Program Version:**EnergyPlus, Version 8.8.0-7c3bbe4830, YMD=2018.01.18 22:06**

Table of Contents

Tabular Output Report in Format: **HTML**

Building: **Building 1**

Environment: **RUN PERIOD 1 ** Piacenza - ITA IGDG WMO#=160840**

Simulation Timestamp: **2018-01-18 22:06:35**

---

Report: **Annual Building Utility Performance Summary**

Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Values gathered over 8760.00 hours**

**Site and Source Energy**

| | Total Energy [GJ] | Energy Per Total Building Area [MJ/m2] | Energy Per Conditioned Building Area [MJ/m2] |
|---|---|---|---|
| Total Site Energy | 2140.08 | 594.47 | 594.47 |
| Net Site Energy | 2140.08 | 594.47 | 594.47 |
| Total Source Energy | 5721.56 | 1589.32 | 1589.32 |
| Net Source Energy | 5721.56 | 1589.32 | 1589.32 |

**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 | 3600.00 |
| Net Conditioned Building Area | 3600.00 |
| 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 | 403.35 | 0.00 |
| Cooling | 0.00 | 0.00 | 0.00 | 585.47 | 0.00 | 0.00 |
| Interior Lighting | 494.91 | 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 | 656.35 | 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 | 1151.26 | 0.00 | 0.00 | 585.47 | 403.35 | 0.00 |

*Note: District heat 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 | General | 0.00 | 0.00 | 0.00 | 0.00 | 403.35 | 0.00 |
| Cooling | General | 0.00 | 0.00 | 0.00 | 585.47 | 0.00 | 0.00 |
| Interior Lighting | General | 494.91 | 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 | 656.35 | 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 | Ventilation (simple) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pumps | General | 0.00 | 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 |
| 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/m2] | Natural Gas Intensity [MJ/m2] | Additional Fuel Intensity [MJ/m2] | District Cooling Intensity [MJ/m2] | District Heating Intensity [MJ/m2] | Water Intensity [m3/m2] |
|---|---|---|---|---|---|---|
| Lighting | 137.47 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| HVAC | 0.00 | 0.00 | 0.00 | 162.63 | 112.04 | 0.00 |
| Other | 182.32 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total | 319.79 | 0.00 | 0.00 | 162.63 | 112.04 | 0.00 |

**Utility Use Per Total Floor Area**

| | Electricity Intensity [MJ/m2] | Natural Gas Intensity [MJ/m2] | Additional Fuel Intensity [MJ/m2] | District Cooling Intensity [MJ/m2] | District Heating Intensity [MJ/m2] | Water Intensity [m3/m2] |
|---|---|---|---|---|---|---|
| Lighting | 137.47 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| HVAC | 0.00 | 0.00 | 0.00 | 162.63 | 112.04 | 0.00 |
| Other | 182.32 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total | 319.79 | 0.00 | 0.00 | 162.63 | 112.04 | 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 | 1151.260 | 100.00 |
| Surplus Electricity Going To Utility | 0.000 | 0.00 |

| | | |
|---|---|---|
| Net Electricity From Utility | 1151.260 | 100.00 |
| | | |
| Total On-Site and Utility Electric Sources | 1151.260 | 100.00 |
| Total Electricity End Uses | 1151.260 | 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 | - |
| Condensate Collection | 0.00 | - |
| Groundwater Well | 0.00 | - |
| Total On Site Water Sources | 0.00 | - |
| - | - | - |
| Initial Storage | 0.00 | - |
| Final Storage | 0.00 | - |
| Change in Storage | 0.00 | - |
| - | - | - |
| Water Supplied by Utility | 0.00 | - |
| - | - | - |
| Total On Site, Change in Storage, and Utility Water Sources | 0.00 | - |
| Total Water End Uses | 0.00 | - |

**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 | 2883.83 |

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

---

**Table of Contents**

Top
Annual Building Utility Performance Summary
Input Verification and Results Summary
Demand End Use Components Summary
Source Energy End Use Components Summary
Component Sizing Summary
Surface Shadowing Summary
Adaptive Comfort Summary
Initialization Summary
Climatic Data Summary
Envelope Summary
Shading Summary
Lighting Summary

Equipment Summary
HVAC Sizing Summary
System Summary
Outdoor Air Summary
Object Count Summary
Energy Meters
Sensible Heat Gain Summary
Standard 62.1 Summary
LEED Summary

**BUILDING ENERGY PERFORMANCE - ELECTRICITY**

| Meter |

**BUILDING ENERGY PERFORMANCE - DISTRICT HEATING**

| Meter |

**BUILDING ENERGY PERFORMANCE - DISTRICT COOLING**

| Meter |

**BUILDING ENERGY PERFORMANCE - ELECTRICITY PEAK DEMAND**

| Meter |

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

| Meter |

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

| Meter |

**Life-Cycle Cost Report**

| Entire Facility |

---

Report: **Input Verification and Results Summary** Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**General**

| | Value |
|---|---|
| Program Version and Build | EnergyPlus, Version 8.8.0-7c3bbe4830, YMD=2018.01.18 22:06 |
| RunPeriod | RUN PERIOD 1 |
| Weather File | Piacenza - ITA IGDG WMO#=160840 |
| Latitude [deg] | 44.92 |
| Longitude [deg] | 9.73 |
| Elevation [m] | 134.00 |
| Time Zone | 1.00 |
| North Axis Angle [deg] | 0.00 |
| Rotation for Appendix G [deg] | 0.00 |
| Hours Simulated [hrs] | 8760.00 |

**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] | 1260.00 | 270.00 | 360.00 | 270.00 | 360.00 |
| Above Ground Wall Area [m2] | 1260.00 | 270.00 | 360.00 | 270.00 | 360.00 |
| Window Opening Area [m2] | 504.00 | 108.00 | 144.00 | 108.00 | 144.00 |
| Gross Window-Wall Ratio [%] | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 |
| Above Ground Window-Wall Ratio [%] | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 |

**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] | 1260.00 | 270.00 | 360.00 | 270.00 | 360.00 |
| Above Ground Wall Area [m2] | 1260.00 | 270.00 | 360.00 | 270.00 | 360.00 |

| | | | | | |
|---|---|---|---|---|---|
| Window Opening Area [m2] | 504.00 | 108.00 | 144.00 | 108.00 | 144.00 |
| Gross Window-Wall Ratio [%] | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 |
| Above Ground Window-Wall Ratio [%] | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 |

**Skylight-Roof Ratio**

| | Total |
|---|---|
| Gross Roof Area [m2] | 1200.00 |
| Skylight Area [m2] | 0.00 |
| Skylight-Roof Ratio [%] | 0.00 |

**PERFORMANCE**

**Zone Summary**

| | Area [m2] | Conditioned (Y/N) | Part of Total Floor Area (Y/N) | Volume [m3] | Multipliers | Above Ground Gross Wall Area [m2] | Underground Gross Wall Area [m2] | Window Glass Area [m2] | Opening Area [m2] | Lighting [W/m2] | People [m2 per person] | Plug and Process [W/m2] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| THERMAL ZONE 1 | 900.00 | Yes | Yes | 2700.00 | 1.00 | 360.00 | 0.00 | 144.00 | 144.00 | 10.6563 | 17.70 | 7.6424 |
| THERMAL ZONE 2 | 200.00 | Yes | Yes | 600.00 | 1.00 | 90.00 | 0.00 | 36.00 | 36.00 | 10.6563 | 19.56 | 6.8889 |
| THERMAL ZONE 3 | 1900.00 | Yes | Yes | 5700.00 | 1.00 | 540.00 | 0.00 | 216.00 | 216.00 | 12.5938 | 9.29 | 0.7535 |
| THERMAL ZONE 4 | 600.00 | Yes | Yes | 1800.00 | 1.00 | 270.00 | 0.00 | 108.00 | 108.00 | 11.6250 | 1.86 | 48.0070 |
| Total | 3600.00 | | | 10800.00 | | 1260.00 | 0.00 | 504.00 | 504.00 | 11.8403 | 6.12 | 10.6922 |
| Conditioned Total | 3600.00 | | | 10800.00 | | 1260.00 | 0.00 | 504.00 | 504.00 | 11.8403 | 6.12 | 10.6922 |
| Unconditioned Total | 0.00 | | | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 | | | |
| Not Part of Total | 0.00 | | | 0.00 | | 0.00 | 0.00 | 0.00 | 0.00 | | | |

---

Report: **Demand End Use Components Summary** Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**End Uses**

| | Electricity [W] | Natural Gas [W] | Propane [W] | District Cooling [W] | District Heating [W] | Water [m3/s] |
|---|---|---|---|---|---|---|
| Time of Peak | 02-JAN-08:09 | - | - | 12-JUL-16:00 | 04-DEC-06:10 | - |
| Heating | 0.00 | 0.00 | 0.00 | 0.00 | 301689.14 | 0.00 |
| Cooling | 0.00 | 0.00 | 0.00 | 196529.67 | 0.00 | 0.00 |
| Interior Lighting | 38362.58 | 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 | 34642.57 | 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 | 73005.15 | 0.00 | 0.00 | 196529.67 | 301689.14 | 0.00 |

**End Uses By Subcategory**

| | Subcategory | Electricity [W] | Natural Gas [W] | Propane [W] | District Cooling [W] | District Heating [W] | Water [m3/s] |
|---|---|---|---|---|---|---|---|
| Heating | General | 0.00 | 0.00 | 0.00 | 0.00 | 301689.14 | 0.00 |
| Cooling | General | 0.00 | 0.00 | 0.00 | 196529.67 | 0.00 | 0.00 |
| Interior Lighting | General | 38362.58 | 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 | 34642.57 | 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 | Ventilation (simple) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pumps | General | 0.00 | 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 |
| 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 |

---

Report: **Source Energy End Use Components Summary** Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**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 | 1457.46 |
| Cooling | 0.00 | 0.00 | 0.00 | 618.06 | 0.00 |
| Interior Lighting | 1567.37 | 0.00 | 0.00 | 0.00 | 0.00 |
| Exterior Lighting | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Interior Equipment | 2078.67 | 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 | 3646.04 | 0.00 | 0.00 | 618.06 | 1457.46 |

**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 | 404.85 |
| Cooling | 0.00 | 0.00 | 0.00 | 171.68 | 0.00 |
| Interior Lighting | 435.38 | 0.00 | 0.00 | 0.00 | 0.00 |
| Exterior Lighting | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Interior Equipment | 577.41 | 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 | 1012.79 | 0.00 | 0.00 | 171.68 | 404.85 |

**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 | 404.85 |
| Cooling | 0.00 | 0.00 | 0.00 | 171.68 | 0.00 |
| Interior Lighting | 435.38 | 0.00 | 0.00 | 0.00 | 0.00 |
| Exterior Lighting | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Interior Equipment | 577.41 | 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 | 1012.79 | 0.00 | 0.00 | 171.68 | 404.85 |

---

Report: **Climatic Data Summary**

Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**SizingPeriod:DesignDay**

| | Maximum Dry Bulb [C] | Daily Temperature Range [deltaC] | Humidity Value | Humidity Type | Wind Speed [m/s] | Wind Direction |
|---|---|---|---|---|---|---|
| PIACENZA ANN CLG .4% CONDNS DB=>MWB | 33.10 | 11.90 | 22.70 | Wetbulb [C] | 2.30 | 90.00 |
| PIACENZA ANN CLG .4% CONDNS DP=>MDB | 27.40 | 11.90 | 23.00 | Dewpoint [C] | 2.30 | 90.00 |
| PIACENZA ANN CLG .4% CONDNS ENTH=>MDB | 30.30 | 11.90 | 74900.00 | Enthalpy [J/kg] | 2.30 | 90.00 |
| PIACENZA ANN CLG .4% CONDNS WB=>MDB | 30.10 | 11.90 | 24.60 | Wetbulb [C] | 2.30 | 90.00 |
| PIACENZA ANN HTG 99.6% CONDNS DB | -6.10 | 0.00 | -6.10 | Wetbulb [C] | 2.00 | 250.00 |
| PIACENZA ANN HTG WIND 99.6% CONDNS WS=>MCDB | 5.80 | 0.00 | 5.80 | Wetbulb [C] | 8.90 | 250.00 |
| PIACENZA ANN HUM_N 99.6% CONDNS DP=>MCDB | 3.50 | 0.00 | -11.30 | Dewpoint [C] | 2.00 | 250.00 |

**Weather Statistics File**

| | Value |
|---|---|
| None | |

Report: **Envelope Summary**

Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Opaque Exterior**

| | Construction | Reflectance | U-Factor with Film [W/m2-K] | U-Factor no Film [W/m2-K] | Gross Area [m2] | Net Area [m2] | Azimuth [deg] | Tilt [deg] | Cardinal Direction |
|---|---|---|---|---|---|---|---|---|---|
| SURFACE 16 | MYWALL 1 | 0.08 | 2.610 | 4.283 | 120.00 | 72.00 | 90.00 | 90.00 | E |
| SURFACE 46 | MYWALL 1 | 0.08 | 2.610 | 4.283 | 120.00 | 72.00 | 90.00 | 90.00 | E |
| SURFACE 76 | MYWALL 1 | 0.08 | 2.610 | 4.283 | 120.00 | 72.00 | 90.00 | 90.00 | E |
| SURFACE 13 | EXTSLABCARPET 4IN CLIMATEZONE 1-8 | 0.15 | 2.945 | 5.634 | 300.00 | 300.00 | 45.00 | 180.00 | |
| SURFACE 78 | ASHRAE 189.1-2009 EXTROOF IEAD CLIMATEZONE 1 | 0.30 | 0.274 | 0.285 | 300.00 | 300.00 | 315.00 | 0.00 | |
| SURFACE 68 | MYWALL 1 | 0.08 | 2.610 | 4.283 | 90.00 | 54.00 | 180.00 | 90.00 | S |
| SURFACE 72 | ASHRAE 189.1-2009 EXTROOF IEAD CLIMATEZONE 1 | 0.30 | 0.274 | 0.285 | 200.00 | 200.00 | 0.00 | 0.00 | |
| SURFACE 34 | MYWALL 1 | 0.08 | 2.610 | 4.283 | 120.00 | 72.00 | 270.00 | 90.00 | W |
| SURFACE 38 | MYWALL 1 | 0.08 | 2.610 | 4.283 | 90.00 | 54.00 | 180.00 | 90.00 | S |
| SURFACE 4 | MYWALL 1 | 0.08 | 2.610 | 4.283 | 120.00 | 72.00 | 270.00 | 90.00 | W |
| SURFACE 64 | MYWALL 1 | 0.08 | 2.610 | 4.283 | 120.00 | 72.00 | 270.00 | 90.00 | W |
| SURFACE 8 | MYWALL 1 | 0.08 | 2.610 | 4.283 | 90.00 | 54.00 | 180.00 | 90.00 | S |
| SURFACE 1 | EXTSLABCARPET 4IN CLIMATEZONE 1-8 | 0.15 | 2.945 | 5.634 | 300.00 | 300.00 | 270.00 | 180.00 | |
| SURFACE 19 | EXTSLABCARPET 4IN CLIMATEZONE 1-8 | 0.15 | 2.945 | 5.634 | 200.00 | 200.00 | 0.00 | 180.00 | |
| SURFACE 7 | EXTSLABCARPET 4IN CLIMATEZONE 1-8 | 0.15 | 2.945 | 5.634 | 200.00 | 200.00 | 0.00 | 180.00 | |
| SURFACE 66 | ASHRAE 189.1-2009 EXTROOF IEAD CLIMATEZONE 1 | 0.30 | 0.274 | 0.285 | 300.00 | 300.00 | 90.00 | 0.00 | |
| SURFACE 84 | ASHRAE 189.1-2009 EXTROOF IEAD CLIMATEZONE 1 | 0.30 | 0.274 | 0.285 | 200.00 | 200.00 | 0.00 | 0.00 | |
| SURFACE 28 | MYWALL 1 | 0.08 | 2.610 | 4.283 | 90.00 | 54.00 | 0.00 | 90.00 | N |
| SURFACE 58 | MYWALL 1 | 0.08 | 2.610 | 4.283 | 90.00 | 54.00 | 0.00 | 90.00 | N |
| SURFACE 88 | MYWALL 1 | 0.08 | 2.610 | 4.283 | 90.00 | 54.00 | 0.00 | 90.00 | N |
| SURFACE 25 | EXTSLABCARPET 4IN CLIMATEZONE 1-8 | 0.15 | 2.945 | 5.634 | 200.00 | 200.00 | 0.00 | 180.00 | |
| SURFACE 90 | ASHRAE 189.1-2009 EXTROOF IEAD CLIMATEZONE 1 | 0.30 | 0.274 | 0.285 | 200.00 | 200.00 | 0.00 | 0.00 | |

