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Scoping Audit Report

{{ facility\_address }}

5/29/2020

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# EXECUTIVE SUMMARY

SustainErgy has completed a Scoping Audit of {{ building\_name }}, located at {{ facility\_address }}. The evaluation was performed using methods, procedures and calculations consistent with ASHRAE Audits and industry standards. Additionally, this report will provide recommendations that will improve the energy efficiency of the facility, also known as Energy Conservation Measures ECMs. SustainErgy performed the on-site evaluation on «Audit\_Date». {{ building\_name }} is an «facility\_type» totaling {{ building\_squarefootage }} ft².

{{ building\_name }} could benefit from some general maintenance to increase its energy efficiency. There are a few areas highlighted in the low cost/ no cost section of the table below that show the potential savings for these maintenance issues. Additionally, the facility could benefit from certain capital measures.

Table 1 Energy Savings for Energy Conservation Measures

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Line Item** | **ECM Description** | **Electric Saved kWh** | **Peak Demand Savings kW** | **Annualized Demand Savings kW** | **Gas Saved GJ** | **GHG Saved Per YeartCO2** | **Expected LifetimeYears** | **Lifetime GHG Saved** |
| Low Cost | | | | | | | | |
| «Line\_Item» | «Ecm\_Name» | «Elec\_Savings» | «Peak\_Demand\_Savings» | «Annualized\_Demand\_Savings» | «Gas\_Savings» | «GHG\_Savings» | «Lifetime» | «Lifetime\_GHG\_Savings» |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Line Item** | **ECM Description** | **Electric Saved kWh** | **Peak Demand SavingskW** | **Annualized Demand SavingskW** | **Gas Saved GJ** | **GHG Saved Per YeartCO2** | **Expected LifetimeYears** | **Lifetime GHG Saved** |
| Capital Cost | | | | | | | | |
| «Line\_Item» | «Ecm\_Name» | «Elec\_Savings» | «Peak\_Demand\_Savings» | «Annualized\_Demand\_Savings» | «Gas\_Savings» | «GHG\_Savings» | «Lifetime» | «Lifetime\_GHG\_Savings» |

Table 2 Financial Analysis of Energy Conservation Measures TEST!!!!!!!!!!!!!!!!!

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Line Item** | **ECM Description** | **Initial Investment** | **Applicable Incentives/Rebates** | **Initial Investment w/ Expected MCCAC Rebate** | **Annual Cost Savings $/year** | **Simple Payback years** | **Simple Payback with Incentive years** | **$/tCO2 Saved Lifetime** |
| Low Cost | | | | | | | | |
| «Line\_Item» | «Ecm\_Name» | «Initial\_Investment» | «Rebate» |  |  |  |  |  |

## Summary of Recommendations

«Facility\_Name» could benefit from certain energy efficient upgrades and repairs.

Table 3 Summary of Recommendations

|  |  |  |  |
| --- | --- | --- | --- |
| **Line Item** | **Description** | **SIR** | **Recommendation** |
| No/Low Cost ECMs | | | |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| Capital Cost ECMs | |  |  |
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Table 3 Performance

|  |  |  |  |
| --- | --- | --- | --- |
| Performance Metric | Pre-Implementation | Post-Implementation | % of Savings |
| Greenhouse Gas Emissions | | | |
| GHG Emissions tCO₂/yr |  |  |  |
| Energy Cost excluding water | | | |
| Current Year $/yr |  |  |  |
| Cost Intensity $/sm/yr |  |  |  |

## Physical Description of Site

The building envelope consists of those elements of a building that enclose conditioned spaces through which thermal energy may be transferred. Energy is saved when the heat exchange between the building and the outside environment is reduced and solar and internal heat gains are controlled.

### Exterior Wall Construction

The exterior walls at «Facility\_Name» are constructed primarily with «primary\_wall\_type». The walls are insulated with «insulation\_type», with a thickness of «insulation\_thickness» and R-value of «insulation\_r\_value». The total R value of the walls is «total\_r\_value».

### Exterior Doors

There are a total of «total\_door\_count» exterior doors at «Facility\_Name». The exterior doors were observed to be in «door\_condition» condition.

### Exterior Windows

The windows at «Facility\_Name» are «frame\_type» framed, and were observed to be in «window\_condition» condition. About «window\_percentage»% of the exterior walls consists of windows.

