# City of Greenville

## Investment Grade Audit Report for Guaranteed Energy Savings Performance Contract

**April 4, 2012**

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# Table of Contents

# Section 1: Executive Summary

Energy Solutions fulfills the role of Energy Service Company (ESCO) for the entire Schneider Electric company. At its core, Schneider Electric combines the best people in the industry with the latest energy-saving technologies and practices to upgrade aging equipment, reduce maintenance expenses, lower utility bills and improve building comfort. Schneider Electric has extensive experience developing, implementing and guaranteeing the results of energy conservation projects for facilities. We act as a "design-build" contractor and bear sole responsibility for the design, plans and specifications, project scheduling, equipment procurement, construction management, start-up, punch-list development and final acceptance inspection. In addition, Schneider Electric provides a performance guarantee that has been proven fair and reliable for over a decade. This performance guarantee protects our clients in the event that the energy savings on a project fall short of the amount guaranteed.

Schneider Electric Energy Solutions entered into an agreement with the City of Greenville to perform an Investment Grade Audit of their facilities, with a primary focus of saving energy, improving operations, and addressing key HVAC infrastructure improvement needs. The purpose of the audit is to determine the scope of work, guaranteed savings amount, energy conservation measures, and guaranteed maximum project cost for a comprehensive building improvement program for the City of Greenville.

The facility survey phase of the Investment Grade Audit commenced in December 2011 during which Schneider Electric project developers and engineers conducted field surveys of each of the buildings to collect the necessary information and data to undertake utility and systems analysis.

The remainder of this overview provides details on the energy audit findings. Sections are included on the scope of the audit, potential conservation measures and savings, and the anticipated project timeline. In the balance of the report, Schneider Electric presents a comprehensive package of energy conservation measures (ECMs) including narrative descriptions, analysis of utilities, cost and savings estimates, and M&V methods.

# Section 2: Project Summary

## 2.1 Introduction

This Investment Grade Audit (IGA) report represents an analysis of energy conservation measures and other building services available to the City of Greenville facilities. In it, Schneider Electric has identified measures that bring value to the city either through increasing energy efficiency or upgrading the facility. For each measure, an energy cost savings is included as well as a description of the analysis methodology, supporting utility data and assumptions used to derive savings. The following report details Schneider Electric's proposed $2,495,944 self funding 15 year term project for the City of Greenville.

## 2.2 Scope Analysis

The purpose of this IGA is to determine, through field surveys and computer simulation, facility upgrades and energy-related efficiency improvements that could and should be made at the City of Greenville facilities. Consideration was taken for solutions that would have a positive life cycle cost as well as solutions that, while not self-funding, could improve occupant comfort and building efficiency. Schneider Electric also considered the project budget and savings constraints outlined by the City of Greenville. At the conclusion of this audit, the ultimate deliverable is a turnkey project proposal for the design, implementation, commissioning, and monitoring of the proposed improvements.

The table below summarizes the buildings that were surveyed.

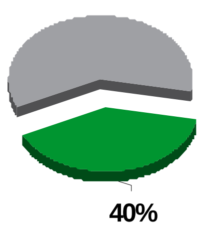
| City of Greenville IGA Building List | |
|---|---|
| **Building / Site Name** | **Address** |
| City Hall | 200 West 5th Street, Greenville, NC 27834 |
| Municipal Building | 201 West 5th Street, Greenville, NC 27834 |
| Police-Fire Rescue | 500 S Greene Street, Greenville, NC 27834 |
| Park Maintenance Center | 210 New Street Greenville, NC 27834 |
| 5th Street Police Substation | 1024 W. 5th St, Greenville, NC 27834 |
| Epps Recreation Center / Thomas Foreman Park | 400 Nash Street Greenville, NC 27834 |
| Guy Smith Stadium | 2160 Chestnut Street, Greenville, NC 27834 |
| City Warehouse | 101 Hooker Rd, Greenville, 27834 |
| Public Works Complex | 1500 Beatty Street, Greenville, NC 27834 |
| South Greenville Rec Center Building | 851 Howell Street, Greenville, NC 27834 |
| Evans Park Building | W Arlington Blvd, Greenville, NC |
| Elm Street Recreation Center | 1058 S Elm Street, Greenville, NC 27858 |
| Jaycee Park Building | 2000 Cedar Lane, Greenville, NC 27858 |
| Sports Connection | 1701 E. 14th St. Greenville, NC 27858 |
| Gardner Training Center | 1402 Brownlea Drive, Greenville, NC 27858 |
| H. Boyd Lee Park Buildings | 5184 Corey Road, Greenville, NC 28590 |
| River Park North Building | 1000 Mumford Rd, Greenville, NC |
| Greenfield Terrace Building | 401 Greenfield Blvd, Greenville, NC 27834 |
| Grenville Aquatics and Fitness Center | 921 Staton Road, Greenville, NC 27834 |
| Bradford Creek Golf Course | 4950 Old Pactolus Road, Greenville, NC 27834 |

Schneider Electric evaluates each building system in terms of age, condition, and performance. The following were studied for each building:

- Existing Heating Ventilating and Air conditioning Systems (HVAC)
- Existing Lighting Systems
- Existing HVAC Control and Energy Management Systems
- Existing Building Envelopes
- Current Water Usage
- Miscellaneous Electrical Loads
- Building Operational and Occupancy Loads
- Current Building Expansions and Building Reductions
- Existing Energy Usage Baseline and Expected (Post Retrofit) Performance

### 2.3 KEY POINTS

Energy Savings: Schneider Electric used utility and hard operational savings that are attributable to a reduction in the city's energy usage which is included in this report as a method to provide payback for the project. Cost Avoidance, or implementation period savings, was not used to improve the payback on this project. Schneider Electric estimates utility expenditure savings though a performance contracting partnership with Schneider Electric to be approximately **$221,900** per year, an overall cost savings of **$3,918,169** over a 15 year term after implementing the ECMs recommended in our project. The following chart and table outline the city's utility savings.




| | |
|---|---|
| Baseline Annual Utility Cost | $551,535 |
| Potential Annual Savings: | $221,893 |
| Savings Percentage: | 40% |

## Energy and Water Savings Summary

| | Electric | | Fuel | Water | Projected Annual Savings |
|---|---|---|---|---|---|
| | kWh | KW | Therms | kGal | $ |
| City Hall | 97,283 | (79) | 474 | 12 | $49,225 |
| Municiple Building | 300,450 | 139 | 0 | 0 | $28,738 |
| Police Fire/Rescue | 288,737 | (64) | 367 | 122 | $31,020 |
| Park Maintenance Center | 8,561 | 37 | (16) | 36 | $1,175 |
| 5th Street Police Substation | 2,501 | 7 | 0 | 0 | $314 |
| Epps Recreation Center/Thomas Foreman Park | 59,496 | 43 | 198 | 0 | $8,475 |
| Guy Smith Stadium | 20,882 | 0 | 0 | 626 | $8,123 |
| City Warehouse | 0 | 0 | 0 | 0 | $0 |
| Public Works Complex | 109,654 | 25 | 719 | 0 | $20,934 |
| South Greenville Recreation Center Building | 40,557 | 123 | 60 | 67 | $6,099 |
| Evans Park Building | 5,089 | 4 | (8) | 9 | $645 |
| Elm Street Recreation Center | 15,780 | 34 | (12) | 58 | $2,323 |
| Jaycee Park Building | 86,749 | 157 | 426 | 0 | $13,487 |
| Sports Connection | 40,959 | 71 | 60 | 9 | $5,614 |
| Gardner Training Center | 5,714 | 25 | (7) | 0 | $652 |
| H. Boyd Lee Park Buildings | 23,325 | 26 | 231 | 0 | $4,697 |
| River Park North Building | 34,107 | 0 | 0 | 0 | $3,538 |
| Greenfield Terrace Building | 5,836 | 0 | 0 | 0 | $723 |
| Greenville Aquatics and Fitness Center | 131,818 | 137 | 1464 | 545 | $33,600 |
| Bradford Creek Golf Course | 23,213 | 54 | (21) | 0 | $2,511 |
| **Total Project Utility Usage and Cost** | **1,300,711** | **738** | **3,936** | **1,484** | **$221,893** |

Measurement & Verification: With 65 employees dedicated to measurement & verification and ongoing support of the project Schneider Electric has the largest amount of in-house resources available in the industry.

Seamless Process: Years of experience in the region and nationwide have given Schneider Electric the expertise in providing a streamlined, seamless process in all aspects of the Performance Contracting process. Schneider Electric's passion and commitment to proven results combined with a single contact (single point of responsibility) ensures the City of Greenville that we will do what it takes to deliver a successful project that exceeds all expectations.

**High priority needs addressed with the $2,495,944 self funding project include:**

- Installation of new HVAC/dehumidification System at the Aquatics Center
- Dedicated cooling HVAC unit for the communications room in City Hall
- Replacement of aging rooftop units the Public Works Building
- Replacement of HVAC unit for 3rd floor of the Municipal Building
- Upgrade/installation of control systems in multiple facilities
- Retro-commissioning of current building automation systems
- Energy efficient lighting system throughout the city

Long-term Partner: Schneider Electric will provide our in-house Performance Assurance (PASS) services for as long as the University requires, helping operate the facilities most efficiently, supporting facility operations, and providing quarterly updates and annual reconciliations of the savings progress.

Reduction of Greenhouse Gas Emissions: Through the term of our recommended project, **the City of Greenville will see savings of over 49,245 tons of carbon emissions which is equivalent to planting 1,969,830 trees or removing 6,354 cars from the road.**

# Section 3: Existing Conditions

Provided in this section are the existing conditions of the City of Greenville's facilities. This section is broken down by each building included in the Investment Grade Audit.

## City Hall

**Address:** 200 West 5th Street, Greenville, NC 27834
**No. of Buildings:** 1
**Sq Ft:** 46847
**Year Built:** 1959
**Use:** Office
**Floors**: 3
**Electric Tariff:** ECMG
**Gas Tariff:** GCCF

**People:** 200 - Average
**Main Activity:** Office

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

| **Primary Building Hours of Operation/Occupancy Schedule** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | Closed | Closed | Closed | Closed |

**Occupancy Notes:** Assembly Area: Scheduled custom for meetings at night during the week.

# System Descriptions:

## Lighting

| Lighting - City Hall | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| City Hall | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 342 |
| City Hall | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 2 |
| City Hall | Existing T8 Fluorescent - Retrofit Relamp Linear Fluorescent T8 | 97 |
| City Hall | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 218 |
| City Hall | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 3 |
| City Hall | Existing T8 Fluorescent U Tube - Retrofit Relamp Reballast Linear Fluorescent T8 With Reflector kit | 83 |

## Water

| Water – City Hall | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Toilets** | | | | **Urinals** | **Bathroom Sinks** | | **Showerheads** | | |
| **Existing gpf** | | | | **Existing gpf** | **Existing gpm** | | **Existing gpm** | | |
| **3.5** | **3.5** | **1.6** | **1.28** | **1.0** | **2.2** | **0.5** | **2.5** | **1.5** | |
| - | - | 17 | - | 3 | 4 | 9 | 4 | - | |

## HVAC

City Hall Uses Packaged Rooftop Units for the main HVAC Systems. The units are split systems with separate condensing units and air handlers. The systems are Variable Air Volume systems (VAV) and designed to vary the flow of the supply air serving the conditioned spaces. There are three of these systems; AHU 1 serves the older East section of the building, AHU 3 serves the newer West section of the building including the Lobby, and AHU 2 serves the Assembly area located on the third floor of the newer section of the building.

Mechanical refrigeration is provided by split condensing units and heating is provided by electric reheat elements in the VAV boxes.

VAV boxes with electric heat are located in the spaces and control the environmental and comfort conditions for the many areas. There are 47 VAV boxes serving the individual areas of the building. Conditioned supply Air is supplied to the VAV boxes. Individual area temperature sensors and controllers modulate supply air flow into the conditioned space. As the cooling requirement decreases the boxes employ dampers to reduce the air flow into the space down to a pre- set minimum. If the temperature in the space reduces further the electric heating element is energized and the supply air is heated, as required, to keep the temperature set point. Temperature set points for this building are set and maintained by a DDC Control System.

The building also includes a large IT/Computer Room which has two dedicated DX AAON rooftop units. Both units serve the same area. These units serve computer spaces and employ reheat for humidity control. The units do not provide ventilation air.

The City Hall HVAC System are controlled by Yamas DDC Control System and includes temperature and temperature setback scheduling for all major equipment.

The following tables show the major equipment in the building:

| Rooftop Units - City Hall | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Supply | | | | |
| Mark | Area Served | Year Installed | System Type | Total Air CFM | Fan Motor HP | Control | Total Cooling (MBH) | Type |
| AAON-1 | Server Room | 1993 | Rooftop Unit, Dx cooling only | 6,000 | 10.00 | Local | 120.0 | None |
| AAON-2 | Server Room | 1993 | Rooftop Unit, Dx cooling only | 6,000 | 10.00 | Local | 120.0 | None |

| DX Systems - City Hall | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Supply | | | | | |
| Mark | Area Served | System Type | Total Air CFM | Outdoor Air CFM | Fan Motor HP | Control | Total Cooling (MBH) | Type |
| AHU-1 | Old Building | Split DX, Elec Reheat | 22,000 | 3,160 | 40.00 | DDC | 705.0 | Elec |
| AHU-2 | Council Chambers | Split DX, Elec Reheat | 6,000 | 3,200 | 7.50 | DDC | 205.0 | Elec |
| AHU-3 | Addition | Split DX, Elec Reheat | 25,000 | 3,000 | 40.00 | DDC | 820.0 | Elec |

| Domestic Hot Water - City Hall | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mark | Quantity | Type | Manufacturer | Model Number | Est Date Installed | MBH | Tank Capacity (Gallons) |
| DHW-1 | 2 | Natrual Gas | Voyager | SSV199-119RB | 1998 | 199 | 80 |

## Issues with Present Building Operation

The building has been refitted with efficient windows and insulation upgrades during the recent renovation (2004). However there are multiple comfort issues associated with the building in the heating season. The primary cause of the discomfort is three fold. Two can be mitigated and the third is probably impractical to improve.

The area that would be difficult to improve involves the insulation around the new windows. This appears to be an issue introduced during construction. The new windows themselves are excellent barriers and the outside seals around the frame look to be in excellent condition. Around the edges of the window in the winter the coldness can be felt, indicating that the insulation around those edges is not reducing conduction enough. These areas are behind the finished walls and may be practically out of reach. Addressing this issue directly is not included in the ECMs for this project. The other deficient areas outlined below exacerbate this discomfort issue and improving them as described in the ECM recommendations will mitigate the effects of this one.

The heating system for the building includes electric reheat in the VAV boxes. There is presently no heat in the air handlers. The quantity of heat available is marginal to the design and operation of the building. There is barely enough heat in the building and there may not be enough if the ventilation dampers are open to full design during the coldest parts of the year. This has forced the controls system to employ routines which restrict ventilation air based on temperature reset algorithms. Additionally, the efficiency of the systems is reduced because of these algorithms affecting/over-riding economizer control. Additionally, there are sensors out of calibration which cause the outside air dampers to stay closed or near closed longer than the set points in the control systems. The present heating design limitations is interactive with planned lighting improvements. The proposed lighting improvements will reduce the amount of heat in the building added by lighting. This area is addressed in the Controls Upgrade ECM.

The building runs at a negative pressure for most hours of the day. This negative pressure is caused by the lack of ventilation/outside air to offset the fixed exhaust in the building. A negative building pulls air and unconditioned air from any leaking areas/seals in the building and causes discomfort and air distribution issues. This area is addressed in the Controls Upgrade ECM.

The VAV box/areas of the building temperatures are scheduled presently to set back during unoccupied periods, however, the fans for the systems are operating 24/7 and allow for a large migration of air in the building making some of the setback temperatures impractical to reach. This is particularly true in the Assembly area where the occupancy/setback temperatures are more actively adjusted. During many days the area can be set back, but because the fans are on, the fans are pulling adjacent air into the space and even with the heat off in the area there is still heating going on from these adjacent areas. The effect is occurring in other areas as well and maybe partially attributed to air migrations because of the constant fan operation or may have to do with sensor calibration/fault issues. Additionally, the issues described above that are creating comfort issues in the winter have also included the use of many portable electric heaters with manual operation. Observations in the first floor accounting area show that the temperature in the area does not set back at night. This area is addressed in the Controls ECM.

Presently the fan for AHU 3 cannot be scheduled because of an IT room,302, that requires supply air 24/7. Without this load the fan could be scheduled during unoccupied hours. This area is addressed in the HVAC Upgrade ECM.

# Municipal Building

**Address:** 201 West 5th Street, Greenville, NC 27834
**No. of Buildings:** 1
**Sq Ft:** 27207
**Year Built:** 1939
**Use:** Office
**Floors**: 4
**Electric Tariff:** ECMG
**Gas Tariff:** GCCF

**People:** 45 - Average
**Main Activity:** Office

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

| **Primary Building Hours of Operation/Occupancy Schedule** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | Closed | Closed | Closed | Closed |

**Occupancy Notes:**

## Systems Description:

### Lighting

| Lighting - Municipal Building | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| Municipal Building | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 43 |
| Municipal Building | Existing T8 Fluorescent - Retrofit Relamp Linear Fluorescent T8 | 151 |
| Municipal Building | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 77 |
| Municipal Building | Existing T8 Fluorescent U Tube - Retrofit Relamp Reballast Linear Fluorescent T8 With Reflector kit | 35 |

## Water

There are no water ECMs for this building.

## HVAC

The Municipal Building uses one Packaged Rooftop Unit for first and second floor. The unit is a split system including an air handler and a separate condensing unit. The system is Variable Air Volume systems (VAV). Mechanical refrigeration is provided by the split condensing units and heating is provided by electric reheat elements in the VAV boxes. There are 16 VAV boxes serving the individual areas of the building with individual temperature. These system are new as part of a recent renovation on the first and second floors.

VAV boxes with electric heat are located in the spaces and control the environmental and comfort conditions for the many areas. There are 16 VAV boxes serving the individual areas of the building. Conditioned supply Air is supplied to the VAV boxes. Individual area temperature sensors and controllers modulate supply air flow into the conditioned space. As the cooling requirement decreases the boxes employ dampers to reduce the air flow into the space down to a pre- set minimum. If the temperature in the space reduces further the electric heating element is energized and the supply air is heated, as required, to keep the temperature set point. Temperature set points for this building are set and maintained by a DDC Control System.

The third floor uses 4 split DX systems including electric heat. These smaller units include a condensing unit on the roof of the building and individual air handlers with electric heat locate in closets around the third floor. There is no system outside air capability. There are some non- operable ventilation louvers on the side of the building which allow some fresh air into the plenum which can work into the building and system with the assist of rest room exhaust.

The first and second floor HVAC Systems are controlled by Yamas DDC Control System and includes temperature and temperature setback scheduling for all major equipment.

The third floor is controlled by individual programmable thermostats.

The following tables show the major equipment in the building:

| Air Handling Units - Municipal Building | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Supply | | | | |
| Mark | Area Served | Year Installed | System Type | Manufacturer | Total Air CFM | Fan Motor HP | Control | Total Cooling (MBH) | Electric Strip kW |
| AHU-1 | First and Second Floors | 2004 | Split DX | Trane | 15,000 | 30.00 | VAV/Static Pressure | 585.1 | 0 |
| Split 1 | 3rd Floor NW Unit | 2004 | Split DX | Lennox | 3,000 | 1.50 | Local T-stat | 90.0 | 16.03 |
| Split 2 | 3rd Floor NE Unit | 1980's | Split DX | Lennox | 800 | 1.00 | Local T-stat | 24.0 | 2.02 |
| Split 3 | 3rd Floor SE Unit | 1980's | Split DX | Lennox | 1,200 | 1.00 | Local T-stat | 36.0 | 11.28 |
| Split 4 | 3rd Floor SW Unit | 1980's | Split DX | Lennox | 1,400 | 1.00 | Local T-stat | 42.0 | 16.03 |

| VAV Boxes - Municipal Building | | | | |
|---|---|---|---|---|
| Mark | Estimated Date Installed | Max Air CFM | Min Air CFM | Heat kW |
| 1-1 | 2004 | 260 | 100 | 1 |
| 1-2 | 2004 | 300 | 110 | 1 |
| 1-3 | 2004 | 275 | 100 | 1 |
| 1-4 | 2004 | 1870 | 660 | 9 |
| 1-5 | 2004 | 1400 | 490 | 7 |
| 1-6 | 2004 | 1045 | 370 | 5 |
| 1-7 | 2004 | 1500 | 530 | 7 |
| 1-8 | 2004 | 800 | 280 | - |
| 1-9 | 2004 | 815 | 290 | 4 |
| 2-1 | 2004 | 1600 | 560 | 8 |
| 2-2 | 2004 | 660 | 240 | 3 |
| 2-3 | 2004 | 260 | 100 | - |
| 2-4 | 2004 | 160 | 60 | - |
| 2-5 | 2004 | 650 | 230 | 3 |
| 2-6 | 2004 | 1840 | 670 | 9 |
| 2-7 | 2004 | 1520 | 530 | 7 |

## Issues with Present Building Operation

The systems serving the first and second floor have had the ventilation systems programmed like City Hall, described above. They are scheduled in the controls with a temperature reset program which delivers ventilation air unevenly during the day and different periods of the year. The ventilation program also interferes with the efficiency of the unit for proper economizer operation. The ventilation programming also causes the building to run at a negative pressure for many hours of the year entraining unconditioned air into the spaces during many hours of operation. The system fans are also running continuously and have a minimum VFD setting that is higher than design and causes energy inefficiency in excess reheat. This area is addressed in the Controls Upgrade ECM.

The third floor still has the older Dx spit systems with electric heat. This area of the building has no provision for directly conditioning outside air for building pressurization and for ventilation. There are the louvers located in the plenums, but the return system for the units is not plenum return, it is direct return located in the air handler closet door. Ventilation air introduced in the plenum would need to leak through the ceiling and into the spaces. This is probably happening to some extent but is not desirable.
The third floor systems are also near the end of their economic lifetimes. This area is addressed in the HVAC Upgrade ECM.

# Police-Fire Rescue

**Address:** 500 S Greene St, Greenville, NC 27834
**No. of Buildings:** 1
**Sq Ft:** 31313
**Year Built:** 1995
**Use:** Police/Fire
**Floors**: 3
**Electric Tariff:** ECMG
**Gas Tariff:** GCCF

**People:** 200 - Average
**Main Activity:** Office

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

**Primary Building Hours of Operation/Occupancy Schedule**

| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | Closed | Closed | Closed | Closed |

**Occupancy Notes:**

# Systems Description:

## Lighting

| Lighting - Police-Fire Rescue | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| Police-Fire Rescue | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 68 |
| Police-Fire Rescue | Existing Exit Sign - Retrofit New LED Fixture | 3 |
| Police-Fire Rescue | Existing High Intensity Discharge - Retrofit New Linear Fluorescent Fixture T5 High-Bay With Sensor | 11 |
| Police-Fire Rescue | Existing Incandescent - Retrofit Relamp LED Dimmable | 15 |
| Police-Fire Rescue | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 82 |
| Police-Fire Rescue | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 387 |
| Police-Fire Rescue | Existing T12 Fluorescent U Tube - Retrofit Relamp Reballast Linear Fluorescent T8 With Reflector kit | 15 |
| Police-Fire Rescue | Existing T8 Fluorescent U Tube - Retrofit Relamp Reballast Linear Fluorescent T8 With Reflector kit | 2 |

## Water

| Water – Police, Fire & Rescue | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Toilets** | | | | **Urinals** | **Bathroom Sinks** | | **Showerheads** | |
| **Existing gpf** | | | | **Existing gpf** | **Existing gpm** | | **Existing gpm** | |
| **3.5** | **3.5** | **1.6** | **1.28** | **1.0** | **2.2** | **0.5** | **2.5** | **1.5** |
| - | 22 | 4 | - | 5 | 30 | - | 15 | - |

## HVAC

The Police Fire and Rescue uses two Packaged Rooftop Units for the majority of building areas. There is one unit serving the Fire side and one unit serving the Police side. The systems are Variable Air Volume systems (VAV). Mechanical refrigeration is provided by DX condensing units located within the rooftop units. The heating is provided by a hot water system, fed by natural gas hot water boilers, in reheat elements in the VAV boxes. There are 65 VAV boxes serving the individual areas of the building with individual temperature control. The building includes areas on both Fire and Police which require the air handlers to run 24/7.

VAV boxes with hot water heat are located in the spaces and control the environmental and comfort conditions for the many areas. These are fan powered parallel operation VAV boxes. There are 65 VAV boxes serving the individual areas of the building. Conditioned supply air is supplied to the VAV boxes. Individual area temperature sensors and controllers modulate supply air flow into the conditioned space. As the cooling requirement decreases the boxes employ dampers to reduce the air flow into the space down to a pre- set minimum. If the temperature in the space reduces further the hot water heating valve opens and the supply air is heated, as required, to keep the temperature set point. At this point of operation a fan in the VAV box is energized and takes air from the plenum in parallel with the minimum supply air. Temperature set points for this building are set and maintained in local thermostats. The only way for the existing thermostats to modulate to a setback position is if the supply air flow stops by means of an additional flow sensor in the supply air. This does not happen in this building because of the 24/7 operation and precludes temperature setback operation.

Presently the VAV boxes are local digital control with no existing communications. There is no remote operation or scheduling available for the box operation.

There is a smaller two ton packaged rooftop unit with electric heat serving the communications room. There is mini split system serving the 911/Emergency room.

Thirteen hot water unit heaters serve the entrances, equipment rooms, and the fire truck bays. These units are ceiling hung and do not have individual hot water control valves. The system operates with a small electric fan controlled by a local thermostat when heat is required.

There are two cast iron hot water boilers serving the heating and domestic hot water needs for the building. The two boilers operate in parallel and are manufactured by Weil McLain. Their input heat rating is 2 MMBTU each. The boilers include a primary circulation pump and then a secondary building circulation pump.

Additionally, the domestic hot water heater is powered by these hot water boilers. The domestic hot water usage is fairly high in the building since it has fire department berthing and other locker room arrangements. The domestic hot water heater has a dedicated secondary circulation pump taking hot water from the boiler primary loop. The boiler temperature set point is 180 degrees for both the VAV box design and the domestic hot water heater.

The following tables show the major equipment in the building:

**DX Systems - Police-Fire Rescue**

| Mark | Area Served | Year Installed | System Type | Manufacturer | Supply Total Air CFM | Supply Fan Motor HP | Supply Control | Total Cooling (MBH) | Electric Strip kW |
|---|---|---|---|---|---|---|---|---|---|
| RTU-3 | Communications | - | Package RTU w/ Electric Heat | Trane | 1,000 | 1/3 | Local T-stat | 24.3 | 7.5 |
| Split AC-1 | Emergency Room | - | Split System | Sanyo | 420 | 1/25 | Local T-stat | 16.5 | N/A |

| Air Handling Units - Police-Fire Rescue | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mark | Area Served | System Type | Manuf. | Supply CFM | Min OA CFM | Supply Fan Motor HP | Exhaust Fan Motor HP | Cooling Type | Total Cooling (MBH) | Heat Type |
| RTU-1 | 1st and 2nd Floor North | VAV RTU | Trane | 10,800 | 2,700 | 10.0 | 5.0 | DX | 591 | Reheat at VAVs |
| RTU-2 | 1st, 2nd, and 3rd Floor South | VAV RTU | Trane | 18,450 | 2,720 | 15.0 | 7.5 | DX | 823 | Reheat at VAVs |

| Boilers - Police-Fire Rescue | | | | | | | |
|---|---|---|---|---|---|---|---|
| Boiler No. | Location | Est. Install Date | Type | Capacity (MBH) | Manufacturer | Model No. | NG Input (MBH) |
| B1 | Boiler Rm | 1993 | Gas Fired HW | 2,049 | Weil McLain | PG-788 | 2,049 |
| B2 | Boiler Rm | 1993 | Gas Fired HW | 2,049 | Weil McLain | PG-788 | 2,049 |

| Domestic Hot Water - Police-Fire Rescue | | | | | | |
|---|---|---|---|---|---|---|
| Mark | Area Served | Location | Heat Source | Est. Date Installed | MBH | Tank Capacity (Gallons) |
| HWS | Building | Boiler Room | Hot Water Plant | 1993 | 1,650 | 275 |

| Hydronic Pumps - Police-Fire Rescue | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mark | System Served | Est Date Installed | Manufacturer | Model No. | GPM | Head (ft.) | Motor HP |
| P7 | HW | 1993 | B & G | Series 80 | 100 | 10.0 | 15.0 |
| P8 | HW | 1993 | B & G | Series 80 | 100 | 10.0 | 1.5 |
| P9 | DHW | 1993 | B & G | Series 80 | 110 | 35.0 | 2.0 |
| P10 | HW | 1993 | B & G | Series 80 | 90 | 50.0 | 3.0 |

## Issues with Present Building Operation

The building maintains operations 24/7 in areas served by each of the existing air handling units. The operation of the individual room thermostats controlling the VAV boxes is local and manual. There are many areas of the building that can be put into set back savings for ventilation, temperature, and fan energy if they could be controlled individually. This area is addressed in the HVAC Upgrade ECM.

# Park Maintenance Center

**Address:** 210 New Street Greenville, NC 27834
**No. of Buildings:** 2
**Sq Ft:** 5824
**Year Built:** 1940
**Use:** Maintenance
**Floors**: 1
**Electric Tariff:** ECSG
**Gas Tariff:** GCCF


**People:** 3 - Average
**Main Activity:** Office

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

| **Primary Building Hours of Operation/Occupancy Schedule** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 7 AM | 4 PM | 7 AM | 4 PM | 7 AM | 4 PM | 7 AM | 4 PM | 7 AM | 4 PM | Closed | Closed | Closed | Closed |

**Occupancy Notes:**

# Systems Description:

## Lighting

| Lighting - Park Maintenance Center | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| Park Maintenance Center | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 3 |
| Park Maintenance Center | Existing Incandescent - Retrofit Relamp Compact Fluorescent | 4 |
| Park Maintenance Center | Existing T12 Fluorescent - Retrofit New Linear Fluorescent Fixture T8 | 4 |
| Park Maintenance Center | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 14 |
| Park Maintenance Center | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 10 |
| Park Maintenance Center | Existing T8 Fluorescent - Retrofit Relamp Linear Fluorescent T8 | 1 |
| Park Maintenance Center | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 11 |
| Park Maintenance Center | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 2 |

## Water

| Water – Park Maintenance Center | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Toilets** | | | | **Urinals** | **Bathroom Sinks** | | **Showerheads** | |
| **Existing gpf** | | | | **Existing gpf** | **Existing gpm** | | **Existing gpm** | |
| **3.5** | **3.5** | **1.6** | **1.28** | **1.0** | **2.2** | **0.5** | **2.5** | **1.5** |
| 2 | - | - | - | - | 3 | - | 1 | - |

## HVAC

The Parks Maintenance has two buildings with HVAC systems. Other buildings in the complex are not heated or mechanically cooled and are used primarily for storage and laydown/staging areas.
The main building includes a small DX split system serving an office area. The building also includes natural gas unit heaters for the warehouse, heat for the office, and welding areas.
The second building has a window a/c unit and two natural gas unit heaters. The a/c unit serves the break area, and the unit heaters serve the break area and the locker room.
These units are controlled by local thermostats.

The following tables show the major equipment in the building:

| DX Systems - Park Maintenance Center | | | | | | |
|---|---|---|---|---|---|---|
| **Building** | **Area Served** | **Location** | **Year Installed** | **System Type** | **Tons** | **Total Cooling (MBH)** |
| Main Building | Front Room | Window | 1990s | Window AC | 1.5 | 18.0 |
| Main Building | Middle Area Split AC | Ceiling | 2010 | Split AC | 3.0 | 36.0 |
| Locker/Support Building | Front Room | Window | 1990s | Window AC | 1.5 | 18.0 |

| Unit Heaters - Park Maintenance Center | | | | |
|---|---|---|---|---|
| **Building** | **Area Served** | **Est. Date Installed** | **Control** | **Est. Size (MBH)** |
| Main Building | Front room | 2000s | Local T-stat | 75 |
| Main Building | Warehouse | 2010 | Local T-stat | 75 |
| Main Building | Warehouse | 2010 | Local T-stat | 75 |
| Support Building | Break Room | 1990s | Local T-stat | 50 |
| Support Building | Locker Room | 1990s | Local T-stat | 50 |

# 5th Street Police Substation

**Address:** 1024 W. 5th St, Greenville, NC 27834
**No. of Buildings:** 1
**Sq Ft:** 1500
**Year Built:** 1940
**Use:** Office
**Floors**: 1
**Electric Tariff:** ECSG
**Gas Tariff:** GCCF

**People:** 3 - Average
**Main Activity:** Office

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

| Primary Building Hours of Operation/Occupancy Schedule | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | Closed | Closed | Closed | Closed |

**Occupancy Notes:**

## Systems Description:

### Lighting

| Lighting - 5th Street Police Substation | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| 5th Street Police Substation | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 12 |
| 5th Street Police Substation | Existing Incandescent - Retrofit Relamp Compact Fluorescent | 6 |
| 5th Street Police Substation | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 4 |

## Water

| Water – 5th Street Police Substation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Toilets | | | | Urinals | Bathroom Sinks | | Showerheads | |
| Existing gpf | | | | Existing gpf | Existing gpm | | Existing gpm | |
| **3.5** | **3.5** | **1.6** | **1.28** | **1.0** | **2.2** | **0.5** | **2.5** | **1.5** |
| 2 | - | - | - | - | 2 | - | - | - |

## HVAC

The Police Sub Station has one split DX residential HVAC unit installed in 2009. The condensing is located in the rear of the building. The air handler is located inside and has a natural gas furnace for heating. This unit is controlled by local thermostats.

The following tables show the major equipment in the building:

| DX Systems - 5th Street Police Substation | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mark | Area Served | Location | Year Installed | System Type | Manuf. | Total Air CFM | Outdoor Air CFM | Control | Cooling (MBH) | Heat Type |
| Unit 1 | House | Closet | 2009 | Split DX | Air Ease | 400 | 0 | Local | 12 | Nat Gas |

# Eppes Recreation Center / Thomas Foreman Park

**Address:** 400 Nash Street Greenville, NC 27834
**No. of Buildings:** 1
**Sq Ft:** 25546
**Year Built:** 1940
**Use:** Gym
**Floors**: 1
**Electric Tariff:** ECMG
**Gas Tariff:** GCCF


**People:** 100 - Average
**Main Activity:** Gym

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

**Primary Building Hours of Operation/Occupancy Schedule**

| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 9 AM | 9 PM | 9 AM | 9 PM | 9 AM | 9 PM | 9 AM | 9 PM | 9 AM | 9 PM | 10 AM | 2 PM | Closed | Closed |

**Occupancy Notes:**

# Systems Description:

## Lighting

| Lighting - Eppes Recreation Center | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| Eppes Recreation Center | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 46 |
| Eppes Recreation Center | Existing Incandescent - Retrofit Relamp Compact Fluorescent | 1 |
| Eppes Recreation Center | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 65 |
| Eppes Recreation Center | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 4 |
| Eppes Recreation Center | Existing T12 Fluorescent HO - Retrofit New Linear Fluorescent Fixture T8 | 12 |
| Eppes Recreation Center | Existing T8 Fluorescent - Retrofit Relamp Linear Fluorescent T8 | 2 |
| Eppes Recreation Center | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 14 |
| Eppes Recreation Center | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 10 |

## Water

| Water – Epps Recreations Center & T. Foreman Park | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Toilets** | | | | **Urinals** | **Bathroom Sinks** | | **Showerheads** | |
| **Existing gpf** | | | | **Existing gpf** | **Existing gpm** | | **Existing gpm** | |
| **3.5** | **3.5** | **1.6** | **1.28** | **1.0** | **2.2** | **0.5** | **2.5** | **1.5** |
| 7 | - | 10 | - | 6 | 12 | 4 | - | - |

## HVAC

The Eppes Recreation Center has three packaged rooftop units; two serving the gym and one serving the mutli-purpose room. These units have natural gas heat and DX cooling. There is a split system serving the game/weight room. This area also uses natural furnace(s), operated in parallel for heating. There are three natural gas unit heaters serving two classrooms and the lobby. There are 6 window type a/c units serving the classrooms, offices and auxiliary area. Each of these systems are all controlled by local thermostats.

The following tables show the major equipment in the building:

| Air Handling Units - Eppes Recreation Center | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mark** | **Area Served** | **System Type** | **Supply Fan HP** | **Tons** | **Medium** | **Total Cooling (MBH)** | **Gas Heat (MBH)** |
| RTU-6 | Multipurpose Room | Gas Pack | 3.0 | 15 | DX | 184.4 | 203.0 |
| RTU-G1 | Gym | Gas Pack | 3.0 | 15 | DX | 181.0 | 284.0 |
| RTU-G2 | Gym | Gas Pack | 3.0 | 15 | DX | 181.0 | 284.0 |
| Heater 1&2 | Game Room | Twinned Gas Furnaces | 0.33 | N/A | None | N/A | 200 Input |
| Heater 3 | Lobby | Gas Furnace | 0.75 | N/A | None | N/A | 165 Input |
| Heater 4 | Classrooms | Gas Furnace | 0.33 | N/A | None | N/A | 137 Input |
| Heater 5 | Classrooms | Gas Furnace | 0.75 | N/A | None | N/A | 107.0 |

| DX Systems - Eppes Recreation Center | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Mark** | **Area Served** | **Qty** | **Year Installed** | **System Type** | **Total Air CFM** | **Supply Fan Motor HP** | **Control** | **Total Cooling (MBH)** |
| Split System | Gameroom | 1 | 2009 | Split System AC | 5,000 | 5.0 | Local T-stat | 150.0 |
| PTACs | Classrooms | 6 | 1990s | Thru-wall PTAC | | | Unit | |

## Issues with Present Building Operation

Presently the building operates in a local/manual manner. Temperature set points and set back is inconsistent.

The Rooftop units and split systems are set to operate in fan cycle mode and the ventilation dampers for the multi-purpose room have been adjusted to a closed position. These issues cause uneven ventilation in the building and also cause the building to run in a negative pressure which allows the introduction of unconditioned outside air into the spaces. These issues are addressed in ECM 2 – Controls Upgrade.

# Guy Smith Stadium

**Address:** 2160 Chstnt St, Greenville, NC 27834
**No. of Buildings:** 1
**Sq Ft:** 2000
**Year Built:** 1940
**Use:** Stadium Support
**Floors**: 1
**Electric Tariff:** ECMG
**Gas Tariff:** GCCF

**People:** 10 - Peak
**Main Activity:** Restrooms/Press Box

**Standard Temperature Settings:** n/a, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** n/a, (Heating/Cooling) Degrees F

| Primary Building Hours of Operation/Occupancy Schedule | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 12 PM | 9 PM | 12 PM | 9 PM | 12 PM | 9 PM | 12 PM | 9 PM | 12 PM | 9 PM | 10 AM | 5 PM | 1 PM | 5 PM |

**Occupancy Notes:**

## Systems Description:

### Lighting

| Lighting - Guy Smith Stadium | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| Guy Smith Stadium | Existing Incandescent - Retrofit Relamp Compact Fluorescent | 6 |
| Guy Smith Stadium | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 56 |
| Guy Smith Stadium | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 14 |

## Water

| Water – Guy Smith Stadium | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Toilets | | | | Urinals | Bathroom Sinks | | Showerheads | |
| Existing gpf | | | | Existing gpf | Existing gpm | | Existing gpm | |
| **3.5** | **3.5** | **1.6** | **1.28** | **1.0** | **2.2** | **0.5** | **2.5** | **1.5** |
| 10 | 4 | 9 | 1 | 13 | 16 | 2 | 4 | 6 |

## HVAC

There are no major HVAC systems in this building. There is a window a/c in the press box and there are two exhaust fans, one in each rest room area.

# City Warehouse

**Address:** 101 Hooker Rd, Greenville, 27834
**No. of Buildings:** 1
**Sq Ft:** 12293
**Year Built:** 1955
**Use:** Office/Warehouse/Evidence
**Floors**: 1
**Electric Tariff:** ECSG
**Gas Tariff:** GCCF

**People:** 1 - Average
**Main Activity:** Office/Storage

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

**Primary Building Hours of Operation/Occupancy Schedule**

| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | Closed | Closed | Closed | Closed |

**Occupancy Notes:**

# Systems Description:

## Lighting

| Lighting - City Warehouse | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| City Warehouse | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 6 |
| City Warehouse | Existing High Intensity Discharge - Retrofit New Linear Fluorescent Fixture T5 High-Bay With Sensor | 8 |
| City Warehouse | Existing Incandescent - Retrofit Relamp Compact Fluorescent | 4 |
| City Warehouse | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 66 |
| City Warehouse | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 16 |

## Water

There are no water ECMs for this building.

## HVAC

The City Warehouse is a fairly new acquisition by the City. It is a former car dealership and includes three major areas. There is a front office area, a warehouse, and in a separate but contiguous building; there is an additional warehouse space.

Presently the front part of the building including the office area and the main warehouse are not occupied, lighting is mostly left off and the temperature settings on the equipment are set to keep enough heat in the building to protect from freezing. There is some temporary storage occurring in the warehouse portion. The back warehouse is an expansion area for police evidence storage. (The main evidence storage area is in the Police Fire Building.) The police evidence area is conditioned for storage and is generally unoccupied.

Presently in the office area there is a Lennox split system which was originally designed for the area. This older unit includes natural gas heat located in the air handler.

The warehouses have two natural gas ceiling hung unit heaters sized at 150 mbh each.
The evidence warehouse has a new split system with natural gas heating and two mini split cooling only DX units.

The systems in the building are manually controlled by local thermostats.

The following tables show the major equipment in the building:

| DX Systems - City Warehouse | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Mark** | **Area Served** | **Year Installed** | **System Type** | **Total Air CFM** | **Control** | **Total Cooling (MBH)** | **Type** | **Heating (MBH)** |
| Unit 1 | Front Office Areas | | Res Split Gas Furnace | 2,000 | Local | 60.0 | Natural Gas | 60.48 |
| Unit 2 | Evidence Area | 2011 | Res Split Gas Furnace | 2,000 | Local | 60.0 | Natural Gas | 60.48 |
| Mini Split 1 | Evidence Area | 2011 | Mini Split Cooling | 1,000 | Local | 36.0 | N/A | N/A |
| Mini Split 2 | Evidence Area | 2011 | Mini Split Cooling | 1,000 | Local | 36.0 | N/A | N/A |

| Unit Heaters - City Warehouse | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mark** | **Area Served** | **Qty** | **Location** | **System Type** | **MBH Input** | **MBH Output** | **Control** |
| UH-1 | Warehouse | 1 | Warehouse | Nat Gas Ceiling Hung Unit Heater | 153.0 | 122.4 | Local T-stat |
| UH-2 | Warehouse | 1 | Warehouse | Nat Gas Ceiling Hung Unit Heater | 153.0 | 122.4 | Local T-stat |

## Issues with Present Building Operation

This building was purchased recently by the city and there are plans to develop the property and remodel the front area offices into a site for the purchasing department. The preliminary planning also includes employing the warehouse for storage. The evidence area will remain as it is.

In order to remodel and render the front office areas functional the existing older split system will need to be replaced as discussed in ECM-3 HVAC Upgrades. Controls for the proper operation of the existing and proposed systems will be included in ECM 2 Controls Upgrades.




Schneider Electric

# Public Works Complex

**Address:** 1500 Beatty St, Greenville, NC 27834
**No. of Buildings:** 6
**Sq Ft:** 14854
**Year Built:** 1980
**Use:** Office
**Floors**: 1
**Electric Tariff:** ECMG
**Gas Tariff:** GCCF

**People:** 75 - Peak
**Main Activity:** Office

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

| **Primary Building Hours of Operation/Occupancy Schedule** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 7 AM | 5 PM | 7 AM | 5 PM | 7 AM | 5 PM | 7 AM | 5 PM | 7 AM | 5 PM | Closed | Closed | Closed | Closed |

**Occupancy Notes:**

# Systems Description:

## Lighting

| Lighting - Public Works Complex | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| Public Works Complex | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 24 |
| Public Works Complex | Existing High Intensity Discharge - Retrofit New Linear Fluorescent Fixture T5 High-Bay | 46 |
| Public Works Complex | Existing High Intensity Discharge - Retrofit New Linear Fluorescent Fixture T5 High-Bay With Sensor | 6 |
| Public Works Complex | Existing High Intensity Discharge - Retrofit Relamp HID | 20 |
| Public Works Complex | Existing Incandescent - Retrofit Relamp Compact Fluorescent | 2 |
| Public Works Complex | Existing T12 Fluorescent - Retrofit New Linear Fluorescent Fixture T8 | 30 |
| Public Works Complex | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 45 |
| Public Works Complex | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 57 |
| Public Works Complex | Existing T12 Fluorescent U Tube - Retrofit Relamp Reballast Linear Fluorescent T8 With Reflector kit | 5 |
| Public Works Complex | Existing T8 Fluorescent - Retrofit Relamp Linear Fluorescent T8 | 43 |
| Public Works Complex | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 87 |
| Public Works Complex | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 9 |
| Public Works Complex | Existing T8 Fluorescent U Tube - Retrofit Relamp Reballast Linear Fluorescent T8 With Reflector kit | 15 |

## Water

| Water – Public Works Complex | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Toilets** | | | | **Urinals** | **Bathroom Sinks** | | **Showerheads** | |
| **Existing gpf** | | | | **Existing gpf** | **Existing gpm** | | **Existing gpm** | |
| **3.5** | **3.5** | **1.6** | **1.28** | **1.0** | **2.2** | **0.5** | **2.5** | **1.5** |
| 8 | - | 6 | 3 | 6 | 17 | 1 | 3 | - |

## HVAC

The Public Works facility is a campus including the main administration building and 5 support/maintenance/storage buildings. The main building is called building A and the other buildings are called B-F.

Building A, the Public Works Administration Building, is used for offices and has a large assembly room in the back of the building. There are 10 packaged rooftop units serving this building. Each unit is a DX cooling unit with natural gas heat. The rooftop units are designed for manually controlled ventilation.

Building B has two split DX systems serving the offices and storage areas. These systems use electric strip heat. Building B also has 4 natural gas fired unit heaters, 140 mbh each serving work areas.

Building C has two split systems serving the grounds meeting, and office areas. These units employ electric heat. Building C also has two natural gas fired unit heaters, estimated to be 150 mbh each serving storage and working areas.

Building D has two split systems serving the grounds meeting, and office areas. These units employ electric heat. Building D also has one natural gas fired unit heater estimated to be 150 mbh each serving storage/working areas.

Building E has two packaged rooftop type units, located on the ground outside, serving offices and meeting areas. These units use natural gas heating. The building also has two natural gas unit heaters, each about 150 mbh serving storage and working areas.

Building F has one natural gas unit heater serving work areas.

The systems in the buildings are controlled by local thermostats.

The following tables show the major equipment in the buildings:

| DX Systems - Public Works Complex | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Mark** | **Area Served** | **System Type** | **Manuf.** | **Total Air CFM** | **Outdoor Air CFM** | **Control** | **Total Cooling (MBH)** | **Heat Type** |
| SS-B-1 | Building B Offices | Split DX | Trane | 2,100 | 210 | Local | 18.0 | Electric |
| SS-B-2 | Building B Storage | Split DX | Trane | 1,000 | 100 | Local | 60.0 | Electric |
| SS-C-1 | Buildins C Grounds | Split DX | RUUD | 1,200 | 0 | Local | 60.0 | Electric |
| SS-C-2 | Building C Offices | Split DX | Comfrot Air | 1,200 | 300 | Local | 48.0 | Electric |
| SS-D-1 | Building D Offices | Split DX | Bryant | 1,200 | 0 | Local | 24.0 | Electric |
| SS-D-2 | Building D Commons | Split DX | Bryant | 1,200 | 0 | Local | 24.0 | Electric |

| Rooftop Units - Public Works Complex | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Mark** | **Area Served** | **Location** | **Year Installed** | **System Type** | **Manuf.** | **Total Air CFM** | **Outdoor Air CFM** | **Control** | **Total Cooling (MBH)** | **Gas Input (MBH)** |
| GPU-1 | Building A | Roof | 2001 | DX Gas Pack | Bryant | 2,100 | 225 | Local | 73.5 | 74 |
| GPU-2 | Building A | Roof | 2001 | DX Gas Pack | Bryant | 1,200 | 120 | Local | 36.6 | 74 |
| GPU-3 | Building A | Roof | 2005 | DX Gas Pack | Carrier | 2,000 | 500 | Local | 59.0 | 72 |
| GPU-4 | Building A | Roof | 2005 | DX Gas Pack | Carrier | 2,000 | 500 | Local | 59.0 | 72 |
| GPU-5 | Building A | Roof | 2005 | DX Gas Pack | Carrier | 2,000 | 500 | Local | 59.0 | 72 |
| GPU-6 | Building A | Roof | 2005 | DX Gas Pack | Carrier | 2,000 | 0 | Local | 59.0 | 72 |
| GPU-7 | Building A Assembly Area | Roof | 1995 | DX Gas Pack | Carrier | 4,500 | 1125 | Local | 117.0 | 72 |
| GPU-8 | Building A Assembly Area | Roof | 1995 | DX Gas Pack | Carrier | 3,000 | 750 | Local | 90.0 | 72 |
| GPU-9 | Building A Assembly Area | Roof | 1995 | DX Gas Pack | Carrier | 4,500 | 1125 | Local | 117.0 | 72 |
| GPU-10 | Building A-Assembly, Restrooms, Offices | Roof | 1995 | DX Gas Pack | Carrier | 1,575 | 394 | Local | 42.0 | 72 |
| GPU-E-1 | Building E | Outside | 2001 | DX Gas Pack | Bryant | 1,600 | 160 | Local | 50.5 | 74 |
| GPU-E-2 | Building E | Outside | 2001 | DX Gas Pack | Bryant | 1,200 | 120 | Local | 36.6 | 74 |

| Unit Heaters - Public Works Complex | | | | | |
|---|---|---|---|---|---|
| **Mark** | **Area Served** | **Qty** | **Location** | **System Type** | **Year Installed** |
| UH-1 | Building B | 4 | Ceiling | Gas Unit Heater | 1995 |
| UH-2 | Building C | 2 | Ceiling | Gas Unit Heater | 1995 |
| UH-3 | Building D | 1 | Ceiling | Gas Unit Heater | |
| UH-4 | Building E | 2 | Ceiling | Gas Unit Heater | |
| UH-5 | Building F | 1 | Ceiling | Gas Unit Heater | |

## Issues with Present Building Operation

Presently the Main Administration Building has four rooftop units that are at the end of their economic lifetimes. These are the four carrier units over the assembly area. This issue is addressed in ECM 3 - HVAC Upgrade. Additionally, the building operates some of the rooftop unit fans in cycle mode and the ventilation dampers have been manually adjusted to limit air flow because of mechanical issues with the aging equipment. These issues are addressed in ECM 2 – Controls Upgrade.

# South Greenville Rec Center Building

**Address:** 851 Howell St, Greenville, NC 27834
**No. of Buildings:** 1
**Sq Ft:** 10886
**Year Built:** 1940
**Use:** Gym
**Floors**: 1
**Electric Tariff:** ECMG
**Gas Tariff:** GCCF

**People:** 100 - Average
**Main Activity:** Gym

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

**Primary Building Hours of Operation/Occupancy Schedule**

| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 7 AM | 7 PM | 7 AM | 7 PM | 7 AM | 7 PM | 7 AM | 7 PM | 7 AM | 7 PM | Closed | Closed | Closed | Closed |

**Occupancy Notes:**

# Systems Description:

## Lighting

| Lighting - South Greenville Rec Center | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| South Greenville Rec Center | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 4 |
| South Greenville Rec Center | Existing Exit Sign - Retrofit New LED Fixture | 8 |
| South Greenville Rec Center | Existing High Intensity Discharge - Retrofit New Linear Fluorescent Fixture T5 High-Bay With Sensor | 24 |
| South Greenville Rec Center | Existing Incandescent - Retrofit Relamp Compact Fluorescent | 6 |
| South Greenville Rec Center | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 36 |
| South Greenville Rec Center | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 20 |
| South Greenville Rec Center | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 3 |

## Water

| Water – South Greenville Recreation Center | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Toilets** | | | | **Urinals** | **Bathroom Sinks** | | **Showerheads** | |
| **Existing gpf** | | | | **Existing gpf** | **Existing gpm** | | **Existing gpm** | |
| **3.5** | **3.5** | **1.6** | **1.28** | **1.0** | **2.2** | **0.5** | **2.5** | **1.5** |
| 3 | 2 | - | - | 1 | 5 | - | - | - |

## HVAC

The South Greenville Recreation Center is served by a split system DX unit. These units have natural gas heat and DX cooling. There are two packaged terminal a/c units serving the office and weight rooms. These units do not have heating capacity. There are two electric unit heaters located in the gym and two small electric heaters for the bathrooms. These systems are all controlled by local thermostats.

The following tables show the major equipment in the building:

| DX Systems - South Greenville Rec Center | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Mark | Area Served | Qty | System Type | Manuf. | Control | Total Cooling (MBH) | Heat Type | Heat Capacity (MBH) |
| Split System | Commity Building | 1 | inned Gas Furnaces w/ Split AC | Lennox | Local T-stat | 102.0 | Nat Gas | (2) 165 Input |
| PTAC | Office | 1 | PTAC | Carrier | Unit | N/A | Electric | N/A |
| PTAC | Weight Room | 1 | PTAC | Freidrich | Unit | N/A | Electric | N/A |

| Unit Heaters - South Greenville Rec Center | | | | | |
|---|---|---|---|---|---|
| Mark | Area Served | Qty | Location | System Type | Year Installed |
| UH | Gym | 2 | Gym | Electric | N/A |

# Evans Park Building

**Address:** W Arlington Blvd, Greenville, NC
**No. of Buildings:** 1
**Sq Ft:** 3184
**Year Built:** 1940
**Use:** Community Center
**Floors**: 1
**Electric Tariff:** ECMG
**Gas Tariff:**

**People:** 25 - Peak
**Main Activity:** Meeting

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

| Primary Building Hours of Operation/Occupancy Schedule | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 8 AM | 10 PM | 8 AM | 10 PM | 8 AM | 10 PM | 8 AM | 10 PM | 8 AM | 10 PM | 8 AM | 10 PM | 8 AM | 10 PM |

**Occupancy Notes:** Flexible Meetings

# Systems Description:

## Lighting

| Lighting - South Greenville Rec Center | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| Evans Park Building | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 68 |
| Evans Park Building | Existing T8 Fluorescent - Retrofit Relamp Linear Fluorescent T8 | 11 |
| Evans Park Building | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 4 |
| Evans Park Building | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 7 |
| Evans Park Building | Existing T8 Fluorescent U Tube - Retrofit Relamp Reballast Linear Fluorescent T8 With Reflector kit | 8 |

## HVAC

The Evans Park Building is served by two packaged rooftop units, located on the ground. These are DX unit cooling and natural gas heating.
These systems are all controlled by local thermostats.

The following tables show the major equipment in the building:

| Rooftop Units - Evans Park Building | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Mark** | **Area Served** | **Qty** | **System Type** | **Total Air CFM** | **Outdoor Air CFM** | **Supply Fan HP** | **Control** | **Total Cooling (MBH)** | **Gas Input (MBH)** |
| GasPac-1 | Lobby Area | 1 | Rooftop Packaged Dx, Gas Heat | 2,000 | 0 | 0.33 | Local | 60.0 | 115 |
| GasPac-2 | Bathrooms | 1 | Rooftop Packaged Dx, Gas Heat | 2,000 | 2,000 | 0.33 | Local | 48.0 | 115 |

## Issues with Present Building Operation

The rooftop unit serving the lobby area is at the end of its economic life.

# Elm Street Recreation Center

**Address:** 1058 S Elm St, Greenville, NC 27858
**No. of Buildings:** 1
**Sq Ft:** 3600
**Year Built:** 1967
**Use:** Community Center
**Floors**: 2
**Electric Tariff:** ECSG
**Gas Tariff:** GCCF

**People:** 35 - Peak
**Main Activity:** Meeting

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

| Primary Building Hours of Operation/Occupancy Schedule | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 8 AM | 10 PM | 8 AM | 10 PM | 8 AM | 10 PM | 8 AM | 10 PM | 8 AM | 10 PM | 8 AM | 10 PM | 8 AM | 10 PM |

**Occupancy Notes:** Flexible Meetings

# Systems Description:

## Lighting

| Lighting - Elm Street Recreation Center | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| Elm Street Recreation Center | Existing Exit Sign - Retrofit New LED Fixture | 3 |
| Elm Street Recreation Center | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 26 |
| Elm Street Recreation Center | Existing T12 Fluorescent U Tube - Retrofit Relamp Reballast Linear Fluorescent T8 With Reflector kit | 2 |
| Elm Street Recreation Center | Existing T8 Fluorescent - Retrofit Relamp Linear Fluorescent T8 | 10 |

## Water

| Water – Elm Street Recreation Center | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Toilets** | | | | **Urinals** | **Bathroom Sinks** | | **Showerheads** | |
| **Existing gpf** | | | | **Existing gpf** | **Existing gpm** | | **Existing gpm** | |
| **3.5** | **3.5** | **1.6** | **1.28** | **1.0** | **2.2** | **0.5** | **2.5** | **1.5** |
| - | - | 6 | - | 1 | 3 | - | - | - |

## HVAC

The Elm Street Recreational Center is served by one split DX system with natural gas heating. This system is controlled by a local thermostat.

The following tables show the major equipment in the building:

| DX Systems - Elm Street Rec Center | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mark** | **Area Served** | **Qty** | **System Type** | **Manuf.** | **Control** | **Total Cooling (MBH)** | **Refridgerant Type** |
| Split System | Whole Building | 1 | Twinned Gas Furnaces w/ Split AC | Carrier | Local T-stat | 90.0 | R22 |

# Jaycee Park Building

**Address:** 2000 Cedar Lane, Greenville, NC 27858
**No. of Buildings:** 1
**Sq Ft:** 17327
**Year Built:** 1978
**Use:** Office/Library/Art & Crafts
**Floors**: 1
**Electric Tariff:** ECMG
**Gas Tariff:** GCCF

**People:** 100 - Sqft/Person
**Main Activity:** Office/Library/Arts & Crafts

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

| Primary Building Hours of Operation/Occupancy Schedule | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | Closed | Closed | Closed | Closed |

**Occupancy Notes:**

# Systems Description:

## Lighting

| Lighting - Jaycee Park Building | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| Jaycee Park Building | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 5 |
| Jaycee Park Building | Existing Exit Sign - Retrofit New LED Fixture | 12 |
| Jaycee Park Building | Existing Incandescent - Retrofit Relamp Compact Fluorescent Dimmable | 8 |
| Jaycee Park Building | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 6 |
| Jaycee Park Building | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 79 |
| Jaycee Park Building | Existing T12 Fluorescent HO - Retrofit New Linear Fluorescent Fixture T8 | 19 |
| Jaycee Park Building | Existing T8 Fluorescent - Retrofit Relamp Linear Fluorescent T8 | 12 |
| Jaycee Park Building | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 15 |
| Jaycee Park Building | Existing T8 Fluorescent U Tube - Retrofit Relamp Reballast Linear Fluorescent T8 With Reflector kit | 5 |

## Water

| Water – Jaycee Park | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Toilets** | | | | **Urinals** | **Bathroom Sinks** | | **Showerheads** | |
| **Existing gpf** | | | | **Existing gpf** | **Existing gpm** | | **Existing gpm** | |
| **3.5** | **3.5** | **1.6** | **1.28** | **1.0** | **2.2** | **0.5** | **2.5** | **1.5** |
| 10 | - | 4 | - | 5 | 10 | - | - | - |

## HVAC

The Jaycee Park Building includes a Library, Arts and Crafts Center, and the offices for the Parks department. The entire building is served by packaged rooftop units with DX cooling and natural gas heating. All of the units are equipped with manual ventilation control. There are 12 of these units varying from 3 to 10 tons nominal cooling size. This system is controlled by local thermostats.

The following tables show the major equipment in the building:

| Air Handling Units - Jaycee Park Building | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mark | Area Served | System Type | Manuf. | Supply CFM | TSP | Tons | Cooling Type | Total Cooling (MBH) | Gas Input (MBH) |
| RTU-1 | Library Activity | Gas Pack | Trane | 1,600 | 1.5 | 4.0 | DX | 47.3 | 72.9 |
| RTU-2 | Library Addition | Gas Pack | Trane | 1,600 | 1.6 | 4.0 | DX | 45.1 | 72.9 |
| RTU-3 | Library Offices | Gas Pack | Trane | 800 | 1.5 | 3.0 | DX | 36.0 | 62.0 |
| RTU-4 | Craft | Gas Pack | Trane | 3,000 | 1.6 | 7.5 | DX | 91.9 | 97.2 |
| RTU-5 | Paint | Gas Pack | Trane | 3,000 | 1.6 | 7.5 | DX | 87.0 | 97.2 |
| AC-1 | Library | Gas Pack | Carrier | 2,250 | 1.5 | 5.0 | DX | 60.0 | 59.2 |
| AC-2 | Library | Gas Pack | Carrier | 3,375 | 1.5 | 7.5 | DX | 90.0 | 100.0 |
| AC-3 | Multipurpose | Gas Pack | Carrier | 4,500 | 1.5 | 10.0 | DX | 120.0 | 144.0 |
| AC-4 | Lobby, Restroom | Gas Pack | Carrier | 2,250 | 1.5 | 5.0 | DX | 60 | 59.2 |
| AC-5 | Office | Gas Pack | Carrier | 2,250 | 1.5 | 5.0 | DX | 60.0 | 59.2 |
| AC-6 | Office | Gas Pack | Carrier | 2,250 | 1.5 | 5.0 | DX | 59.0 | 59.0 |
| AC-7 | Office | Gas Pack | Carrier | 1,800 | 1.5 | 4.0 | DX | 48.0 | 59.2 |

## Issues with Present Building Operation

The Carrier units (qty 7) are at the end of their economic lifetimes. This issue is addressed in ECM 3 – HVAC Upgrade.

Many of the rooftop units and split systems are set to operate in fan cycle mode and the ventilation dampers for the multi-purpose room have been adjusted to a closed position. These issues cause uneven ventilation in the building and also cause the building to run in a negative pressure which allows the introduction of unconditioned outside air into the spaces. These issues are addressed in ECM 2 – Controls Upgrade.