**Exterior Fenestration**

| | Construction | Glass Area [m2] | Frame Area [m2] | Divider Area [m2] | Area of One Opening [m2] | Area of Multiplied Openings [m2] | Glass U-Factor [W/m2-K] | Glass SHGC | Glass Visible Transmittance | Frame Conductance [W/m2-K] | Divider Conductance [W/m2-K] | Shade Control | Parent Surface | Az |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUB SURFACE 5 | ASHRAE 189.1-2009 EXTWINDOW CLIMATEZONE 1 | 48.00 | 0.00 | 0.00 | 48.00 | 48.00 | 6.424 | 0.252 | 0.252 | | | No | SURFACE 16 | |
| SUB SURFACE 9 | ASHRAE 189.1-2009 EXTWINDOW | 48.00 | 0.00 | 0.00 | 48.00 | 48.00 | 6.424 | 0.252 | 0.252 | | | No | SURFACE 46 | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CLIMATEZONE 1 | | | | | | | | | | | | |
| SUB SURFACE 11 | ASHRAE 189.1-2009 EXTWINDOW CLIMATEZONE 1 | 48.00 | 0.00 | 0.00 | 48.00 | 48.00 | 6.424 | 0.252 | 0.252 | | | No | SURFACE 76 |
| SUB SURFACE 4 | ASHRAE 189.1-2009 EXTWINDOW CLIMATEZONE 1 | 36.00 | 0.00 | 0.00 | 36.00 | 36.00 | 6.424 | 0.252 | 0.252 | | | No | SURFACE 68 |
| SUB SURFACE 7 | ASHRAE 189.1-2009 EXTWINDOW CLIMATEZONE 1 | 48.00 | 0.00 | 0.00 | 48.00 | 48.00 | 6.424 | 0.252 | 0.252 | | | No | SURFACE 34 |
| SUB SURFACE 8 | ASHRAE 189.1-2009 EXTWINDOW CLIMATEZONE 1 | 36.00 | 0.00 | 0.00 | 36.00 | 36.00 | 6.424 | 0.252 | 0.252 | | | No | SURFACE 38 |
| SUB SURFACE 2 | ASHRAE 189.1-2009 EXTWINDOW CLIMATEZONE 1 | 48.00 | 0.00 | 0.00 | 48.00 | 48.00 | 6.424 | 0.252 | 0.252 | | | No | SURFACE 4 |
| SUB SURFACE 1 | ASHRAE 189.1-2009 EXTWINDOW CLIMATEZONE 1 | 48.00 | 0.00 | 0.00 | 48.00 | 48.00 | 6.424 | 0.252 | 0.252 | | | No | SURFACE 64 |
| SUB SURFACE 3 | ASHRAE 189.1-2009 EXTWINDOW CLIMATEZONE 1 | 36.00 | 0.00 | 0.00 | 36.00 | 36.00 | 6.424 | 0.252 | 0.252 | | | No | SURFACE 8 |
| SUB SURFACE 6 | ASHRAE 189.1-2009 EXTWINDOW CLIMATEZONE 1 | 36.00 | 0.00 | 0.00 | 36.00 | 36.00 | 6.424 | 0.252 | 0.252 | | | No | SURFACE 28 |
| SUB SURFACE 10 | ASHRAE 189.1-2009 EXTWINDOW CLIMATEZONE 1 | 36.00 | 0.00 | 0.00 | 36.00 | 36.00 | 6.424 | 0.252 | 0.252 | | | No | SURFACE 58 |
| SUB SURFACE 12 | ASHRAE 189.1-2009 EXTWINDOW CLIMATEZONE 1 | 36.00 | 0.00 | 0.00 | 36.00 | 36.00 | 6.424 | 0.252 | 0.252 | | | No | SURFACE 88 |
| Total or Average | | | | | | 504.00 | 6.424 | 0.252 | 0.252 | | | | |
| North Total or Average | | | | | | 108.00 | 6.424 | 0.252 | 0.252 | | | | |
| Non-North Total or Average | | | | | | 396.00 | 6.424 | 0.252 | 0.252 | | | | |

**Interior Fenestration**

| | Construction | Area of One Opening [m2] | Area of Openings [m2] | Glass U-Factor [W/m2-K] | Glass SHGC | Glass Visible Transmittance | Parent Surface |
|---|---|---|---|---|---|---|---|
| Total or Average | | | 0.00 | - | - | - | |

**Exterior Door**

| | Construction | U-Factor with Film [W/m2-K] | U-Factor no Film [W/m2-K] | Gross Area [m2] | Parent Surface |
|---|---|---|---|---|---|
| None | | | | | |

Report: **Shading Summary**

Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Sunlit Fraction**

| | March 21 9am | March 21 noon | March 21 3pm | June 21 9am | June 21 noon | June 21 3pm | December 21 9am | December 21 noon | December 21 3pm |
|---|---|---|---|---|---|---|---|---|---|
| SUB SURFACE 5 | 0.81 | 0.02 | 0.00 | 0.57 | 0.01 | 0.00 | 0.93 | 0.04 | 0.00 |
| SUB SURFACE 9 | 0.81 | 0.02 | 0.00 | 0.57 | 0.01 | 0.00 | 0.93 | 0.04 | 0.00 |
| SUB SURFACE 11 | 0.81 | 0.02 | 0.00 | 0.57 | 0.01 | 0.00 | 0.93 | 0.04 | 0.00 |
| SUB SURFACE 4 | 0.62 | 0.56 | 0.57 | 0.02 | 0.00 | 0.01 | 0.92 | 0.80 | 0.85 |
| SUB SURFACE 7 | 0.00 | 0.00 | 0.49 | 0.00 | 0.00 | 0.22 | 0.00 | 0.00 | 0.77 |
| SUB SURFACE 8 | 0.62 | 0.56 | 0.57 | 0.02 | 0.00 | 0.01 | 0.92 | 0.80 | 0.85 |
| SUB SURFACE 2 | 0.00 | 0.00 | 0.49 | 0.00 | 0.00 | 0.22 | 0.00 | 0.00 | 0.77 |
| SUB SURFACE 1 | 0.00 | 0.00 | 0.49 | 0.00 | 0.00 | 0.22 | 0.00 | 0.00 | 0.77 |
| SUB SURFACE 3 | 0.62 | 0.56 | 0.57 | 0.02 | 0.00 | 0.01 | 0.92 | 0.80 | 0.85 |
| SUB SURFACE 6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| SUB SURFACE 10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| SUB SURFACE 12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**Window Control**

| | Name | Type | Shaded Construction | Control | Glare Control |
|---|---|---|---|---|---|
| None | | | | | |

---

Report: **Lighting Summary**

Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Interior Lighting**

| | Zone | Lighting Power Density [W/m2] | Zone Area [m2] | Total Power [W] | End Use Subcategory | Schedule Name | Scheduled Hours/Week [hr] | Hours/Week > 1% [hr] | Full Load Hours/Week [hr] | Return Air Fraction | Conditioned (Y/N) | Consum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 189.1-2009 - OFFICE - OPENOFFICE - CZ1-3 LIGHTS 1 | THERMAL ZONE 1 | 3.5521 | 900.00 | 3196.88 | General | OFFICE BLDG LIGHT | 61.85 | 168.00 | 61.85 | 0.0000 | Y | 3 |
| 189.1-2009 - OFFICE - OPENOFFICE - CZ1-3 LIGHTS 2 | THERMAL ZONE 1 | 3.5521 | 900.00 | 3196.88 | General | OFFICE BLDG LIGHT | 61.85 | 168.00 | 61.85 | 0.0000 | Y | 3 |
| 189.1-2009 - OFFICE - OPENOFFICE - CZ1-3 LIGHTS 3 | THERMAL ZONE 1 | 3.5521 | 900.00 | 3196.88 | General | OFFICE BLDG LIGHT | 61.85 | 168.00 | 61.85 | 0.0000 | Y | 3 |
| 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 1 | THERMAL ZONE 3 | 1.9885 | 1900.00 | 3778.13 | General | OFFICE BLDG LIGHT | 61.85 | 168.00 | 61.85 | 0.0000 | Y | 4 |
| 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 2 | THERMAL ZONE 3 | 1.3257 | 1900.00 | 2518.76 | General | OFFICE BLDG LIGHT | 61.85 | 168.00 | 61.85 | 0.0000 | Y | 2 |
| 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 3 | THERMAL ZONE 3 | 1.3257 | 1900.00 | 2518.76 | General | OFFICE BLDG LIGHT | 61.85 | 168.00 | 61.85 | 0.0000 | Y | 2 |
| 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 4 | THERMAL ZONE 3 | 1.9885 | 1900.00 | 3778.13 | General | OFFICE BLDG LIGHT | 61.85 | 168.00 | 61.85 | 0.0000 | Y | 4 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 5 | THERMAL ZONE 3 | 1.3257 | 1900.00 | 2518.76 | General | OFFICE BLDG LIGHT | 61.85 | 168.00 | 61.85 | 0.0000 | Y | 2 |
| 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 6 | THERMAL ZONE 3 | 1.3257 | 1900.00 | 2518.76 | General | OFFICE BLDG LIGHT | 61.85 | 168.00 | 61.85 | 0.0000 | Y | 2 |
| 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 7 | THERMAL ZONE 3 | 1.9885 | 1900.00 | 3778.13 | General | OFFICE BLDG LIGHT | 61.85 | 168.00 | 61.85 | 0.0000 | Y | 4 |
| 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 8 | THERMAL ZONE 3 | 1.3257 | 1900.00 | 2518.76 | General | OFFICE BLDG LIGHT | 61.85 | 168.00 | 61.85 | 0.0000 | Y | 2 |
| 189.1-2009 - OFFICE - BREAKROOM - CZ1-3 LIGHTS 1 | THERMAL ZONE 4 | 3.8750 | 600.00 | 2325.00 | General | OFFICE BLDG LIGHT | 61.85 | 168.00 | 61.85 | 0.0000 | Y | 2 |
| 189.1-2009 - OFFICE - BREAKROOM - CZ1-3 LIGHTS 2 | THERMAL ZONE 4 | 3.8750 | 600.00 | 2325.00 | General | OFFICE BLDG LIGHT | 61.85 | 168.00 | 61.85 | 0.0000 | Y | 2 |
| 189.1-2009 - OFFICE - BREAKROOM - CZ1-3 LIGHTS 3 | THERMAL ZONE 4 | 3.8750 | 600.00 | 2325.00 | General | OFFICE BLDG LIGHT | 61.85 | 168.00 | 61.85 | 0.0000 | Y | 2 |
| THERMAL ZONE 2 189.1-2009 - OFFICE - CLOSEDOFFICE - CZ1-3 LIGHTS | THERMAL ZONE 2 | 10.6563 | 200.00 | 2131.25 | General | OFFICE BLDG LIGHT | 61.85 | 168.00 | 61.85 | 0.0000 | Y | 2 |
| Interior Lighting Total | | 2.1420 | 19900.00 | 42625.09 | | | | | | | | 49 |

**Daylighting**

| | Zone | Control Name | Daylighting Method | Control Type | Fraction Controlled | Lighting Installed in Zone [W] | Lighting Controlled [W] |
|---|---|---|---|---|---|---|---|
| None | | | | | | | |

**Exterior Lighting**

| | Total Watts | Astronomical Clock/Schedule | Schedule Name | Scheduled Hours/Week [hr] | Hours/Week > 1% [hr] | Full Load Hours/Week [hr] | Consumption [GJ] |
|---|---|---|---|---|---|---|---|
| Exterior Lighting Total | 0.00 | | | | | | 0.00 |

---

Report: **Equipment Summary** Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Central Plant**

| | Type | Nominal Capacity [W] | Nominal Efficiency [W/W] | IPLV in SI Units [W/W] | IPLV in IP Units [Btu/W-h] |
|---|---|---|---|---|---|
| None | | | | | |

**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] |
|---|---|---|---|---|---|---|---|---|---|
| None | | | | | | | | | |

**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] |
|---|---|---|---|---|
| None | | | | |

**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 |
|---|---|---|---|---|---|---|---|---|
| None | | | | | | | | |

**Pumps**

| | Type | Control | Head [pa] | Water Flow [m3/s] | Electric Power [W] | Power Per Water Flow Rate [W-s/m3] | Motor Efficiency [W/W] |
|---|---|---|---|---|---|---|---|
| None | | | | | | | |

**Service Water Heating**

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

---

Report: **HVAC Sizing Summary** Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Zone Sensible Cooling**

| | Calculated Design Load [W] | User Design Load [W] | User Design Load per Area [W/m2] | Calculated Design Air Flow [m3/s] | User Design Air Flow [m3/s] | Design Day Name | Date/Time Of Peak {TIMESTAMP} | Thermostat Setpoint Temperature at Peak Load [C] | Indoor Temperature at Peak Load [C] | Indoor Humidity Ratio at Peak Load [kgWater/kgAir] | Outdoor Temperature at Peak Load [C] | Hu a [kgV |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| THERMAL ZONE 1 | 34384.65 | 39542.35 | 43.94 | 2.844 | 3.270 | PIACENZA ANN CLG .4% CONDNS DB=>MWB | 8/21 15:20:00 | 24.00 | 24.00 | 0.00953 | 32.86 | |
| THERMAL ZONE 2 | 9210.99 | 10592.64 | 52.96 | 0.762 | 0.876 | PIACENZA ANN CLG .4% CONDNS DB=>MWB | 8/21 17:10:00 | 24.00 | 24.00 | 0.00936 | 31.24 | |
| THERMAL ZONE 3 | 64694.62 | 74398.81 | 39.16 | 5.351 | 6.154 | PIACENZA ANN CLG .4% CONDNS DB=>MWB | 8/21 17:10:00 | 24.00 | 23.99 | 0.01013 | 31.24 | |
| THERMAL ZONE 4 | 82301.36 | 94646.56 | 157.74 | 6.820 | 7.843 | PIACENZA ANN CLG .4% CONDNS DB=>MWB | 8/21 15:10:00 | 24.00 | 23.98 | 0.01039 | 32.98 | |

*The Design Load is the zone sensible load only. It does not include any system effects or ventilation loads.*

**Zone Sensible Heating**

| | Calculated Design Load [W] | User Design Load [W] | User Design Load per Area [W/m2] | Calculated Design Air Flow [m3/s] | User Design Air Flow [m3/s] | Design Day Name | Date/Time Of Peak {TIMESTAMP} | Thermostat Setpoint Temperature at Peak Load [C] | Indoor Temperature at Peak Load [C] | Indoor Humidity Ratio at Peak Load [kgWater/kgAir] | Outdoor Temperature at Peak Load [C] | Hur a [kgW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| THERMAL ZONE 1 | 34933.82 | 43667.28 | 48.52 | 1.521 | 1.901 | PIACENZA ANN HTG 99.6% CONDNS DB | 1/21 06:00:00 | 21.00 | 21.00 | 0.00728 | -6.10 | |
| THERMAL ZONE 2 | 11179.91 | 13974.89 | 69.87 | 0.487 | 0.608 | PIACENZA ANN HTG 99.6% CONDNS DB | 1/21 06:00:00 | 21.00 | 20.99 | 0.00706 | -6.10 | |
| THERMAL ZONE 3 | 55328.94 | 69161.17 | 36.40 | 2.409 | 3.011 | PIACENZA ANN HTG 99.6% CONDNS DB | 1/21 06:00:00 | 21.00 | 21.00 | 0.00729 | -6.10 | |
| THERMAL ZONE 4 | 25760.86 | 32201.08 | 53.67 | 1.122 | 2.286 | PIACENZA ANN HTG 99.6% CONDNS DB | 1/21 06:00:00 | 21.00 | 21.00 | 0.00730 | -6.10 | |

*The Design Load is the zone sensible load only. It does not include any system effects or ventilation loads.*

**System Design Air Flow Rates**

| | Calculated cooling [m3/s] | User cooling [m3/s] | Calculated heating [m3/s] | User heating [m3/s] |
|---|---|---|---|---|
| None | | | | |

**Plant Loop Coincident Design Fluid Flow Rate Adjustments**

| | Previous Design Volume Flow Rate [m3/s] | Algorithm Volume Flow Rate [m3/s] | Coincident Design Volume Flow Rate [m3/s] | Coincident Size Adjusted | Peak Sizing Period Name | Peak Day into Period {TIMESTAMP} [day] | Peak Hour Of Day {TIMESTAMP} [hr] | Peak Step Start Minute {TIMESTAMP}[min] |
|---|---|---|---|---|---|---|---|---|
| None | | | | | | | | |

---

Report: **System Summary** Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Economizer**

| | High Limit Shutoff Control | Minimum Outdoor Air [m3/s] | Maximum Outdoor Air [m3/s] | Return Air Temp Limit | Return Air Enthalpy Limit | Outdoor Air Temperature Limit [C] | Outdoor Air Enthalpy Limit [C] |
|---|---|---|---|---|---|---|---|
| None | | | | | | | |

**Demand Controlled Ventilation using Controller:MechanicalVentilation**

| | Controller:MechanicalVentilation Name | Outdoor Air Per Person [m3/s-person] | Outdoor Air Per Area [m3/s-m2] | Outdoor Air Per Zone [m3/s] | Outdoor Air ACH [ach] | Outdoor Air Method | Outdoor Air Schedule Name | Air Distribution Effectiveness in Cooling Mode | Air Distribution Effectiveness in Heating Mode | Air Distribution Effectiveness Schedule Name |
|---|---|---|---|---|---|---|---|---|---|---|
| None | | | | | | | | | | |

**Time Not Comfortable Based on Simple ASHRAE 55-2004**

| | Winter Clothes [hr] | Summer Clothes [hr] | Summer or Winter Clothes [hr] |
|---|---|---|---|
| THERMAL ZONE 1 | 2853.17 | 4594.67 | 2518.33 |
| THERMAL ZONE 2 | 3176.33 | 4240.17 | 2560.50 |
| THERMAL ZONE 3 | 2886.67 | 4839.00 | 2729.00 |

| | | | |
|---|---|---|---|
| THERMAL ZONE 4 | 1831.83 | 4489.50 | 1406.17 |
| Facility | 3416.00 | 4863.50 | 2883.83 |

*Aggregated over the RunPeriods for Weather*

**Time Setpoint Not Met**

| | During Heating [hr] | During Cooling [hr] | During Occupied Heating [hr] | During Occupied Cooling [hr] |
|---|---|---|---|---|
| THERMAL ZONE 1 | 0.00 | 0.00 | 0.00 | 0.00 |
| THERMAL ZONE 2 | 0.00 | 0.00 | 0.00 | 0.00 |
| THERMAL ZONE 3 | 0.00 | 0.00 | 0.00 | 0.00 |
| THERMAL ZONE 4 | 0.00 | 0.00 | 0.00 | 0.00 |
| Facility | 0.00 | 0.00 | 0.00 | 0.00 |

*Aggregated over the RunPeriods for Weather*

---

Report: **Outdoor Air Summary** Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Average Outdoor Air During Occupied Hours**

| | Average Number of Occupants | Nominal Number of Occupants | Zone Volume [m3] | Mechanical Ventilation [ach] | Infiltration [ach] | AFN Infiltration [ach] | Simple Ventilation [ach] |
|---|---|---|---|---|---|---|---|
| THERMAL ZONE 1 | 9.47 | 50.86 | 2700.00 | 0.000 | 0.089 | 0.000 | 0.329 |
| THERMAL ZONE 2 | 5.71 | 10.23 | 600.00 | 0.000 | 0.176 | 0.000 | 0.298 |
| THERMAL ZONE 3 | 9.84 | 204.51 | 5700.00 | 0.000 | 0.067 | 0.000 | 0.278 |
| THERMAL ZONE 4 | 41.42 | 322.92 | 1800.00 | 0.000 | 0.096 | 0.000 | 1.395 |