Figure 1 Exterior

Figure 2 Overhead View

# ENERGY CONSERVATION MEASURES

## ECM Name

Recommendation:

Basis for Savings:

Key Analytical Assumptions:

**Interactive Effects:**

**Schedules**

Table 4 Schedules

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Floor** | **Area** | **Usage Hours/ Week** | **Fixtures Per Area** | **Fixture Type** | **Watts / Fixture** | **kWh/Year** | **Proposed Upgrade** | **Upgraded Watts / Fixture** | **kWh Savings** | **$ Savings** |
|  |  |  |  |  |  |  |  |  |  |  |

Table 6 ECM Analysis

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ECM Description** | **Electricity kWh** | **Electrical Demand kW** | **Natural Gas GJ** | **Total GJ** |  | **ECM Description** | **Units** | **Total** |
| **ECM Energy Use - Baseline** |  |  |  |  |  | **Measure Life** | **Years** |  |
| **ECM Energy Use - Post Retrofit** |  |  |  |  |  | **Lifetime GHG Reductions** | **tCO2e** |  |
| **Annual Energy Savings** |  |  |  |  |  | **ECM Unit Cost** | **$** |  |
| **Eligible Annual Energy Savings** |  |  |  |  |  | **Number of Units** | **#** |  |
|  |  |  |  |  |  | **ECM Total Cost** | **$** |  |
|  |  |  |  |  |  | **Simple Payback Without Incentive** | **Years** |  |
|  |  |  |  |  |  | **Expected Rec Rebate** | **$** |  |
| **Annual GHG Reductions TCO2e** |  |  |  |  |  | **Simple Payback with Incentive** | **Years** |  |
| **Annual Energy Cost Savings $** |  |  |  |  |  | **Lifetime Abatement Rate** | **$/tCO2e** |  |

# BACKGROUND INFORMATION

## Contact Information

### SustainErgy Primary Point of Contact

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### {{ client\_name }}

### {{ client\_name }} Primary Point of Contact

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Anton Massinger, Engineering Technologist

## Audit Scope and Methodology

### Preliminary Energy-Use Analysis PEA

Before the energy audit was conducted, a Preliminary Energy-Use Analysis PEA was conducted. The PEA evaluates the historic utility usage, peak demand, and cost. It develops the Energy Cost Index ECI of the building expressed in dollars per floor area per year. It develops the Energy Utilization Index EUI of the building expressed in GJ/m².

### Site Survey

The following steps were conducted during the on-site walk-through:

1. SustainErgy performed a walk-through survey of the facility to become familiar with its construction, equipment, operation, and maintenance.
2. SustainErgy reviewed the mechanical and electrical system design, installed condition, maintenance practices, and operating methods.
3. SustainErgy reviewed planned building changes or improvements.
4. SustainErgy measured key operating parameters and compared them to design levels, when available e.g., operating schedules, heating/cooling water temperatures, supply air temperature, space temperature and humidity, ventilation quantities, lighting levels. Such measurements may have been taken on a spot-measurement basis, logged manually, or logged electronically.
5. SustainErgy personnel met with the owner-operator and the occupants to discuss any special problems or planned improvements, such as HVAC upgrades or aesthetic improvements, and any operation or maintenance issues. It was determined whether any maintenance problems and/or practices currently affect facility efficiency.

### Analysis

1. SustainErgy performed a space function analysis to determine if the facility efficiency might be affected by functions that differ from the original functional intent of the facility.
2. SustainErgy analyzed and described the energy-using systems of the building, resulting from the on-site observations, measurements, and engineering calculations. The building systems documented include the following, as applicable:
   * Envelope
   * Lighting
   * Plug loads
   * HVAC
   * Domestic hot water
3. SustainErgy identified any low/no cost ECMs and estimated the approximate savings that will result from their implementation.
4. SustainErgy prepared a breakdown of the total annual energy use into end-use components.
5. SustainErgy listed all possible modifications to equipment and operations that would save energy. From this list, SustainErgy selected those that might be considered practical with assistance from the owner/operator.
6. For each measure, SustainErgy estimated the potential savings in energy costs and its effect on the facility’s EUI.
7. SustainErgy estimated the implementation costs for each measure.
8. SustainErgy estimated the impact of each measure on building operations, maintenance costs, and non-energy operating costs.
9. SustainErgy prepared a financial evaluation of the estimated total potential investment.