# Sports Connection

**Address:** 1701 E. 14th St. Greenville, NC 27858
**No. of Buildings:** 1
**Sq Ft:** 17173
**Year Built:** 2000
**Use:** Gym
**Floors:** 1
**Electric Tariff:** ECSG
**Gas Tariff:** GCCF

**People:** 100 - Average
**Main Activity:** Gym

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

**Primary Building Hours of Operation/Occupancy Schedule**

| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 12 PM | 9 PM | 12 PM | 9 PM | 12 PM | 9 PM | 12 PM | 9 PM | 12 PM | 9 PM | 10 AM | 5 PM | 1 PM | 5 PM |

**Occupancy Notes:**

# Systems Description:

## Lighting

| Lighting - Sports Connection | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| Sports Connection | Existing High Intensity Discharge - Retrofit New Linear Fluorescent Fixture T5 High-Bay With Sensor | 21 |
| Sports Connection | Existing Incandescent - Retrofit Relamp Compact Fluorescent | 1 |
| Sports Connection | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 3 |
| Sports Connection | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 36 |
| Sports Connection | Existing T12 Fluorescent U Tube - Retrofit Relamp Reballast Linear Fluorescent T8 With Reflector kit | 2 |
| Sports Connection | Existing T8 Fluorescent - Retrofit Relamp Linear Fluorescent T8 | 13 |

## Water

| Water – Sports Connection | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Toilets** | | | | **Urinals** | **Bathroom Sinks** | | **Showerheads** | |
| **Existing gpf** | | | | **Existing gpf** | **Existing gpm** | | **Existing gpm** | |
| **3.5** | **3.5** | **1.6** | **1.28** | **1.0** | **2.2** | **0.5** | **2.5** | **1.5** |
| - | - | 5 | 1 | 2 | 4 | - | - | - |

## HVAC

The Sports Connection Building has two spilt systems with DX cooling and natural gas heating serving the Fitness Training and Pro Shop areas. The second floor conference area uses a split system heat pump with no supplemental heat.

There are four unit heaters in the facility; two for the batting cages and two for the gym. They are all ceiling hung units nominally rated at 90 mbh each.
These systems are controlled by local thermostats.
The following tables show the major equipment in the building:

| DX Systems - Sports Connection | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mark | Area Served | System Type | Manuf. | Total Air CFM | Outdoor Air CFM | Supply Fan HP | Control | Total Cooling (MBH) | Heat Type | Heat Input (MBH) |
| FN-1 | Fitness Training | Split DX, Gas Furnace | Carrier | 1,100 | 300 | 0.50 | Local | 36.0 | Gas Furnace | 115 |
| FN-2 | Pro Shop | Split DX, Gas Furnace | Carrier | 1,600 | 300 | 0.50 | Local | 48.0 | Gas Furnace | 115 |
| SS-3 | 2nd Floor Conference | Split DX | Payne | 800 | 80 | 0.25 | Local | 24.0 | Heat Pump | N/A |

| Unit Heaters - Sports Connection | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mark | Area Served | Qty | Location | Year Installed | System Type | Manuf. | Control | Type | MBH Input |
| UH-1 & 2 | Batting Cages | 2 | Ceiling | 2000 | Gas Unit Heater | Dayton | Local | Nat Gas | 90 |
| UH-3 & 4 | Basketball Court | 2 | Ceiling | 2000 | Gas Unit Heater | Dayton | Local | Nat Gas | 90 |

# Gardner Training Center

**Address:** 1402 Brownlea Drive, Greenville, NC 27858
**No. of Buildings:** 1
**Sq Ft:** 2240
**Year Built:** 1980
**Use:** Office
**Floors**: 1
**Electric Tariff:** ECSG
**Gas Tariff:** GCCF

**People:** 5 - Average
**Main Activity:** Office

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

**Primary Building Hours of Operation/Occupancy Schedule**

| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | Closed | Closed | Closed | Closed |

**Occupancy Notes:**

## Systems Description:

### Lighting

| Lighting - Gardner Training Center | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| Gardner Training Center | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 2 |
| Gardner Training Center | Existing Incandescent - Retrofit Relamp Compact Fluorescent | 10 |
| Gardner Training Center | Existing Incandescent - Retrofit Relamp Compact Fluorescent Dimmable | 10 |
| Gardner Training Center | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 25 |

## Water

| Water – Gardner Training Center | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Toilets | | | | Urinals | Bathroom Sinks | | Showerheads | |
| Existing gpf | | | | Existing gpf | Existing gpm | | Existing gpm | |
| **3.5** | **3.5** | **1.6** | **1.28** | **1.0** | **2.2** | **0.5** | **2.5** | **1.5** |
| 3 | - | - | - | 1 | 4 | - | - | - |

## HVAC

The Gardner Training Center has two spilt systems with DX cooling and natural gas heating serving the office and training areas.
These systems are controlled by local thermostats.
The following tables show the major equipment in the building:

| DX Systems - Gardner Training Center | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Mark** | **Area Served** | **System Type** | **Manuf.** | **Control** | **Refrigerant Type** | **Manuf.** | **Cooling Tons** | **Heat Type** |
| Unit 1 | Office Area | Split DX | Luxaire | Local T-stat | R-22 | Carrier | 3.0 | Nat Gas |
| Unit 2 | Training | Split DX | Carrier | Local T-stat | R-22 | York | 3.0 | Nat Gas |

# H. Boyd Lee Park Buildings

**Address:** 5184 Corey Rd, Greenville, NC 28590
**No. of Buildings:** 1
**Sq Ft:** 17400
**Year Built:** 2000
**Use:** Gym
**Floors**: 3
**Electric Tariff:** ECMG
**Gas Tariff:** GCCF

**People:** 100 - Average
**Main Activity:** Gym

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

**Primary Building Hours of Operation/Occupancy Schedule**

| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 7 AM | 7 PM | 7 AM | 7 PM | 7 AM | 7 PM | 7 AM | 7 PM | 7 AM | 7 PM | Closed | Closed | Closed | Closed |

**Occupancy Notes:** Based on South Greenville

# Systems Description:

## Lighting

| Lighting - H. Boyd Lee Park Buildings | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| H. Boyd Lee Park Buildings | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 102 |
| H. Boyd Lee Park Buildings | Existing Incandescent - Retrofit Relamp Compact Fluorescent | 4 |
| H. Boyd Lee Park Buildings | Existing T8 Fluorescent - Retrofit Relamp Linear Fluorescent T8 | 30 |
| H. Boyd Lee Park Buildings | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 55 |

## Water

There are no water ECMs for this building.

## HVAC

The H. Boyd Lee Park Facility has two packaged rooftop units, one serving the main building office and one serving the arcade. The building unit is 17.5 tons and the arcade unit is a 5 ton unit. These units use natural gas heating. The large unit is a variable air volume (VAV) system and employs 10 VAV cooling only boxes.

Air conditioning is also provided in the scoring tower by two small packaged terminal a/c units. These units have electric heat.

The Gym is heating only and is served by a Reznor heating and ventilating unit. For ambient cooling capability in the warmer weather the Gym is equipped with large exhaust fans and matching louvers capable of moving large amounts of outside air through the gym.

These systems are controlled by local thermostats.

The following tables show the major equipment in the building:

| Air Handling Units - H. Boyd Lee Park Buildings | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Mark** | **Area Served** | **System Type** | **Manuf.** | **Est. Installed Date** | **Supply CFM** | **Supply Fan HP** | **Cooling Medium** | **Total Capacity (MBH)** | **Heat Medium** | **Heat Capacity (MBH)** |
| PTAC-1 | Scorer Tower | PTAC | McQuay | 1,999 | 280 | N/A | DX | 9.40 | Electric | 8.0 |
| PTAC-2 | Scorer Tower | PTAC | McQuay | 1,999 | 280 | N/A | DX | 9.40 | Electric | 8.0 |
| HV-1 | Gym | H & V | Reznor | 1,999 | 9,450 | 10 | None | N/A | Gas | 560.0 |
| AC-1 | Main Bldg. Office | Gas Pack | Trane | 2,000 | 6,510 | 5 | DX | 210.00 | Gas | 203.0 |
| AC-4 | Arcade Area | Gas Pack | Trane | 2,000 | 2,000 | 0.75 | DX | 60.50 | Gas | 72.9 |

| VAV Boxes - H. Boyd Lee Park | | | | |
|---|---|---|---|---|
| **Mark** | **Year Installed** | **Manuf.** | **Model No.** | **Cooling CFM** |
| 1 | 1999 | Trane | VADA | 930 |
| 2 | 1999 | Trane | VADA | 900 |
| 3 | 1999 | Trane | VADA | 150 |
| 4 | 1999 | Trane | VADA | 600 |
| 5 | 1999 | Trane | VADA | 1,600 |
| 6 | 1999 | Trane | VADA | 640 |
| 7 | 1999 | Trane | VADA | 290 |
| 8 | 1999 | Trane | VADA | 1,500 |
| 9 | 1999 | Trane | VADA | 2,600 |
| 10 | 1999 | Trane | VADA | 555 |

| Exhaust Fans - H. Boyd Lee Park Buildings | | | | |
|---|---|---|---|---|
| **Mark** | **Area Served** | **Est. Year Installed** | **Total Air CFM** | **Motor HP** |
| EF-1 | RR Main Building | 1999 | 105 | 113 W |
| EF-2 | Locker Rooms | 1999 | 1,680 | 0.5 |
| EF-3 | Restrooms | 1999 | 1,500 | 0.25 |
| EF-4 | Gym | 1999 | 7,000 | 0.5 |
| CF-1 | Scorers Tower | 1999 | | 75 W |
| CF-2 | Gym | 1999 | 27,500 | |

# River Park North Building

**Address:** 1000 Mumford Rd, Greenville, NC
**No. of Buildings:** 1
**Sq Ft:** 10500
**Year Built:** 2004
**Use:** Museum
**Floors**: 1
**Electric Tariff:** ECMG
**Gas Tariff:**

**People:** 30 - Average
**Main Activity:** Office/Exhibit

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

**Primary Building Hours of Operation/Occupancy Schedule**

| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| Clsd | Clsd | 9 AM | 5 PM | 9 AM | 5 PM | 9 AM | 5 PM | 9 AM | 5 PM | 9 AM | 5 PM | 1 PM | 5 PM |

**Occupancy Notes:**

# Systems Description:

## Lighting

| Lighting - River Park North Building | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| River Park North Building | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 170 |
| River Park North Building | Existing Incandescent - Retrofit Relamp LED Dimmable | 36 |
| River Park North Building | Existing T8 Fluorescent - Retrofit Relamp Linear Fluorescent T8 | 25 |
| River Park North Building | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 10 |
| River Park North Building | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 1 |
| River Park North Building | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 With Reflector kit | 6 |

## Water

There are no water ECMs for this building.

## HVAC

The River Park North Facility has five split heat pumps serving the occupied spaces. These units use DX cooling with electric supplemental heating. There are two small 5 kW electric heaters located in the rest rooms. This building also supports aquariums and there are pumping systems and a small chiller to support these systems. These systems are controlled by local thermostats.

The following tables show the major equipment in the building:

**DX Systems - River Park North Building**

| Mark | Area Served | System Type | Total Air CFM | Outdoor Air CFM | Control | Total Cooling (MBH) | Heat Pump (MBH) | Electric Strip kW |
|---|---|---|---|---|---|---|---|---|
| HP-1/AHU-1 | Gift Shop, Exhibit Area | Split System HP | 3,000 | 560 | Local T-stat | 93.5 | 70.0 | 18.7 |
| HP-2/AHU-2 | Theater | Split System HP | 2,500 | 540 | Local T-stat | 77.3 | 44.9 | 18.7 |
| HP-3/AHU-3 | Life Science Center, Classroom | Split System HP | 2,600 | 300 | Local T-stat | 66.5 | 43.0 | 18.7 |
| HP-4/AHU-4 | N.A. Wildlife Center | Split System HP | 1,800 | 225 | Local T-stat | 43.8 | 25.5 | 11.5 |
| HP-5/AHU-5 | Work Area, Shop | Split System HP | 1,500 | 100 | Local T-stat | 48.0 | 27.2 | 7.2 |

**Pumps - River Park North Building**

| Mark | System Served | Type | Manufacturer | Model No. | Motor HP |
|---|---|---|---|---|---|
| Aquarium Pump | Aquarium | End Suction | WhisperFlo | WFK-6 | 1.5 |
| Aquarium Pump | Aquarium | End Suction | WhisperFlo | WFK-6 | 1.5 |

**Chillers - River Park North Building**

| Chiller No. | System Served | Location | Type | Model No. | Serial No. | Est. Date Installed | Capacity (Tons) |
|---|---|---|---|---|---|---|---|
| Aquarium | Aquarium | Outside | In-Line Water Chiller | MT-10, TTA 120 | 15878, 63213TWAD | 2006 | 10.0 |

# Greenfield Terrace Building

**Address:** 401 Greenfield Blvd, Greenville, NC
**No. of Buildings:** 1
**Sq Ft:** 1197
**Year Built:** 1961
**Use:** Community Center
**Floors**: 1
**Electric Tariff:** ECSG
**Gas Tariff:** GCCF


**People:** 50 - Peak
**Main Activity:** Meeting

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

| **Primary Building Hours of Operation/Occupancy Schedule** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | 8 AM | 5 PM | Closed | Closed | Closed | Closed |

**Occupancy Notes:**

# Systems Description:

## Lighting

| Lighting - Greenfield Terrace Building | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| Greenfield Terrace Building | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 4 |
| Greenfield Terrace Building | Existing Incandescent - Retrofit Relamp Compact Fluorescent | 1 |
| Greenfield Terrace Building | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 2 |
| Greenfield Terrace Building | Existing T8 Fluorescent - Retrofit Relamp Linear Fluorescent T8 | 9 |
| Greenfield Terrace Building | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 24 |

## Water

There are no water ECMs for this building.

## HVAC

The Greenfield Terrace Building has two packaged rooftop units located on the ground in the back of the building. One unit serves the kitchen area and one serves the meeting area. These units use DX cooling with electric heating.
These systems are controlled by local thermostats.
The following tables show the major equipment in the building:

| DX Systems - Greenfield Terrace Building | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Mark** | **Area Served** | **System Type** | **Total Air CFM** | **Total Supply S.P.** | **Supply Fan HP** | **Control** | **Total Cooling (MBH)** | **Heat Pump (MBH)** | **Electric Heat kW** |
| Unit 1 | Kitchen Area | Packaged DX | 2,000 | 1.5 | 1.03 | Local T-stat | 60.0 | 70.0 | 7.5 |
| Unit 2 | Meeting Area | Packaged DX | 2,000 | 1.5 | 1.03 | Local T-stat | 60.0 | 27.2 | 7.5 |

# Greenville Aquatics and Fitness Center

**Address:** 921 Staton Road, Greenville, NC
**No. of Buildings:** 1
**Sq Ft:** 30535
**Year Built:** 1983
**Use:** Gym/Pool
**Floors:** 1
**Electric Tariff:** ECMG
**Gas Tariff:** GCCF


**People:** 100 - Average
**Main Activity:** Gym/Pool

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

**Primary Building Hours of Operation/Occupancy Schedule**

| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 5 AM | 9 PM | 5 AM | 9 PM | 5 AM | 9 PM | 5 AM | 9 PM | 5 AM | 8 PM | 8 AM | 4 PM | 1 PM | 6 PM |

**Occupancy Notes:**

# Systems Description:

## Lighting

| Lighting - Greenville Aquatics and Fitness Center | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| Grenville Aquatics and Fitness Ctr | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 42 |
| Grenville Aquatics and Fitness Ctr | Existing High Intensity Discharge - Retrofit New Linear Fluorescent Fixture T5 High-Bay | 20 |
| Grenville Aquatics and Fitness Ctr | Existing Incandescent - Retrofit Relamp Compact Fluorescent | 17 |
| Grenville Aquatics and Fitness Ctr | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 39 |
| Grenville Aquatics and Fitness Ctr | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 32 |
| Grenville Aquatics and Fitness Ctr | Existing T12 Fluorescent U Tube - Retrofit Relamp Reballast Linear Fluorescent T8 With Reflector kit | 25 |
| Grenville Aquatics and Fitness Ctr | Existing T8 Fluorescent - Retrofit Relamp Linear Fluorescent T8 | 8 |
| Grenville Aquatics and Fitness Ctr | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 31 |
| Grenville Aquatics and Fitness Ctr | Existing T8 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 5 |

## Water

| Water – Greenville Aquatics & Fitness Center | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Toilets** | | | | **Urinals** | **Bathroom Sinks** | | **Showerheads** | |
| **Existing gpf** | | | | **Existing gpf** | **Existing gpm** | | **Existing gpm** | |
| **3.5** | **3.5** | **1.6** | **1.28** | **1.0** | **2.2** | **0.5** | **2.5** | **1.5** |
| 5 | 3 | 1 | - | 4 | 9 | - | - | 17 |

## HVAC

The Greenville Aquatic and Fitness Center includes an indoor pool, a fitness/exercise area, weight room, aerobics room, meeting room, day care room, offices and a gymnasium. The gymnasium has been recently renovated and a new HVAC system installed. The unit is a built up air handler employing DX cooling and hot water heating and is installed in an equipment mezzanine. The DX cooling is from a condensing unit located on the roof. A Natural gas hot water boiler provides heating for the system. This unit has local DDC control and is 100% economizer capable.

The Pool employs and older DX dehumidification system with hot water reheat. The system is also a built up air handler located on the equipment mezzanine. The condensing unit is located on the roof above it. This unit is older and is no longer working since the fall of 2011. The fan still operates and is used but the outside air dampers are closed. This unit was equipped with on board electro-mechanical controls.
The pool is maintained at 85 degrees. The room set points should be 86-87 degrees at 60%RH according to the operators of the area. These conditions are consistent with ASHRAE guidance for the type of pool use at the facility.

The other areas of the building are served by packaged rooftop units. There are six of these. Five of them are DX cooling with natural gas heating. The sixth one, serving the aerobics room is a heat pump with electric supplemental heat. These units have varying outside air capabilities for ventilation. The weight room and aerobics units have no ventilation capability. The rest of the packaged units have manually set dampers for ventilation.

The facility has two atmospheric natural gas boilers for pool heating. These are rated at 400mbh input each and are located in the pool pumping/water chemical room adjacent to the pool.
There is one natural gas atmospheric boiler located in the equipment mezzanine and used for primary constant flow pumping system and three way valves at the two air handler heating coils.
Domestic Hot Water

The facility employs two 200mbh domestic hot water heaters (DHW). These units are natural gas.

With the exception of the new gym system the HVAC systems are controlled by local thermostats.

The following tables show the major equipment in the building:

| Air Handling Units - Greenville Aquatics and Fitness Center | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mark | Area Served | Location | Year Installed | System Type | Total Air CFM | Supply Fan HP | Control | Cooling (Tons) | Heat Type | Gas Input (MBH) |
| RTU-1 | Exercise | Roof | 1993 | RTU DX w/ Gas Heat | 6,000 | 5.00 | Local | 15.3 | Nat Gas | 275 |
| RTU-2 | Room B | Roof | 1993 | RTU DX w/ Gas Heat | 1,600 | 0.75 | Local | 4.0 | Nat Gas | 115 |
| RTU-3 | Day Care / Offices / Entry | Roof | 1993 | RTU DX w/ Gas Heat | 3,000 | 2.00 | Local | 7.4 | Nat Gas | 180 |
| RTU-4 | Weight Room | Roof | 1993 | RTU DX w/ Gas Heat | 1,600 | 0.75 | Local | 4.0 | Nat Gas | 115 |
| RTU-5 | Lockers | Roof | 1993 | RTU DX w/ Gas Heat | 1,600 | 0.75 | Local | 4.0 | Nat Gas | 115 |
| RTU-AER | Aerobics | Roof | 2008 | RTU DX w/ Electric Heat | 2,000 | 1.91 | Local | 5.0 | Electricity | 76 |

| Air Handling Units - Greenville Aquatics and Fitness Center | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Mark | Area Served | Est. Installed Date | Supply CFM | OA Minimum (Min/Max) | Supply Fan HP | Total Cooling (MBH) | Heat Recovery Reheat (MBH) | Heat Medium | Heat Capacity (MBH) | Notes |
| Pool | Pool Area | 1994 | 13,500 | 2,295 | 10.0 | 446 | 247.0 | HW | 291 | 3 Circuits / 3 Compressors |
| AHU-G1 | Gym and Stage | 2010 | 13,000 | 2,600/13,000 | 7.5 | 480 | N/A | HW | 300 | 4 Compressors / 2 Circuits |

| Boilers - Greenville Aquatics and Fitness Center | | | | | | | |
|---|---|---|---|---|---|---|---|
| Boiler No. | Qty. | Area Served | Type | Capacity (MBH) | Manufacturer | NG Input (MBH) | Burner Efficiency (%) |
| Pool Boiler | 2 | Pool | Gas | 399 | Jandy Lite 2 | 399 | 79 |
| HVAC HW Boiler | 1 | Gym and Pool AHUs | Gas | 642 | Peerless Atmospheric | 910 | 71 |

| Pumps - Greenville Aquatics and Fitness Center | | | | | |
|---|---|---|---|---|---|
| Mark | System Served | Location | Type | GPM | Motor HP |
| Pool Circ Pump | Pool | Outside Pool Filter Area | Vertical | 750 | 20.0 |
| HVAC HW Boiler Circ | Gym and Pool AHUs | Mezzanine Equipment Rm | In-line | 65 | 0.8 |

| Domestic Hot Water - Greenville Aquatics and Fitness Center | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mark | Qty | Location | Type | Manuf. | Est Date Installed | MBH | Tank Capacity (Gallons) |
| DHW-1 | 2 | Mezzanine Equipment Rm | Nat Gas | Voyager | 1998 | 199 | 80 |

## Issues with Present Building Operation

The air conditioning unit for the pool was not operating during the field visits and reportedly has not been operating since the fall of 2011.

The other systems in the building are operating with reduced ventilation air and many are operating in fan cycle mode. Operating the building this way causes a negative pressurization of the building and does not provide for full ventilation of the occupants.

# Bradford Creek Golf Course

**Address:** 4950 Old Pactolus Road, Greenville, NC
**No. of Buildings:** 2
**Sq Ft:** 5342
**Year Built:** 1996
**Use:** Pro Shop/Maintenance
**Floors**: 1
**Electric Tariff:** ECMG
**Gas Tariff:** Propane

**People:** 5 - Average
**Main Activity:** Retail/Maintenance

**Standard Temperature Settings:** 70/74, (Heating/Cooling) Degrees F
**Standardized Set Back Temperatures:** 64/80, (Heating/Cooling) Degrees F

| Primary Building Hours of Operation/Occupancy Schedule | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monday | | Tuesday | | Wednesday | | Thursday | | Friday | | Saturday | | Sunday | |
| Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed | Open | Closed |
| 7 AM | 10 PM | 7 AM | 10 PM | 7 AM | 10 PM | 7 AM | 10 PM | 7 AM | 10 PM | 7 AM | 10 PM | 7 AM | 10 PM |

**Occupancy Notes:**

# Systems Description:

## Lighting

| Lighting - Bradford Creek Golf Course | | |
|---|---|---|
| **Building Name** | **Existing Legend Descriptions** | **Existing Qty** |
| Bradford Creek Golf Course | Existing Excluded due to lack of cost effective replacement or more efficient option - No Retrofit Proposed | 37 |
| Bradford Creek Golf Course | Existing High Intensity Discharge - Retrofit New Linear Fluorescent Fixture T5 High-Bay With Sensor | 6 |
| Bradford Creek Golf Course | Existing Incandescent - Retrofit Relamp Compact Fluorescent | 111 |
| Bradford Creek Golf Course | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 | 36 |
| Bradford Creek Golf Course | Existing T12 Fluorescent - Retrofit Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 11 |

## Water

There are no water ECMs for this building.

## HVAC

The Bradford Creek Building has four split systems with DX cooling and propane heat.
These systems are controlled by local thermostats.
The following tables show the major equipment in the building:

| DX Systems - Bradford Creek Golf Course | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Mark** | **Area Served** | **System Type** | **Total Air CFM** | **Control** | **Year Installed** | **Total Capacity (MBH)** | **Heat Type** |
| SS-1 | Offices | Split DX, Gas Heat | 1,200 | Local | 2000 | 60.0 | Propane |
| SS-2 | Pro Shop | Split DX, Gas Heat | 1,200 | Local | 2000 | 60.0 | Propane |
| SS-3 | Dining | Split DX, Gas Heat | 1,200 | Local | 2000 | 60.0 | Propane |
| SS-4 | Dining, Foyer | Split DX, Gas Heat | 1,200 | Local | 2000 | 60.0 | Propane |

# Section 4: Energy Conservation Measures

## City Hall

### ECM 1 – Lighting

The simple payback of the lighting recommendations for this building far exceeded the term of the contract.

### ECM 2 – Controls Upgrade

The purpose of this ECM is to improve the environmental and comfort issues in the existing building and to save energy. The existing systems and issues with the systems are described in detail in Section 4 – Existing Conditions. The intent of the recommendations will allow the city to mandate the removal of the majority of portable heaters in the building.

This project includes:

- The installation of Electrical/Mechanical Scope to add Heating capability into the air handlers. This scope is required and will allow the controls of the building to operate properly.
- The upgrading of the existing controls system, re-commissioning of the building controls, rebalancing of systems and building pressurization - as required, and additional points and programming.

Adding Heating Capability in the three main air handling units:
The installation of heating capability in the air handlers is the most cost effective and practical solution to augmenting the heating capability of the building. Presently the air handlers don't have any means to heat supply air. This means that during the coldest periods of the year the mixture of return air and outside air would drop the supply air temperature lower than what the reheat coils can effectively heat in all circumstances. The result is a limitation of the heating supply air temperature to satisfy comfort.

The existing air handlers have sections that will allow for the installation of electric heating. The requirements are the addition of 30 kW in each of the three main AHUs. (The similarity of the heating requirements is close because the outside air flow requirements for all three are close.)

The scope of work includes the sourcing of the power requirement for the new heaters from the main distribution panel, all wiring and OEM heaters or equivalent, specified to operate at all flow operational points. The heaters should be SCR controlled to provide linear or acceptable stepped control to avoid excessive demand and cycling operation.

This part of the recommendation also includes all controllers, points and programming required to accomplish supply air temperature reset to as high as 65 degrees F. The programming should include all means to accommodate the lowest temperature requirement of the system so all spaces will be satisfied.

Controls Upgrades:
Controls upgrades, re-commissioning, and balancing efforts for this Building will allow for proper operation of the following:

- Fan scheduling for AHU 1 and AHU 2. (AHU 3 Scheduling is part of ECM 3)
- Optimum Start Stop for AHU 1 and AHU2 (AHU 3 Scheduling is part of ECM 3)

- Temperature Setback control for AHU 1 and AHU 2 during unoccupied periods.
- Control of system ventilation optimization including scheduling and programmed building pressurization from ventilation-exhaust sequences.
- Scheduling of VAV box minimum settings for occupied and unoccupied periods.
- Control/scheduling of all exhaust fans in the building
- Proper air side economizer control for free cooling
- Humidity control and supply air reset based on humidity and heating requirements for the building.

Controls Scope of Work

- Niagara AX (G3) Framework Upgrade –Implement a full upgrade of the facility's DDC software from the R2 framework to the current version AX framework including providing a one for one replacement of the existing UNC supervisory controller with a current model ENC controller. All programming and graphics work required to facilitate the upgrade shall be included and the user interface shall be upgraded to the most current and advanced offering from the BAS contractor as part of this scope..
- VAV Air Handling Units – Under this scope of work the BAS contractor shall modify the existing programming to include the following control algorithms for the three existing VAV rooftop air handling units: optimum start/stop, supply air $CO_2$ based demand controlled ventilation (include sensor hardware for AHU-1 and AHU-3 only – DCV is existing on AHU-2), and dynamic load-based supply air temperature reset (in place of outdoor air reset).
- Improved Trending Interface – The BAS contractor shall provide a simplified trending utility through the web based interface for each physical I/O point on the system permitting rapid access to the most relevant trends for a unit directly from its graphics page. In addition, an advanced trending and reporting utility shall be provided via the operator workstation providing the ability to execute a number or pre-made reports, create new custom reports, and create tailored queries of both long-term and short-term trend data.

## ECM 3 – HVAC Upgrade

Room 303 is a communications control room located on the third floor. The room is includes electronics equipment that requires sensible cooling 24/7. The room is presently served by RTU – 3, which serves the new addition portion of the building. Because of this one critical room, the RTU needs to operate 24/7. If the room had a small dedicated cooling system the larger RTU could be scheduled, savings substantial energy.

We recommend the installation of a dedicated cooling only system for room 303. The system would operate 24/7 and be capable of satisfying the cooling needs of the room and the electronic systems inside the room. The system would be a min-split system with the condensing unit installed on the roof and the terminal unit/AHU and temperature control installed in the room.

The following is a table with conceptual design information for the new unit:

| Air Handling Units - City Hall | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Mark** | **Area Served** | **System Type** | **Economizer / Relief** | **DCV** | **Supply CFM** | **TSP** | **OA CFM** | **Nominal Tons** | **Heating Capacity (MBH)** |
| EMI-1 | Room 303 | Mini Split | No | No | 750 | 0.5 | 0.0 | 2 | 0 |

Installation would include power distribution wiring to support the installation of the new unit.

Controls Upgrades:
Controls upgrades, re-commissioning, and balancing efforts for this Building will allow for proper operation of the following:

- Status of new mini split system, temperature and operation
- Fan scheduling for AHU 3
- Optimum Start Stop for AHU 3
- Temperature Setback control for AHU 3

## ECM 4 – Water Conservation Measures

Existing high flow toilets will be replaced with 1.28 gpf fixtures and existing 1.6 gpf toilets will remain in place. Toilets which are 1.6 gpf capable and are currently equipped with 3.5 gpf valves will have the valves retrofit to 1.6 gpf. Existing urinals will remain in place. Existing 2.2 gpm bathroom sink faucets will be retrofit to 0.5 gpm. Existing 2.5 gpm showerheads will be replaced with new, 1.5 gpm showerheads; Existing 1.5 gpm showerheads will remain in place.

See the Water Appendix for detailed building by building fixture counts and assumptions.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# Municipal Building

## ECM 1 – Lighting

The simple payback of the lighting recommendations for this building exceeded the term of the contract.

## ECM 2 – Controls Upgrade

The purpose of this ECM is to improve the environmental and comfort issues in the existing building and to save energy. The existing systems and issues with the systems are described in detail in Section 4 – Existing Conditions.

It is important to note that this project scope is interactive with ECM 3 – HVAC Upgrade. If ECM 3 is chosen in the final project, controls for the existing third floor units will be deleted, and the controls scope listed as part of ECM 3 will be installed.

This project includes:

- The upgrading of the existing controls system, re-commissioning of the building controls, rebalancing of systems and building pressurization - as required, and additional points and programming.

Controls Upgrades:
Controls upgrades, re-commissioning, and balancing efforts for this Building will allow for proper operation of the following:

- Fan scheduling for all HVAC systems
- Optimum Start Stop for all HVAC systems
- Temperature Setback control for all HVAC systems during unoccupied periods.
- Control of system ventilation optimization including scheduling and programmed building pressurization from ventilation-exhaust sequences for AHU 1, first and second floor.
- AHU 1, Scheduling of VAV box minimum settings for occupied and unoccupied periods.
- Control/scheduling of all exhaust fans in the building
- AHU 1, Proper air side economizer control for free cooling
- Humidity control and supply air reset based on humidity and heating requirements for the building.

Controls Scope of Work

- <u>Niagara AX (G3) Framework Upgrade</u> –Implement a full upgrade of the facility's DDC software from the R2 framework to the current version AX framework including providing a one for one replacement of the existing UNC supervisory controller with a current model ENC controller. All programming and graphics work required to facilitate the upgrade shall be included and the user interface shall be upgraded to the most current and advanced offering from the BAS contractor as part of this scope.
- <u>VAV Air Handling Unit</u> – Under this scope of work the BAS contractor shall modify the existing programming to include the following control algorithms for the existing VAV air handling unit: optimum start/stop, supply air $CO_2$ based demand controlled ventilation (include sensor hardware), and dynamic load-based supply air temperature reset (in place of outdoor air reset).

- Improved Trending Interface – The BAS contractor shall provide a simplified trending utility through the web based interface for each physical I/O point on the system permitting rapid access to the most relevant trends for a unit directly from its graphics page. In addition, an advanced trending and reporting utility shall be provided via the operator workstation providing the ability to execute a number or pre-made reports, create new custom reports, and create tailored queries of both long-term and short-term trend data.

## ECM 3 – HVAC Upgrade

The purpose of this project is to replace the existing systems on the third floor.

This project scope is interactive with ECM 2 – Controls Upgrade. If ECM 3 is chosen in the final project, controls for the existing third floor units will be deleted, and the controls scope listed as part of ECM 3 will be installed.

The municipal building includes three occupied floors. A recent renovation in 2004 remodeled the first and second floors of the building and upgraded the HVAC in those areas. The third floor still has older systems including 4 split systems with electric heat. The systems themselves have no outside air capability and rely on ventilation louvers located on the side of the building and feeding small amounts of outside air into the plenum. This method is almost completely ineffective and adds to the load of the building and comfort issues.

These systems are older and are at the end of their economic life. We recommend the replacement of these systems with a single air handler serving these areas. The new system would be a central packaged VAV air handler with dx cooling and full outside air capability including economizer and relief. The air side of the system would include installation of new duct work to serve 6 zones from the air handler and with a plenum return. The system will be a Variable Air Volume System with electric Reheat. Improvements in the new system include improved air quality for the occupants, better temperature control, reduced maintenance costs and more efficient operation.

Additionally as part of this project the air vents in the side of the building and feeding into the plenum will be sealed and insulated.

The following is a table defining the design concept for the replacement:

| New Third Floor System Air Handler - Municipal Building | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Airside | | | | | | | |
| Mark | Area Served | Cooling Capacity (MBH) | Location | System Type | Total Air CFM | Outdoor Air CFM | Total Supply SP | Supply Fan HP | Control | Economizer | Return/Relief Fan Motor HP |
| AHU-2 | 3rd Floor | 280 | Roof Mech Room | Split DX, VAV w/Elec Re-heat | 7,525 | 1,500 | 2.00 | 10.0 | DDC | Yes | TBD |

| VAV Boxes - Municipal Building | | | |
|---|---|---|---|
| Mark | Max CFM | Occupied Min CFM | Elec Heat kW |
| VAV 3-1 | 860 | 310 | 4 |
| VAV 3-2 | 1,300 | 460 | 6 |
| VAV 3-3 | 975 | 350 | 4 |
| VAV 3-4 | 2,500 | 880 | 12 |
| VAV 3-5 | 1,190 | 420 | 5 |
| VAV 3-6 | 700 | 250 | 3 |

Controls Upgrades:
Controls upgrades, re-commissioning, and balancing efforts for this Building will allow for proper operation of the following:

- Fan scheduling for new system
- Optimum Start Stop for new HVAC system
- Temperature Setback control for new HVAC systems during unoccupied periods.
- Control of system ventilation optimization including scheduling and programmed building pressurization from ventilation-exhaust sequences.
- Scheduling of VAV box minimum settings for occupied and unoccupied periods.
- Proper air side economizer control for free cooling
- Humidity control and supply air reset based on humidity and heating requirements for the building.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# Police-Fire Rescue

## ECM 1 – Lighting

A total of 532 lighting fixtures are to be retrofitted as part of this project. Existing exit signs will be replaced with new LED exit signs. Existing HID fixtures will be retrofitted with similar technology or replaced with new LED fixtures. High-bay HID fixtures will be replaced with new linear fluorescent T5 high-bay fixtures. Incandescent fixtures will be relamped with dimmable LED retrofits. Existing T12 linear fluorescent fixtures will be retrofitted with new T8 lamps and ballasts with some fixtures having reduced lamp quantity. Existing T12 and T8 U-tube fluorescent fixtures will be retrofitted with new T8 linear fluorescent lamps, reflector kits, and new ballasts.

Refer to the Lighting Appendix for detailed fixture counts and assumptions.

## ECM 2 – Controls Upgrade

The purpose of this ECM is to improve the environmental and comfort issues in the existing building and to save energy. The existing systems and issues with the systems are described above in detail in the facility HVAC description.

This project includes:

- The comprehensive installation of a new building wide controls system and upgrading of the existing controls system, re-commissioning of the building controls, rebalancing of systems and building pressurization - as required, and additional points and programming.

Controls Upgrades:
Controls upgrades, re-commissioning, and balancing efforts for this Building will allow for proper operation of the following:

- Fan scheduling for all HVAC systems – (Capability)
- Optimum Start Stop for all HVAC systems – (Capability)
- Installation of DDC controllers and programming for all VAV boxes.
- Temperature Setback control for all applicable areas during unoccupied periods.
- Control of system ventilation optimization including scheduling and programmed building pressurization from ventilation-exhaust sequences.
- Scheduling of VAV box minimum settings for occupied and unoccupied periods.
- Control/scheduling of all exhaust fans in the building
- Proper air side economizer control for free cooling
- Humidity control and supply air reset based on humidity and heating requirements for the building.
- Supervisory control of building boiler systems and pumping
- Control of hot water unit heaters

Controls Scope of Work
Hot Water Plant – Two Weil McLain 88 series cast iron boilers with dedicated circulation (primary) pumps and gas-fired, modulating Cyclonetic burners provide heating and domestic hot water to both the fire and police sections of the facility with a single secondary pump (no redundancy) dedicated to each service. A stand-alone (capillary operated) three-way valve controls temperature to the domestic hot water heat exchanger downstream from the DHW pump. A Trane digital controls package operates the other equipment in the system at present. Provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement ES provided sequences of operation. The intent is to affect a “brain-swap” of the Trane equipment, reusing wiring and end-devices where possible but replacing control panels, communications wiring, sensing elements, etc. as required.

VAV Air Handling Units – Two DX VAV Air Handling Units (similar to the other downtown municipal building units) serve the facility – one for the Police section and one for Fire. These systems are operated by the rudimentary Trane controls package at present. Provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement ES provided sequences of operation. The intent is to affect a "brain-swap" of the Trane equipment, reusing wiring and end-devices where possible but replacing control panels, communications wiring, sensing elements, etc. as required. The existing ABB supply air fan VFDs are to remain and shall be directly incorporated (via hard-wired interface) to the new BAS.
Fan Powered Terminal Boxes (75) – The aforementioned VAV air handling units serve a total of 75 parallel fan powered VAV boxes with hot water reheats (2-way control valves). Provide, install, program, validate and commission new application specific controllers, sensors, and other end devices (as outlined in the I-O summary) to implement ES provided sequences of operation. Existing pop-top hot water valve-actuator assemblies are to remain (valves determined to be non-functional at the time of commissioning shall be addressed within an equipment deficiency report).

Call Center Rooftop Unit – A packaged rooftop unit serves the call center independent of the VAV air handling systems and is operated by a conventional bimetallic thermostat at present. Provide, install, program, validate and commission a Viconics VT7600 communicating thermostat (or an equivalent product) to provide unit control with a means of interface to the BAS. No ancillary or monitoring points (supply air fan status, supply air temperature, etc.) are to be included under this scope item at this phase of development.

Enable/Disable System – Provide, install, program, validate and commission new controls to implement a three zone enable/disable (red-wire) system for 13 unit heaters in the facility. Relays shall be installed and wired to break power to the conventional thermostats operating the equipment during unoccupied hours with space temperature sensors installed so that the zone may be re-enabled to maintain a setback temperature as necessary.

Exhaust Air Fans – All non-process related fans (including restroom fans) that exhaust air from the building envelope shall be enabled and disabled according to the occupancy of their associated air handling units. Exhaust fans and/or transfer fans that do not move air outside of the building envelope and process fans are excluded from the scope of work. Provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement enable / disable control of these exhaust fans. For purposes of this proposal, include 4 exhaust fans grouped into 2 control zones.

## ECM 4 – Water Conservation Measures

Existing high flow toilets will be replaced with 1.28 gpf fixtures and existing 1.6 gpf toilets will remain in place. Toilets which are 1.6 gpf capable and are currently equipped with 3.5 gpf valves will have the valves retrofit to 1.6 gpf. Existing urinals will remain in place. Existing 2.2 gpm bathroom sink faucets will be retrofit to 0.5 gpm. Existing 2.5 gpm showerheads will be replaced with new, 1.5 gpm showerheads; Existing 1.5 gpm showerheads will remain in place.

See the Water Appendix for detailed building by building fixture counts and assumptions.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# Park Maintenance Center

## ECM 1 – Lighting

A total of 54 lighting fixtures are to be retrofitted or replaced as part of this project. Existing HID fixtures will be retrofitted with a new HID lamp and ballast or replaced with a new LED fixture. Incandescent fixtures will be relamped with compact fluorescent lamps. Existing T12 linear fluorescent fixtures will be retrofitted with T8 linear fluorescent lamps and new ballasts, some of which will have the number of lamps reduced while still meeting appropriate lighting levels. Four T12 linear fluorescent fixtures will be replaced with new T8 linear fluorescent fixtures. Existing T8 linear fluorescent fixtures will be retrofitted with new lamps and ballasts.

Refer to the Lighting Appendix for detailed fixture counts and assumptions.

## ECM 2 – Controls Upgrade

The simple payback of the controls upgrade recommendations for this building exceeded the term of the contract.

## ECM 4 – Water Conservation Measures

Existing high flow toilets will be replaced with 1.28 gpf fixtures and existing 1.6 gpf toilets will remain in place. Toilets which are 1.6 gpf capable and are currently equipped with 3.5 gpf valves will have the valves retrofit to 1.6 gpf. Existing urinals will remain in place. Existing 2.2 gpm bathroom sink faucets will be retrofit to 0.5 gpm. Existing 2.5 gpm showerheads will be replaced with new, 1.5 gpm showerheads; Existing 1.5 gpm showerheads will remain in place.

See the Water Appendix for detailed building by building fixture counts and assumptions.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# 5th Street Police Substation

## ECM 1 – Lighting

A total of 10 lighting fixtures will be retrofitted as part of this project. Existing incandescent fixtures will be relamped with compact fluorescent lamps. Existing T12 linear fluorescent fixtures will be retrofitted with new T8 linear fluorescent lamps and ballasts.

Refer to the Lighting Appendix for detailed fixture counts and assumptions.

## ECM 2 – Controls Upgrade

The simple payback of the controls upgrade recommendations for this building exceeded the term of the contract.

## ECM 4 – Water Conservation Measures

The simple payback of the water recommendations for this building exceeded the term of the contract.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# Eppes Recreation Center / Thomas Foreman Park

## ECM 1 – Lighting

A total of 119 fixtures will be retrofitted or replaced as part of this project. Existing HID fixtures will be replaced with new LED fixtures. Incandescent fixtures will be relamped with compact fluorescent lamps. Existing T12 linear fluorescent fixtures will be retrofitted with T8 linear fluorescent lamps and new ballasts, some fixtures will have the number of lamps reduced while maintaining appropriate light levels. Existing T12 linear fluorescent high output fixtures will be replaced with new T8 linear fluorescent fixtures. Existing T8 linear fluorescent fixtures will be retrofitted with new lamps and ballasts as required, some fixtures will have the number of lamps reduced.

Refer to the Lighting Appendix for detailed fixture counts and assumptions.

## ECM 2 – Controls Upgrade

The purpose of this ECM is to improve the environmental and comfort issues in the existing building and to save energy. Additionally, installation of this ECM will allow for consistency in building comfort conditions settings and allow for some remote status and troubleshooting capabilities.

This project includes:

- The comprehensive installation of a new set of controls to automate the operation of the building HVAC systems.

Controls Upgrades:
Controls upgrades for this Building will allow for proper operation of the following:

- Remote temperature setback control for all applicable areas during unoccupied periods.
- Setting and balancing of ventilation damper operation
- Setting operation and setback of building exhaust systems.
- Programming and balancing for controlling and optimizing building pressurization, using existing systems and planned controls, during all modes of operation.
- Supervisory control of building temperature and operational status, on/off.
- Installation of Demand Control Ventilation programming on the gym and multi purpose room systems.

Controls Scope of Work
Gymnasium Roof Top Units – Two DX-cooling, gas-heating packaged roof-top unit s, outfitted with Trane controls serve the main gymnasium. Provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement ES provided sequences of operation. The intent is to affect a "brain-swap" of the Trane equipment, reusing wiring and end-devices where possible but replacing control panels, communications wiring, sensing elements, etc. as required. Demand Control Ventilation will be installed on these units.

Multi-Purpose Room Roof Top Unit – A single DX-cooling, gas-heating packaged roof-top unit, outfitted with Trane controls serve the main gymnasium. Provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement ES provided sequences of operation. The intent is to affect a "brain-swap" of the Trane equipment, reusing wiring and end-devices where possible but replacing control panels, communications wiring, sensing elements, etc. as required. Demand Ventilation will be installed on this unit.

Forced Air Furnaces – The classrooms and concession stand / lobby office are served by 3 single zone forced air gas-fired furnaces operated by a conventional bimetallic thermostats at present. The recreation room and weight room are served by a twinned forced air gas furnace for heating while the recreation room has a separate split system (DX) cooling only unit. These units are operated by independent thermostats today. Provide, install, program, validate and commission a Viconics VT7600 communicating thermostat (or an equivalent product) to provide control of each unit with a means of interface to the BAS. The recreation center / weight room units shall be operated off of a single thermostat. No ancillary or monitoring points (supply air fan status, supply air temperature, etc.) are to be included under this scope item at this phase of development.

Exhaust Air Fans – All non-process related fans (including restroom fans) that exhaust air from the building envelope shall be enabled and disabled according to the occupancy of their associated air handling units. Exhaust fans and/or transfer fans that do not move air outside of the building envelope and process fans are excluded from the scope of work. Provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement enable / disable control of these exhaust fans. For purposes of this proposal, include 5 exhaust fans grouped into 2 control zones.

PTAC and window air conditioners are excluded from this scope of work.

## ECM 4 – Water Conservation Measures

The simple payback of the water recommendations for this building exceeded the term of the contract.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# Guy Smith Stadium

## ECM 1 – Lighting

The simple payback of the lighting recommendations for this building exceeded the term of the contract.

## ECM 4 – Water Conservation Measures

Existing high flow toilets will be replaced with 1.28 gpf fixtures and existing 1.6 gpf toilets will remain in place. Toilets which are 1.6 gpf capable and are currently equipped with 3.5 gpf valves will have the valves retrofit to 1.6 gpf. Existing urinals will remain in place. Existing 2.2 gpm bathroom sink faucets will be retrofit to 0.5 gpm. Existing 2.5 gpm showerheads will be replaced with new, 1.5 gpm showerheads; Existing 1.5 gpm showerheads will remain in place.

See the Water Appendix for detailed building by building fixture counts and assumptions.

## City Warehouse

### ECM 1 – Lighting

The simple payback of the lighting recommendations for this building exceeded the term of the contract.

### ECM 2 – Controls Upgrade

The simple payback of the controls upgrade recommendations for this building exceeded the term of the contract.

### ECM 3 – HVAC Upgrade

The simple payback of the HVAC upgrade recommendations for this building exceeded the term of the contract.

### ECM 4 – Water Conservation Measures

The simple payback of the water recommendations for this building exceeded the term of the contract.

### ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# Public Works Complex

## ECM 1 – Lighting

The simple payback of the lighting recommendations for this building exceeded the term of the contract.

## ECM 2 – Controls Upgrade

The purpose of this ECM is to improve the environmental and comfort issues in the existing building and to save energy. Additionally, installation of this ECM will allow for consistency in building comfort conditions settings and allow for some remote status and troubleshooting capabilities.

This ECM is interactive with ECM 3 – HVAC Upgrades. The following scope is applicable for both existing and proposed equipment identified in ECM 3. If ECM 3 is chosen for the final project, coordinate control efforts with the installation of replacement units. The unit counts and types, control strategies will remain the same,

This project includes:

- The installation of a new set of controls to automate the operation of the building HVAC systems.

Controls Upgrades:
Controls upgrades for this Building will allow for proper operation of the following:

- Remote temperature setback control for all applicable areas during unoccupied periods.
- Setting and balancing of ventilation damper operation
- Review and balance/reset of problem area zones in offices in the rear of the building and IT room. (qty 5- areas)
- Setting operation and setback of building exhaust systems.
- Programming and balancing for controlling and optimizing building pressurization, using existing systems and planned controls, during all modes of operation.
- Supervisory control of building temperature and operational status, on/off.
- Installation of Demand Control Ventilation programming in the assembly area.

Controls Scope of Work
A point of access from the local field controller network to the broader BAS shall be required for each building.

<u>Air Handling Units</u> – A combination of packaged pad mounted units, rooftop units, and split systems serve the various facilities. These are operated by conventional thermostats (primarily bi-metallic, digital non-programmable, or programmable) at present. Provide, install, program, validate and commission Viconics VT7600 communicating thermostats (or an equivalent product) to provide unit control with a means of interface to the BAS. No ancillary or monitoring points (supply air fan status, supply air temperature, etc.) are to be included under this scope item at this phase of development. For purposes of this proposal, include 18 units of this type.

<u>Enable/Disable System</u> – Provide, install, program, validate and commission new controls to implement a 4 zone enable/disable (red-wire) system for the10 unit heaters and the electrical baseboard heaters (typical of 2) in the facility. Relays shall be installed and wired to break power to the conventional thermostats operating the equipment during unoccupied hours with space temperature sensors installed so that the zone may be re-enabled to maintain a setback temperature as necessary.

Exhaust Air Fans – All non-process related fans (including restroom fans) that exhaust air from the building envelope shall be enabled and disabled according to the occupancy of their associated air handling units. Exhaust fans and/or transfer fans that do not move air outside of the building envelope and process fans are excluded from the scope of work. Provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement enable / disable control of these exhaust fans. For purposes of this proposal, include 7 exhaust fans grouped into 4 control zones.

*PTAC units are excluded from scope of work.*

## ECM 3 – HVAC Upgrade

This ECM is interactive with ECM 2 – Control Upgrades. Use controls systems scope from ECM 2 for new equipment identified in this ECM. If ECM 3 is chosen for the final project, coordinate control efforts with the installation of replacement units. The unit counts and types, control strategies will remain the same.

**Public Works Building A**
There are ten Rooftop units, “gas packs” installed at Public Works Building A. The four units serving the assembly area are older units the end of their economic lifetimes and the customer has requested the replacement of the units for maintenance reasons.

We recommend the installation of new units for these areas. All units are to be replaced with dx rooftop units with gas heat. Improvements in efficiency include increased efficiency for cooling and heating energy. Improvements to these units will include economizer and demand control ventilation.

The following is a table which shows the conceptual design for the new units:

| Rooftop Units - Public Works Complex | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mark | Area Served | System Type | Economizer/ Relief | DCV | Total Air CFM | Outdoor Air CFM | Total Supply SP | Nominal Tons | MBH Output |
| GPU-7 | Building A - Assembly Area | DX Gas Pack | Yes | Yes | 4,500 | 1,125 | 1.50 | 10.0 | 59 |
| GPU-8 | Building A - Assembly Area | DX Gas Pack | Yes | Yes | 3,000 | 750 | 1.50 | 7.5 | 59 |
| GPU-9 | Building A - Assembly Area | DX Gas Pack | Yes | Yes | 4,500 | 1,125 | 1.50 | 10.0 | 59 |
| GPU-10 | Building A-Assembly, RR, Offices | DX Gas Pack | Yes | Yes | 1,575 | 394 | 1.50 | 3.5 | 59 |

Controls Scope of Work
See ECM 2 – Controls Upgrade. Controls scope of work and intent is identical for the new units.

## ECM 4 – Water Conservation Measures

The simple payback of the water recommendations for this building exceeded the term of the contract.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# South Greenville Recreation Center

## ECM 1 – Lighting

A total of 100 fixtures will be retrofitted or replaced as part of this project. Existing exit signs will be replaced with new LED exit signs. Existing HID fixtures will be replaced with either new compact fluorescent or new LED fixtures. Existing HID high-bay fixtures will be replaced with new T5 linear fluorescent high-bay fixtures with sensors. Existing linear T12 and T8 fluorescent fixtures will be retrofitted with new T8 lamps and ballasts, some of the included fixtures will have the quantity of lamps reduced while still maintaining appropriate light levels.

Refer to the Lighting Appendix for detailed fixture counts and assumptions.

## ECM 2 – Controls Upgrade

The purpose of this ECM is to improve the environmental and comfort issues in the existing building and to save energy. Additionally, installation of this ECM will allow for consistency in building comfort conditions settings and allow for some remote status and troubleshooting capabilities.

This project includes:

- The installation of a new set of communicating programmable thermostats and communications capabilities.

Controls Upgrades:
Controls upgrades for this Building will allow for proper operation of the following:

- Remote temperature setback control for all applicable areas during unoccupied periods.
- Supervisory control of building temperature and operational status, on/off.

Controls Scope of Work
Air Handling Units – A single split system (DX-cooling, gas-heating) serves the front offices and recreation center. The BAS contractor is to provide, install, program, validate and commission Viconics VT7600 communicating thermostats (or an equivalent product) to provide unit control with a means of interface to the BAS. No ancillary or monitoring points (supply air fan status, supply air temperature, etc.) are to be included under this scope item at this phase of development.

Enable/Disable System – Provide, install, program, validate and commission new controls to implement a 2 zone enable/disable (red-wire) system for the gym 2 unit heaters and the electrical baseboard heaters (typical of 2) in the facility. Relays shall be installed and wired to break power to the conventional thermostats operating the equipment during unoccupied hours with space temperature sensors installed so that the zone may be re-enabled to maintain a setback temperature as necessary.

Exhaust Air Fans – All non-process related fans (including restroom fans) that exhaust air from the building envelope shall be enabled and disabled according to the occupancy of their associated air handling units. Exhaust fans and/or transfer fans that do not move air outside of the building envelope and process fans are excluded from the scope of work. Provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement enable / disable control of these exhaust fans. For purposes of this proposal, include 4 exhaust fans grouped into 2 control zones.

*Gym Office PTAC and Weight Room PTAC units are excluded from scope of work.*

## ECM 4 – Water Conservation Measures

Existing high flow toilets will be replaced with 1.28 gpf fixtures and existing 1.6 gpf toilets will remain in place. Toilets which are 1.6 gpf capable and are currently equipped with 3.5 gpf valves will have the valves retrofit to 1.6 gpf. Existing urinals will remain in place. Existing 2.2 gpm bathroom sink faucets will be retrofit to 0.5 gpm. Existing 2.5 gpm showerheads will be replaced with new, 1.5 gpm showerheads; Existing 1.5 gpm showerheads will remain in place.

See the Water Appendix for detailed building by building fixture counts and assumptions.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# Evans Park Building

## ECM 1 – Lighting

A total of 30 fixtures will be retrofitted as part of this project. Existing T8 linear fluorescent fixtures will be retrofitted with new T8 lamps and ballasts where appropriate. Some of the existing T8 fixtures will be retrofitted with reduced number of lamps while maintaining appropriate light levels. The current T8 U-tube fluorescent fixtures will be retrofitted with linear T8 fluorescent lamps, new ballasts, and reflector kits.

Refer to the Lighting Appendix for detailed fixture counts and assumptions.

## ECM 2 – Controls Upgrade

The simple payback of the controls upgrade recommendations for this building exceeded the term of the contract.

## ECM 3 – HVAC Upgrade

The simple payback of the HVAC upgrade recommendations for this building exceeded the term of the contract.

## ECM 4 – Water Conservation Measures

Existing high flow toilets will be replaced with 1.28 gpf fixtures and existing 1.6 gpf toilets will remain in place. Toilets which are 1.6 gpf capable and are currently equipped with 3.5 gpf valves will have the valves retrofit to 1.6 gpf. Existing urinals will remain in place. Existing 2.2 gpm bathroom sink faucets will be retrofit to 0.5 gpm. Existing 2.5 gpm showerheads will be replaced with new, 1.5 gpm showerheads; Existing 1.5 gpm showerheads will remain in place.

See the Water Appendix for detailed building by building fixture counts and assumptions.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# Elm Street Recreation Center

## ECM 1 – Lighting

A total of 41 fixtures will be retrofitted as a part of this project. Existing exit signs will be replaced with new LED exit signs. Existing T12 linear fluorescent fixtures will be retrofitted with T8 linear fluorescent lamps, new ballasts, and the number of lamps will be reduced while maintaining adequate lighting levels. Existing T12 U-tube fluorescent fixtures will be retrofitted with linear T8 lamps, new ballasts, and reflector kits. Existing linear T8 fixtures will be relamped.

Refer to the Lighting Appendix for detailed fixture counts and assumptions.

## ECM 2 – Controls Upgrade

The purpose of this ECM is to improve the environmental and comfort issues in the existing building and to save energy. Additionally, installation of this ECM will allow for consistency in building comfort conditions settings and allow for some remote status and troubleshooting capabilities.

This project includes:

- The installation of a new set of communicating programmable thermostats and communications capabilities.

Controls Upgrades:
Controls upgrades for this Building will allow for proper operation of the following:

- Remote temperature setback control for all applicable areas during unoccupied periods.
- Supervisory control of building temperature and operational status, on/off.

Controls Scope of Work
Air Handling Unit – A DX-cooling split system unit with twinned furnaces serves the offices and community area of the Elm Street Center. Provide, install, program, validate and commission Viconics VT7600 communicating thermostats (or an equivalent product) to provide unit control with a means of interface to the BAS. No ancillary or monitoring points (supply air fan status, supply air temperature, etc.) are to be included under this scope item at this phase of development.

Exhaust Air Fans – All non-process related fans (including restroom fans) that exhaust air from the building envelope shall be enabled and disabled according to the occupancy of their associated air handling units. Exhaust fans and/or transfer fans that do not move air outside of the building envelope and process fans are excluded from the scope of work. Provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement enable / disable control of these exhaust fans. For purposes of this proposal, include 2 exhaust fans grouped into 1 control zones.

## ECM 4 – Water Conservation Measures

Existing high flow toilets will be replaced with 1.28 gpf fixtures and existing 1.6 gpf toilets will remain in place. Toilets which are 1.6 gpf capable and are currently equipped with 3.5 gpf valves will have the valves retrofit to 1.6 gpf. Existing urinals will remain in place. Existing 2.2 gpm bathroom sink faucets will be retrofit to 0.5 gpm. Existing 2.5 gpm showerheads will be replaced with new, 1.5 gpm showerheads; Existing 1.5 gpm showerheads will remain in place.

See the Water Appendix for detailed building by building fixture counts and assumptions.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# Jaycee Park Building

## ECM 1 – Lighting

A total of 156 lighting fixtures will be retrofitted or replaced as part of this project. Exit signs will be replaced with new LED exit signs. Existing incandescent fixtures will be retrofitted with dimmable compact fluorescent lamps. Existing T12 linear fluorescent fixtures (standard and high output) will be retrofitted with T8 linear fluorescent lamps and ballasts. Existing T8 linear fluorescent fixtures will be retrofitted with new lamps and new ballasts. Some of the current T12 and T8 linear fluorescent fixtures will have reduced number of lamps while maintaining adequate light levels. Existing T8 U-tube fluorescent fixtures will be retrofitted with linear T8 lamps, new ballasts, and reflector kits.

Refer to the Lighting Appendix for detailed fixture counts and assumptions.

## ECM 2 – Controls Upgrade

The purpose of this ECM is to improve the environmental and comfort issues in the existing building and to save energy. Additionally, installation of this ECM will allow for consistency in building comfort conditions settings and allow for some remote status and troubleshooting capabilities.

This ECM is interactive with ECM 3 – HVAC Upgrades. The following scope is applicable for both existing and proposed equipment identified in ECM 3. If ECM 3 is chosen for the final project, coordinate control efforts with the installation of replacement units. The unit counts and types, control strategies will remain the same.

This project includes:

- The installation of a new set of controls to automate the operation of the building HVAC systems.

Controls Upgrades:
Controls upgrades for this Building will allow for proper operation of the following:

- Remote temperature setback control for all applicable areas during unoccupied periods.
- Setting and balancing of ventilation damper operation
- Setting operation and setback of building exhaust systems.
- Programming and balancing for controlling and optimizing building pressurization, using existing systems and planned controls, during all modes of operation.
- Supervisory control of building temperature and operational status, on/off.
- Installation of Demand Control Ventilation programming in the multi-purpose room.

Controls Scope of Work
Air Handling Units –Existing Trane controls for current roof-tops shall be demolished under this scope of work. Provide, install, program, validate and commission Viconics VT7600 communicating thermostats (or an equivalent product) to provide unit control with a means of interface to the BAS. No ancillary or monitoring points (supply air fan status, supply air temperature, etc.) are to be included under this scope item at this phase of development.

Exhaust Air Fans – All non-process related fans (including restroom fans) that exhaust air from the building envelope shall be enabled and disabled according to the occupancy of their associated air handling units. Exhaust fans and/or transfer fans that do not move air outside of the building envelope and process fans are excluded from the scope of work. Provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement enable / disable control of these exhaust fans. For purposes of this proposal, include 2 exhaust fans grouped into 1 control zones.

## ECM 3 – HVAC Upgrade

The simple payback of the HVAC upgrade recommendations for this building exceeded the term of the contract.

## ECM 4 – Water Conservation Measures

The simple payback of the water recommendations for this building exceeded the term of the contract.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# Sports Connection

## ECM 1 – Lighting

A total of 55 lighting fixtures will be retrofitted or replaced as part of this project. Existing incandescent fixtures will be retrofitted with compact fluorescent lamps. Existing T12 linear fluorescent fixtures will be retrofitted with T8 linear fluorescent lamps and ballasts, some of which will have reduced number of lamps while maintaining adequate light levels. Existing T12 U-tube fluorescent fixtures will be retrofitted with linear T8 lamps, new ballasts, and reflector kits. Existing T8 linear fluorescent fixtures will be relamped with new T8 lamps.

Refer to the Lighting Appendix for detailed fixture counts and assumptions.

## ECM 2 – Controls Upgrade

The purpose of this ECM is to improve the environmental and comfort issues in the existing building and to save energy. Additionally, installation of this ECM will allow for consistency in building comfort conditions settings and allow for some remote status and troubleshooting capabilities.

This project includes:
- The installation of a new set of communicating programmable thermostats and communications capabilities.

Controls Upgrades:
Controls upgrades for this Building will allow for proper operation of the following:
- Remote temperature setback control for all applicable areas during unoccupied periods.
- Setting and balancing of ventilation damper operation
- Setting operation and setback of building exhaust systems.
- Programming and balancing for controlling and optimizing building pressurization, using existing systems and planned controls, during all modes of operation.
- Disable Gym/Batting Cages Exhaust fans during heating.
- Supervisory control of building temperature and operational status, on/off.
- Supervisory control of building temperature and operational status, on/off.

Controls Scope of Work
Air Handling Units – Three split system (DX-cooling, gas-fired heat) units serve the front offices, indoor restrooms and community / meeting areas of Sport Connection. Provide, install, program, validate and commission Viconics VT7600 communicating thermostats (or an equivalent product) to provide unit control with a means of interface to the BAS. No ancillary or monitoring points (supply air fan status, supply air temperature, etc.) are to be included under this scope item at this phase of development.

Enable/Disable System – Provide, install, program, validate and commission new controls to implement a 2 zone enable/disable (red-wire) system for the 4 unit heaters serving the batting area and gymnasium in the facility. Relays shall be installed and wired to break power to the conventional thermostats operating the equipment during unoccupied hours with space temperature sensors installed so that the zone may be re-enabled to maintain a setback temperature as necessary.

Exhaust Air Fans – All non-process related fans (including restroom fans) that exhaust air from the building envelope shall be enabled and disabled according to the occupancy of their associated air handling units. Exhaust fans and/or transfer fans that do not move air outside of the building envelope and process fans are excluded from the scope of work. Provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement enable / disable control of these exhaust fans. For purposes of this proposal, include 3 exhaust fans grouped into 3 control zones.

## ECM 4 – Water Conservation Measures

Existing high flow toilets will be replaced with 1.28 gpf fixtures and existing 1.6 gpf toilets will remain in place. Toilets which are 1.6 gpf capable and are currently equipped with 3.5 gpf valves will have the valves retrofit to 1.6 gpf. Existing urinals will remain in place. Existing 2.2 gpm bathroom sink faucets will be retrofit to 0.5 gpm. Existing 2.5 gpm showerheads will be replaced with new, 1.5 gpm showerheads; Existing 1.5 gpm showerheads will remain in place.