*Values shown for a single zone without multipliers*

**Minimum Outdoor Air During Occupied Hours**

| | Average Number of Occupants | Nominal Number of Occupants | Zone Volume [m3] | Mechanical Ventilation [ach] | Infiltration [ach] | AFN Infiltration [ach] | Simple Ventilation [ach] |
|---|---|---|---|---|---|---|---|
| THERMAL ZONE 1 | 9.47 | 50.86 | 2700.00 | 0.000 | 0.001 | 0.000 | 0.001 |
| THERMAL ZONE 2 | 5.71 | 10.23 | 600.00 | 0.000 | 0.002 | 0.000 | 0.001 |
| THERMAL ZONE 3 | 9.84 | 204.51 | 5700.00 | 0.000 | 0.001 | 0.000 | 0.001 |
| THERMAL ZONE 4 | 41.42 | 322.92 | 1800.00 | 0.000 | 0.001 | 0.000 | 0.004 |

*Values shown for a single zone without multipliers*

---

Report: **Object Count Summary** Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Surfaces by Class**

| | Total | Outdoors |
|---|---|---|
| Wall | 46 | 12 |
| Floor | 6 | 5 |
| Roof | 6 | 5 |
| Internal Mass | 16 | 0 |
| Building Detached Shading | 0 | 0 |
| Fixed Detached Shading | 0 | 0 |
| Window | 12 | 12 |
| Door | 0 | 0 |
| Glass Door | 0 | 0 |
| Shading | 18 | 18 |
| Overhang | 0 | 0 |

| | | |
|---|---|---|
| Fin | 0 | 0 |
| Tubular Daylighting Device Dome | 0 | 0 |
| Tubular Daylighting Device Diffuser | 0 | 0 |

**HVAC**

| | Count |
|---|---|
| HVAC Air Loops | 0 |
| Conditioned Zones | 4 |
| Unconditioned Zones | 0 |
| Supply Plenums | 0 |
| Return Plenums | 0 |

**Input Fields**

| | Count |
|---|---|
| IDF Objects | 500 |
| Defaulted Fields | 402 |
| Fields with Defaults | 1170 |
| Autosized Fields | 0 |
| Autosizable Fields | 16 |
| Autocalculated Fields | 173 |
| Autocalculatable Fields | 176 |

---

Report: **Energy Meters**

Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Annual and Peak Values - Electricity**

| | Electricity Annual Value [GJ] | Electricity Minimum Value [W] | Timestamp of Minimum {TIMESTAMP} | Electricity Maximum Value [W] | Timestamp of Maximum {TIMESTAMP} |
|---|---|---|---|---|---|
| Electricity:Facility | 1151.26 | 13678.78 | 01-JAN-00:10 | 73005.15 | 02-JAN-08:10 |
| Electricity:Building | 1151.26 | 13678.78 | 01-JAN-00:10 | 73005.15 | 02-JAN-08:10 |
| Electricity:Zone:THERMAL ZONE 1 | 228.64 | 2542.97 | 01-JAN-00:10 | 14821.90 | 02-JAN-08:10 |
| InteriorLights:Electricity | 494.91 | 2131.25 | 01-JAN-00:10 | 38362.58 | 02-JAN-08:10 |
| InteriorLights:Electricity:Zone:THERMAL ZONE 1 | 111.35 | 479.53 | 01-JAN-00:10 | 8631.58 | 02-JAN-08:10 |
| General:InteriorLights:Electricity | 494.91 | 2131.25 | 01-JAN-00:10 | 38362.58 | 02-JAN-08:10 |
| Electricity:Zone:THERMAL ZONE 3 | 302.23 | 1625.89 | 01-JAN-00:10 | 22823.80 | 02-JAN-08:10 |
| InteriorLights:Electricity:Zone:THERMAL ZONE 3 | 277.82 | 1196.41 | 01-JAN-00:10 | 21535.36 | 02-JAN-08:10 |
| Electricity:Zone:THERMAL ZONE 4 | 572.15 | 8990.02 | 01-JAN-00:10 | 32201.31 | 02-JAN-08:10 |
| InteriorLights:Electricity:Zone:THERMAL ZONE 4 | 80.98 | 348.75 | 01-JAN-00:10 | 6277.51 | 02-JAN-08:10 |
| Electricity:Zone:THERMAL ZONE 2 | 48.24 | 519.90 | 01-JAN-00:10 | 3158.13 | 02-JAN-08:10 |
| InteriorLights:Electricity:Zone:THERMAL ZONE 2 | 24.75 | 106.56 | 01-JAN-00:10 | 1918.13 | 02-JAN-08:10 |
| InteriorEquipment:Electricity | 656.35 | 11547.52 | 01-JAN-00:10 | 34642.57 | 02-JAN-08:10 |
| InteriorEquipment:Electricity:Zone:THERMAL ZONE 1 | 117.28 | 2063.44 | 01-JAN-00:10 | 6190.32 | 02-JAN-08:10 |
| General:InteriorEquipment:Electricity | 656.35 | 11547.52 | 01-JAN-00:10 | 34642.57 | 02-JAN-08:10 |
| InteriorEquipment:Electricity:Zone:THERMAL ZONE 3 | 24.41 | 429.48 | 01-JAN-00:10 | 1288.44 | 02-JAN-08:10 |
| InteriorEquipment:Electricity:Zone:THERMAL ZONE 4 | 491.16 | 8641.27 | 01-JAN-00:10 | 25923.80 | 02-JAN-08:10 |
| InteriorEquipment:Electricity:Zone:THERMAL ZONE 2 | 23.49 | 413.33 | 01-JAN-00:10 | 1240.00 | 02-JAN-08:10 |
| Fans:Electricity | 0.00 | 0.00 | 01-JAN-00:10 | 0.00 | 01-JAN-00:10 |

| | | | | | |
|---|---|---|---|---|---|
| Fans:Electricity:Zone:THERMAL ZONE 1 | 0.00 | 0.00 | 01-JAN-00:10 | 0.00 | 01-JAN-00:10 |
| Ventilation (simple):Fans:Electricity | 0.00 | 0.00 | 01-JAN-00:10 | 0.00 | 01-JAN-00:10 |
| Fans:Electricity:Zone:THERMAL ZONE 2 | 0.00 | 0.00 | 01-JAN-00:10 | 0.00 | 01-JAN-00:10 |
| Fans:Electricity:Zone:THERMAL ZONE 3 | 0.00 | 0.00 | 01-JAN-00:10 | 0.00 | 01-JAN-00:10 |
| Fans:Electricity:Zone:THERMAL ZONE 4 | 0.00 | 0.00 | 01-JAN-00:10 | 0.00 | 01-JAN-00:10 |
| ElectricityPurchased:Facility | 1151.26 | 13678.78 | 07-JAN-18:50 | 73005.15 | 27-MAR-08:10 |
| ElectricityPurchased:Plant | 1151.26 | 13678.78 | 07-JAN-18:50 | 73005.15 | 27-MAR-08:10 |
| Cogeneration:ElectricityPurchased | 1151.26 | 13678.78 | 07-JAN-18:50 | 73005.15 | 27-MAR-08:10 |
| ElectricitySurplusSold:Facility | 0.00 | 0.00 | 01-JAN-00:10 | 0.00 | 01-JAN-00:10 |
| ElectricitySurplusSold:Plant | 0.00 | 0.00 | 01-JAN-00:10 | 0.00 | 01-JAN-00:10 |
| Cogeneration:ElectricitySurplusSold | 0.00 | 0.00 | 01-JAN-00:10 | 0.00 | 01-JAN-00:10 |
| ElectricityNet:Facility | 1151.26 | 13678.78 | 07-JAN-18:50 | 73005.15 | 27-MAR-08:10 |
| ElectricityNet:Plant | 1151.26 | 13678.78 | 07-JAN-18:50 | 73005.15 | 27-MAR-08:10 |
| Cogeneration:ElectricityNet | 1151.26 | 13678.78 | 07-JAN-18:50 | 73005.15 | 27-MAR-08:10 |

**Annual and Peak Values - Gas**

| | Gas Annual Value [GJ] | Gas Minimum Value [W] | Timestamp of Minimum {TIMESTAMP} | Gas Maximum Value [W] | Timestamp of Maximum {TIMESTAMP} |
|---|---|---|---|---|---|
| None | | | | | |

**Annual and Peak Values - Cooling**

| | Cooling Annual Value [GJ] | Cooling Minimum Value [W] | Timestamp of Minimum {TIMESTAMP} | Cooling Maximum Value [W] | Timestamp of Maximum {TIMESTAMP} |
|---|---|---|---|---|---|
| DistrictCooling:Facility | 585.47 | 0.00 | 01-JAN-00:10 | 196529.67 | 12-JUL-17:00 |
| DistrictCooling:HVAC | 585.47 | 0.00 | 01-JAN-00:10 | 196529.67 | 12-JUL-17:00 |
| Cooling:DistrictCooling | 585.47 | 0.00 | 01-JAN-00:10 | 196529.67 | 12-JUL-17:00 |

**Annual and Peak Values - Water**

| | Annual Value [m3] | Minimum Value [m3/s] | Timestamp of Minimum {TIMESTAMP} | Maximum Value [m3/s] | Timestamp of Maximum {TIMESTAMP} |
|---|---|---|---|---|---|
| None | | | | | |

**Annual and Peak Values - Other by Weight/Mass**

| | Annual Value [kg] | Minimum Value [kg/s] | Timestamp of Minimum {TIMESTAMP} | Maximum Value [kg/s] | Timestamp of Maximum {TIMESTAMP} |
|---|---|---|---|---|---|
| Carbon Equivalent:Facility | 0.00 | 0.000 | 01-JAN-00:10 | 0.000 | 01-JAN-00:10 |
| CarbonEquivalentEmissions:Carbon Equivalent | 0.00 | 0.000 | 01-JAN-00:10 | 0.000 | 01-JAN-00:10 |

**Annual and Peak Values - Other Volumetric**

| | Annual Value [m3] | Minimum Value [m3/s] | Timestamp of Minimum {TIMESTAMP} | Maximum Value [m3/s] | Timestamp of Maximum {TIMESTAMP} |
|---|---|---|---|---|---|
| None | | | | | |

**Annual and Peak Values - Other Liquid/Gas**

| | Annual Value [L] | Minimum Value [L] | Timestamp of Minimum {TIMESTAMP} | Maximum Value [L] | Timestamp of Maximum {TIMESTAMP} |
|---|---|---|---|---|---|
| None | | | | | |

**Annual and Peak Values - Other**

| | Annual Value [GJ] | Minimum Value [W] | Timestamp of Minimum {TIMESTAMP} | Maximum Value [W] | Timestamp of Maximum {TIMESTAMP} |
|---|---|---|---|---|---|
| EnergyTransfer:Facility | 838.44 | 0.00 | 02-JAN-22:10 | 270734.06 | 04-DEC-06:10 |
| EnergyTransfer:Building | 838.44 | 0.00 | 02-JAN-22:10 | 270734.06 | 04-DEC-06:10 |
| EnergyTransfer:Zone:THERMAL ZONE | 195.67 | 0.00 | 02-JAN-22:10 | 70363.88 | 04-DEC-06:10 |

| 1 | | | | | |
|---|---|---|---|---|---|
| Heating:EnergyTransfer | 400.75 | 0.00 | 02-JAN-22:10 | 270734.06 | 04-DEC-06:10 |
| Heating:EnergyTransfer:Zone:THERMAL ZONE 1 | 122.22 | 0.00 | 02-JAN-22:10 | 70363.88 | 04-DEC-06:10 |
| Cooling:EnergyTransfer | 437.69 | 0.00 | 01-JAN-00:10 | 135708.63 | 10-JUL-17:00 |
| Cooling:EnergyTransfer:Zone:THERMAL ZONE 1 | 73.45 | 0.00 | 01-JAN-00:10 | 30253.12 | 10-JUL-16:00 |
| EnergyTransfer:Zone:THERMAL ZONE 2 | 62.38 | 0.00 | 02-JAN-22:10 | 19746.06 | 04-DEC-06:10 |
| Heating:EnergyTransfer:Zone:THERMAL ZONE 2 | 44.28 | 0.00 | 02-JAN-22:10 | 19746.06 | 04-DEC-06:10 |
| Cooling:EnergyTransfer:Zone:THERMAL ZONE 2 | 18.10 | 0.00 | 01-JAN-00:10 | 7885.34 | 10-JUL-17:00 |
| EnergyTransfer:Zone:THERMAL ZONE 3 | 306.52 | 0.00 | 02-JAN-22:10 | 135310.06 | 04-DEC-06:10 |
| Heating:EnergyTransfer:Zone:THERMAL ZONE 3 | 213.71 | 0.00 | 02-JAN-22:10 | 135310.06 | 04-DEC-06:10 |
| Cooling:EnergyTransfer:Zone:THERMAL ZONE 3 | 92.80 | 0.00 | 01-JAN-00:10 | 43893.46 | 10-JUL-17:00 |
| EnergyTransfer:Zone:THERMAL ZONE 4 | 273.88 | 0.00 | 01-JAN-15:50 | 54160.16 | 11-JUL-17:00 |
| Heating:EnergyTransfer:Zone:THERMAL ZONE 4 | 20.53 | 0.00 | 01-JAN-15:50 | 45314.06 | 04-DEC-06:10 |
| Cooling:EnergyTransfer:Zone:THERMAL ZONE 4 | 253.34 | 0.00 | 01-JAN-00:10 | 54160.16 | 11-JUL-17:00 |
| DistrictHeating:Facility | 403.35 | 0.00 | 02-JAN-22:10 | 301689.14 | 04-DEC-06:10 |
| DistrictHeating:HVAC | 403.35 | 0.00 | 02-JAN-22:10 | 301689.14 | 04-DEC-06:10 |
| Heating:DistrictHeating | 403.35 | 0.00 | 02-JAN-22:10 | 301689.14 | 04-DEC-06:10 |

Report: **Sensible Heat Gain Summary**

Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Annual Building Sensible Heat Gain Components**

| | HVAC Zone Eq & Other Sensible Air Heating [GJ] | HVAC Zone Eq & Other Sensible Air Cooling [GJ] | HVAC Terminal Unit Sensible Air Heating [GJ] | HVAC Terminal Unit Sensible Air Cooling [GJ] | HVAC Input Heated Surface Heating [GJ] | HVAC Input Cooled Surface Cooling [GJ] | People Sensible Heat Addition [GJ] | Lights Sensible Heat Addition [GJ] | Equipment Sensible Heat Addition [GJ] | Window Heat Addition [GJ] | Interzone Air Transfer Heat Addition [GJ] | Infiltration Heat Addition [GJ] | Opaque Surface Conduction and Other Heat Addition [GJ] | Equipmer Sensibl Hea Remova [GJ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| THERMAL ZONE 1 | 122.222 | -73.444 | 0.000 | 0.000 | 0.000 | 0.000 | 36.920 | 111.354 | 117.284 | 23.889 | 0.000 | 3.603 | 0.000 | 0.00 |
| THERMAL ZONE 2 | 44.281 | -18.098 | 0.000 | 0.000 | 0.000 | 0.000 | 7.482 | 24.745 | 23.494 | 5.479 | 0.000 | 0.875 | 0.000 | 0.00 |
| THERMAL ZONE 3 | 213.713 | -92.801 | 0.000 | 0.000 | 0.000 | 0.000 | 87.077 | 277.823 | 24.411 | 39.936 | 0.000 | 6.390 | 0.000 | 0.00 |
| THERMAL ZONE 4 | 20.535 | -253.343 | 0.000 | 0.000 | 0.000 | 0.000 | 129.335 | 80.985 | 491.163 | 12.614 | 0.000 | 8.205 | 0.000 | 0.00 |
| Total Facility | 400.751 | -437.686 | 0.000 | 0.000 | 0.000 | 0.000 | 260.812 | 494.908 | 656.352 | 81.918 | 0.000 | 19.073 | 0.000 | 0.00 |

**Peak Cooling Sensible Heat Gain Components**

| | Time of Peak {TIMESTAMP} | HVAC Zone Eq & Other Sensible Air Heating [W] | HVAC Zone Eq & Other Sensible Air Cooling [W] | HVAC Terminal Unit Sensible Air Heating [W] | HVAC Terminal Unit Sensible Air Cooling [W] | HVAC Input Heated Surface Heating [W] | HVAC Input Cooled Surface Cooling [W] | People Sensible Heat Addition [W] | Lights Sensible Heat Addition [W] | Equipment Sensible Heat Addition [W] | Window Heat Addition [W] | Interzone Air Transfer Heat Addition [W] | Infiltration Heat Addition [W] | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| THERMAL ZONE 1 | 13-JUL-06:01 | 0.00 | -79433.95 | 0.00 | 0.00 | 0.00 | 0.00 | 333.92 | 959.06 | 2751.26 | 2007.42 | 0.00 | 0.00 | |
| THERMAL ZONE 2 | 13-JUL-06:01 | 0.00 | -32301.83 | 0.00 | 0.00 | 0.00 | 0.00 | 61.67 | 213.13 | 551.11 | 0.00 | 0.00 | 0.00 | |
| THERMAL | 10-JUL-17:00 | 0.00 | -43893.93 | 0.00 | 0.00 | 0.00 | 0.00 | 5813.10 | 21535.36 | 1288.44 | 18396.32 | 0.00 | 6688.58 | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ZONE 3 | | | | | | | | | | | | | | |
| THERMAL ZONE 4 | 13-JUL-06:01 | 0.00 | -127765.34 | 0.00 | 0.00 | 0.00 | 0.00 | 1839.63 | 697.50 | 11521.69 | 0.00 | 0.00 | 0.00 | |
| Total Facility | 13-JUL-06:01 | 0.00 | -239501.13 | 0.00 | 0.00 | 0.00 | 0.00 | 3711.05 | 4262.51 | 15396.70 | 2007.42 | 0.00 | 0.00 | |