### Financial Analysis – Methodologies and Assumptions

SustainErgy analyzes all ECMs using multiple financial methodologies. ECMs that are considered financially viable must meet all criteria. SustainErgy prepared a financial study of each proposed ECM evaluating investment cost, energy cost savings, simple payback period and savings-to-investment ratio. The savings-to-investment ratio SIR of each ECM was analyzed to ensure financial practicality and feasibility.

#### Simple Payback Period

An energy project’s simple payback period is the amount of time it will take to recover the initial investment in energy savings. This is calculated by dividing initial investment cost by the annual energy cost savings.

#### Savings-to-Investment Ratio SIR

The savings-to-investment ratio is the ratio of the present value PV of future savings to the current investment costs of an energy or water conservation measure. SustainErgy assumes a 3% rate of inflation for present value calculations.

An ECM is only recommended if the SIR is greater than or equal to 1.0. An SIR of less than 1.0 indicates that the present-day value of savings the ECM will generate is less than the actual investment cost.

## Utility Analysis

Utility analysis is one of the primary steps in the energy audits process as it can provide insight into current facility operation, energy end uses, performance and anomalies, as well assisting to quantify savings relative to current usage patterns. SustainErgy has received utility bills from {{ client\_name }} for all metered energy sources at {{ building\_name }} with account number «Account\_Number». From these utility bills, SustainErgy was able to perform a Preliminary Energy-Use Analysis PEA. The PEA provides the following information:

* + Historical and current unit costs for energy consumption
  + Correlation between energy usage and weather variations
  + Energy End-Use and Cost Allocation

### Historical Usage and Data

Based on the historical usage data last 12 months provided by {{ client\_name }}, the following current energy rates have been determined for {{ building\_name }}. These rates are considered “blended” rates and include all associated costs e.g. demand charges, customer fees, taxes.

Table 20 Utility Rates Last 12 Months

| Utility | Rate |
| --- | --- |
| Electric | $«Electric\_rate»/kWh |
| Gas | $«Gas\_Rate»/GJ |

#### Electricity

Based on «Elec\_Bill\_Count» months of electricity bills, electrical usage was «Elec\_Bill\_Total» kWh for a total cost of $«Elec\_Bill\_Total\_Cost». The average price paid during this period was $«Elec\_Rate\_Total»/kWh. «Elec\_Provider» provides electrical service to «Facility\_Name».

Table 21 Electricity Usage

| Meter # | Period | kWh | $ | $/ kWh |
| --- | --- | --- | --- | --- |
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|  |  |  |  |  |
|  | Total |  |  |  |

Figure 11 Electrical Usage Trend

Figure 12 Electrical Cost Trend

#### Natural Gas

Based on «Gas\_Bill\_Count» months of natural gas bills, electrical usage was «Gas\_Bill\_Total» GJ for a total cost of $ «Gas\_Bill\_Total\_Cost». The average price paid during this period was $ «Gas\_Rate\_Total»/kWh. «Gas\_Provider» provides natural gas service to «Facility\_Name».

Table 22 Natural Gas Consumption

| Meter # | Period | GJ | $ | $/ GJ |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
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|  |  |  |  |  |
|  |  |  |  |  |
|  | Total |  |  |  |

Figure 13 Gas Usage Trend

Figure 14 Gas Cost Trend

#### Boyle Arena Energy Consumption Baseline

For analysis of total energy consumption, all energy units must be converted to common units in order to be summed. The utility consumption data was converted to GJ comparison and for energy use totaling. «Facility\_Name» has a baseline annual total energy use of «Baseline\_Energy\_Consumption» GJ and cost of $ «Baseline\_Energy\_Cost».

The following table and charts represent the total energy consumption and cost baseline for «Facility\_Name»:

Table 23 Energy Consumption

| Period | GJ | $ | $/ GJ |
| --- | --- | --- | --- |
| Aug | 114 | $3,865.38 | $33.83 |
| Sep | 215 | $5,376.86 | $25.02 |
| Oct | 387 | $8,703.27 | $22.48 |
| Nov | 382 | $1,348.20 | $3.53 |
| Dec | 477 | $9,830.62 | $20.62 |
| Jan | 467 | $9,399.04 | $20.12 |
| Feb | 342 | $9,206.57 | $26.90 |
| Mar | 258 | $8,304.87 | $32.22 |
| Apr | 68 | $5,989.33 | $88.44 |
| May | 48 | $4,291.32 | $89.65 |
| Jun | 25 | $3,594.31 | $146.12 |
| Jul | 45 | $3,476.89 | $77.35 |
| Annual | 2,827 | $73,386.66 | $25.96 |

