

Program Version: **EnergyPlus, Version 8.9.0-40101eaafd, YMD=2018.07.23 12:58**

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Tabular Output Report in Format: **HTML**

Building: **Scott Hall 6002**

Environment: **PITTSBURGH PA USA TMY2-94823 WMO#=725200**

Simulation Timestamp: **2018-07-23 12:58:05**

Report: **Annual Building Utility Performance Summary**

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For: **Entire Facility**

Timestamp: **2018-07-23 12:58:05**

Values gathered over **24.00** hours

WARNING: THE REPORT DOES NOT REPRESENT A FULL ANNUAL SIMULATION.

Site and Source Energy

	Total Energy [GJ]	Energy Per Total Building Area [MJ/m2]	Energy Per Conditioned Building Area [MJ/m2]
Total Site Energy	0.16	4.02	4.02
Net Site Energy	0.16	4.02	4.02
Total Source Energy	0.48	12.27	12.27
Net Source Energy	0.48	12.27	12.27

Site to Source Energy Conversion Factors

	Site=>Source Conversion Factor
Electricity	3.167
Natural Gas	1.084
District Cooling	1.056
District Heating	3.613
Steam	0.300
Gasoline	1.050
Diesel	1.050
Coal	1.050
Fuel Oil #1	1.050
Fuel Oil #2	1.050
Propane	1.050

Propane	1.000
Other Fuel 1	1.000
Other Fuel 2	1.000

Building Area

	Area [m2]
Total Building Area	39.46
Net Conditioned Building Area	39.46
Unconditioned Building Area	0.00

End Uses

	Electricity [GJ]	Natural Gas [GJ]	Additional Fuel [GJ]	District Cooling [GJ]	District Heating [GJ]	Water [m3]
Heating	0.00	0.01	0.00	0.00	0.00	0.00
Cooling	0.06	0.00	0.00	0.00	0.00	0.00
Interior Lighting	0.03	0.00	0.00	0.00	0.00	0.00
Exterior Lighting	0.00	0.00	0.00	0.00	0.00	0.00
Interior Equipment	0.04	0.00	0.00	0.00	0.00	0.00
Exterior Equipment	0.00	0.00	0.00	0.00	0.00	0.00
Fans	0.01	0.00	0.00	0.00	0.00	0.00
Pumps	0.01	0.00	0.00	0.00	0.00	0.00
Heat Rejection	0.00	0.00	0.00	0.00	0.00	0.11
Humidification	0.00	0.00	0.00	0.00	0.00	0.00
Heat Recovery	0.00	0.00	0.00	0.00	0.00	0.00
Water Systems	0.00	0.00	0.00	0.00	0.00	0.00
Refrigeration	0.00	0.00	0.00	0.00	0.00	0.00
Generators	0.00	0.00	0.00	0.00	0.00	0.00
Total End Uses	0.15	0.01	0.00	0.00	0.00	0.11

Note: Natural gas appears to be the principal heating source based on energy usage.

End Uses By Subcategory

	Subcategory	Electricity [GJ]	Natural Gas [GJ]	Additional Fuel [GJ]	District Cooling [GJ]	District Heating [GJ]	Water [m3]
Heating	Boiler	0.00	0.01	0.00	0.00	0.00	0.00
	Boiler						

	Parasitic	0.00	0.00	0.00	0.00	0.00	0.00
Cooling	General	0.06	0.00	0.00	0.00	0.00	0.00
Interior Lighting	General	0.03	0.00	0.00	0.00	0.00	0.00
Exterior Lighting	General	0.00	0.00	0.00	0.00	0.00	0.00
Interior Equipment	General	0.04	0.00	0.00	0.00	0.00	0.00
Exterior Equipment	General	0.00	0.00	0.00	0.00	0.00	0.00
Fans	General	0.01	0.00	0.00	0.00	0.00	0.00
Pumps	General	0.01	0.00	0.00	0.00	0.00	0.00
Heat Rejection	General	0.00	0.00	0.00	0.00	0.00	0.00
	Other	0.00	0.00	0.00	0.00	0.00	0.11
Humidification	General	0.00	0.00	0.00	0.00	0.00	0.00
Heat Recovery	General	0.00	0.00	0.00	0.00	0.00	0.00
Water Systems	General	0.00	0.00	0.00	0.00	0.00	0.00
Refrigeration	General	0.00	0.00	0.00	0.00	0.00	0.00
Generators	General	0.00	0.00	0.00	0.00	0.00	0.00