**Peak Heating Sensible Heat Gain Components**

| | Time of Peak {TIMESTAMP} | HVAC Zone Eq & Other Sensible Air Heating [W] | HVAC Zone Eq & Other Sensible Air Cooling [W] | HVAC Terminal Unit Sensible Air Heating [W] | HVAC Terminal Unit Sensible Air Cooling [W] | HVAC Input Heated Surface Heating [W] | HVAC Input Cooled Surface Cooling [W] | People Sensible Heat Addition [W] | Lights Sensible Heat Addition [W] | Equipment Sensible Heat Addition [W] | Window Heat Addition [W] | Interzone Air Transfer Heat Addition [W] | Infiltration Heat Addition [W] | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| THERMAL ZONE 1 | 04-DEC-06:01 | 499628.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 536.69 | 959.06 | 2751.26 | 0.00 | 0.00 | 0.00 | |
| THERMAL ZONE 2 | 04-DEC-06:01 | 114707.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 107.91 | 213.13 | 551.11 | 0.00 | 0.00 | 0.00 | |
| THERMAL ZONE 3 | 04-DEC-06:01 | 1043014.23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2158.14 | 2392.82 | 572.64 | 0.00 | 0.00 | 0.00 | |
| THERMAL ZONE 4 | 04-DEC-06:01 | 331358.23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3407.59 | 697.50 | 11521.69 | 0.00 | 0.00 | 0.00 | |
| Total Facility | 04-DEC-06:01 | 1988708.44 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6210.33 | 4262.51 | 15396.70 | 0.00 | 0.00 | 0.00 | |

---

Report: **Standard 62.1 Summary** Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**System Ventilation Requirements for Cooling**

| | Sum of Zone Primary Air Flow - Vpz-sum [m3/s] | System Population - Ps | Sum of Zone Population - Pz-sum | Occupant Diversity - D | Uncorrected Outdoor Air Intake Airflow - Vou [m3/s] | System Primary Airflow - Vps [m3/s] | Average Outdoor Air Fraction - Xs | System Ventilation Efficiency - Ev | Outdoor Air Intake Flow - Vot [m3/s] | Percent Outdoor Air - %OA |
|---|---|---|---|---|---|---|---|---|---|---|
| None | | | | | | | | | | |

**System Ventilation Requirements for Heating**

| | Sum of Zone Primary Air Flow - Vpz-sum [m3/s] | System Population - Ps | Sum of Zone Population - Pz-sum | Occupant Diversity - D | Uncorrected Outdoor Air Intake Airflow - Vou [m3/s] | System Primary Airflow - Vps [m3/s] | Average Outdoor Air Fraction - Xs | System Ventilation Efficiency - Ev | Outdoor Air Intake Flow Vot [m3/s] | Percent Outdoor Air - %OA |
|---|---|---|---|---|---|---|---|---|---|---|
| None | | | | | | | | | | |

**Zone Ventilation Parameters**

| | AirLoop Name | People Outdoor Air Rate - Rp [m3/s-person] | Zone Population - Pz | Area Outdoor Air Rate - Ra [m3/s-m2] | Zone Floor Area - Az [m2] | Breathing Zone Outdoor Airflow - Vbz [m3/s] | Cooling Zone Air Distribution Effectiveness - Ez-clg | Cooling Zone Outdoor Airflow - Voz-clg [m3/s] | Heating Zone Air Distribution Effectiveness - Ez-htg | Heating Zone Outdoor Airflow - Voz-htg [m3/s] |
|---|---|---|---|---|---|---|---|---|---|---|
| None | | | | | | | | | | |

**System Ventilation Parameters**

| | People Outdoor Air Rate - Rp [m3/s-person] | Sum of Zone Population - Pz-sum | Area Outdoor Air Rate - Ra [m3/s-m2] | Sum of Zone Floor Area - Az-sum [m2] | Breathing Zone Outdoor Airflow - Vbz [m3/s] | Cooling Zone Outdoor Airflow - Voz-clg [m3/s] | Heating Zone Outdoor Airflow - Voz-htg [m3/s] |
|---|---|---|---|---|---|---|---|
| None | | | | | | | |

**Zone Ventilation Calculations for Cooling Design**

| | AirLoop Name | Box Type | Zone Primary Airflow - | Zone Discharge Airflow - Vdz [m3/s] | Minimum Zone Primary Airflow - Vpz-min [m3/s] | Zone Outdoor Airflow Cooling - Voz-clg [m3/s] | Primary Outdoor Air | Primary Air Fraction - Ep | Secondary Recirculation Fraction- Er | Supply Air Fraction- Fa | Mixed Air Fraction - Fb | Outdoor Air Fraction - Fc | Zone Ventilation Efficiency - Evz |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Vpz [m3/s] | | | | Fraction - Zpz | | | | | | |
| None | | | | | | | | | | | | | |

**System Ventilation Calculations for Cooling Design**

| | Sum of Zone Primary Airflow - Vpz-sum [m3/s] | System Primary Airflow - Vps [m3/s] | Sum of Zone Discharge Airflow - Vdz-sum [m3/s] | Sum of Min Zone Primary Airflow - Vpz-min [m3/s] | Zone Outdoor Airflow Cooling - Voz-clg [m3/s] | Zone Ventilation Efficiency - Evz-min |
|---|---|---|---|---|---|---|
| None | | | | | | |

**Zone Ventilation Calculations for Heating Design**

| | AirLoop Name | Box Type | Zone Primary Airflow - Vpz [m3/s] | Zone Discharge Airflow - Vdz [m3/s] | Minimum Zone Primary Airflow - Vpz-min [m3/s] | Zone Outdoor Airflow Heating - Voz-htg [m3/s] | Primary Outdoor Air Fraction - Zpz | Primary Air Fraction - Ep | Secondary Recirculation Fraction- Er | Supply Air Fraction- Fa | Mixed Air Fraction - Fb | Outdoor Air Fraction - Fc | Zone Ventilation Efficiency - Evz |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| None | | | | | | | | | | | | | |

**System Ventilation Calculations for Heating Design**

| | Sum of Zone Primary Airflow - Vpz-sum [m3/s] | System Primary Airflow - Vps [m3/s] | Sum of Zone Discharge Airflow - Vdz-sum [m3/s] | Sum of Min Zone Primary Airflow - Vpz-min [m3/s] | Zone Outdoor Airflow Heating - Voz-htg [m3/s] | Zone Ventilation Efficiency - Evz-min |
|---|---|---|---|---|---|---|
| None | | | | | | |

---

Report: **LEED Summary** Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Sec1.1A-General Information**

| | Data |
|---|---|
| Weather File | RUN PERIOD 1 ** Piacenza - ITA IGDG WMO#=160840 |
| Total gross floor area [m2] | 3600.00 |
| Principal Heating Source | District Heat |

**EAp2-1. Space Usage Type**

| | Space Area [m2] | Regularly Occupied Area [m2] | Unconditioned Area [m2] | Typical Hours/Week in Operation [hr/wk] |
|---|---|---|---|---|
| THERMAL ZONE 1 | 900.00 | 900.00 | 0.00 | 100.72 |
| THERMAL ZONE 2 | 200.00 | 200.00 | 0.00 | 100.72 |
| THERMAL ZONE 3 | 1900.00 | 1900.00 | 0.00 | 100.72 |
| THERMAL ZONE 4 | 600.00 | 600.00 | 0.00 | 100.72 |
| Totals | 3600.00 | 3600.00 | 0.00 | |

**EAp2-2. Advisory Messages**

| | Data |
|---|---|
| Number of hours heating loads not met | 0.00 |
| Number of hours cooling loads not met | 0.00 |
| Number of hours not met | 0.00 |

**EAp2-3. Energy Type Summary**

| | Utility Rate | Virtual Rate [$/unit energy] | Units of Energy | Units of Demand |
|---|---|---|---|---|
| None | | | | |

**EAp2-4/5. Performance Rating Method Compliance**

| | Electric | Electric | Natural Gas | Natural Gas | Additional | Additional | District | District | District | District |
|---|---|---|---|---|---|---|---|---|---|---|

| | Energy Use [GJ] | Demand [W] | Energy Use [GJ] | Demand [W] | Fuel Use [GJ] | Fuel Demand [W] | Cooling Use [GJ] | Cooling Demand [W] | Heating Use [GJ] | Heating Demand [W] |
|---|---|---|---|---|---|---|---|---|---|---|
| Heating -- Not Subdivided | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 403.35 | 301689.14 |
| Cooling -- Not Subdivided | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 585.47 | 196529.67 | 0.00 | 0.00 |
| Interior Lighting -- General | 494.91 | 38362.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Exterior Lighting -- Not Subdivided | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Interior Equipment -- General | 656.35 | 34642.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Exterior Equipment -- Not Subdivided | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Fans -- Ventilation (simple) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Pumps -- Not Subdivided | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Heat Rejection -- Not Subdivided | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Humidification -- Not Subdivided | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Heat Recovery -- Not Subdivided | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Water Systems -- Not Subdivided | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Refrigeration -- Not Subdivided | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Generators -- Not Subdivided | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**EAp2-6. Energy Use Summary**

| | Process Subtotal [GJ] | Total Energy Use [GJ] |
|---|---|---|
| Electricity | 656.35 | 1151.26 |
| Natural Gas | 0.00 | 0.00 |
| Additional | 0.00 | 988.82 |
| Total | 656.35 | 2140.08 |

**EAp2-7. Energy Cost Summary**

| | Process Subtotal [$] | Total Energy Cost [$] |
|---|---|---|
| Electricity | 0.00 | |
| Natural Gas | 0.00 | |
| Additional | 0.00 | |
| Total | 0.00 | |

*Process energy cost based on ratio of process to total energy.*

**L-1. Renewable Energy Source Summary**

| | Rated Capacity [kW] | Annual Energy Generated [GJ] |
|---|---|---|
| Photovoltaic | 0.00 | 0.00 |
| Wind | 0.00 | 0.00 |

**EAp2-17a. Energy Use Intensity - Electricity**

| | Electricty [MJ/m2] |
|---|---|
| Interior Lighting (All) | 137.47 |
| Space Heating | 0.00 |
| Space Cooling | 0.00 |
| Fans (All) | 0.00 |
| Service Water Heating | 0.00 |
| | |

| | |
|---|---|
| Receptacle Equipment | 182.32 |
| Miscellaneous (All) | 319.79 |
| Subtotal | 319.79 |

**EAp2-17b. Energy Use Intensity - Natural Gas**

| | Natural Gas [MJ/m2] |
|---|---|
| Space Heating | 0.00 |
| Service Water Heating | 0.00 |
| Miscellaneous (All) | 0.00 |
| Subtotal | 0.00 |

**EAp2-17c. Energy Use Intensity - Additional**

| | Additional [MJ/m2] |
|---|---|
| Subtotal | 0.00 |
| Miscellaneous | 0.00 |

**EAp2-18. End Use Percentage**

| | Percent [%] |
|---|---|
| Interior Lighting (All) | 23.13 |
| Space Heating | 18.85 |
| Space Cooling | 27.36 |
| Fans (All) | 0.00 |
| Service Water Heating | 0.00 |
| Receptacle Equipment | 30.67 |
| Miscellaneous | 0.00 |

**Schedules-Equivalent Full Load Hours (Schedule Type=Fraction)**

| | Equivalent Full Load Hours of Operation Per Year [hr] | Hours > 1% [hr] |
|---|---|---|
| OFFICE BLDG LIGHT | 3225. | 8760. |
| MEDIUM OFFICE BLDG EQUIP | 4737. | 8760. |
| MEDIUM OFFICE BLDG OCC | 2834. | 5252. |
| MEDIUM OFFICE INFIL QUARTER ON | 5172. | 8760. |
| OFFICE BLDG EQUIP | 4737. | 8760. |
| OFFICE INFIL QUARTER ON | 5172. | 8760. |
| OFFICE MISC OCC | 1508. | 5252. |
| OFFICE WORK OCC | 2595. | 5252. |

**Schedules-SetPoints (Schedule Type=Temperature)**

| | First Object Used | Month Assumed | 11am First Wednesday [C] | Days with Same 11am Value | 11pm First Wednesday [C] | Days with Same 11pm Value |
|---|---|---|---|---|---|---|
| MEDIUM OFFICE HTGSETP | THERMAL ZONE 1 THERMOSTAT | January | 21.00 | 365 | 15.60 | 365 |
| MEDIUM OFFICE CLGSETP | THERMAL ZONE 1 THERMOSTAT | July | 24.00 | 365 | 26.70 | 365 |

---

Report: **Component Sizing Summary** Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**ZoneHVAC:IdealLoadsAirSystem**

| | User-Specified Maximum Heating Air Flow Rate [m3/s] | User-Specified Maximum Cooling Air Flow Rate [m3/s] |
|---|---|---|
| THERMAL ZONE 1 IDEAL LOADS AIR | 0.000000 | 0.000000 |

| | | |
|---|---|---|
| SYSTEM | | |
| THERMAL ZONE 2 IDEAL LOADS AIR SYSTEM | 0.000000 | 0.000000 |
| THERMAL ZONE 3 IDEAL LOADS AIR SYSTEM | 0.000000 | 0.000000 |
| THERMAL ZONE 4 IDEAL LOADS AIR SYSTEM | 0.000000 | 0.000000 |

*User-Specified values were used. Design Size values were used if no User-Specified values were provided.*

---

Report: **Surface Shadowing Summary** Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Surfaces (Walls, Roofs, etc) that may be Shadowed by Other Surfaces**

| | Possible Shadow Receivers |
|---|---|
| SUB SURFACE 11 - OVERHANG | Mir-SUB SURFACE 4 - OVERHANG \| SURFACE 76 \| |
| Mir-SUB SURFACE 11 - OVERHANG | SURFACE 76 \| |
| SUB SURFACE 5 - OVERHANG | Mir-SUB SURFACE 11 - OVERHANG \| Mir-SUB SURFACE 9 - OVERHANG \| Mir-SUB SURFACE 4 - OVERHANG \| Mir-SUB SURFACE 1 - OVERHANG \| Mir-SUB SURFACE 3 - OVERHANG \| Mir-SUB SURFACE 7 - OVERHANG \| Mir-SUB SURFACE 8 - OVERHANG \| SURFACE 16 \| SURFACE 46 \| SURFACE 76 \| |
| Mir-SUB SURFACE 5 - OVERHANG | SURFACE 16 \| |
| SUB SURFACE 9 - OVERHANG | Mir-SUB SURFACE 11 - OVERHANG \| Mir-SUB SURFACE 4 - OVERHANG \| Mir-SUB SURFACE 1 - OVERHANG \| Mir-SUB SURFACE 8 - OVERHANG \| SURFACE 46 \| SURFACE 76 \| |
| Mir-SUB SURFACE 9 - OVERHANG | SURFACE 46 \| |
| SUB SURFACE 4 - OVERHANG | SURFACE 68 \| |
| Mir-SUB SURFACE 4 - OVERHANG | SURFACE 68 \| |
| SUB SURFACE 1 - OVERHANG | Mir-SUB SURFACE 4 - OVERHANG \| SURFACE 64 \| |
| Mir-SUB SURFACE 1 - OVERHANG | SURFACE 64 \| |
| SUB SURFACE 2 - OVERHANG | Mir-SUB SURFACE 11 - OVERHANG \| Mir-SUB SURFACE 9 - OVERHANG \| Mir-SUB SURFACE 4 - OVERHANG \| Mir-SUB SURFACE 1 - OVERHANG \| Mir-SUB SURFACE 3 - OVERHANG \| Mir-SUB SURFACE 7 - OVERHANG \| Mir-SUB SURFACE 8 - OVERHANG \| SURFACE 34 \| SURFACE 4 \| SURFACE 64 \| |
| Mir-SUB SURFACE 2 - OVERHANG | SURFACE 4 \| |
| SUB SURFACE 3 - OVERHANG | Mir-SUB SURFACE 11 - OVERHANG \| Mir-SUB SURFACE 9 - OVERHANG \| Mir-SUB SURFACE 4 - OVERHANG \| Mir-SUB SURFACE 1 - OVERHANG \| Mir-SUB SURFACE 7 - OVERHANG \| Mir-SUB SURFACE 8 - OVERHANG \| SURFACE 68 \| SURFACE 38 \| SURFACE 8 \| |
| Mir-SUB SURFACE 3 - OVERHANG | SURFACE 8 \| |
| SUB SURFACE 7 - OVERHANG | Mir-SUB SURFACE 11 - OVERHANG \| Mir-SUB SURFACE 4 - OVERHANG \| Mir-SUB SURFACE 1 - OVERHANG \| Mir-SUB SURFACE 8 - OVERHANG \| SURFACE 34 \| SURFACE 64 \| |
| Mir-SUB SURFACE 7 - OVERHANG | SURFACE 34 \| |
| SUB SURFACE 8 - OVERHANG | Mir-SUB SURFACE 11 - OVERHANG \| Mir-SUB SURFACE 4 - OVERHANG \| Mir-SUB SURFACE 1 - OVERHANG \| SURFACE 68 \| SURFACE 38 \| |
| Mir-SUB SURFACE 8 - OVERHANG | SURFACE 38 \| |
| SURFACE 16 | Mir-SUB SURFACE 11 - OVERHANG \| Mir-SUB SURFACE 5 - OVERHANG \| Mir-SUB SURFACE 9 - OVERHANG \| |

| | |
|---|---|
| SURFACE 46 | Mir-SUB SURFACE 11 - OVERHANG \| Mir-SUB SURFACE 9 - OVERHANG \| |
| SURFACE 76 | Mir-SUB SURFACE 11 - OVERHANG \| |
| SURFACE 68 | Mir-SUB SURFACE 4 - OVERHANG \| |
| SURFACE 34 | Mir-SUB SURFACE 1 - OVERHANG \| Mir-SUB SURFACE 7 - OVERHANG \| |
| SURFACE 38 | Mir-SUB SURFACE 4 - OVERHANG \| Mir-SUB SURFACE 8 - OVERHANG \| |
| SURFACE 4 | Mir-SUB SURFACE 1 - OVERHANG \| Mir-SUB SURFACE 2 - OVERHANG \| Mir-SUB SURFACE 7 - OVERHANG \| |
| SURFACE 64 | Mir-SUB SURFACE 1 - OVERHANG \| |
| SURFACE 8 | Mir-SUB SURFACE 4 - OVERHANG \| Mir-SUB SURFACE 3 - OVERHANG \| Mir-SUB SURFACE 8 - OVERHANG \| |

