

LEED NC 2.2 EA Credit 1 Summary Report

LEED Class Archive # 3 Workshop 9- SOLVED 2008
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General Information

Simulation Program Name and Version **Hourly Analysis Program v4.40**
 Simulation Weather File Name **St. Louis IAP, Missouri (TM2)**
 Total Conditioned Floor Area **90,000** ft²
 Total Floor Area **90,000** ft²

Building Designations

Proposed Building **alt 1 - Floor 1 VAV w/RH boxes**
 Baseline - 0 degrees **[B000] alt 1 - Floor 1 VAV w/RH boxes**
 Baseline - 90 degrees **[B090] alt 1 - Floor 1 VAV w/RH boxes**
 Baseline - 180 degrees **[B180] alt 1 - Floor 1 VAV w/RH boxes**
 Baseline - 270 degrees **[B270] alt 1 - Floor 1 VAV w/RH boxes**

Window-to-Wall Ratios

	Proposed Design	Baseline
Window to Wall Ratio	31 %	31 %
Gross Wall Area (ft ²)	28,716	28,716
Vertical Window Area (ft ²)	8,820	8,820

Advisory Messages

	Proposed Building	Baseline Building (0 deg. rotation)	Difference
Number of hours heating loads not met	0	0	0
Number of hours cooling loads not met	1	0	+1

Table 1.5. Energy Type Summary

Energy Type	Utility Rate Description	Units of Energy	Units of Demand
Electric	St. Louis Complex Rate	kWh	kW
Natural Gas	St. Louis Natural Gas	Therm	MBH

Energy Units:

1 kBTU = 1,000 BTU
 1 kWh = 3.412 kBTU
 1 Therm = 100,000 kBTU

Demand Units:

1 MBH = 1,000 BTU/h
 1 kW = 3.412 MBH

Table 1.8.1. Baseline Performance - Performance Rating Method Compliance

End Use	Process	Baseline Design Energy Type	Units of Annual Energy & Peak Demand	Baseline (0 deg rotation)	Baseline (90 deg rotation)	Baseline (180 deg rotation)	Baseline (270 deg rotation)	Baseline Design
Interior Lighting	No	Electric	Energy kWh	263,016	263,016	263,016	263,016	263,016
			Demand kW	81.0	81.0	81.0	81.0	81.0
Space Heating	No	Natural Gas	Energy Therm	11,919	11,913	11,913	11,919	11,916
			Demand MBH	1,435.7	1,435.2	1,435.1	1,435.8	1,435.5
Space Cooling	No	Electric	Energy kWh	176,107	176,140	176,125	176,115	176,122
			Demand kW	155.7	155.7	155.7	155.7	155.7
Pumps	No	Electric	Energy kWh	5,754	5,752	5,753	5,755	5,754
			Demand kW	1.2	1.2	1.2	1.2	1.2
Heat Rejection	No	Electric	Energy kWh	0	0	0	0	0
			Demand kW	0.0	0.0	0.0	0.0	0.0
Fans - Interior	No	Electric	Energy kWh	172,361	172,336	172,287	172,316	172,325
			Demand kW	49.3	49.3	49.4	49.3	49.3

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Receptacle Equipment	Yes	Electric	Energy kWh	197,262	197,262	197,262	197,262	197,262
			Demand kW	60.8	60.8	60.8	60.8	60.8
Elevators	Yes	Electric	Energy kWh	15,271	15,271	15,271	15,271	15,271
			Demand kW	6.9	6.9	6.9	6.9	6.9
Parking Lot Lights tradable	No	Electric	Energy kWh	2,628	2,628	2,628	2,628	2,628
			Demand kW	0.6	0.6	0.6	0.6	0.6
Parking Lot Lights nontradable	No	Electric	Energy kWh	11,826	11,826	11,826	11,826	11,826
			Demand kW	2.7	2.7	2.7	2.7	2.7
Service Hot Water	No	Natural Gas	Energy Therm	3,486	3,486	3,486	3,486	3,486
			Demand MBH	124.7	124.7	124.7	124.7	124.7
Baseline Energy Totals	Total Annual Energy Use kBtu			4,421,011	4,420,432	4,420,272	4,420,953	4,420,667
	Annual Process Energy kBtu							725,162

Process Cost accounts for 23% of Baseline Performance. Process cost must equal at least 25% of Baseline Performance or the narrative at the end of this form must document why this building's process costs are less than 25%.