See the Water Appendix for detailed building by building fixture counts and assumptions.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# Gardner Training Center

## ECM 1 – Lighting

A total of 47 lighting fixtures will be retrofitted or replaced as part of this project. Existing HID fixtures will be replaced with new LED fixtures. Existing incandescent fixtures will be retrofitted with either standard compact fluorescent lamps or dimmable compact fluorescent lamps. Existing T12 linear fluorescent fixtures will be retrofitted with T8 linear fluorescent lamps and ballasts and the number of lamps will be reduced while maintaining adequate light levels.

Refer to the Lighting Appendix for detailed fixture counts and assumptions.

## ECM 2 – Controls Upgrade

The simple payback of the controls upgrade recommendations for this building exceeded the term of the contract.

## ECM 4 – Water Conservation Measures

The simple payback of the water recommendations for this building exceeded the term of the contract.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# H. Boyd Lee Park Buildings

## ECM 1 – Lighting

A total of 89 lighting fixtures will be retrofitted or replaced as part of this project. Existing incandescent fixtures will be retrofitted with compact fluorescent lamps. Existing T8 linear fluorescent fixtures will be relamped with new T8 lamps or retrofitted with new T8 lamps and ballasts.

Refer to the Lighting Appendix for detailed fixture counts and assumptions.

## ECM 2 – Controls Upgrade

The purpose of this ECM is to improve the environmental and comfort issues in the existing building and to save energy. Additionally, installation of this ECM will allow for consistency in building comfort conditions settings and allow for some remote status and troubleshooting capabilities.

This project includes:

- The comprehensive installation of a new set of controls to automate the operation of the building HVAC systems.

Controls Upgrades:
Controls upgrades for this Building will allow for proper operation of the following:

- Remote temperature setback control for all applicable areas during unoccupied periods.
- Setting and balancing of ventilation damper operation
- Setting operation and setback of building exhaust systems.
- Programming and balancing for controlling and optimizing building pressurization, using existing systems and planned controls, during all modes of operation.
- Supervisory control of building temperature and operational status, on/off.
- Ensure operation of Demand Control Ventilation programming on the gym systems.

Controls Scope of Work
<u>VVT Air Handling System</u> – A packaged VVT roof-top unit serves, outfitted with Trane controls serves the office and most communal areas of the main facility through 9 VVT zones. The BAS contractor shall provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement ES provided sequences of operation. The intent is to affect a "brain-swap" of the Trane equipment, reusing wiring and end-devices where possible but replacing control panels, communications wiring, sensing elements, etc. as required.

<u>Gymnasium Air Handling Unit</u> – A gas-fired heating and ventilation unit, outfitted with Trane controls serves gymnasium at present. The BAS contractor shall provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement ES provided sequences of operation. The intent is to affect a "brain-swap" of the Trane equipment, reusing wiring and end-devices (including the existing space Carbon Dioxide sensor) where possible but replacing control panels, communications wiring, sensing elements, etc. as required.

<u>Atrium Air Handling Unit</u> – A packaged roof-top unit (DX-cooling, gas-fired heating) serves the atrium and is operated by a digital programmable Trane thermostat. The BAS contractor is to provide, install, program, validate and commission Viconics VT7600 communicating thermostats (or an equivalent product) to provide unit control with a means of interface to the BAS. No ancillary or monitoring points (supply air fan status, supply air temperature, etc.) are to be included under this scope item at this phase of development.

Exhaust Air Fans – All non-process related fans (including restroom fans) that exhaust air from the building envelope shall be enabled and disabled according to the occupancy of their associated air handling units. Exhaust fans and/or transfer fans that do not move air outside of the building envelope and process fans are excluded from the scope of work. The BAS contractor is to provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement enable / disable control of these exhaust fans. For purposes of this proposal, include 6 exhaust fans grouped into 3 control zones.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# River Park North Building

## ECM 1 – Lighting

The simple payback of the lighting recommendations for this building exceeded the term of the contract.

## ECM 2 – Controls Upgrade

The purpose of this ECM is to improve the environmental and comfort issues in the existing building and to save energy. Additionally, installation of this ECM will allow for consistency in building comfort conditions settings and allow for some remote status and troubleshooting capabilities.

This project includes:

- The installation of a new set of communicating programmable thermostats and communications capabilities.

Controls Upgrades:
Controls upgrades for this Building will allow for proper operation of the following:

- Remote temperature setback control for all applicable areas during unoccupied periods.
- Supervisory control of building temperature and operational status, on/off.

Controls Scope of Work
Air Handling Units – 5 split system (DX-cooling, electric heating heat pumps) units serve the front offices, auditorium, exhibit spaces and back workroom. The BAS contractor is to provide, install, program, validate and commission Viconics VT7600 communicating thermostats (or an equivalent product) to provide unit control with a means of interface to the BAS. No ancillary or monitoring points (supply air fan status, supply air temperature, etc.) are to be included under this scope item at this phase of development.

Infrared Heating in Men's and Woman's restrooms located outside the main building are to have scheduling and set back implemented.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# Greenfield Terrace Building

## ECM 1 – Lighting

The simple payback of the lighting recommendations for this building exceeded the term of the contract.

## ECM 2 – Controls Upgrade

The purpose of this ECM is to improve the environmental and comfort issues in the existing building and to save energy. Additionally, installation of this ECM will allow for consistency in building comfort conditions settings and allow for some remote status and troubleshooting capabilities.

This project includes:

- The installation of a new set of communicating programmable thermostats and communications capabilities.

Controls Upgrades:
Controls upgrades for this Building will allow for proper operation of the following:

- Remote temperature setback control for all applicable areas during unoccupied periods.
- Supervisory control of building temperature and operational status, on/off.

Controls Scope of Work
Air Handling Units – Two packaged units (DX-cooling, gas-fired heating) serve the park facility. Provide, install, program, validate and commission Viconics VT7600 communicating thermostats (or an equivalent product) to provide unit control with a means of interface to the BAS. No ancillary or monitoring points (supply air fan status, supply air temperature, etc.) are to be included under this scope item at this phase of development.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# Greenville Aquatics and Fitness Center

## ECM 1 – Lighting

A total of 180 lighting fixtures will be retrofitted or replaced as part of this project. One existing HID fixtures will be replaced with a new LED fixture. Existing HID high-bay fixtures will be replaced with new T5 linear fluorescent high-bay fixtures. Existing incandescent fixtures will be retrofitted with compact fluorescent lamps. Existing T12 linear fluorescent fixtures will be retrofitted with T8 linear fluorescent lamps and ballasts, some of which will have reduced number of lamps while maintaining adequate light levels. Existing T12 U-tube fluorescent fixtures will be retrofitted with linear T8 lamps, new ballasts, and reflector kits. Existing T8 linear fluorescent fixtures will be relamped with new T8 lamps or retrofitted with new T8 lamps and ballasts where appropriate. Some of the T8 linear fluorescent fixtures will also have reduced number of lamps while maintaining appropriate light levels.

Refer to the Lighting Appendix for detailed fixture counts and assumptions.

## ECM 2 – Controls Upgrade

The purpose of this ECM is to improve the environmental and comfort issues in the existing building and to save energy. The existing systems and issues with the systems are described above in detail in the facility HVAC description.

This project scope is interactive with ECM 3 – HVAC Upgrade. If ECM 3 is chosen in the final project, controls for the existing third floor units will be deleted, and the controls scope listed as part of ECM 3 will be installed.

This project includes:

- The upgrading of the existing controls system, re-commissioning of the building controls, rebalancing of systems and building pressurization - as required, and additional points and programming.

Controls Upgrades:
Controls upgrades, re-commissioning, and balancing efforts for this Building will allow for proper operation of the following:

- Fan scheduling for all HVAC systems
- Optimum Start Stop for all HVAC systems
- Temperature Setback control for all HVAC systems during unoccupied periods.
- Control of system ventilation optimization including scheduling and programmed building pressurization from ventilation-exhaust sequences.
- Control/scheduling of all exhaust fans in the building
- Full Economizer for the Gym Unit
- Demand Control Ventilation for the Gym

Controls Scope of Work
Gymnasium Air Handling Unit – A built-up air handling unit with hydronic heating, DX cooling, and full economizer with motorized relief dampers, outfitted with Delta controls serves the gymnasium at present. Provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement ES provided sequences of operation, including the implementation of Demand Controlled Ventilation (new Carbon Dioxide sensor required). The intent is to affect a “brain-swap” of the Delta equipment, reusing wiring and end-devices where possible but replacing control panels, communications wiring, sensing elements, etc. as required.

Natatorium Air Handling Unit – A new air handling unit is to be installed under the mechanical scope of work. This system is likely to include air-to-air heat recovery (flat plate) with economizer, a heat pump to simultaneously dehumidify the supply air stream and temper the pool water, and hot water heating. Provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement ES provided sequences of operation.

Air Handling Units – Four packaged roof-top units, operated by conventional bimetallic thermostats, serve the auxiliary rooms of the facility. Provide, install, program, validate and commission Viconics VT7600 communicating thermostats (or an equivalent product) to provide unit control with a means of interface to the BAS. No ancillary or monitoring points (supply air fan status, supply air temperature, etc.) are to be included under this scope item at this phase of development.

Exhaust Air Fans – All non-process related fans (including restroom fans) that exhaust air from the building envelope shall be enabled and disabled according to the occupancy of their associated air handling units. Exhaust fans and/or transfer fans that do not move air outside of the building envelope and process fans are excluded from the scope of work. Provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement enable / disable control of these exhaust fans. For purposes of this proposal, include 6 exhaust fans grouped into 3 control zones.

## ECM 3 – HVAC Upgrade

The dehumidification system serving the pool is an older unit and is beyond its economic lifetime. Replacing the unit will provide a better environment for the pool area and occupants. Additionally, the measure will save heating energy for heating the pool.

The installation of this project includes a replacement of the existing dehumidification unit with two new Desert Aire ND-18 dehumidifiers, installation of heat recovery for heating the pool, and the installation of a pool cover.

The features of the units shall include:

- Integral compressor heat – reheat
- 100% outside Air economizer and relief/exhaust fan
- Remove the duct-mounted reheat coil and provide reheat coils in the new units
- Hot Water Heating for the Pool.
    - Provide Compressor Waste Heat Recovery for heating the pool water.
- Install Pool Cover for use during unoccupied Hours.
- Controls communication to the BAS

The following is the conceptual design for the replacement unit:

| Replacement Dehumidification Unit - Greenville Aquatics and Fitness Center | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mark | Area Served | System Type | Economizer/ Relief | Manuf. and Model | Supply Fan HP | Supply CFM | Minimum OA CFM | Nominal Tons | Moisture Removal (lbs/hr) |
| Pool-1 | Pool Area | Constant Volume | Yes | Desert Aire ND-18 | 7.5 | 8,200 | 1,900 | 18 | 108 |
| Pool-2 | Pool Area | Constant Volume | Yes | Desert Aire ND-18 | 7.5 | 8,200 | 1,900 | 18 | 108 |

Controls Scope of Work
Natatorium Air Handling Unit – Two new air handling units are to be installed under the mechanical scope of work. Provide, install, program, validate and commission new controllers, sensors, and other end devices (as outlined in the I-O summary) to implement ES provided sequences of operation.

## ECM 4 – Water Conservation Measures

Existing high flow toilets will be replaced with 1.28 gpf fixtures and existing 1.6 gpf toilets will remain in place. Toilets which are 1.6 gpf capable and are currently equipped with 3.5 gpf valves will have the valves retrofit to 1.6 gpf. Existing urinals will remain in place. Existing 2.2 gpm bathroom sink faucets will be retrofit to 0.5 gpm. Existing 2.5 gpm showerheads will be replaced with new, 1.5 gpm showerheads; Existing 1.5 gpm showerheads will remain in place.

See the Water Appendix for detailed building by building fixture counts and assumptions.

## ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

## ECM 6 – Chlorine Generator

It is recommended as part of this project to install a chlorine generator water treatment system at the Aquatics Center pool. A chlorine generator produces the chlorine necessary to maintain a clean and safe pool by utilizing salt water in place of the traditional chlorine chemical additives. Chlorine generators provide the chlorine so that you don't have to purchase, store, or handle chlorine pool treatment chemicals. While you must still maintain proper water balance and pool chemistry properly, the amount of pool treatment chemicals needed is greatly reduced and savings can be realized by the lower chemical costs required when using a chlorine generator system. Chlorine generators not only reduce the amount of chemicals required for pool treatment, they also provide a better and healthier swimming experience for the pool users.

## Bradford Creek Golf Course

### ECM 1 – Lighting

A total of 177 lighting fixtures will be retrofitted or replaced as part of this project. Existing HID fixtures will be replaced with new LED fixtures. Existing HID high-bay fixtures will be replaced with new T5 linear fluorescent high-bay fixtures with sensors. Existing incandescent fixtures will be retrofitted with compact fluorescent lamps. A small number of existing incandescent fixtures will be retrofitted with LED technology. Existing T12 linear fluorescent fixtures will be retrofitted with T8 linear fluorescent lamps and ballasts, some of which will have reduced number of lamps while maintaining adequate light levels.

Refer to the Lighting Appendix for detailed fixture counts and assumptions.

### ECM 2 – Controls Upgrade

The simple payback of the controls upgrade recommendations for this building exceeded the term of the contract.

### ECM 5 – Building Envelope

The simple payback of the building envelope recommendations for this building far exceeded the term of the contract.

# Section 5: Utility Baseline and Analysis

## City Hall

### Utility Description

#### General

The building purchases electricity for the majority of energy usage. There is a gas meter associated with the site but the usage is low; it is used for the emergency generator only. The meters serving this facility are listed below.

*City hall - Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 7503902 | 116734 | Whole Bldg |
| GUC | Electric | 3049400 | 109577 | Exterior |
| GUC | Gas | 7503902 | 18214 | Generator |

#### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECMG rate structure as summarized below.

**Electric Rate GUC ECMG**

| Consumption | | | Demand Charge | | Base Charge |
|---|---|---|---|---|---|
| For Usage | Cost | Unit | For Usage | Cost | Cost |
| 1st 12500 | $ 0.12323 | kWh | 1st 35 kW | Free | |
| >12500 | $ 0.09233 | kWh | >35 kW | 4.17 | 13.33 |
| | | | | | |

#### Natural Gas

The natural gas used at the facility is only used to operate a backup generator and was not included in this study.

## Energy Usage and Baseline

The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

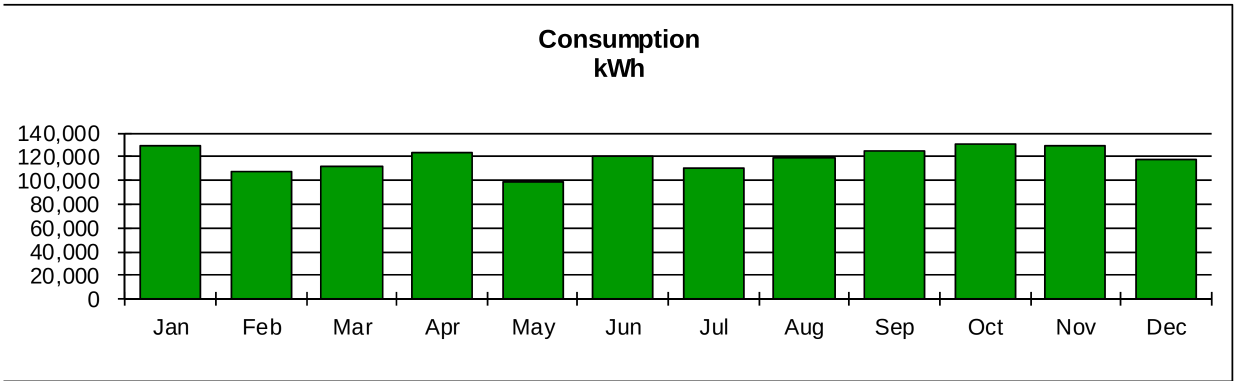
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Date** | **KWH** | **$-KWH** | **KW** | **$-KW** | **$-Tot Elec.** | **$/KWH** | **therms** | **$-Gas** |
| Jan | 129,024 | | 269 | | $13,287 | $0.1030 | 10 | $35 |
| Feb | 107,520 | | 300 | | $11,278 | $0.1049 | 7 | $31 |
| Mar | 111,744 | | 246 | | $11,596 | $0.1038 | 12 | $38 |
| Apr | 123,840 | | 244 | | $12,705 | $0.1026 | 13 | $39 |
| May | 97,920 | | 225 | | $10,231 | $0.1045 | 9 | $34 |
| Jun | 120,192 | | 242 | | $12,360 | $0.1028 | 20 | $49 |
| Jul | 110,592 | | 242 | | $11,473 | $0.1037 | 15 | $42 |
| Aug | 118,464 | | 261 | | $12,280 | $0.1037 | 15 | $41 |
| Sep | 124,224 | | 273 | | $12,860 | $0.1035 | 257 | $338 |
| Oct | 130,176 | | 257 | | $13,346 | $0.1025 | 19 | $46 |
| Nov | 129,024 | | 236 | | $13,151 | $0.1019 | 16 | $43 |
| Dec | 116,928 | | 277 | | $12,050 | $0.1031 | 20 | $47 |
| | | | | | | | | |
| **Totals** | **1,419,648** | | **3,071** | | **$ 146,618** | **$ 0.103** | **413** | **$ 784** |

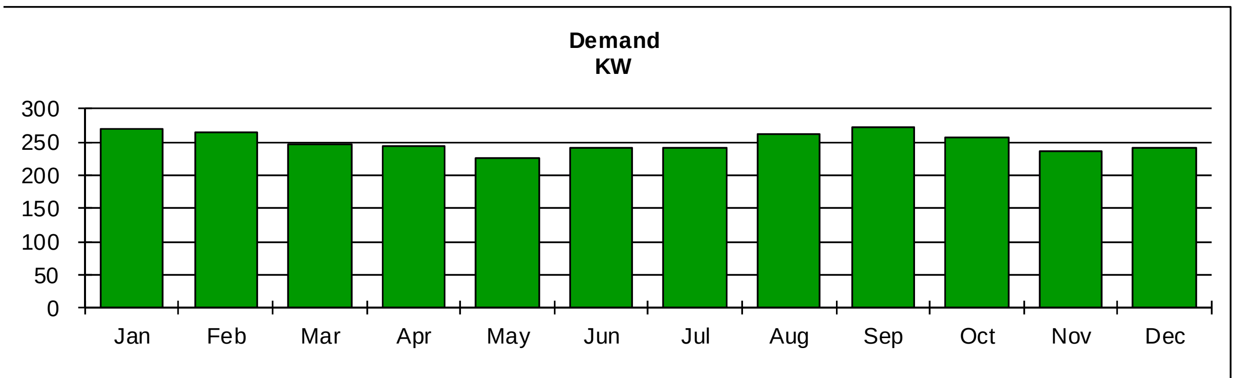
Facility Square Feet: 46,847

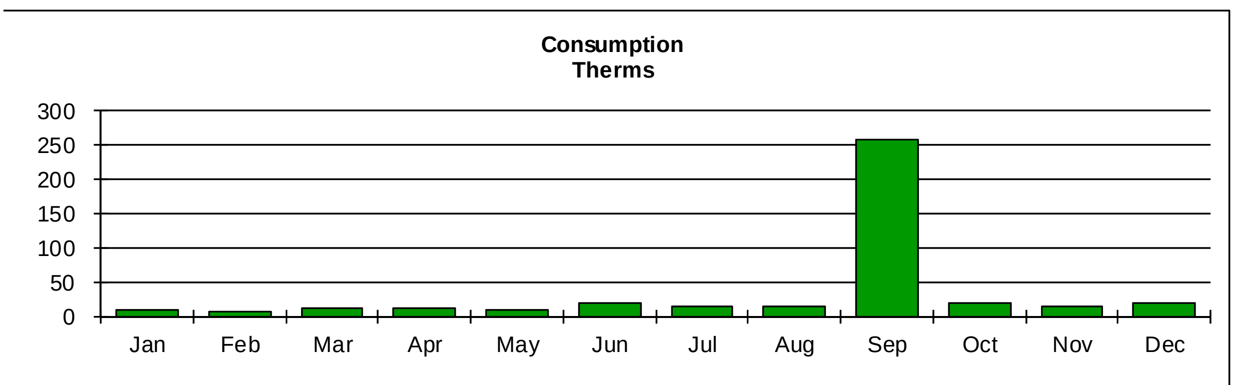
| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Consumption** | **Equivalent MMBTU** | **Annual BTU/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | 1,419,648 | 4,844 | 103,397 | 99% |
| Electricity (KW) | 3,071 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 413 | 41 | 882 | 1% |
| **Total** | **N.A.** | **4,885** | **104,279** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Costs** | **Average Cost/Unit** | **Annual Cost/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | $146,618 | $0.103 | $3.130 | 99% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $784 | $1.899 | $0.017 | 1% |
| **Total** | **$147,402** | **$30.174** | **$3.146** | **100%** |

The following are the graphical representations of the building's baseline energy usage.



## Baseline Model Development - eQuest™ Building Simulation Modeling Method

Energy calculations were performed using eQuest™, a building simulation model and energy analysis program derived from the latest version of DOE-2, and by engineering calculations with spreadsheets. The eQuest™ building simulation and energy analysis program is well known in the heating, ventilation, and air-conditioning (HVAC) industry.

eQuest™ consists of multiple screen inputs for various components, steps, or facility information that may be broken down into the following categories:

*Building Site Information & Weather Data* - eQuest™ calculates energy usage on an hour-by-hour basis utilizing hourly weather data for the location. The program uses a weather file representing the a typical meteorological year temperature profile for Greenville, NC based on Typical Meteorological Year 3 weather data from the National Renewable Energy Laboratory. This makes site characteristics, such as latitude, longitude, and elevation very important. Additionally, adjacent structures or landscape capable of providing shading for the building were also observed during the site surveys.

*Building Shell, Structure, Materials, & Shades* - Accurate architectural data for the facilities were obtained from architectural plans provided by the City of Greenville and site observations. These included building layouts and dimensions, and wall, roof, and floor constructions, as well as, window quantities, locations, types, and shading.

*Building Operations & Scheduling* - Accurate schedules of operation for building occupancy, thermostat set points, and equipment operation were obtained from site surveys and interviews.

*Internal Loads* - Loads, such as people density, lighting, plug loads, and miscellaneous loads, were obtained from site surveys. These loads provide electrical usage, heat gain to the space, and load on the HVAC equipment. The computer program uses these parameters, along with the architectural data, and the latest DOE-2 and American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE) methodologies to calculate cooling and heating loads for the facilities.

*HVAC Equipment & Performance* - Accurate HVAC and plant system descriptions at the facilities were obtained from mechanical plans provided by the City of Greenville, as well as site surveys and interviews. The computer program uses the resulting loads and the system parameters to calculate the cooling and heating load profiles for the facilities on an hourly basis. The program then uses these load profiles and system requirements to calculate the energy consumption.

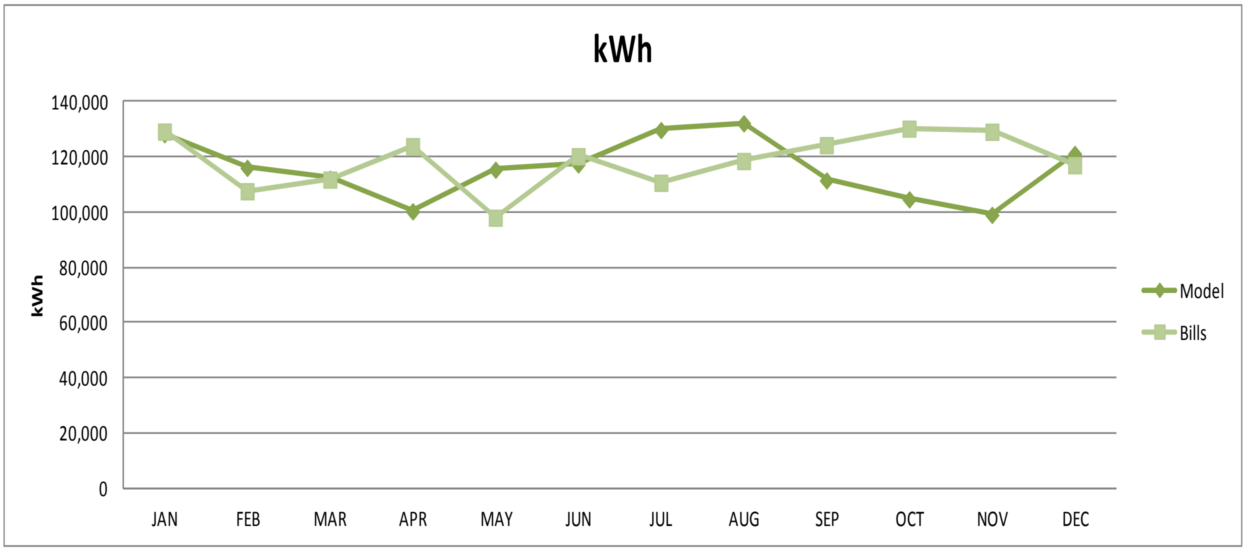
*Energy Economics* - In this final section, current electric and natural gas rate structures are defined in the computer models. The program uses this information to apply cost to the energy consumption calculated.

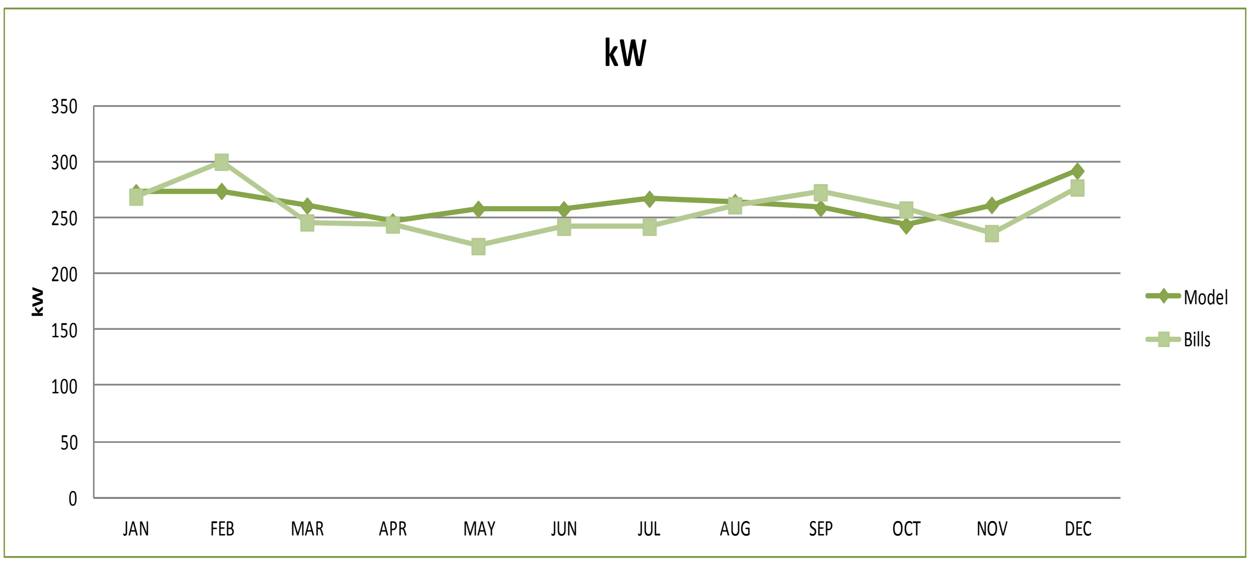
The models are then adjusted for baseline calibration until the following criteria are met:

- Calculated plant and system loads closely match the actual installed capacities
- Calculated energy consumption closely matches the actual energy consumption determined in the utility analysis

## Baseline Model Results

The following graph illustrates the results of the comparison between the historic baseline energy usage and the results of the initial baseline building simulation model outputs.



# Municipal Building

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. There is a gas meter associated with the site but the usage is low; it is used for the emergency generator only. The meters serving this facility are listed below.

**Municipal Building** - *Accounts inlcuded in baseline summary*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 3009300 | 48969 | Exterior |
| GUC | Electric | 7519947 | 119703 | Whole Bldg |
| GUC | Gas | 3007900 | 32449 | Generator |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECMG rate structure as summarized below.

**Electric Rate** **GUC** **ECMG**

| Consumption | | | Demand Charge | | Base Charge |
|---|---|---|---|---|---|
| For Usage | Cost | Unit | For Usage | Cost | Cost |
| 1st 12500 | $ 0.12323 | kWh | 1st 35 kW | Free | |
| >12500 | $ 0.09233 | kWh | >35 kW | 4.17 | 13.33 |
| | | | | | |

#### Natural Gas

The natural gas used at the facility is only used to operate a backup generator and was not included in this study.

## Energy Usage and Baseline

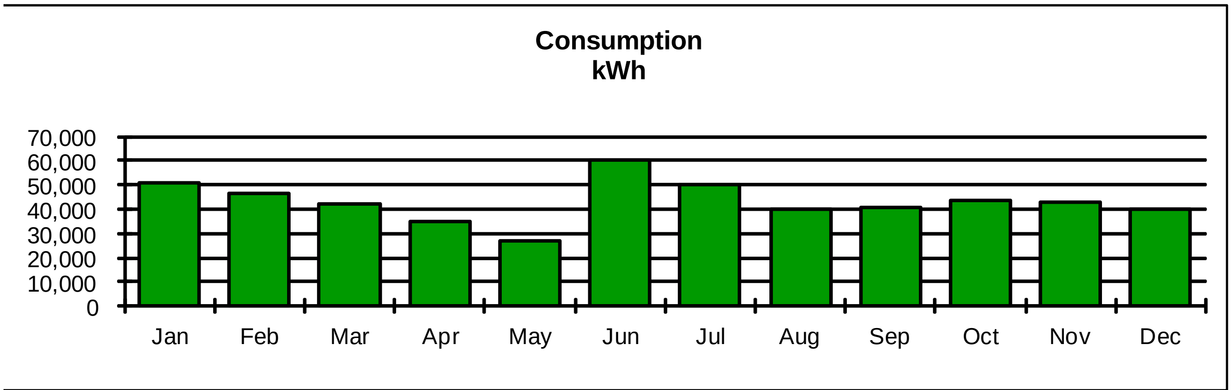
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

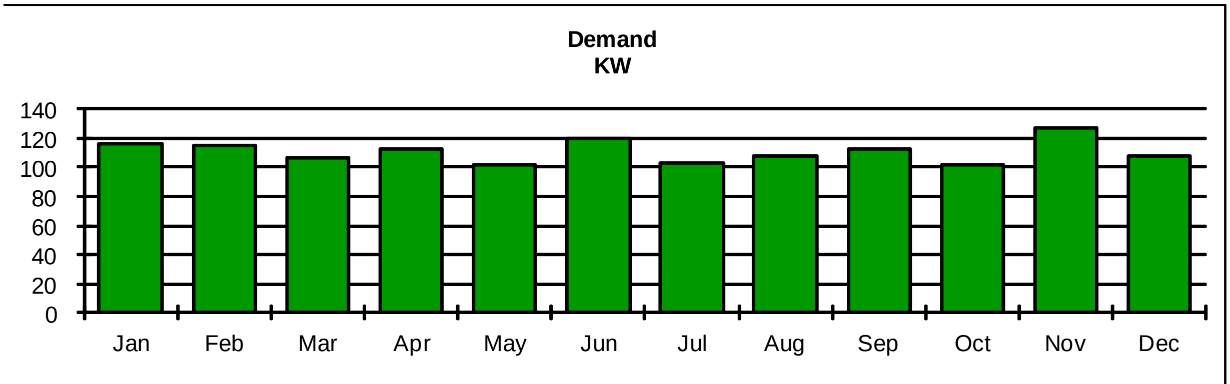
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | KWH | $-KWH | KW | $-KW | $-Tot Elec. | $/KWH | therms | $-Gas |
| Jan | 50,640 | | 116 | | $5,413 | $0.1069 | 10 | $35 |
| Feb | 46,800 | | 115 | | $5,055 | $0.1080 | 11 | $37 |
| Mar | 41,840 | | 106 | | $4,560 | $0.1090 | 11 | $37 |
| Apr | 35,200 | | 112 | | $3,971 | $0.1128 | 14 | $41 |
| May | 26,640 | | 102 | | $3,137 | $0.1178 | 10 | $35 |
| Jun | 60,000 | | 120 | | $6,294 | $0.1049 | 13 | $39 |
| Jul | 50,320 | | 102 | | $5,327 | $0.1059 | 11 | $37 |
| Aug | 39,680 | | 108 | | $4,368 | $0.1101 | 10 | $35 |
| Sep | 40,640 | | 113 | | $4,476 | $0.1101 | 13 | $39 |
| Oct | 43,200 | | 102 | | $4,666 | $0.1080 | 13 | $39 |
| Nov | 42,480 | | 126 | | $4,703 | $0.1107 | 14 | $40 |
| Dec | 40,160 | | 108 | | $4,412 | $0.1099 | 10 | $35 |
| | | | | | | | | |
| **Totals** | **517,600** | | **1,330** | | **$ 56,381** | **$ 0.109** | **140** | **$ 448** |

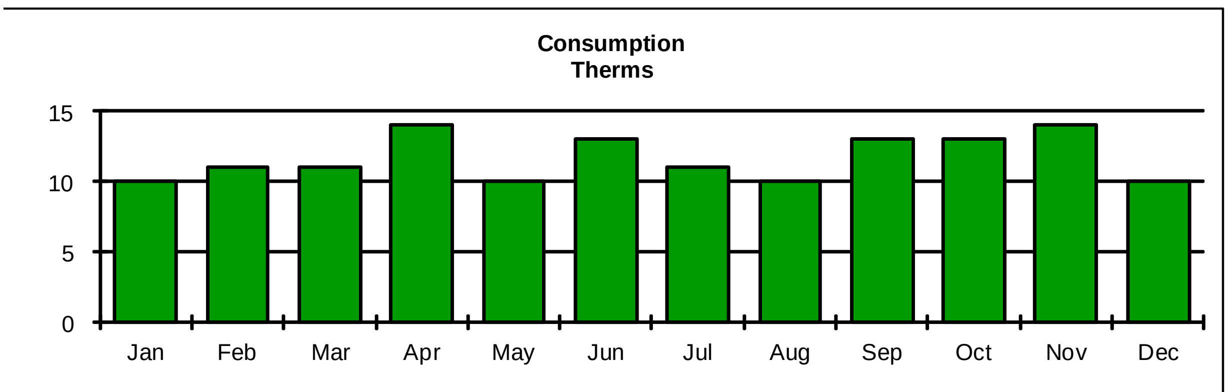
Facility Square Feet: 27,207

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Consumption | Equivalent MMBTU | Annual BTU/Sq.Ft. | % of Total |
| Electricity (KWH) | 517,600 | 1,766 | 64,912 | 99% |
| Electricity (KW) | 1,330 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 140 | 14 | 515 | 1% |
| **Total** | **N.A.** | **1,780** | **65,426** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Costs | Average Cost/Unit | Annual Cost/Sq.Ft. | % of Total |
| Electricity (KWH) | $56,381 | $0.109 | $2.072 | 99% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $448 | $3.202 | $0.016 | 1% |
| **Total** | **$56,830** | **$31.926** | **$2.089** | **100%** |


Consumption
kWh
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


Demand
KW
140
120
100
80
60
40
20
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


Consumption
Therms
15
10
5
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

## Baseline Model Development - eQuest™ Building Simulation Modeling Method

Energy calculations were performed using eQuest™, a building simulation model and energy analysis program derived from the latest version of DOE-2, and by engineering calculations with spreadsheets. The eQuest™ building simulation and energy analysis program is well known in the heating, ventilation, and air-conditioning (HVAC) industry.

eQuest™ consists of multiple screen inputs for various components, steps, or facility information that may be broken down into the following categories:

*Building Site Information & Weather Data* - eQuest™ calculates energy usage on an hour-by-hour basis utilizing hourly weather data for the location. The program uses a weather file representing the a typical meteorological year temperature profile for Greenville, NC based on Typical Meteorological Year 3 weather data from the National Renewable Energy Laboratory. This makes site characteristics, such as latitude, longitude, and elevation very important. Additionally, adjacent structures or landscape capable of providing shading for the building were also observed during the site surveys.

*Building Shell, Structure, Materials, & Shades* - Accurate architectural data for the facilities were obtained from architectural plans provided by the City of Greenville and site observations. These included building layouts and dimensions, and wall, roof, and floor constructions, as well as, window quantities, locations, types, and shading.

*Building Operations & Scheduling* - Accurate schedules of operation for building occupancy, thermostat set points, and equipment operation were obtained from site surveys and interviews.

*Internal Loads* - Loads, such as people density, lighting, plug loads, and miscellaneous loads, were obtained from site surveys. These loads provide electrical usage, heat gain to the space, and load on the HVAC equipment. The computer program uses these parameters, along with the architectural data, and the latest DOE-2 and American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE) methodologies to calculate cooling and heating loads for the facilities.

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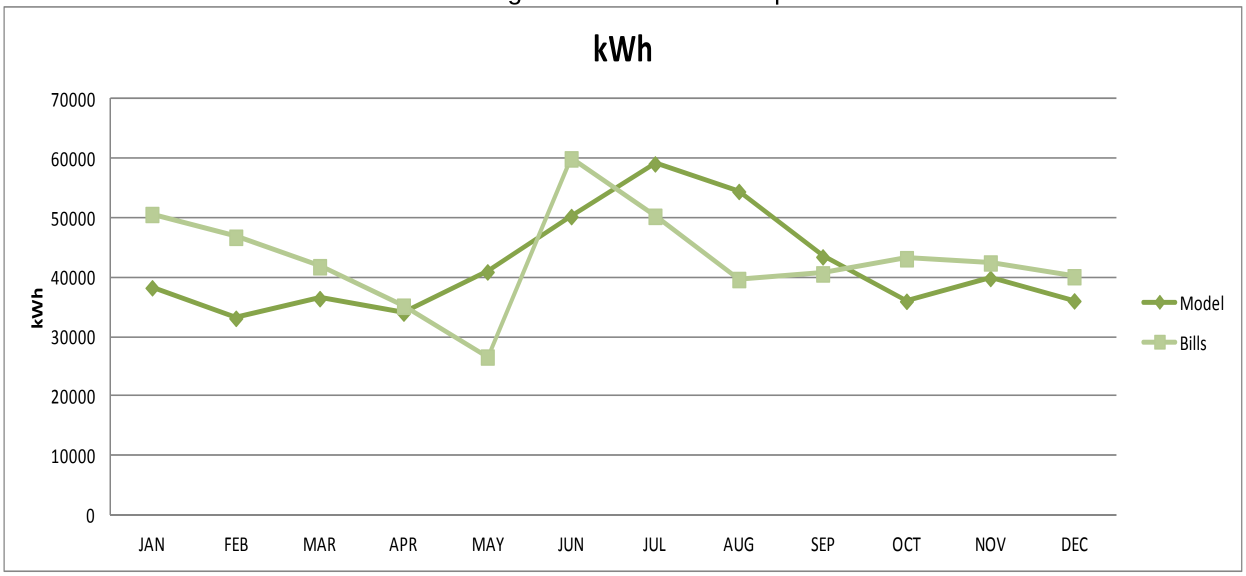
*Energy Economics* - In this final section, current electric and natural gas rate structures are defined in the computer models. The program uses this information to apply cost to the energy consumption calculated.

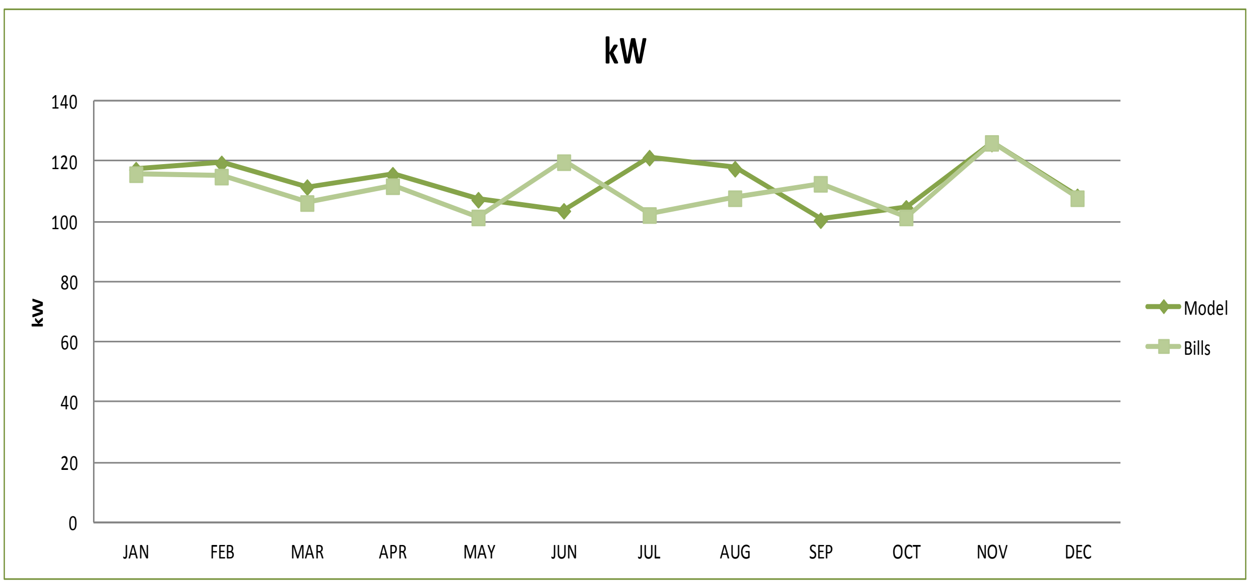
The models are then adjusted for baseline calibration until the following criteria are met:

- Calculated plant and system loads closely match the actual installed capacities
- Calculated energy consumption closely matches the actual energy consumption determined in the utility analysis

## Baseline Model Results

The following graph illustrates the results of the comparison between the historic baseline energy usage and the results of the initial baseline building simulation model outputs.



# Police-Fire Rescue

## Utility Description and Energy Baseline

### General

**The building purchases electricity for the majority of energy usage. Natural gas is also used for heating. The main electric meter captures demand and usage for the entire building. The natural gas meter captures all gas usage. The meters serving this facility are listed below.**

**Police-Fire Rescue** - *Accounts inlcuded in baseline summary*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 5427910 | 69877 | Whole Bldg |
| GUC | Gas | 5427910 | 29080 | Whole Bldg |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECMG rate structure as summarized below.

**Electric Rate GUC ECMG**

| Consumption | | | Demand Charge | | Base Charge |
|---|---|---|---|---|---|
| For Usage | Cost | Unit | For Usage | Cost | Cost |
| 1st 12500 | $ 0.12323 | kWh | 1st 35 kW | Free | |
| >12500 | $ 0.09233 | kWh | >35 kW | 4.17 | 13.33 |
| | | | | | |

#### Natural Gas

Natural gas at this facility is charged through the GUC GCCF gas structure as summarized below.

**Natural Gas Rate GUC GCCF**

| Consumption | | | Base Charge |
|---|---|---|---|
| For Usage | Cost | Unit | Cost |
| 50 | $ 1.18130 | therm | 22 |
| Next 250 | $ 1.10760 | therm | |
| Next 200 | $ 1.05760 | therm | |
| >500 | $ 0.90710 | therm | |

## Energy Usage and Baseline

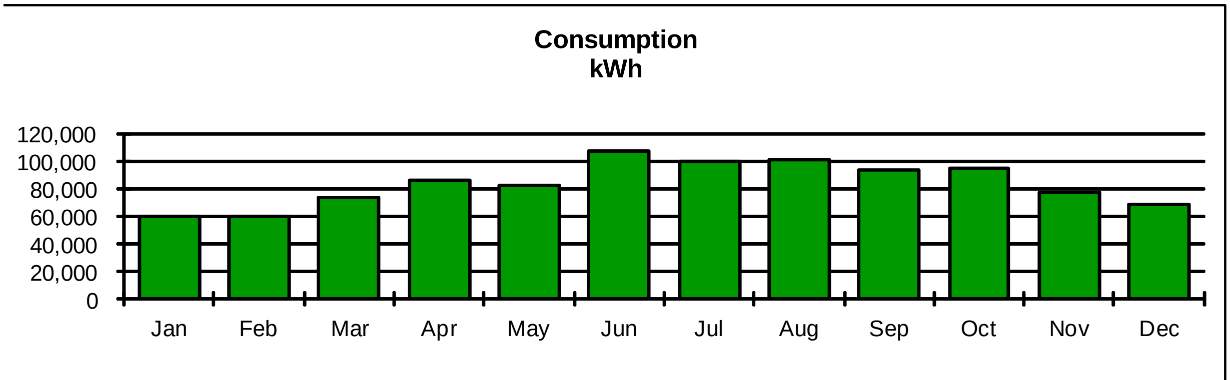
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

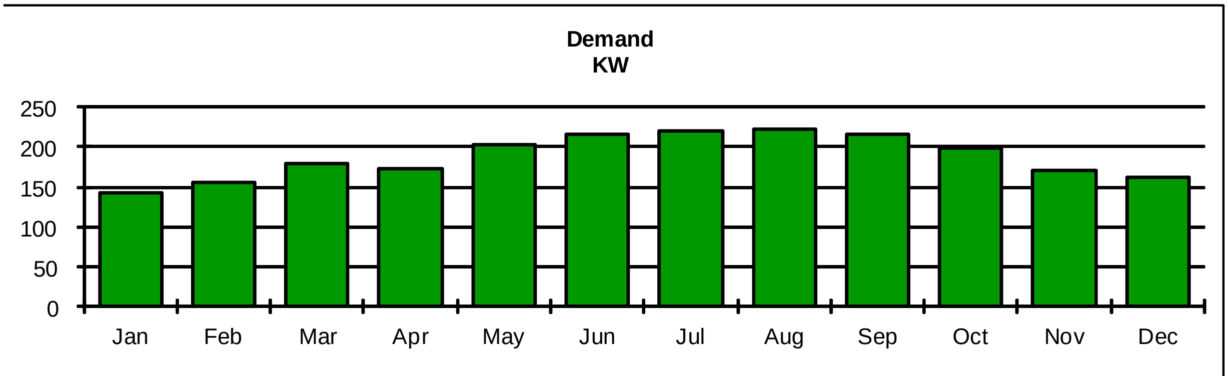
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Date** | **KWH** | **$-KWH** | **KW** | **$-KW** | **$-Tot Elec.** | **$/KWH** | **therms** | **$-Gas** |
| Jan | 59,328 | | 143 | | $6,328 | $0.1067 | 2,358 | $2,605 |
| Feb | 59,328 | | 157 | | $6,385 | $0.1076 | 1,704 | $1,939 |
| Mar | 73,152 | | 179 | | $7,752 | $0.1060 | 1,393 | $1,606 |
| Apr | 86,112 | | 174 | | $8,929 | $0.1037 | 1,464 | $1,682 |
| May | 82,656 | | 202 | | $8,728 | $0.1056 | 999 | $1,185 |
| Jun | 107,424 | | 216 | | $10,984 | $0.1022 | 1,157 | $1,354 |
| Jul | 99,648 | | 219 | | $10,368 | $0.1040 | 985 | $1,170 |
| Aug | 101,088 | | 223 | | $10,515 | $0.1040 | 930 | $1,065 |
| Sep | 93,312 | | 216 | | $9,771 | $0.1047 | 1,119 | $1,249 |
| Oct | 94,176 | | 199 | | $9,779 | $0.1038 | 1,431 | $1,565 |
| Nov | 76,896 | | 170 | | $8,063 | $0.1049 | 1,469 | $1,604 |
| Dec | 67,968 | | 162 | | $7,205 | $0.1060 | 1,534 | $1,614 |
| | | | | | | | | |
| **Totals** | **1,001,088** | | **2,260** | | **$ 104,808** | **$ 0.105** | **16,543** | **$ 18,639** |

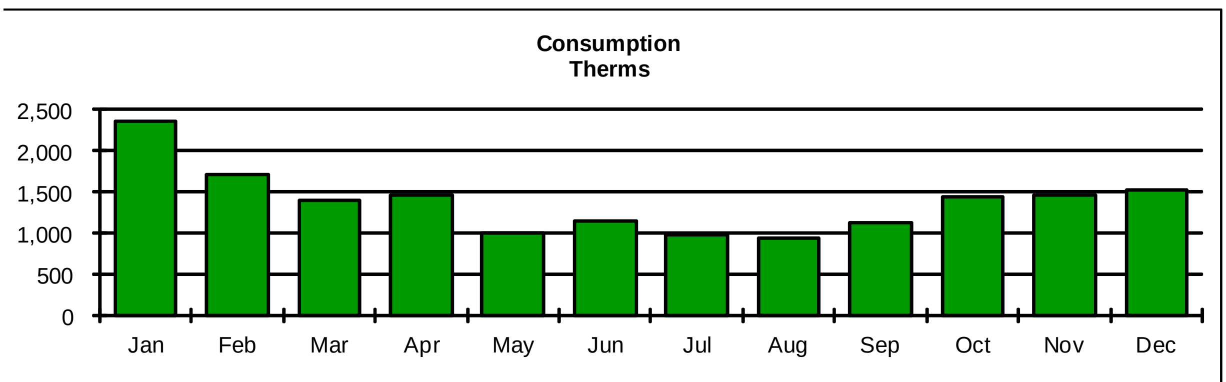
Facility Square Feet: 31,313

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Consumption** | **Equivalent MMBTU** | **Annual BTU/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | 1,001,088 | 3,416 | 109,083 | 67% |
| Electricity (KW) | 2,260 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 16,543 | 1,654 | 52,831 | 33% |
| **Total** | **N.A.** | **5,070** | **161,914** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Costs** | **Average Cost/Unit** | **Annual Cost/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | $104,808 | $0.105 | $3.347 | 85% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $18,639 | $1.127 | $0.595 | 15% |
| **Total** | **$123,447** | **$24.348** | **$3.942** | **100%** |


Consumption
kWh
120,000
100,000
80,000
60,000
40,000
20,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Demand
KW
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Consumption
Therms
2,500
2,000
1,500
1,000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

## Baseline Model Development - eQuest™ Building Simulation Modeling Method

Energy calculations were performed using eQuest™, a building simulation model and energy analysis program derived from the latest version of DOE-2, and by engineering calculations with spreadsheets. The eQuest™ building simulation and energy analysis program is well known in the heating, ventilation, and air-conditioning (HVAC) industry.

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*Building Shell, Structure, Materials, & Shades* - Accurate architectural data for the facilities were obtained from architectural plans provided by the City of Greenville and site observations. These included building layouts and dimensions, and wall, roof, and floor constructions, as well as, window quantities, locations, types, and shading.

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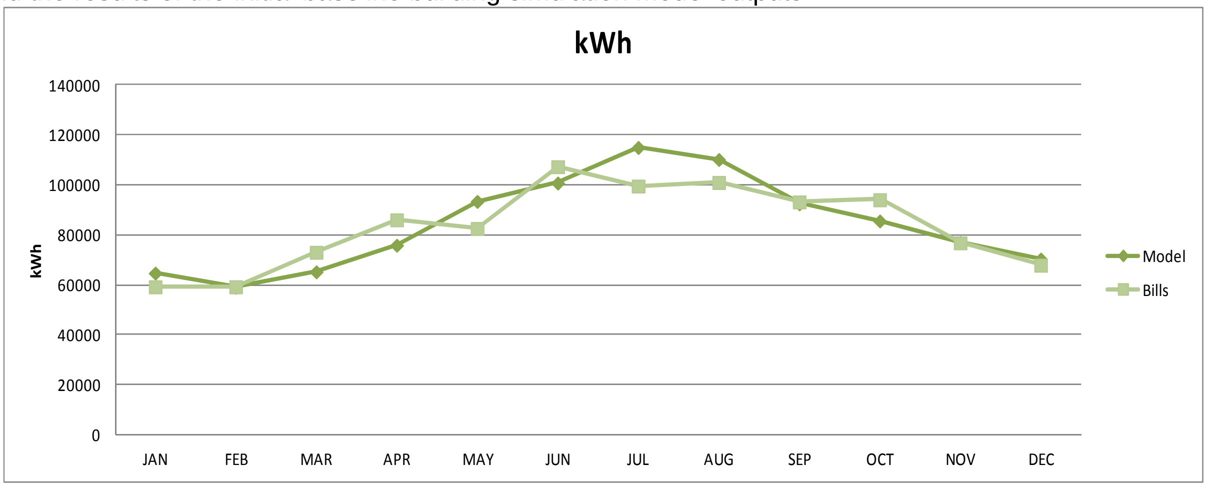
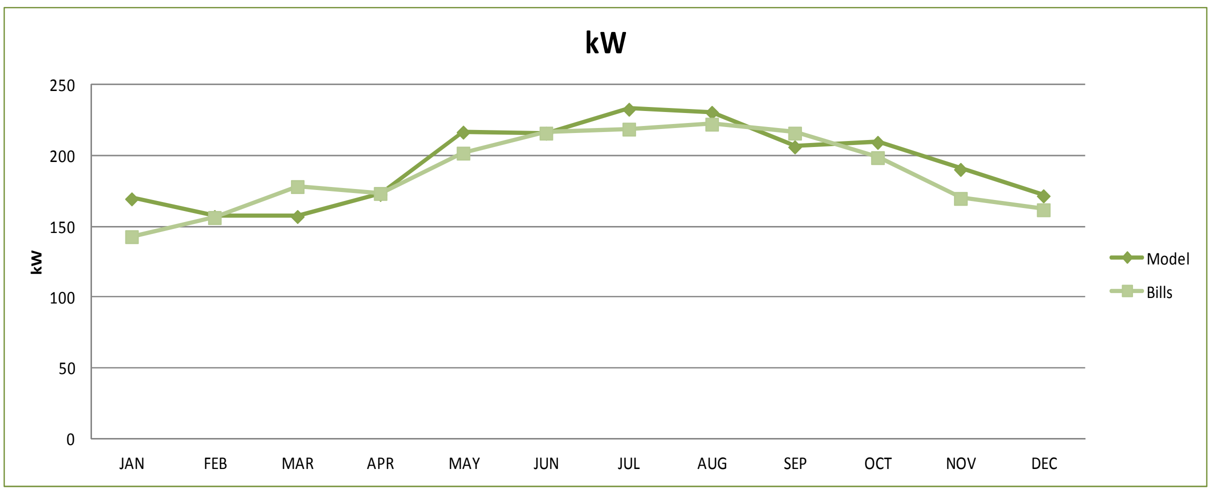
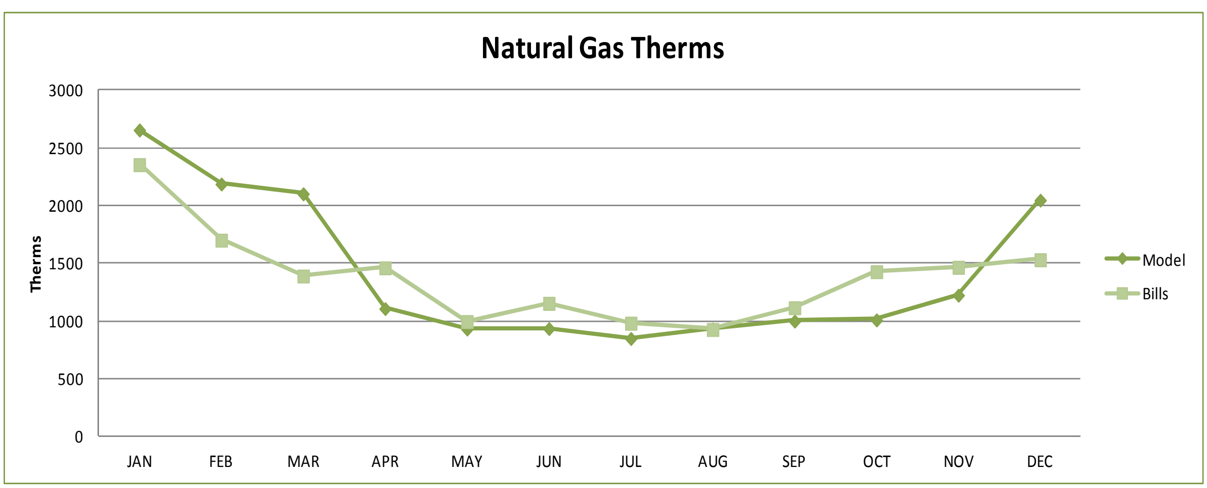
- Calculated plant and system loads closely match the actual installed capacities
- Calculated energy consumption closely matches the actual energy consumption determined in the utility analysis

## Baseline Model Results

The following graph illustrates the results of the comparison between the historic baseline energy usage and the results of the initial baseline building simulation model outputs.



# Park Maintenance Center

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Natural gas is also used for heating. The main electric meter captures demand and usage for the entire building. The natural gas meter captures all gas usage. The meters serving this facility are listed below.

*Park Maintenance Building -Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 1003900 | 110620 | Whole Bldg |
| GUC | Gas | 1003900 | 11606 | Whole Bldg |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECSG rate structure as summarized below.

| Electric Rate | GUC | ECSG | |
|---|---|---|---|
| **Consumption** | | | **Base Charge** |
| For Usage | Cost | Unit | Cost |
| 1st 1000 | $ 0.13177 | kWh | 12.89 |
| Next 5000 | $ 0.12558 | kWh | |
| >6000 | $ 0.10696 | kWh | |

#### Natural Gas

Natural gas at this facility is charged through the GUC GCCF gas structure as summarized below.

| Natural Gas Rate | GUC | GCCF | |
|---|---|---|---|
| **Consumption** | | | **Base Charge** |
| For Usage | Cost | Unit | Cost |
| 50 | $ 1.18130 | therm | 22 |
| Next 250 | $ 1.10760 | therm | |
| Next 200 | $ 1.05760 | therm | |
| >500 | $ 0.90710 | therm | |

## Energy Usage and Baseline

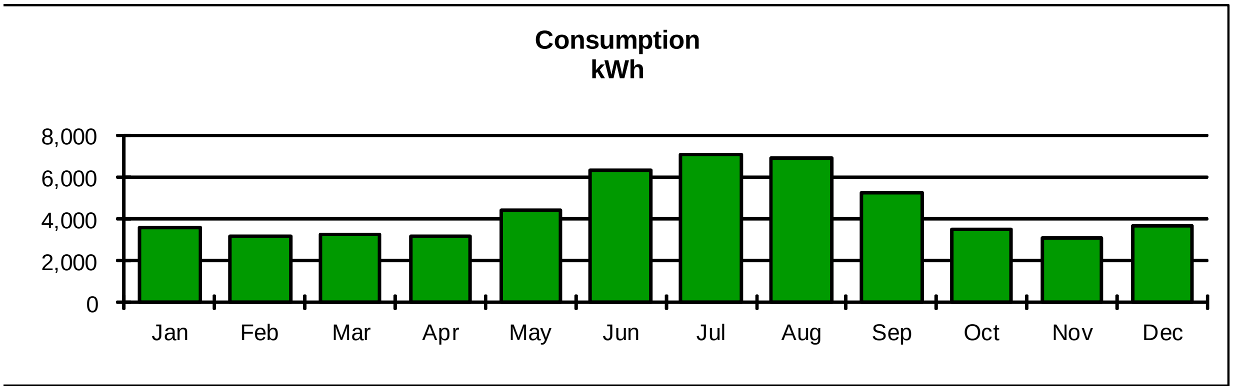
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

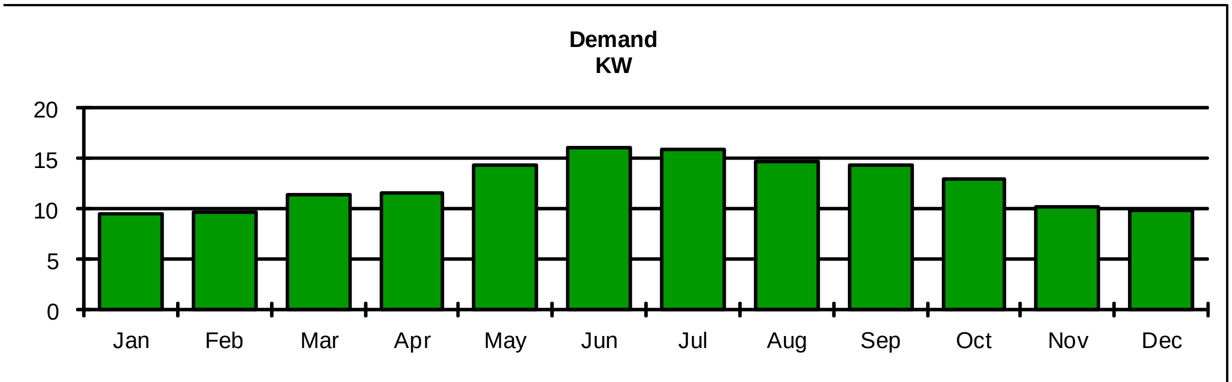
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Date** | **KWH** | **$-KWH** | **KW** | **$-KW** | **$-Tot Elec.** | **$/KWH** | **therms** | **$-Gas** |
| Jan | 3,596 | | 10 | | $471 | $0.1309 | 1,126 | $1,404 |
| Feb | 3,121 | | 10 | | $411 | $0.1317 | 609 | $817 |
| Mar | 3,256 | | 11 | | $428 | $0.1314 | 467 | $641 |
| Apr | 3,133 | | 12 | | $413 | $0.1317 | 103 | $180 |
| May | 4,401 | | 14 | | $572 | $0.1299 | 26 | $79 |
| Jun | 6,322 | | 16 | | $807 | $0.1276 | 8 | $55 |
| Jul | 7,026 | | 16 | | $882 | $0.1256 | 8 | $53 |
| Aug | 6,900 | | 15 | | $869 | $0.1259 | 0 | $45 |
| Sep | 5,263 | | 14 | | $680 | $0.1292 | 2 | $47 |
| Oct | 3,516 | | 13 | | $461 | $0.1310 | 171 | $258 |
| Nov | 3,098 | | 10 | | $408 | $0.1317 | 315 | $366 |
| Dec | 3,633 | | 10 | | $475 | $0.1308 | 1,325 | $1,395 |
| | | | | | | | | |
| **Totals** | **53,265** | | **151** | | **$ 6,876** | **$ 0.13** | **4,160** | **$ 5,339** |

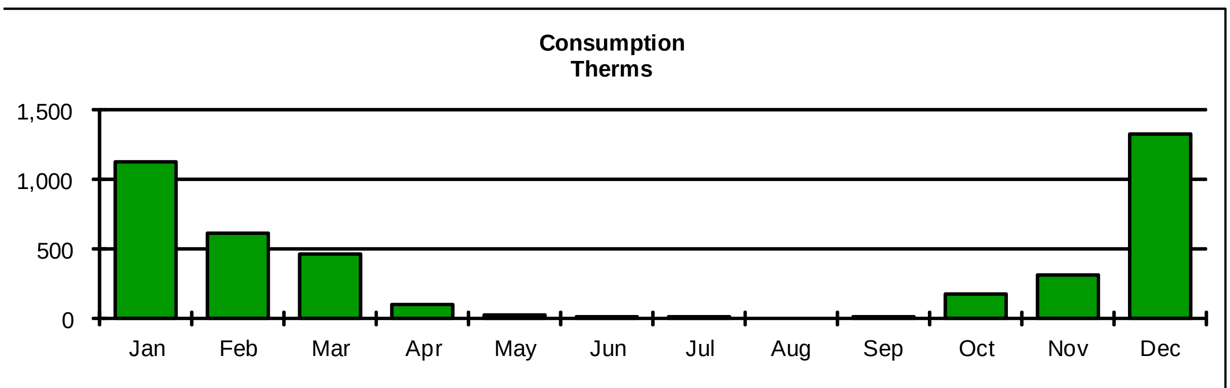
Facility Square Feet: 5,824

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Consumption** | **Equivalent MMBTU** | **Annual BTU/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | 53,265 | 182 | 31,205 | 30% |
| Electricity (KW) | 151 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 4,160 | 416 | 71,429 | 70% |
| **Total** | **N.A.** | **598** | **102,634** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Costs** | **Average Cost/Unit** | **Annual Cost/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | $6,876 | $0.129 | $1.181 | 56% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $5,339 | $1.284 | $0.917 | 44% |
| **Total** | **$12,215** | **$20.436** | **$2.097** | **100%** |


Consumption
kWh
8,000
6,000
4,000
2,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Demand
KW
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Consumption
Therms
1,500
1,000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

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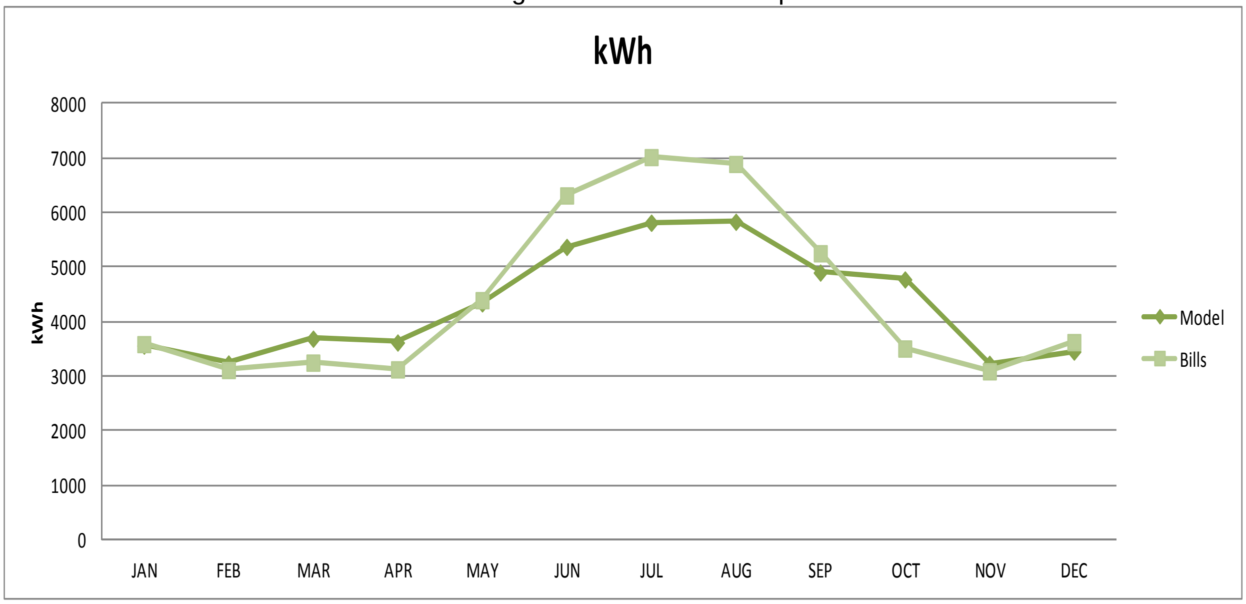
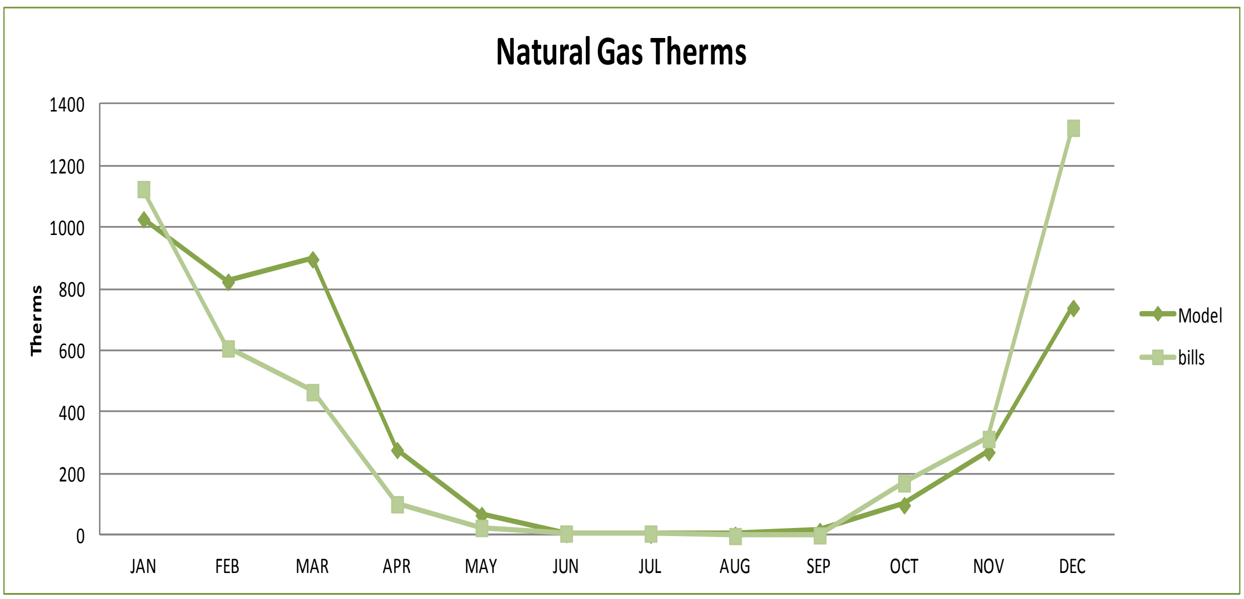
The models are then adjusted for baseline calibration until the following criteria are met:

- Calculated plant and system loads closely match the actual installed capacities
- Calculated energy consumption closely matches the actual energy consumption determined in the utility analysis

## Baseline Model Results

The following graph illustrates the results of the comparison between the historic baseline energy usage and the results of the initial baseline building simulation model outputs.