Figure 15 1 Yr GJ Usage Trend

Figure 16 1 Yr GJ Cost Trend

#### Boyle Arena Energy Intensity Baseline

Table 24 EUI

|  |  |
| --- | --- |
| **Energy Intensity** | |
|  | GJ/m2 Per Year |
| Site EUI |  |
| Source EUI |  |

### End-Use Analysis

Also known as disaggregation, end-use and cost allocation is the breakdown of the energy usage at the site into separate usage categories. This helps to identify areas of energy use that could provide greater energy savings.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table 25 Baseline Energy Usage   |  |  |  | | --- | --- | --- | | **Baseline Energy Usage** | | | | Type | Consumption GJ | | |  |  |  | |  |  |  | |  |  |  | |  |  |  | |  |  |  | |  |  |  | | **Total** |  |  | | Figure 17 Baseline Energy Usage |
| Table 26 Gas Usage Breakdown   |  |  |  | | --- | --- | --- | | **Gas Usage Breakdown** | | | | Type | Consumption GJ | | |  |  |  | |  |  |  | |  |  |  | |  |  |  | |  |  |  | | **Total** |  |  | | Figure 18 Gas Usage Breakdown |
| Table 27 Electrical Usage Breakdown   |  |  |  | | --- | --- | --- | | **Electrical Usage Breakdown** | | | | Type | Consumption kWh | | |  |  |  | |  |  |  | |  |  |  | |  |  |  | | **Total** |  |  | | Figure 19 Electrical Usage Breakdown |

# EXISTING BUILDING SYSTEMS

The following section contains descriptions of the existing building envelope, lighting, mechanical and any other significant energy consuming systems.

## Occupancy

## Lighting Systems

## Hot Water Systems

### Instantaneous Hot Water

### Storage Water Heaters

### Storage Tanks

## Heating, Ventilation and Air Conditioning HVAC

### Radiant Heaters

### Unit Heaters

### Furnaces

### Boilers

# APPENDICES

## Glossary of Terms

### General Definitions

**Annual Fuel Utilization Efficiency AFUE**

Measurement of efficiency for heating appliances. This laboratory-based figure accounts for chimney heat losses, equipment jacket losses, and cycling losses. It does not include distribution losses or fan/pump energy.

**British Thermal Unit Btu, BTU**

The amount of heat required to raise the temperature of 1 pound 0.454 kg of liquid water by 1°F 0.56°C at a constant pressure of one atmosphere. Several definitions of Btu exist. These are based on different water temperatures and therefore vary by up to 0.5 percent. A BTU can be approximated as the heat produced by burning a single wooden match. In the United States, the power of HVAC systems is sometimes expressed in BTU/h instead of watts. Nameplates in Canada typically have the amount of BTU produced per hour.

**Compact Fluorescent Light CFL**

A light bulb that uses 65 percent less energy than a traditional incandescent bulb. Compared to an incandescent bulb, a single CFL saves approximately $30 over its lifetime. It will pay for itself in about six months.

**Coefficient of Performance COP**

A heat pump or air conditioner’s output in watt-hours of heat moved divided by watt-hours of electrical input.

**Coil**

Equipment that performs heat transfer to air when mounted inside an air handling unit or ductwork. A coil is heated or cooled by electrical means or by circulating liquid or steam within it.

**Ductless Mini-Split**

Mini-split systems — usually called ductless air conditioners — typically produce 9,000–36,000 BTU/h of cooling. Most ductless split system air conditioners still typically provide cooling to a single interior zone, just like a window air conditioner. More powerful outside units are becoming available. The advantages of the ductless system include smaller size and flexibility for zoning or heating and cooling individual rooms.

**Economizer**

An HVAC component that uses outside air to reduce the need for mechanical cooling. It allows a building’s mechanical ventilation system to bring in outside air when the outside air’s enthalpy is less than that of the supply air for cooling.

**Energy Conservation Measure ECM**

Any type of project conducted, or technology implemented, to reduce the consumption of energy in a building.

**Energy Cost Index ECI**

A representation of the energy usage costs at a facility relative to the size of the facility. Generally, ECI is expressed in the units dollars per square foot $/m².

