LEED Energy Performance Summary Report

By BSA LifeStructures

Section 1.1 - General Information

Simulation Program:	TRACE™ 700 v6.3.5
Principle Heating Source:	Purchased Heat
Energy Code Used:	ASHRAE 90.1-2010
Weather File:	Austin, TX TMY (Full Year - 8760)
Climate Zone:	2A
New Construction Percent:	100 %
Existing Renovation Percent:	0 %
Quantity of Floors:	4
Proposed:	Alternative 1 - UT SEA Bldg
Baseline:	Alternative 2 - ASHRAE Baseline 90.1-10 Climate Zone 2A

Section 1.2 - Space Summary

Building Use (Occupancy Type)	Space Area (ft^2)	Regularly Occupied Area (ft^2)	Unconditioned Area (ft^2)
Office	17,493.00	17,493.00	0.00
Reception	788.00	788.00	0.00
Conference	971.00	971.00	0.00
Lobby	145.00	145.00	0.00
Corridor	7,036.00	7,036.00	0.00
Storage	236.00	236.00	0.00
Run Room	676.00	676.00	0.00
Unoccupied	3,480.00	3,480.00	0.00
Total	**30,825.00**	**30,825.00**	**0.00**

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Section 1.3 - Advisory Messages

Advisory Messages	Baseline Building (0 deg rotation)	Proposed Building
Number of hours heating load not met:	0	108
Number of hours cooling load not met:	5	4
Total	5	112

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Section 1.4 - Comparison of Proposed Design Versus Baseline Design

Input Parameter	Proposed Design Input	Baseline Design Input
Exterior Wall Construction	90.1-10 Min Wall Nonres Zone 1 & 2 U-factor: 0.060 Btu/h·ft²·°F	90.1-10 Min Wall Nonres Zone 1 & 2 U-factor: 0.124 Btu/h·ft²·°F
Roof Construction	90.1-10 Min Roof Nonres Zone 2-3 U-factor: 0.040 Btu/h·ft²·°F Reflectivity: 0.55	90.1-10 Min Roof Nonres Zone 2-3 U-factor: 0.048 Btu/h·ft²·°F Reflectivity: 0.55
Window-to-gross wall ratio	27.7 %	27.7 %
Fenestration Type	Double Coated 1/4" U-factor: 0.770 Btu/h·ft²·°F SHGC: 0.27 Visible Transmissivity: 0.301	90.1 Window Zone 2 Metal Curtain Wall U-factor: 0.700 Btu/h·ft²·°F SHGC: 0.25 Visible Transmissivity: 0.900
Fenestration Type	Double Coated 1/4" U-factor: 0.450 Btu/h·ft²·°F SHGC: 0.27 Visible Transmissivity: 0.301	
Interior Light Power Density	Lighting Compliance: Space-By-Space Method Daylighting Controls: No Building: 0.66 W/ft²	Lighting Compliance: Space-By-Space Method Daylighting Controls: No Building: 0.90 W/ft²
Interior Light Power Density	Room Type: Office - 0.66 W/ft² Reception - 0.66 W/ft² Conference - 0.66 W/ft² Lobby - 0.66 W/ft² Corridor - 0.66 W/ft²	Room Type: Default - 0.00 W/ft² Office - 0.90 W/ft² Reception - 0.90 W/ft² Conference - 0.90 W/ft² Lobby - 0.90 W/ft²
Interior Light Power Density	Room Type: Storage - 0.66 W/ft² Run Room - 0.66 W/ft² Unoccupied - 0.66 W/ft²	Room Type: Corridor - 0.90 W/ft² Storage - 0.90 W/ft² Run Room - 0.90 W/ft² Unoccupied - 0.90 W/ft²
Receptacle Elec Eq Power Density	1.71 W/ft²	1.75 W/ft²
HVAC System Type	FCU 4-1 Fan Coil Supply vol: 1987 cfm Fan power: 0.22 kW	FCU 4-1 Fan Coil Supply vol: 2287 cfm Fan power: 0.69 kW

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Section 1.4 - Comparison of Proposed Design Versus Baseline Design