# 5th Street Police Substation

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Natural gas is also used for heating. The main electric meter captures demand and usage for the entire building. The natural gas meter captures all gas usage. The meters serving this facility are listed below.

*5th St. Police Substation -Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 7535940 | 95006 | Whole Bldg |
| GUC | Gas | 7535940 | 15201 | Whole Bldg |

### Utility Rates

### Electric

Electric demand and usage at the facility is charged through the GUC ECSG rate structure as summarized below.

| Electric Rate | GUC | ECSG | |
|---|---|---|---|
| **Consumption** | | | **Base Charge** |
| For Usage | Cost | Unit | Cost |
| 1st 1000 | $ 0.13177 | kWh | 12.89 |
| Next 5000 | $ 0.12558 | kWh | |
| >6000 | $ 0.10696 | kWh | |

### Natural Gas

Natural gas at this facility is charged through the GUC GCCF gas structure as summarized below.

| Natural Gas Rate | GUC | GCCF | |
|---|---|---|---|
| **Consumption** | | | **Base Charge** |
| For Usage | Cost | Unit | Cost |
| 50 | $ 1.18130 | therm | 22 |
| Next 250 | $ 1.10760 | therm | |
| Next 200 | $ 1.05760 | therm | |
| >500 | $ 0.90710 | therm | |

## Energy Usage and Baseline

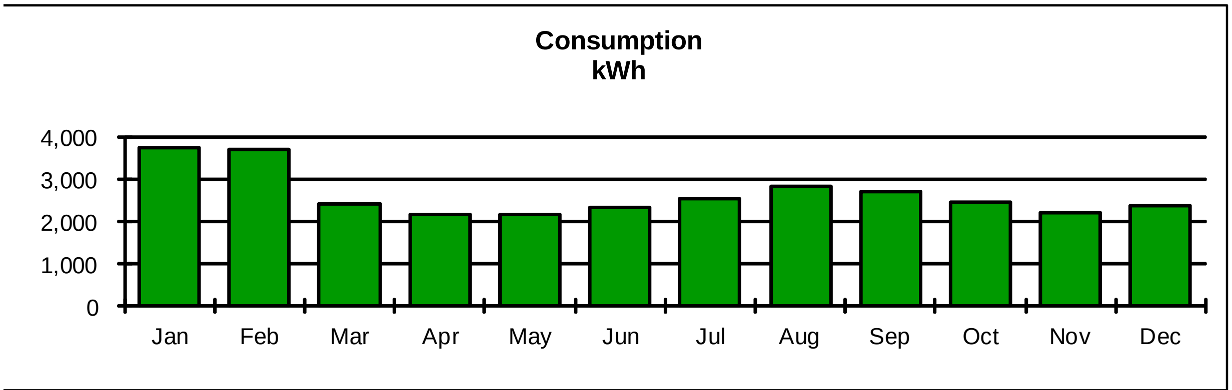
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

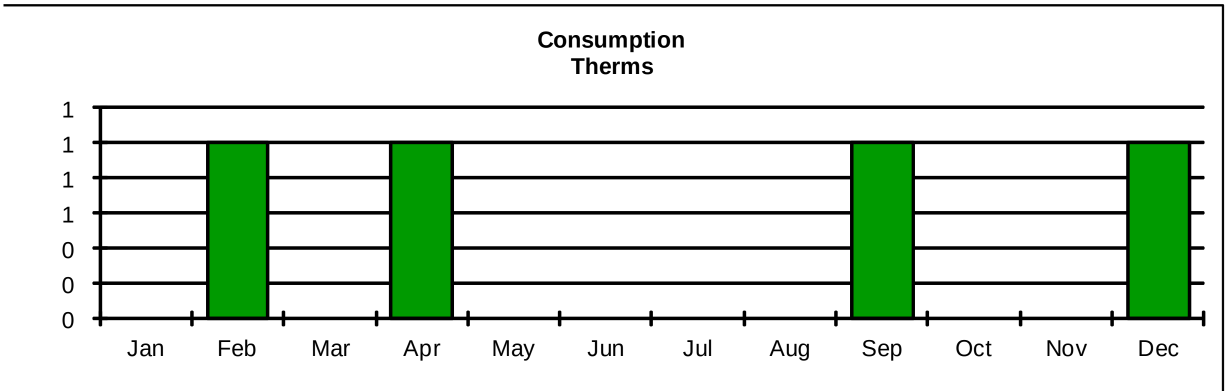
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | KWH | $-KWH | KW | $-KW | $-Tot Elec. | $/KWH | therms | $-Gas |
| Jan | 3,732 | | 0 | | $488 | $0.1307 | 0 | $22 |
| Feb | 3,678 | | 0 | | $481 | $0.1308 | 1 | $23 |
| Mar | 2,391 | | 0 | | $319 | $0.1336 | 0 | $22 |
| Apr | 2,145 | | 0 | | $288 | $0.1345 | 1 | $23 |
| May | 2,143 | | 0 | | $288 | $0.1345 | 0 | $22 |
| Jun | 2,304 | | 0 | | $308 | $0.1339 | 0 | $22 |
| Jul | 2,548 | | 0 | | $339 | $0.1331 | 0 | $22 |
| Aug | 2,825 | | 0 | | $374 | $0.1323 | 0 | $22 |
| Sep | 2,701 | | 0 | | $358 | $0.1326 | 1 | $23 |
| Oct | 2,439 | | 0 | | $325 | $0.1334 | 0 | $22 |
| Nov | 2,185 | | 0 | | $293 | $0.1343 | 0 | $22 |
| Dec | 2,384 | | 0 | | $318 | $0.1336 | 1 | $23 |
| | | | | | | | | |
| **Totals** | **31,475** | | **-** | | **$ 4,182** | **$ 0.133** | **4** | **$ 269** |

Facility Square Feet: 1,500

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Consumption | Equivalent MMBTU | Annual BTU/Sq.Ft. | % of Total |
| Electricity (KWH) | 31,475 | 107 | 71,595 | 100% |
| Electricity (KW) | 0 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 4 | 0 | 267 | 0% |
| **Total** | **N.A.** | **108** | **71,862** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Costs | Average Cost/Unit | Annual Cost/Sq.Ft. | % of Total |
| Electricity (KWH) | $4,182 | $0.133 | $2.788 | 94% |
| Electricity (KW) | $0 | #DIV/0! | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $269 | $67.315 | $0.180 | 6% |
| **Total** | **$4,451** | **$41.291** | **$2.967** | **100%** |


Consumption
kWh
4,000
3,000
2,000
1,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Consumption
Therms
1
1
1
1
0
0
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Energy calculations were performed using eQuest$^{TM}$, a building simulation model and energy analysis program derived from the latest version of DOE-2, and by engineering calculations with spreadsheets. The eQuest$^{TM}$ building simulation and energy analysis program is well known in the heating, ventilation, and air-conditioning (HVAC) industry.

eQuest$^{TM}$ consists of multiple screen inputs for various components, steps, or facility information that may be broken down into the following categories:

*Building Site Information & Weather Data* - eQuest$^{TM}$ calculates energy usage on an hour-by-hour basis utilizing hourly weather data for the location. The program uses a weather file representing the a typical meteorological year temperature profile for Greenville, NC based on Typical Meteorological Year 3 weather data from the National Renewable Energy Laboratory. This makes site characteristics, such as latitude, longitude, and elevation very important. Additionally, adjacent structures or landscape capable of providing shading for the building were also observed during the site surveys.

*Building Shell, Structure, Materials, & Shades* - Accurate architectural data for the facilities were obtained from architectural plans provided by the City of Greenville and site observations. These included building layouts and dimensions, and wall, roof, and floor constructions, as well as, window quantities, locations, types, and shading.

*Building Operations & Scheduling* - Accurate schedules of operation for building occupancy, thermostat set points, and equipment operation were obtained from site surveys and interviews.

*Internal Loads* - Loads, such as people density, lighting, plug loads, and miscellaneous loads, were obtained from site surveys. These loads provide electrical usage, heat gain to the space, and load on the HVAC equipment. The computer program uses these parameters, along with the architectural data, and the latest DOE-2 and American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE) methodologies to calculate cooling and heating loads for the facilities.

*HVAC Equipment & Performance* - Accurate HVAC and plant system descriptions at the facilities were obtained from mechanical plans provided by the City of Greenville, as well as site surveys and interviews. The computer program uses the resulting loads and the system parameters to calculate the cooling and heating load profiles for the facilities on an hourly basis. The program then uses these load profiles and system requirements to calculate the energy consumption.

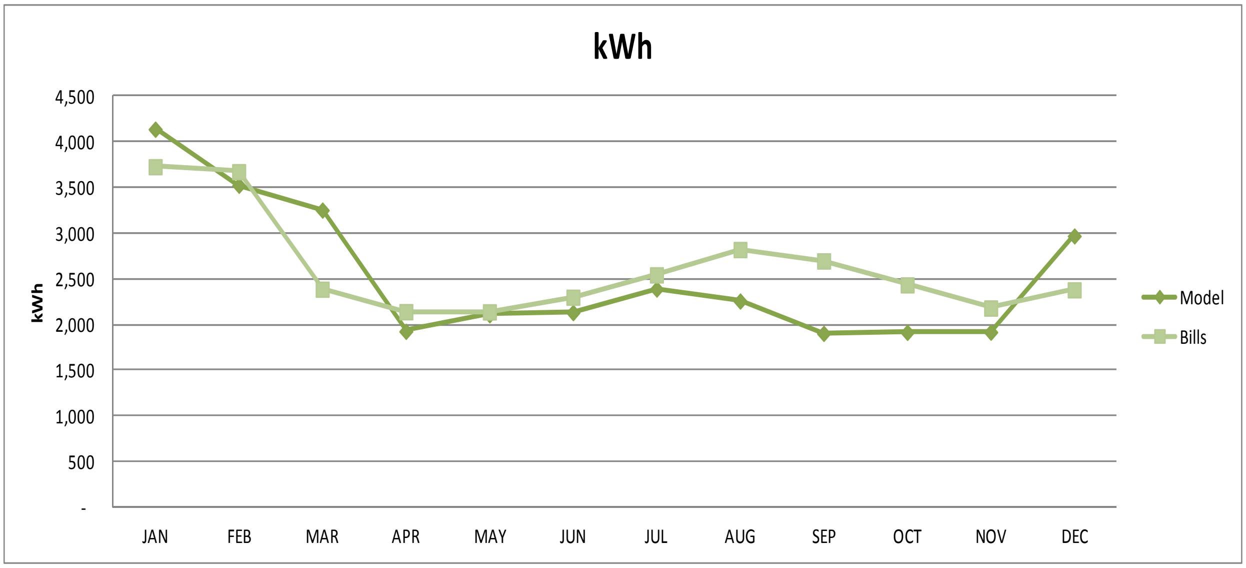
*Energy Economics* - In this final section, current electric and natural gas rate structures are defined in the computer models. The program uses this information to apply cost to the energy consumption calculated.

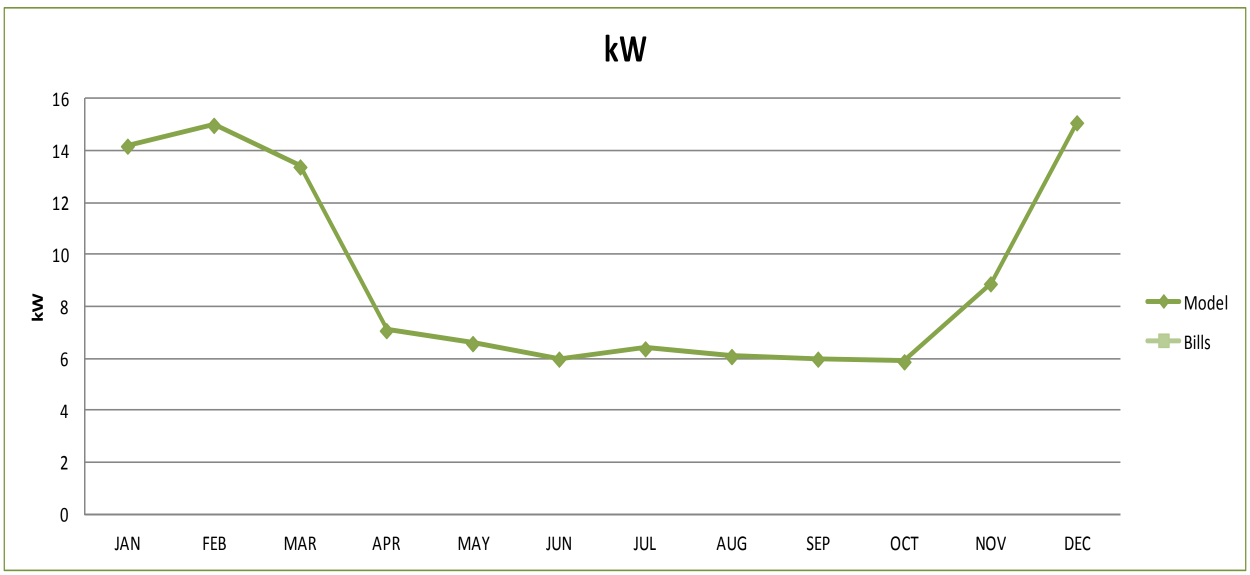
The models are then adjusted for baseline calibration until the following criteria are met:

- Calculated plant and system loads closely match the actual installed capacities
- Calculated energy consumption closely matches the actual energy consumption determined in the utility analysis

## Baseline Model Results

The following graph illustrates the results of the comparison between the historic baseline energy usage and the results of the initial baseline building simulation model outputs.



# Eppes Recreation Center

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Natural gas is also used for heating. The main electric meter captures demand and usage for the entire building. The natural gas meter captures all gas usage. The meters serving this facility are listed below.

*Eppes Recreation Center -Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 1069501 | 75270 | Whole Bldg |
| GUC | Gas | 1069501 | 18054 | Whole Bldg |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECMG rate structure as summarized below.

**Electric Rate GUC ECMG**

| Consumption | | | Demand Charge | | Base Charge |
|---|---|---|---|---|---|
| For Usage | Cost | Unit | For Usage | Cost | Cost |
| 1st 12500 | $ 0.12323 | kWh | 1st 35 kW | Free | |
| >12500 | $ 0.09233 | kWh | >35 kW | 4.17 | 13.33 |
| | | | | | |

#### Natural Gas

Natural gas at this facility is charged through the GUC GCCF gas structure as summarized below.

**Natural Gas Rate GUC GCCF**

| Consumption | | | Base Charge |
|---|---|---|---|
| For Usage | Cost | Unit | Cost |
| 50 | $ 1.18130 | therm | 22 |
| Next 250 | $ 1.10760 | therm | |
| Next 200 | $ 1.05760 | therm | |
| >500 | $ 0.90710 | therm | |

## Energy Usage and Baseline

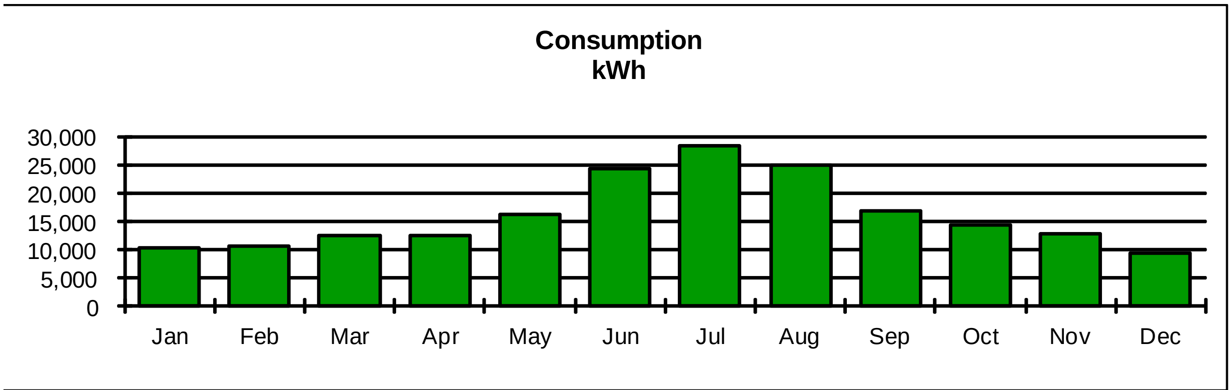
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

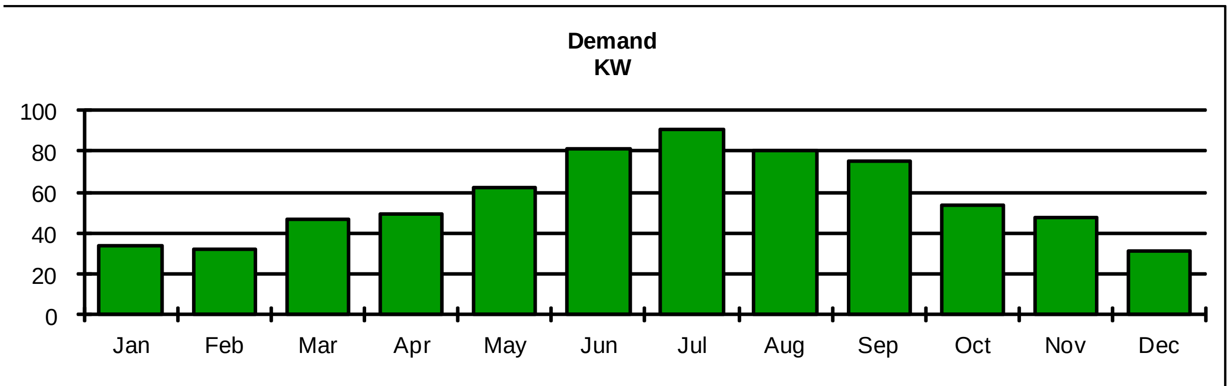
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Date** | **KWH** | **$-KWH** | **KW** | **$-KW** | **$-Tot Elec.** | **$/KWH** | **therms** | **$-Gas** |
| Jan | 10,360 | | 34 | | $1,290 | $0.1245 | 2,125 | $2,389 |
| Feb | 10,640 | | 32 | | $1,325 | $0.1245 | 1,276 | $1,481 |
| Mar | 12,440 | | 47 | | $1,596 | $0.1283 | 1,043 | $1,232 |
| Apr | 12,600 | | 50 | | $1,624 | $0.1289 | 341 | $457 |
| May | 16,160 | | 62 | | $2,004 | $0.1240 | 94 | $145 |
| Jun | 24,240 | | 81 | | $2,830 | $0.1168 | 26 | $57 |
| Jul | 28,320 | | 91 | | $3,247 | $0.1147 | 32 | $63 |
| Aug | 24,960 | | 80 | | $2,892 | $0.1159 | 32 | $63 |
| Sep | 16,960 | | 75 | | $2,131 | $0.1257 | 30 | $61 |
| Oct | 14,440 | | 54 | | $1,812 | $0.1255 | 460 | $576 |
| Nov | 12,640 | | 48 | | $1,621 | $0.1282 | 904 | $870 |
| Dec | 9,200 | | 31 | | $1,147 | $0.1247 | 2,283 | $2,180 |
| | | | | | | | | |
| **Totals** | **192,960** | | **684** | | **$ 23,519** | **$ 0.122** | **8,646** | **$ 9,574** |

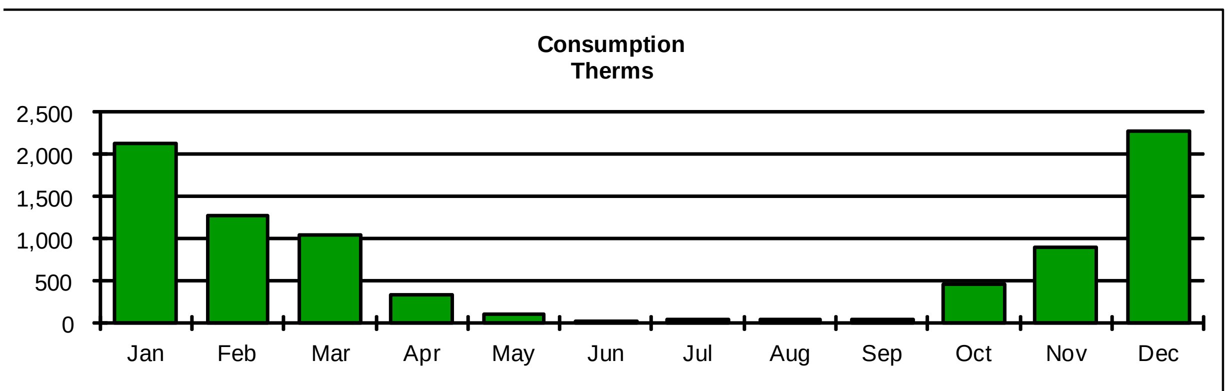
Facility Square Feet: 25,546

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Consumption** | **Equivalent MMBTU** | **Annual BTU/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | 192,960 | 658 | 25,772 | 43% |
| Electricity (KW) | 684 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 8,646 | 865 | 33,845 | 57% |
| **Total** | **N.A.** | **1,523** | **59,617** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Costs** | **Average Cost/Unit** | **Annual Cost/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | $23,519 | $0.122 | $0.921 | 71% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $9,574 | $1.107 | $0.375 | 29% |
| **Total** | **$33,093** | **$21.729** | **$1.295** | **100%** |


Consumption
kWh
30,000
25,000
20,000
15,000
10,000
5,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Demand
KW
100
80
60
40
20
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Consumption
Therms
2,500
2,000
1,500
1,000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

## Baseline Model Development - eQuest™ Building Simulation Modeling Method

Energy calculations were performed using eQuest™, a building simulation model and energy analysis program derived from the latest version of DOE-2, and by engineering calculations with spreadsheets. The eQuest™ building simulation and energy analysis program is well known in the heating, ventilation, and air-conditioning (HVAC) industry.

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*Building Shell, Structure, Materials, & Shades* - Accurate architectural data for the facilities were obtained from architectural plans provided by the City of Greenville and site observations. These included building layouts and dimensions, and wall, roof, and floor constructions, as well as, window quantities, locations, types, and shading.

*Building Operations & Scheduling* - Accurate schedules of operation for building occupancy, thermostat set points, and equipment operation were obtained from site surveys and interviews.

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The models are then adjusted for baseline calibration until the following criteria are met:

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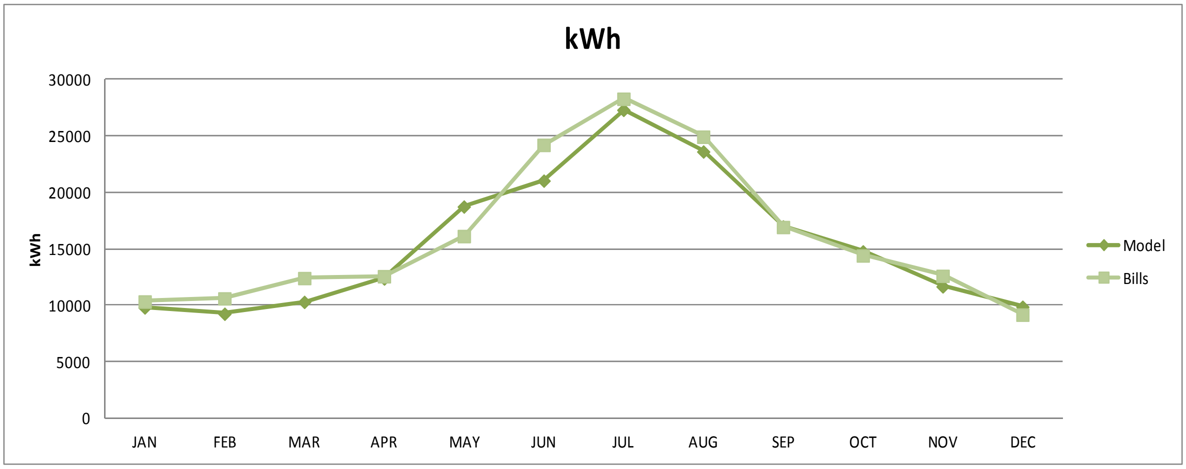
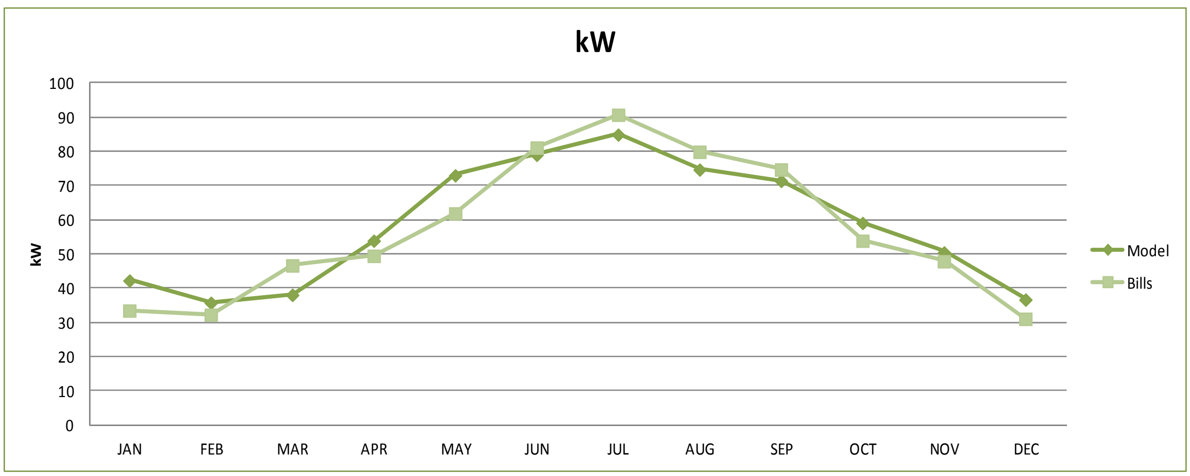
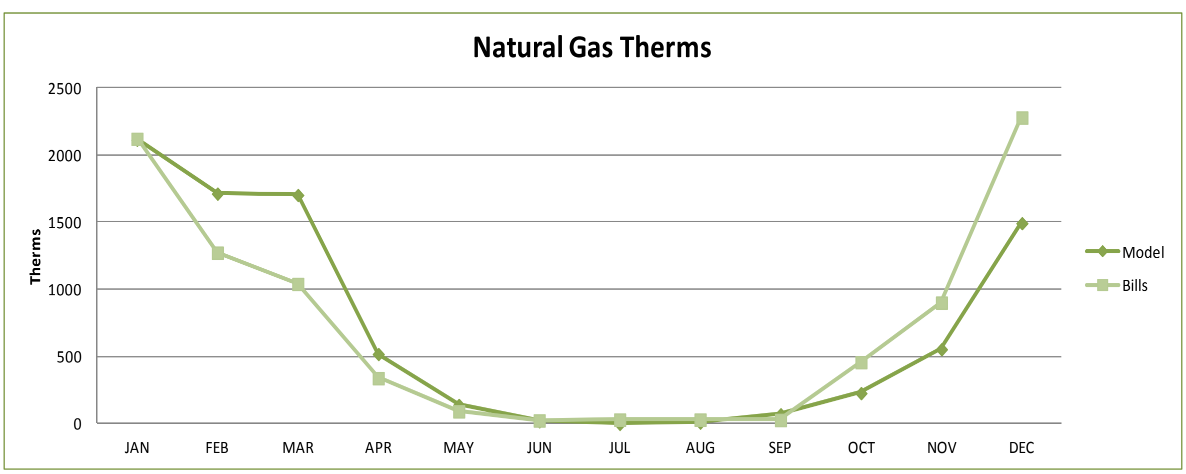
- Calculated energy consumption closely matches the actual energy consumption determined in the utility analysis

## Baseline Model Results

The following graph illustrates the results of the comparison between the historic baseline energy usage and the results of the initial baseline building simulation model outputs.



# Guy Smith Stadium

## Utility Description and Energy Baseline

### General

This building is served by multiple electric meters. No controls or mechanical measures exist for the facility and the following is a summary of its energy usage.

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECMG rate structure as summarized below.

| **Electric Rate** | **GUC** | **ECMG** | | | |
|---|---|---|---|---|---|
| **Consumption** | | | **Demand Charge** | | **Base Charge** |
| For Usage | Cost | Unit | For Usage | Cost | Cost |
| 1st 12500 | $ 0.12323 | kWh | 1st 35 kW | Free | |
| >12500 | $ 0.09233 | kWh | >35 kW | 4.17 | 13.33 |
| | | | | | |

## Energy Usage and Baseline

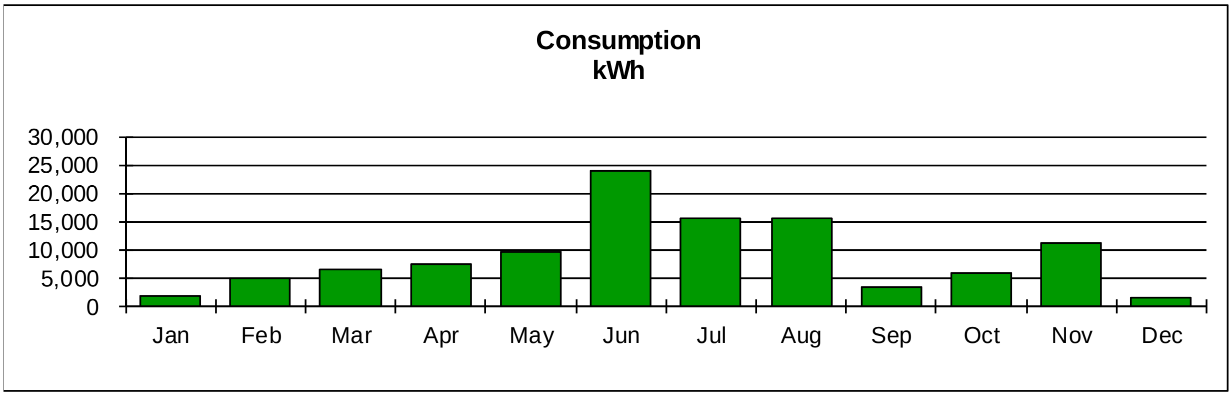
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

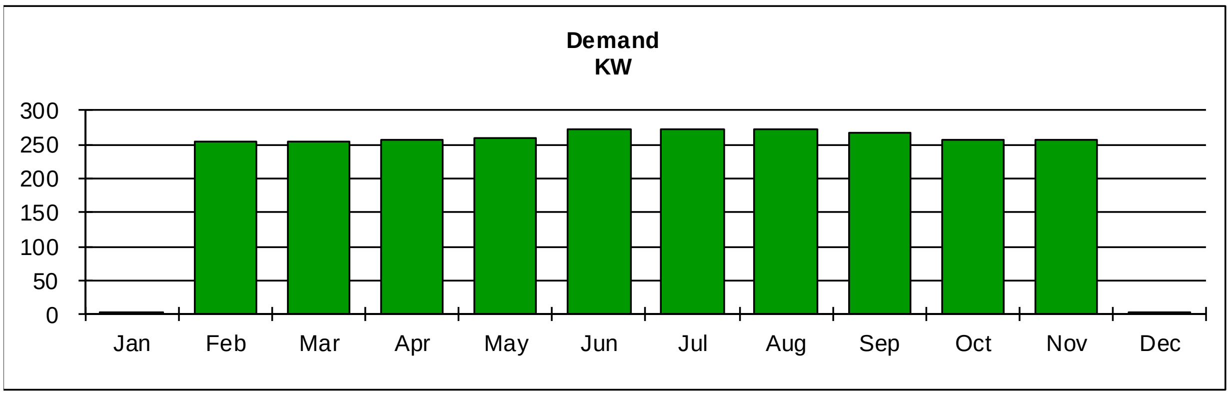
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | KWH | $-KWH | KW | $-KW | $-Tot Elec. | $/KWH | therms | $-Gas |
| Jan | 1,920 | | 3 | | $265 | $0.1379 | | |
| Feb | 4,994 | | 255 | | $1,155 | $0.2312 | | |
| Mar | 6,557 | | 255 | | $1,312 | $0.2001 | | |
| Apr | 7,639 | | 257 | | $1,432 | $0.1874 | | |
| May | 9,574 | | 260 | | $1,685 | $0.1759 | | |
| Jun | 23,892 | | 273 | | $3,297 | $0.1380 | | |
| Jul | 15,519 | | 273 | | $2,408 | $0.1551 | | |
| Aug | 15,483 | | 273 | | $2,402 | $0.1551 | | |
| Sep | 3,530 | | 268 | | $1,012 | $0.2866 | | |
| Oct | 5,835 | | 256 | | $1,259 | $0.2158 | | |
| Nov | 11,207 | | 257 | | $1,814 | $0.1619 | | |
| Dec | 1,492 | | 5 | | $212 | $0.1418 | | |
| | | | | | | | | |
| **Totals** | **107,642** | | **2,633** | | **$ 18,251** | **$ 0.170** | **-** | **$ -** |

Facility Square Feet: 2,500

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Consumption | Equivalent MMBTU | Annual BTU/Sq.Ft. | % of Total |
| Electricity (KWH) | 107,642 | 367 | 146,910 | 100% |
| Electricity (KW) | 2,633 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 0 | 0 | 0 | 0% |
| **Total** | **N.A.** | **367** | **146,910** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Costs | Average Cost/Unit | Annual Cost/Sq.Ft. | % of Total |
| Electricity (KWH) | $18,251 | $0.170 | $7.300 | 100% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $0 | $0.000 | $0.000 | 0% |
| **Total** | **$18,251** | **$49.692** | **$7.300** | **100%** |




## Baseline Model Development

No baseline model was developed for the Guy Smith Stadium because no controls or mechanical measures are being pursued.

# City Warehouse

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Natural gas is also used for heating. Two separate electric meters capture demand and usage for the building. The natural gas meter captures all gas usage. The meters serving this facility are listed below.

*City Warehouse - Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 7565587 | 111506 | Abandoned Part of Building |
| GUC | Electric | 7519947 | 111535 | Police Storage |
| GUC | Gas | 7565587 | 27316 | Whole Building |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECSG rate structure as summarized below.

| Electric Rate | GUC | ECSG | |
|---|---|---|---|
| **Consumption** | | | **Base Charge** |
| For Usage | Cost | Unit | Cost |
| 1st 1000 | $ 0.13177 | kWh | 12.89 |
| Next 5000 | $ 0.12558 | kWh | |
| >6000 | $ 0.10696 | kWh | |

#### Natural Gas

Natural gas at this facility is charged through the GUC GCCF gas structure as summarized below.

| Natural Gas Rate | GUC | GCCF | |
|---|---|---|---|
| **Consumption** | | | **Base Charge** |
| For Usage | Cost | Unit | Cost |
| 50 | $ 1.18130 | therm | 22 |
| Next 250 | $ 1.10760 | therm | |
| Next 200 | $ 1.05760 | therm | |
| >500 | $ 0.90710 | therm | |

## Energy Usage and Baseline

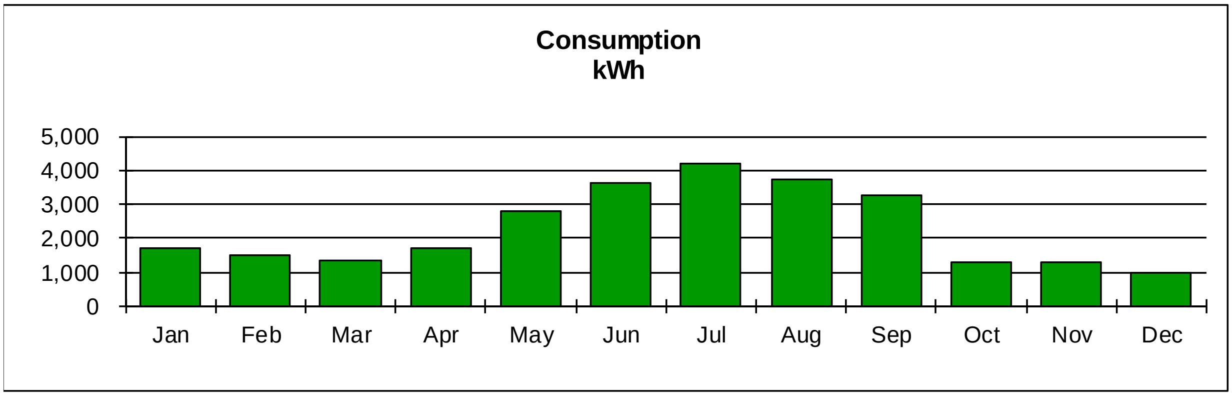
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

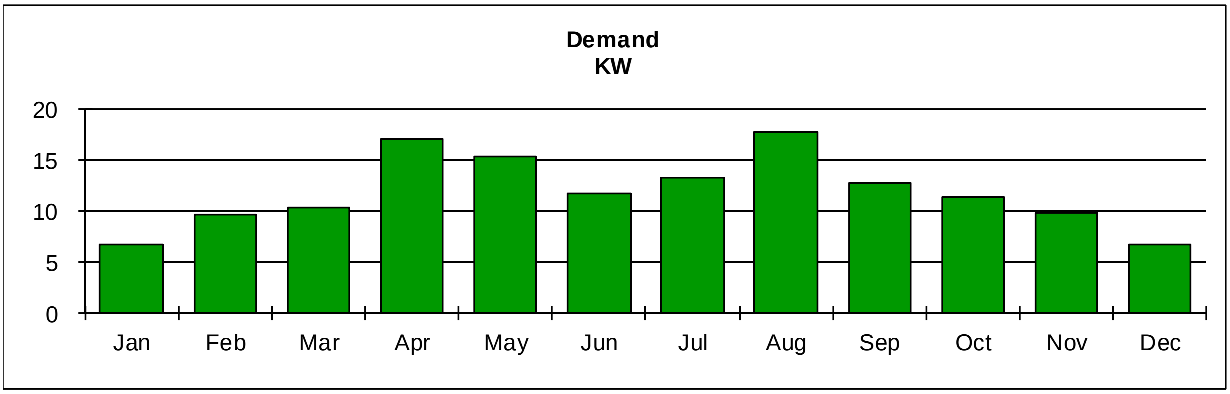
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Date** | **KWH** | **$-KWH** | **KW** | **$-KW** | **$-Tot Elec.** | **$/KWH** | **therms** | **$-Gas** |
| Jan | 1,726 | | 7 | | $253 | $0.1466 | 680 | $843 |
| Feb | 1,513 | | 10 | | $225 | $0.1488 | 313 | $423 |
| Mar | 1,339 | | 10 | | $202 | $0.1510 | 195 | $273 |
| Apr | 1,729 | | 17 | | $252 | $0.1458 | 0 | $22 |
| May | 2,796 | | 15 | | $386 | $0.1380 | 0 | $22 |
| Jun | 3,620 | | 12 | | $489 | $0.1350 | 0 | $22 |
| Jul | 4,202 | | 13 | | $562 | $0.1338 | 0 | $22 |
| Aug | 3,755 | | 18 | | $506 | $0.1348 | 0 | $22 |
| Sep | 3,251 | | 13 | | $445 | $0.1368 | 0 | $22 |
| Oct | 1,314 | | 11 | | $199 | $0.1514 | 1 | $23 |
| Nov | 1,281 | | 10 | | $195 | $0.1519 | 0 | $22 |
| Dec | 989 | | 7 | | $156 | $0.1577 | 404 | $492 |
| | | | | | | | | |
| **Totals** | **27,515** | | **143** | | **$ 3,870** | **$ 0.141** | **1,593** | **$ 2,209** |

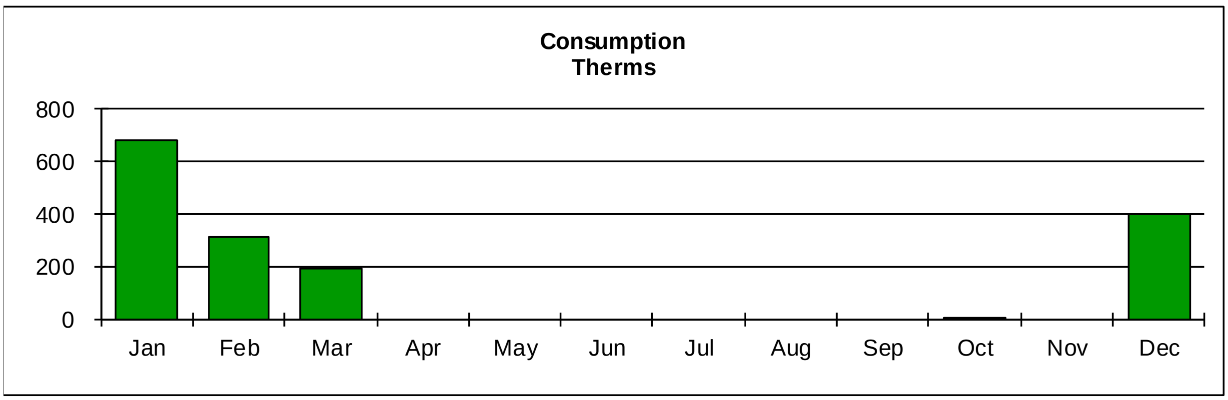
Facility Square Feet: 31,313

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Consumption** | **Equivalent MMBTU** | **Annual BTU/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | 27,515 | 94 | 2,998 | 37% |
| Electricity (KW) | 143 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 1,593 | 159 | 5,087 | 63% |
| **Total** | **N.A.** | **253** | **8,085** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Costs** | **Average Cost/Unit** | **Annual Cost/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | $3,870 | $0.141 | $0.124 | 64% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $2,209 | $1.387 | $0.071 | 36% |
| **Total** | **$6,079** | **$24.010** | **$0.194** | **100%** |


Consumption
kWh
5,000
4,000
3,000
2,000
1,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Demand
KW
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Consumption
Therms
800
600
400
200
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

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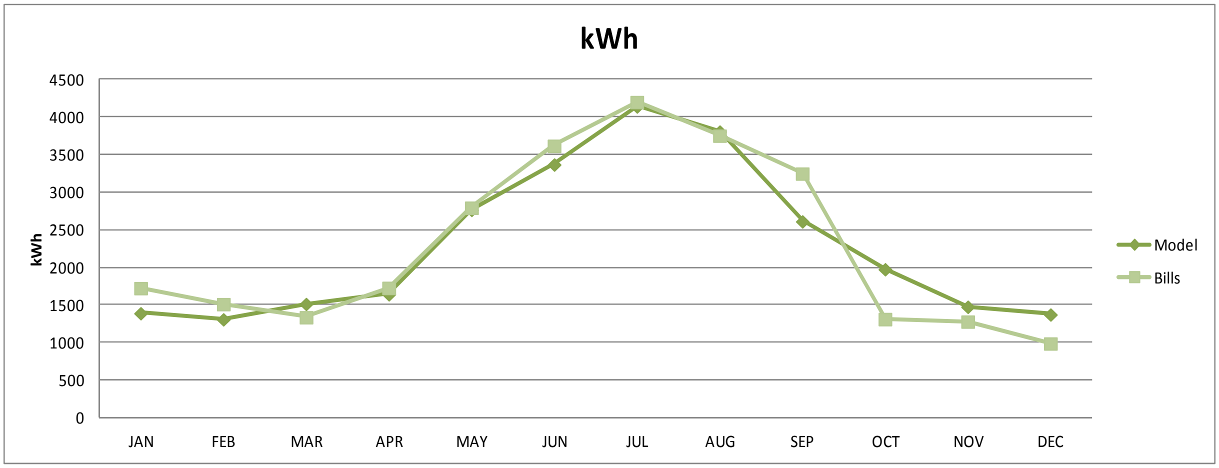
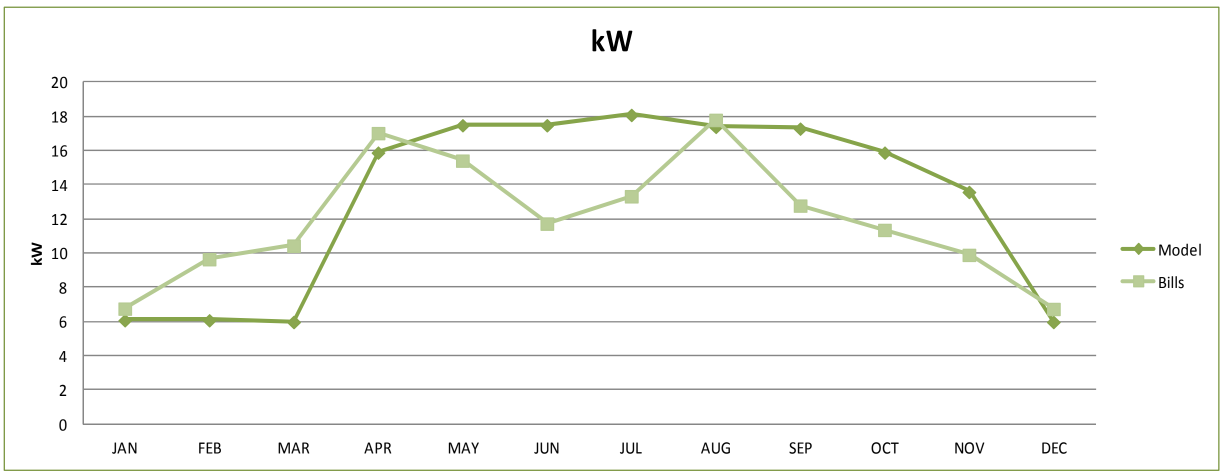
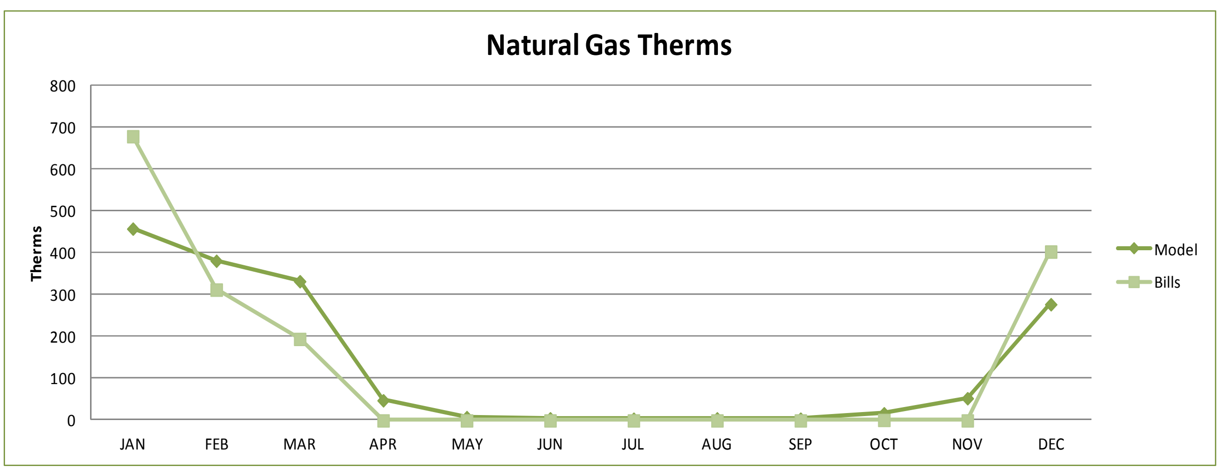


# Public Works Complex

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Natural gas is also used for heating. Electric Meters are located throughout the complex. The natural gas meter captures all gas usage for the complex. The meters serving this complex are listed below.

*Public Works Complex - Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 1425300 | 120791 | Admin Bldg |
| GUC | Electric | 1425701 | 120830 | Buildings B,C,D,F |
| GUC | Electric | 1425801 | 121254 | Building E |
| GUC | Gas | 1425300 | 13909 | Complex |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECMG rate structure as summarized below.

**Electric Rate GUC ECMG**

| Consumption | | | Demand Charge | | Base Charge |
|---|---|---|---|---|---|
| For Usage | Cost | Unit | For Usage | Cost | Cost |
| 1st 12500 | $ 0.12323 | kWh | 1st 35 kW | Free | |
| >12500 | $ 0.09233 | kWh | >35 kW | 4.17 | 13.33 |
| | | | | | |

#### Natural Gas

Natural gas at this facility is charged through the GUC GCCF gas structure as summarized below.

**Natural Gas Rate GUC GCCF**

| Consumption | | | Base Charge |
|---|---|---|---|
| For Usage | Cost | Unit | Cost |
| 50 | $ 1.18130 | therm | 22 |
| Next 250 | $ 1.10760 | therm | |
| Next 200 | $ 1.05760 | therm | |
| >500 | $ 0.90710 | therm | |

## Energy Usage and Baseline

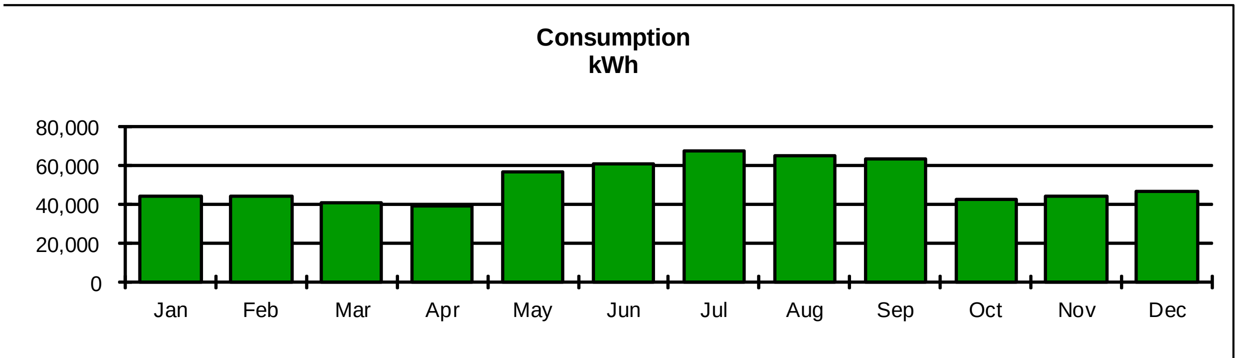
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

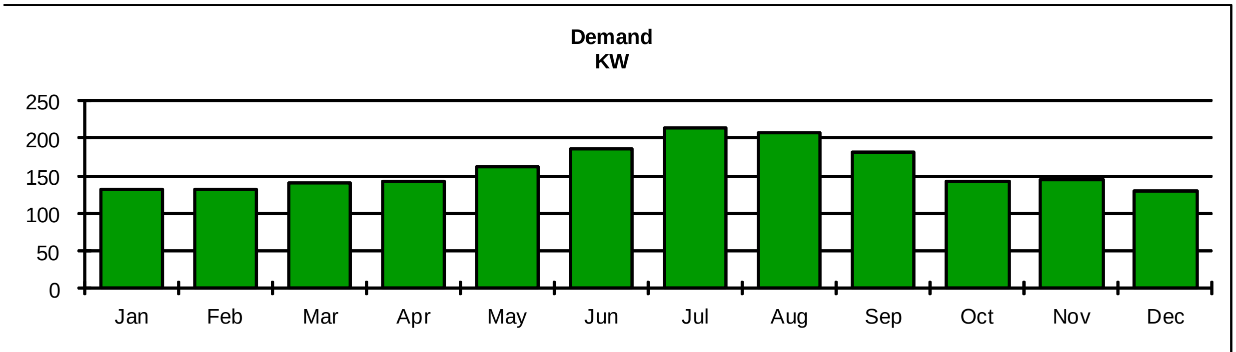
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | KWH | $-KWH | KW | $-KW | $-Tot Elec. | $/KWH | therms | $-Gas |
| Jan | 44,200 | | 132 | | $5,163 | $0.1168 | 6,838 | $8,100 |
| Feb | 44,320 | | 132 | | $5,227 | $0.1179 | 5,674 | $6,801 |
| Mar | 40,600 | | 140 | | $4,905 | $0.1208 | 2,624 | $3,077 |
| Apr | 39,320 | | 143 | | $4,788 | $0.1218 | 482 | $643 |
| May | 56,040 | | 162 | | $6,483 | $0.1157 | 77 | $125 |
| Jun | 60,240 | | 185 | | $6,991 | $0.1161 | 28 | $60 |
| Jul | 67,160 | | 214 | | $7,750 | $0.1154 | 27 | $58 |
| Aug | 65,000 | | 206 | | $7,500 | $0.1154 | 21 | $50 |
| Sep | 62,680 | | 181 | | $7,168 | $0.1144 | 86 | $132 |
| Oct | 42,520 | | 142 | | $5,074 | $0.1193 | 713 | $862 |
| Nov | 44,000 | | 144 | | $5,229 | $0.1188 | 2,839 | $2,955 |
| Dec | 46,800 | | 130 | | $5,420 | $0.1158 | 7,584 | $7,818 |
| | | | | | | | | |
| **Totals** | **612,880** | | **1,912** | | **$ 71,698** | **$ 0.117** | **26,993** | **$ 30,681** |

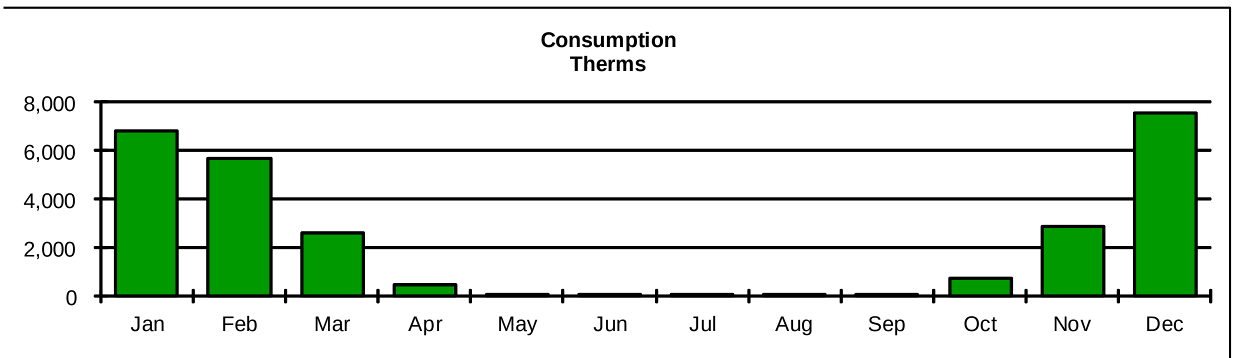
Facility Square Feet: 14,854

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Consumption | Equivalent MMBTU | Annual BTU/Sq.Ft. | % of Total |
| Electricity (KWH) | 612,880 | 2,091 | 140,780 | 44% |
| Electricity (KW) | 1,912 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 26,993 | 2,699 | 181,720 | 56% |
| **Total** | **N.A.** | **4,790** | **322,500** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Costs | Average Cost/Unit | Annual Cost/Sq.Ft. | % of Total |
| Electricity (KWH) | $71,698 | $0.117 | $4.827 | 70% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $30,681 | $1.137 | $2.066 | 30% |
| **Total** | **$102,378** | **$21.372** | **$6.892** | **100%** |


Consumption
kWh
80,000
60,000
40,000
20,000
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


Demand
KW
250
200
150
100
50
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


Consumption
Therms
8,000
6,000
4,000
2,000
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

## Baseline Model Development - eQuest™ Building Simulation Modeling Method

Energy calculations were performed using eQuest™, a building simulation model and energy analysis program derived from the latest version of DOE-2, and by engineering calculations with spreadsheets. The eQuest™ building simulation and energy analysis program is well known in the heating, ventilation, and air-conditioning (HVAC) industry.

eQuest™ consists of multiple screen inputs for various components, steps, or facility information that may be broken down into the following categories:

*Building Site Information & Weather Data* - eQuest™ calculates energy usage on an hour-by-hour basis utilizing hourly weather data for the location. The program uses a weather file representing the a typical meteorological year temperature profile for Greenville, NC based on Typical Meteorological Year 3 weather data from the National Renewable Energy Laboratory. This makes site characteristics, such as latitude, longitude, and elevation very important. Additionally, adjacent structures or landscape capable of providing shading for the building were also observed during the site surveys.

*Building Shell, Structure, Materials, & Shades* - Accurate architectural data for the facilities were obtained from architectural plans provided by the City of Greenville and site observations. These included building layouts and dimensions, and wall, roof, and floor constructions, as well as, window quantities, locations, types, and shading.

*Building Operations & Scheduling* - Accurate schedules of operation for building occupancy, thermostat set points, and equipment operation were obtained from site surveys and interviews.

*Internal Loads* - Loads, such as people density, lighting, plug loads, and miscellaneous loads, were obtained from site surveys. These loads provide electrical usage, heat gain to the space, and load on the HVAC equipment. The computer program uses these parameters, along with the architectural data, and the latest DOE-2 and American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE) methodologies to calculate cooling and heating loads for the facilities.

*HVAC Equipment & Performance* - Accurate HVAC and plant system descriptions at the facilities were obtained from mechanical plans provided by the City of Greenville, as well as site surveys and interviews. The computer program uses the resulting loads and the system parameters to calculate the cooling and heating load profiles for the facilities on an hourly basis. The program then uses these load profiles and system requirements to calculate the energy consumption.