**Subsurfaces (Windows and Doors) that may be Shadowed by Surfaces**

| | Possible Shadow Receivers |
|---|---|
| SURFACE 16 | SUB SURFACE 5 \| |
| SURFACE 46 | SUB SURFACE 9 \| |
| SURFACE 76 | SUB SURFACE 11 \| |
| SURFACE 68 | SUB SURFACE 4 \| |
| SURFACE 34 | SUB SURFACE 7 \| |
| SURFACE 38 | SUB SURFACE 8 \| |
| SURFACE 4 | SUB SURFACE 2 \| |
| SURFACE 64 | SUB SURFACE 1 \| |
| SURFACE 8 | SUB SURFACE 3 \| |
| SURFACE 28 | SUB SURFACE 6 \| |
| SURFACE 58 | SUB SURFACE 10 \| |
| SURFACE 88 | SUB SURFACE 12 \| |

---

Report: **Adaptive Comfort Summary** Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Time Not Meeting the Adaptive Comfort Models during Occupied Hours**

| | ASHRAE55 90% Acceptability Limits [Hours] | ASHRAE55 80% Acceptability Limits [Hours] | CEN15251 Category I Acceptability Limits [Hours] | CEN15251 Category II Acceptability Limits [Hours] | CEN15251 Category III Acceptability Limits [Hours] |
|---|---|---|---|---|---|

---

Report: **Initialization Summary** Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Version**

| | Version ID |
|---|---|
| 1 | 8.8 |

**Timesteps per Hour**

| | #TimeSteps | Minutes per TimeStep {minutes} |
|---|---|---|
| 1 | 6 | 10 |

**System Convergence Limits**

| | Minimum System TimeStep {minutes} | Max HVAC Iterations | Minimum Plant Iterations | Maximum Plant Iterations |
|---|---|---|---|---|
| 1 | 1 | 20 | 2 | 8 |

**Simulation Control**

| | Do Zone Sizing | Do System Sizing | Do Plant Sizing | Do Design Days | Do Weather Simulation | Do HVAC Sizing Simulation |
|---|---|---|---|---|---|---|
| 1 | Yes | No | No | Yes | Yes | No |

**Output Reporting Tolerances**

| | Tolerance for Time Heating Setpoint Not Met | Tolerance for Zone Cooling Setpoint Not Met Time |
|---|---|---|
| 1 | 0.200 | 0.200 |

**Site:GroundTemperature:BuildingSurface**

| | Jan{C} | Feb{C} | Mar{C} | Apr{C} | May{C} | Jun{C} | Jul{C} | Aug{C} | Sep{C} | Oct{C} | Nov{C} | Dec{C} |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 |

**Site:GroundTemperature:FCfactorMethod**

| | Jan{C} | Feb{C} | Mar{C} | Apr{C} | May{C} | Jun{C} | Jul{C} | Aug{C} | Sep{C} | Oct{C} | Nov{C} | Dec{C} |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.79 | 3.68 | 7.36 | 10.85 | 17.45 | 20.92 | 21.88 | 20.11 | 16.05 | 10.98 | 5.99 | 2.69 |

**Site:GroundTemperature:Shallow**

| | Jan{C} | Feb{C} | Mar{C} | Apr{C} | May{C} | Jun{C} | Jul{C} | Aug{C} | Sep{C} | Oct{C} | Nov{C} | Dec{C} |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13.00 | 13.00 | 13.00 | 13.00 | 13.00 | 13.00 | 13.00 | 13.00 | 13.00 | 13.00 | 13.00 | 13.00 |

**Site:GroundTemperature:Deep**

| | Jan{C} | Feb{C} | Mar{C} | Apr{C} | May{C} | Jun{C} | Jul{C} | Aug{C} | Sep{C} | Oct{C} | Nov{C} | Dec{C} |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 | 16.00 |

**Site:GroundReflectance**

| | Jan{dimensionless} | Feb{dimensionless} | Mar{dimensionless} | Apr{dimensionless} | May{dimensionless} | Jun{dimensionless} | Jul{dimensionless} | Aug{dim |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | |

**Site:GroundReflectance:SnowModifier**

| | Normal | Daylighting {dimensionless} |
|---|---|---|
| 1 | 1.000 | 1.000 |

**Site:GroundReflectance:Snow**

| | Jan{dimensionless} | Feb{dimensionless} | Mar{dimensionless} | Apr{dimensionless} | May{dimensionless} | Jun{dimensionless} | Jul{dimensionless} | Aug{dim |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | |

**Site:GroundReflectance:Snow:Daylighting**

| | Jan{dimensionless} | Feb{dimensionless} | Mar{dimensionless} | Apr{dimensionless} | May{dimensionless} | Jun{dimensionless} | Jul{dimensionless} | Aug{dim |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | |

**Environment:Weather Station**

| | Wind Sensor Height Above Ground {m} | Wind Speed Profile Exponent {} | Wind Speed Profile Boundary Layer Thickness {m} | Air Temperature Sensor Height Above Ground {m} | Wind Speed Modifier Coefficient-Internal | Temperature Modifier Coefficient-Internal |
|---|---|---|---|---|---|---|
| 1 | 10.000 | 0.140 | 270.000 | 1.500 | 1.586 | 9.750E-003 |

**Site:Location**

| | Location Name | Latitude {N+/S-Deg} | Longitude {E+/W-Deg} | Time Zone Number {GMT+/-} | Elevation {m} | Standard Pressure at Elevation {Pa} | Standard RhoAir at Elevation |
|---|---|---|---|---|---|---|---|
| 1 | Piacenza - ITA IGDG WMO#=160840 | 44.92 | 9.73 | 1.00 | 134.00 | 99726 | 1.1853 |

**Building Information**

| | Building Name | North Axis {deg} | Terrain | Loads Convergence Tolerance Value | Temperature Convergence Tolerance Value | Solar Distribution | Maximum Number of Warmup Days | Minimum Number of Warmup Days |
|---|---|---|---|---|---|---|---|---|
| 1 | Building 1 | 0.000 | Suburbs | 4.00000E-002 | 0.40000 | FullExterior | 25 | 6 |

**Inside Convection Algorithm**

| | Algorithm {Simple TARP CeilingDiffuser AdaptiveConvectionAlgorithm} |
|---|---|
| 1 | TARP |

**Outside Convection Algorithm**

| | Algorithm {SimpleCombined TARP MoWitt DOE-2 AdaptiveConvectionAlgorithm} |
|---|---|
| 1 | DOE-2 |

**Sky Radiance Distribution**

| | Value {Anisotropic} |
|---|---|
| 1 | Anisotropic |

**Zone Air Solution Algorithm**

| | Value {ThirdOrderBackwardDifference AnalyticalSolution EulerMethod} |
|---|---|
| 1 | ThirdOrderBackwardDifference |

**Zone Air Carbon Dioxide Balance Simulation**

| | Simulation {Yes/No} | Carbon Dioxide Concentration |
|---|---|---|
| 1 | No | N/A |

**Zone Air Generic Contaminant Balance Simulation**

| | Simulation {Yes/No} | Generic Contaminant Concentration |
|---|---|---|
| 1 | No | N/A |

**Zone Air Mass Flow Balance Simulation**

| | Enforce Mass Balance | Adjust Zone Mixing | Adjust Zone Infiltration {AddInfiltration AdjustInfiltration None} | Infiltration Zones {MixingSourceZonesOnly AllZones} |
|---|---|---|---|---|
| 1 | No | N/A | N/A | N/A |

**HVACSystemRootFindingAlgorithm**

| | Value {RegulaFalsi Bisection BisectionThenRegulaFalsi RegulaFalsiThenBisection} |
|---|---|
| 1 | RegulaFalsi |

**Environment:Site Atmospheric Variation**

| | Wind Speed Profile Exponent {} | Wind Speed Profile Boundary Layer Thickness {m} | Air Temperature Gradient Coefficient {K/m} |
|---|---|---|---|
| 1 | 0.220 | 370.000 | 6.500000E-003 |

**Surface Geometry**

| | Starting Corner | Vertex Input Direction | Coordinate System | Daylight Reference Point Coordinate System | Rectangular (Simple) Surface Coordinate System |
|---|---|---|---|---|---|
| 1 | UpperLeftCorner | Counterclockwise | RelativeCoordinateSystem | RelativeCoordinateSystem | RelativeToZoneOrigin |

**Surface Heat Transfer Algorithm**

| | Value {CTF - ConductionTransferFunction EMPD - MoisturePenetrationDepthConductionTransferFunction CondFD - ConductionFiniteDifference HAMT - CombinedHeatAndMoistureFiniteElement} - Description | Inside Surface Max Temperature Limit{C} | Surface Convection Coefficient Lower Limit {W/m2-K} | Surface Convection Coefficient Upper Limit {W/m2-K} |
|---|---|---|---|---|
| 1 | CTF - ConductionTransferFunction | 200 | 0.10 | 1000.0 |

**Shading Summary**

| | Number of Fixed Detached Shades | Number of Building Detached Shades | Number of Attached Shades |
|---|---|---|---|
| 1 | 0 | 0 | 18 |

**Zone Summary**

| | Number of Zones | Number of Zone Surfaces | Number of SubSurfaces |
|---|---|---|---|
| 1 | 4 | 86 | 12 |

**Zone Information**

| | Zone Name | North Axis {deg} | Origin X-Coordinate {m} | Origin Y-Coordinate {m} | Origin Z-Coordinate {m} | Centroid X-Coordinate {m} | Centroid Y-Coordinate {m} | Centroid Z-Coordinate {m} | Type | Zone Multiplier | Zone List Multiplier | Minimum X {m} | Maximum X {m} | Minimum Y {m} |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | THERMAL ZONE 1 | 0.0 | 38.91 | 30.31 | 0.00 | 44.79 | 40.31 | 4.50 | 1 | 1 | 1 | 38.91 | 48.91 | 20.31 |
| 2 | THERMAL ZONE 2 | 0.0 | 48.91 | 20.31 | 6.00 | 33.91 | 24.26 | 7.50 | 1 | 1 | 1 | 18.91 | 48.91 | 20.31 |
| 3 | THERMAL ZONE 3 | 0.0 | 28.91 | 20.31 | 0.00 | 29.22 | 36.57 | 4.19 | 1 | 1 | 1 | 18.91 | 48.91 | 20.31 |
| 4 | THERMAL ZONE 4 | 0.0 | 38.91 | 50.31 | 0.00 | 33.91 | 56.52 | 4.50 | 1 | 1 | 1 | 18.91 | 48.91 | 50.31 |

**Zone Internal Gains Nominal**

| | Zone Name | Floor Area {m2} | # Occupants | Area per Occupant {m2/person} | Occupant per Area {person/m2} | Interior Lighting {W/m2} | Electric Load {W/m2} | Gas Load {W/m2} | Other Load {W/m2} | Hot Water Eq {W/m2} | Steam Equipment {W/m2} | Sum Loads per Area {W/m2} | Outdoor Controlled Baseboard Heat |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | THERMAL ZONE 1 | 900.00 | 50.9 | 17.696 | 5.651E-002 | 10.656 | 7.642 | 0.000 | 0.000 | 0.000 | 0.000 | 18.299 | No |
| 2 | THERMAL ZONE 2 | 200.00 | 10.2 | 19.559 | 5.113E-002 | 10.656 | 6.889 | 0.000 | 0.000 | 0.000 | 0.000 | 17.545 | No |
| 3 | THERMAL ZONE 3 | 1900.00 | 204.5 | 9.290 | 0.108 | 12.594 | 0.753 | 0.000 | 0.000 | 0.000 | 0.000 | 13.347 | No |
| 4 | THERMAL ZONE 4 | 600.00 | 322.9 | 1.858 | 0.538 | 11.625 | 48.007 | 0.000 | 0.000 | 0.000 | 0.000 | 59.632 | No |

**People Internal Gains Nominal**

| | Name | Schedule Name | Zone Name | Zone Floor Area {m2} | # Zone Occupants | Number of People {} | People/Floor Area {person/m2} | Floor Area per person {m2/person} | Fraction Radiant | Fraction Convected | Sensible Fraction Calculation | Activity level | ASH War |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 189.1-2009 - OFFICE - OPENOFFICE - CZ1-3 PEOPLE 1 | OFFICE WORK OCC | THERMAL ZONE 1 | 900.00 | 50.9 | 17.0 | 1.884E-002 | 53.087 | 0.300 | 0.700 | AutoCalculate | OFFICE ACTIVITY | |
| 2 | 189.1-2009 - OFFICE - OPENOFFICE - CZ1-3 PEOPLE 2 | OFFICE WORK OCC | THERMAL ZONE 1 | 900.00 | 50.9 | 17.0 | 1.884E-002 | 53.087 | 0.300 | 0.700 | AutoCalculate | OFFICE ACTIVITY | |
| 3 | 189.1-2009 - OFFICE - OPENOFFICE - CZ1-3 PEOPLE 3 | OFFICE WORK OCC | THERMAL ZONE 1 | 900.00 | 50.9 | 17.0 | 1.884E-002 | 53.087 | 0.300 | 0.700 | AutoCalculate | OFFICE ACTIVITY | |
| 4 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 PEOPLE 1 | OFFICE MISC OCC | THERMAL ZONE 3 | 1900.00 | 204.5 | 32.3 | 1.700E-002 | 58.839 | 0.300 | 0.700 | AutoCalculate | OFFICE ACTIVITY | |
| 5 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 PEOPLE 2 | OFFICE MISC OCC | THERMAL ZONE 3 | 1900.00 | 204.5 | 21.5 | 1.133E-002 | 88.258 | 0.300 | 0.700 | AutoCalculate | OFFICE ACTIVITY | |
| 6 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 PEOPLE 3 | OFFICE MISC OCC | THERMAL ZONE 3 | 1900.00 | 204.5 | 21.5 | 1.133E-002 | 88.258 | 0.300 | 0.700 | AutoCalculate | OFFICE ACTIVITY | |
| 7 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 PEOPLE 4 | OFFICE MISC OCC | THERMAL ZONE 3 | 1900.00 | 204.5 | 32.3 | 1.700E-002 | 58.839 | 0.300 | 0.700 | AutoCalculate | OFFICE ACTIVITY | |
| 8 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 PEOPLE 5 | OFFICE MISC OCC | THERMAL ZONE 3 | 1900.00 | 204.5 | 21.5 | 1.133E-002 | 88.258 | 0.300 | 0.700 | AutoCalculate | OFFICE ACTIVITY | |
| 9 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 PEOPLE 6 | OFFICE MISC OCC | THERMAL ZONE 3 | 1900.00 | 204.5 | 21.5 | 1.133E-002 | 88.258 | 0.300 | 0.700 | AutoCalculate | OFFICE ACTIVITY | |
| 10 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 PEOPLE 7 | OFFICE MISC OCC | THERMAL ZONE 3 | 1900.00 | 204.5 | 32.3 | 1.700E-002 | 58.839 | 0.300 | 0.700 | AutoCalculate | OFFICE ACTIVITY | |
| 11 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 PEOPLE 8 | OFFICE MISC OCC | THERMAL ZONE 3 | 1900.00 | 204.5 | 21.5 | 1.133E-002 | 88.258 | 0.300 | 0.700 | AutoCalculate | OFFICE ACTIVITY | |
| 12 | 189.1-2009 - OFFICE - BREAKROOM - CZ1-3 PEOPLE 1 | OFFICE MISC OCC | THERMAL ZONE 4 | 600.00 | 322.9 | 107.6 | 0.179 | 5.574 | 0.300 | 0.700 | AutoCalculate | OFFICE ACTIVITY | |
| 13 | 189.1-2009 - OFFICE - BREAKROOM - CZ1-3 PEOPLE 2 | OFFICE MISC OCC | THERMAL ZONE 4 | 600.00 | 322.9 | 107.6 | 0.179 | 5.574 | 0.300 | 0.700 | AutoCalculate | OFFICE ACTIVITY | |
| 14 | 189.1-2009 - OFFICE - BREAKROOM - CZ1-3 PEOPLE 3 | OFFICE MISC OCC | THERMAL ZONE 4 | 600.00 | 322.9 | 107.6 | 0.179 | 5.574 | 0.300 | 0.700 | AutoCalculate | OFFICE ACTIVITY | |
| 15 | THERMAL ZONE 2 189.1-2009 - OFFICE - CLOSEDOFFICE - CZ1-3 PEOPLE | OFFICE WORK OCC | THERMAL ZONE 2 | 200.00 | 10.2 | 10.2 | 5.113E-002 | 19.559 | 0.300 | 0.700 | AutoCalculate | OFFICE ACTIVITY | |