Input Parameter	Proposed Design Input	Baseline Design Input
HVAC System Type	FCU 1-2 Single Zone Supply vol: 1061 cfm Fan power: 0.12 kW	FCU 1-2 Fan Coil Supply vol: 1223 cfm Fan power: 0.37 kW
HVAC System Type	FCU 2-1 Single Zone Supply vol: 1091 cfm Fan power: 0.12 kW	FCU 2-1 Fan Coil Supply vol: 1249 cfm Fan power: 0.37 kW
HVAC System Type	FCU 6-1 Single Zone Supply vol: 523 cfm Fan power: 0.06 kW	FCU 6-1 Fan Coil Supply vol: 917 cfm Fan power: 0.28 kW
HVAC System Type	FCU 5-1 Fan Coil Supply vol: 1084 cfm Fan power: 0.12 kW	FCU 5-1 Fan Coil Supply vol: 1250 cfm Fan power: 0.37 kW
HVAC System Type	FCU 3-1 Fan Coil Supply vol: 1700 cfm Fan power: 0.19 kW	FCU 3-1 Fan Coil Supply vol: 1958 cfm Fan power: 0.59 kW
HVAC System Type	FCU 5-2 Fan Coil Supply vol: 1064 cfm Fan power: 0.12 kW	FCU 5-2 Fan Coil Supply vol: 1227 cfm Fan power: 0.37 kW
HVAC System Type	FCU 1-3 Single Zone Supply vol: 1593 cfm Fan power: 0.18 kW	FCU 1-3 Fan Coil Supply vol: 1835 cfm Fan power: 0.55 kW
HVAC System Type	FCU 1-1 Single Zone Supply vol: 2167 cfm Fan power: 0.24 kW	FCU 1-1 Fan Coil Supply vol: 2514 cfm Fan power: 0.75 kW
HVAC System Type	AHU-4 Variable Volume Reheat (30% Min Flow Default) Uses: Enth Econ Supply vol: 28930 cfm Fan power: 20.44 kW	AHU 4 - LEVEL 3 System 7 - 2010 - VAV Reheat Chill Water & Hot Water Supply vol: 6188 cfm Fan power: 7.64 kW
HVAC System Type		AHU 4 - LEVEL 4 System 7 - 2010 - VAV Reheat Chill Water & Hot Water Supply vol: 6457 cfm Fan power: 7.97 kW

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Section 1.4 - Comparison of Proposed Design Versus Baseline Design

Input Parameter	Proposed Design Input	Baseline Design Input
HVAC System Type		AHU 4 - LEVEL 2 System 7 - 2010 - VAV Reheat Chill Water & Hot Water Supply vol: 5636 cfm Fan power: 6.96 kW
HVAC System Type		AHU 4 - LEVEL 5 System 7 - 2010 - VAV Reheat Chill Water & Hot Water Supply vol: 7060 cfm Fan power: 8.65 kW
Cooling Equipment	Plant: Cooling plant Type: Purchased Chilled Water Category: Water-cooled chiller Clg Cap: Design Engy Rate: 1 COP (compressor only)	Plant: Cooling plant Type: Purchased Chilled Water Category: Water-cooled chiller Clg Cap: Design Engy Rate: 1 COP (compressor only)
Chilled Water Pump	Type: Var vol chill water pump Full load consumption: 16 Watt/gpm	Type: 90.1-10 Min Var Vol Chilled Water Pump Full load consumption: 16 Watt/gpm
Heating Equipment	Plant: DHW Type: Default electric resistance Category: Electric resistance Capacity: 1100 Mbh Energy Rate: 100 Percent efficient	Plant: DHW Type: Default electric resistance Category: Electric resistance Capacity: 1100 Mbh Energy Rate: 100 Percent efficient
Heating Equipment	Plant: Heating plant Type: Purchased District Steam Category: Boiler Capacity: 1100 Mbh Energy Rate: 100 Percent efficient	Plant: Heating plant - 001 Type: Purchased District Steam Category: Boiler Capacity: Design Energy Rate: 100 Percent efficient
Hot Water Pump	Type: var volume heating water pump Full load consumption: 100 ft water	Type: 90.1 Pump Riding the Pump Curve Full load consumption: 19 Watt/gpm
Hot Water Pump	Type: Water circulating pump Full load consumption: 0.4 hp	Type: Water circulating pump Full load consumption: 0.4 hp
Thermal Energy Storage	No	No
Base Utility	Type: Elevator 1 Description: Elevator 1 Energy Type: Electricity Hourly Consumption: 18.6 kW Schedule: Base Util - Elevator (Office,Table G-I)	Type: Elevator 1 Description: Elevator 1 Energy Type: Electricity Hourly Consumption: 18.6 kW Schedule: Base Util - Elevator (Office,Table G-I)

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Section 1.4 - Comparison of Proposed Design Versus Baseline Design

Input Parameter	Proposed Design Input	Baseline Design Input
Base Utility	Type: dom hot water circulator Description: dom hot water circulator Energy Type: Electricity Hourly Consumption: 0.3 kW Schedule: Hot water - High Rise Office	Type: dom hot water circulator Description: dom hot water circulator Energy Type: Electricity Hourly Consumption: 0.3 kW Schedule: Hot water - High Rise Office
Base Utility	Type: Parking lot lights Description: Parking lot lights Energy Type: Electricity Hourly Consumption: 0.4 kW Schedule: Parking lot lights	Type: Parking lot lights Description: Parking lot lights Energy Type: Electricity Hourly Consumption: 0.9 kW Schedule: Parking lot lights

Section 1.5 - Energy Type Summary (Proposed)