Table 1.8.1(b). Baseline Energy Costs

Energy Type	Baseline Cost (0 deg rotation) (\$)	Baseline Cost (90 deg rotation) (\$)	Baseline Cost (180 deg rotation) (\$)	Baseline Cost (270 deg rotation) (\$)	Baseline Building Performance (\$)
Electric	120,033	120,030	120,033	120,044	120,035
Natural Gas	12,684	12,679	12,679	12,684	12,681
Total Baseline Costs	132,717	132,709	132,712	132,728	132,716

Table 1.8.2. Performance Rating Table - Performance Rating Method Compliance

End Use	Process	Proposed Design Energy Type	Proposed Design Units	Proposed Building Results	Baseline Building Units	Baseline Building Results	Percent Savings
Interior Lighting	No	Electric	Energy kWh	247,235	Energy kWh	263,016	6 %
			Demand kW	76.1	Demand kW	81.0	6 %
Space Heating	No	Natural Gas	Energy Therm	6,877	Energy Therm	11,916	42 %
			Demand MBH	949.9	Demand MBH	1,435.5	34 %
Space Cooling	No	Electric	Energy kWh	87,286	Energy kWh	176,122	50 %
			Demand kW	100.4	Demand kW	155.7	35 %
Pumps	No	Electric	Energy kWh	22,614	Energy kWh	5,754	-293 %
			Demand kW	13.2	Demand kW	1.2	-1034 %
Heat Rejection	No	Electric	Energy kWh	13,140	Energy kWh	0	n/a
			Demand kW	8.1	Demand kW	0.0	n/a
Fans - Interior	No	Electric	Energy kWh	54,805	Energy kWh	172,325	68 %
			Demand kW	24.7	Demand kW	49.3	50 %
Receptacle Equipment	Yes	Electric	Energy kWh	197,262	Energy kWh	197,262	0 %
			Demand kW	60.8	Demand kW	60.8	0 %
Elevators	Yes	Electric	Energy kWh	15,271	Energy kWh	15,271	0 %
			Demand kW	6.9	Demand kW	6.9	0 %
Parking Lot Lights tradable	No	Electric	Energy kWh	2,628	Energy kWh	2,628	0 %
			Demand kW	0.6	Demand kW	0.6	0 %
Parking Lot Lights nontradable	No	Electric	Energy kWh	11,826	Energy kWh	11,826	0 %
			Demand kW	2.7	Demand kW	2.7	0 %
Service Hot Water	No	Natural Gas	Energy Therm	3,486	Energy Therm	3,486	0 %
			Demand MBH	124.7	Demand MBH	124.7	0 %

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Energy Totals	Total Annual Energy Use kBTU	3,261,218		4,420,667	26 %
	Annual Process Energy kBTU	725,162		725,162	0 %

Table 1.8.2(b). Energy Cost and Consumption by Energy Type - Performance Rating Method Compliance

Energy Type	Proposed Design		Baseline Design		Percent Savings	
	Energy Use	Cost (\$)	Energy Use	Cost (\$)	Energy Use	Cost
Electric	652,067 kWh	94,831	844,203 kWh	120,035	22.8 %	21.0 %
Natural Gas	10,364 Therm	8,638	15,402 Therm	12,681	32.7 %	31.9 %
Subtotal (Model Outputs)	3,261,218 kBTU	103,469	4,420,667 kBTU	132,716	26.2 %	22.0 %
On Site Renewable Energy	Energy Generated	Renewable Energy Cost				
Exceptional Calculations	Energy Savings	Cost Savings				
	Proposed Design	Proposed Design	Baseline Design	Baseline Design	Percent Savings	Percent Savings
	Energy Use	Cost (\$)	Energy Use	Cost (\$)	Energy	Cost
Total:	kBTU		kBTU		%	%

Note: In Table 1.8.2(b), On-Site Renewable, Exceptional Calculation and amended total results at bottom of table are to be filled in manually if these separate calculations were performed.

LEED NC 2.2 EA Credit 1 Points Reference Table

New Construction % Cost Savings	Existing Building Renovations % Cost Savings	LEED NC 2.2 Points Awarded
10.5 %	3.5 %	1 pt
14.0 %	7.0 %	2 pts
17.5 %	10.5 %	3 pts
21.0 %	14.0 %	4 pts
24.5 %	17.5 %	5 pts
28.0 %	21.0 %	6 pts
31.5 %	24.5 %	7 pts
35.0 %	28.0 %	8 pts
38.5 %	31.5 %	9 pts
42.0 %	35.0 %	10 pts