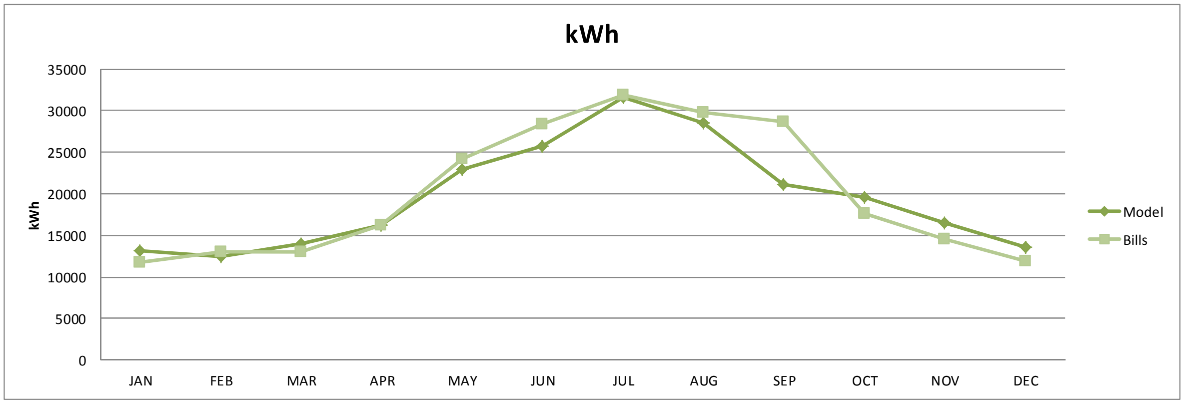
*Energy Economics* - In this final section, current electric and natural gas rate structures are defined in the computer models. The program uses this information to apply cost to the energy consumption calculated.

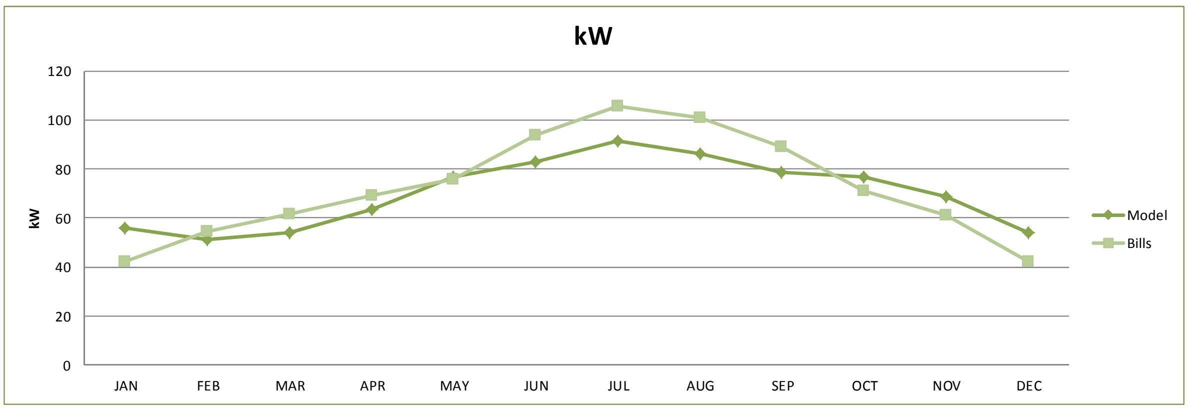
The models are then adjusted for baseline calibration until the following criteria are met:

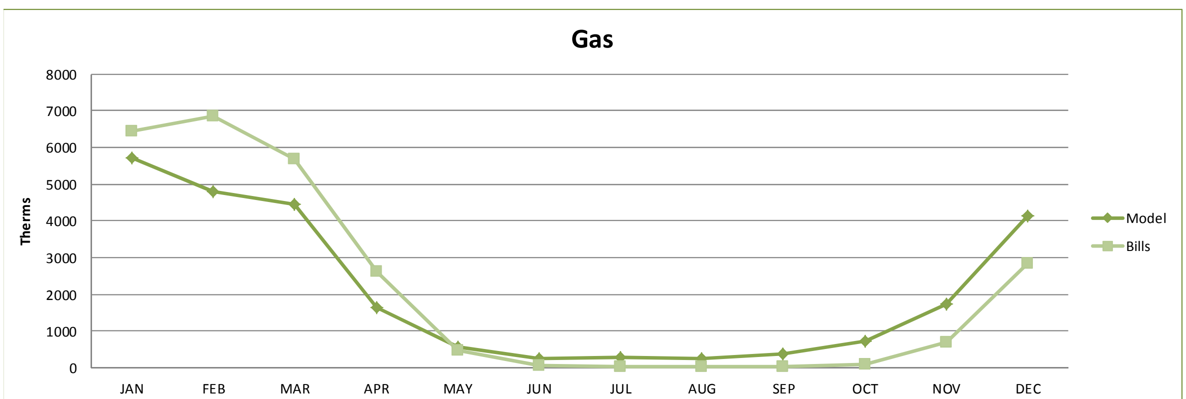
- Calculated plant and system loads closely match the actual installed capacities
- Calculated energy consumption closely matches the actual energy consumption determined in the utility analysis

## Baseline Model Results

The following graph illustrates the results of the comparison between the historic baseline energy usage and the results of the initial baseline building simulation model outputs.



# South Greenville Recreation Center

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Natural gas is also used for heating. The main electric meter captures demand and usage for the entire building. The natural gas meter captures all gas usage. The meters serving this facility are listed below.

*South Greenville Rec Center -Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 11611700 | 75471 | Whole Bldg |
| GUC | Gas | 1161700 | 19972 | Whole Bldg |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECMG rate structure as summarized below.

**Electric Rate GUC ECMG**

| **Consumption** | | | **Demand Charge** | | **Base Charge** |
|---|---|---|---|---|---|
| For Usage | Cost | Unit | For Usage | Cost | Cost |
| 1st 12500 | $ 0.12323 | kWh | 1st 35 kW | Free | |
| >12500 | $ 0.09233 | kWh | >35 kW | 4.17 | 13.33 |
| | | | | | |

#### Natural Gas

Natural gas at this facility is charged through the GUC GCCF gas structure as summarized below.

**Natural Gas Rate GUC GCCF**

| **Consumption** | | | **Base Charge** |
|---|---|---|---|
| For Usage | Cost | Unit | Cost |
| 50 | $ 1.18130 | therm | 22 |
| Next 250 | $ 1.10760 | therm | |
| Next 200 | $ 1.05760 | therm | |
| >500 | $ 0.90710 | therm | |

## Energy Usage and Baseline

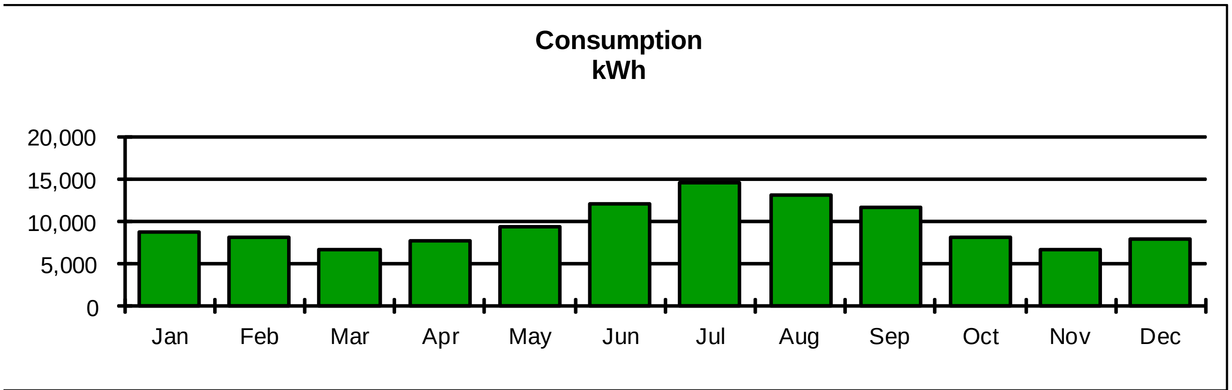
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

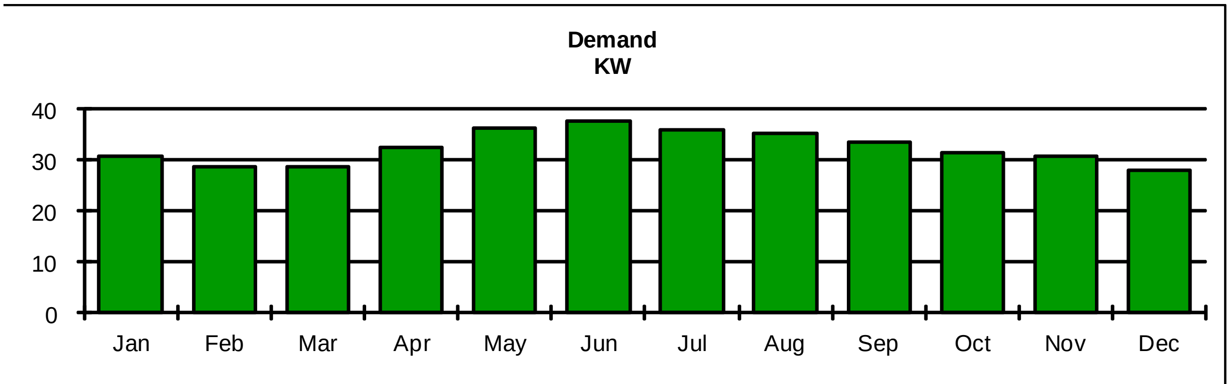
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Date** | **KWH** | **$-KWH** | **KW** | **$-KW** | **$-Tot Elec.** | **$/KWH** | **therms** | **$-Gas** |
| Jan | 8,720 | | 31 | | $1,088 | $0.1248 | 1,415 | $1,630 |
| Feb | 8,160 | | 29 | | $1,019 | $0.1249 | 706 | $871 |
| Mar | 6,640 | | 29 | | $832 | $0.1252 | 217 | $301 |
| Apr | 7,720 | | 32 | | $965 | $0.1250 | 4 | $27 |
| May | 9,280 | | 36 | | $1,163 | $0.1253 | 0 | $22 |
| Jun | 12,080 | | 38 | | $1,513 | $0.1252 | 0 | $22 |
| Jul | 14,560 | | 36 | | $1,748 | $0.1201 | 0 | $18 |
| Aug | 13,000 | | 35 | | $1,601 | $0.1231 | 0 | $22 |
| Sep | 11,640 | | 34 | | $1,448 | $0.1244 | 1 | $23 |
| Oct | 8,080 | | 32 | | $1,009 | $0.1249 | 108 | $157 |
| Nov | 6,600 | | 31 | | $827 | $0.1253 | 161 | $220 |
| Dec | 7,920 | | 28 | | $989 | $0.1249 | 1,868 | $1,914 |
| | | | | | | | | |
| **Totals** | **114,400** | | **390** | | **$ 14,200** | **$ 0.124** | **4,480** | **$ 5,228** |

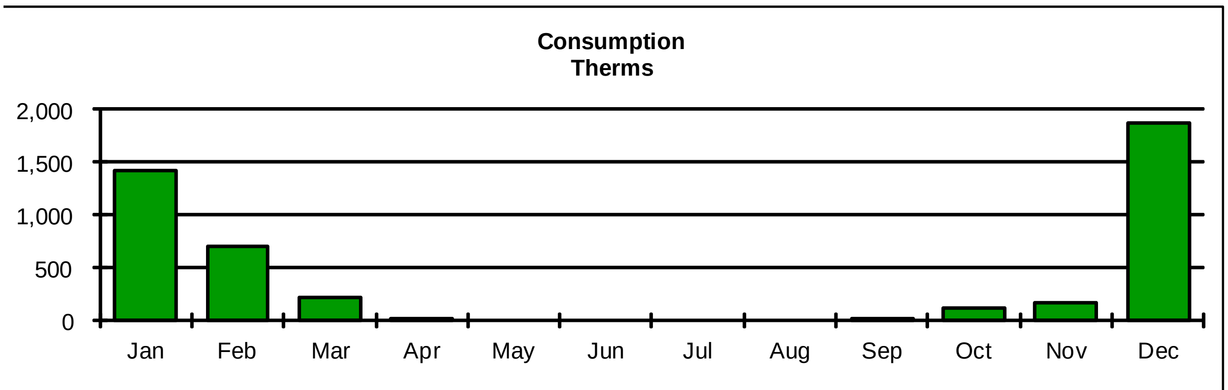
Facility Square Feet: 10,886

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Consumption** | **Equivalent MMBTU** | **Annual BTU/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | 114,400 | 390 | 35,856 | 47% |
| Electricity (KW) | 390 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 4,480 | 448 | 41,154 | 53% |
| **Total** | **N.A.** | **838** | **77,010** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Costs** | **Average Cost/Unit** | **Annual Cost/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | $14,200 | $0.124 | $1.304 | 73% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $5,228 | $1.167 | $0.480 | 27% |
| **Total** | **$19,428** | **$23.175** | **$1.785** | **100%** |


Consumption
kWh
20,000
15,000
10,000
5,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Demand
KW
40
30
20
10
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Consumption
Therms
2,000
1,500
1,000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

## Baseline Model Development - eQuest$^{TM}$ Building Simulation Modeling Method

Energy calculations were performed using eQuest$^{TM}$, a building simulation model and energy analysis program derived from the latest version of DOE-2, and by engineering calculations with spreadsheets. The eQuest$^{TM}$ building simulation and energy analysis program is well known in the heating, ventilation, and air-conditioning (HVAC) industry.

eQuest$^{TM}$ consists of multiple screen inputs for various components, steps, or facility information that may be broken down into the following categories:

*Building Site Information & Weather Data* - eQuest$^{TM}$ calculates energy usage on an hour-by-hour basis utilizing hourly weather data for the location. The program uses a weather file representing the a typical meteorological year temperature profile for Greenville, NC based on Typical Meteorological Year 3 weather data from the National Renewable Energy Laboratory. This makes site characteristics, such as latitude, longitude, and elevation very important. Additionally, adjacent structures or landscape capable of providing shading for the building were also observed during the site surveys.

*Building Shell, Structure, Materials, & Shades* - Accurate architectural data for the facilities were obtained from architectural plans provided by the City of Greenville and site observations. These included building layouts and dimensions, and wall, roof, and floor constructions, as well as, window quantities, locations, types, and shading.

*Building Operations & Scheduling* - Accurate schedules of operation for building occupancy, thermostat set points, and equipment operation were obtained from site surveys and interviews.

*Internal Loads* - Loads, such as people density, lighting, plug loads, and miscellaneous loads, were obtained from site surveys. These loads provide electrical usage, heat gain to the space, and load on the HVAC equipment. The computer program uses these parameters, along with the architectural data, and the latest DOE-2 and American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE) methodologies to calculate cooling and heating loads for the facilities.

*HVAC Equipment & Performance* - Accurate HVAC and plant system descriptions at the facilities were obtained from mechanical plans provided by the City of Greenville, as well as site surveys and interviews. The computer program uses the resulting loads and the system parameters to calculate the cooling and heating load profiles for the facilities on an hourly basis. The program then uses these load profiles and system requirements to calculate the energy consumption.

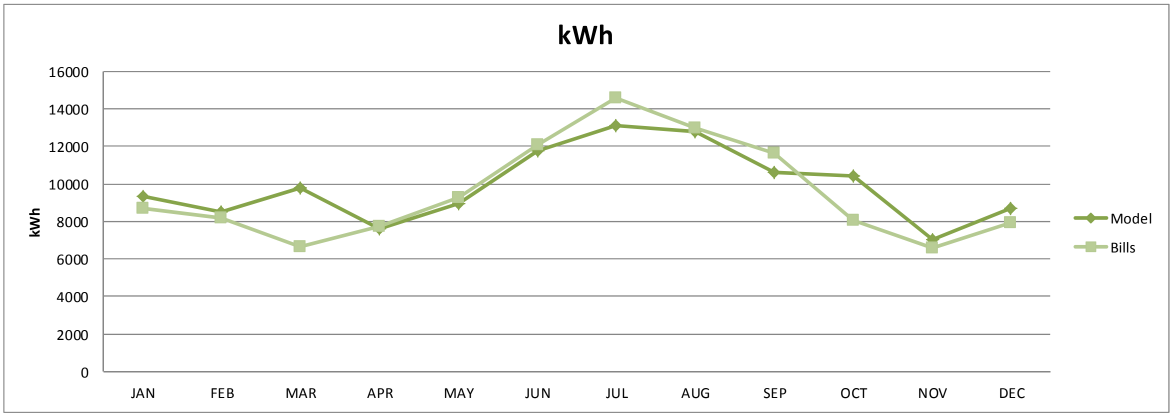
*Energy Economics* - In this final section, current electric and natural gas rate structures are defined in the computer models. The program uses this information to apply cost to the energy consumption calculated.

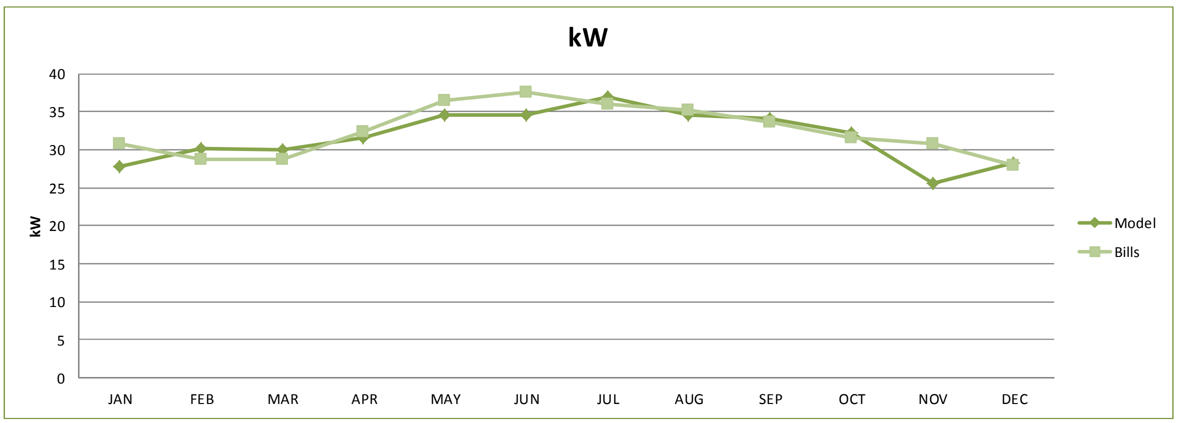
The models are then adjusted for baseline calibration until the following criteria are met:

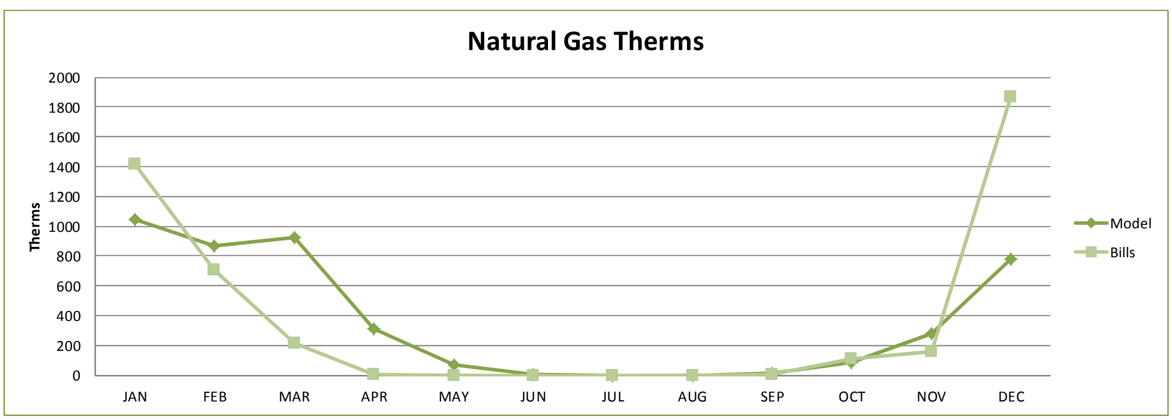
- Calculated plant and system loads closely match the actual installed capacities
- Calculated energy consumption closely matches the actual energy consumption determined in the utility analysis

## Baseline Model Results

The following graph illustrates the results of the comparison between the historic baseline energy usage and the results of the initial baseline building simulation model outputs.



# Evans Park

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Natural gas is also used for heating. The main electric meter captures demand and usage for the entire building. The natural gas meter captures all gas usage. The meters serving this facility are listed below.

*Evans Park - Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 7392751 | 61808 | Whole Bldg |
| GUC | Gas | 7406405 | 16305 | Whole Bldg |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECMG rate structure as summarized below.

| Electric Rate | GUC | ECMG | | | |
|---|---|---|---|---|---|
| **Consumption** | | | **Demand Charge** | | **Base Charge** |
| For Usage | Cost | Unit | For Usage | Cost | Cost |
| 1st 12500 | $ 0.12323 | kWh | 1st 35 kW | Free | |
| >12500 | $ 0.09233 | kWh | >35 kW | 4.17 | 13.33 |
| | | | | | |

#### Natural Gas

Natural gas at this facility is charged through the GUC GCCF gas structure as summarized below.

| Natural Gas Rate | GUC | GCCF | |
|---|---|---|---|
| **Consumption** | | | **Base Charge** |
| For Usage | Cost | Unit | Cost |
| 50 | $ 1.18130 | therm | 22 |
| Next 250 | $ 1.10760 | therm | |
| Next 200 | $ 1.05760 | therm | |
| >500 | $ 0.90710 | therm | |

## Energy Usage and Baseline

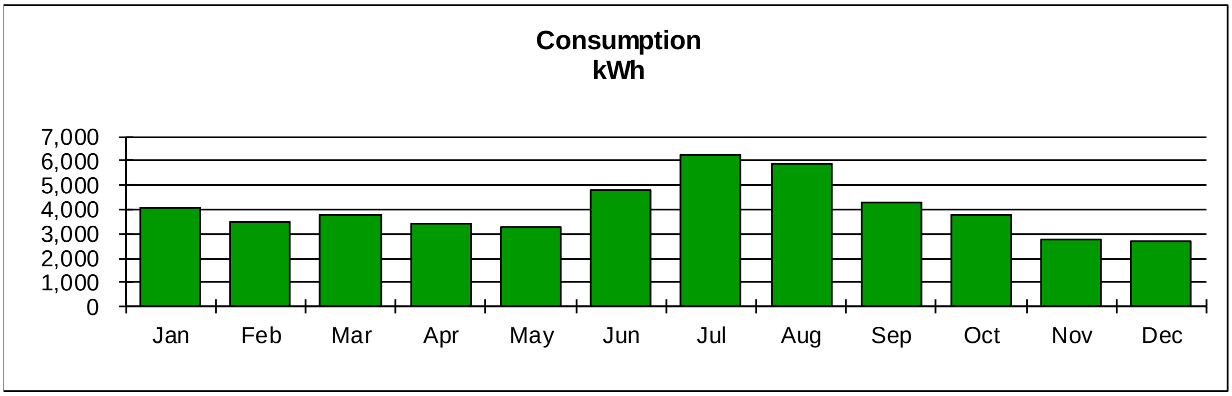
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

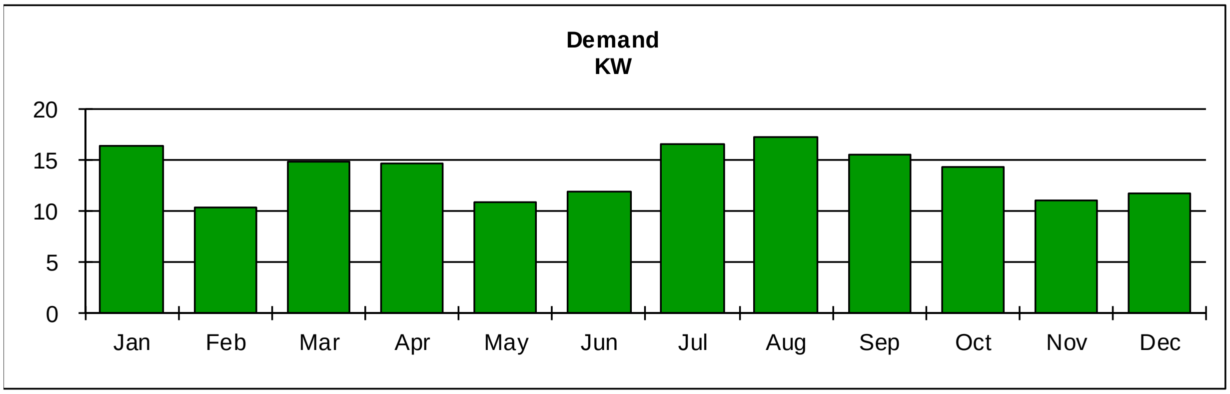
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | KWH | $-KWH | KW | $-KW | $-Tot Elec. | $/KWH | therms | $-Gas |
| Jan | 4,040 | | 16 | | $818 | $0.2026 | 544 | $654 |
| Feb | 3,515 | | 10 | | $849 | $0.2415 | 382 | $507 |
| Mar | 3,810 | | 15 | | $1,164 | $0.3055 | 283 | $385 |
| Apr | 3,400 | | 15 | | $965 | $0.2839 | 150 | $216 |
| May | 3,258 | | 11 | | $1,499 | $0.4601 | 36 | $70 |
| Jun | 4,799 | | 12 | | $2,041 | $0.4253 | 16 | $44 |
| Jul | 6,242 | | 17 | | $2,331 | $0.3734 | 22 | $52 |
| Aug | 5,862 | | 17 | | $1,599 | $0.2728 | 19 | $47 |
| Sep | 4,290 | | 16 | | $1,225 | $0.2855 | 5 | $28 |
| Oct | 3,795 | | 14 | | $1,450 | $0.3820 | 7 | $31 |
| Nov | 2,736 | | 11 | | $1,411 | $0.5155 | 75 | $117 |
| Dec | 2,722 | | 12 | | $1,115 | $0.4097 | 178 | $239 |
| | | | | | | | | |
| **Totals** | **48,469** | | **166** | | **$ 16,466** | **$ 0.340** | **1,717** | **$ 2,390** |

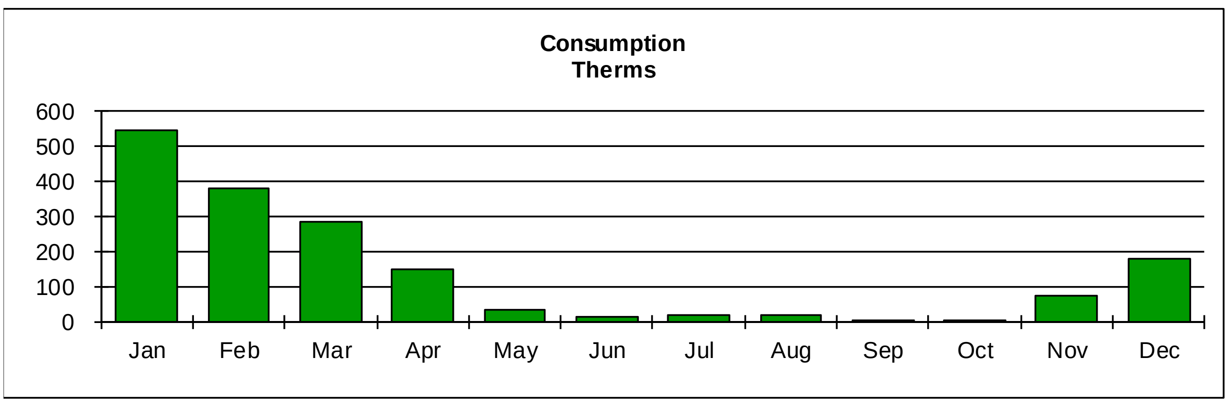
Facility Square Feet: 3,184

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Consumption | Equivalent MMBTU | Annual BTU/Sq.Ft. | % of Total |
| Electricity (KWH) | 48,469 | 165 | 51,940 | 49% |
| Electricity (KW) | 166 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 1,717 | 172 | 53,926 | 51% |
| **Total** | **N.A.** | **337** | **105,866** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Costs | Average Cost/Unit | Annual Cost/Sq.Ft. | % of Total |
| Electricity (KWH) | $16,466 | $0.340 | $5.172 | 87% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $2,390 | $1.392 | $0.751 | 13% |
| **Total** | **$18,856** | **$55.941** | **$5.922** | **100%** |


Consumption
kWh
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


Demand
KW
20
15
10
5
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


Consumption
Therms
600
500
400
300
200
100
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

## Baseline Model Development - eQuest$^{TM}$ Building Simulation Modeling Method

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*Building Shell, Structure, Materials, & Shades* - Accurate architectural data for the facilities were obtained from architectural plans provided by the City of Greenville and site observations. These included building layouts and dimensions, and wall, roof, and floor constructions, as well as, window quantities, locations, types, and shading.

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*Internal Loads* - Loads, such as people density, lighting, plug loads, and miscellaneous loads, were obtained from site surveys. These loads provide electrical usage, heat gain to the space, and load on the HVAC equipment. The computer program uses these parameters, along with the architectural data, and the latest DOE-2 and American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE) methodologies to calculate cooling and heating loads for the facilities.

*HVAC Equipment & Performance* - Accurate HVAC and plant system descriptions at the facilities were obtained from mechanical plans provided by the City of Greenville, as well as site surveys and interviews. The computer program uses the resulting loads and the system parameters to calculate the cooling and heating load profiles for the facilities on an hourly basis. The program then uses these load profiles and system requirements to calculate the energy consumption.

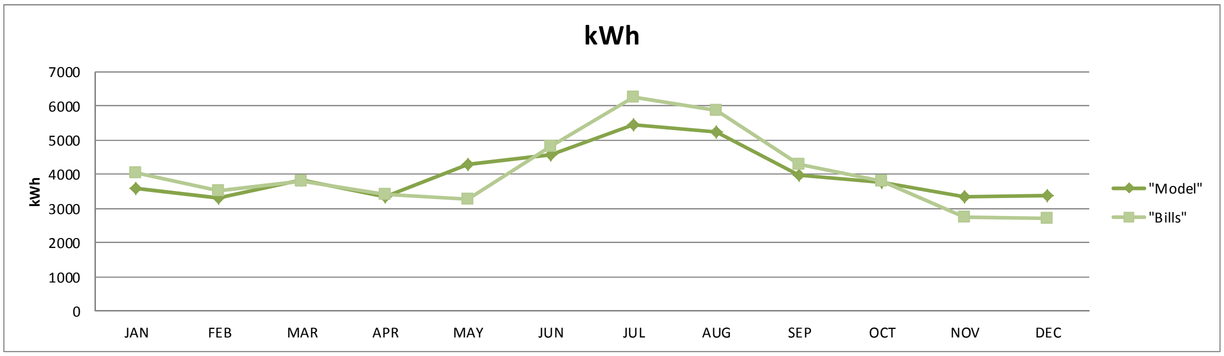
*Energy Economics* - In this final section, current electric and natural gas rate structures are defined in the computer models. The program uses this information to apply cost to the energy consumption calculated.

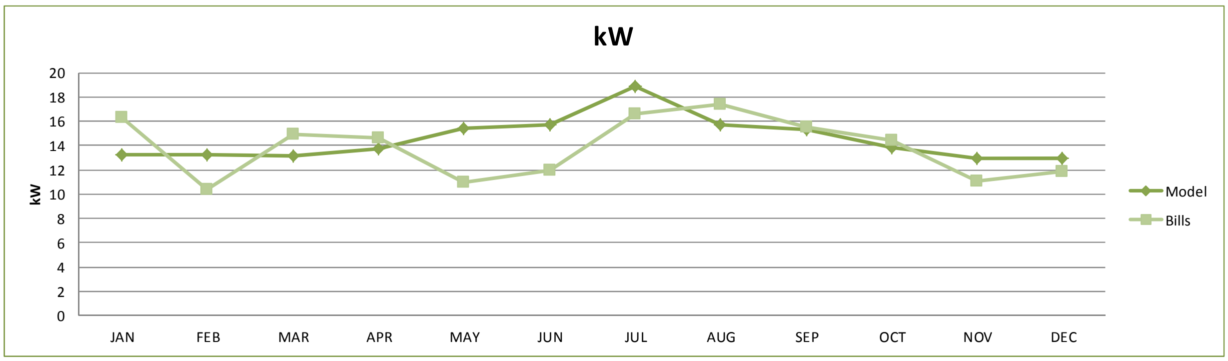
The models are then adjusted for baseline calibration until the following criteria are met:

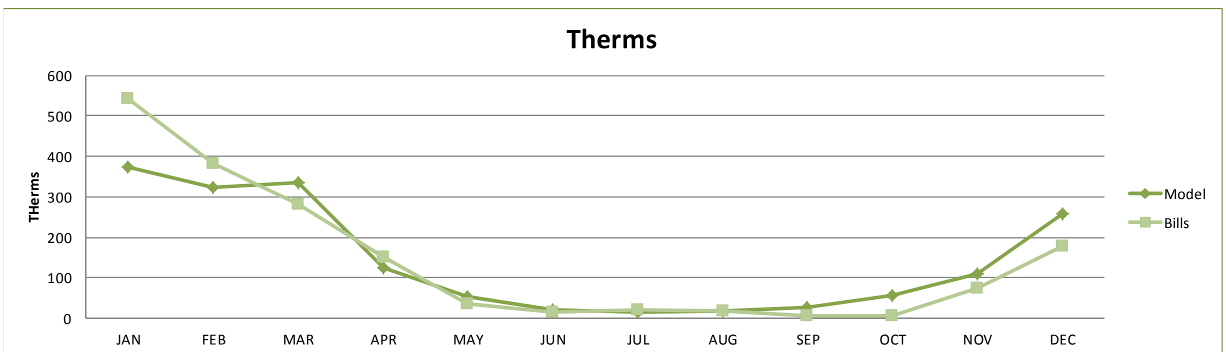
- Calculated plant and system loads closely match the actual installed capacities
- Calculated energy consumption closely matches the actual energy consumption determined in the utility analysis

## Baseline Model Results

The following graph illustrates the results of the comparison between the historic baseline energy usage and the results of the initial baseline building simulation model outputs.



# Elm Street Recreation Center

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Natural gas is also used for heating. The main electric meter captures demand and usage for the entire building. The natural gas meter captures all gas usage. The meters serving this facility are listed below.

*Elm Street Recreation Center - Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 2431000 | 88939 | Whole Bldg |
| GUC | Gas | 24314000 | 26461 | Whole Bldg |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECSG rate structure as summarized below.

| Electric Rate | GUC | ECSG | |
|---|---|---|---|
| Consumption | | | Base Charge |
| For Usage | Cost | Unit | Cost |
| 1st 1000 | $ 0.13177 | kWh | 12.89 |
| Next 5000 | $ 0.12558 | kWh | |
| >6000 | $ 0.10696 | kWh | |

#### Natural Gas

Natural gas at this facility is charged through the GUC GCCF gas structure as summarized below.

| Natural Gas Rate | GUC | GCCF | |
|---|---|---|---|
| Consumption | | | Base Charge |
| For Usage | Cost | Unit | Cost |
| 50 | $ 1.18130 | therm | 22 |
| Next 250 | $ 1.10760 | therm | |
| Next 200 | $ 1.05760 | therm | |
| >500 | $ 0.90710 | therm | |

## Energy Usage and Baseline

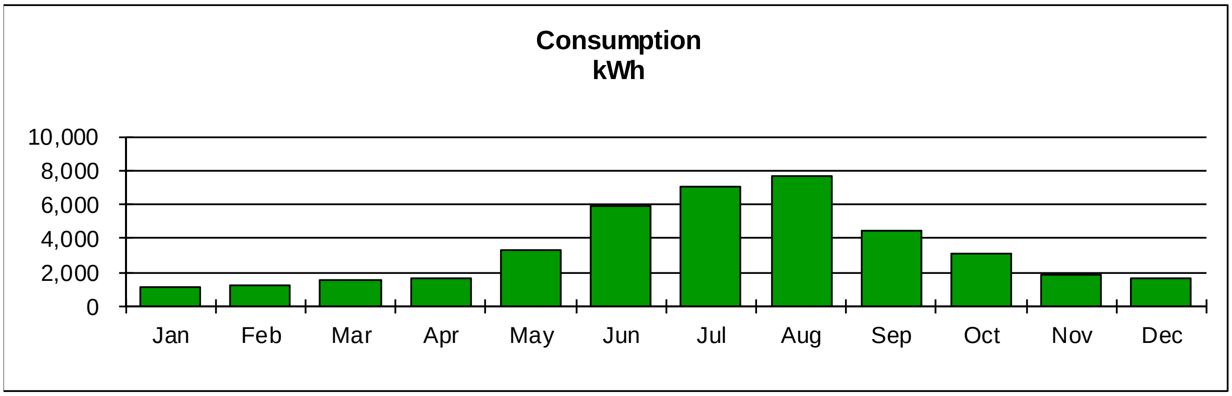
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

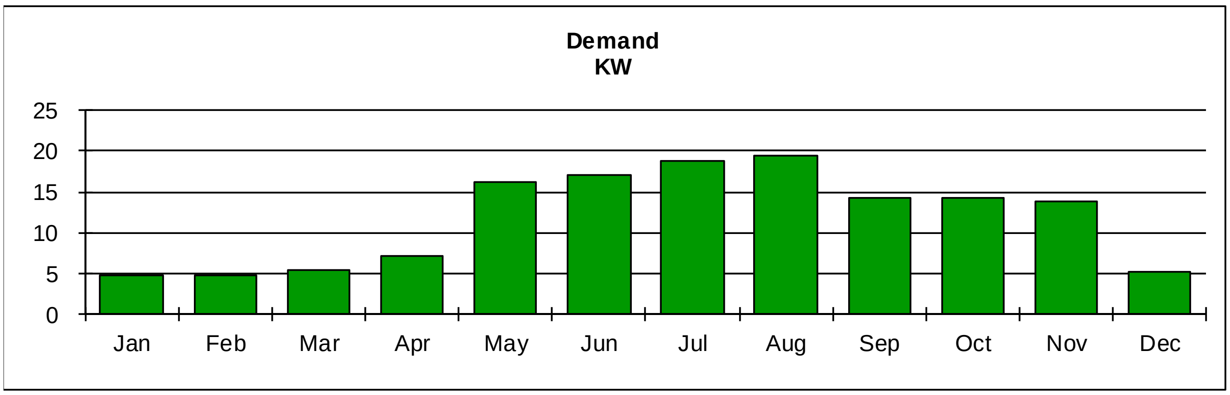
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | KWH | $-KWH | KW | $-KW | $-Tot Elec. | $/KWH | therms | $-Gas |
| Jan | 1,165 | | 5 | | $165 | $0.1420 | 335 | $433 |
| Feb | 1,218 | | 5 | | $172 | $0.1412 | 242 | $333 |
| Mar | 1,550 | | 5 | | $214 | $0.1379 | 104 | $158 |
| Apr | 1,646 | | 7 | | $226 | $0.1372 | 59 | $101 |
| May | 3,359 | | 16 | | $441 | $0.1313 | 0 | $22 |
| Jun | 5,947 | | 17 | | $766 | $0.1288 | 0 | $22 |
| Jul | 7,070 | | 19 | | $887 | $0.1255 | 0 | $22 |
| Aug | 7,635 | | 19 | | $947 | $0.1241 | 0 | $22 |
| Sep | 4,475 | | 14 | | $581 | $0.1298 | 0 | $22 |
| Oct | 3,146 | | 14 | | $414 | $0.1316 | 0 | $22 |
| Nov | 1,896 | | 14 | | $257 | $0.1356 | 51 | $88 |
| Dec | 1,664 | | 5 | | $228 | $0.1370 | 112 | $159 |
| | | | | | | | | |
| **Totals** | **40,771** | | **141** | | **$ 5,299** | **$ 0.130** | **903** | **$ 1,403** |

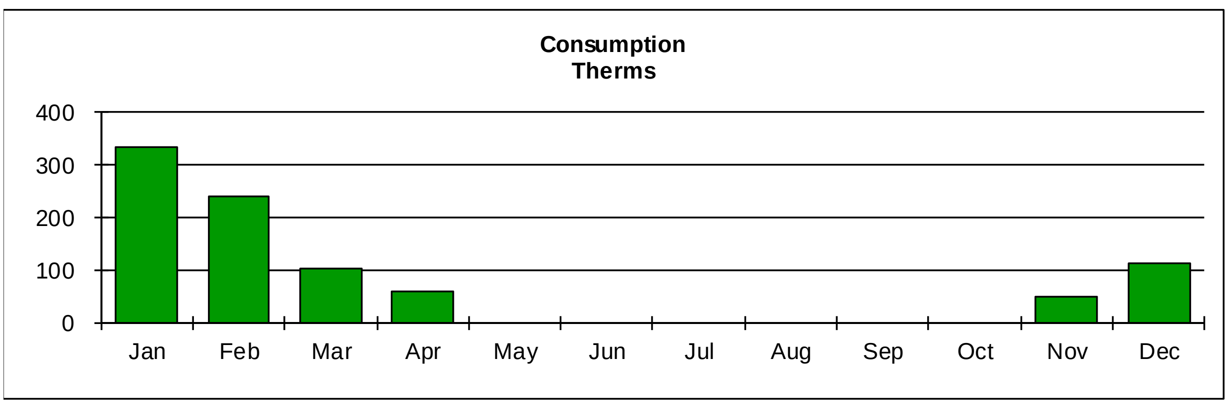
Represents the Center Only
Facility Square Feet: 3,600

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Consumption | Equivalent MMBTU | Annual BTU/Sq.Ft. | % of Total |
| Electricity (KWH) | 40,771 | 139 | 38,642 | 61% |
| Electricity (KW) | 141 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 903 | 90 | 25,083 | 39% |
| **Total** | **N.A.** | **229** | **63,725** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Costs | Average Cost/Unit | Annual Cost/Sq.Ft. | % of Total |
| Electricity (KWH) | $5,299 | $0.130 | $1.472 | 79% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $1,403 | $1.553 | $0.390 | 21% |
| **Total** | **$6,701** | **$29.211** | **$1.861** | **100%** |


Consumption
kWh
10,000
8,000
6,000
4,000
2,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Demand
KW
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Consumption
Therms
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

## Baseline Model Development - eQuest™ Building Simulation Modeling Method

Energy calculations were performed using eQuest™, a building simulation model and energy analysis program derived from the latest version of DOE-2, and by engineering calculations with spreadsheets. The eQuest™ building simulation and energy analysis program is well known in the heating, ventilation, and air-conditioning (HVAC) industry.

eQuest™ consists of multiple screen inputs for various components, steps, or facility information that may be broken down into the following categories:

*Building Site Information & Weather Data* - eQuest™ calculates energy usage on an hour-by-hour basis utilizing hourly weather data for the location. The program uses a weather file representing the a typical meteorological year temperature profile for Greenville, NC based on Typical Meteorological Year 3 weather data from the National Renewable Energy Laboratory. This makes site characteristics, such as latitude, longitude, and elevation very important. Additionally, adjacent structures or landscape capable of providing shading for the building were also observed during the site surveys.

*Building Shell, Structure, Materials, & Shades* - Accurate architectural data for the facilities were obtained from architectural plans provided by the City of Greenville and site observations. These included building layouts and dimensions, and wall, roof, and floor constructions, as well as, window quantities, locations, types, and shading.

*Building Operations & Scheduling* - Accurate schedules of operation for building occupancy, thermostat set points, and equipment operation were obtained from site surveys and interviews.

*Internal Loads* - Loads, such as people density, lighting, plug loads, and miscellaneous loads, were obtained from site surveys. These loads provide electrical usage, heat gain to the space, and load on the HVAC equipment. The computer program uses these parameters, along with the architectural data, and the latest DOE-2 and American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE) methodologies to calculate cooling and heating loads for the facilities.

*HVAC Equipment & Performance* - Accurate HVAC and plant system descriptions at the facilities were obtained from mechanical plans provided by the City of Greenville, as well as site surveys and interviews. The computer program uses the resulting loads and the system parameters to calculate the cooling and heating load profiles for the facilities on an hourly basis. The program then uses these load profiles and system requirements to calculate the energy consumption.

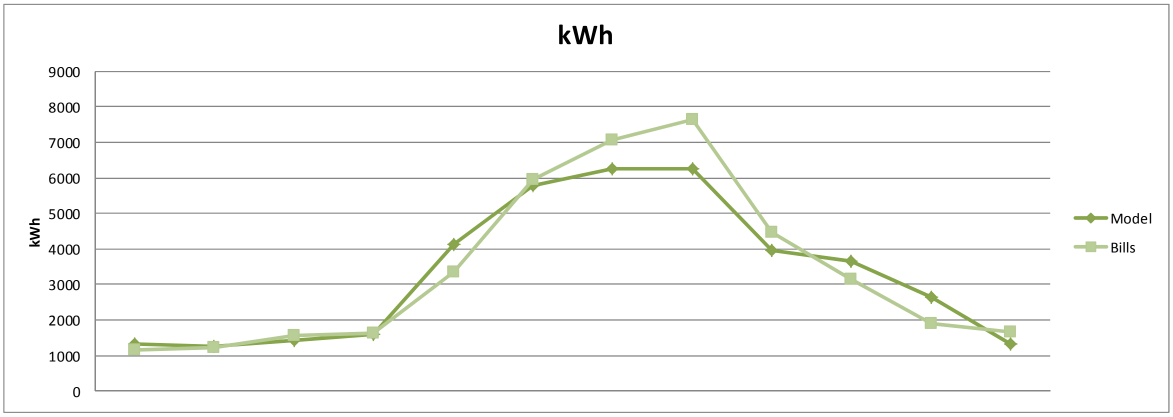
*Energy Economics* - In this final section, current electric and natural gas rate structures are defined in the computer models. The program uses this information to apply cost to the energy consumption calculated.

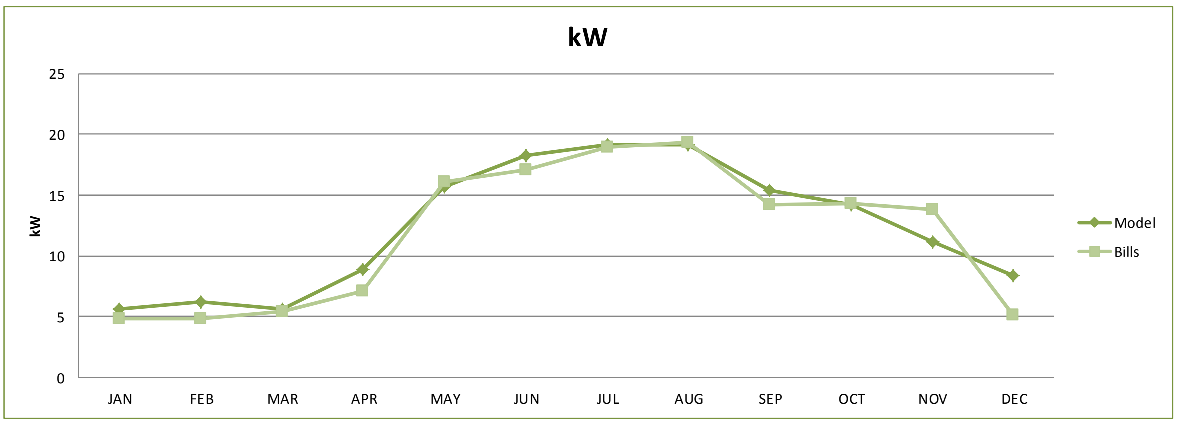
The models are then adjusted for baseline calibration until the following criteria are met:

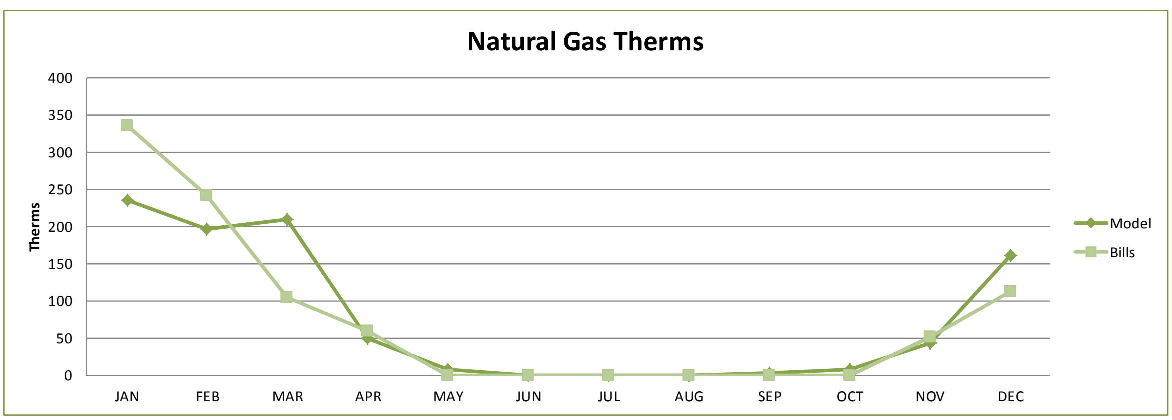
- Calculated plant and system loads closely match the actual installed capacities
- Calculated energy consumption closely matches the actual energy consumption determined in the utility analysis

## Baseline Model Results

The following graph illustrates the results of the comparison between the historic baseline energy usage and the results of the initial baseline building simulation model outputs.



# Jaycee Park Building

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Natural gas is also used for heating. The main electric meter captures demand and usage for the entire building. The natural gas meter captures all gas usage. The meters serving this facility are listed below.

*Jaycee Park - Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 2499100 | 42823 | Whole Bldg |
| GUC | Gas | 6634701 | 3021 | Whole Bldg |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECMG rate structure as summarized below.

**Electric Rate GUC ECMG**

| Consumption | | | Demand Charge | | Base Charge |
|---|---|---|---|---|---|
| For Usage | Cost | Unit | For Usage | Cost | Cost |
| 1st 12500 | $ 0.12323 | kWh | 1st 35 kW | Free | |
| >12500 | $ 0.09233 | kWh | >35 kW | 4.17 | 13.33 |
| | | | | | |

#### Natural Gas

Natural gas at this facility is charged through the GUC GCCF gas structure as summarized below.

**Natural Gas Rate GUC GCCF**

| Consumption | | | Base Charge |
|---|---|---|---|
| For Usage | Cost | Unit | Cost |
| 50 | $ 1.18130 | therm | 22 |
| Next 250 | $ 1.10760 | therm | |
| Next 200 | $ 1.05760 | therm | |
| >500 | $ 0.90710 | therm | |

## Energy Usage and Baseline

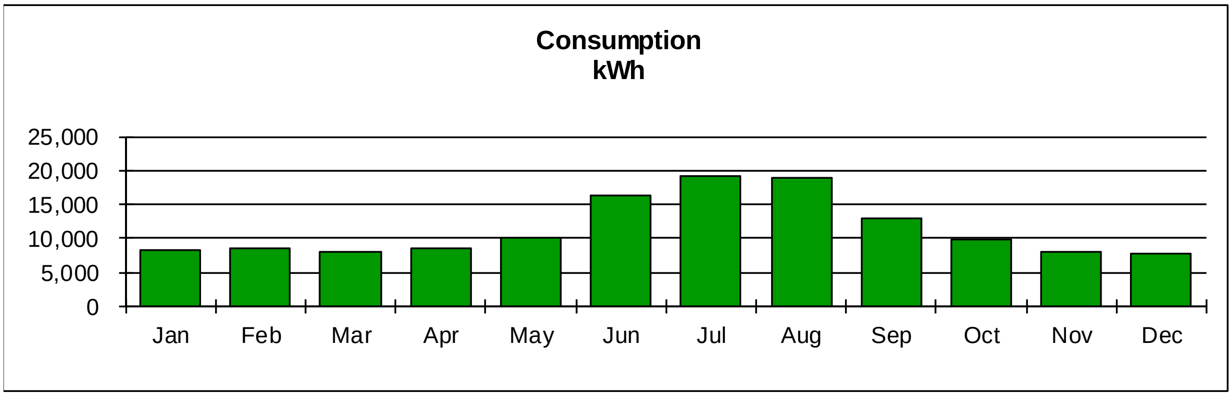
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

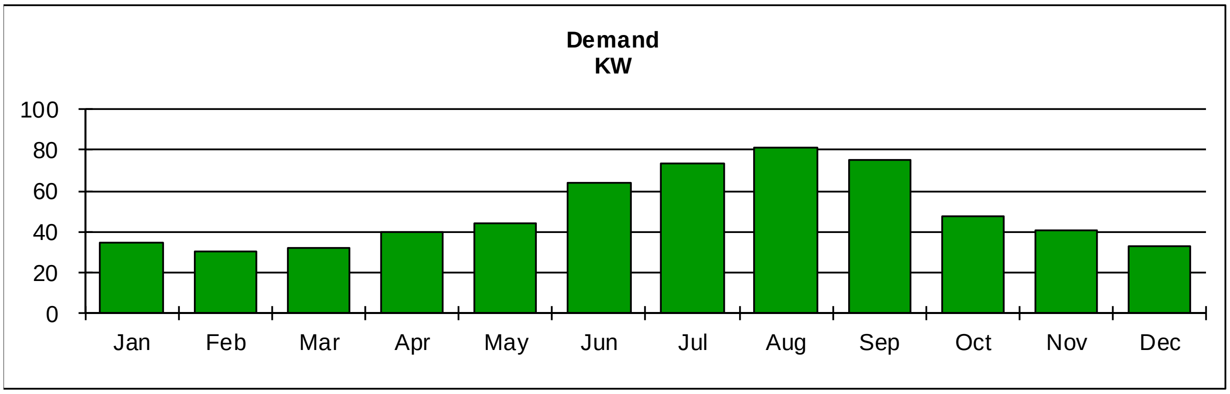
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Date** | **KWH** | **$-KWH** | **KW** | **$-KW** | **$-Tot Elec.** | **$/KWH** | **therms** | **$-Gas** |
| Jan | 8,400 | | 35 | | $1,048 | $0.1248 | 1,578 | $1,934 |
| Feb | 8,680 | | 31 | | $1,083 | $0.1248 | 1,385 | $1,751 |
| Mar | 8,160 | | 32 | | $1,019 | $0.1249 | 811 | $1,075 |
| Apr | 8,680 | | 40 | | $1,102 | $0.1270 | 216 | $308 |
| May | 10,120 | | 44 | | $1,298 | $0.1283 | 17 | $46 |
| Jun | 16,400 | | 64 | | $2,033 | $0.1240 | 0 | $22 |
| Jul | 19,120 | | 73 | | $2,324 | $0.1216 | 0 | $22 |
| Aug | 18,960 | | 81 | | $2,341 | $0.1235 | 1 | $23 |
| Sep | 13,000 | | 75 | | $1,766 | $0.1358 | 1 | $23 |
| Oct | 9,920 | | 48 | | $1,288 | $0.1299 | 59 | $100 |
| Nov | 8,040 | | 40 | | $1,027 | $0.1277 | 298 | $385 |
| Dec | 7,800 | | 33 | | $975 | $0.1249 | 962 | $1,080 |
| | | | | | | | | |
| **Totals** | **137,280** | | **595** | | **$ 17,304** | **$ 0.126** | **5,327** | **$ 6,769** |

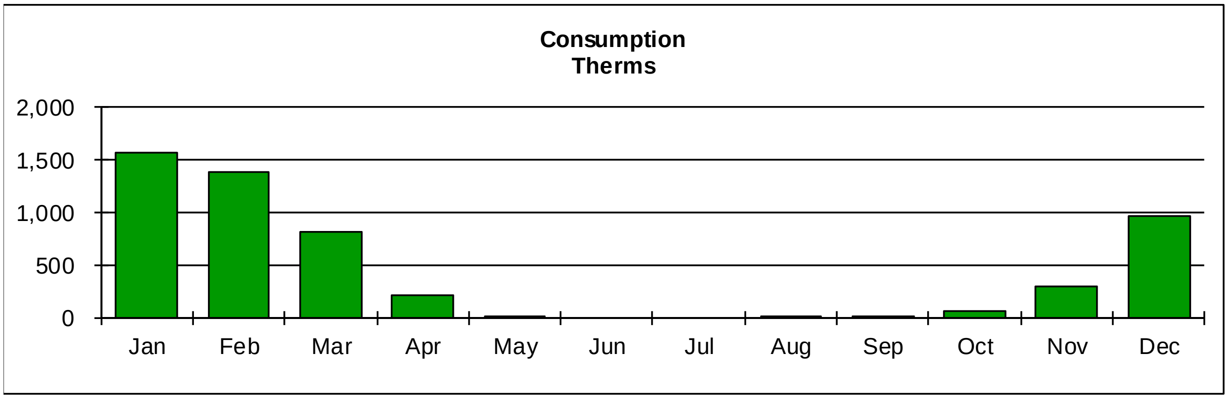
Facility Square Feet: 17,327

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Consumption** | **Equivalent MMBTU** | **Annual BTU/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | 137,280 | 468 | 27,033 | 47% |
| Electricity (KW) | 595 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 5,327 | 533 | 30,742 | 53% |
| **Total** | **N.A.** | **1,001** | **57,775** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Costs** | **Average Cost/Unit** | **Annual Cost/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | $17,304 | $0.126 | $0.999 | 72% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $6,769 | $1.271 | $0.391 | 28% |
| **Total** | **$24,073** | **$24.048** | **$1.389** | **100%** |


Consumption
kWh
25,000
20,000
15,000
10,000
5,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Demand
KW
100
80
60
40
20
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Consumption
Therms
2,000
1,500
1,000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

## Baseline Model Development - eQuest™ Building Simulation Modeling Method

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*Energy Economics* - In this final section, current electric and natural gas rate structures are defined in the computer models. The program uses this information to apply cost to the energy consumption calculated.

The models are then adjusted for baseline calibration until the following criteria are met:

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- Calculated energy consumption closely matches the actual energy consumption determined in the utility analysis

## Baseline Model Results

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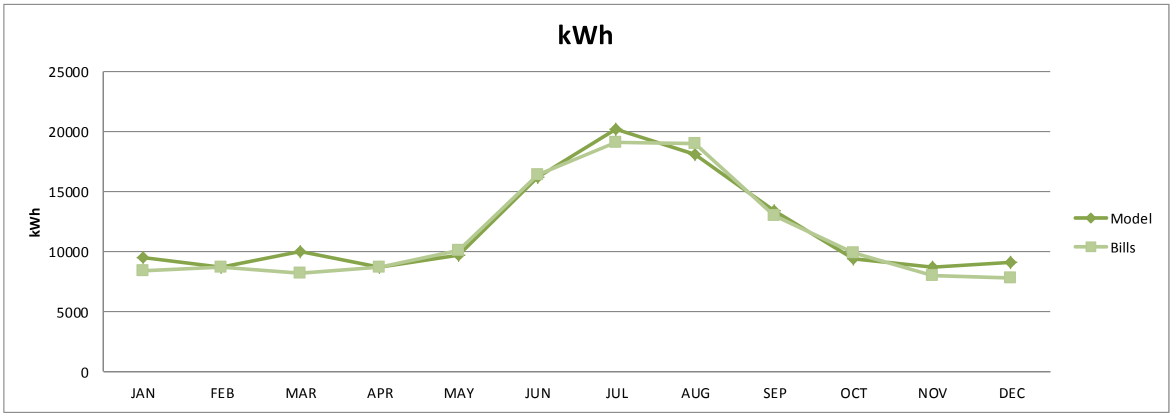
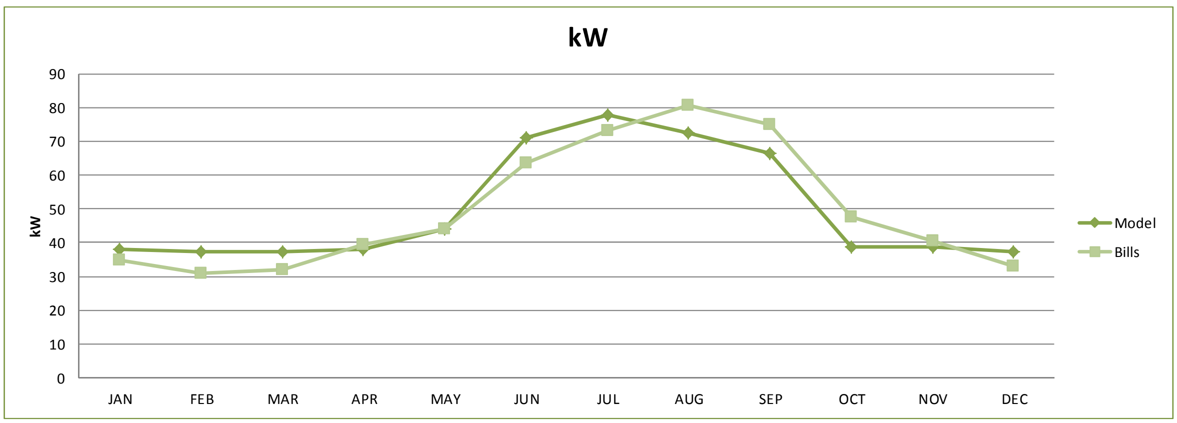
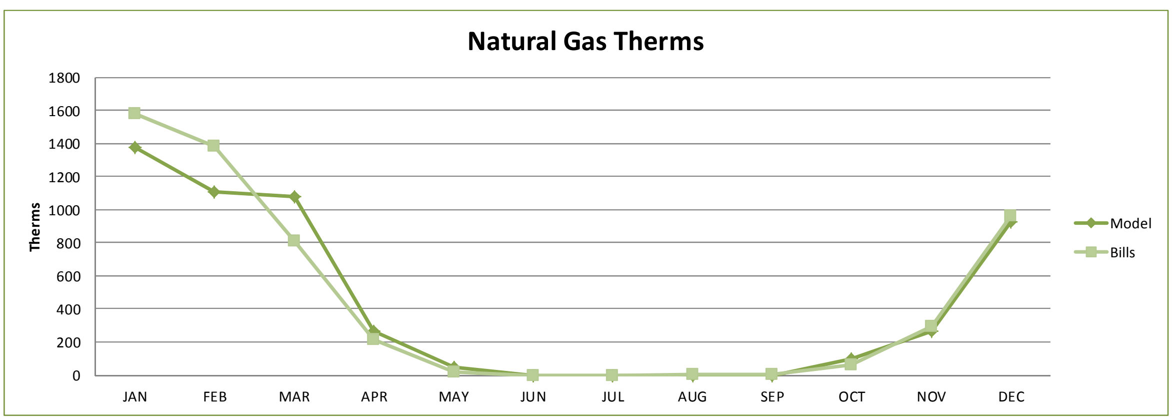


# Sports Connection

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Natural gas is also used for heating. The main electric meter captures demand and usage for the entire building. The natural gas meter captures all gas usage. The meters serving this facility are listed below.

