	\$0	\$0
Energy Utility Rebates	\$0	\$0

Subtotal (for Energy):	\$703,282	\$55,016
Water Usage Costs	\$0	\$0
Water Disposal Costs	\$0	\$0
Operating, Maintenance & Repair Costs		
Component: Copy of:		
Annually Recurring Costs	\$2,609,771	\$204,156
Non-Annually Recurring Costs	\$0	\$0
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Subtotal (for OM&R):	\$2,609,771	\$204,156
Replacements to Capital Components		
Component: Copy of:	\$0	\$0
	-----	-----
Subtotal (for Replacements):	\$0	\$0
Residual Value of Original Capital Components		
Component: Copy of:	\$0	\$0
	-----	-----
Subtotal (for Residual Value):	\$0	\$0
Residual Value of Capital Replacements		
Component: Copy of:	\$0	\$0
	-----	-----
Subtotal (for Residual Value):	\$0	\$0
Total Life-Cycle Cost	\$3,313,053	\$259,172

Emissions Summary

Energy Name	Annual	Life-Cycle
Electricity:		
CO2	34,782.64 kg	869,542.20 kg
SO2	280.71 kg	7,017.48 kg
NOx	40.99 kg	1,024.83 kg

Chilled Water:

CO2	238,207.86 kg	5,955,033.33 kg
SO2	1,922.41 kg	48,059.00 kg
NOx	280.75 kg	7,018.52 kg

Steam:

CO2	1,584.53 kg	39,612.23 kg
SO2	12.79 kg	319.68 kg
NOx	1.87 kg	46.69 kg

Total:

CO2	274,575.03 kg	6,864,187.76 kg
SO2	2,215.91 kg	55,396.16 kg
NOx	323.61 kg	8,090.03 kg

Alternative: Fan Coil
Initial Cost Data (not Discounted)

Initial Capital Costs

(adjusted for price escalation)

Initial Capital Costs for All Components: \$0

Component: Copy of: Copy of:

Cost-Phasing

Date	Portion	Yearly Cost
April 1, 2007	100%	\$0

Total (for Component)		\$0

Energy Costs: Electricity

(base-year dollars)

Average	Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Rebate
157,000.0 kWh	\$0.07700	\$12,089	\$0

Energy Costs: Chilled Water

(base-year dollars)

Average	Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Rebate
20,600.0 kWh	\$0.00750	\$155.00	\$0

30,696.0 Therm \$0.88/50 \$27,243 \$0 \$0

Energy Costs: Steam
(base-year dollars)

Average		Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Demand	Annual Rebate
1,060.0 Therm	\$0.91400	\$969	\$0	\$0

Life-Cycle Cost Analysis

	Present Value	Annual Value
Initial Capital Costs	\$0	\$0
Energy Costs		
Energy Consumption Costs	\$513,813	\$40,194
Energy Demand Charges	\$0	\$0
Energy Utility Rebates	\$0	\$0

Subtotal (for Energy):	\$513,813	\$40,194
Water Usage Costs	\$0	\$0
Water Disposal Costs	\$0	\$0
Operating, Maintenance & Repair Costs		
Component: Copy of: Copy of:		
Annually Recurring Costs	\$3,088,937	\$241,640
Non-Annually Recurring Costs	\$0	\$0

Subtotal (for OM&R):	\$3,088,937	\$241,640
Replacements to Capital Components		
Component: Copy of: Copy of:	\$0	\$0

Subtotal (for Replacements):	\$0	\$0
Residual Value of Original Capital Components		
Component: Copy of: Copy of:	\$0	\$0

Subtotal (for Residual Value):

\$0 \$0

Residual Value of Capital Replacements

Component: Copy of: Copy of:

\$0 \$0

Subtotal (for Residual Value):

\$0 \$0

Total Life-Cycle Cost

\$3,602,750 \$281,835

Emissions Summary

Energy Name	Annual	Life-Cycle
Electricity:		
CO2	28,294.69 kg	707,347.80 kg
SO2	228.35 kg	5,708.52 kg
NOx	33.35 kg	833.67 kg
Chilled Water:		
CO2	162,129.37 kg	4,053,123.40 kg
SO2	1,308.44 kg	32,709.99 kg
NOx	191.08 kg	4,776.95 kg
Steam:		
CO2	5,598.68 kg	139,963.21 kg
SO2	45.18 kg	1,129.55 kg
NOx	6.60 kg	164.96 kg
Total:		
CO2	196,022.74 kg	4,900,434.41 kg
SO2	1,581.97 kg	39,548.05 kg
NOx	231.03 kg	5,775.58 kg