Normalized Metrics

Utility Use Per Conditioned Floor Area

	Electricity Intensity [MJ/m ²]	Natural Gas Intensity [MJ/m ²]	Additional Fuel Intensity [MJ/m ²]	District Cooling Intensity [MJ/m ²]	District Heating Intensity [MJ/m ²]	Water Intensity [m ³ /m ²]
Lighting	0.88	0.00	0.00	0.00	0.00	0.00
HVAC	1.99	0.22	0.00	0.00	0.00	0.00
Other	0.93	0.00	0.00	0.00	0.00	0.00
Total	3.80	0.22	0.00	0.00	0.00	0.00

Utility Use Per Total Floor Area

	Electricity Intensity [MJ/m ²]	Natural Gas Intensity [MJ/m ²]	Additional Fuel Intensity [MJ/m ²]	District Cooling Intensity [MJ/m ²]	District Heating Intensity [MJ/m ²]	Water Intensity [m ³ /m ²]
Lighting	0.88	0.00	0.00	0.00	0.00	0.00
HVAC	1.99	0.22	0.00	0.00	0.00	0.00
Other	0.93	0.00	0.00	0.00	0.00	0.00
Total	3.80	0.22	0.00	0.00	0.00	0.00

Electric Loads Satisfied

	Electricity [GJ]	Percent Electricity [%]
Fuel-Fired Power Generation	0.000	0.00
High Temperature Geothermal*	0.000	0.00
Photovoltaic Power	0.000	0.00
Wind Power	0.000	0.00
Power Conversion	0.000	0.00
Net Decrease in On-Site Storage	0.000	0.00
Total On-Site Electric Sources	0.000	0.00
Electricity Coming From Utility	0.150	100.00
Surplus Electricity Going To Utility	0.000	0.00
Net Electricity From Utility	0.150	100.00
Total On-Site and Utility Electric Sources	0.150	100.00
Total Electricity End Uses	0.150	100.00

On-Site Thermal Sources

	Heat [GJ]	Percent Heat [%]
Water-Side Heat Recovery	0.00	
Air to Air Heat Recovery for Cooling	0.00	
Air to Air Heat Recovery for Heating	0.00	
High-Temperature Geothermal*	0.00	
Solar Water Thermal	0.00	
Solar Air Thermal	0.00	
Total On-Site Thermal Sources	0.00	

Water Source Summary

	Water [m3]	Percent Water [%]
Rainwater Collection	0.00	0.00
Condensate Collection	0.00	0.00
Groundwater Well	0.00	0.00
Total On Site Water Sources	0.00	0.00
-	-	-

Initial Storage	0.00	0.00
Final Storage	0.00	0.00
Change in Storage	0.00	0.00
-	-	-
Water Supplied by Utility	0.11	100.00
-	-	-
Total On Site, Change in Storage, and Utility Water Sources	0.11	100.00
Total Water End Uses	0.11	100.00

Setpoint Not Met Criteria

	Degrees [deltaC]
Tolerance for Zone Heating Setpoint Not Met Time	0.20
Tolerance for Zone Cooling Setpoint Not Met Time	0.20

Comfort and Setpoint Not Met Summary

	Facility [Hours]
Time Setpoint Not Met During Occupied Heating	0.00
Time Setpoint Not Met During Occupied Cooling	0.00
Time Not Comfortable Based on Simple ASHRAE 55-2004	0.00

Note 1: An asterisk (*) indicates that the feature is not yet implemented.