**Energy Efficiency Ratio EER**

A commonly used measurement for air conditioning equipment, often used with a seasonal energy efficiency ratio SEER. The higher the EER number for an air conditioner, the more efficiently it will perform at high outdoor temperatures. See also Seasonal Energy Efficiency Ratio.

**ENERGY STAR®**

An EPA Environmental Protection Agency designation attached to a wide variety of energy-using products that meet or exceed EPA guidelines for energy-efficient performance above the standard government minimum levels.

**Gallons per Minute GPM**

The flow rate of water through a plumbing fixture.

**Heating Seasonal Performance Factor HSPF**

An efficiency factor equal to the total heating output of a central air conditioning heat pump in BTU’s during its normal usage period for heating divided by the total electrical energy input in watt-hours during the same period. A heat pump with a high HSPF is more efficient than one with a low HSPF.

**High Intensity Discharge Lamp HID**

A type of electrical gas-discharge lamp which produces light by means of an electric arc between tungsten electrodes housed inside a translucent or transparent fused quartz or fused alumina arc tube.

**Kilowatt kW**

1,000 watts, where a watt is a unit of electrical power calculated as the rate of energy transfer equivalent to one ampere flowing under a potential difference of one volt. Ten hundred-watt bulbs operating at full power would require 1 kW.

**Kilowatt-Hour kWh**

A measurement that appears on your electric bill to show your usage. One thousand watt-hours equal one kWh. A typical United States household uses approximately 27,022 kilowatt-hours of electricity per year. Ten 100-watt incandescent bulbs lit for one hour consume one kWh of energy.

**Light-Emitting Diode LED**

Semiconductor devices that produce visible light when an electrical current is passed through them. LED lamps are a type of solid-state lighting, as are Organic Light–Emitting Diodes OLEDs and Light–Emitting Polymers LEPs. LEDs use 75 percent less electricity than incandescent bulbs to produce the same amount of light. They also last 25,000-50,000 hours 25 to 50 times longer.

**National Renewable Energy Laboratory NREL**

The United States' primary laboratory for renewable energy and energy efficiency research and development. The National Renewable Energy Laboratory NREL is a government-owned, contractor-operated facility. It is funded through the U.S. Department of Energy DOE.

**Payback Period**

A payback period, in the energy efficiency industry, is the ratio of the estimated total cost of a conservation measure divided by its annual financial savings. This figure is one way to determine whether a conservation measure is cost-effective. More sophisticated versions of this calculation may take interest rates and discount rates into account.

**Preliminary Energy-Use Analysis PEA**

A PEA includes an initial analysis of historical utility usage data, demand, and costs; development of an Energy Cost Index ECI and Energy Utilization Index EUI. It includes a comparison of the facility and its metrics to similar facilities as available.

**R-Value**

A measure of a material’s resistance to heat flow. The higher the R-value, the better the insulation material’s ability to resist the flow of heat through it.

**Savings to Investment Ratio SIR**

The ratio of the present value PV of future savings to the current investment costs of an energy or water conservation measure.

**Seasonal Energy Efficiency Ratio SEER**

A commonly used measurement for air conditioning equipment. SEER is often used with an energy efficiency ratio. The higher the SEER, the more efficient an air conditioner is during average conditions. See also EER.

**Site EUI**

Site EUI expresses the building’s energy use in respect to only the energy that enters the facility at the utility meters.

**Source EUI**

Source EUI expresses the building’s energy use in respect to source energy. Source energy represents the total amount of raw fuel that is required to operate the building. It incorporates all transmission, delivery, and production losses. By taking all energy use into account, the score provides a complete assessment of energy efficiency in a building. Source EUI’s are derived from Source-Site Ratios developed by EPA/Energy Star reference material found here: https://portfoliomanager.energystar.gov/pdf/reference/Source%20Energy.pdf.

**Gigajoule GJ**

A standard unit for measuring the energy in the natural gas one has used. The gigajoule is the industry standard, used by most gas utilities in Canada.

**Watt W**

A watt is the unit of electrical power that can cause one ampere of current to flow under an electrical potential difference of one volt. Electrical potential is like pressure in a water piping system.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| {%tr for item in light\_contents %} | | | | | |
| {{ item.area\_id }} | {{ item.hours }} | {{ item.fixture\_count }} | {{ item.fixture }} | {{ item.lamp }} | {{ item.wattage }} |
| {%tr endfor %} | | | | | |

## Lighting Schedules

| Area | Usage hrs/ wk | Fixt./ Area | Fixture Type |  | Watts/ Fixt | Lamps/ Fixt |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | |
|  |  |  |  |  |  |  |
|  | | | | | | |
|  |  |  |  |  |  |  |

In the above table, "N/A" represents not available while "-" represents not applicable.