**Lights Internal Gains Nominal**

| | Name | Schedule Name | Zone Name | Zone Floor Area {m2} | # Zone Occupants | Lighting Level {W} | Lights/Floor Area {W/m2} | Lights per person {W/person} | Fraction Return Air | Fraction Radiant | Fraction Short Wave | Fraction Convected | Fraction Replaceable |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 189.1-2009 - OFFICE - OPENOFFICE - CZ1-3 LIGHTS 1 | OFFICE BLDG LIGHT | THERMAL ZONE 1 | 900.00 | 50.9 | 3196.881 | 3.552 | 62.857 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| 2 | 189.1-2009 - OFFICE - | OFFICE BLDG LIGHT | THERMAL ZONE 1 | 900.00 | 50.9 | 3196.881 | 3.552 | 62.857 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OPENOFFICE - CZ1-3 LIGHTS 2 | | | | | | | | | | | | |
| 3 | 189.1-2009 - OFFICE - OPENOFFICE - CZ1-3 LIGHTS 3 | OFFICE BLDG LIGHT | THERMAL ZONE 1 | 900.00 | 50.9 | 3196.881 | 3.552 | 62.857 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| 4 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 1 | OFFICE BLDG LIGHT | THERMAL ZONE 3 | 1900.00 | 204.5 | 3778.133 | 1.988 | 18.474 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| 5 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 2 | OFFICE BLDG LIGHT | THERMAL ZONE 3 | 1900.00 | 204.5 | 2518.755 | 1.326 | 12.316 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| 6 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 3 | OFFICE BLDG LIGHT | THERMAL ZONE 3 | 1900.00 | 204.5 | 2518.755 | 1.326 | 12.316 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| 7 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 4 | OFFICE BLDG LIGHT | THERMAL ZONE 3 | 1900.00 | 204.5 | 3778.133 | 1.988 | 18.474 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| 8 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 5 | OFFICE BLDG LIGHT | THERMAL ZONE 3 | 1900.00 | 204.5 | 2518.755 | 1.326 | 12.316 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| 9 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 6 | OFFICE BLDG LIGHT | THERMAL ZONE 3 | 1900.00 | 204.5 | 2518.755 | 1.326 | 12.316 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| 10 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 7 | OFFICE BLDG LIGHT | THERMAL ZONE 3 | 1900.00 | 204.5 | 3778.133 | 1.988 | 18.474 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| 11 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 LIGHTS 8 | OFFICE BLDG LIGHT | THERMAL ZONE 3 | 1900.00 | 204.5 | 2518.755 | 1.326 | 12.316 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| 12 | 189.1-2009 - OFFICE - BREAKROOM - CZ1-3 LIGHTS 1 | OFFICE BLDG LIGHT | THERMAL ZONE 4 | 600.00 | 322.9 | 2325.005 | 3.875 | 7.200 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| 13 | 189.1-2009 - OFFICE - BREAKROOM - CZ1-3 LIGHTS 2 | OFFICE BLDG LIGHT | THERMAL ZONE 4 | 600.00 | 322.9 | 2325.005 | 3.875 | 7.200 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| 14 | 189.1-2009 - OFFICE - BREAKROOM - CZ1-3 LIGHTS 3 | OFFICE BLDG LIGHT | THERMAL ZONE 4 | 600.00 | 322.9 | 2325.005 | 3.875 | 7.200 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |
| 15 | THERMAL ZONE 2 189.1-2009 - OFFICE - CLOSEDOFFICE - CZ1-3 LIGHTS | OFFICE BLDG LIGHT | THERMAL ZONE 2 | 200.00 | 10.2 | 2131.254 | 10.656 | 208.421 | 0.000 | 0.000 | 0.000 | 1.000 | 1.000 |

**ElectricEquipment Internal Gains Nominal**

| | Name | Schedule Name | Zone Name | Zone Floor Area {m2} | # Zone Occupants | Equipment Level {W} | Equipment/Floor Area {W/m2} | Equipment per person {W/person} | Fraction Latent | Fraction Radiant | Fraction Lost | Fraction Convected | End SubCate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 189.1-2009 - OFFICE - OPENOFFICE - CZ1-3 ELECTRIC EQUIPMENT 1 | OFFICE BLDG EQUIP | THERMAL ZONE 1 | 900.00 | 50.9 | 2292.713 | 2.547 | 45.079 | 0.000 | 0.000 | 0.000 | 1.000 | Ge |
| 2 | 189.1-2009 - OFFICE - OPENOFFICE - CZ1-3 ELECTRIC EQUIPMENT 2 | OFFICE BLDG EQUIP | THERMAL ZONE 1 | 900.00 | 50.9 | 2292.713 | 2.547 | 45.079 | 0.000 | 0.000 | 0.000 | 1.000 | Ge |
| 3 | 189.1-2009 - OFFICE - | OFFICE BLDG | THERMAL ZONE 1 | 900.00 | 50.9 | 2292.713 | 2.547 | 45.079 | 0.000 | 0.000 | 0.000 | 1.000 | Ge |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OPENOFFICE - CZ1-3 ELECTRIC EQUIPMENT 3 | EQUIP | | | | | | | | | | | |
| 4 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 ELECTRIC EQUIPMENT 1 | OFFICE BLDG EQUIP | THERMAL ZONE 3 | 1900.00 | 204.5 | 226.042 | 0.119 | 1.105 | 0.000 | 0.000 | 0.000 | 1.000 | Ge |
| 5 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 ELECTRIC EQUIPMENT 2 | OFFICE BLDG EQUIP | THERMAL ZONE 3 | 1900.00 | 204.5 | 150.695 | 7.931E-002 | 0.737 | 0.000 | 0.000 | 0.000 | 1.000 | Ge |
| 6 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 ELECTRIC EQUIPMENT 3 | OFFICE BLDG EQUIP | THERMAL ZONE 3 | 1900.00 | 204.5 | 150.695 | 7.931E-002 | 0.737 | 0.000 | 0.000 | 0.000 | 1.000 | Ge |
| 7 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 ELECTRIC EQUIPMENT 4 | OFFICE BLDG EQUIP | THERMAL ZONE 3 | 1900.00 | 204.5 | 226.042 | 0.119 | 1.105 | 0.000 | 0.000 | 0.000 | 1.000 | Ge |
| 8 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 ELECTRIC EQUIPMENT 5 | OFFICE BLDG EQUIP | THERMAL ZONE 3 | 1900.00 | 204.5 | 150.695 | 7.931E-002 | 0.737 | 0.000 | 0.000 | 0.000 | 1.000 | Ge |
| 9 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 ELECTRIC EQUIPMENT 6 | OFFICE BLDG EQUIP | THERMAL ZONE 3 | 1900.00 | 204.5 | 150.695 | 7.931E-002 | 0.737 | 0.000 | 0.000 | 0.000 | 1.000 | Ge |
| 10 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 ELECTRIC EQUIPMENT 7 | OFFICE BLDG EQUIP | THERMAL ZONE 3 | 1900.00 | 204.5 | 226.042 | 0.119 | 1.105 | 0.000 | 0.000 | 0.000 | 1.000 | Ge |
| 11 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 ELECTRIC EQUIPMENT 8 | OFFICE BLDG EQUIP | THERMAL ZONE 3 | 1900.00 | 204.5 | 150.695 | 7.931E-002 | 0.737 | 0.000 | 0.000 | 0.000 | 1.000 | Ge |
| 12 | 189.1-2009 - OFFICE - BREAKROOM - CZ1-3 ELECTRIC EQUIPMENT 1 | OFFICE BLDG EQUIP | THERMAL ZONE 4 | 600.00 | 322.9 | 9601.408 | 16.002 | 29.733 | 0.000 | 0.000 | 0.000 | 1.000 | Ge |
| 13 | 189.1-2009 - OFFICE - BREAKROOM - CZ1-3 ELECTRIC EQUIPMENT 2 | OFFICE BLDG EQUIP | THERMAL ZONE 4 | 600.00 | 322.9 | 9601.408 | 16.002 | 29.733 | 0.000 | 0.000 | 0.000 | 1.000 | Ge |
| 14 | 189.1-2009 - OFFICE - BREAKROOM - CZ1-3 ELECTRIC EQUIPMENT 3 | OFFICE BLDG EQUIP | THERMAL ZONE 4 | 600.00 | 322.9 | 9601.408 | 16.002 | 29.733 | 0.000 | 0.000 | 0.000 | 1.000 | Ge |
| 15 | THERMAL ZONE 2 189.1-2009 - OFFICE - CLOSEDOFFICE - CZ1-3 ELECTRIC EQUIPMENT | OFFICE BLDG EQUIP | THERMAL ZONE 2 | 200.00 | 10.2 | 1377.781 | 6.889 | 134.737 | 0.000 | 0.000 | 0.000 | 1.000 | Ge |

**Shadowing/Sun Position Calculations Annual Simulations**

| | Calculation Method | Value {days} | Allowable Number Figures in Shadow Overlap {} | Polygon Clipping Algorithm | Sky Diffuse Modeling Algorithm |
|---|---|---|---|---|---|
| 1 | AverageOverDaysInFrequency | 20 | 15000 | SutherlandHodgman | SimpleSkyDiffuseModeling |

**ZoneInfiltration Airflow Stats Nominal**

| | Name | Schedule Name | Zone Name | Zone Floor Area {m2} | # Zone Occupants | Design Volume Flow Rate {m3/s} | Volume Flow Rate/Floor Area {m3/s/m2} | Volume Flow Rate/Exterior Surface Area {m3/s/m2} | ACH - Air Changes per Hour | Equation A - Constant Term Coefficient {} | Equation B - Temperature Term Coefficient {1/C} | Equation C - Velocity Term Coefficient {s/m} | Eq Ve Sc Coef {s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 189.1-2009 - OFFICE - OPENOFFICE - CZ1-3 INFILTRATION 1 | OFFICE INFIL QUARTER ON | THERMAL ZONE 1 | 900.00 | 50.9 | 3.627E-002 | 4.030E-005 | 5.496E-005 | 4.836E-002 | 1.000 | 0.000 | 0.000 | |
| 2 | 189.1-2009 - OFFICE - OPENOFFICE - CZ1-3 INFILTRATION 2 | OFFICE INFIL QUARTER ON | THERMAL ZONE 1 | 900.00 | 50.9 | 3.627E-002 | 4.030E-005 | 5.496E-005 | 4.836E-002 | 1.000 | 0.000 | 0.000 | |
| 3 | 189.1-2009 - OFFICE - OPENOFFICE - CZ1-3 INFILTRATION 3 | OFFICE INFIL QUARTER ON | THERMAL ZONE 1 | 900.00 | 50.9 | 0.127 | 1.411E-004 | 1.923E-004 | 0.169 | 1.000 | 0.000 | 0.000 | |
| 4 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 INFILTRATION 1 | OFFICE INFIL QUARTER ON | THERMAL ZONE 3 | 1900.00 | 204.5 | 3.627E-002 | 1.909E-005 | 3.488E-005 | 2.291E-002 | 1.000 | 0.000 | 0.000 | |
| 5 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 INFILTRATION 2 | OFFICE INFIL QUARTER ON | THERMAL ZONE 3 | 1900.00 | 204.5 | 2.720E-002 | 1.432E-005 | 2.616E-005 | 1.718E-002 | 1.000 | 0.000 | 0.000 | |
| 6 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 INFILTRATION 3 | OFFICE INFIL QUARTER ON | THERMAL ZONE 3 | 1900.00 | 204.5 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 | 0.000 | 0.000 | |
| 7 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 INFILTRATION 4 | OFFICE INFIL QUARTER ON | THERMAL ZONE 3 | 1900.00 | 204.5 | 3.627E-002 | 1.909E-005 | 3.488E-005 | 2.291E-002 | 1.000 | 0.000 | 0.000 | |
| 8 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 INFILTRATION 5 | OFFICE INFIL QUARTER ON | THERMAL ZONE 3 | 1900.00 | 204.5 | 2.720E-002 | 1.432E-005 | 2.616E-005 | 1.718E-002 | 1.000 | 0.000 | 0.000 | |
| 9 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 INFILTRATION 6 | OFFICE INFIL QUARTER ON | THERMAL ZONE 3 | 1900.00 | 204.5 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 | 0.000 | 0.000 | |
| 10 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 INFILTRATION 7 | OFFICE INFIL QUARTER ON | THERMAL ZONE 3 | 1900.00 | 204.5 | 0.127 | 6.682E-005 | 1.221E-004 | 8.018E-002 | 1.000 | 0.000 | 0.000 | |
| 11 | 189.1-2009 - OFFICE - LOBBY - CZ1-3 INFILTRATION 8 | OFFICE INFIL QUARTER ON | THERMAL ZONE 3 | 1900.00 | 204.5 | 6.045E-002 | 3.182E-005 | 5.813E-005 | 3.818E-002 | 1.000 | 0.000 | 0.000 | |
| 12 | 189.1-2009 - OFFICE - BREAKROOM - CZ1-3 INFILTRATION 1 | OFFICE INFIL QUARTER ON | THERMAL ZONE 4 | 600.00 | 322.9 | 2.720E-002 | 4.534E-005 | 5.788E-005 | 5.441E-002 | 1.000 | 0.000 | 0.000 | |
| 13 | 189.1-2009 - OFFICE - BREAKROOM - CZ1-3 INFILTRATION 2 | OFFICE INFIL QUARTER ON | THERMAL ZONE 4 | 600.00 | 322.9 | 2.720E-002 | 4.534E-005 | 5.788E-005 | 5.441E-002 | 1.000 | 0.000 | 0.000 | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | 189.1-2009 - OFFICE - BREAKROOM - CZ1-3 INFILTRATION 3 | OFFICE INFIL QUARTER ON | THERMAL ZONE 4 | 600.00 | 322.9 | 8.766E-002 | 1.461E-004 | 1.865E-004 | 0.175 | 1.000 | 0.000 | 0.000 | |
| 15 | THERMAL ZONE 2 189.1-2009 - OFFICE - CLOSEDOFFICE - CZ1-3 INFILTRATION | OFFICE INFIL QUARTER ON | THERMAL ZONE 2 | 200.00 | 10.2 | 8.766E-002 | 4.383E-004 | 3.023E-004 | 0.526 | 1.000 | 0.000 | 0.000 | |

**ZoneVentilation Airflow Stats Nominal**

| | Name | Schedule Name | Zone Name | Zone Floor Area {m2} | # Zone Occupants | Design Volume Flow Rate {m3/s} | Volume Flow Rate/Floor Area {m3/s/m2} | Volume Flow Rate/person Area {m3/s/person} | ACH - Air Changes per Hour | Fan Type {Exhaust;Intake;Natural} | Fan Pressure Rise {Pa} | Fan Efficiency {} |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | THERMAL ZONE 1 VENTILATION PER PERSON | OFFICE WORK OCC | THERMAL ZONE 1 | 900.00 | 50.9 | 0.480 | 5.334E-004 | 9.439E-003 | 0.640 | Natural | 0.000 | 1.0 |
| 2 | THERMAL ZONE 2 VENTILATION PER PERSON | OFFICE WORK OCC | THERMAL ZONE 2 | 200.00 | 10.2 | 9.652E-002 | 4.826E-004 | 9.439E-003 | 0.579 | Natural | 0.000 | 1.0 |
| 3 | THERMAL ZONE 3 VENTILATION PER PERSON | OFFICE MISC OCC | THERMAL ZONE 3 | 1900.00 | 204.5 | 1.448 | 7.620E-004 | 7.079E-003 | 0.914 | Natural | 0.000 | 1.0 |
| 4 | THERMAL ZONE 4 VENTILATION PER PERSON | OFFICE MISC OCC | THERMAL ZONE 4 | 600.00 | 322.9 | 2.286 | 3.810E-003 | 7.079E-003 | 4.572 | Natural | 0.000 | 1.0 |

**AirFlow Model**

| | Simple |
|---|---|
| 1 | Simple |

**RoomAir Model**

| | Zone Name | Mixing/Mundt/UCSDDV/UCSDCV/UCSDUFI/UCSDUFE/User Defined |
|---|---|---|
| 1 | THERMAL ZONE 1 | Mixing/Well-Stirred |
| 2 | THERMAL ZONE 2 | Mixing/Well-Stirred |
| 3 | THERMAL ZONE 3 | Mixing/Well-Stirred |
| 4 | THERMAL ZONE 4 | Mixing/Well-Stirred |

**AirflowNetwork Model:Control**

| | No Multizone or Distribution/Multizone with Distribution/Multizone without Distribution/Multizone with Distribution only during Fan Operation |
|---|---|
| 1 | NoMultizoneOrDistribution |

**Zone Volume Capacitance Multiplier**

| | Sensible Heat Capacity Multiplier | Moisture Capacity Multiplier | Carbon Dioxide Capacity Multiplier | Generic Contaminant Capacity Multiplier |
|---|---|---|---|---|
| 1 | 1.000 | 1.000 | 1.000 | 1.000 |

**Load Timesteps in Zone Design Calculation Averaging Window**

| | Value |
|---|---|
| 1 | 6 |

**Heating Sizing Factor Information**

| | Sizing Factor ID | Value |
|---|---|---|
| 1 | Global | 1.2500 |
| 2 | Zone THERMAL ZONE 1 | 1.2500 |
| 3 | Zone THERMAL ZONE 2 | 1.2500 |
| 4 | Zone THERMAL ZONE 3 | 1.2500 |
| 5 | Zone THERMAL ZONE 4 | 1.2500 |

**Cooling Sizing Factor Information**

| | Sizing Factor ID | Value |
|---|---|---|
| 1 | Global | 1.1500 |
| 2 | Zone THERMAL ZONE 1 | 1.1500 |
| 3 | Zone THERMAL ZONE 2 | 1.1500 |
| 4 | Zone THERMAL ZONE 3 | 1.1500 |
| 5 | Zone THERMAL ZONE 4 | 1.1500 |

**Zone Sizing Information**

| | Zone Name | Load Type | Calc Des Load {W} | User Des Load {W} | Calc Des Air Flow Rate {m3/s} | User Des Air Flow Rate {m3/s} | Design Day Name | Date/Time of Peak | Temperature at Peak {C} | Humidity Ratio at Peak {kgWater/kgDryAir} | Floor Area {m2} | # Occupants |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | THERMAL ZONE 1 | Cooling | 34384.65419 | 39542.35232 | 2.84362 | 3.27017 | PIACENZA ANN CLG .4% CONDNS DB=>MWB | 8/21 15:20:00 | 32.86200 | 1.33499E-002 | 900.00000 | 50.85948 |
| 2 | THERMAL ZONE 1 | Heating | 34933.82322 | 43667.27902 | 1.52095 | 1.90119 | PIACENZA ANN HTG 99.6% CONDNS DB | 1/21 06:00:00 | -6.10000 | 2.28840E-003 | 900.00000 | 50.85948 |
| 3 | THERMAL ZONE 2 | Cooling | 9210.99195 | 10592.64074 | 0.76171 | 0.87597 | PIACENZA ANN CLG .4% CONDNS DB=>MWB | 8/21 17:10:00 | 31.23567 | 1.33499E-002 | 200.00000 | 10.22571 |
| 4 | THERMAL ZONE 2 | Heating | 11179.91461 | 13974.89326 | 0.48669 | 0.60837 | PIACENZA ANN HTG 99.6% CONDNS DB | 1/21 06:00:00 | -6.10000 | 2.28840E-003 | 200.00000 | 10.22571 |
| 5 | THERMAL ZONE 3 | Cooling | 64694.61944 | 74398.81235 | 5.35140 | 6.15411 | PIACENZA ANN CLG .4% CONDNS DB=>MWB | 8/21 17:10:00 | 31.23567 | 1.33499E-002 | 1900.00000 | 204.51430 |
| 6 | THERMAL ZONE 3 | Heating | 55328.93899 | 69161.17374 | 2.40900 | 3.01126 | PIACENZA ANN HTG 99.6% CONDNS DB | 1/21 06:00:00 | -6.10000 | 2.28840E-003 | 1900.00000 | 204.51430 |
| 7 | THERMAL ZONE 4 | Cooling | 82301.35813 | 94646.56185 | 6.82015 | 7.84318 | PIACENZA ANN CLG .4% CONDNS DB=>MWB | 8/21 15:10:00 | 32.98100 | 1.33499E-002 | 600.00000 | 322.91731 |
| 8 | THERMAL ZONE 4 | Heating | 25760.86481 | 32201.08101 | 1.12157 | 2.28600 | PIACENZA ANN HTG 99.6% CONDNS DB | 1/21 06:00:00 | -6.10000 | 2.28840E-003 | 600.00000 | 322.91731 |