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Report: **Equipment Summary**

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For: **Entire Facility**

Timestamp: **2018-07-23 12:58:05**

Central Plant

	Type	Nominal Capacity [W]	Nominal Efficiency [W/W]	IPLV in SI Units [W/W]	IPLV in IP Units [Btu/W-h]
BOILER 1	Boiler:HotWater	2187.48	0.80		
CHILLER 1	Chiller:Electric:EIR	8499.42	3.60	3.42	11.66

TOWER 1	CoolingTower:TwoSpeed	8688.30			
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Cooling Coils

	Type	Design Coil Load [W]	Nominal Total Capacity [W]	Nominal Sensible Capacity [W]	Nominal Latent Capacity [W]	Nominal Sensible Heat Ratio	Nominal Efficiency [W/W]	Nominal Coil UA Value [W/C]	Nominal Coil Surface Area [m2]
VAV WITH REHEAT COOLING COIL	Coil:Cooling:Water	8499.56	7077.73	4521.66	2556.07	0.64	-	817.16	8.29

Nominal values are gross at rated conditions, i.e., the supply air fan heat and electric power NOT accounted for.

DX Cooling Coils

	DX Cooling Coil Type	Standard Rated Net Cooling Capacity [W]	Standard Rated Net COP [W/W]	EER [Btu/W-h]	SEER [Btu/W-h]	IEER [Btu/W-h]
None						

DX Cooling Coil ASHRAE 127 Standard Ratings Report

	DX Cooling Coil Type	Rated Net Cooling Capacity Test A [W]	Rated Electric Power Test A [W]	Rated Net Cooling Capacity Test B [W]	Rated Electric Power Test B [W]	Rated Net Cooling Capacity Test C [W]	Rated Electric Power Test C [W]	Rated Net Cooling Capacity Test D [W]	Rated Electric Power Test D [W]
None									

DX Heating Coils

	DX Heating Coil Type	High Temperature Heating (net) Rating Capacity [W]	Low Temperature Heating (net) Rating Capacity [W]	HSPF [Btu/W-h]	Region Number
None					

Heating Coils

	Type	Design Coil Load [W]	Nominal Total Capacity [W]	Nominal Efficiency [W/W]
ZONE ONE REHEAT COIL	Coil:Heating:Water	2142.96	1757.69	-
VAV WITH REHEAT HEATING COIL	Coil:Heating:Water	0.00	0.00	-

Nominal values are gross at rated conditions, i.e., the supply air fan heat and electric power NOT accounted for.

Fans

	Type	Total Efficiency [W/W]	Delta Pressure [pa]	Max Air Flow Rate [m3/s]	Rated Electric Power [W]	Rated Power Per Max Air Flow Rate [W-s/m3]	Motor Heat In Air Fraction	End Use	Design Day Name for Fan Sizing Peak	Date/Time for Fan Sizing Peak
VAV WITH REHEAT SUPPLY FAN	Fan:VariableVolume	0.70	1000.00	0.24	339.14	1428.57	1.00	General	test my Design Day	test 1/2 00:00:00

Pumps

	Type	Control	Head [pa]	Water Flow [m3/s]	Electric Power [W]	Power Per Water Flow Rate [W-s/m3]	Motor Efficiency [W/W]
HOT WATER PLANT HW SUPPLY PUMP	Pump:ConstantSpeed	Intermittent	179352.00	0.000047	12.10	255487.18	0.90
CHILLED WATER PLANT CHW SUPPLY PUMP	Pump:VariableSpeed	Intermittent	179352.00	0.000304	77.56	255487.18	0.90
CHILLED WATER PLANT CNDW SUPPLY PUMP	Pump:VariableSpeed	Intermittent	179352.00	0.000464	118.55	255487.18	0.90

Service Water Heating

	Type	Storage Volume [m3]	Input [W]	Thermal Efficiency [W/W]	Recovery Efficiency [W/W]	Energy Factor
None						