*Sports Connection - Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 7476731 | 45114 | Whole Bldg |
| GUC | Gas | 7476731 | 15697 | Whole Bldg |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECSG rate structure as summarized below.

| Electric Rate | GUC | ECSG | |
|---|---|---|---|
| **Consumption** | | | **Base Charge** |
| For Usage | Cost | Unit | Cost |
| 1st 1000 | $ 0.13177 | kWh | 12.89 |
| Next 5000 | $ 0.12558 | kWh | |
| >6000 | $ 0.10696 | kWh | |

#### Natural Gas

Natural gas at this facility is charged through the GUC GCCF gas structure as summarized below.

| Natural Gas Rate | GUC | GCCF | |
|---|---|---|---|
| **Consumption** | | | **Base Charge** |
| For Usage | Cost | Unit | Cost |
| 50 | $ 1.18130 | therm | 22 |
| Next 250 | $ 1.10760 | therm | |
| Next 200 | $ 1.05760 | therm | |
| >500 | $ 0.90710 | therm | |

## Energy Usage and Baseline

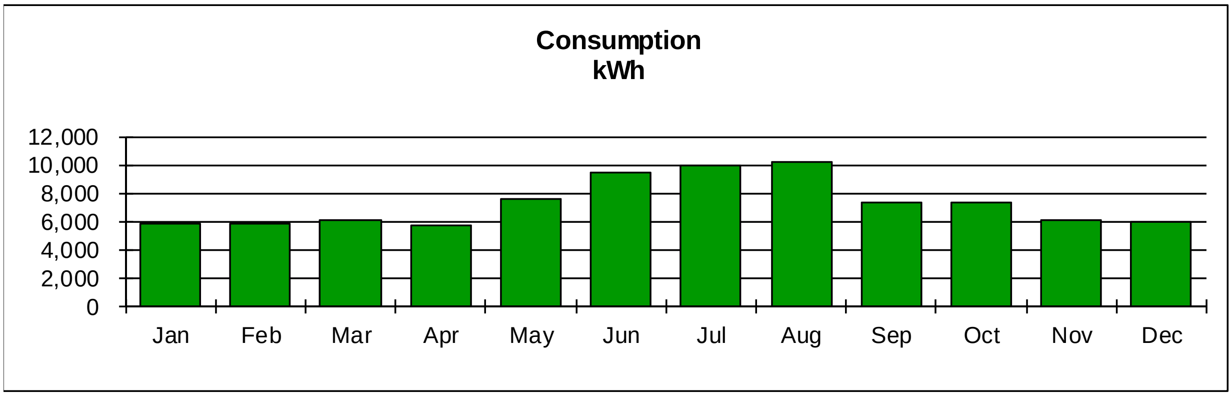
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

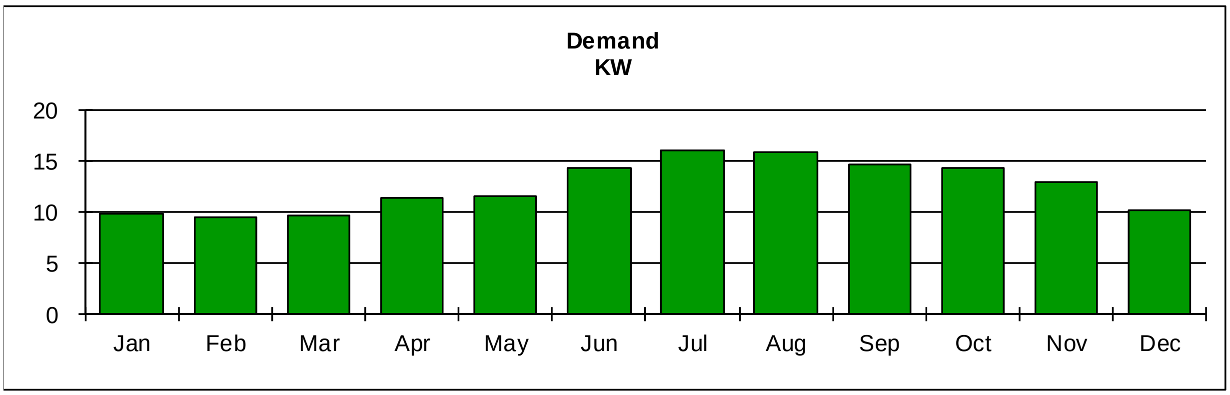
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | KWH | $-KWH | KW | $-KW | $-Tot Elec. | $/KWH | therms | $-Gas |
| Jan | 5,800 | | 10 | | $475 | $0.0820 | 1,178 | $1,318 |
| Feb | 5,800 | | 10 | | $471 | $0.0812 | 715 | $881 |
| Mar | 6,080 | | 10 | | $411 | $0.0676 | 221 | $306 |
| Apr | 5,760 | | 11 | | $428 | $0.0743 | 208 | $290 |
| May | 7,640 | | 12 | | $413 | $0.0540 | 14 | $41 |
| Jun | 9,480 | | 14 | | $572 | $0.0603 | 8 | $33 |
| Jul | 9,960 | | 16 | | $807 | $0.0810 | 7 | $31 |
| Aug | 10,160 | | 16 | | $882 | $0.0868 | 7 | $31 |
| Sep | 7,360 | | 15 | | $869 | $0.1180 | 8 | $32 |
| Oct | 7,360 | | 14 | | $680 | $0.0924 | 11 | $36 |
| Nov | 6,160 | | 13 | | $461 | $0.0748 | 136 | $191 |
| Dec | 6,000 | | 10 | | $408 | $0.0680 | 320 | $404 |
| | | | | | | | | |
| **Totals** | **87,560** | | **151** | | **$ 6,876** | **$ 0.079** | **2,833** | **$ 3,595** |

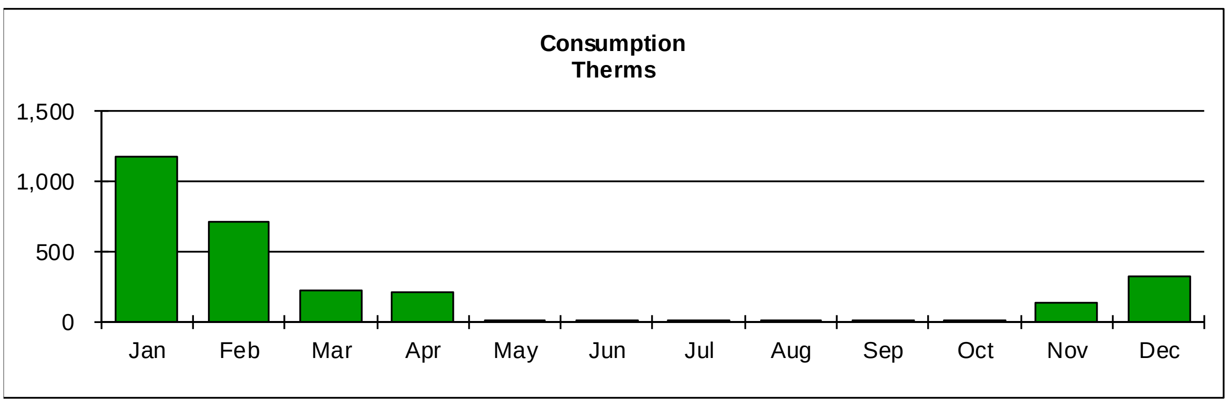
Facility Square Feet: 17,173

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Consumption | Equivalent MMBTU | Annual BTU/Sq.Ft. | % of Total |
| Electricity (KWH) | 87,560 | 299 | 17,397 | 51% |
| Electricity (KW) | 151 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 2,833 | 283 | 16,497 | 49% |
| **Total** | **N.A.** | **582** | **33,894** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Costs | Average Cost/Unit | Annual Cost/Sq.Ft. | % of Total |
| Electricity (KWH) | $6,876 | $0.079 | $0.400 | 66% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $3,595 | $1.269 | $0.209 | 34% |
| **Total** | **$10,471** | **$17.990** | **$0.610** | **100%** |


Consumption
kWh
12,000
10,000
8,000
6,000
4,000
2,000
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


Demand
KW
20
15
10
5
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec


Consumption
Therms
1,500
1,000
500
0
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

## Baseline Model Development - eQuest™ Building Simulation Modeling Method

Energy calculations were performed using eQuest™, a building simulation model and energy analysis program derived from the latest version of DOE-2, and by engineering calculations with spreadsheets. The eQuest™ building simulation and energy analysis program is well known in the heating, ventilation, and air-conditioning (HVAC) industry.

eQuest™ consists of multiple screen inputs for various components, steps, or facility information that may be broken down into the following categories:

*Building Site Information & Weather Data* - eQuest™ calculates energy usage on an hour-by-hour basis utilizing hourly weather data for the location. The program uses a weather file representing the a typical meteorological year temperature profile for Greenville, NC based on Typical Meteorological Year 3 weather data from the National Renewable Energy Laboratory. This makes site characteristics, such as latitude, longitude, and elevation very important. Additionally, adjacent structures or landscape capable of providing shading for the building were also observed during the site surveys.

*Building Shell, Structure, Materials, & Shades* - Accurate architectural data for the facilities were obtained from architectural plans provided by the City of Greenville and site observations. These included building layouts and dimensions, and wall, roof, and floor constructions, as well as, window quantities, locations, types, and shading.

*Building Operations & Scheduling* - Accurate schedules of operation for building occupancy, thermostat set points, and equipment operation were obtained from site surveys and interviews.

*Internal Loads* - Loads, such as people density, lighting, plug loads, and miscellaneous loads, were obtained from site surveys. These loads provide electrical usage, heat gain to the space, and load on the HVAC equipment. The computer program uses these parameters, along with the architectural data, and the latest DOE-2 and American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE) methodologies to calculate cooling and heating loads for the facilities.

*HVAC Equipment & Performance* - Accurate HVAC and plant system descriptions at the facilities were obtained from mechanical plans provided by the City of Greenville, as well as site surveys and interviews. The computer program uses the resulting loads and the system parameters to calculate the cooling and heating load profiles for the facilities on an hourly basis. The program then uses these load profiles and system requirements to calculate the energy consumption.

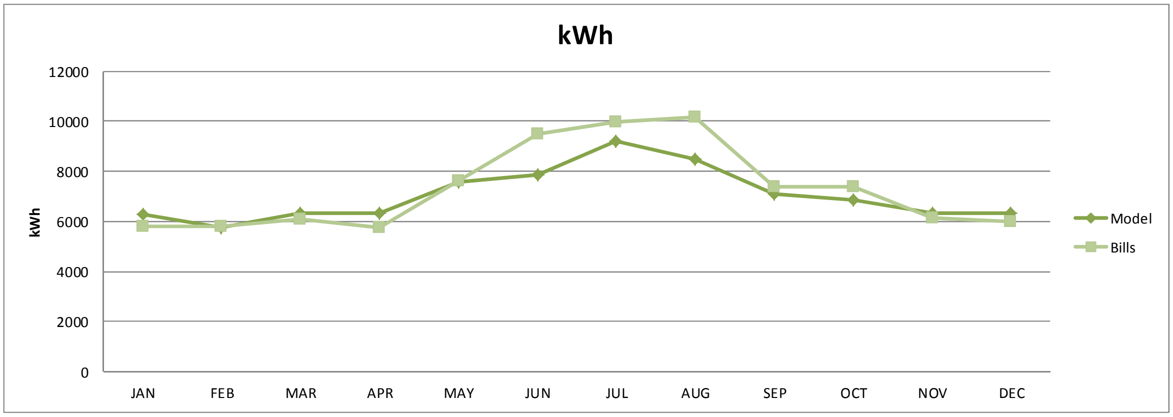
*Energy Economics* - In this final section, current electric and natural gas rate structures are defined in the computer models. The program uses this information to apply cost to the energy consumption calculated.

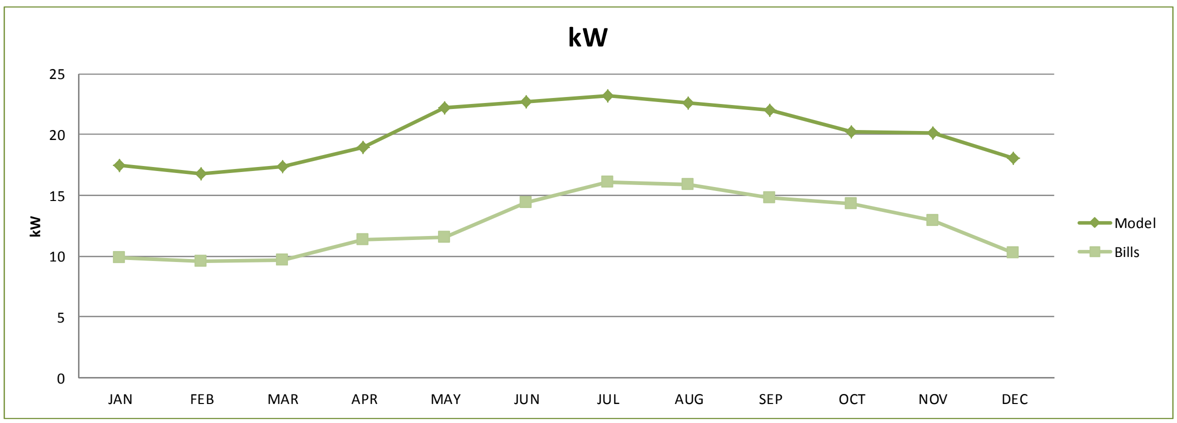
The models are then adjusted for baseline calibration until the following criteria are met:

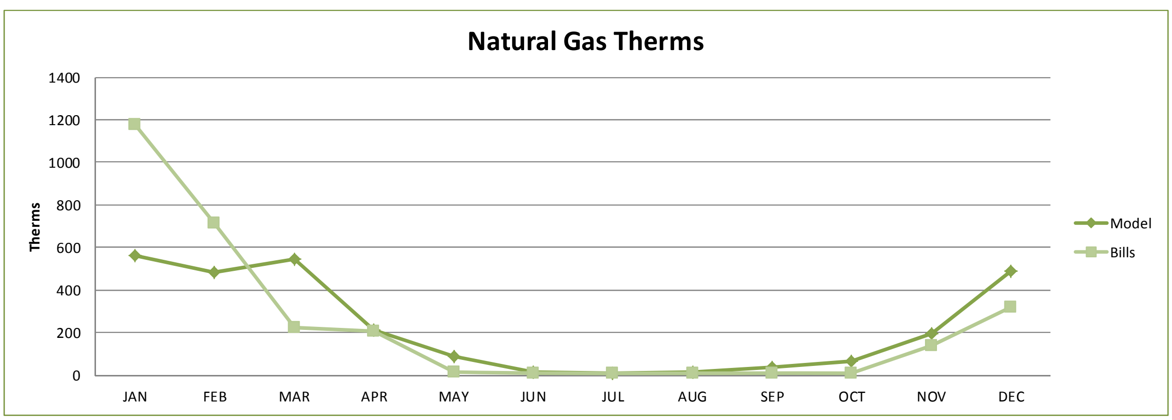
- Calculated plant and system loads closely match the actual installed capacities
- Calculated energy consumption closely matches the actual energy consumption determined in the utility analysis

## Baseline Model Results

The following graph illustrates the results of the comparison between the historic baseline energy usage and the results of the initial baseline building simulation model outputs.



# Gardner Training

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Natural gas is also used for heating. The main electric meter captures demand and usage for the entire building. The natural gas meter captures all gas usage. The meters serving this facility are listed below.

*Gardner Training - Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 2488301 | 112439 | Whole Bldg |
| GUC | Gas | 2488301 | 24233 | Whole Bldg |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECSG rate structure as summarized below.

| Electric Rate | GUC | ECSG | |
|---|---|---|---|
| **Consumption** | | | **Base Charge** |
| For Usage | Cost | Unit | Cost |
| 1st 1000 | $ 0.13177 | kWh | 12.89 |
| Next 5000 | $ 0.12558 | kWh | |
| >6000 | $ 0.10696 | kWh | |

#### Natural Gas

Natural gas at this facility is charged through the GUC GCCF gas structure as summarized below.

| Natural Gas Rate | GUC | GCCF | |
|---|---|---|---|
| **Consumption** | | | **Base Charge** |
| For Usage | Cost | Unit | Cost |
| 50 | $ 1.18130 | therm | 22 |
| Next 250 | $ 1.10760 | therm | |
| Next 200 | $ 1.05760 | therm | |
| >500 | $ 0.90710 | therm | |

## Energy Usage and Baseline

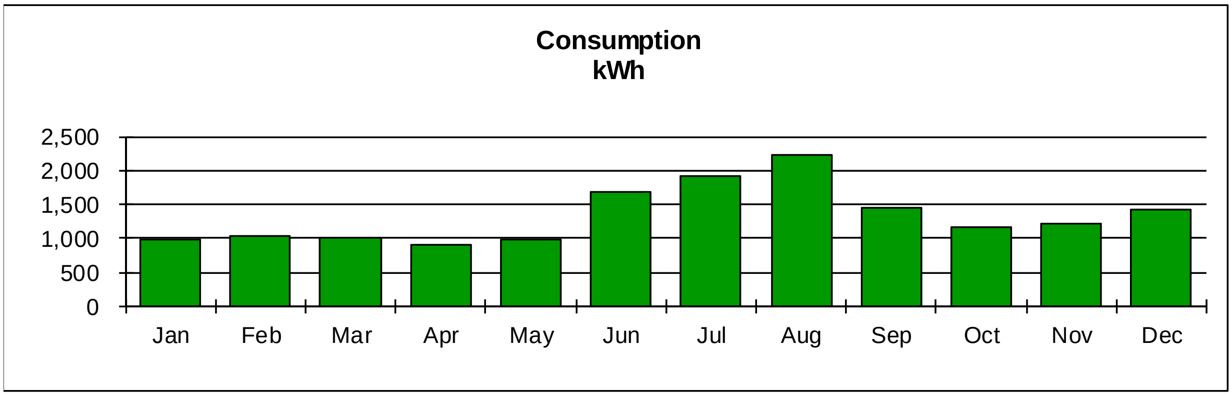
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

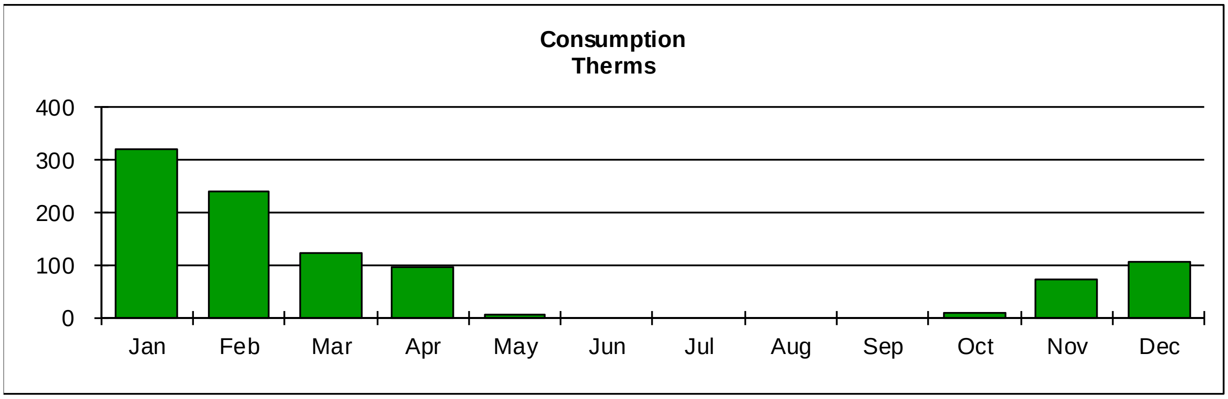
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | KWH | $-KWH | KW | $-KW | $-Tot Elec. | $/KWH | therms | $-Gas |
| Jan | 989 | | | | $143 | $0.1448 | 320 | $416 |
| Feb | 1,034 | | | | $149 | $0.1440 | 241 | $332 |
| Mar | 1,016 | | | | $147 | $0.1444 | 125 | $184 |
| Apr | 902 | | | | $132 | $0.1461 | 97 | $149 |
| May | 994 | | | | $144 | $0.1447 | 6 | $30 |
| Jun | 1,686 | | | | $231 | $0.1369 | 0 | $22 |
| Jul | 1,928 | | | | $261 | $0.1355 | 0 | $22 |
| Aug | 2,240 | | | | $300 | $0.1341 | 0 | $22 |
| Sep | 1,440 | | | | $200 | $0.1388 | 0 | $22 |
| Oct | 1,160 | | | | $165 | $0.1420 | 10 | $35 |
| Nov | 1,228 | | | | $173 | $0.1411 | 73 | $114 |
| Dec | 1,418 | | | | $197 | $0.1390 | 107 | $153 |
| | | | | | | | | |
| **Totals** | **16,035** | | | | **$ 2,242** | **$ 0.140** | **979** | **$ 1,501** |

Facility Square Feet: 2,240

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Consumption | Equivalent MMBTU | Annual BTU/Sq.Ft. | % of Total |
| Electricity (KWH) | 16,035 | 55 | 24,425 | 36% |
| Electricity (KW) | 0 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 979 | 98 | 43,705 | 64% |
| **Total** | **N.A.** | **153** | **68,130** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Costs | Average Cost/Unit | Annual Cost/Sq.Ft. | % of Total |
| Electricity (KWH) | $2,242 | $0.140 | $1.001 | 60% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $ 1,501 | $1.533 | $0.670 | 40% |
| **Total** | **$3,743** | **$24.523** | **$1.671** | **100%** |


Consumption
kWh
2,500
2,000
1,500
1,000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Consumption
Therms
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

## Baseline Model Development - eQuest™ Building Simulation Modeling Method

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eQuest™ consists of multiple screen inputs for various components, steps, or facility information that may be broken down into the following categories:

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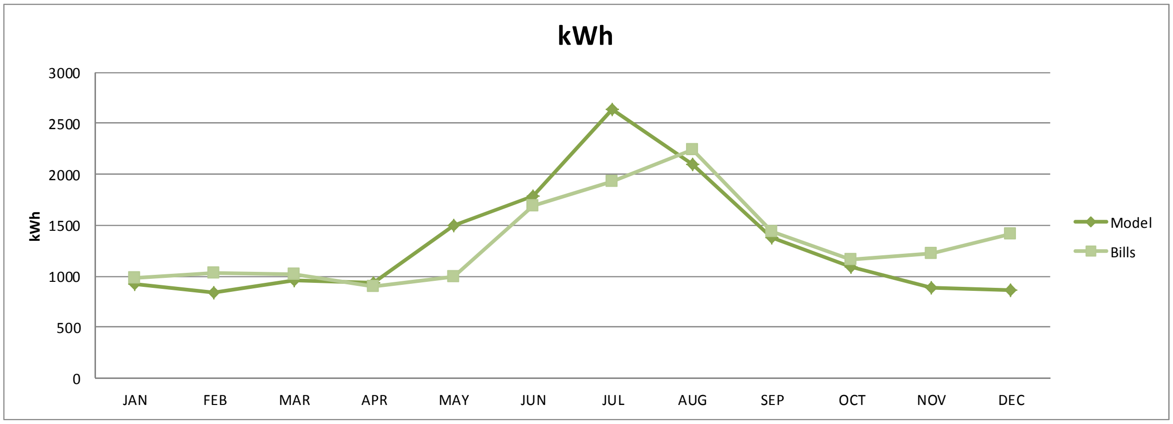
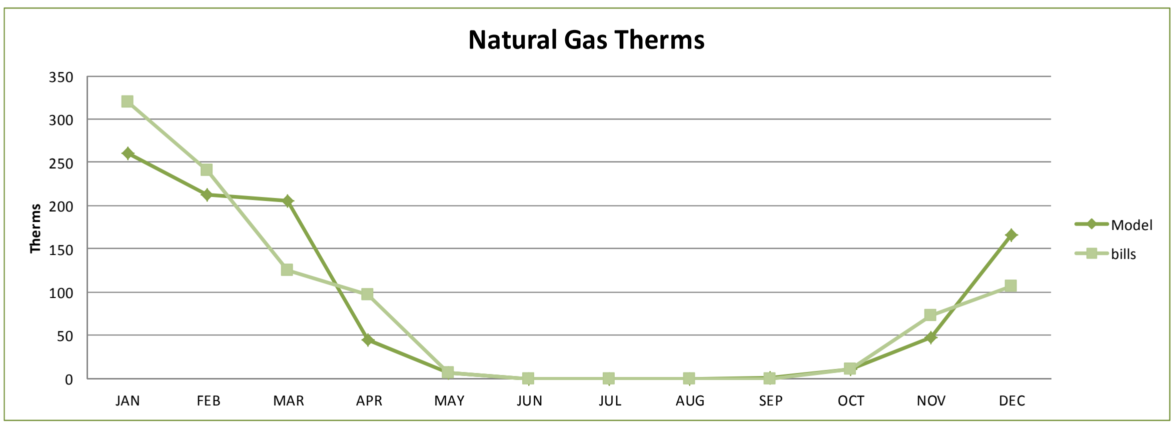


# H. Boyd Lee Park Building

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Natural gas is also used for heating. The main electric meter captures demand and usage for the entire building. The natural gas meter captures all gas usage. The meters serving this facility are listed below.

*H. Boyd Lee Park - Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 7412757 | 46366 | Whole Bldg |
| GUC | Gas | 7405845 | 16362 | Whole Bldg |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECMG rate structure as summarized below.

**Electric Rate GUC ECMG**

| Consumption | | | Demand Charge | | Base Charge |
|---|---|---|---|---|---|
| For Usage | Cost | Unit | For Usage | Cost | Cost |
| 1st 12500 | $ 0.12323 | kWh | 1st 35 kW | Free | |
| >12500 | $ 0.09233 | kWh | >35 kW | 4.17 | 13.33 |
| | | | | | |

#### Natural Gas

Natural gas at this facility is charged through the GUC GCCF gas structure as summarized below.

**Natural Gas Rate GUC GCCF**

| Consumption | | | Base Charge |
|---|---|---|---|
| For Usage | Cost | Unit | Cost |
| 50 | $ 1.18130 | therm | 22 |
| Next 250 | $ 1.10760 | therm | |
| Next 200 | $ 1.05760 | therm | |
| >500 | $ 0.90710 | therm | |

## Energy Usage and Baseline

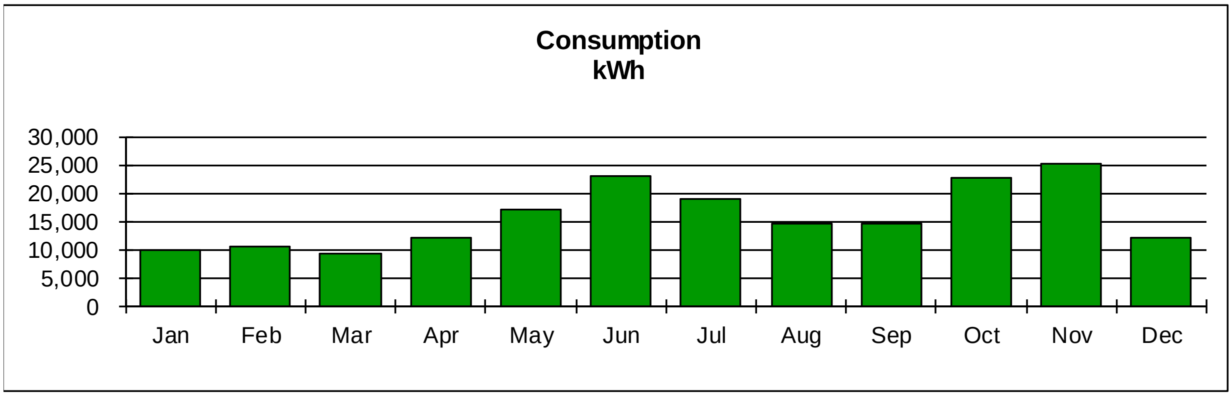
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

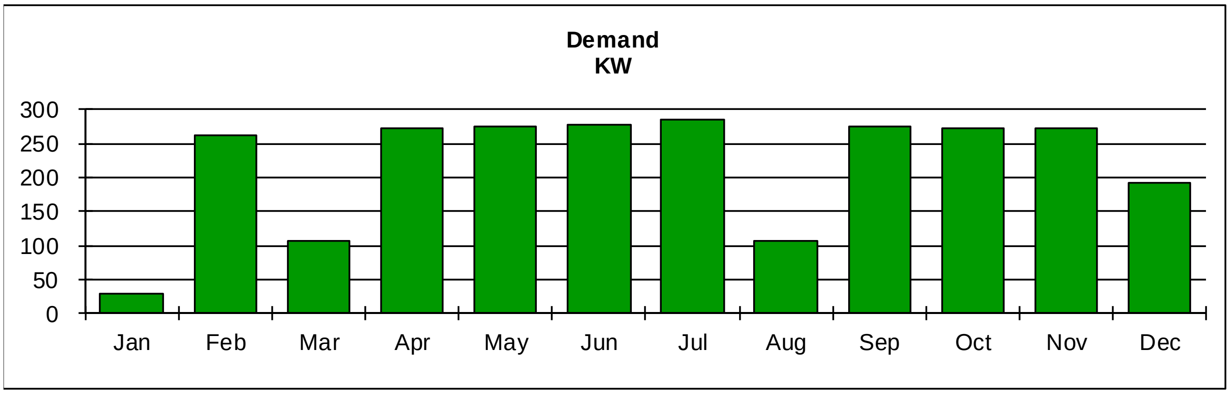
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Date** | **KWH** | **$-KWH** | **KW** | **$-KW** | **$-Tot Elec.** | **$/KWH** | **therms** | **$-Gas** |
| Jan | 10,080 | | 29 | | $1,255 | $0.1246 | 3,450 | $3,531 |
| Feb | 10,680 | | 263 | | $2,279 | $0.2134 | 2,710 | $3,015 |
| Mar | 9,480 | | 108 | | $1,486 | $0.1567 | 1,080 | $1,271 |
| Apr | 12,240 | | 271 | | $2,507 | $0.2048 | 683 | $847 |
| May | 17,160 | | 274 | | $2,979 | $0.1736 | 86 | $135 |
| Jun | 22,920 | | 277 | | $3,526 | $0.1538 | 8 | $33 |
| Jul | 18,840 | | 284 | | $3,179 | $0.1687 | 6 | $30 |
| Aug | 14,760 | | 106 | | $2,057 | $0.1393 | 4 | $27 |
| Sep | 14,640 | | 274 | | $2,746 | $0.1876 | 6 | $30 |
| Oct | 22,680 | | 272 | | $3,484 | $0.1536 | 82 | $125 |
| Nov | 25,320 | | 271 | | $3,722 | $0.1470 | 818 | $944 |
| Dec | 12,000 | | 193 | | $2,152 | $0.1793 | 1,042 | $1,146 |
| | | | | | | | | |
| **Totals** | **190,800** | | **2,622** | | **$ 31,372** | **$ 0.164** | **9,975** | **$ 11,135** |

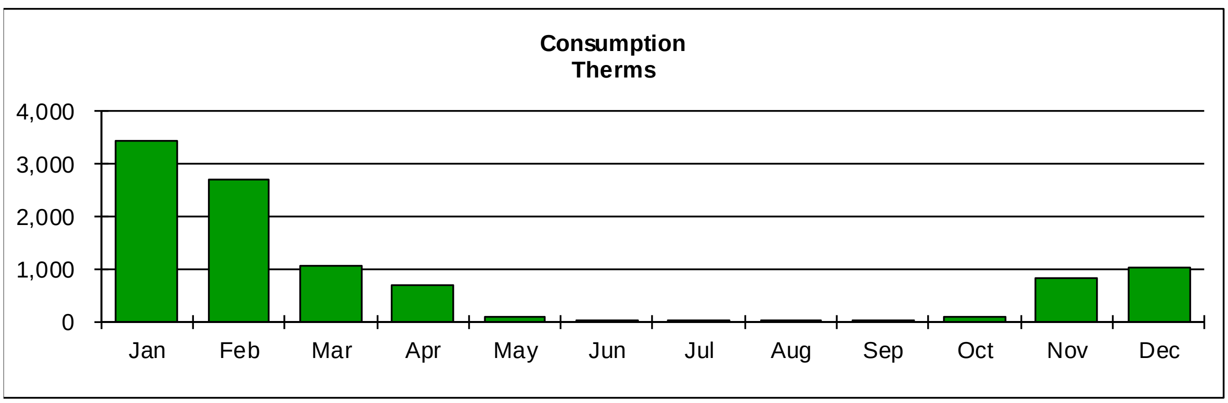
Facility Square Feet: 17,400

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Consumption** | **Equivalent MMBTU** | **Annual BTU/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | 190,800 | 651 | 37,414 | 39% |
| Electricity (KW) | 2,622 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 9,975 | 998 | 57,328 | 61% |
| **Total** | **N.A.** | **1,649** | **94,742** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Costs** | **Average Cost/Unit** | **Annual Cost/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | $31,372 | $0.164 | $1.803 | 74% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $11,135 | $1.116 | $0.640 | 26% |
| **Total** | **$42,507** | **$25.785** | **$2.443** | **100%** |


Consumption
kWh
30,000
25,000
20,000
15,000
10,000
5,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Demand
KW
300
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Consumption
Therms
4,000
3,000
2,000
1,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

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*Building Shell, Structure, Materials, & Shades* - Accurate architectural data for the facilities were obtained from architectural plans provided by the City of Greenville and site observations. These included building layouts and dimensions, and wall, roof, and floor constructions, as well as, window quantities, locations, types, and shading.

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*HVAC Equipment & Performance* - Accurate HVAC and plant system descriptions at the facilities were obtained from mechanical plans provided by the City of Greenville, as well as site surveys and interviews. The computer program uses the resulting loads and the system parameters to calculate the cooling and heating load profiles for the facilities on an hourly basis. The program then uses these load profiles and system requirements to calculate the energy consumption.

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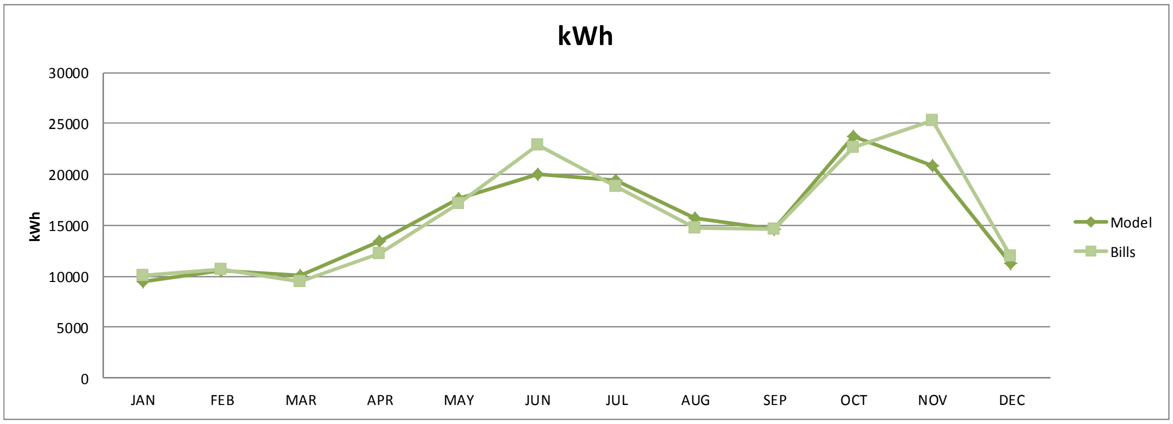
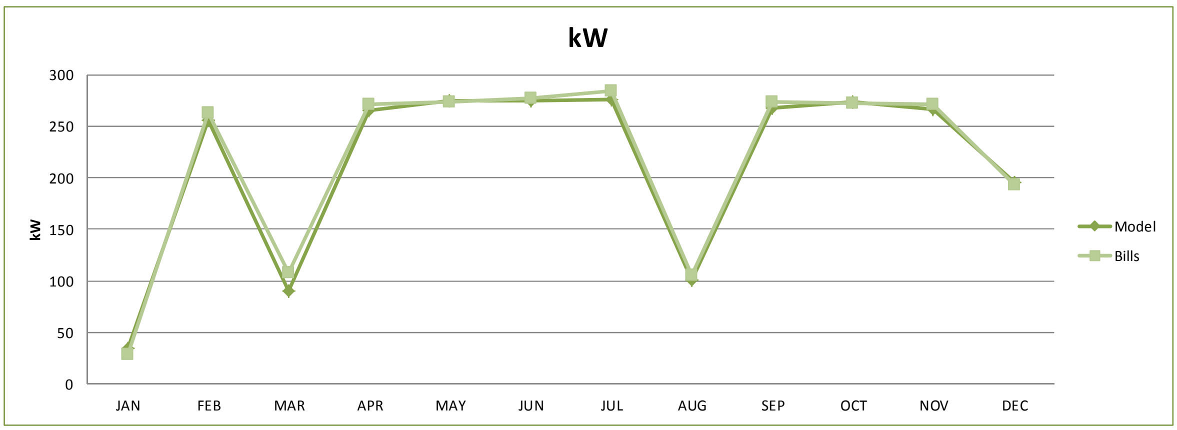
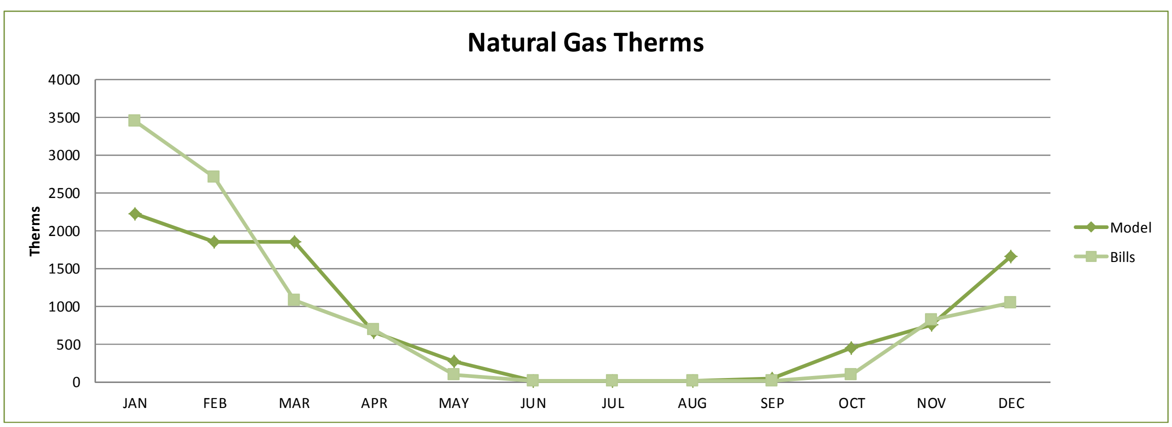


# River Park North

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Natural gas is not used at this facility. The main electric meter captures demand and usage for the entire building. The meters serving this facility are listed below.

*River Park North - Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 7478589 | 115677 | Whole Bldg |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECMG rate structure as summarized below.

| Electric Rate | GUC | ECMG | | | |
|---|---|---|---|---|---|
| **Consumption** | | | **Demand Charge** | | **Base Charge** |
| For Usage | Cost | Unit | For Usage | Cost | Cost |
| 1st 12500 | $ 0.12323 | kWh | 1st 35 kW | Free | |
| >12500 | $ 0.09233 | kWh | >35 kW | 4.17 | 13.33 |
| | | | | | |

## Energy Usage and Baseline

The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

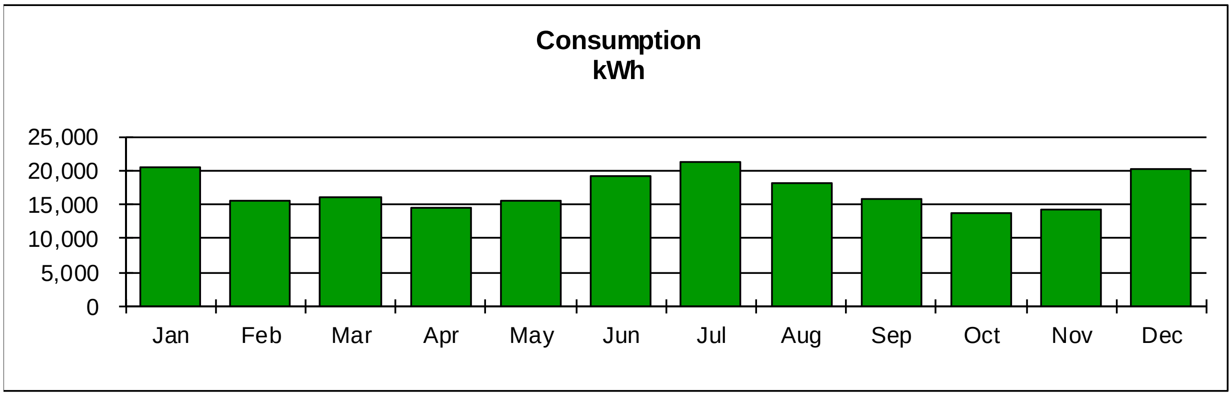
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | KWH | $-KWH | KW | $-KW | $-Tot Elec. | $/KWH | therms | $-Gas |
| Jan | 20,520 | | 66 | | $2,425 | $0.1182 | | |
| Feb | 15,440 | | 51 | | $1,892 | $0.1226 | | |
| Mar | 15,960 | | 49 | | $1,932 | $0.1211 | | |
| Apr | 14,640 | | 50 | | $1,817 | $0.1241 | | |
| May | 15,640 | | 56 | | $1,933 | $0.1236 | | |
| Jun | 19,120 | | 59 | | $2,266 | $0.1185 | | |
| Jul | 21,240 | | 65 | | $2,488 | $0.1171 | | |
| Aug | 18,240 | | 56 | | $2,173 | $0.1191 | | |
| Sep | 15,840 | | 55 | | $1,946 | $0.1229 | | |
| Oct | 13,640 | | 58 | | $1,758 | $0.1289 | | |
| Nov | 14,320 | | 44 | | $1,762 | $0.1231 | | |
| Dec | 20,200 | | 69 | | $2,407 | $0.1192 | | |
| | | | | | | | | |
| **Totals** | **204,800** | | **678** | | **$ 24,798** | **$ 0.121** | **-** | **$ -** |

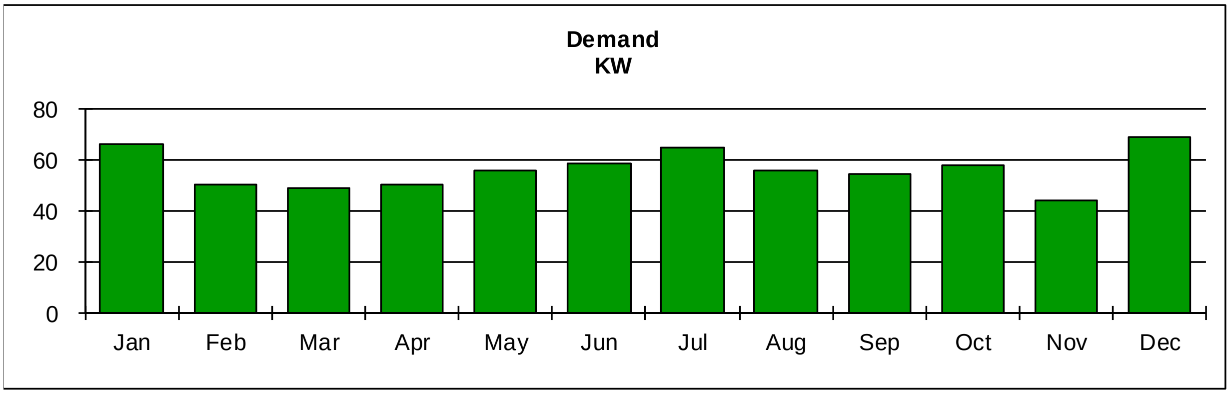
Totals

Facility Square Feet: 10,500

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Consumption | Equivalent MMBTU | Annual BTU/Sq.Ft. | % of Total |
| Electricity (KWH) | 204,800 | 699 | 66,550 | 100% |
| Electricity (KW) | 678 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 0 | 0 | 0 | 0% |
| **Total** | **N.A.** | **699** | **66,550** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Costs | Average Cost/Unit | Annual Cost/Sq.Ft. | % of Total |
| Electricity (KWH) | $24,798 | $0.121 | $2.362 | 100% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $0 | $0.000 | $0.000 | 0% |
| **Total** | **$24,798** | **$35.488** | **$2.362** | **100%** |


Consumption
kWh
25,000
20,000
15,000
10,000
5,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Demand
KW
80
60
40
20
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

## Baseline Model Development - eQuest$^{TM}$ Building Simulation Modeling Method

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*Internal Loads* - Loads, such as people density, lighting, plug loads, and miscellaneous loads, were obtained from site surveys. These loads provide electrical usage, heat gain to the space, and load on the HVAC equipment. The computer program uses these parameters, along with the architectural data, and the latest DOE-2 and American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE) methodologies to calculate cooling and heating loads for the facilities.

*HVAC Equipment & Performance* - Accurate HVAC and plant system descriptions at the facilities were obtained from mechanical plans provided by the City of Greenville, as well as site surveys and interviews. The computer program uses the resulting loads and the system parameters to calculate the cooling and heating load profiles for the facilities on an hourly basis. The program then uses these load profiles and system requirements to calculate the energy consumption.

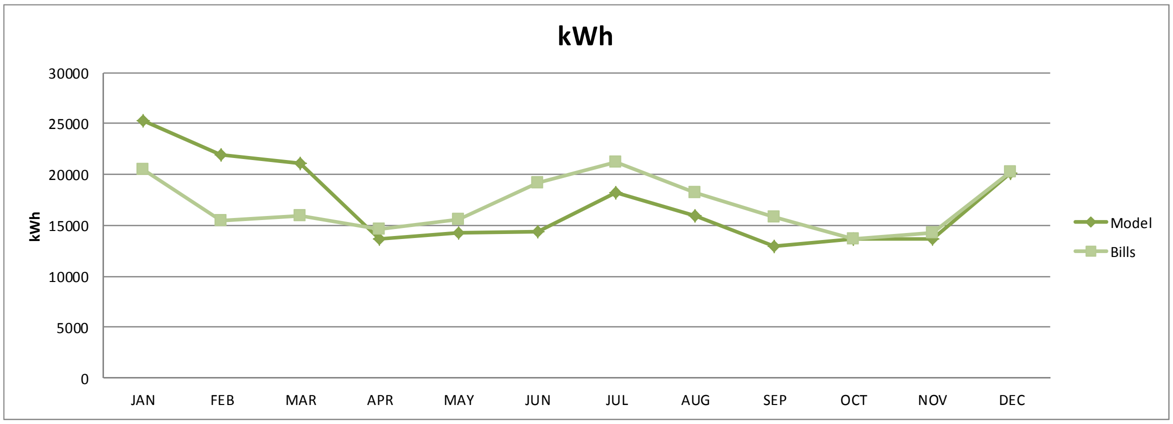
*Energy Economics* - In this final section, current electric and natural gas rate structures are defined in the computer models. The program uses this information to apply cost to the energy consumption calculated.

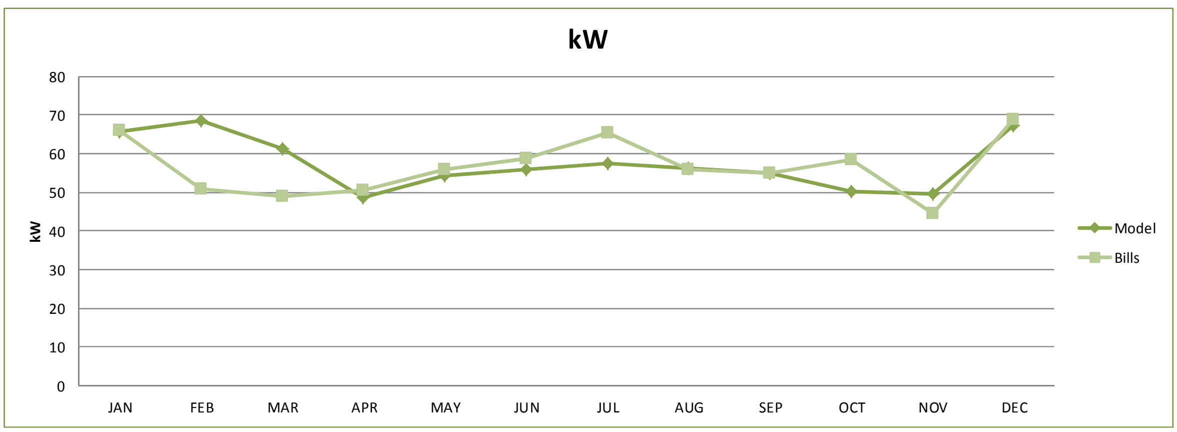
The models are then adjusted for baseline calibration until the following criteria are met:

- Calculated plant and system loads closely match the actual installed capacities
- Calculated energy consumption closely matches the actual energy consumption determined in the utility analysis

## Baseline Model Results

The following graph illustrates the results of the comparison between the historic baseline energy usage and the results of the initial baseline building simulation model outputs.



# Greenfield Terrace

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Natural gas is also used for heating. Two electric meters capture demand and usage for the entire building. The meters serving this facility are listed below.

*Greenfield Terrace - Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 2928700 | 103948 | Whole Bldg |
| GUC | Electric | 7484977 | 121845 | Exterior |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECSG rate structure as summarized below.

| Electric Rate | GUC | ECSG | |
|---|---|---|---|
| **Consumption** | | | **Base Charge** |
| For Usage | Cost | Unit | Cost |
| 1st 1000 | $ 0.13177 | kWh | 12.89 |
| Next 5000 | $ 0.12558 | kWh | |
| >6000 | $ 0.10696 | kWh | |

## Energy Usage and Baseline

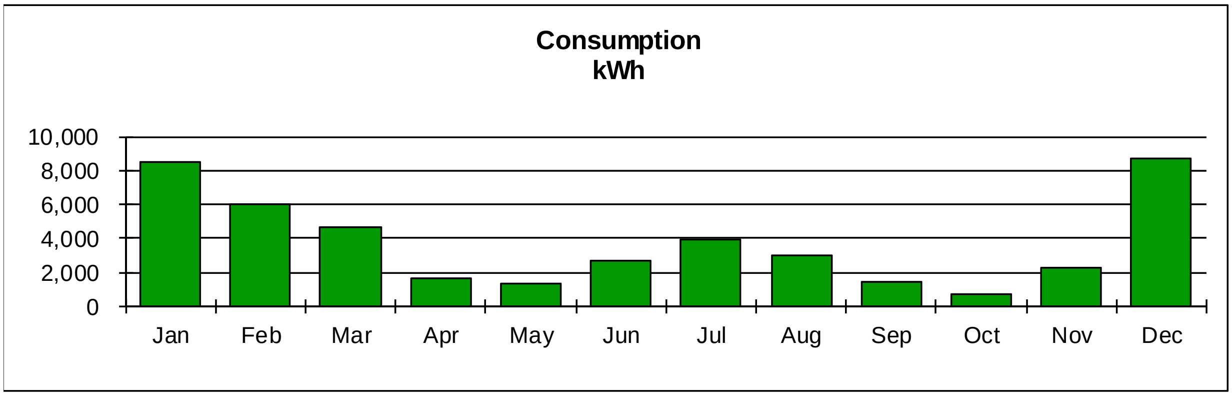
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

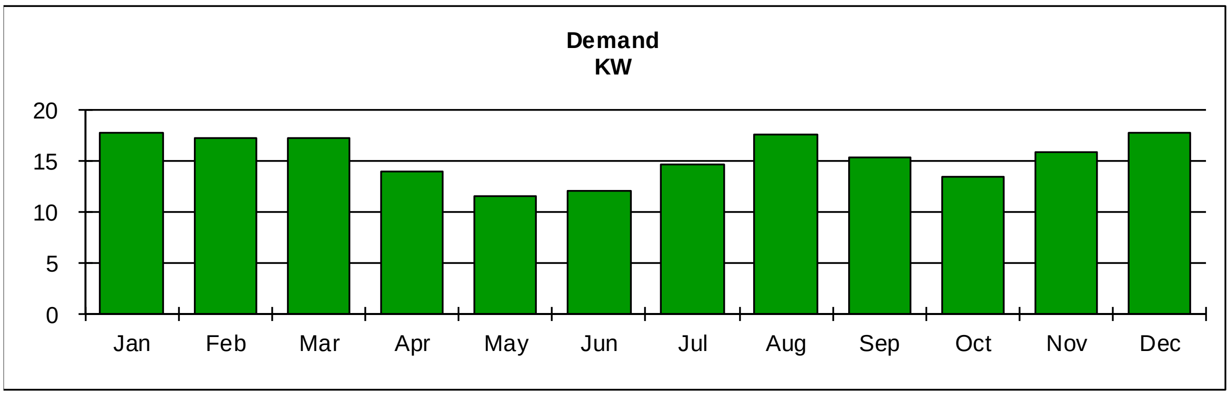
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | KWH | $-KWH | KW | $-KW | $-Tot Elec. | $/KWH | therms | $-Gas |
| Jan | 8,478 | | 18 | | $1,052 | $0.1241 | | |
| Feb | 6,018 | | 17 | | $788 | $0.1309 | | |
| Mar | 4,661 | | 17 | | $617 | $0.1324 | | |
| Apr | 1,672 | | 14 | | $242 | $0.1447 | | |
| May | 1,388 | | 12 | | $206 | $0.1487 | | |
| Jun | 2,677 | | 12 | | $369 | $0.1378 | | |
| Jul | 3,935 | | 15 | | $527 | $0.1339 | | |
| Aug | 3,008 | | 18 | | $410 | $0.1364 | | |
| Sep | 1,511 | | 15 | | $222 | $0.1471 | | |
| Oct | 781 | | 13 | | $129 | $0.1648 | | |
| Nov | 2,320 | | 16 | | $324 | $0.1395 | | |
| Dec | 8,668 | | 18 | | $1,072 | $0.1236 | | |
| | | | | | | | | |
| **Totals** | **45,117** | | **185** | | **$ 5,958** | **$ 0.132** | **-** | **$ -** |

Facility Square Feet: 1,197

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Consumption | Equivalent MMBTU | Annual BTU/Sq.Ft. | % of Total |
| Electricity (KWH) | 45,117 | 154 | 128,604 | 100% |
| Electricity (KW) | 185 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 0 | 0 | 0 | 0% |
| **Total** | **N.A.** | **154** | **128,604** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| Energy Type | Annual Energy Costs | Average Cost/Unit | Annual Cost/Sq.Ft. | % of Total |
| Electricity (KWH) | $5,958 | $0.132 | $4.977 | 100% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $0 | $0.000 | $0.000 | 0% |
| **Total** | **$5,958** | **$38.701** | **$4.977** | **100%** |


Consumption
kWh
10,000
8,000
6,000
4,000
2,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Demand
KW
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

## Baseline Model Development - eQuest™ Building Simulation Modeling Method

Energy calculations were performed using eQuest™, a building simulation model and energy analysis program derived from the latest version of DOE-2, and by engineering calculations with spreadsheets. The eQuest™ building simulation and energy analysis program is well known in the heating, ventilation, and air-conditioning (HVAC) industry.

eQuest™ consists of multiple screen inputs for various components, steps, or facility information that may be broken down into the following categories:

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## Baseline Model Results

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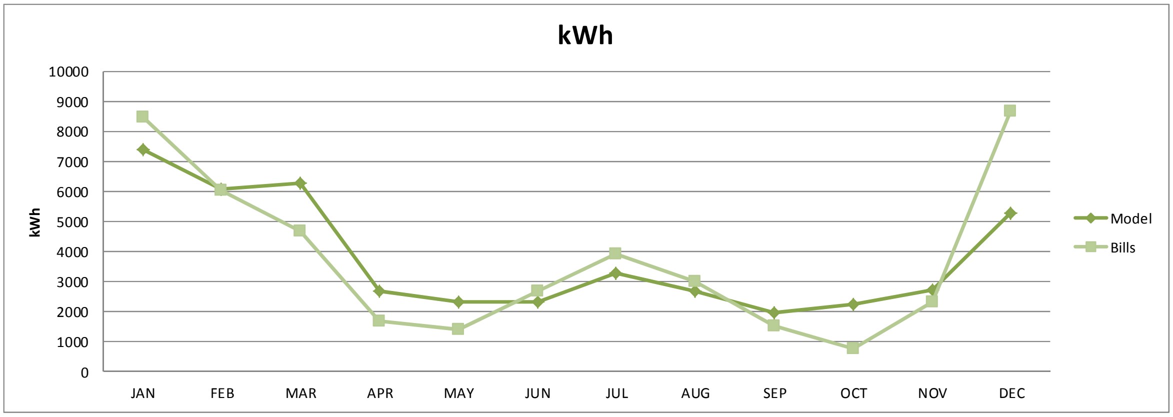


# Greenville Aquatics Center

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Natural gas is also used for heating. The main electric meter captures demand and usage for the entire building. Two natural gas meters captures all gas usage at the facility. These meters are listed below.

*Greenville Aquatic Center - Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 2431000 | 115678 | Whole Bldg |
| GUC | Gas | 2923600 | 1994 | Pool |
| GUC | Gas | 2923800 | 4079 | Bldg |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECMG rate structure as summarized below.

**Electric Rate GUC ECMG**

| Consumption | | | Demand Charge | | Base Charge |
|---|---|---|---|---|---|
| For Usage | Cost | Unit | For Usage | Cost | Cost |
| 1st 12500 | $ 0.12323 | kWh | 1st 35 kW | Free | |
| >12500 | $ 0.09233 | kWh | >35 kW | 4.17 | 13.33 |
| | | | | | |

#### Natural Gas

Natural gas at this facility is charged through the GUC GCCF gas structure as summarized below.

**Natural Gas Rate GUC GCCF**

| Consumption | | | Base Charge |
|---|---|---|---|
| For Usage | Cost | Unit | Cost |
| 50 | $ 1.18130 | therm | 22 |
| Next 250 | $ 1.10760 | therm | |
| Next 200 | $ 1.05760 | therm | |
| >500 | $ 0.90710 | therm | |

## Energy Usage and Baseline

The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

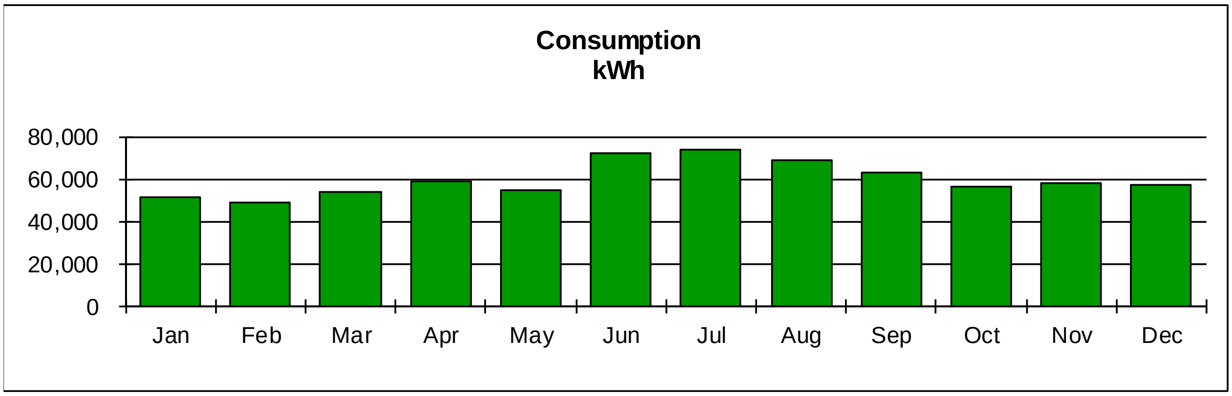
The baseline electricity demand values for June, 2011 and July, 2011 were significantly higher than the 2009 and 2010 historical utility data. Instead, the average of the 2009 and 2010 electricity demand values for June and July were used for the baseline analysis.

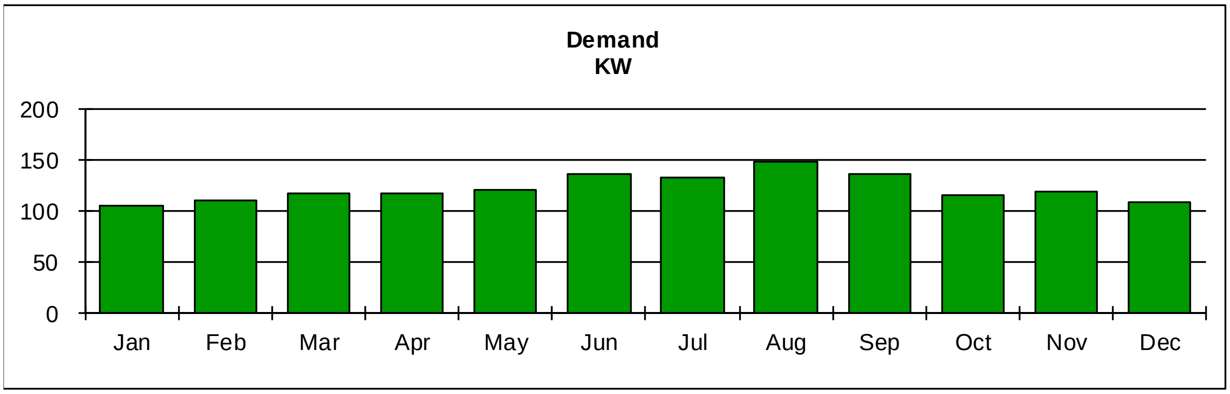
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Date** | **KWH** | **$-KWH** | **KW** | **$-KW** | **$-Tot Elec.** | **$/KWH** | **therms** | **$-Gas** |
| Jan | 51,680 | | 105 | | $5,462 | $0.1057 | 3,422 | $3,893 |
| Feb | 48,640 | | 111 | | $5,207 | $0.1070 | 2,218 | $2,605 |
| Mar | 53,600 | | 118 | | $5,693 | $0.1062 | 1,923 | $2,289 |
| Apr | 58,760 | | 118 | | $6,169 | $0.1050 | 1,447 | $1,780 |
| May | 54,520 | | 122 | | $5,795 | $0.1063 | 1,114 | $1,419 |
| Jun | 71,760 | | 137 | | $7,581 | $0.1057 | 658 | $881 |
| Jul | 73,480 | | 133 | | $7,710 | $0.1049 | 688 | $896 |
| Aug | 69,200 | | 148 | | $7,262 | $0.1049 | 770 | $941 |
| Sep | 63,040 | | 136 | | $6,643 | $0.1054 | 1,064 | $1,242 |
| Oct | 56,000 | | 116 | | $5,910 | $0.1055 | 930 | $1,155 |
| Nov | 57,840 | | 120 | | $6,093 | $0.1053 | 2,400 | $2,648 |
| Dec | 57,220 | | 109 | | $5,990 | $0.1047 | 3,079 | $3,374 |
| | | | | | | | | |
| **Totals** | **715,740** | | **1,472** | | **$ 75,514** | **$ 0.106** | **19,713** | **$ 23,123** |

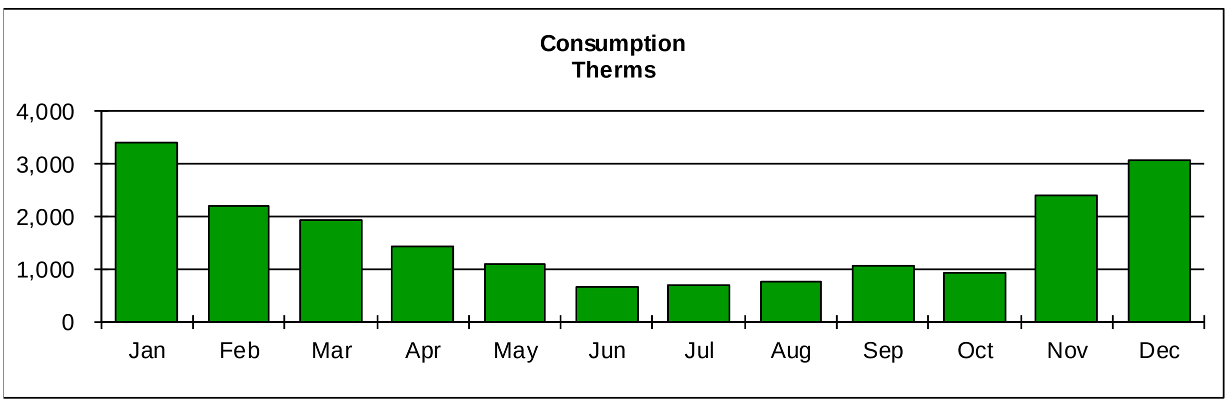
*June and July kW of the Baseline year were high in comparison to 2009,2010.*
*Used the average of those two years for the baseline data.*
Facility Square Feet: 30,535

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Consumption** | **Equivalent MMBTU** | **Annual BTU/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | 715,740 | 2,442 | 79,977 | 55% |
| Electricity (KW) | 1,472 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 19,713 | 1,971 | 64,559 | 45% |
| **Total** | **N.A.** | **4,413** | **144,536** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Costs** | **Average Cost/Unit** | **Annual Cost/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | $75,514 | $0.106 | $2.473 | 77% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $23,123 | $1.173 | $0.757 | 23% |
| **Total** | **$98,637** | **$22.349** | **$3.230** | **100%** |


Consumption
kWh
80,000
60,000
40,000
20,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Demand
KW
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Consumption
Therms
4,000
3,000
2,000
1,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

## Baseline Model Development –b eQuest™ Building Simulation Modeling Method

Energy calculations were performed using eQuest™, a building simulation model and energy analysis program derived from the latest version of DOE-2, and by engineering calculations with spreadsheets. The eQuest™ building simulation and energy analysis program is well known in the heating, ventilation, and air-conditioning (HVAC) industry.

eQuest™ consists of multiple screen inputs for various components, steps, or facility information that may be broken down into the following categories:

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*Building Shell, Structure, Materials, & Shades* - Accurate architectural data for the facilities were obtained from architectural plans provided by the City of Greenville and site observations. These included building layouts and dimensions, and wall, roof, and floor constructions, as well as, window quantities, locations, types, and shading.