**Component Sizing Information**

| | Component Type | Component Name | Input Field Description | Value |
|---|---|---|---|---|
| 1 | ZoneHVAC:IdealLoadsAirSystem | THERMAL ZONE 1 IDEAL LOADS AIR SYSTEM | User-Specified Maximum Heating Air Flow Rate [m3/s] | 0.00000 |

| | | | | |
|---|---|---|---|---|
| 2 | ZoneHVAC:IdealLoadsAirSystem | THERMAL ZONE 1 IDEAL LOADS AIR SYSTEM | User-Specified Maximum Cooling Air Flow Rate [m3/s] | 0.00000 |
| 3 | ZoneHVAC:IdealLoadsAirSystem | THERMAL ZONE 2 IDEAL LOADS AIR SYSTEM | User-Specified Maximum Heating Air Flow Rate [m3/s] | 0.00000 |
| 4 | ZoneHVAC:IdealLoadsAirSystem | THERMAL ZONE 2 IDEAL LOADS AIR SYSTEM | User-Specified Maximum Cooling Air Flow Rate [m3/s] | 0.00000 |
| 5 | ZoneHVAC:IdealLoadsAirSystem | THERMAL ZONE 3 IDEAL LOADS AIR SYSTEM | User-Specified Maximum Heating Air Flow Rate [m3/s] | 0.00000 |
| 6 | ZoneHVAC:IdealLoadsAirSystem | THERMAL ZONE 3 IDEAL LOADS AIR SYSTEM | User-Specified Maximum Cooling Air Flow Rate [m3/s] | 0.00000 |
| 7 | ZoneHVAC:IdealLoadsAirSystem | THERMAL ZONE 4 IDEAL LOADS AIR SYSTEM | User-Specified Maximum Heating Air Flow Rate [m3/s] | 0.00000 |
| 8 | ZoneHVAC:IdealLoadsAirSystem | THERMAL ZONE 4 IDEAL LOADS AIR SYSTEM | User-Specified Maximum Cooling Air Flow Rate [m3/s] | 0.00000 |

**Environment**

| | Environment Name | Environment Type | Start Date | End Date | Start DayOfWeek | Duration {#days} | Source:Start DayOfWeek | Use Daylight Saving | Use Holidays | Apply Weekend Holiday Rule | Use Rain Values | Use Snow Values |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | PIACENZA ANN CLG .4% CONDNS DB=>MWB | SizingPeriod:DesignDay | 08/21 | 08/21 | SummerDesignDay | 1 | N/A | N/A | N/A | N/A | N/A | N/A |
| 2 | PIACENZA ANN CLG .4% CONDNS DP=>MDB | SizingPeriod:DesignDay | 08/21 | 08/21 | SummerDesignDay | 1 | N/A | N/A | N/A | N/A | N/A | N/A |
| 3 | PIACENZA ANN CLG .4% CONDNS ENTH=>MDB | SizingPeriod:DesignDay | 08/21 | 08/21 | SummerDesignDay | 1 | N/A | N/A | N/A | N/A | N/A | N/A |
| 4 | PIACENZA ANN CLG .4% CONDNS WB=>MDB | SizingPeriod:DesignDay | 08/21 | 08/21 | SummerDesignDay | 1 | N/A | N/A | N/A | N/A | N/A | N/A |
| 5 | PIACENZA ANN HTG 99.6% CONDNS DB | SizingPeriod:DesignDay | 01/21 | 01/21 | WinterDesignDay | 1 | N/A | N/A | N/A | N/A | N/A | N/A |
| 6 | PIACENZA ANN HTG WIND 99.6% CONDNS WS=>MCDB | SizingPeriod:DesignDay | 01/21 | 01/21 | WinterDesignDay | 1 | N/A | N/A | N/A | N/A | N/A | N/A |
| 7 | PIACENZA ANN HUM_N 99.6% CONDNS DP=>MCDB | SizingPeriod:DesignDay | 01/21 | 01/21 | WinterDesignDay | 1 | N/A | N/A | N/A | N/A | N/A | N/A |
| 8 | RUN PERIOD 1 | WeatherFileRunPeriod | 01/01 | 12/31 | Sunday | 365 | Use RunPeriod Specified Day | No | No | No | Yes | Yes |

**Environment:Daylight Saving**

| | Daylight Saving Indicator | Source | Start Date | End Date |
|---|---|---|---|---|
| 1 | No | SizingPeriod:DesignDay | | |
| 2 | No | SizingPeriod:DesignDay | | |
| 3 | No | SizingPeriod:DesignDay | | |
| 4 | No | SizingPeriod:DesignDay | | |
| 5 | No | SizingPeriod:DesignDay | | |
| 6 | No | SizingPeriod:DesignDay | | |
| 7 | No | SizingPeriod:DesignDay | | |
| 8 | No | RunPeriod Object | | |

**Environment:WarmupDays**

| | NumberofWarmupDays |
|---|---|
| 1 | 6 |
| 2 | 6 |
| 3 | 6 |
| 4 | 6 |
| 5 | 6 |
| 6 | 6 |
| 7 | 6 |
| 8 | 6 |

**Environment:Design Day Data**

| | Max Dry-Bulb Temp {C} | Temp Range {dC} | Temp Range Ind Type | Hum Ind Value at Max Temp | Hum Ind Type | Pressure {Pa} | Wind Direction {deg CW from N} | Wind Speed {m/s} | Clearness | Rain | Snow |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 33.10 | 11.90 | DefaultMultipliers | 99726 | 90 | 2.3 | 0.00 | No | No | | |
| 2 | 27.40 | 11.90 | DefaultMultipliers | 99726 | 90 | 2.3 | 0.00 | No | No | | |
| 3 | 30.30 | 11.90 | DefaultMultipliers | 99726 | 90 | 2.3 | 0.00 | No | No | | |
| 4 | 30.10 | 11.90 | DefaultMultipliers | 99726 | 90 | 2.3 | 0.00 | No | No | | |
| 5 | -6.10 | 0.00 | DefaultMultipliers | 99726 | 250 | 2.0 | 0.00 | No | No | | |
| 6 | 5.80 | 0.00 | DefaultMultipliers | 99726 | 250 | 8.9 | 0.00 | No | No | | |
| 7 | 3.50 | 0.00 | DefaultMultipliers | 99726 | 250 | 2.0 | 0.00 | No | No | | |

**Environment:Design Day Misc**

| | DayOfYear | ASHRAE A Coeff | ASHRAE B Coeff | ASHRAE C Coeff | Solar Constant-Annual Variation | Eq of Time {minutes} | Solar Declination Angle {deg} | Solar Model |
|---|---|---|---|---|---|---|---|---|
| 1 | 233 | 1106.3 | 0.2000 | 0.1216 | 1.0 | -3.33 | 12.4 | ASHRAETau |
| 2 | 233 | 1106.3 | 0.2000 | 0.1216 | 1.0 | -3.33 | 12.4 | ASHRAETau |
| 3 | 233 | 1106.3 | 0.2000 | 0.1216 | 1.0 | -3.33 | 12.4 | ASHRAETau |
| 4 | 233 | 1106.3 | 0.2000 | 0.1216 | 1.0 | -3.33 | 12.4 | ASHRAETau |
| 5 | 21 | 1229.0 | 0.1415 | 5.7310E-002 | 1.0 | -11.15 | -20.1 | ASHRAEClearSky |
| 6 | 21 | 1229.0 | 0.1415 | 5.7310E-002 | 1.0 | -11.15 | -20.1 | ASHRAEClearSky |
| 7 | 21 | 1229.0 | 0.1415 | 5.7310E-002 | 1.0 | -11.15 | -20.1 | ASHRAEClearSky |

**Tabular Report**

| | Style | Unit Conversion |
|---|---|---|
| 1 | HTML | None |

**Warmup Convergence Information**

| | Zone Name | Environment Type/Name | Average Warmup Temperature Difference {deltaC} | Std Dev Warmup Temperature Difference {deltaC} | Max Temperature Pass/Fail Convergence | Min Temperature Pass/Fail Convergence | Average Warmup Load Difference {W} | Std Dev Warmup Load Difference {W} | Heating Load Pass/Fail Convergence | Cooling Load Pass/Fail Convergence |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | THERMAL ZONE 1 | SizingPeriod: PIACENZA ANN CLG .4% CONDNS DB=>MWB | 3.9611685215E-002 | 0.2802733447 | Pass | Pass | 0.1036223816 | 0.7407273263 | Pass | Pass |
| 2 | THERMAL ZONE 2 | SizingPeriod: PIACENZA ANN CLG .4% CONDNS DB=>MWB | 3.9188335681E-002 | 0.2878346765 | Pass | Pass | 4.2068303683E-002 | 0.1748579160 | Pass | Pass |
| 3 | THERMAL ZONE 3 | SizingPeriod: PIACENZA ANN CLG .4% CONDNS DB=>MWB | 4.1165561557E-002 | 0.2748273975 | Pass | Pass | 5.1794381295E-002 | 0.2067756136 | Pass | Pass |
| 4 | THERMAL ZONE 4 | SizingPeriod: PIACENZA ANN CLG .4% CONDNS DB=>MWB | 3.7500000009E-002 | 0.2936524786 | Pass | Pass | 1.8972313937E-002 | 7.3521325634E-002 | Pass | Pass |
| 5 | THERMAL ZONE 1 | SizingPeriod: PIACENZA ANN CLG .4% CONDNS DP=>MDB | 4.1136024725E-002 | 0.2762244038 | Pass | Pass | 3.9206546716E-002 | 0.1048148671 | Pass | Pass |
| 6 | THERMAL ZONE 2 | SizingPeriod: PIACENZA ANN CLG .4% CONDNS DP=>MDB | 4.0475694195E-002 | 0.2802812541 | Pass | Pass | 5.1456255424E-002 | 0.1929785570 | Pass | Pass |
| 7 | THERMAL ZONE 3 | SizingPeriod: PIACENZA ANN CLG | 4.3099406449E-002 | 0.2804033129 | Pass | Pass | 5.4896018077E-002 | 0.1434601894 | Pass | Pass |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | .4% CONDNS DP=>MDB | | | | | | | | |
| 8 | THERMAL ZONE 4 | SizingPeriod: PIACENZA ANN CLG .4% CONDNS DP=>MDB | 3.7637214027E-002 | 0.2959350186 | Pass | Pass | 1.5317835331E-002 | 3.5128621145E-002 | Pass | Pass |
| 9 | THERMAL ZONE 1 | SizingPeriod: PIACENZA ANN CLG .4% CONDNS ENTH=>MDB | 4.0113760006E-002 | 0.2773372847 | Pass | Pass | 5.8469003663E-002 | 0.2367701030 | Pass | Pass |
| 10 | THERMAL ZONE 2 | SizingPeriod: PIACENZA ANN CLG .4% CONDNS ENTH=>MDB | 3.9735049264E-002 | 0.2850837871 | Pass | Pass | 4.1239134950E-002 | 0.1539147498 | Pass | Pass |
| 11 | THERMAL ZONE 3 | SizingPeriod: PIACENZA ANN CLG .4% CONDNS ENTH=>MDB | 4.1449165616E-002 | 0.2767955566 | Pass | Pass | 6.2341459471E-002 | 0.2599867452 | Pass | Pass |
| 12 | THERMAL ZONE 4 | SizingPeriod: PIACENZA ANN CLG .4% CONDNS ENTH=>MDB | 3.7500000000E-002 | 0.2945127421 | Pass | Pass | 1.7590165871E-002 | 5.7300970414E-002 | Pass | Pass |
| 13 | THERMAL ZONE 1 | SizingPeriod: PIACENZA ANN CLG .4% CONDNS WB=>MDB | 4.0157967255E-002 | 0.2770095822 | Pass | Pass | 6.0008139907E-002 | 0.2397143346 | Pass | Pass |
| 14 | THERMAL ZONE 2 | SizingPeriod: PIACENZA ANN CLG .4% CONDNS WB=>MDB | 3.9792141694E-002 | 0.2847821304 | Pass | Pass | 4.2761503191E-002 | 0.1581068920 | Pass | Pass |
| 15 | THERMAL ZONE 3 | SizingPeriod: PIACENZA ANN CLG .4% CONDNS WB=>MDB | 4.1552156074E-002 | 0.2768949088 | Pass | Pass | 6.1830158646E-002 | 0.2566148010 | Pass | Pass |
| 16 | THERMAL ZONE 4 | SizingPeriod: PIACENZA ANN CLG .4% CONDNS WB=>MDB | 3.7500000000E-002 | 0.2945597227 | Pass | Pass | 1.7577505609E-002 | 5.6320906471E-002 | Pass | Pass |
| 17 | THERMAL ZONE 1 | SizingPeriod: PIACENZA ANN HTG 99.6% CONDNS DB | 1.1001076593E-013 | 7.8009747848E-014 | Pass | Pass | 2.3019160636E-003 | 1.9462792511E-002 | Pass | Pass |
| 18 | THERMAL ZONE 2 | SizingPeriod: PIACENZA ANN HTG 99.6% CONDNS DB | 8.7411559472E-014 | 7.5799573045E-014 | Pass | Pass | 3.2873777988E-003 | 2.7890654031E-002 | Pass | Pass |
| 19 | THERMAL ZONE 3 | SizingPeriod: PIACENZA ANN HTG 99.6% CONDNS DB | 6.0494819031E-014 | 5.9517445596E-014 | Pass | Pass | 2.2889725684E-003 | 1.9352622520E-002 | Pass | Pass |
| 20 | THERMAL ZONE 4 | SizingPeriod: PIACENZA ANN HTG 99.6% CONDNS DB | 7.9516640186E-014 | 5.9960627019E-014 | Pass | Pass | 2.2154433070E-003 | 1.8727008478E-002 | Pass | Pass |
| 21 | THERMAL ZONE 1 | SizingPeriod: PIACENZA ANN HTG WIND 99.6% CONDNS WS=>MCDB | 6.1012923109E-014 | 6.3517460569E-014 | Pass | Pass | 1.9872710125E-003 | 1.6788003310E-002 | Pass | Pass |
| 22 | THERMAL ZONE 2 | SizingPeriod: PIACENZA ANN HTG WIND 99.6% | 5.1292303738E-014 | 6.6046772818E-014 | Pass | Pass | 2.8711359733E-003 | 2.4320605552E-002 | Pass | Pass |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | CONDNS WS=>MCDB | | | | | | | | |
| 23 | THERMAL ZONE 3 | SizingPeriod: PIACENZA ANN HTG WIND 99.6% CONDNS WS=>MCDB | 3.0420110875E-014 | 4.0222092954E-014 | Pass | Pass | 1.8874502274E-003 | 1.5940786062E-002 | Pass | Pass |
| 24 | THERMAL ZONE 4 | SizingPeriod: PIACENZA ANN HTG WIND 99.6% CONDNS WS=>MCDB | 5.7756268903E-014 | 5.4784198054E-014 | Pass | Pass | 1.9111266914E-003 | 1.6141680903E-002 | Pass | Pass |
| 25 | THERMAL ZONE 1 | SizingPeriod: PIACENZA ANN HUM_N 99.6% CONDNS DP=>MCDB | 4.6876083262E-014 | 3.5949661477E-014 | Pass | Pass | 2.1139180648E-003 | 1.7863805281E-002 | Pass | Pass |
| 26 | THERMAL ZONE 2 | SizingPeriod: PIACENZA ANN HUM_N 99.6% CONDNS DP=>MCDB | 6.1136281223E-014 | 5.7178390003E-014 | Pass | Pass | 3.0698571432E-003 | 2.6022972248E-002 | Pass | Pass |
| 27 | THERMAL ZONE 3 | SizingPeriod: PIACENZA ANN HUM_N 99.6% CONDNS DP=>MCDB | 1.4161511470E-014 | 2.1735629649E-014 | Pass | Pass | 2.0700934947E-003 | 1.7491409604E-002 | Pass | Pass |
| 28 | THERMAL ZONE 4 | SizingPeriod: PIACENZA ANN HUM_N 99.6% CONDNS DP=>MCDB | 5.3043988954E-014 | 4.4504844825E-014 | Pass | Pass | 2.0173623846E-003 | 1.7043506634E-002 | Pass | Pass |
| 29 | THERMAL ZONE 1 | RunPeriod: RUN PERIOD 1 | 3.0074708156E-014 | 2.4119902578E-014 | Pass | Pass | 4.2818342600E-003 | 5.2344414519E-003 | Pass | Pass |
| 30 | THERMAL ZONE 2 | RunPeriod: RUN PERIOD 1 | 4.1843072217E-014 | 3.9714906715E-014 | Pass | Pass | 3.8034675449E-003 | 4.2990028561E-003 | Pass | Pass |
| 31 | THERMAL ZONE 3 | RunPeriod: RUN PERIOD 1 | 2.7348493840E-014 | 2.1756059615E-014 | Pass | Pass | 3.9694263143E-003 | 4.6976161239E-003 | Pass | Pass |
| 32 | THERMAL ZONE 4 | RunPeriod: RUN PERIOD 1 | 1.9677082453E-003 | 3.5927195517E-003 | Pass | Pass | 6.5308698753E-002 | 0.1836413645 | Pass | Pass |