## DHW Schedules

| Line Item | ECM Code | Equipment Type | Location | Tag | Quantity | Manufacturer | Model # | Serial # | Year Built | Input Capacity | Fuel Type | Storage Volume gallon | Thermal Efficiency % | Energy Factor | Set Point °F | Insulation R-Value | Notes |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

In the above table, "N/A" represents not available while "-" represents not applicable.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| {%tr for item in dhw\_contents %} | | | | | | | | | | | | | | | | |
| {{ item.building\_id }} | {{ item.equipment\_type }} | {{ item.area\_id }} | {{ item.tag }} | {{ item.quantity}} | {{ item.manufacturer }} | {{ item.model\_number}} | {{ item.serial\_number}} | {{ item.year\_built}} | {{ item.input\_capacity }} | {{ item.fuel\_type }} | {{ item.stoage\_volume }} | {{ item.thermal\_efficiency}} | {{ item.energy\_factory}} | {{ item.set\_point }} | {{ item.insulation\_value}} | {{ item.notes}} |
| {%tr endfor %} | | | | | | | | | | | | | | | | |

## Pump Schedules

| Line Item | ECM Code | Loc. | Tag | Systems Served | Manu. | Mod. # | Ser. # | Yr | GPM | Head Press. | HP | RPM | Volts | Eff. | VFD Equip | Notes |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

In the above table, "N/A" represents not available while "-" represents not applicable.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| {%tr for item in pump\_contents %} | | | | | | | | | | | | | | | |
| {{ item.building\_id }} | {{ item.area\_id }} | {{ item.tag }} | {{ item.manufacturer }} | {{ item.model\_number}} | {{ item.serial\_number}} | {{ item.year\_built}} | {{ item.gpm }} | {{ item.fuel\_type }} | {{ item.head\_pressure }} | {{ item.hp}} | {{ item.rpm}} | {{ item.volts }} | {{ item.efficiency}} | {{ item.vfd\_equip}} | {{item.notes}} |
| {%tr endfor %} | | | | | | | | | | | | | | |  |

## Motor Schedules

| Line Item | ECM Code | Loc. | Equip Served | Quantity | Manu. | Mod. # | Ser. # | Yr | HP | BHP | RPM | Fan Type | Volts | CFM | Eff. | VFD Equip |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

In the above table, "N/A" represents not available while "-" represents not applicable.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| {%tr for item in motor\_contents %} | | | | | | | | | | | | | | | |
| {{ item.building\_id }} | {{ item.area\_id }} | {{ item.quantity }} | {{ item.manufacturer }} | {{ item.model\_number}} | {{ item.serial\_number}} | {{ item.year\_built}} | {{ item.hp }} | {{ item.bhp }} | {{ item.rpm }} | {{ item.fan\_type}} | {{ item.volts}} | {{ item.cfm }} | {{ item.efficiency}} | {{ item.vfd\_equip}} | {{item.notes}} |
| {%tr endfor %} | | | | | | | | | | | | | | |  |

## HVAC Schedules

| Line Item | Equip. Type | Loc. | Tag | System | Manu. | Mod. # | Ser. # | Yr Blt | Cool Cap. | Heating Cap. | Heat Fuel | Heat Eff. | Notes |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 17 |  |  |  |  |  |  |  |  |  |  |  |  |  |

In the above table, "N/A" represents not available while "-" represents not applicable.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| {%tr for item in hvac\_contents %} | | | | | | | | | | | | |
| {{ item.building\_id }} | {{ item.area\_id }} | {{ item.equipment\_type }} | {{ item.tag }} | {{ item.manufactuerr }} | {{ item. model\_numbe }} | {{ item.serial\_number }} | {{ item.year\_built }} | {{ item.cooling\_capacity }} | {{ item.heating\_capacity }} | {{ item.heat\_fuel }} | {{ item.heating\_effieciency }} | {{ item.notes }} |
| {%tr endfor %} | | | | | | | | | | | | |

## Plug Load Schedules

| Line Item | ECM Code | Floor | Area | Appliance Category | Appliance Type | Appliance Details | Qty | Notes |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |

## Photo Gallery

## Approval