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## Baseline Model Results

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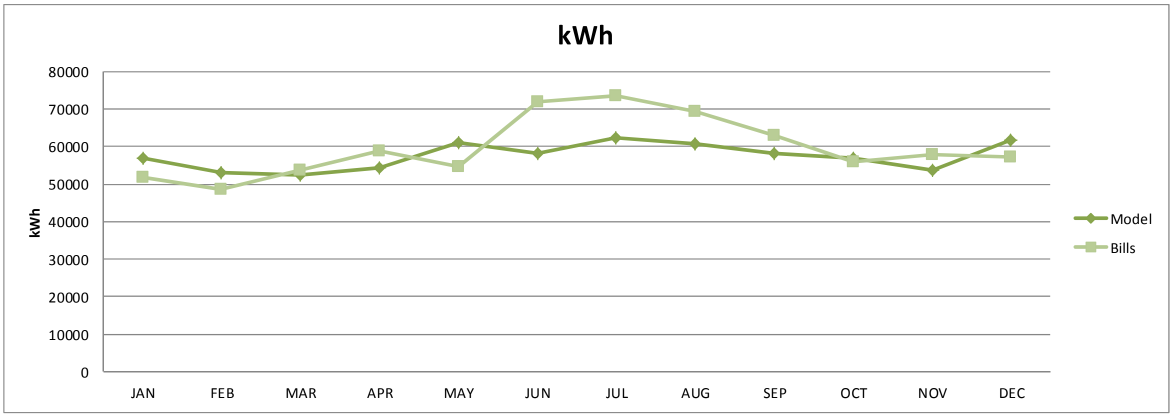
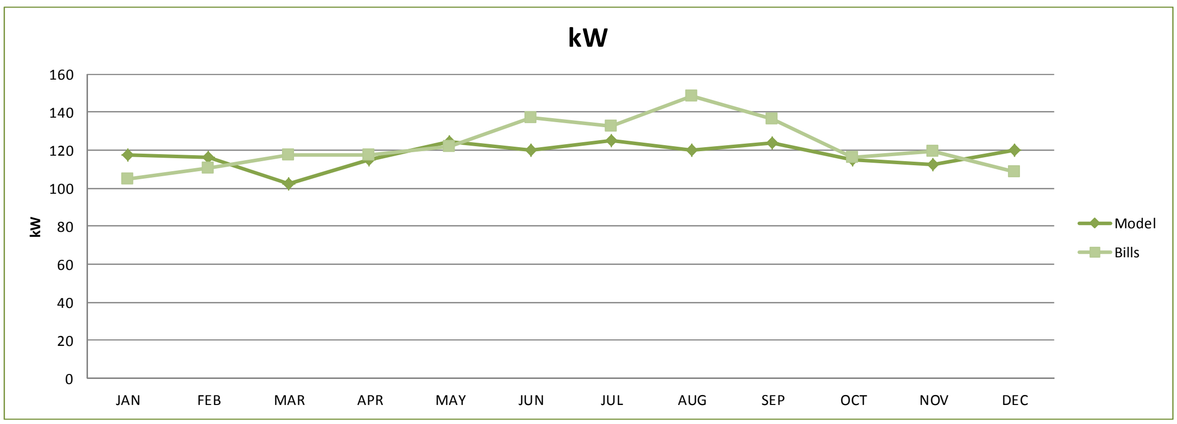
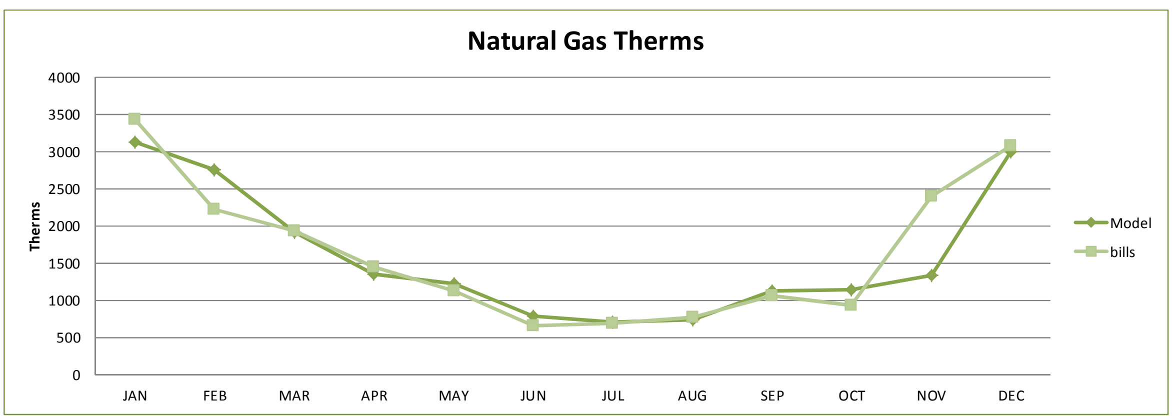


# Bradford Creek Golf Course

## Utility Description and Energy Baseline

### General

The building purchases electricity for the majority of energy usage. Liquid propane is used for heating at the facility. The main electric meter captures demand and usage for the entire building.

*Bradford Creek Golf Course - Accounts inlcuded in baseline analysis*

| Utility | Fuel | Account # | Meter # | Area Served |
|---|---|---|---|---|
| GUC | Electric | 7392868 | 109334 | Whole Bldg |
| East Carolina Propane of Greenville | Liquid Propane | NA | none | Whole Bldg |

### Utility Rates

#### Electric

Electric demand and usage at the facility is charged through the GUC ECMG rate structure as summarized below.

**Electric Rate GUC ECMG**

| Consumption | | | Demand Charge | | Base Charge |
|---|---|---|---|---|---|
| For Usage | Cost | Unit | For Usage | Cost | Cost |
| 1st 12500 | $ 0.12323 | kWh | 1st 35 kW | Free | |
| >12500 | $ 0.09233 | kWh | >35 kW | 4.17 | 13.33 |
| | | | | | |

#### Liquid Propane

Liquid propane at the facility is purchased through East Carolina Propane of Greenville.

**Propane Rate East Carolina Propane**

| Consumption | | |
|---|---|---|
| For Usage | Cost | Unit |
| | $ 1.95900 | gal |

## Energy Usage and Baseline

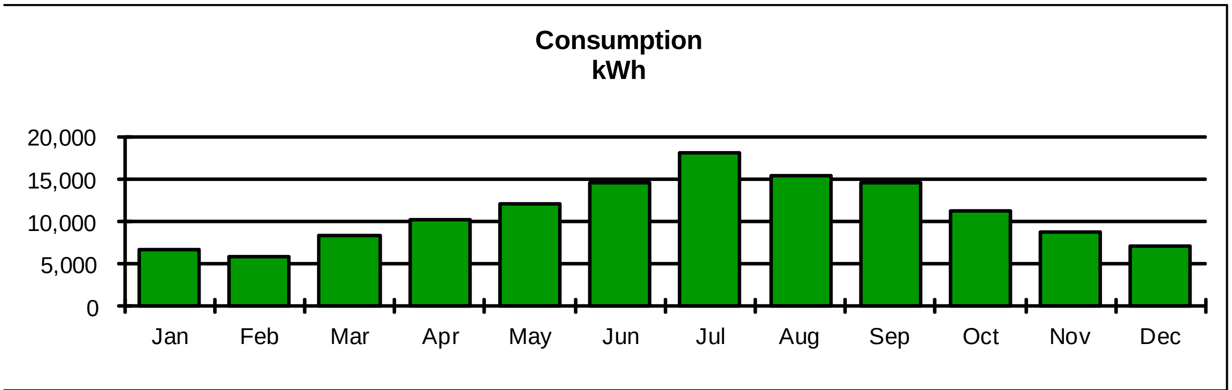
The historical energy used at the facility is summarized below. The data is based on a detailed utility analysis using the most recent 36 months of utility bills received during the preliminary phase and up to the start of the Investment Grade Audit. The tables below summarize the baseline that was developed. Following the summary tables are graphical representations of the information.

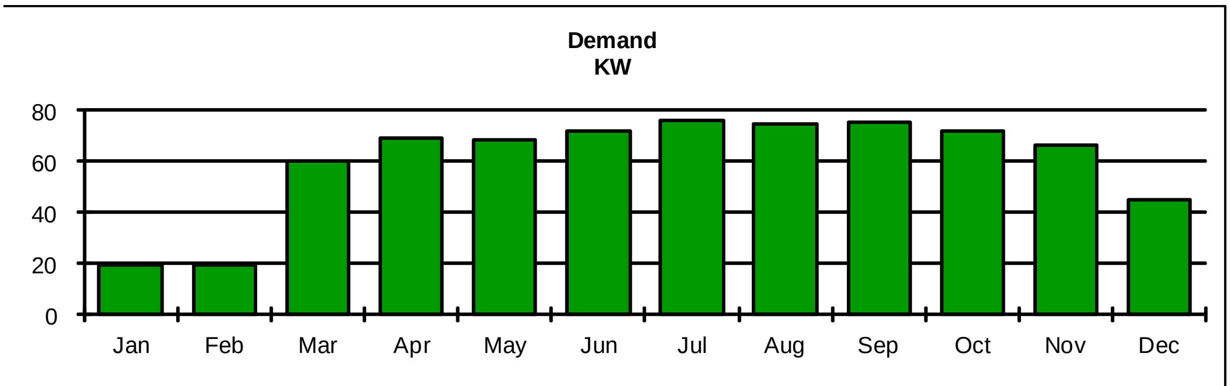
| | Energy Profile | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Date** | **KWH** | **$-KWH** | **KW** | **$-KW** | **$-Tot Elec.** | **$/KWH** | **therms** | **$-Gas** |
| Jan | 6,640 | | 20 | | $1,866 | $0.2810 | | |
| Feb | 5,800 | | 20 | | $1,607 | $0.2771 | | |
| Mar | 8,400 | | 60 | | $2,090 | $0.2489 | | |
| Apr | 10,080 | | 69 | | $2,178 | $0.2161 | | |
| May | 11,960 | | 68 | | $2,187 | $0.1828 | | |
| Jun | 14,480 | | 72 | | $3,725 | $0.2573 | | |
| Jul | 18,040 | | 76 | | $4,649 | $0.2577 | | |
| Aug | 15,280 | | 74 | | $6,114 | $0.4001 | | |
| Sep | 14,440 | | 76 | | $4,733 | $0.3278 | | |
| Oct | 11,280 | | 72 | | $3,264 | $0.2893 | | |
| Nov | 8,680 | | 66 | | $2,448 | $0.2821 | | |
| Dec | 7,040 | | 45 | | $2,061 | $0.2928 | | |
| | | | | | | | | |
| **Totals** | **132,120** | | **717** | | **$ 36,923** | **$ 0.279** | **-** | **$ -** |

Facility Square Feet: 5,342

| Annual Energy Consumption Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Consumption** | **Equivalent MMBTU** | **Annual BTU/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | 132,120 | 451 | 84,387 | 100% |
| Electricity (KW) | 717 | 0 | 0 | 0% |
| Oil (GAL) | 0 | 0 | 0 | 0% |
| Gas (therms) | 0 | 0 | 0 | 0% |
| **Total** | **N.A.** | **451** | **84,387** | **100%** |

| Annual Energy Cost Profile | | | | |
|---|---|---|---|---|
| **Energy Type** | **Annual Energy Costs** | **Average Cost/Unit** | **Annual Cost/Sq.Ft.** | **% of Total** |
| Electricity (KWH) | $36,923 | $0.279 | $6.912 | 100% |
| Electricity (KW) | $0 | $0.000 | $0.000 | 0% |
| Oil (GAL) | $0 | $0.000 | $0.000 | 0% |
| Gas (therms) | $0 | $0.000 | $0.000 | 0% |
| **Total** | **$36,923** | **$81.908** | **$6.912** | **100%** |


Consumption
kWh
20,000
15,000
10,000
5,000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Demand
KW
80
60
40
20
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

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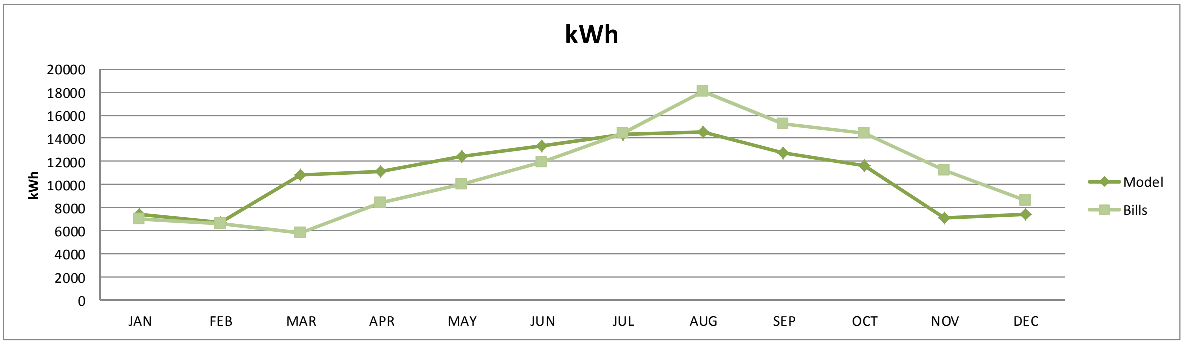
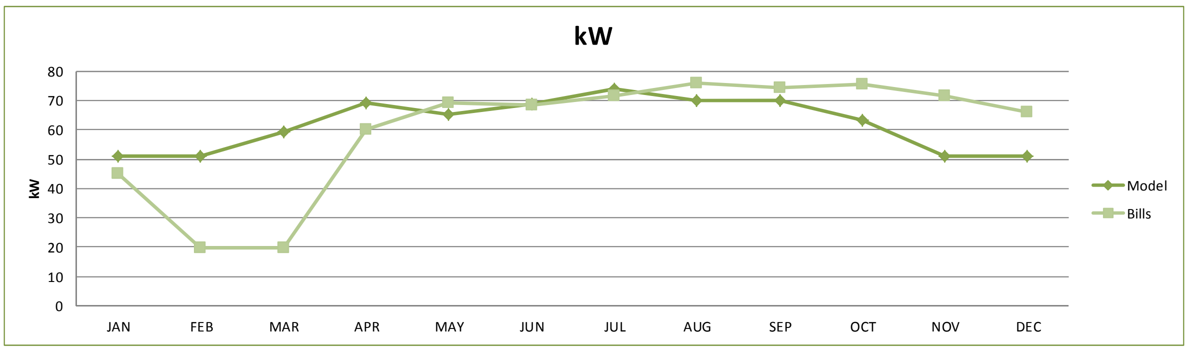
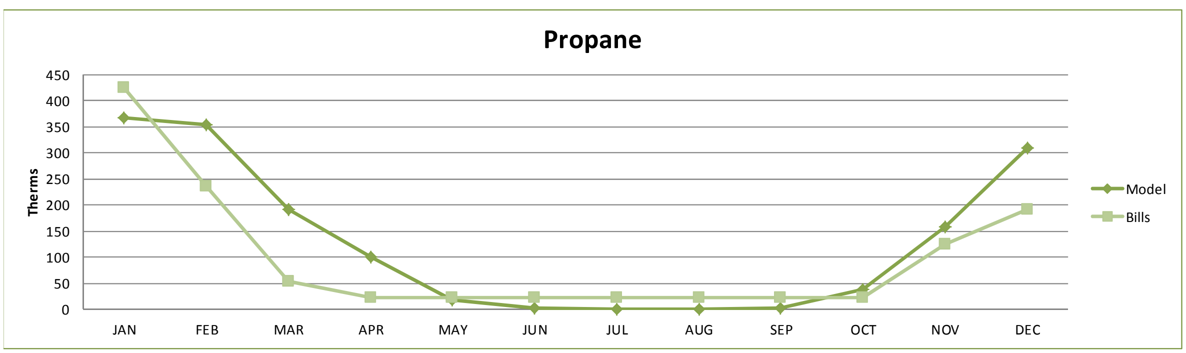
The following graph shows the results of the comparison between the historic baseline energy usage and the results of the initial baseline building simulation model outputs.



# Section 6: Operational Savings

Provided in this section is an overview of the approach to operational savings taken by Schneider Electric followed by specific examples in the proposed project of Operational Savings quantified and included in the proposed project.

## Section 6.1 – Operational Savings Overview

One of the benefits of entering a guaranteed energy savings partnership with Schneider Electric is the installation of various pieces of new mechanical, lighting and control system equipment. Replacing old equipment with new or adding new equipment to automate processes previously performed manually improves efficiency in the customer's facility maintenance department. While this efficiency improvement results in additional savings to the customer, this "operational" savings is often not quantifiable or verifiable and is not included in the guaranteed savings. Schneider Electric prefers using only real and verifiable savings to document projects. Any non-energy savings included in a savings guarantee could add risk to the customer and increase the potential for financial shortfalls in future years. In many instances, "operational" savings add more risk than value to the project. If it is appropriate to guarantee operational savings, it is done only with explicit client understanding and consent.

***Schneider Electric will only guarantee operational savings resulting from recurring expenses in the operating budget.*** Operational savings will be measured by comparing the current year's budget line item with the base year's line item from which savings are being achieved. If there is a shortfall in an agreed-upon line item in the operating budget, Schneider Electric will address it in the same manner as the energy guarantees.

# Section 6.2 – Proposed Operational Savings

## Lighting

Operational lighting savings will be observed throughout the city as most of the lighting fixtures and ballasts will be retrofitted. The operational savings created from the lighting scope of work can be divided into two types: warranty savings and maintenance savings. No labor was included in the calculated operational savings, only material costs have been accounted for.

Warranty savings are realized through the reduced amount of material costs that would have been spent on replacing failed lamps and ballasts throughout the course of a year. The lighting scope specifies a complete retrofit with new lamps and ballasts which reduce the amount of lighting failures. In addition, the new lighting materials are under manufacturer warranty for three years on the lamps and five years on the ballasts. The table below shows the anticipated warranty savings that can be expected from the lighting scope of work. These savings reflect the warranties that will cover replacement of any failed component for their respective terms and the avoided material costs from lamp and ballast failures if lighting was not upgraded as part of this project. The values are escalated at a rate of 2.0% per year.

| Lighting Warranty Savings | | |
|---|---|---|
| **Year** | **Covered Items** | **Annual Savings** |
| 1 | Lamps and Ballasts | $5,074 |
| 2 | Lamps and Ballasts | $5,175 |
| 3 | Lamps and Ballasts | $5,279 |
| 4 | Ballasts Only | $1,346 |
| 5 | Ballasts Only | $1,030 |

Additional lighting operational savings will be realized as maintenance savings. The life expectancy of the new lighting materials is greater than those that are currently installed in the City's buildings. Savings from lighting maintenance will provide an additional **$3,476** annual savings. This value is also escalated at 2.0% per year for the duration of the performance contract in the financial analysis and cash flow.

# Section 7: Project Commissioning Plan

**Introduction**

The commissioning process executes the testing necessary to verify the project design, contractor and vendor performance, and the baseline performance of the installed systems. This documentation verifies the use of proper construction processes and documents resultant system and building performance. This data provides a comparative basis for analysis of the building performance for years to come. The basic concept of any energy project is that the ESCO will take full-responsibility for all aspects of a project including design, equipment selection, installation, construction management, commissioning, training and final documentation. One of the most attractive aspects of an energy project is the absolute written and contractual guarantee that the systems installed will perform at least as well as promised for the term of the guarantee, often up to 15 years or more. If the systems fail to perform, the ESCO is contractually obligated to reimburse the owner for failed equipment/system performance and energy savings. For this reason, Schneider Electric commissioning standards far exceed those outlined in ASHRAE 1-1996 and those suggested by the Building Commissioning Association. Schneider Electric is also accredited by the National Association of Energy Service Companies (NAESCO).

**Commissioning Plan Summary**

The Schneider Electric commissioning process formally begins during the IGA phase of the project. As part of the IGA development, Schneider Electric provides an interim IGA report. Once the interim IGA report is accepted, the commissioning plan is developed in parallel with the ECM designs, and design phase commissioning is performed. Scope is defined by identifying systems to be commissioned in four phases of testing for each ECM:

- Design Analysis
- Functional performance testing
- Acceptance performance testing

Verification and confidence in building performance is created by executing the commissioning plan contained in this document. The byproducts of the commissioning service allow us to:

- Define desired performance criteria and develop test forms
- Prove design compliance with performance criteria
- Collect and analyze actual performance data
- Strategize and implement optimal performance
- Educate on the proper use of the test forms to verify ongoing performance

**Statement of Work**

Roles and Responsibilities Matrix

Project team member roles and responsibilities for each process of the service are summarized in the table on the matrix below:

| | Roles, Responsibilities and Work Products |
|---|---|
| Pre-Design | |
| PD 100: Develop Cx Plan | Commissioning (Cx) Team develops a Commissioning Plan. Owner Team approves plan. |
| PD 200: Document Performance Criteria | Cx Team issues written guidelines for format and content of performance criteria. Design Team develops performance criteria. Cx Team reviews performance criteria and quantifies non-performance issues. Project Team resolves non-performance issues quantified in the Project Issues List. |
| Design | |
| D 100: Engineering Analysis | During contract documents phase of design, Cx Team quantifies non-performance issues through preliminary and final reviews of design documents. Project Team resolves non-performance issues quantified in the Project Issues List. |
| Bid/Construct | |
| BC 100: Manage Performance Testing | Cx Team creates and manages critical path performance testing schedule. Project Team resolves non-performance issues quantified in the Project Issues List during performance testing. |
| BC 200: Review Contractor Submittal Documentation | Design and Cx Teams quantify non-performance issues through review of Construction Team's submittal documentation. Project Team resolves non-performance issues quantified in the Project Issues List. |
| BC 300: Develop Performance Testing Documentation | Cx Team develops Functional Performance Testing Manual(s) and Acceptance Performance Testing Manuals. Design Team approves manuals. |
| BC 400: Functional Performance Testing | Cx Team quantifies non-performance issues by executing Pre-Functional and Functional Performance Testing. |
| Closeout | |
| C 100: Acceptance Performance Testing | Cx Team quantifies non-performance issues through execution of Integrated Systems Acceptance Performance Testing. |
| C 200: Review Contractor Closeout Documentation | Design and Cx Teams quantify non-performance issues through review of Construction Team's closeout documentation. Project Team resolves non-performance issues quantified in the Project Issues List. |
| C 300: Communicate Performance Testing Final Results | Design Team updates performance criteria. Cx Team develops Commissioning Report for approval by Design Team. Commissioning Report submitted to Owner Team by Cx Team. |

**Schedule**

The service delivery schedule is summarized in the following matrix.

| Cx Phase/Process | Start Date | Finish Date |
|---|---|---|
| Pre-Design | | |
| Task PD 100: Develop Cx Plan | 07-03-12 | 07-17-12 |
| Task PD 200: Document performance criteria | 07-10-12 | 07-24-12 |
| Design | | |
| Task D 100: Engineering Analysis | 07-30-12 | 08-06-12 |
| Bid/Construct/Implement | | |

| Cx Phase/Process | Start Date | Finish Date |
|---|---|---|
| Task BC 100: Manage Performance Testing | 08-09-12 | 06-17-13 |
| Task BC 200: Review Contractor Submittal Documentation | 06-07-13 | 06-17-13 |
| Task BC 300: Develop Performance Testing Documentation | 08-09-12 | 08-31-12 |
| Task BC 400: Pre-Functional & Functional Performance Testing | 08-09-12 | 06-17-13 |
| Closeout | | |
| Task C 100: Acceptance Performance Testing | 08-09-12 | 06-17-13 |
| Task C 200: Review Contractor Closeout Documentation | 06-07-13 | 06-21-13 |
| Task C 300: Communicate Performance Testing Final Results | 06-07-13 | 06-21-13 |

**Functional Performance Testing**

Each commissioned system is subjected to a phased functional performance testing process that quantifies its performance relative to design intent as defined in the facility's Operational Intent document. The following table summarizes each phase of Functional Performance Testing (FPT):

| Functional Performance Testing | | |
|---|---|---|
| **ID** | **Description** | **Methods/Criteria** |
| PFT: Pre-Functional Testing | | |
| PFT-1 | Equipment Verification | Visually inspect all equipment and components comprising the system. Verify consistency between specified, submitted, and installed equipment. |
| PFT-2 | Installation Verification | Visually inspect all equipment and components comprising the system and verify installation per contract documents, maintainability, and operational availability. |
| PFT-3 | Operation Verification | Test all equipment and components comprising the system to verify that their independent performance complies with design intent. Examples are duct leakage testing, pipe leakage testing, piping flushing, system controls startup, vendor equipment startup, etc. |
| FT: System Functional Testing | | |
| FT-1 | Fail Safe Functions | Test performance of each control function dedicated to "fail safe" system operation. |
| FT-2 | Equipment Protection, Interlocks, and Life Safety Interface Functions | Test performance of each control function dedicated to protecting system equipment, interfacing with life safety system(s), and interlocking operation of system equipment and components. |
| FT-3 | Hardware | Test performance of each system's controls device (i.e. Equipment Enable/Disable, Start/Stop, and Step, Equipment Modulation, Modulating Components, Step Components, Analog Sensors, Digital Sensors, etc). |
| FT-4 | Schedule/Mode Switch Control Functions | Test performance of each control function dedicated to time scheduling, staging of the system mode, or staging of equipment and components. Examples of these control functions are optimal start/stop, occupied/unoccupied operation, automatic equipment alternation, etc. |
| FT-5 | Basic Control | Test performance of each control function required for system |

| Functional Performance Testing | | |
|---|---|---|
| **ID** | **Description** | **Methods/Criteria** |
| | Functions | operation. Examples of these control functions are: AHU discharge temperature control, AHU discharge static pressure control, Hydronic system differential pressure control, etc. |
| FT-6 | Advanced Control Functions | Test performance of each control function included to optimize a system, but not required for system operation. Examples of these control functions are AHU discharge temperature reset, hydronic system temperature reset, etc. |
| FT-7 | Failures & Alarms Control Functions | Test performance of each control function dedicated to system failure and alarming. |
| FT-8 | Setpoints and/or Configuration | Verify system controls setpoints and/or configuration parameters (i.e. Verify setpoints and configuration parameters for fan-powered terminal unit). |
| FT-9 | Graphical User Interface | Test performance of system graphical user interface. |
| TAB: Testing, Adjusting, Balancing, & Optimization | | |
| TAB-1 | Measurement devices | Calibrate measurement devices (i.e. terminal unit primary airflow measurement stations, hydronic flow measurement stations, etc) |
| TAB-2 | Proportional Balance | Proportion airflow or hydronic flow to the identified system's terminal devices (i.e. grilles, registers, diffusers, coils, etc) per contract documents. |
| TAB-3 | Distribution Equipment Performance | Measure performance of distribution equipment (i.e. fans, pumps, etc). |
| TAB-4 | Production Equipment Performance | Measure performance of production equipment (i.e. Boilers, Chillers, Cooling Towers, etc). |
| TAB-5 | Heat Transfer Equipment Performance | Measure performance of heat transfer equipment (i.e. heat exchangers, coils, etc). |
| TAB-6 | Optimum setpoint(s) | Optimize setpoints (i.e. AHU discharge static pressure setpoint, hydronic system differential pressure, etc) to minimize resource consumption and/or demand. |
| TR: Training | | |
| TR-1 | Design Intent | Summarize how the system is designed and operated to comply with the facility's Operational Intent. |
| TR-2 | Sequence of Operations | Summarize how the system is automated to comply with the facility's Operational Intent. |
| TR-3 | Equipment or Component Training | Provide specified vendor training for key equipment and components. |

**Acceptance Performance Testing**

The project is subjected to an Acceptance Performance Testing process that quantifies performance of the facility relative to its integrated systems performance criteria. Integrated systems performance criteria are defined in the facility's Operational Intent document. The following table defines the categories of Acceptance Performance Testing (APT).

| APT Category | Description |
|---|---|
| Safety | Quantify performance of integrated systems relative to safety criteria defined in facility's Operational Intent document. |
| Comfort | Quantify performance of integrated systems relative to comfort criteria defined in facility's Operational Intent document. |
| Efficiency | Quantify performance of integrated systems relative to efficiency criteria defined |

| APT Category | Description |
|---|---|
| | in facility's Operational Intent document. |
| Reliability | Quantify performance of integrated systems relative to reliability criteria defined in facility's Operational Intent document. |
| Operations | Quantify performance of integrated systems relative to operations criteria defined in facility's Operational Intent document. |

Schneider Electric's Acceptance Performance Testing is summarized in the following table. Section 4 of Schedule H summarizes how these tests are applied to this project.

| Acceptance Performance Testing | | |
|---|---|---|
| **ID** | **Description** | **Methods/Criteria** |
| S: Safety | | |
| S-1 | Life Safety System(s) Interfaces | Test ability of all life safety subsystems to function together at a point in time in response to initiation events. (i.e. Fire Alarm, Fire/Smoke Dampers, Heating, Ventilation, & Air Conditioning, Emergency Power System, etc). Optimize systems, equipment, and/or components as required to achieve life safety system(s) performance per regulatory agency standards as defined in facility's Operational Intent document. |
| S-2 | Electrical Utility Failure | Simulate failure of electrical utility. Verify response of systems, equipment, and components per facility's Operational Intent document. |
| S-3 | Ventilation Air Quantities | Measure and document indoor air quality throughout entire operating range of system(s) over a specified time period. Optimize systems, equipment, and components as required to achieve Indoor Air Quality standards of performance per facility's Operational Intent document. |
| S-4 | Space Pressurization | Measure and document space pressurization throughout entire operating range of system(s) over a specified time period. Optimize systems, equipment, and/or components as required to achieve space pressurization in accordance with regulatory agency standards per facility's Operational Intent document. |
| S-5 | Space Environmental Condition Modes | Test ability of system(s) to function together and switch between multiple modes of operation within a limited amount of time (i.e. transition surgery suite between 75 deg F and 60 deg F in 15 minutes). Optimize systems, equipment, and/or components as required to meet or exceed time limits per facility's Operational Intent document. |
| C: Comfort | | |
| C-1 | Space Environmental Conditions | Measure and document space environmental conditions (i.e. space temperature, space humidity, etc) over a specified time period. Optimize systems, equipment, and components as required to achieve environmental conditions per facility's Operational Intent document. |
| C-2 | Space Acoustical Performance | Measure Sound Pressure Levels at occupant location for each mode of operation. |
| E: Efficiency | | |
| E-1 | Unoccupied Ventilation Air Heating/Cooling | Measure and document system performance over a specified time period. Optimize systems, equipment, and components as required to minimize the quantity of ventilation air delivered during unoccupied hours per facility's Operational Intent Document. |

| Acceptance Performance Testing | | |
|---|---|---|
| **ID** | **Description** | **Methods/Criteria** |
| E-2 | Economizer(s) | Measure and document system performance over a specified time period. Optimize systems, equipment, and/or components as required to achieve economizer operation per facility's Operational Intent Document. |
| E-3 | Simultaneous Heating/Cooling | Measure and document system performance over a specified time period. Optimize systems, equipment, and/or components as required to minimize and/or eliminate simultaneous heating/cooling per facility's Operational Intent Document. |
| E-4 | Distribution Equipment Energy | Measure and document performance of distribution equipment (i.e. fans, pumps, etc) volumetric control loop(s) throughout entire operating range of system over a specified time period. Optimize systems, equipment, and/or components as required to minimize resource use per facility's Operational Intent Document. |
| E-5 | Heating/Cooling Energy | Measure and document performance of system temperature control loop(s) throughout entire operating range of system over a specified time period. Optimize systems, equipment, and/or components as required to minimize resource use per facility's Operational Intent Document. |
| E-6 | Heating/Cooling Energy Production and Distribution | Measure and document performance of system equipment staging/sequencing control loop(s) throughout entire operating range over a specified time period. Optimize systems, equipment, and/or components as required to minimize resource use per facility's Operational Intent Document. |
| R: Reliability | | |
| R-1 | Air Distribution System Component Load-up | Verify that air distribution system has enough spare capacity to deliver flow per system design intent during maximum block load conditions when the pressure drop of all system components is simulated to equal the maximum value documented in the facility's Operational Intent Document. |
| R-2 | Hydronic Distribution System Component Load-up | Verify that hydronic distribution system has enough spare capacity to deliver flow per system design intent during maximum block load conditions when the pressure drop of all system components is simulated to equal the maximum value documented in the facility's Operational Intent Document. |
| R-3 | Duct Leakage | Verify duct leakage is less than or equal to quantities specified in the facility's Operational Intent Document. |
| R-4 | Production Equipment Efficiency | Measure and document production equipment efficiency. Optimize systems, equipment, and/or components as required to achieve equipment efficiency per facility's Operational Intent Document. |
| R-5 | Water treatment system | Measure and document system blow-down. Optimize systems, equipment, and/or components as required to achieve quantity of blow down per facility's Operational Intent Document. |
| O: Operations | | |
| O-1 | System Schedules | Measure and document system and/or equipment hours of operation over a specified time period. Optimize system schedules to achieve hours of operation per facility's Operational Intent Document. |
| O-2 | System Setpoints | Measure and document setpoints critical to optimal system operation. Optimize setpoints per facility's Operational Intent Document. |
| O-3 | Electricity Production Modes | Verify operation of multiple systems supporting the production of electricity in all possible modes of operation. Optimize systems, equipment, and components as required to achieve operation of each system in all modes of operation per facility's Operational Intent Document. |

## Commissioning Service Scope

The application of Functional Performance Testing and Acceptance Testing is summarized as follows in the commissioning service scope:

**ECM 2 - Controls (DDC)**

| | Pre-functional Testing | | | Functional Testing | | | | | | | | | Test and Balance | | | | | | Training | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Functional Testing | PFT-1 | PFT-2 | PFT-3 | FT-1 | FT-2 | FT-3 | FT-4 | FT-5 | FT-6 | FT-7 | FT-8 | FT-9 | TAB-1 | TAB-2 | TAB-3 | TAB-4 | TAB-5 | TAB-6 | TR-1 | TR-2 | TR-3 | Notes |
| DDC Control Systems | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | X | X | X | X | |
| | Safety | | | | | Comfort | | Efficiency | | | | | | Reliability | | | | | Operations | | | |
| Acceptance Testing | S-1 | S-2 | S-3 | S-4 | S-5 | C-1 | C-2 | E-1 | E-2 | E-3 | E-4 | E-5 | E-6 | R-1 | R-2 | R-3 | R-4 | R-5 | O-1 | O-2 | O-3 | Notes |
| DDC Control Systems | | X | X | | | X | | X | X | X | X | X | X | | | | | | X | X | | |
| System/Location/Quantity | City Hall, Municipal Building, Police-Fire Rescue*, Eppes Recreation*, H. Boyd Lee Park*, Greenville Aquatics and Fitness, | | | | | | | | | | | | | | | | | | | | | |
| | DDC control system installation, modification, and retro-commissioning | | | | | | | | | | | | | | | | | | | | | |

**ECM 2 - Controls (Viconics)**

| | Pre-functional Testing | | | Functional Testing | | | | | | | | | Test and Balance | | | | | | Training | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Functional Testing | PFT-1 | PFT-2 | PFT-3 | FT-1 | FT-2 | FT-3 | FT-4 | FT-5 | FT-6 | FT-7 | FT-8 | FT-9 | TAB-1 | TAB-2 | TAB-3 | TAB-4 | TAB-5 | TAB-6 | TR-1 | TR-2 | TR-3 | Notes |
| Viconics Control Systems | X | X | X | | X | X | X | X | | X | X | X | | | | | | X | X | X | X | |
| | Safety | | | | | Comfort | | Efficiency | | | | | | Reliability | | | | | Operations | | | |
| Acceptance Testing | S-1 | S-2 | S-3 | S-4 | S-5 | C-1 | C-2 | E-1 | E-2 | E-3 | E-4 | E-5 | E-6 | R-1 | R-2 | R-3 | R-4 | R-5 | O-1 | O-2 | O-3 | Notes |
| Viconics Control Systems | | X | | | | X | | X | | | | | | | | | | | X | X | | |
| System/Location/Quantity | Police-Fire Rescue*, 5th Street Police Substation, Eppes Recreation*, City Warehouse*, Public Works Complex*, South Greenville Recreation*, Evans Park*, Elm Street Center, Jaycee Park, Sports Connection*, Gardner Training, H. Boyd Lee Park*, River Park North, Greenfield Terrace, Greenville Aquatics and Fitness*, Bradford Creek Golf Course | | | | | | | | | | | | | | | | | | | | | |
| | All Viconics communicating thermostat control system installations | | | | | | | | | | | | | | | | | | | | | |

**ECM 2 - Controls (Enable/Disable)**

| | Pre-functional Testing | | | Functional Testing | | | | | | | | | Test and Balance | | | | | | Training | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Functional Testing | PFT-1 | PFT-2 | PFT-3 | FT-1 | FT-2 | FT-3 | FT-4 | FT-5 | FT-6 | FT-7 | FT-8 | FT-9 | TAB-1 | TAB-2 | TAB-3 | TAB-4 | TAB-5 | TAB-6 | TR-1 | TR-2 | TR-3 | Notes |
| Enable/Disable Controls | X | X | X | | X | X | X | | | | X | X | | | | | | | X | X | X | |
| | Safety | | | | | Comfort | | Efficiency | | | | | | Reliability | | | | | Operations | | | |
| Acceptance Testing | S-1 | S-2 | S-3 | S-4 | S-5 | C-1 | C-2 | E-1 | E-2 | E-3 | E-4 | E-5 | E-6 | R-1 | R-2 | R-3 | R-4 | R-5 | O-1 | O-2 | O-3 | Notes |
| Enable/Disable Controls | | X | | | | X | | X | | | | | | | | | | | X | X | | |
| System/Location/Quantity | Police-Fire Rescue*, City Warehouse*, Public Works Complex*, South Greenville Recreation*, Evans Park*, Sports Connection* | | | | | | | | | | | | | | | | | | | | | |
| | All enable/disable (red-wire) control system installations | | | | | | | | | | | | | | | | | | | | | |

* Indicated buildings are to have multiple control solutions implemented as part of this performance contract. Each system type will be commissioned per the commission plans shown above.

**ECM 3 - HVAC Upgrades**

| Functional Testing | Pre-functional Testing | | | Functional Testing | | | | | | | | | Test and Balance | | | | | | Training | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PFT-1 | PFT-2 | PFT-3 | FT-1 | FT-2 | FT-3 | FT-4 | FT-5 | FT-6 | FT-7 | FT-8 | FT-9 | TAB-1 | TAB-2 | TAB-3 | TAB-4 | TAB-5 | TAB-6 | TR-1 | TR-2 | TR-3 | |
| AHU Systems | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | X | X | X | |
| VAV Boxes | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | X | X | X | X | |
| Ductless Splits and Unit Heaters | X | X | X | | | X | X | | | | X | | | | | | | X | X | X | X | |

| Acceptance Testing | Safety | | | | | Comfort | | Efficiency | | | | | | Reliability | | | | | Operations | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S-1 | S-2 | S-3 | S-4 | S-5 | C-1 | C-2 | E-1 | E-2 | E-3 | E-4 | E-5 | E-6 | R-1 | R-2 | R-3 | R-4 | R-5 | O-1 | O-2 | O-3 | |
| AHU Systems | X | X | X | | | X | | X | X | X | X | X | | X | | | | | X | X | | |
| VAV Boxes | X | X | | | | X | | X | | X | | X | X | X | | | | | X | X | | |
| Ductless Splits and Unit Heaters | | | | | | X | | | | | | X | X | | | | | | X | X | | |

| System/Location/Quantity | |
|---|---|
| | City Hall, Municipal Bldg, City Warehouse, Public Works, Jaycee Park, Greenville Aquatic and Fitness |
| | New mechanical equipment installations including ductless split systems, air handling units, rooftop units, VAV boxes, unit heaters, and dehumidification units |

# Section 8: Equipment Maintenance Plan

Schneider Electric understands the impact of an appropriate equipment maintenance plan on the performance of new systems and equipment and the resources of the facility – namely time and money. With input from the facility operators and staff, Schneider Electric prepares an appropriate equipment maintenance recommendation plan that keeps equipment and systems functioning in a manner that continues to meet savings guarantees, maximizes equipment life and is considerate of the time and monetary resources that can be allocated by an owner. Schneider Electric is positioned to provide a custom-tailored maintenance program which involves, rather than replaces, the in-house resources of the owner.

Schneider Electric would like to consider ourselves an extension of City of Greenville's staff. We often consult with our customers on a variety of topics including operations and maintenance, energy efficiency, long term energy planning, and comfort and code issues.

The following is an overview of the ongoing support functions that Schneider Electric is offering to City of Greenville. This support will be further customized as we continue to move forward in this process to better complement your needs.

- Schneider Electric will regularly monitor the performance of the installed ECMs and perform routine site visits to ensure efficient and proper system operation.
- Through remote access Schneider Electric will regularly review the operation of the Building Automation System to identify any additional savings opportunities or inefficiencies in existing control strategies and HVAC systems.
- Schneider Electric will periodically review existing system operations and any changes to building use or function that may require operating adjustments. If changes are required, Schneider Electric will make recommendations to maximize energy savings or minimize any negative impact.
- Schneider Electric will consult with City of Greenville's representatives quarterly or as-needed to discuss ongoing performance of the ECMs, co-author additional energy savings opportunities, review equipment problems or maintenance, and any other related topics or opportunities.

Schneider Electric will provide City of Greenville with a professional operations and maintenance plan and support as part of the project. The maintenance plan will be designed to ensure safe, reliable, and efficient operation of the installed equipment and systems. All equipment included in the current proposal, with the exception of the absorption chiller and thermal solar panels, is similar to equipment already operating on site. This will minimize the training requirements for Facilities' staff and ensure that the installed equipment will reduce rather than add to the maintenance workload.

The following is an overview of the information and documentation Schneider Electric typically provides as part of the maintenance plan included with the project documentation:

- Equipment cut sheets and technical data
- Detailed sequence of operations
- Start up and shut down procedures
- Detailed description of the control system operation and features
- Routine maintenance procedures as recommended by the manufacturer and Schneider Electric engineers
- Recommended procedures for reliable and efficient operation of all equipment and systems
- All warranty information and claim procedures

- List of all contractors and manufacturers with contact information
- Provisions for safety shutdowns, emergency conditions, and interfaces with building control and life safety systems

Schneider Electric works with its customers to help negotiate the best available equipment warranties. During the competitive bidding process we often add in provisions for warranty or options for an extended warranty to support critical response needs. All new equipment warranties will be transferred directly to City of Greenville upon completion of the project.

Schneider Electric will provide a replacement stock for various lighting fixtures. In addition, we can include in the Investment Grade Audit an allocation of money to cover additional service costs for the expansion of the building automation system if desired.

The Schneider Electric equipment maintenance plan is set apart from others in three distinct ways: availability of provider choices for the facility; program flexibility; and the availability of professional maintenance support. We will work to establish the most efficient maintenance support procedures for the upgraded facility and allow the facilities staff to decide how to best implement the recommended procedures. In-house staff, outside subcontractors or a blend of the two resources can be used. The facility decision makers can decide to take a more or less active role in maintenance responsibility during the guarantee period of a Schneider Electric performance contract with no effect on the savings guarantee. **The Schneider Electric equipment maintenance plan is focused on maintenance standards, not maintenance sales.** The Schneider Electric team provides engineering expertise to develop a strong energy savings program, yet our staff also includes extensive operations and maintenance experience to assure that we provide the consulting services required for the life of the contract. Our Performance Assurance Support Services (PASS) group provides 24-hour technical support to be utilized to allow the onsite facilities staff to be more efficient and self perform many maintenance functions.

Schneider Electric will continue to provide ongoing facility and energy management support once initial construction, commissioning, and training have been completed. Schneider Electric will make periodic site visits to inspect the performance of the installed ECMs as well as consult with City of Greenville about ongoing facilities and energy management needs. Provisions can be made to provide for additional on- or off-site training of City of Greenville personnel as needed over the term of the contract.

In compliance with North Carolina legislation, Schneider Electric will recommend, but not require, maintenance contracts to be part of its energy savings contract. During the Investment Grade Audit and construction phases we will work cooperatively with City of Greenville to formalize a long-term maintenance and repair plan for installed equipment and systems. This will complement the extensive and ongoing training program that is a part of this proposal. Schneider Electric believes that an effective training program and disciplined preventative maintenance will deliver a strong return with minimal investment.

While there is no requirement to purchase maintenance services from Schneider Electric in order to maintain the energy savings guarantee, the City should be aware of the responsibilities of the proposed preventive maintenance tasks. This requirement is not intended to be onerous, but simply to assure that equipment maintenance and repair history is maintained. These maintenance checklists are intentionally kept brief and minimal in that the goal is not to establish grounds for non-performance but rather to establish a minimal baseline of service to assure that the equipment will remain functional. Schneider Electric is able to provide maintenance engineering abilities that can help to improve the productivity of the facility's operations staff.

While effective preventive maintenance is the minimum requirement for the energy savings guarantee, predictive maintenance can provide money savings through reduced down time and fewer emergency repairs. Our PASS team presently employs 65 people with a sole responsibility to assist customers in optimizing their facility operations. Maintenance engineering through Schneider Electric can provide the controls system data interpretation required to implement predictive maintenance functions as well as technical consulting regarding physical changes in building function and scheduling or equipment interactions over the life of the energy guarantee. Scope and pricing for some of these services are often included in our M&V fees, depending upon the method chosen by the City. The final scope of services from our PASS department will be established during the Investment Grade Audit to assure that City of Greenville receives the level of service it deems necessary.

For the Energy Conservation Measures evaluated, the following equipment must be maintained properly to ensure energy savings:

- Lighting System Upgrades (lamps, ballasts, fixtures)
- Building Control Systems (BAS, EMS)
- Air Handling Units
- Packaged Rooftop Equipment
- Pool Dehumidification System
- Solar Thermal System

# Section 9: Measurement & Verification Plan

This section contains the measurement and verification overview for the City of Greenville's guaranteed energy savings performance contract project. Once we have received the comments on this report from the City and the 3rd party engineer, Schneider Electric will review the final scope information and populate the fields as well as provide the baseline data.

## OPTION A – LIGHTING EFFICIENCY AND CONTROLS

**A. Overview of M&V Plan, and Savings Calculation**
**B. Energy Savings Calculations**
**C. Key Parameter Measurement Strategy**
**D. Parameter Estimates**
**E. Cost Savings Calculations**

### A. Overview of M&V Plan, and Savings Calculation

Savings in this section are determined by using an "Option A: Retrofit Isolation – Key Parameter Measurement" approach as described in the International Performance Measurement & Verification Protocol (IPMVP Volume I, EVO 10000-1:2010). The remainder of this section describes the energy savings calculations, key parameter measurements that will be conducted, parameters that will be estimated and those values, and how cost savings will be calculated. The energy and cost savings that are determined using this approach will be the annual savings values used for each year of the Performance Period.

### B. Energy Savings Calculations

Provided within this section is an explanation of the calculations that will be used to perform energy savings calculations for this verification method.

<u>Equations and Analysis of Energy Savings</u>

Savings are calculated as the difference in energy usage from the baseline conditions, and the Performance Period conditions.

For energy demand, the demand savings will be determined for each fixture and summed for all fixtures that will be retrofitted using the following formula:

Equation 1 – Energy Demand Savings

$$D_{save} = \sum_{i=1}^{n} \left[ \left( E_{Pre} \times F_{Pre} - E_{Post} \times F_{Post} \right) \times M \right]_i$$

Where,

$D_{save}$ = Demand savings
n = Number of fixtures
$E_{Pre}$ =Power usage of the baseline lighting conditions

$E_{Post}$ =Power usage of the Performance Period lighting conditions
$F_{Pre}$ = Demand diversity factor of the baseline lighting conditions
$F_{Post}$ = Demand diversity factor of the Performance Period lighting conditions
M = Equivalent months of annual demand savings

For energy consumption, the energy savings will be determined for each fixture and summed for all fixtures that will be retrofitted using the following formula:

Equation 2 – Energy Consumption Savings

$$E_{save} = \sum_{i=1}^{n} \left[ E_{Pre} \times H_{Pre} - E_{Post} \times H_{Post} \right]_i$$

Where,
$E_{save}$ = Energy savings
$H_{Pre}$ = Baseline burn hours
$H_{Post}$ = Performance Period burn hours

The energy usage of both the baseline and Performance Period lighting conditions are calculated utilizing the same equations. The measured parameters collected during the pre-implementation period will be used to compute the baseline fixture power use. The measured parameters collected during the post-implementation period will be used to compute the Performance Period fixture power use. The equations for a single fixture for both the baseline and Performance Period are shown below using the baseline calculations as an example.

Equation 3 – Total Fixture Power Use

$$E_{Pre} = E_{Fixt,Pre} + E_{Cool} + E_{Heat}$$

Where,
$E_{Fixt,Pre}$ = Pre-implementation direct power usage of light fixture
$E_{cool}$ = Indirect cooling power usage associated with the light fixture
$E_{heat}$ = Indirect heating power usage associated with the light fixture

Equation 4 – Fixture Lighting Power Use

$$E_{Fixt,Pre} = (P \times B)_{Pre} \times Q$$

Where,
P = Pre-implementation power draw of light fixture
Q = Quantity of associated light fixture
B = Burnout rate of associated light fixture

Equation 5 – Cooling System Power Use

$$E_{Cool} = E_{Fixt,Pre} \times CF$$

Where,
CF = Cooling Efficiency Conversion Factor

Equation 6 – Heating System Power Use (penalty)

$$E_{Heat} = E_{Fixt,\mathrm{Pre}} \times HF$$

Where,
HF = Heating Efficiency Conversion Factor (negative)

**C. Key Parameter Measurement Strategy**

This section outlines the measurements that will be conducted to determine the measured values in the equations provided above in Paragraph B. For this lighting project, the key parameters that will be measured are the power consumption of each fixture type and the burn hours for each occupancy type. Measurement and documentation strategies for each project phase are outlined below.

Pre-Implementation Measurements and Documentation

Power measurements will be taken on a sample set of each baseline fixture type to determine the average power use for each fixture type. At least eight (8) measurements will be taken for each fixture type (unless fewer exist). Measurements will continue to be taken for a given fixture type until the 95% confidence interval for the true population mean spans no more than 10% above and below the mean of the sample (or until all fixtures have been measured). The mean of this sample set will be treated as the power consumption for that fixture type for all savings calculations. The table below lists each fixture type to be measured, the total quantity of that fixture type, and the minimum amount to be measured prior to removing the fixtures to implement the retrofit. As stated above, more measurements may be needed if the sampled fixtures have too much variance.

| Fixture Code | Total Fixtures | Minimum Sample |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Lighting loggers and occupancy sensors were utilized to determine the baseline and Performance Period burn hours. The lighting loggers were used to calculate the baseline burn hours. The occupancy sensors determine the necessary operation of the lighting fixtures to meet the lighting needs. Those annual hours are the Performance Period burn hours. The values in the table below were extrapolated from a sample of each occupancy type. The table below contains the annual baseline and Performance Period burn hours.

| Occupancy Code | Baseline Burn Hours | Performance Period Burn Hours |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Post-Implementation Measurements and Documentation

Power measurements will be taken on a sample set of each Performance Period fixture type to determine the average power use for each fixture type. At least eight (8) measurements will be taken for each fixture type (unless fewer exist). Measurements will continue to be taken for a given fixture type until the 95% confidence interval for the true population mean spans no more than 10% above and below the mean of the sample (or until all fixtures have been measured). The mean of this sample set will be treated as the power consumption for that fixture type for all savings calculations. The preferred locations for measurements for the new retrofit types will be locations where some previous measurement was taken. The number of post-retrofit samples measured is independent from the number of pre-retrofit samples taken. These measurements are taken to determine the average power use of each fixture type, not the reduction of power use in any specific locations. All measurements will be taken using the same equipment and will be calibrated. The table below lists each fixture type to be measured, the total quantity of that fixture type, and the minimum amount to be measured during the post-implementation period.

| Fixture Code | Total Fixtures | Minimum Sample |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Performance Period Measurements and Documentation

No additional measurements will be taken during the Performance Period of this M&V strategy.

**D. Parameter Estimates**

Of the parameters identified under the equations for energy savings in Section B, several of the parameters are estimates, and will not be measured during any period of the project. Of the variables identified, the parameters that will be estimated for this particular ECM and M&V strategy include: burn hours (for fixtures without occupancy sensors), demand diversity factors, burnout rates, heating efficiency conversion factors, and cooling efficiency conversion factors. This information is provided for each grouping of fixtures in APPENDIX XX. Common information that applies to all fixtures groups is included below:

| | |
|---|---|
| Heating Efficiency Conversion Factor | (therms/kWh) |
| Cooling Efficiency Conversion Factor | (kWh/kWh) |

**E. Cost Savings Calculations**

Provided below are the methods and equations used to determine the cost savings associated with this particular methodology.

Cost Savings are calculated as the difference between the baseline and Performance Period energy costs using the utility rates as defined in Schedule D, Energy, Water, and O&M Rate Data. The applicable marginal utility rates will be applied to the baseline and Performance Period energy use as determined in Paragraph B. Equation 7 will be used to compute the total cost savings for each Guarantee Year.

Equation 7 – Total Cost Savings

$$\$_{save} = \sum_{i=1}^{n} \left(\$_{Baseline} - \$_{Performance}\right)_i$$

Where,

$\$_{save}$ = Guarantee year cost savings
$\$_{Baseline}$ = Billing period k baseline utility cost for account i
$\$_{Performance}$ = Billing period k performance period utility cost for account i
n = Total number of utility types

## OPTION C – WHOLE TERM

**A. Overview of M&V Plan, and Savings Calculation**
**B. Energy Savings Calculations**
**C. Key Parameters Measurement Strategy**
**D. Parameter Estimates**
**E. Cost Savings Calculations**

### A. Overview of M&V Plan, and Savings Calculation

The method of determining energy savings described in this section uses "Option C – Whole Facility (Main Meter Measurement)" as described in the International Measurement and Verification Protocol (IPMVP Volume I, EVO 10000-1:2010). The remainder of this section provides the energy savings calculations, the key parameter measurements that will be conducted, the parameters that will be estimated and those values, and how cost savings will be calculated.

Guaranteed Meters

The following meters will be used to measure actual energy consumption for both the base year and guarantee periods.

| Meter Name | Account | Utility Type | Utility Company | Rate | Units |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Building Summary

The following table lists the buildings that were served by guarantee meters during the base year period.

| Building Name | Area ($ft^2$) | Comments |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

### B. Energy Savings Calculations

Provided within this section is an explanation of the calculations that will be used to perform energy savings calculations for this particular ECM.

Overview of Savings Methodology

Energy savings will be measured by comparing the Performance Period's total energy consumption and demand to the total energy consumption and demand for the same area in the base year period by utilizing energy meter data. Base year energy and demand will be adjusted for differences in weather, facility operation and facility modifications to estimate how much energy would have been used in the guarantee period if the energy conservation measures had not been implemented. The energy saved is the difference between the adjusted base year consumption and the Performance Period consumption. The demand saved is the difference between the adjusted base year demand and the Performance Period demand. This process will be followed for each fuel type involved in the guarantee.

Equations and Analysis of Energy Savings

Savings are calculated as the difference in energy usage from the baseline conditions after adjusting for all necessary changes, and the Performance Period conditions. This is shown in Equation 1 below:

Equation 1 – Energy Consumption Savings

$$E_{save} = E_{Baseline} - E_{Performance}$$

Where,

$E_{save}$ = Energy savings
$E_{Baseline}$ = Adjusted energy usage of facility equipment pre-implementation
$E_{Performance}$ = Energy usage of facility equipment post-implementation

The baseline is that set of parameters that describes both the energy consumed in the base year and the conditions that caused that consumption to occur. This set of parameters includes utility consumption, facility use information, weather data and other information as may be necessary to describe the base year conditions. In addition, the baseline includes certain mathematical values, calculated by a model, that are used to correlate the base year energy consumption with the factors that caused that consumption and is defined by Equation 2 below:

Equation 2 – Baseline Energy Use

$$E_{Baseline} = \sum_{i=1}^{n} C_D \times T_i + C_H \times HDD_i + C_c \times CDD_i + CO_i + CM_i$$

Where,

n = Number of billing periods in year.
$E_{Baseline}$ = Adjusted baseline period consumption
$C_D$ = A constant representing units of consumption per billing period day
$T_i$ = Number of days in billing period
$C_H$ = A constant representing units of consumption per heating degree day
$HDD_i$ = Heating degree days in the current billing period
$C_C$ = A constant representing units of consumption per cooling degree day
$CDD_i$ = Cooling degree days in the current billing period
$CO_i$ = Offset for the current billing period
$CM_i$ = Other adjustments for the current billing period

Customer agrees to accept modifications to this baseline that are necessary to account for changes in the facilities and their use which may have occurred prior to the execution of this agreement but come to the attention of ESCO after the execution of this agreement. Typical adjustments are provided in detail in Schedule E.

Demand savings are computed similarly to the consumption savings, as shown by Equation 3 below:

Equation 3 – Peak Demand Savings

$$D_{save} = D_{Baseline} - D_{Performance}$$

Where,

$D_{save}$ = Demand savings
$D_{Baseline}$ = Adjusted energy demand of facility equipment pre-implementation
$D_{Performance}$ = Energy demand of facility equipment post-implementation

Adjusted base year demand is calculated as demonstrated in Equation 4 below:

Equation 4 – Baseline Peak Demand

$$D_{Baseline} = \sum_{i=1}^{n} D_D + D_H \times \frac{HDD_i}{T_i} + D_C \times \frac{CDD_i}{T_i} + DO_i + DM_i$$

Where,

$D_D$ = A constant representing units of demand per billing period
$D_H$ = A constant representing units of demand per heating degree day per day
$D_C$ = A constant representing units of demand per cooling degree day per day
$DO_i$ = Offset for the current billing period
$DM_i$ = Other adjustments for the current billing period

## C. Key Parameters Measurement Strategy

Measurement and documentation strategies for each project phase are outline below.

Pre-Implementation Measurements and Documentation

Customer will provide ESCO with monthly utility bills and all delivery invoices for the accounts included in Paragraph A for a minimum of twenty-four (24) months worth of historical utility data that is to represent a complete span of two years worth of energy usage. Customer will also provide ESCO with monthly utility bills and all delivery invoices for the accounts included in Paragraph A from the end of that twenty-four (24) month data set through the Savings Guarantee Commencement Date within the timelines specified in Schedule E.

ESCO will collect daily high and low temperature data from the weather station defined in Schedule D, Common ECM Assumptions.

Post-Implementation Measurements and Documentation

No short term verification is performed using this method. All post-implementation measurements are conducting during the Performance Period.

Performance Period Measurements and Documentation

Throughout the Performance Period, Customer will provide ESCO with the monthly utility bills and all delivery invoices for the accounts included in Paragraph A within the timelines specified in Schedule E.

ESCO will collect daily high and low temperature data from the weather station defined in Schedule D, Common ECM Assumptions.

### D. Parameter Estimates

The parameters defined in the equations outlined in Paragraph B that are estimated are determined through engineering analysis of at least twelve (12) months worth of the pre-implementation measured utility data. This is done to establish the relationship between the weather, billing period length, any other independent factors, and the consumption and demand associated with a particular account. The end result of this analysis is the set of coefficients used in the equations defined in Paragraph B to fully define the baseline for each account. The values will be presented to Customer by ESCO before the Savings Guarantee Commencement Date and will be documented and agreed upon by both parties in the Meter Tuning Summary. Below are definitions of each of the estimated parameters included in Paragraph B;

- The values of CD and DD represent the base load consumption and demand of the utility usage of a particular meter and are equivalent to the weather independent energy usage and demand.
- The values of CH and DH represent the heating consumption and demand of the utility usage of a particular meter and are equivalent to the weather dependent energy usage and demand. They are associated with a consumption and demand heating balance point specific to that account.
- The values of CC and DC represent the cooling consumption and demand of the utility usage of a particular meter and are equivalent to the weather dependent energy usage and demand. They are associated with a consumption and demand cooling balance point specific to that account.
- The billing period values of COi and DOi represent the portion of the energy consumption and demand that cannot be accounted for with the weather independent and weather dependent consumption.

Each of these parameters will be determined based on the relationship of the baseline period energy and demand and the independent factors. During the Performance Period they will be used to estimate the energy use and demand that would have occurred if the project had not been performed. To accomplish this, COi and DOi will be pro-rated to the Performance Period billing periods for each account.

The terms CMi and DMi are included in the equations in Paragraph B to account for changes in the Performance Period energy use and demand from the baseline Period energy use and demand on the accounts in Paragraph A for any causes unrelated to the project as defined in Schedule E. The procedures for developing these estimates vary with the specific causes for the adjustments. The requirements for determining these values and any measurements necessary to support these estimates are defined in Schedule E.

### E. Cost Savings Calculations

Provided below are the methods and equations used to determine the cost savings associated with this particular methodology.

Cost Savings are calculated as the difference between the baseline and Performance Period energy costs using the utility rates as defined in Schedule D, Energy, Water, and O&M Rate Data. The applicable utility rates will be applied to the baseline and Performance Period energy use for the accounts in Paragraph A. Equation 5 will be used to compute the total cost savings for each Guarantee Year.

Equation 5 – Total Cost Savings

$$\$_{save} = \sum_{i=1}^{n} \left[ \sum_{k=1}^{q} \left( \$_{Baseline} - \$_{Performance} \right)_k \right]_i$$

Where,

$\$_{save}$ = Guarantee year cost savings

$\$_{Baseline}$ = Billing period k baseline utility cost for account i
$\$_{Performance}$ = Billing period k performance period utility cost for account i
n = Total number of accounts
q = Total number of billing periods for account i

## CALCULATED SAVINGS

**A. Overview of M&V Plan, and Savings Calculation**
**B. Annual Calculated Utility Savings**
**C. Performance Period Validation Activities**

### A. Overview of M&V Plan, and Savings Calculation

The Actual Savings associated with this methodology will be agreed upon as outlined herein and will not be verified by measurements after implementation has occurred. Customer and ESCO agree to accept the annual savings values included in Section B with no additional verification. In the event that verification steps are performed by Customer or ESCO, the annual savings values included in Section B will still be the reported savings and values used for reconciling the guarantee in Schedule C. Section B details the agreed upon savings by measure and by category.

