

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\Garrison Hall real.xml
 Date of Study: Wed Jan 23 09:25:23 CST 2008
 Analysis Type: FEMP Analysis, Energy Project
 Project Name: Garrison Hall LCC
 Project Location: Texas
 Analyst: Travis Alexander
 Base Date: January 1, 2008
 Service Date: January 1, 2008
 Study Period: 25 years 0 months (January 1, 2008 through December 31, 2032)
 Discount Rate: 6%
 Discounting Convention: End-of-Year

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

Alternative: Scenario A

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
January 1, 2008	100%	\$0

Total (for Component)		\$0

Energy Costs: Electricity

(base-year dollars)

Average	Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Demand
61,000.0 kWh	\$0.07700	\$4,697	\$0
			Annual Rebate
			\$0

Energy Costs: Chilled Water

(base-year dollars)

Average		Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Demand	Annual Rebate
33,885.0	Therm \$0.88750	\$30,073		\$0

Energy Costs: Steam
(base-year dollars)

Average		Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Demand	Annual Rebate
2,100.0	Therm \$0.91400	\$1,919		\$0

Life-Cycle Cost Analysis

	Present Value	Annual Value
Initial Capital Costs	\$0	\$0

Energy Costs

Energy Consumption Costs	\$469,008	\$36,689
Energy Demand Charges	\$0	\$0
Energy Utility Rebates	\$0	\$0

Subtotal (for Energy):	\$469,008	\$36,689
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Water Usage Costs	\$0	\$0
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Water Disposal Costs	\$0	\$0
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Operating, Maintenance & Repair Costs

Component:

Annually Recurring Costs	\$3,086,406	\$241,442
Non-Annually Recurring Costs	\$0	\$0

Subtotal (for OM&R):	\$3,086,406	\$241,442
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Replacements to Capital Components

Component:	\$0	\$0
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Subtotal (for Replacements):	\$0	\$0
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**Component:
Cost-Phasing**

Date	Portion	Yearly Cost
January 1, 2008	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
65,000.0 kWh	\$0.07700	\$5,005	\$0	\$0

**Energy Costs: Chilled Water
(base-year dollars)**

Average		Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Demand	Annual Rebate
31,567.0 Therm	\$0.88750	\$28,016	\$0	\$0

**Energy Costs: Steam
(base-year dollars)**

Average		Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Demand	Annual Rebate
3,570.0 Therm	\$0.91400	\$3,263	\$0	\$0

Life-Cycle Cost Analysis

	Present Value	Annual Value
Initial Capital Costs	\$0	\$0
Energy Costs		
Energy Consumption Costs	\$463,822	\$36,284
Energy Demand Charges	\$0	\$0
Energy Utility Rebates	\$0	\$0

Subtotal (for Energy):	\$463,822	\$36,284
Water Usage Costs	\$0	\$0

Water Disposal Costs	\$0	\$0
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Operating, Maintenance & Repair Costs

Component:

Annually Recurring Costs	\$2,895,274	\$226,490
Non-Annually Recurring Costs	\$0	\$0

Subtotal (for OM&R):	\$2,895,274	\$226,490
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Replacements to Capital Components

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

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

Component:	\$0	\$0
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Subtotal (for Residual Value):	\$0	\$0
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Total Life-Cycle Cost	\$3,359,096	\$262,774
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Emissions Summary

Energy Name	Annual	Life-Cycle
Electricity:		
CO2	11,714.36 kg	292,851.00 kg
SO2	94.54 kg	2,363.40 kg
NOx	13.81 kg	345.15 kg
Chilled Water:		
CO2	166,729.80 kg	4,168,130.91 kg
SO2	1,345.56 kg	33,638.13 kg
NOx	106.51 kg	4,012.50 kg

NOx	190.91 kg	4,912.50 kg
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Steam:

CO2	18,855.94 kg	471,385.54 kg
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SO2	152.17 kg	3,804.23 kg
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NOx	22.22 kg	555.57 kg
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Total:

CO2	197,300.10 kg	4,932,367.45 kg
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SO2	1,592.27 kg	39,805.76 kg
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NOx	232.54 kg	5,813.22 kg
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Alternative: Scenario C

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
January 1, 2008	100%	\$0

Total (for Component)		\$0

Energy Costs: Electricity

(base-year dollars)

