

REPORT: SIMULATION FOR MODIFICATION 3

Site and Source Energy

	Total Energy [GJ]	Energy Per Total Building Area [MJ/m2]	Energy Per Conditioned Building Area [MJ/m2]
Total Site Energy	5647.82	1050.56	1050.56
Net Site Energy	4701.79	874.59	874.59
Total Source Energy	18270.34	3398.50	3398.50
Net Source Energy	15274.28	2841.20	2841.20

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
Other Fuel 1	1.000
Other Fuel 2	1.000

Building Area

	Area [m2]
Total Building Area	5376.00
Net Conditioned Building Area	5376.00
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	0.00	0.00	0.00	3558.49	0.00
Cooling	0.00	0.00	0.00	570.53	0.00	0.00
Interior Lighting	602.26	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	916.55	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	0.00	0.00	0.00	0.00	0.00	0.00
Pumps	0.00	0.00	0.00	0.00	0.00	0.00
Heat Rejection	0.00	0.00	0.00	0.00	0.00	0.00
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	1518.81	0.00	0.00	570.53	3558.49	0.00

Note: District heat appears to be the principal heating source based on energy usage.

Electric Loads Satisfied

	Electricity [GJ]	Percent Electricity [%]
Fuel-Fired Power Generation	0.000	0.00
High Temperature Geothermal*	0.000	0.00
Photovoltaic Power	965.331	63.56
Wind Power	0.000	0.00
Power Conversion	-19.31	-1.3
Net Decrease in On-Site Storage	0.000	0.00
Total On-Site Electric Sources	946.025	62.29
Electricity Coming From Utility	843.200	55.52
Surplus Electricity Going To Utility	270.420	17.80

Net Electricity From Utility	572.780	37.71
Total On-Site and Utility Electric Sources	1518.805	100.00
Total Electricity End Uses	1518.805	100.00

ENVELOPE

Window-Wall Ratio

	Total	North (315 to 45 deg)	East (45 to 135 deg)	South (135 to 225 deg)	West (225 to 315 deg)
Gross Wall Area [m2]	8845.20	2478.00	1944.60	2478.00	1944.60
Above Ground Wall Area [m2]	8845.20	2478.00	1944.60	2478.00	1944.60
Window Opening Area [m2]	4662.00	1379.70	942.48	1379.70	960.12
Gross Window-Wall Ratio [%]	52.71	55.68	48.47	55.68	49.37
Above Ground Window-Wall Ratio [%]	52.71	55.68	48.47	55.68	49.37

Conditioned Window-Wall Ratio

	Total	North (315 to 45 deg)	East (45 to 135 deg)	South (135 to 225 deg)	West (225 to 315 deg)
Gross Wall Area [m2]	8845.20	2478.00	1944.60	2478.00	1944.60
Above Ground Wall Area [m2]	8845.20	2478.00	1944.60	2478.00	1944.60
Window Opening Area [m2]	4662.00	1379.70	942.48	1379.70	960.12
Gross Window-Wall Ratio [%]	52.71	55.68	48.47	55.68	49.37
Above Ground Window-Wall Ratio [%]	52.71	55.68	48.47	55.68	49.37

Skylight-Roof Ratio

	Total
Gross Roof Area [m2]	5376.00
Skylight Area [m2]	0.00
Skylight-Roof Ratio [%]	0.00

Report: **Source Energy End Use Components Summary**

For: **Entire Facility**

Timestamp: **2018-01-17 17:24:43** Values gathered over **8760.00** hours

Source Energy End Use Components Summary

	Source Electricity [GJ]	Source Natural Gas [GJ]	Source Additional Fuel [GJ]	Source District Cooling [GJ]	Source District Heating [GJ]
Heating	0.00	0.00	0.00	0.00	12857.99
Cooling	0.00	0.00	0.00	602.29	0.00
Interior Lighting	1907.35	0.00	0.00	0.00	0.00
Exterior Lighting	0.00	0.00	0.00	0.00	0.00
Interior Equipment	2902.70	0.00	0.00	0.00	0.00
Exterior Equipment	0.00	0.00	0.00	0.00	0.00
Fans	0.00	0.00	0.00	0.00	0.00
Pumps	0.00	0.00	0.00	0.00	0.00
Heat Rejection	0.00	0.00	0.00	0.00	0.00
Humidification	0.00	0.00	0.00	0.00	0.00
Heat Recovery	0.00	0.00	0.00	0.00	0.00
Water Systems	0.00	0.00	0.00	0.00	0.00
Refrigeration	0.00	0.00	0.00	0.00	0.00
Generators	0.00	0.00	0.00	0.00	0.00
Total Source Energy End Use Components	4810.06	0.00	0.00	602.29	12857.99

Normalized Metrics

Source Energy End Use Components Per Conditioned Floor Area

	Source Electricity [MJ/m2]	Source Natural Gas [MJ/m2]	Source Additional Fuel [MJ/m2]	Source District Cooling [MJ/m2]	Source District Heating [MJ/m2]
Heating	0.00	0.00	0.00	0.00	2391.74
Cooling	0.00	0.00	0.00	112.03	0.00
Interior Lighting	354.79	0.00	0.00	0.00	0.00
Exterior Lighting	0.00	0.00	0.00	0.00	0.00
Interior Equipment	539.94	0.00	0.00	0.00	0.00