Report: **BUILDING ENERGY PERFORMANCE - ELECTRICITY**

Table of Contents

For: **Meter**

Timestamp: **2018-01-18 22:06:35**

**Custom Monthly Report**

| | INTERIORLIGHTS:ELECTRICITY [J] | EXTERIORLIGHTS:ELECTRICITY [] | INTERIOREQUIPMENT:ELECTRICITY [J] | EXTERIOREQUIPMENT:EL |
|---|---|---|---|---|
| January | 0.417078E+11 | 0.00 | 0.555667E+11 | |
| February | 0.380557E+11 | 0.00 | 0.504119E+11 | |
| March | 0.432576E+11 | 0.00 | 0.566475E+11 | |
| April | 0.388997E+11 | 0.00 | 0.526221E+11 | |
| May | 0.432576E+11 | 0.00 | 0.566475E+11 | |
| June | 0.415237E+11 | 0.00 | 0.545690E+11 | |
| July | 0.406336E+11 | 0.00 | 0.547006E+11 | |
| August | 0.432576E+11 | 0.00 | 0.566475E+11 | |
| September | 0.404495E+11 | 0.00 | 0.537029E+11 | |
| October | 0.417078E+11 | 0.00 | 0.555667E+11 | |
| November | 0.415237E+11 | 0.00 | 0.545690E+11 | |

| | | | | |
|---|---|---|---|---|
| December | 0.406336E+11 | 0.00 | 0.547006E+11 | |
| | | | | |
| Annual Sum or Average | 0.494908E+12 | 0.00 | 0.656352E+12 | |
| Minimum of Months | 0.380557E+11 | 0.00 | 0.504119E+11 | |
| Maximum of Months | 0.432576E+11 | 0.00 | 0.566475E+11 | |

Report: **BUILDING ENERGY PERFORMANCE - DISTRICT HEATING** Table of Contents

For: **Meter**

Timestamp: **2018-01-18 22:06:35**

**Custom Monthly Report**

| | INTERIORLIGHTS:DISTRICTHEATING [] | EXTERIORLIGHTS:DISTRICTHEATING [] | INTERIOREQUIPMENT:DISTRICTHEATING [] | EXTERIOR |
|---|---|---|---|---|
| January | 0.00 | 0.00 | 0.00 | |
| February | 0.00 | 0.00 | 0.00 | |
| March | 0.00 | 0.00 | 0.00 | |
| April | 0.00 | 0.00 | 0.00 | |
| May | 0.00 | 0.00 | 0.00 | |
| June | 0.00 | 0.00 | 0.00 | |
| July | 0.00 | 0.00 | 0.00 | |
| August | 0.00 | 0.00 | 0.00 | |
| September | 0.00 | 0.00 | 0.00 | |
| October | 0.00 | 0.00 | 0.00 | |
| November | 0.00 | 0.00 | 0.00 | |
| December | 0.00 | 0.00 | 0.00 | |
| | | | | |
| Annual Sum or Average | 0.00 | 0.00 | 0.00 | |
| Minimum of Months | 0.00 | 0.00 | 0.00 | |
| Maximum of Months | 0.00 | 0.00 | 0.00 | |

Report: **BUILDING ENERGY PERFORMANCE - DISTRICT COOLING** Table of Contents

For: **Meter**

Timestamp: **2018-01-18 22:06:35**

**Custom Monthly Report**

| | INTERIORLIGHTS:DISTRICTCOOLING [] | EXTERIORLIGHTS:DISTRICTCOOLING [] | INTERIOREQUIPMENT:DISTRICTCOOLING [] | EXTERIOI |
|---|---|---|---|---|
| January | 0.00 | 0.00 | 0.00 | |
| February | 0.00 | 0.00 | 0.00 | |
| March | 0.00 | 0.00 | 0.00 | |
| April | 0.00 | 0.00 | 0.00 | |
| May | 0.00 | 0.00 | 0.00 | |
| June | 0.00 | 0.00 | 0.00 | |
| July | 0.00 | 0.00 | 0.00 | |
| August | 0.00 | 0.00 | 0.00 | |
| September | 0.00 | 0.00 | 0.00 | |
| October | 0.00 | 0.00 | 0.00 | |
| November | 0.00 | 0.00 | 0.00 | |
| December | 0.00 | 0.00 | 0.00 | |

| | | | | |
|---|---|---|---|---|
| Annual Sum or Average | 0.00 | 0.00 | 0.00 | |
| Minimum of Months | 0.00 | 0.00 | 0.00 | |
| Maximum of Months | 0.00 | 0.00 | 0.00 | |

Report: **BUILDING ENERGY PERFORMANCE - ELECTRICITY PEAK DEMAND** Table of Contents

For: **Meter**

Timestamp: **2018-01-18 22:06:35**

**Custom Monthly Report**

| | ELECTRICITY:FACILITY {Maximum}[W] | ELECTRICITY:FACILITY {TIMESTAMP} | INTERIORLIGHTS:ELECTRICITY {AT MAX/MIN} [W] | EXTERIORLIGHTS:ELECTRICITY [] | INTERIOREQU |
|---|---|---|---|---|---|
| January | 73005.15 | 02-JAN-08:09 | 38362.58 | 0.00 | |
| February | 73005.15 | 01-FEB-08:09 | 38362.58 | 0.00 | |
| March | 73005.15 | 01-MAR-08:09 | 38362.58 | 0.00 | |
| April | 73005.15 | 03-APR-08:09 | 38362.58 | 0.00 | |
| May | 73005.15 | 01-MAY-08:09 | 38362.58 | 0.00 | |
| June | 73005.15 | 01-JUN-08:09 | 38362.58 | 0.00 | |
| July | 73005.15 | 03-JUL-08:09 | 38362.58 | 0.00 | |
| August | 73005.15 | 01-AUG-08:09 | 38362.58 | 0.00 | |
| September | 73005.15 | 01-SEP-08:09 | 38362.58 | 0.00 | |
| October | 73005.15 | 02-OCT-08:09 | 38362.58 | 0.00 | |
| November | 73005.15 | 01-NOV-08:09 | 38362.58 | 0.00 | |
| December | 73005.15 | 01-DEC-08:09 | 38362.58 | 0.00 | |
| | | | | | |
| Annual Sum or Average | | | | 0.00 | |
| Minimum of Months | 73005.15 | | 38362.58 | 0.00 | |
| Maximum of Months | 73005.15 | | 38362.58 | 0.00 | |

Report: **BUILDING ENERGY PERFORMANCE - DISTRICT HEATING PEAK DEMAND** Table of Contents

For: **Meter**

Timestamp: **2018-01-18 22:06:35**

**Custom Monthly Report**

| | DISTRICTHEATING:FACILITY {Maximum}[W] | DISTRICTHEATING:FACILITY {TIMESTAMP} | INTERIORLIGHTS:DISTRICTHEATING [] | EXTERIORLIGHTS:DISTRICTHEA |
|---|---|---|---|---|
| January | 266516.58 | 27-JAN-06:10 | 0.00 | |
| February | 261255.47 | 06-FEB-06:10 | 0.00 | |
| March | 263355.28 | 11-MAR-06:10 | 0.00 | |
| April | 229990.25 | 03-APR-06:10 | 0.00 | |
| May | 172335.77 | 13-MAY-06:10 | 0.00 | |
| June | 100461.31 | 10-JUN-06:10 | 0.00 | |
| July | 57967.84 | 01-JUL-06:10 | 0.00 | |
| August | 63508.05 | 25-AUG-06:10 | 0.00 | |
| September | 186328.14 | 18-SEP-06:10 | 0.00 | |
| October | 201664.16 | 23-OCT-06:10 | 0.00 | |
| November | 241749.07 | 20-NOV-06:10 | 0.00 | |
| December | 301689.14 | 04-DEC-06:10 | 0.00 | |
| | | | | |

| | | | | |
|---|---|---|---|---|
| Annual Sum or Average | | | 0.00 | |
| Minimum of Months | 57967.84 | | 0.00 | |
| Maximum of Months | 301689.14 | | 0.00 | |

Report: **BUILDING ENERGY PERFORMANCE - DISTRICT COOLING PEAK DEMAND** Table of Contents

For: **Meter**

Timestamp: **2018-01-18 22:06:35**

**Custom Monthly Report**

| | DISTRICTCOOLING:FACILITY {Maximum}[W] | DISTRICTCOOLING:FACILITY {TIMESTAMP} | INTERIORLIGHTS:DISTRICTCOOLING [] | EXTERIORLIGHTS:DISTRICTCC |
|---|---|---|---|---|
| January | 9145.50 | 30-JAN-15:00 | 0.00 | |
| February | 27274.20 | 21-FEB-14:00 | 0.00 | |
| March | 51716.34 | 28-MAR-16:00 | 0.00 | |
| April | 98308.69 | 24-APR-16:00 | 0.00 | |
| May | 121466.56 | 25-MAY-15:50 | 0.00 | |
| June | 148761.26 | 23-JUN-16:00 | 0.00 | |
| July | 196529.67 | 12-JUL-16:00 | 0.00 | |
| August | 166509.63 | 02-AUG-15:00 | 0.00 | |
| September | 150197.10 | 08-SEP-16:19 | 0.00 | |
| October | 102754.01 | 03-OCT-15:00 | 0.00 | |
| November | 33602.28 | 03-NOV-11:00 | 0.00 | |
| December | 18936.09 | 19-DEC-13:09 | 0.00 | |
| | | | | |
| Annual Sum or Average | | | 0.00 | |
| Minimum of Months | 9145.50 | | 0.00 | |
| Maximum of Months | 196529.67 | | 0.00 | |

Report: **Life-Cycle Cost Report** Table of Contents

For: **Entire Facility**

Timestamp: **2018-01-18 22:06:35**

**Life-Cycle Cost Parameters**

| | Value |
|---|---|
| Name | {7943C80B-FFCF-45B8-8370-FC0943E8B783} |
| Discounting Convention | EndOfYear |
| Inflation Approach | ConstantDollar |
| Real Discount Rate | 0.0300 |
| Nominal Discount Rate | -- N/A -- |
| Inflation | -- N/A -- |
| Base Date | January 2011 |
| Service Date | January 2011 |
| Length of Study Period in Years | 25 |
| Tax rate | 0.0000 |
| Depreciation Method | None |

**Use Price Escalation**

| | U.S. AVG COMMERCIAL- | U.S. AVG COMMERCIAL- | U.S. AVG COMMERCIAL- | U.S. AVG COMMERCIAL- | U.S. AVG |
|---|---|---|---|---|---|

| | ELECTRICITY | DISTILLATE OIL | RESIDUAL OIL | NATURAL GAS | COMMERCIAL-COAL |
|---|---|---|---|---|---|
| Resource | Electricity | FuelOil#1 | FuelOil#2 | Gas | Coal |
| Start Date | January 2011 | January 2011 | January 2011 | January 2011 | January 2011 |
| 1 | 0.983800 | 0.971400 | 0.846900 | 0.982300 | 0.997000 |
| 2 | 0.973000 | 0.973000 | 0.825700 | 0.955700 | 1.008900 |
| 3 | 0.963200 | 0.994200 | 0.868100 | 0.927900 | 1.008900 |
| 4 | 0.961100 | 1.016400 | 0.898800 | 0.925700 | 0.994100 |
| 5 | 0.957100 | 1.054100 | 0.928900 | 0.934600 | 0.994100 |
| 6 | 0.955300 | 1.092800 | 0.960400 | 0.941200 | 1.000000 |
| 7 | 0.953900 | 1.126700 | 0.989700 | 0.951200 | 1.003000 |
| 8 | 0.952100 | 1.158000 | 1.007500 | 0.964500 | 1.005900 |
| 9 | 0.954600 | 1.179200 | 1.031400 | 0.985600 | 1.008900 |
| 10 | 0.955000 | 1.196700 | 1.055400 | 1.006700 | 1.011900 |
| 11 | 0.955300 | 1.220000 | 1.086100 | 1.022200 | 1.014800 |
| 12 | 0.956400 | 1.233300 | 1.127800 | 1.041000 | 1.017800 |
| 13 | 0.957500 | 1.256600 | 1.149700 | 1.061000 | 1.020800 |
| 14 | 0.959600 | 1.270900 | 1.162000 | 1.078700 | 1.026700 |
| 15 | 0.961800 | 1.282600 | 1.174300 | 1.094200 | 1.029700 |
| 16 | 0.961400 | 1.298500 | 1.185200 | 1.109800 | 1.035600 |
| 17 | 0.961800 | 1.310200 | 1.194800 | 1.122000 | 1.041500 |
| 18 | 0.961800 | 1.325000 | 1.203700 | 1.130800 | 1.053400 |
| 19 | 0.959300 | 1.326100 | 1.207100 | 1.138600 | 1.056400 |
| 20 | 0.958900 | 1.328200 | 1.211900 | 1.148600 | 1.059300 |
| 21 | 0.960700 | 1.332400 | 1.213900 | 1.161900 | 1.065300 |
| 22 | 0.962500 | 1.335600 | 1.219400 | 1.176300 | 1.071200 |
| 23 | 0.965000 | 1.343100 | 1.227600 | 1.191800 | 1.074200 |
| 24 | 0.970800 | 1.351000 | 1.236500 | 1.211800 | 1.080100 |
| 25 | 0.975100 | 1.356800 | 1.242000 | 1.228400 | 1.083100 |

**Cash Flow for Recurring and Nonrecurring Costs (Without Escalation)**

| | DEFAULT COST |
|---|---|
| | Nonrecurring |
| January 2011 | 0.00 |
| January 2012 | 0.00 |
| January 2013 | 0.00 |
| January 2014 | 0.00 |
| January 2015 | 0.00 |
| January 2016 | 0.00 |
| January 2017 | 0.00 |
| January 2018 | 0.00 |
| January 2019 | 0.00 |
| January 2020 | 0.00 |
| January 2021 | 0.00 |
| January 2022 | 0.00 |
| January 2023 | 0.00 |
| January 2024 | 0.00 |
| January 2025 | 0.00 |
| January 2026 | 0.00 |
| January 2027 | 0.00 |
| January 2028 | 0.00 |
| January 2029 | 0.00 |
| January 2030 | 0.00 |
| January 2031 | 0.00 |
| January 2032 | 0.00 |

| | |
|---|---|
| January 2033 | 0.00 |
| January 2034 | 0.00 |
| January 2035 | 0.00 |

**Energy and Water Cost Cash Flows (Without Escalation)**

| | |
|---|---|
| January 2011 | |
| January 2012 | |
| January 2013 | |
| January 2014 | |
| January 2015 | |
| January 2016 | |
| January 2017 | |
| January 2018 | |
| January 2019 | |
| January 2020 | |
| January 2021 | |
| January 2022 | |
| January 2023 | |
| January 2024 | |
| January 2025 | |
| January 2026 | |
| January 2027 | |
| January 2028 | |
| January 2029 | |
| January 2030 | |
| January 2031 | |
| January 2032 | |
| January 2033 | |
| January 2034 | |
| January 2035 | |

**Capital Cash Flow by Category (Without Escalation)**

| | Construction | Salvage | OtherCapital | Total |
|---|---|---|---|---|
| January 2011 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2012 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2013 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2014 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2015 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2016 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2017 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2018 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2019 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2020 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2021 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2022 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2023 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2024 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2025 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2026 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2027 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2028 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2029 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2030 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2031 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | |
|---|---|---|---|---|
| January 2032 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2033 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2034 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2035 | 0.00 | 0.00 | 0.00 | 0.00 |

**Operating Cash Flow by Category (Without Escalation)**

| | Energy | Water | Maintenance | Repair | Operation | Replacement | MinorOverhaul | MajorOverhaul | OtherOperational | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| January 2011 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2012 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2013 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2014 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2015 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2016 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2017 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2018 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2019 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2020 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2021 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2022 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2023 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2024 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2025 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2026 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2027 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2028 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2029 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2030 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2031 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2032 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2033 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2034 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| January 2035 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**Monthly Total Cash Flow (Without Escalation)**

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2011 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2012 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2013 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2014 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2015 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2016 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2017 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2018 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2019 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2020 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2021 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2022 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2023 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2024 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2025 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2026 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2027 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2028 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2029 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2030 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2031 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2032 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2033 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2034 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2035 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**Present Value for Recurring, Nonrecurring and Energy Costs (Before Tax)**

| | Category | Kind | Cost | Present Value | Present Value Factor |
|---|---|---|---|---|---|
| DEFAULT COST | Construction | Nonrecurring | 0.00 | 0.00 | - |
| TOTAL | | | | 0.00 | |

**Present Value by Category**

| | Present Value |
|---|---|
| Construction | 0.00 |
| Salvage | 0.00 |
| Other Capital | 0.00 |
| Energy | 0.00 |
| Water | 0.00 |
| Maintenance | 0.00 |
| Repair | 0.00 |
| Operation | 0.00 |
| Replacement | 0.00 |
| Minor Overhaul | 0.00 |
| Major Overhaul | 0.00 |
| Other Operational | 0.00 |
| Total Energy | 0.00 |
| Total Operation | 0.00 |
| Total Capital | 0.00 |
| Grand Total | 0.00 |

**Present Value by Year**

| | Total Cost | Present Value of Costs |
|---|---|---|
| January 2011 | 0.00 | 0.00 |
| January 2012 | 0.00 | 0.00 |
| January 2013 | 0.00 | 0.00 |
| January 2014 | 0.00 | 0.00 |
| January 2015 | 0.00 | 0.00 |
| January 2016 | 0.00 | 0.00 |
| January 2017 | 0.00 | 0.00 |
| January 2018 | 0.00 | 0.00 |
| January 2019 | 0.00 | 0.00 |
| January 2020 | 0.00 | 0.00 |
| January 2021 | 0.00 | 0.00 |
| January 2022 | 0.00 | 0.00 |
| January 2023 | 0.00 | 0.00 |
| January 2024 | 0.00 | 0.00 |
| January 2025 | 0.00 | 0.00 |
| January 2026 | 0.00 | 0.00 |
| January 2027 | 0.00 | 0.00 |
| January 2028 | 0.00 | 0.00 |
| January 2029 | 0.00 | 0.00 |
| January 2030 | 0.00 | 0.00 |
| January 2031 | 0.00 | 0.00 |
| January 2032 | 0.00 | 0.00 |

| | | |
|---|---|---|
| January 2033 | 0.00 | 0.00 |
| January 2034 | 0.00 | 0.00 |
| January 2035 | 0.00 | 0.00 |
| TOTAL | | 0.00 |