Average	Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Demand
82,000.0 kWh	\$0.07700	\$6,314	\$0
			Annual Rebate
			\$0

Energy Costs: Chilled Water

(base-year dollars)

Average	Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Demand
34,103.0 Therm	\$0.88750	\$30,266	\$0
			Annual Rebate
			\$0

Energy Costs: Steam

(base-year dollars)

Average	Average	Average	Average
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Annual Usage	Price/Unit	Annual Cost	Annual Demand	Annual Rebate
820.0 kWh	\$0.91400	\$749	\$0	\$0

Life-Cycle Cost Analysis

	Present Value	Annual Value
Initial Capital Costs	\$0	\$0
Energy Costs		
Energy Consumption Costs	\$477,196	\$37,330
Energy Demand Charges	\$0	\$0
Energy Utility Rebates	\$0	\$0
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Subtotal (for Energy):	\$477,196	\$37,330
Water Usage Costs	\$0	\$0
Water Disposal Costs	\$0	\$0
Operating, Maintenance & Repair Costs		
Component:		
Annually Recurring Costs	\$2,870,232	\$224,531
Non-Annually Recurring Costs	\$0	\$0
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Subtotal (for OM&R):	\$2,870,232	\$224,531
Replacements to Capital Components		
Component:	\$0	\$0
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Subtotal (for Replacements):	\$0	\$0
Residual Value of Original Capital Components		
Component:	\$0	\$0
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Subtotal (for Residual Value):	\$0	\$0
Residual Value of Capital Replacements		
Component:	\$0	\$0

Subtotal (for Residual Value):

\$0

\$0

Total Life-Cycle Cost

\$3,347,428

\$261,861

Emissions Summary

Energy Name	Annual	Life-Cycle
Electricity:		
CO2	14,778.12 kg	369,442.80 kg
SO2	119.26 kg	2,981.52 kg
NOx	17.42 kg	435.42 kg
Chilled Water:		
CO2	180,124.38 kg	4,502,986.29 kg
SO2	1,453.66 kg	36,340.52 kg
NOx	212.29 kg	5,307.16 kg
Steam:		
CO2	147.78 kg	3,694.43 kg
SO2	1.19 kg	29.82 kg
NOx	0.17 kg	4.35 kg
Total:		
CO2	195,050.28 kg	4,876,123.52 kg
SO2	1,574.12 kg	39,351.86 kg
NOx	229.88 kg	5,746.93 kg

Alternative: Scenario D

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
January 1, 2008	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
158,000.0 kWh	\$0.07700	\$12,166		\$0

Energy Costs: Chilled Water

(base-year dollars)

Average		Average	Average	Average
Annual Usage	Price/Unit	Annual Cost	Annual Demand	Annual Rebate
34,103.0 Therm	\$0.88750	\$30,266		\$0

Life-Cycle Cost Analysis

	Present Value	Annual Value
Initial Capital Costs	\$0	\$0

Energy Costs

Energy Consumption Costs	\$542,423	\$42,432
Energy Demand Charges	\$0	\$0
Energy Utility Rebates	\$0	\$0

Subtotal (for Energy):	\$542,423	\$42,432

Water Usage Costs	\$0	\$0
Water Disposal Costs	\$0	\$0

Operating, Maintenance & Repair Costs

Component:		
Annually Recurring Costs	\$2,504,369	\$195,911
Non-Annually Recurring Costs	\$0	\$0

Subtotal (for OM&R):	\$2,504,369	\$195,911

Replacements to Capital Components

Component:	\$0	\$0

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

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

Component:	\$0	\$0
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Subtotal (for Residual Value):	\$0	\$0
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Total Life-Cycle Cost	\$3,046,792	\$238,343
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Emissions Summary

Energy Name	Annual	Life-Cycle
Electricity:		
CO2	28,474.91 kg	711,853.20 kg
SO2	229.80 kg	5,744.88 kg
NOx	33.56 kg	838.98 kg
Chilled Water:		
CO2	180,124.38 kg	4,502,986.29 kg
SO2	1,453.66 kg	36,340.52 kg
NOx	212.29 kg	5,307.16 kg
Total:		
CO2	208,599.29 kg	5,214,839.49 kg
SO2	1,683.46 kg	42,085.40 kg
NOx	245.85 kg	6,146.14 kg