Exterior Equipment	0.00	0.00	0.00	0.00	0.00
Fans	0.00	0.00	0.00	0.00	0.00
Pumps	0.00	0.00	0.00	0.00	0.00
Heat Rejection	0.00	0.00	0.00	0.00	0.00
Humidification	0.00	0.00	0.00	0.00	0.00
Heat Recovery	0.00	0.00	0.00	0.00	0.00
Water Systems	0.00	0.00	0.00	0.00	0.00
Refrigeration	0.00	0.00	0.00	0.00	0.00
Generators	0.00	0.00	0.00	0.00	0.00
Total Source Energy End Use Components	894.73	0.00	0.00	112.03	2391.74

Source Energy End Use Components Per Total Floor Area

	Source Electricity [MJ/m2]	Source Natural Gas [MJ/m2]	Source Additional Fuel [MJ/m2]	Source District Cooling [MJ/m2]	Source District Heating [MJ/m2]
Heating	0.00	0.00	0.00	0.00	2391.74
Cooling	0.00	0.00	0.00	112.03	0.00
Interior Lighting	354.79	0.00	0.00	0.00	0.00
Exterior Lighting	0.00	0.00	0.00	0.00	0.00
Interior Equipment	539.94	0.00	0.00	0.00	0.00
Exterior Equipment	0.00	0.00	0.00	0.00	0.00
Fans	0.00	0.00	0.00	0.00	0.00
Pumps	0.00	0.00	0.00	0.00	0.00
Heat Rejection	0.00	0.00	0.00	0.00	0.00
Humidification	0.00	0.00	0.00	0.00	0.00
Heat Recovery	0.00	0.00	0.00	0.00	0.00
Water Systems	0.00	0.00	0.00	0.00	0.00
Refrigeration	0.00	0.00	0.00	0.00	0.00
Generators	0.00	0.00	0.00	0.00	0.00
Total Source Energy End Use Components	894.73	0.00	0.00	112.03	2391.74

Report: **Climatic Data Summary**

For: **Entire Facility**

Timestamp: **2018-01-17 17:24:43 Sizing Period: Design Day**

	Maximum Dry Bulb [C]	Daily Temperature Range [deltaC]	Humidity Value	Humidity Type	Wind Speed [m/s]	Wind Direction
MILANO-LINATE ANN CLG .4% CONDNS DB=>MWB	33.00	10.20	24.10	Wetbulb [C]	2.30	220.00
MILANO-LINATE ANN CLG .4% CONDNS DP=>MDB	28.50	10.20	23.50	Dewpoint [C]	2.30	220.00
MILANO-LINATE ANN CLG .4% CONDNS ENTH=>MDB	31.00	10.20	77500.00	Enthalpy [J/kg]	2.30	220.00
MILANO-LINATE ANN CLG .4% CONDNS WB=>MDB	31.00	10.20	25.20	Wetbulb [C]	2.30	220.00
MILANO-LINATE ANN HTG 99.6% CONDNS DB	-5.10	0.00	-5.10	Wetbulb [C]	0.40	240.00
MILANO-LINATE ANN HTG WIND 99.6% CONDNS WS=>MCDB	8.80	0.00	8.80	Wetbulb [C]	10.30	240.00
MILANO-LINATE ANN HUM_N 99.6% CONDNS DP=>MCDB	2.30	0.00	-11.50	Dewpoint [C]	0.40	240.00

EA2-6. Energy Use Summary

	Process Subtotal [GJ]	Total Energy Use [GJ]
Electricity	916.55	1518.81
Natural Gas	0.00	0.00
Additional	0.00	4129.01
Total	916.55	5647.82

Report: **BUILDING ENERGY PERFORMANCE - ELECTRICITY**

For: **Meter**

Timestamp: **2018-01-17 17:24:43 Custom Monthly Report**

	INTERIOR LIGHTS : ELECTRICITY [J]	INTERIOR EQUIPMENT : ELECTRICITY [J]
January	0.507546E+11	0.775948E+11
February	0.463103E+11	0.703965E+11

March	0.526406E+11	0.791041E+11
April	0.473373E+11	0.734828E+11
May	0.526406E+11	0.791041E+11
June	0.505305E+11	0.762015E+11
July	0.494474E+11	0.763854E+11
August	0.526406E+11	0.791041E+11
September	0.492234E+11	0.749922E+11
October	0.507546E+11	0.775948E+11
November	0.505305E+11	0.762015E+11
December	0.494474E+11	0.763854E+11
Annual Sum or Average	0.602258E+12	0.916547E+12
Minimum of Months	0.463103E+11	0.703965E+11
Maximum of Months	0.526406E+11	0.791041E+11