Energy Type	Utility Rate Description	Units
Electric Consumption	Univ of Texas	kWh
Electric Demand	Univ of Texas	kW
Purchased Chilled Water	Univ of Texas	therms
Purchased Steam	Univ of Texas	therms

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Section 1.6 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
Space Heating	No	Electricity	Energy Use (kWh)	13,280	13,275	13,283	13,280	13,280
			Demand (kW)	6.6	6.6	6.6	6.6	6.6
Pumps	No	Electricity	Energy Use (kWh)	7,132	7,057	7,199	7,108	7,124
			Demand (kW)	5.0	4.7	5.0	5.0	4.9
Fans - Interior	No	Electricity	Energy Use (kWh)	84,491	86,391	88,430	85,155	86,117
			Demand (kW)	35.1	33.1	35.5	35.1	34.7
Receptacle Equipment	Yes	Electricity	Energy Use (kWh)	174,575	174,575	174,575	174,575	174,575
			Demand (kW)	52.7	52.7	52.7	52.7	52.7
Interior Lighting	No	Electricity	Energy Use (kWh)	89,244	89,244	89,244	89,244	89,244
			Demand (kW)	26.9	26.9	26.9	26.9	26.9
Elevator 1 - Base Utility	Yes	Electricity	Energy Use (kWh)	28,949	28,949	28,949	28,949	28,949
			Demand (kW)	12.9	12.9	12.9	12.9	12.9
Parking lot lights - Base Utility	Yes	Electricity	Energy Use (kWh)	4,123	4,123	4,123	4,123	4,123
			Demand (kW)	0.9	0.9	0.9	0.9	0.9
dom hot water circulator - Base Utility	Yes	Electricity	Energy Use (kWh)	535	535	535	535	535
			Demand (kW)	0.3	0.3	0.3	0.3	0.3
Space Heating	No	Purchased Steam	Energy Use (therms)	2,121	2,005	2,088	2,083	2,074
			Demand (therms)	4.2	4.2	4.3	4.2	4.2
Space Cooling	No	Purchased Chilled Water	Energy Use (therms)	31,052	30,600	31,660	31,086	31,100
			Demand (therms)	13.3	12.6	13.4	13.3	13.1
Baseline Energy Totals:			Energy Use (MMBtu/yr)	**4,690.4**	**4,639.9**	**4,761.7**	**4,692.2**	**4,696.1**
			Process (MMBtu/yr)	**710.5**	**710.5**	**710.5**	**710.5**	**710.5**

Section 1.6 Proposed Performance - Performance Rating Method Compliance

End Use	Process	Proposed Design Energy Type	Units of Annual Energy & Peak Demand	Proposed Design
Space Heating	No	Electricity	Energy Use (kWh)	13,216
			Demand (kW)	6.6
Pumps	No	Electricity	Energy Use (kWh)	5,976
			Demand (kW)	4.4

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Section 1.6 Proposed Performance - Performance Rating Method Compliance

End Use	Process	Proposed Design Energy Type	Units of Annual Energy & Peak Demand	Proposed Design
Fans - Interior	No	Electricity	Energy Use (kWh)	49,668
			Demand (kW)	21.6
Receptacle Equipment	Yes	Electricity	Energy Use (kWh)	174,575
			Demand (kW)	52.7
Interior Lighting	No	Electricity	Energy Use (kWh)	67,294
			Demand (kW)	20.3
Elevator 1 - Base Utility	Yes	Electricity	Energy Use (kWh)	28,949
			Demand (kW)	12.9
Parking lot lights - Base Utility	Yes	Electricity	Energy Use (kWh)	2,021
			Demand (kW)	0.4
dom hot water circulator - Base Utility	Yes	Electricity	Energy Use (kWh)	535
			Demand (kW)	0.3
Space Heating	No	Purchased Steam	Energy Use (therms)	1,032
			Demand (therm)	4.1
Space Cooling	No	Purchased Chilled Water	Energy Use (therms)	27,701
			Demand (therm)	12.8
Proposed Energy Totals:			Energy Use (MMBtu/yr)	**4,041.31**
			Process (MMBtu/yr)	**703.35**

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Table 1.6 Table EAp2-9 Energy Cost Summary (Manual Cost Input) - Baseline Case

Energy Type	Baseline Cost (0° rotation)	Baseline Cost (90° rotation)	Baseline Cost (180° rotation)	Baseline Cost (270° rotation)	Average
Electric Consumption	$30,979	$31,119	$31,288	$31,028	$31,104
Purchased Steam	$1,939	$1,833	$1,909	$1,904	$1,896
Purchased Chilled Water	$27,559	$27,157	$28,099	$27,589	$27,601

Table 1.6 Table EAp2-9 Energy Cost Summary (Manual Cost Input) - Proposed Case

Energy Type	Proposed Cost
Electric Consumption	$26,352
Purchased Steam	$943
Purchased Chilled Water	$24,585

Proposed building economic cost improvement over baseline building: 14.39 %