Report: **BUILDING ENERGY PERFORMANCE - DISTRICT HEATING**

For: **Meter**

Timestamp: **2018-01-17 17:24:43 Custom Monthly Report**

	HEATING : DISTRICT HEATING [J]
January	0.800179E+12
February	0.629427E+12
March	0.395254E+12
April	0.242805E+12
May	0.742443E+11
June	0.236778E+11
July	0.317072E+10
August	0.546845E+10
September	0.458876E+11
October	0.174869E+12
November	0.461984E+12
December	0.701519E+12
Annual Sum or Average	0.355849E+13
Minimum of Months	0.317072E+10
Maximum of Months	0.800179E+12

Report: **BUILDING ENERGY PERFORMANCE - DISTRICT COOLING**

For: **Meter**

Timestamp: **2018-01-17 17:24:43 Custom Monthly Report**

	COOLING : DISTRICT COOLING [J]
January	0.00
February	92287220.01
March	0.530776E+10
April	0.754263E+10
May	0.525594E+11
June	0.115677E+12
July	0.172325E+12
August	0.138488E+12
September	0.642385E+11
October	0.128140E+11
November	0.148408E+10
December	0.00
Annual Sum or Average	0.570529E+12
Minimum of Months	0.00
Maximum of Months	0.172325E+12

Report: **BUILDING ENERGY PERFORMANCE - ELECTRICITY PEAK DEMAND**

For: **Meter**

Timestamp: **2018-01-17 17:24:43 Custom Monthly Report**

	ELECTRICITY : FACILITY {Maximum}[W]	ELECTRICITY : FACILITY {TIMESTAMP}	INTERIOR LIGHTS : ELECTRICITY {AT MAX/MIN} [W]	INTERIOR EQUIPMENT : ELECTRICITY {AT MAX/MIN} [W]
January	95059.56	02-JAN-08:15	46683.77	48375.79
February	95059.56	01-FEB-08:15	46683.77	48375.79
March	95059.56	01-MAR-08:15	46683.77	48375.79
April	95059.56	03-APR-08:15	46683.77	48375.79
May	95059.56	01-MAY-08:15	46683.77	48375.79
June	95059.56	01-JUN-08:15	46683.77	48375.79
July	95059.56	03-JUL-08:15	46683.77	48375.79

August	95059.56	01-AUG-08:15	46683.77	48375.79
September	95059.56	01-SEP-08:15	46683.77	48375.79
October	95059.56	02-OCT-08:15	46683.77	48375.79
November	95059.56	01-NOV-08:15	46683.77	48375.79
December	95059.56	01-DEC-08:15	46683.77	48375.79
Annual Sum or Average				
Minimum of Months	95059.56		46683.77	48375.79
Maximum of Months	95059.56		46683.77	48375.79

Report: **BUILDING ENERGY PERFORMANCE - DISTRICT HEATING PEAK DEMAND**

For: **Meter**

Timestamp: **2018-01-17 17:24:43 Custom Monthly Report**

	DISTRICT HEATING : FACILITY {Maximum}[W]	DISTRICT HEATING : FACILITY {TIMESTAMP}	HEATING : DISTRICT HEATING {AT MAX/MIN} [W]
January	816368.61	30-JAN-06:15	816368.61
February	732585.93	08-FEB-06:15	732585.93
March	686942.17	01-MAR-06:15	686942.17
April	626576.00	01-APR-06:15	626576.00
May	441726.12	02-MAY-06:15	441726.12
June	403569.17	13-JUN-06:15	403569.17
July	221666.62	15-JUL-06:15	221666.62
August	251714.90	30-AUG-06:15	251714.90
September	445542.45	29-SEP-06:15	445542.45
October	567306.28	31-OCT-06:15	567306.28
November	655549.02	18-NOV-06:15	655549.02
December	775365.30	29-DEC-06:15	775365.30
Annual Sum or Average			
Minimum of Months	221666.62		221666.62
Maximum of Months	816368.61		816368.61

Report: **BUILDING ENERGY PERFORMANCE - DISTRICT COOLING PEAK DEMAND**

For: **Meter**

Timestamp: **2018-01-17 17:24:43 Custom Monthly Report**

	DISTRICT COOLING : FACILITY {Maximum}[W]	DISTRICT COOLING : FACILITY {TIMESTAMP}	COOLING : DISTRICT COOLING {AT MAX/MIN} [W]
January	0.00	01-JAN-00:15	0.00
February	10229.68	17-FEB-15:00	10229.68
March	58329.48	15-MAR-15:00	58329.48
April	56946.05	07-APR-15:00	56946.05
May	182766.27	25-MAY-16:15	182766.27
June	307458.48	29-JUN-15:00	307458.48
July	313104.50	24-JUL-16:15	313104.50
August	259100.56	08-AUG-15:00	259100.56
September	204959.23	01-SEP-15:00	204959.23
October	93382.99	12-OCT-14:00	93382.99
November	22712.49	03-NOV-15:15	22712.49
December	0.00	01-DEC-00:15	0.00
Annual Sum or Average			
Minimum of Months	0.00		0.00
Maximum of Months	313104.50		313104.50