### B. Annual Calculated Savings

<u>Utility Cost Savings</u>

Once the construction of each of the measures below has reached Substantial Completion, the annual savings in the table below will be prorated monthly for each measure until the Savings Guarantee Commencement Date. The annual savings in the table below for each measure will be claimed for each Guarantee Year after the Savings Guarantee Commencement Date.

| Utility Cost Savings Measure | Cost Savings |
|---|---|
| | |
| | |
| | |
| | |
| | |

Any savings accrued prior to the Savings Guarantee Commencement Date will be considered Excess Savings.

<u>Operation and Maintenance Savings</u>

The annual savings in the table below for each measure will be claimed for each Guarantee Year after the Savings Guarantee Commencement Date.

| Operation and Maintenance Savings Measure | Cost Savings |
|---|---|
| | |
| | |
| | |
| | |
| | |

### C. Performance Period Validation Activities

Although no measurements will be performed to determine the magnitude of the achieved savings, ESCO will perform the validation exercises below to notify Customer of the effectiveness of Customer's utilization of the Utility Cost Savings measures in Paragraph B. These validation exercises will be performed annually during the Performance Period and a summary of their results will be provided with the savings report through the end of each Guarantee Year. If the validation exercises demonstrate less than optimal utilization of the measures, Customer will correct such deficiency in accordance with Schedule E. In no event will the results of the validation exercises alter the amount of reported savings. The agreed upon annual savings values in Paragraph B will always be used as the reported savings and the values used to reconcile the guarantee in Schedule C.

# Section 10: Disposal and Recycling

In general, Schneider Electric takes responsibility for the disposal and recycling of any equipment or materials removed from the premises as part of an ECM. Schneider Electric believes it is important to remove any unused equipment and/or material to maintain a clean and aesthetically-pleasing working and operating environment for the City of Greenville. If the City of Greenville desires, Schneider Electric will provide removed equipment to the City for spare parts, surplus, or other use.

Hazardous material generated from the lighting project (PCB's and mercury) will be sent by Schneider Electric or its subcontractor to an approved/licensed recycler for proper disposal. Recycling certificates (disposal manifests) will be provided to the City of Greenville for record purposes. The City of Greenville will be responsible for taking all necessary steps to correct, abate, clean up, or control hazardous materials not addressed by Schneider Electric in the final scope of work in accordance with all applicable statutes and regulations.


# Section 11: Project Implementation Schedule

This section contains the preliminary master schedule for implementation of the project throughout the City buildings. This schedule may be adjusted during the construction phase to accommodate the needs of the City of Greenville.

| ID | | Task Name | Duration | Start | Finish | Predecessors |
|---|---|---|---|---|---|---|
| 1 | | **City of Greenville** | **333 days** | **Wed 3/28/12** | **Fri 7/5/13** | |
| 2 | | IGA Contract | 0 days | Wed 3/28/12 | Wed 3/28/12 | |
| 3 | | Final Review | 0 days | Fri 4/20/12 | Fri 4/20/12 | 2 |
| 4 | | Construction Contract | 0 days | Thu 6/14/12 | Thu 6/14/12 | 3 |
| 5 | | Construction Kick Off Meeting | 1 day | Tue 6/19/12 | Tue 6/19/12 | |
| 6 | | Issue Subcontracts | 14 days | Thu 6/14/12 | Tue 7/3/12 | 4 |
| 7 | | Obtain Permits | 14 days | Thu 6/14/12 | Tue 7/3/12 | 4 |
| 8 | | Commence Work | 0 days | Tue 7/3/12 | Tue 7/3/12 | 7 |
| 9 | | **City Hall** | **27 days** | **Wed 7/4/12** | **Thu 8/9/12** | |
| 10 | | Lighting | 10 days | Wed 7/4/12 | Tue 7/17/12 | 7 |
| 11 | | Mechanical | 15 days | Wed 7/4/12 | Tue 7/24/12 | 7 |
| 12 | | Controls | 20 days | Wed 7/4/12 | Tue 7/31/12 | 8 |
| 13 | | Building Envelope | 3 days | Wed 7/4/12 | Fri 7/6/12 | 8 |
| 14 | | Water | 2 days | Wed 7/4/12 | Thu 7/5/12 | 8 |
| 15 | | Test & Balance | 7 days | Wed 8/1/12 | Thu 8/9/12 | 11,12,13 |
| 16 | | Building Turnover | 0 days | Thu 8/9/12 | Thu 8/9/12 | 15 |
| 17 | | **Municipal** | **40 days** | **Mon 7/9/12** | **Fri 8/31/12** | |
| 18 | | Lighting | 14 days | Wed 7/18/12 | Mon 8/6/12 | 10 |
| 19 | | Mechanical | 15 days | Wed 7/25/12 | Tue 8/14/12 | 11 |
| 20 | | Controls | 18 days | Wed 8/1/12 | Fri 8/24/12 | 12 |
| 21 | | Building Envelope | 3 days | Mon 7/9/12 | Wed 7/11/12 | 13 |
| 22 | | Test & Balance | 5 days | Mon 8/27/12 | Fri 8/31/12 | 19,20,21 |
| 23 | | Building Turnover | 0 days | Fri 8/31/12 | Fri 8/31/12 | 22 |
| 24 | | **Police-Fire Rescue** | **60 days** | **Wed 7/4/12** | **Tue 9/25/12** | |
| 25 | | Lighting | 12 days | Tue 8/7/12 | Wed 8/22/12 | 18 |
| 26 | | Controls | 17 days | Mon 8/27/12 | Tue 9/18/12 | 20 |
| 27 | | Water | 2 days | Fri 7/6/12 | Mon 7/9/12 | 14 |
| 28 | | Solar | 15 days | Wed 7/4/12 | Tue 7/24/12 | 8 |
| 29 | | Building Envelope | 3 days | Thu 7/12/12 | Mon 7/16/12 | 21 |
| 30 | | Test & Balance | 5 days | Wed 9/19/12 | Tue 9/25/12 | 26,29 |
| 31 | | Building Turnover | 0 days | Tue 9/25/12 | Tue 9/25/12 | 30 |
| 32 | | **Park Maintenance Center** | **37 days** | **Tue 7/10/12** | **Wed 8/29/12** | |
| 33 | | Lighting | 5 days | Thu 8/23/12 | Wed 8/29/12 | 25 |
| 34 | | Water | 2 days | Tue 7/10/12 | Wed 7/11/12 | 27 |
| 35 | | Building Envelope | 3 days | Tue 7/17/12 | Thu 7/19/12 | 29 |
| 36 | | Building Turnover | 0 days | Wed 8/29/12 | Wed 8/29/12 | 33,34,35 |
| 37 | | **5th Street Police Substation** | **58 days** | **Fri 7/20/12** | **Tue 10/9/12** | |
| 38 | | Lighting | 3 days | Thu 8/30/12 | Mon 9/3/12 | 33 |
| 39 | | Controls | 10 days | Wed 9/19/12 | Tue 10/2/12 | 26 |
| 40 | | Building Envelope | 1 day | Fri 7/20/12 | Fri 7/20/12 | 35 |
| 41 | | Test & Balance | 5 days | Wed 10/3/12 | Tue 10/9/12 | 39,40 |
| 42 | | Building Turnover | 0 days | Tue 10/9/12 | Tue 10/9/12 | 41 |
| 43 | | **Epps Recreation Center** | **74 days** | **Thu 7/12/12** | **Tue 10/23/12** | |
| 44 | | Lighting | 10 days | Tue 9/4/12 | Mon 9/17/12 | 38 |
| 45 | | Controls | 12 days | Wed 10/3/12 | Thu 10/18/12 | 39 |
| 46 | | Water | 3 days | Thu 7/12/12 | Mon 7/16/12 | 27,34 |
| 47 | | Building Envelope | 3 days | Mon 7/23/12 | Wed 7/25/12 | 40 |
| 48 | | Test & Balance | 3 days | Fri 10/19/12 | Tue 10/23/12 | 45,47 |
| 49 | | Building Turnover | 0 days | Tue 10/23/12 | Tue 10/23/12 | 48 |
| 50 | | **Guy Smith Stadium** | **51 days** | **Tue 7/17/12** | **Tue 9/25/12** | |
| 51 | | Lighting | 6 days | Tue 9/18/12 | Tue 9/25/12 | 44 |
| 52 | | Water | 2 days | Tue 7/17/12 | Wed 7/18/12 | 46 |
| 53 | | Building Turnover | 0 days | Tue 9/25/12 | Tue 9/25/12 | 51,52 |
| 54 | | **City Warehouse** | **55 days** | **Wed 8/15/12** | **Tue 10/30/12** | |
| 55 | | Lighting | 5 days | Wed 9/26/12 | Tue 10/2/12 | 51 |
| 56 | | Mechanical | 7 days | Wed 8/15/12 | Thu 8/23/12 | 19 |
| 57 | | Controls | 5 days | Fri 10/19/12 | Thu 10/25/12 | 45 |
| 58 | | Test & Balance | 3 days | Fri 10/26/12 | Tue 10/30/12 | 56,57 |
| 59 | | Building Turnover | 0 days | Tue 10/30/12 | Tue 10/30/12 | 58,55,56,57 |
| 60 | | **Public Works Complex** | **100 days** | **Thu 7/19/12** | **Wed 12/5/12** | |
| 61 | | Lighting | 15 days | Wed 10/3/12 | Tue 10/23/12 | 55 |
| 62 | | Mechanical | 15 days | Fri 8/24/12 | Thu 9/13/12 | 56 |
| 63 | | Controls | 22 days | Fri 10/26/12 | Mon 11/26/12 | 57 |
| 64 | | Water | 3 days | Thu 7/19/12 | Mon 7/23/12 | 52 |
| 65 | | Building Envelope | 2 days | Thu 7/26/12 | Fri 7/27/12 | 47 |
| 66 | | Test & Balance | 7 days | Tue 11/27/12 | Wed 12/5/12 | 62,63,65 |
| 67 | | Building Turnover | 0 days | Wed 12/5/12 | Wed 12/5/12 | 66 |

| ID | ℹ | Task Name | Duration | Start | Finish | Predecessors |
|---|---|---|---|---|---|---|
| 68 | | **South Greenville Rec Center** | **105 days** | **Tue 7/24/12** | **Mon 12/17/12** | |
| 69 | | Lighting | 7 days | Wed 10/24/12 | Thu 11/1/12 | 61 |
| 70 | | Controls | 10 days | Tue 11/27/12 | Mon 12/10/12 | 63 |
| 71 | | Water | 2 days | Tue 7/24/12 | Wed 7/25/12 | 64 |
| 72 | | Building Envelope | 4 days | Mon 7/30/12 | Thu 8/2/12 | 65 |
| 73 | | Test & Balance | 5 days | Tue 12/11/12 | Mon 12/17/12 | 70,72 |
| 74 | | Building Turnover | 0 days | Mon 12/17/12 | Mon 12/17/12 | 73 |
| 75 | | **Evans Park Building** | **109 days** | **Thu 7/26/12** | **Tue 12/25/12** | |
| 76 | | Lighting | 3 days | Fri 11/2/12 | Tue 11/6/12 | 69 |
| 77 | | Controls | 8 days | Tue 12/11/12 | Thu 12/20/12 | 70 |
| 78 | | Water | 2 days | Thu 7/26/12 | Fri 7/27/12 | 71 |
| 79 | | Building Envelope | 2 days | Fri 8/3/12 | Mon 8/6/12 | 72 |
| 80 | | Test & Balance | 3 days | Fri 12/21/12 | Tue 12/25/12 | 77,79 |
| 81 | | Building Turnover | 0 days | Tue 12/25/12 | Tue 12/25/12 | 80 |
| 82 | | **Elm Street Rec Center** | **120 days** | **Mon 7/30/12** | **Fri 1/11/13** | |
| 83 | | Lighting | 2 days | Wed 11/7/12 | Thu 11/8/12 | 76 |
| 84 | | Controls | 12 days | Fri 12/21/12 | Mon 1/7/13 | 77 |
| 85 | | Water | 2 days | Mon 7/30/12 | Tue 7/31/12 | 78 |
| 86 | | Building Envelope | 2 days | Tue 8/7/12 | Wed 8/8/12 | 79 |
| 87 | | Test & Balance | 4 days | Tue 1/8/13 | Fri 1/11/13 | 84,86 |
| 88 | | Building Turnover | 0 days | Fri 1/11/13 | Fri 1/11/13 | 87 |
| 89 | | **Jaycee Park Building** | **146 days** | **Wed 8/1/12** | **Wed 2/20/13** | |
| 90 | | Lighting | 10 days | Fri 11/9/12 | Thu 11/22/12 | 83 |
| 91 | | Mechanical | 20 days | Fri 9/14/12 | Thu 10/11/12 | 62 |
| 92 | | Controls | 25 days | Tue 1/8/13 | Mon 2/11/13 | 84 |
| 93 | | Water | 3 days | Wed 8/1/12 | Fri 8/3/12 | 85 |
| 94 | | Building Envelope | 3 days | Thu 8/9/12 | Mon 8/13/12 | 86 |
| 95 | | Test & Balance | 7 days | Tue 2/12/13 | Wed 2/20/13 | 91,92,94 |
| 96 | | Building Turnover | 0 days | Wed 2/20/13 | Wed 2/20/13 | 95 |
| 97 | | **Sports Connection** | **153 days** | **Mon 8/6/12** | **Wed 3/6/13** | |
| 98 | | Lighting | 10 days | Fri 11/23/12 | Thu 12/6/12 | 90 |
| 99 | | Controls | 10 days | Tue 2/12/13 | Mon 2/25/13 | 92 |
| 100 | | Water | 2 days | Mon 8/6/12 | Tue 8/7/12 | 93 |
| 101 | | Building Envelope | 5 days | Tue 8/14/12 | Mon 8/20/12 | 94 |
| 102 | | Test & Balance | 7 days | Tue 2/26/13 | Wed 3/6/13 | 99,101 |
| 103 | | Building Turnover | 0 days | Wed 3/6/13 | Wed 3/6/13 | 102 |
| 104 | | **Gardner Training Center** | **156 days** | **Wed 8/8/12** | **Wed 3/13/13** | |
| 105 | | Lighting | 2 days | Fri 12/7/12 | Mon 12/10/12 | 98 |
| 106 | | Controls | 8 days | Tue 2/26/13 | Thu 3/7/13 | 99 |
| 107 | | Water | 1 day | Wed 8/8/12 | Wed 8/8/12 | 100 |
| 108 | | Building Envelope | 1 day | Tue 8/21/12 | Tue 8/21/12 | 101 |
| 109 | | Test & Balance | 4 days | Fri 3/8/13 | Wed 3/13/13 | 106,108 |
| 110 | | Building Turnover | 0 days | Wed 3/13/13 | Wed 3/13/13 | 109 |
| 111 | | **H. Boyd Lee Park** | **161 days** | **Wed 8/22/12** | **Wed 4/3/13** | |
| 112 | | Lighting | 7 days | Tue 12/11/12 | Wed 12/19/12 | 105 |
| 113 | | Controls | 15 days | Fri 3/8/13 | Thu 3/28/13 | 106 |
| 114 | | Building Envelope | 2 days | Wed 8/22/12 | Thu 8/23/12 | 108 |
| 115 | | Test & Balance | 4 days | Fri 3/29/13 | Wed 4/3/13 | 113,114 |
| 116 | | Building Turnover | 0 days | Wed 4/3/13 | Wed 4/3/13 | 115 |
| 117 | | **River Park North** | **168 days** | **Fri 8/24/12** | **Tue 4/16/13** | |
| 118 | | Lighting | 3 days | Thu 12/20/12 | Mon 12/24/12 | 112 |
| 119 | | Controls | 9 days | Fri 3/29/13 | Wed 4/10/13 | 113 |
| 120 | | Building Envelope | 3 days | Fri 8/24/12 | Tue 8/28/12 | 114 |
| 121 | | Test & Balance | 4 days | Thu 4/11/13 | Tue 4/16/13 | 119,120 |
| 122 | | Building Turnover | 0 days | Tue 4/16/13 | Tue 4/16/13 | 121 |
| 123 | | **Greenfield Terrace** | **175 days** | **Wed 8/29/12** | **Tue 4/30/13** | |
| 124 | | Lighting | 2 days | Tue 12/25/12 | Wed 12/26/12 | 118 |
| 125 | | Controls | 10 days | Thu 4/11/13 | Wed 4/24/13 | 119 |
| 126 | | Building Envelope | 2 days | Wed 8/29/12 | Thu 8/30/12 | 120 |
| 127 | | Test & Balance | 4 days | Thu 4/25/13 | Tue 4/30/13 | 125,126 |
| 128 | | Building Turnover | 0 days | Tue 4/30/13 | Tue 4/30/13 | 127 |
| 129 | | **Greenville Aquatics Center** | **213 days** | **Thu 8/9/12** | **Mon 6/3/13** | |
| 130 | | Lighting | 8 days | Thu 12/27/12 | Mon 1/7/13 | 124 |
| 131 | | Mechanical | 24 days | Fri 10/12/12 | Wed 11/14/12 | 91 |
| 132 | | Controls | 20 days | Thu 4/25/13 | Wed 5/22/13 | 125 |
| 133 | | Water | 5 days | Thu 8/9/12 | Wed 8/15/12 | 107 |
| 134 | | Building Envelope | 4 days | Fri 8/31/12 | Wed 9/5/12 | 126 |

| ID | ℹ | Task Name | Duration | Start | Finish | Predecessors |
|---|---|---|---|---|---|---|
| 135 | | Test & Balance | 8 days | Thu 5/23/13 | Mon 6/3/13 | 131,132,134 |
| 136 | | Building Turnover | 0 days | Mon 6/3/13 | Mon 6/3/13 | 135 |
| 137 | | **Bradford Creek Golf Course** | **197 days** | **Thu 9/6/12** | **Fri 6/7/13** | |
| 138 | | Lighting | 3 days | Tue 1/8/13 | Thu 1/10/13 | 130 |
| 139 | | Controls | 8 days | Thu 5/23/13 | Mon 6/3/13 | 132 |
| 140 | | Building Envelope | 5 days | Thu 9/6/12 | Wed 9/12/12 | 134 |
| 141 | | Test & Balance | 4 days | Tue 6/4/13 | Fri 6/7/13 | 139,140 |
| 142 | | Building Turnover | 0 days | Fri 6/7/13 | Fri 6/7/13 | 141 |
| 143 | | Substantial Completion | 0 days | Fri 6/7/13 | Fri 6/7/13 | 122,136,128,142 |
| 144 | | Punch List | 20 days | Mon 6/10/13 | Fri 7/5/13 | 143 |
| 145 | | Inspections | 10 days | Mon 6/10/13 | Fri 6/21/13 | 143 |
| 146 | | Final Completion | 0 days | Fri 7/5/13 | Fri 7/5/13 | 143,144,145 |

Resource Names

| Resource Names |
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| Resource Names |
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# Section 12: Training Provisions

## Overview

Successful performance contracting depends on the partnership between the client and the ESCO after installation. The partnership includes a mutual, active commitment to training and support. Training is a critical component in today's job market and is a great investment in personnel, both in improving skill sets and motivation. Training can increase employee effectiveness by providing the skills to keep your building systems running efficiently and cost effectively. Highly trained staff results in less down time, reduced maintenance costs, and optimum comfort conditions at the lowest possible cost. Our goal is to provide the highest quality training solutions to help optimize your productivity, process and investments by maximizing staff performance. All training will be approved by City of Greenville.


Schneider Electric provides frequent on-site training during the project implementation process for facilities maintenance and management personnel responsible for operating and maintaining the systems. ***This not only allows us to train as many personnel as the facilities department wishes to train, but also allows facility department personnel training on specific equipment.*** When training occurs at Schneider Electric's Learning Centers or at another equipment manufacturer's facilities, two of the department's personnel will be assigned to attend the specified training; however, Schneider Electric will ensure training manuals from off-site training will be provided to keep at the site.

During construction, staff will receive on-site training as each system becomes operational. The frequency of this training will depend upon construction progress and staff skill level. Operator manuals will be provided to the facilities department for reference.

Near project completion, the project manager will schedule on-site training in larger blocks to include system operating parameters. Once basic training is complete, the project manager will notify facilities management and our Performance Assurance Support Services (PASS) department to develop a detailed training plan based on the assessed skill level of the staff. **Schneider Electric training is focused on creating competent, confident, and engaged system operators committed to improving system performance.**

## Detailed Description of Training

Initial training is designed to empower operating staff to operate and understand new or existing building systems. During the Detailed Audit, Schneider Electric will assess your staff capabilities and identify potential areas for additional training including:

- Energy management control systems
- HVAC optimization and maintenance
- Preventative maintenance
- Building system trouble shooting

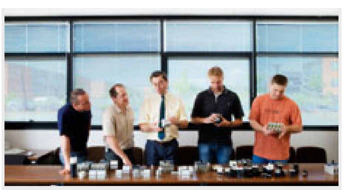
The type and amount of training needed is unique to each customer. Schneider Electric engineers and project team will assess the skill level of the facilities staff and their familiarity with the types of Energy

Conservation Measures (ECMs) being implemented by interacting with key members of that staff during the audit.

On all Schneider Electric related projects, training will begin during the implementation phase of your project and continue through the measurement & verification phase of your project. The frequency of training will be continuous and ongoing throughout City of Greenville's relationship with Schneider Electric. Should there be turnover of key staff Schneider Electric can provide additional training as needed.

### Training provided by Schneider Electric personnel

Schneider Electric believes that the best way to ensure project and guarantee success is to train our customers to be ***proficient with the installed systems and to be confident, autonomous operators.*** The first step toward achieving this goal is frequent, relevant training on-site during the implementation process. Our training curriculum will be tailored to the capabilities and skill-sets of City of Greenville's staff, following a tiered training approach from basic principals to advanced applications of available technologies. Schneider Electric personnel will provide training, except where manufacturers' representatives are called in to provide training on the operation and maintenance of individual components, and will be available during the contract duration to answer questions by facility personnel as they arise. Schneider Electric will develop a training curriculum that educates the users on various mechanical systems, control schemes, and ultimately advanced control system applications including programming. Similar training curricula will be developed for other technologies as needed. We will utilize the traditional classroom environment with handouts, real-life demonstrations/examples, and Web-based technologies to maximize training effectiveness.



As the implementation period progresses, your personnel will receive on-site training ***as each system becomes operational.*** This becomes a benefit to you and Schneider Electric as energy savings start to accrue with the implementation of each ECM. Additional value is provided because the training is done on ***your*** equipment and its unique systems, ***ensuring that your staff learns techniques and tactics that they can apply to their day-to-day operations.***

Near the end of the implementation phase, the project manager will schedule on-site training in larger blocks to thoroughly cover the basic operating characteristics of your systems. Once this training is complete, the project manager can communicate with facilities management personnel and our PASS department to develop a detailed training plan, based on the skills and ongoing needs of your staff. The support organization Schneider Electric has in place for our performance contracting customers is second to none. When we become your partner in a performance contract, we begin a relationship that will benefit the City for years to come. With Schneider Electric, you already have a partner that you have worked with for years to save energy at City of Greenville. You will be gaining a partner to assist you in making cost effective facility decisions.

### Training Provided by Others

Schneider Electric wants to install the best solutions for the City. Due to the comprehensive nature of a performance contract, there will be numerous types of Energy Conservation Measures implemented and a variety of types of equipment installed. In many cases, the training required is on other vendor's equipment (i.e. – chillers, boilers, controls, security, etc.). Schneider Electric's project team will set up training with outside vendors to ensure that the City's personnel is comfortable and knowledgeable with the equipment installed. The frequency and location of the outside vendor training is dependent on the type of equipment, manufacturer and level of training desired.

Upon completion of a project, multiple copies of a detailed operation and maintenance (O&M) manual will be provided to the customer and used as a reference during training. The O&M manual will be organized by ECM and will have maintenance schedules and additional technical details as supplied by the manufacturers.

Schneider Electric understands that City of Greenville's facility operations are a priority and that serving its customers is critical. The frequency and duration of all training sessions will be customized around the City's schedule for maximum effectiveness and minimum disruption. The table on the following page summarizes the amount of training to be provided on an ECM-by-ECM basis as presented in the RFP response. This is subject to change as the scope of work becomes more defined.

## City of Greenville Training Matrix

Provided below is a proposed training plan for the City based on proposed scope and current understanding of existing technologies. This plan is fully customizable and will be changed to meet the specific concerns of the City.

| Training Matrix | | | | |
|---|---|---|---|---|
| **ECM #** | **ECM Description** | **Training Category** | **Hours of Training** | **Training Description** |
| 1 | Lighting System Upgrades | Lighting | 16 | Group training for appropriate facility staff. By PM, Lighting Designer |
| 2 | Controls System Upgrades | Controls | 80 | Group training for appropriate facility staff. By PM, Controls Contractor (Includes two weeks of off-site training for two staff members) |
| 3 | HVAC Upgrades | Mechanical | 24 | Group training for appropriate facility staff. By PM, Mechanical Contractor |
| 4 | Water Improvements | Mechanical | 4 | Group training for appropriate facility staff. By PM, Water Contractor |

# Section 13: Project Financing

The following page contains a preliminary financial cash flow analysis of your project. The final cash flow is subject to change based on the interest rates received from the issuance of the financing RFP.

## ESCO's ANNUAL CASH FLOW ANALYSIS

| | | | | |
|---|---|---|---|---|
| Financed Amount: | $2,495,944 | Escalation Rate by Utility/Fuel* | | |
| Finance Term: | 15 years | | Electric: | 2% |
| Annual Interest Rate: | 3.00 % | | Natural Gas: | 2% |
| Construction Months: | 12 | | Other: | 2% |
| | | Escalation Rate for Annual Fees: | | 2% |

| Yr. | Calculated Electric Dollar Savings | Calculated Natural Gas Dollar Savings | Other Calculated Utility Savings | Calculated Water Dollar Savings | Calculated Operational Dollar Savings | Total Calculated Dollar Savings | Guaranteed Dollar Savings (a) | Annual M&V Fees (b) | Financing Cost (P&I) (c) | Net Savings = a-b-c |
|---|---|---|---|---|---|---|---|---|---|---|
| **1** | $136,982 | $29,606 | $41,443 | $10,862 | $7,677 | $226,570 | $206,579 | $0 | ($206,376) | $203 |
| **2** | $139,722 | $30,198 | $42,272 | $11,079 | $7,831 | $231,101 | $210,711 | ($24,000) | ($186,507) | $204 |
| **3** | $142,516 | $30,802 | $43,117 | $11,301 | $7,987 | $235,723 | $214,925 | ($24,480) | ($190,240) | $205 |
| **4** | $145,366 | $31,418 | $43,980 | $11,527 | $8,147 | $240,438 | $219,224 | ($24,970) | ($194,051) | $203 |
| **5** | $148,274 | $32,046 | $44,859 | $11,757 | $8,310 | $245,247 | $223,608 | ($25,469) | ($197,937) | $202 |
| **6** | $151,239 | $32,687 | $45,756 | $11,993 | $8,476 | $250,152 | $228,080 | ($25,978) | ($201,897) | $205 |
| **7** | $154,264 | $33,341 | $46,672 | $12,232 | $8,646 | $255,155 | $232,642 | ($26,498) | ($205,941) | $203 |
| **8** | $157,349 | $34,008 | $47,605 | $12,477 | $8,818 | $260,258 | $237,295 | ($27,028) | ($210,063) | $204 |
| **9** | $160,496 | $34,688 | $48,557 | $12,727 | $8,995 | $265,463 | $242,041 | ($27,568) | ($214,269) | $204 |
| **10** | $163,706 | $35,382 | $49,528 | $12,981 | $9,175 | $270,772 | $246,882 | ($28,120) | ($218,559) | $203 |
| **11** | $166,980 | $36,090 | $50,519 | $13,241 | $9,358 | $276,188 | $251,819 | ($28,682) | ($222,934) | $203 |
| **12** | $170,320 | $36,811 | $51,529 | $13,506 | $9,545 | $281,711 | $256,856 | ($29,256) | ($227,395) | $205 |
| **13** | $173,726 | $37,548 | $52,560 | $13,776 | $9,736 | $287,346 | $261,993 | ($29,841) | ($231,948) | $204 |
| **14** | $177,201 | $38,299 | $53,611 | $14,051 | $9,931 | $293,092 | $267,233 | ($30,438) | ($236,593) | $202 |
| **15** | $180,745 | $39,064 | $54,683 | $14,332 | $10,130 | $298,954 | $272,577 | ($31,047) | ($241,329) | $201 |
| **Total** | **$2,368,887** | **$511,989** | **$716,691** | **$187,841** | **$132,762** | **$3,918,169** | **$3,572,464** | **($383,375)** | **($3,186,038)** | **$3,051** |

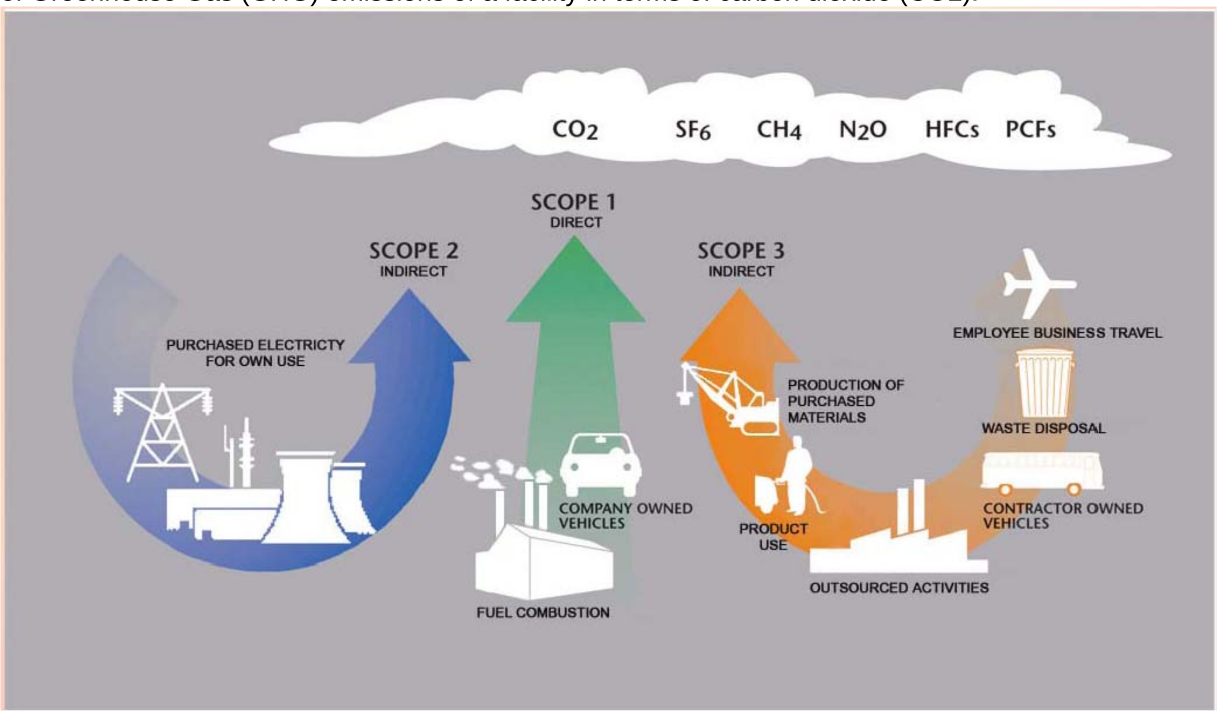
**NOTES:** **Net savings must never be negative.**
**A surplus in one year cannot be carried forward to create positive cash flow in a subsequent year.**
**Assumes Quarterly payment made in arrears.**
**The final project cash flows will be determined by the interest rates received from the issuance of the financing RFP.**

# Section 14: Environmental Impact

The energy performance enhancement outlined in this proposal will yield other benefits beyond the leveraging of energy savings to fund infrastructure renewal. From a strategic standpoint, the energy performance contract will assist in the reduction of the City of Greenville's greenhouse gas (GHG) emissions by providing measurable contributions to the Greenhouse Gas Emissions and Local Inventory Action Plan.

## Carbon Footprint

In an effort to determine the environmental impact of a specific building or entity, there has been a growing trend to quantify the facility's Carbon Footprint. The carbon footprint is a measure of the amount of Greenhouse Gas (GHG) emissions of a facility in terms of carbon dioxide (CO2).




*Graphic courtesy of the World Resources Institute*

In order to accurately determine the carbon footprint for any facility there are many variables required, including methods of transportation to and from the facility, activities that occur at the facility and the materials purchased for use at the facility, to name a few. The Green House Gas (GHG) Protocol categorizes these into Scope Items where each individual scope is reported separately.

**SCOPE 1 – DIRECT EMISSIONS**
On-Site Combustion
Company Owned Vehicles

**SCOPE 2 – INDIRECT EMISSIONS**
Produced Energy

**SCOPE 3 – OHER INDIRECT**
Commuter Transportation

Business Travel
Product Use
Construction Energy

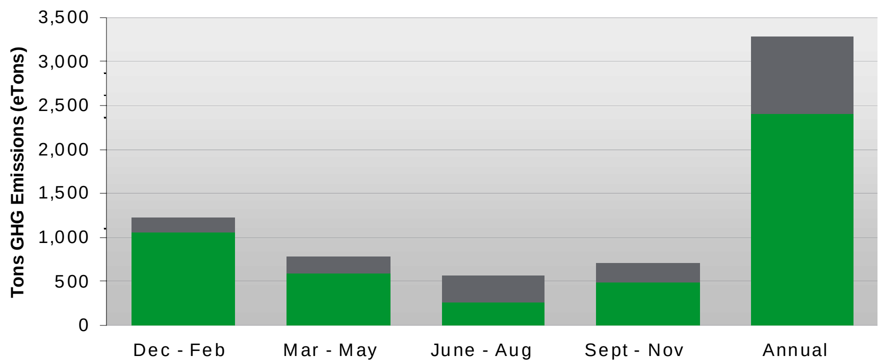
*The above lists are not meant to be exhaustive, rather representative of the expected energies that are associated with each scope item.

## The Results

According to the 2006 Environmental Protection Agency's report Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004, roughly 86% of all carbon equivalent emissions come from energy-related activities. With this average, it is obvious that any energy conservation strategies employed as part of a project with Schneider Electric would impact the largest contributor of greenhouse gas emissions in the United States.

The information provided is a representation of all Scope1 and Scope 2 emissions of the facilities included in this project at their current rates, and how much of an impact conducting the project as detailed would curb current GHG emissions. Included are three of the 6 major anthropogenic Greenhouse Gasses as identified by the Kyoto Protocol and their respective carbon equivalencies to determine the overall carbon impact the facility has through its energy usage.

### Carbon Equivalent GHG Emissions Savings




| | Dec - Feb eTons | Mar - May eTons | June - Aug eTons | Sept - Nov eTons | Annual eTons |
|---|---|---|---|---|---|
| Scope 1 | 1061.9 | 584.5 | 260.7 | 490.3 | 2399.9 |
| Scope 2 | 166.00 | 197.82 | 303.59 | 215.73 | 883.14 |
| Scope 3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Total** | **1227.9** | **782.3** | **564.3** | **706.1** | **3283.0** |

Scope 1 Scope 2 Scope 3

**Note:** Scope 1 emissions reflect the direct emissions
Scope 2 emissions are indirect emissions

### Equivalency of GHG Emissions Savings

| | Dec - Feb | Mar - May | June - Aug | Sept - Nov | Annual |
|---|---|---|---|---|---|
| Equiv. Car(s) | 263.7 | 168.0 | 121.2 | 151.6 | 705.1 |
| Equiv. Tree(s) | 49,117 | 31,294 | 22,572 | 28,243 | 131,322 |
| Avg. House(s) | 158.4 | 100.9 | 72.8 | 91.1 | 423.6 |

## Next Steps

There are several initiatives occurring across the world that are setting benchmarks to curb GHG emissions over the next several decades. If it is desired, Schneider Electric would be willing to provide guidance in understanding the Scope 3 emissions of your facility to determine your total carbon footprint. As a result, the findings would provide added benefit and direction as to where efforts should be concentrated to make significant strides in reducing your environmental impact.

## Sustainable Expertise/Involvement

Schneider Electric clients benefit from environmentally conscientious projects designed to reduce utility costs, reduce green house gas emissions, and promote long-term sustainability. Each project makes a positive impact on the environment.

Schneider Electric's staff of LEED Accredited Professionals has the background and experience to develop recycling plans for different facility types. The team's experience with previous LEED projects has given us insight into the process and Schneider Electric has adopted the use of forms that assist in developing the LEED plan and executing the plan. GreenSpec and the ASHRAE Green Guide are major references. Architectural firms with experience in sustainable design are engaged for large projects.

Each project is modeled using a building modeling tool such as DOE-2 or Energy Plus depending on the complexity of the project. The base model is tuned to match the actual operating information. Alternatives are then evaluated. Indoor air quality is an important issue in the renovation or replacement of any air distribution system. Minimum IAQ requirements, controllability, and thermal comfort are addressed where possible.

Renewable solutions, such as passive solar, solar thermal, solar electric, wind, biomass, geothermal and other distributed generation technologies (fuel cells, co-generation, combined heat and power) are evaluated on many projects and implemented where possible. In some cases, the performance contracts will not support the payback period for renewable energy. Schneider Electric continues to develop creative and cost effective designs for the use of renewable energy.

## Emissions/Reductions

Schneider Electric is committed to energy efficiency and sustainable building design and operation. The movement toward sustainability has allowed us to develop innovative and environmentally conscious, integrated solutions for clients and facilities that help preserve natural resources. Thus with each Schneider Electric project implemented, our clients make a positive impact on the environment. Following is energy conservation conversion information:

Reduction of 1 kWh = 1.5 lbs of $CO_2$ removed
Reduction of 1 kWh = 5.8 g $SO_2$ removed
Reduction of 1 kWh = 2.5 g $NO_x$ removed
Reduction of 10,000 lbs $CO_2$ = removing 1 car from the road for a year
Reduction of 10,000 lbs $CO_2$ = planting 1.36 acres of trees for a year

# Appendix A: Lighting Audit Documentation

Atlantic Energy Concepts
Your success is our commitment.
PO Box 14745, Reading, PA 19612
610.916.5013 ▲ 877.234.1134 toll free
610.916.5014 fax ▲ www.atlanticenergyconcepts.com

# EXISTING FIXTURE LEGEND

# CITY OF GREENVILLE - FINAL DESIGN

Proposal # / Date: 2090 03-23-12

Proposal Rev # / Date: 0.01 02-26-12

## EXISTING LEGEND

| EXISTING REF # | EXISTING CODE | EXISTING USED | EXISTING DESCRIPTION | EXISTING STANDARD LEGEND | EXISTING WATTS |
|---|---|---|---|---|---|
| 6 | 40X2 | X | (2) Lamp 40 Watt Incandescent Fixture | Incandescent | 80 |
| 7.1 | 40X4 | X | (4) Lamp 40 Watt Incandescent Fixture | Incandescent | 160 |
| 8.1 | 40X6 | X | (6) Lamp 40 Watt Incandescent Fixture | Incandescent | 240 |
| 9.1 | 45 | X | 45 Watt Incandescent Fixture | Incandescent | 45 |
| 14 | 60 | X | 60 Watt Incandescent Fixture | Incandescent | 60 |
| 15 | 60X2 | X | (2) Lamp 60 Watt Incandescent Fixture | Incandescent | 120 |
| 16 | 60X3 | X | (3) Lamp 60 Watt Incandescent Fixture | Incandescent | 180 |
| 17 | 60X4 | X | (4) Lamp 60 Watt Incandescent Fixture | Incandescent | 240 |
| 17.1 | 60X6 | X | (6) Lamp 60 Watt Incandescent Fixture | Incandescent | 360 |
| 18 | 65 | X | 65 Watt Incandescent Fixture | Incandescent | 65 |
| 22 | 75 | X | 75 Watt Incandescent Fixture | Incandescent | 75 |
| 25 | 90 | X | 90 Watt Incandescent Fixture | Incandescent | 90 |
| 31 | 100 | X | 100 Watt Incandescent Fixture | Incandescent | 100 |
| 32 | 100X2 | X | (2) Lamp 100 Watt Incandescent Fixture | Incandescent | 200 |
| 35 | 120 | X | 120 Watt Incandescent Fixture | Incandescent | 120 |
| 39 | 150 | X | 150 Watt Incandescent Fixture | Incandescent | 150 |
| 43 | 250 | X | 250 Watt Incandescent Fixture | Incandescent | 250 |
| 51.1 | 4 BIAX | X | (4) Lamp Biax | Compact Fluorescent | 110 |
| 54.1 | CF14 | X | 14 Watt screw-in Compact Fluorescent Fixture | Compact Fluorescent | 14 |
| 63 | PL13 | X | 13 Watt plug-in Compact Fluorescent Fixture | Compact Fluorescent | 16 |
| 64 | PL13X2 | X | (2) Lamp 13 Watt plug-in Compact Fluorescent Fixture | Compact Fluorescent | 32 |
| 68 | PL26X2 | X | (2) Lamp 26 Watt plug-in Compact Fluorescent Fixture | Compact Fluorescent | 64 |
| 69 | PL32 | X | 32 Watt plug-in Compact Fluorescent Fixture | Compact Fluorescent | 35 |

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# EXISTING FIXTURE LEGEND

# CITY OF GREENVILLE - FINAL DESIGN

Proposal # / Date: 2090 03-23-12

Proposal Rev # / Date: 0.01 02-26-12

## EXISTING LEGEND

| EXISTING REF # | EXISTING CODE | EXISTING USED | EXISTING DESCRIPTION | EXISTING STANDARD LEGEND | EXISTING WATTS |
|---|---|---|---|---|---|
| 70 | PL32X2 | X | (2) Lamp 32 Watt plug-in Compact Fluorescent Fixture | Compact Fluorescent | 69 |
| 77 | 13SS | X | (1) Lamp 30W T12 with 3' standard magnetic fixture | T12 Fluorescent | 46 |
| 79 | 14EE | X | (1) Lamp 34W SuperSaver T12 with 4' magnetic ballast fixture | T12 Fluorescent | 43 |
| 88 | 14T8 | X | (1) Lamp 32W T8 with 4' linear fixture | T8 Fluorescent | 30 |
| 107 | 22SS | X | (2) Lamp 20W T12 with 2' standard magnetic ballast fixture | T12 Fluorescent | 53 |
| 108 | 22T8 | X | (2) Lamp 17W T8 with 2' linear fixture | T8 Fluorescent | 32 |
| 112 | 23T8 | X | (2) Lamp 25W T8 with 3' linear fixture | T8 Fluorescent | 45 |
| 113 | 24EE | X | (2) Lamp 34W SuperSaver T12 with 4' magnetic ballast linear fixture | T12 Fluorescent | 72 |
| 124 | 24T8 | X | (2) Lamp 32W T8 with 4' linear fixture | T8 Fluorescent | 59 |
| 127 | 24T8 I/O | X | (2) Lamp 32W T8 with 4' linear fixture | T8 Fluorescent | 60 |
| 128 | 24UEE | X | (2) Lamp 40W SuperSaver T12 U tube with magnetic ballast fixture | T12 Fluorescent U Tube | 72 |
| 129 | 24UT8 | X | (2) Lamp T8 U tube with standard electric ballast fixture | T8 Fluorescent U Tube | 59 |
| 145.1 | 38HOSE | X | (3) Lamp F96HO SuperSaver T12 with 8' standard magnetic ballast fixture | T12 Fluorescent HO | 362 |
| 147 | 28SLEE | X | (2) Lamp F96 SuperSaver T12 with 8' magnetic slimline ballast fixture | T12 Fluorescent | 126 |
| 148 | 28SLSE | X | (2) Lamp F96 SuperSaver T12 with 8' standard magnetic slimline ballast fixture | T12 Fluorescent | 131 |
| 150 | 28T8 | X | (2) Lamp 59W T8 SL with 8' linear fixture | T8 Fluorescent | 110 |
| 158 | 34EE | X | (3) Lamp 34W SuperSaver T12 with 4' magnetic ballast linear fixture | T12 Fluorescent | 115 |
| 164 | 34T8 | X | (3) Lamp 32W T8 with 4' linear fixture | T8 Fluorescent | 87 |
| 168 | 34T8 I/O | X | (3) Lamp 32W (2) T8 with 4' linear fixture,Dual switched | T8 Fluorescent | 89 |
| 176 | 44EE | X | (4) Lamp 34W SuperSaver T12 with 4' magnetic ballast linear fixture | T12 Fluorescent | 144 |
| 178 | 44EE I/O | X | (4) Lamp 34W SuperSaver T12 with 4' magnetic ballast linear fixture, Dual switched | T12 Fluorescent | 144 |
| 184 | 44T5HO | X | (4) FP54 T5 lamps with 4' linear fixture | T5 Fluorescent HO | 241 |
| 185 | 44T8 | X | (4) Lamp 32W T8 with 4' linear fixture | T8 Fluorescent | 114 |

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|---|---|---|---|---|---|
| 188 | 44T8 I/O | X | (4) Lamp 32W (2) T8 with 4' linear fixture, Dual switched | T8 Fluorescent | 118 |
| 215 | 250M | X | 250 Watt Mercury fixture | High Intensity Discharge | 285 |
| 220 | 70S | X | 70 Watt High Pressure Sodium fixture | High Intensity Discharge | 91 |
| 222 | 150S | X | 150 Watt High Pressure Sodium fixture | High Intensity Discharge | 188 |
| 223 | 250S | X | 250 Watt High Pressure Sodium fixture | High Intensity Discharge | 295 |
| 224 | 400S | X | 400 Watt High Pressure Sodium fixture | High Intensity Discharge | 464 |
| 226 | 50MH | X | 50 Watt Metal Halide fixture | High Intensity Discharge | 72 |
| 227 | 70MH | X | 70 Watt Metal Halide fixture | High Intensity Discharge | 90 |
| 228 | 100MH | X | 100 Watt Metal Halide fixture | High Intensity Discharge | 130 |
| 229 | 175MH | X | 175 Watt Metal Halide fixture | High Intensity Discharge | 210 |
| 230 | 250MH | X | 250 Watt Metal Halide fixture | High Intensity Discharge | 295 |
| 231 | 400MH | X | 400 Watt Metal Halide fixture | High Intensity Discharge | 458 |
| 232 | 1000MH | X | 1000 Watt Metal Halide fixture | High Intensity Discharge | 1080 |
| 232.1 | 1500MH | X | 1500 Watt Metal Halide fixture | High Intensity Discharge | 1620 |
| 237 | EXIT PL7 | X | Compact Fluorescent Exit Sign | Exit Sign | 22 |
| 241 | DRINK | X | Non-perishable drink vending machine | Miscellaneous | 400 |
| 242 | SNACK | X | Non-perishable snack vending machine | Miscellaneous | 100 |
| 300 | EXCLUDE | X | Fixture is Excluded | Excluded | 0 |

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# RETROFIT FIXTURE LEGEND

## CITY OF GREENVILLE - FINAL DESIGN

Proposal # / Date: 2090 03-23-12

Proposal Rev # / Date: 0.01 02-26-12

RETROFIT LEGEND

| RETROFIT REF # | RETROFIT CODE | RETROFIT USED | RETROFIT STANDARD LEGEND | WATTS | RETROFIT FIXTURE TYPE (1) | RETROFIT FIXTURE TYPE (2) |
|---|---|---|---|---|---|---|
| 24.1 | CF9G25X4 | X | Relamp Compact Fluorescent | 36 | 9W CFL G25 GLOBE | N/A |
| 24.2 | CF9G25X6 | X | Relamp Compact Fluorescent | 54 | 9W CFL G25 GLOBE | N/A |
| 25.1 | CF9G25X2 | X | Relamp Compact Fluorescent | 18 | 9W CFL G25 GLOBE | N/A |
| 32 | CF13 | X | Relamp Compact Fluorescent | 13 | 13W CFL | N/A |
| 33 | CF13X2 | X | Relamp Compact Fluorescent | 26 | 2-LAMP 13W CFL | N/A |
| 34 | CF13X3 | X | Relamp Compact Fluorescent | 39 | 3-LAMP 13W CFL | N/A |
| 35.1 | CF13X6 | X | Relamp Compact Fluorescent | 78 | 4-LAMP 13W CFL | N/A |
| 47 | CF18 | X | Relamp Compact Fluorescent | 18 | 18W CFL | N/A |
| 51 | CF18R30 | X | Relamp Compact Fluorescent | 18 | 18W CFL PAR30 | N/A |
| 54 | CF23 | X | Relamp Compact Fluorescent | 23 | 23W CFL | N/A |
| 55 | CF23X2 | X | Relamp Compact Fluorescent | 46 | 2-LAMP 23W CFL | N/A |
| 61 | CF23-DIMR40 | X | Relamp Compact Fluorescent Dimmable | 23 | 23W CFL DIMMABLE PAR40 | N/A |
| 77 | CF42 | X | Relamp Compact Fluorescent | 42 | 42W CFL | N/A |
| 91 | LED15-DIMR30 | X | Relamp LED Dimmable | 15 | N/A | N/A |
| 92 | LED18-DIMR38 | X | Relamp LED Dimmable | 18 | N/A | N/A |
| 93.1 | LED3WX4 | X | Retrofit LED | 12 | TCP 3W FLAME TIP LED LAMP (X4) | N/A |
| 94 | LED40-RETRO III | X | Retrofit LED | 40 | POST TOP LED RETROFIT KIT MEDIUM LIGHT | N/A |
| 119 | L14 | X | Relamp Linear Fluorescent T8 | 24 | N/A | N/A |
| 136 | L24 | X | Relamp Linear Fluorescent T8 | 46 | N/A | N/A |
| 153 | L34 | X | Relamp Linear Fluorescent T8 | 67 | N/A | N/A |

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|---|---|---|---|---|---|---|
| 167 | L44 | X | Relamp Linear Fluorescent T8 | 88 | N/A | N/A |
| 213 | LB13 | X | Relamp Reballast Linear Fluorescent T8 | 27 | N/A | N/A |
| 215 | LB14 | X | Relamp Reballast Linear Fluorescent T8 | 25 | N/A | N/A |
| 215.1 | LB14LP | X | Relamp Reballast Linear Fluorescent T8 | 21 | N/A | N/A |
| 218.1 | LB14LPDL | X | Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 21 | N/A | N/A |
| 232 | LB22LP | X | Relamp Reballast Linear Fluorescent T8 | 26 | N/A | N/A |
| 233 | LB22REF | X | Relamp Reballast Linear Fluorescent T8 With Reflector kit | 30 | 2X2 2-LAMP WHITE REFLECTOR KIT | N/A |
| 241 | LB22LPREF-RT | X | Relamp Reballast Linear Fluorescent T8 With Reflector kit | 26 | PREMIUM 2X2 2-LAMP LP BALLAST REFLECTOR KIT, WITH VOLUMETRIC LENS DOOR FRAME | N/A |
| 250 | LB23LP | X | Relamp Reballast Linear Fluorescent T8 | 36 | N/A | N/A |
| 255 | LB24LP | X | Relamp Reballast Linear Fluorescent T8 | 39 | N/A | N/A |
| 255.1 | LB24LP-32 | X | Relamp Reballast Linear Fluorescent T8 | 48 | N/A | N/A |
| 259 | LB24DL | X | Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 43 | N/A | N/A |
| 260 | LB24HPDL | X | Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 60 | N/A | N/A |
| 260.1 | LB24HPDL-32 | X | Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 74 | N/A | N/A |
| 261 | LB24LPDL | X | Relamp Reballast Linear Fluorescent T8 Reduce Lamp Qty | 39 | N/A | N/A |
| 265 | LB24HPREF | X | Relamp Reballast Linear Fluorescent T8 With Reflector kit | 60 | 2X4 2-LAMP WHITE REFLECTOR KIT | N/A |
| 274 | LB24HP-STP | X | Relamp Reballast Linear Fluorescent T8 | 60 | 8' 2-LAMP STRIP RETROFIT | N/A |
| 274.1 | LB24HP-STP-32 | X | Relamp Reballast Linear Fluorescent T8 | 74 | 8' 2-LAMP STRIP RETROFIT | N/A |
| 290 | LB24REF-RT | X | Relamp Reballast Linear Fluorescent T8 With Reflector kit | 43 | PREMIUM 2X4 2-LAMP REFLECTOR KIT, WITH VOLUMETRIC LENS DOOR FRAME | N/A |
| 290.1 | LB24REF-RT-EM | X | Relamp Reballast Linear Fluorescent T8 With Reflector kit | 43 | PREMIUM 2X4 2-LAMP REFLECTOR KIT, WITH VOLUMETRIC LENS DOOR FRAME | N/A |

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|---|---|---|---|---|---|---|
| 296 | LB24PSDREF-RT | X | Relamp Reballast Linear Fluorescent T8 With Reflector kit | 43 | PREMIUM 2X4 2-LAMP STEP DIMMING BALLAST REFLECTOR KIT, WITH VOLUMETRIC LENS DOOR FRAME | N/A |
| 296.1 | LB24PSDREF-RT-EM | X | Relamp Reballast Linear Fluorescent T8 With Reflector kit | 43 | PREMIUM 2X4 2-LAMP STEP DIMMING BALLAST REFLECTOR KIT, WITH VOLUMETRIC LENS DOOR FRAME | N/A |
| 310 | LB32REF | X | Relamp Reballast Linear Fluorescent T8 With Reflector kit | 44 | 2X2 3-LAMP WHITE REFLECTOR KIT | N/A |
| 311 | LB32LPREF | X | Relamp Reballast Linear Fluorescent T8 With Reflector kit | 38 | 2X2 3-LAMP WHITE REFLECTOR KIT | N/A |
| 321 | LB34LP | X | Relamp Reballast Linear Fluorescent T8 | 57 | N/A | N/A |
| 345 | LB44LP | X | Relamp Reballast Linear Fluorescent T8 | 76 | N/A | N/A |
| 395 | HLB320PS | X | Relamp Reballast HID | 368 | N/A | N/A |
| 407 | NF1-BATT | X | New LED Fixture | 4 | LED EXIT WITH BATTERY BACK-UP | N/A |
| 429 | NF3-244HP | X | New Linear Fluorescent Fixture T8 | 144 | 2X4-(4) LAMP HP LAYIN TROFFER .125"A12 LENSE | N/A |
| 519.2 | NF8-42HP-32 | X | New Linear Fluorescent Fixture T8 | 74 | 2 LAMP 4'STRIP WITH REFLECTOR | N/A |
| 526 | NF9-42LP-32 | X | New Linear Fluorescent Fixture T8 | 48 | 2 LAMP 4' STRIP INDUSTRIAL PREMIUM GRADE | N/A |
| 539.1 | NF11-82-32 | X | New Linear Fluorescent Fixture T8 | 48 | 2 LAMP 8' VAPOR TIGHT | N/A |
| 569 | NF16-2X26 | X | New Compact Fluorescent Fixture | 54 | 2X26W FLUORESCENT 12X12 CLG. MOUNT | N/A |
| 575.1 | SP-LED SHOEBOX-250 | X | New LED Fixture | 110 | LED SHOEBOX - 530mA | N/A |
| 575.2 | SP-LED WALLPACK-250 | X | New LED Fixture | 74 | LED WALLPACK - 700mA | N/A |
| 575.3 | SP-LED WALLPACK-100 | X | New LED Fixture | 57 | LED WALLPACK - 530mA | N/A |
| 576.1 | SP-LED CANOPY-100 | X | New LED Fixture | 60 | LED CANOPY FIXTURE | N/A |
| 576.2 | SP-LED SHOEBOX-400 | X | New LED Fixture | 146 | LED SHOEBOX - 700mA | N/A |

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|---|---|---|---|---|---|---|
| 635.1 | NF24-1X42 CUTOFF | X | New Compact Fluorescent Fixture | 46 | 42W FLUORESCENT WALL MOUNT | N/A |
| 635.2 | SP-RCL 42W RETROFIT | X | Miscellaneous | 46 | DOWNLIGHT RETROFIT KIT - 1X42W LENSED | N/A |
| 644 | NF28-43HO-OS | X | New Linear Fluorescent Fixture T5 High-Bay With Sensor | 182 | PREMIUM 4' 3 LAMP T5 HO SURFACE MOUNT/PENDANT HIGHBAY WITH SENSOR | N/A |
| 648 | NF28-44HO-OS | X | New Linear Fluorescent Fixture T5 High-Bay With Sensor | 241 | PREMIUM 4' 4 LAMP T5 HO SURFACE MOUNT/PENDANT HIGHBAY WITH SENSOR | N/A |
| 683 | NF29-43HO | X | New Linear Fluorescent Fixture T5 High-Bay | 182 | 4' 3 LAMP T5 HO SURFACE MOUNT/PENDANT HIGHBAY | N/A |
| 683.1 | NF29-43HO-ARCH | X | New Linear Fluorescent Fixture T5 High-Bay | 182 | 4' 3 LAMP T5 HO SURFACE MOUNT/PENDANT HIGHBAY- ARCHITECTURAL | N/A |
| 684 | NF29-43HO-OS | X | New Linear Fluorescent Fixture T5 High-Bay With Sensor | 182 | 4' 3 LAMP T5 HO SURFACE MOUNT/PENDANT HIGHBAY WITH SENSOR | N/A |
| 688 | NF29-44HO-OS | X | New Linear Fluorescent Fixture T5 High-Bay With Sensor | 241 | 4' 4 LAMP T5 HO SURFACE MOUNT/PENDANT HIGHBAY WITH SENSOR | N/A |
| 709 | NF30-44HO | X | New Linear Fluorescent Fixture T5 High-Bay | 241 | 4 LAMP T5HO PREMIUM VAPOR TIGHT HIGHBAY | N/A |
| 731 | CR84 | X | New Linear Fluorescent Fixture T8 | 85 | 8' 4-LAMP CLASSROOM FIXTURE | N/A |
| 732 | CR84HP | X | New Linear Fluorescent Fixture T8 | 124 | 8' 4-LAMP HIGH POWER CLASSROOM FIXTURE | N/A |
| 761 | OCC DT-C | X | Lighting Controls | 0 | LOW VOLTAGE DUAL TECH OCCUPANCY SENSOR CEILING MOUNT < 15' | N/A |
| 765 | OCC DT-W | X | Lighting Controls | 0 | LOW VOLTAGE DUAL TECH OCCUPANCY SENSOR WALL/CEILING MOUNT < 15' | N/A |
| 775 | OCC HAL-W | X | Lighting Controls | 0 | LOW VOLTAGE PIR OCCUPANCY SENSOR WALL/CEILING MOUNT < 15' | N/A |
| 777 | OCC IR-C | X | Lighting Controls | 0 | LOW VOLTAGE PIR OCCUPANCY SENSOR CEILING MOUNT < 15' | N/A |
| 783 | OCC IR-HC-F | X | Lighting Controls | 0 | LINE VOLTAGE PIR OCCUPANCY SENSOR FIXTURE MOUNT > 15' | N/A |
| 787 | OCC IR-W | X | Lighting Controls | 0 | LOW VOLTAGE PIR OCCUPANCY SENSOR WALL/CEILING MOUNT< 15' | N/A |
| 796 | OCC WSDT | X | Lighting Controls | 0 | DUAL TECH OCCUPANCY SENSOR WALL SWITCH MOUNT * (SELECT COLOR) | N/A |
| 796.1 | TIMER-WS | X | LIGHTING CONTROLS | 0 | TIMER SWITCH | N/A |
| 804 | OCC WSIR | X | Lighting Controls | 0 | PIR OCCUPANCY SENSOR WALL SWITCH MOUNT * (SELECT COLOR) | N/A |

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|---|---|---|---|---|---|---|
| 816 | PC-C | X | Lighting Controls | 0 | LOW VOLTAGE ON/OFF SURFACE MOUNT W/PHOTO CONTROL | N/A |
| 819 | SNACK | X | Miscellaneous | 0 | SNACK MISER FOR SNACK MACHINE | N/A |
| 820 | DRINK | X | Miscellaneous | 0 | VENDING MISER FOR SODA MACHINE | N/A |
| 822 | DLO | X | Lighting Controls | 0 | DROP CEILING LIGHTING ONLY | N/A |
| 826 | FIX | X | Lighting Controls | 0 | FIXTURE ONLY (1 SENSOR EVERY FIXTURE) | N/A |
| 830 | HLO | X | Lighting Controls | 0 | HARD CEILING LIGHTING ONLY | N/A |
| 837 | WSW | X | Lighting Controls | 0 | WALL SWITCH INSTALL | N/A |
| 849 | MISER | X | Miscellaneous | 0 | VENDING MISER INSTALL | N/A |
| 853 | SCAFFOLD | X | Miscellaneous | 0 | 1 WEEK (3) SECTIONS SCAFFOLD DELIVERED & PICKED UP & ERECTED & DISMANTALED | N/A |
| 858 | NF29-WIREGUARD | X | Miscellaneous | 0 | ADD WIREGUARD TO NF29 | N/A |
| 863 | EXCLUDE | X | Excluded | 0 | EXCLUDE | N/A |
| 865 | EXTR | X | Excluded | 0 | EXISTING TO REMAIN | N/A |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 1 | City Hall | 3 | | ELEVATOR | | 8,760 | 2 | 24EE | 72 W | 0.14 KW | 1,261 KWH | 2 | LB24LP | 39 W | 0.08 KW | 683 KWH | 0 KWH | 683 KWH | | | 0.07 KW | 578 KWH | 0 KWH | 578 KWH |
| 2 | City Hall | 3 | 303 | OFFICE | | 2,456 | 4 | 34T8 | 87 W | 0.35 KW | 855 KWH | 4 | LB24REF-RT | 43 W | 0.17 KW | 422 KWH | -63 KWH | 359 KWH | 15% | X | 0.18 KW | 432 KWH | 63 KWH | 496 KWH |
| 3 | City Hall | 3 | 307 | OFFICE | | 2,456 | 6 | 34T8 | 87 W | 0.52 KW | 1,282 KWH | 6 | LB24REF-RT | 43 W | 0.26 KW | 634 KWH | -95 KWH | 539 KWH | 15% | X | 0.26 KW | 648 KWH | 95 KWH | 743 KWH |
| 4 | City Hall | 3 | | CORRIDOR | | 2,808 | 1 | 24UT8 | 59 W | 0.06 KW | 166 KWH | 1 | LB22LPREF-RT | 26 W | 0.03 KW | 73 KWH | 0 KWH | 73 KWH | | | 0.03 KW | 93 KWH | 0 KWH | 93 KWH |
| 5 | City Hall | 3 | 309 | COUNCIL CHAMBER | | 884 | 40 | 34T8 | 87 W | 3.48 KW | 3,076 KWH | 40 | LB34LP | 57 W | 2.28 KW | 2,016 KWH | 0 KWH | 2,016 KWH | | | 1.20 KW | 1,061 KWH | 0 KWH | 1,061 KWH |
| 6 | City Hall | 3 | 309 | COUNCIL CHAMBER | | 884 | 38 | PL26X2 | 64 W | 2.43 KW | 2,150 KWH | 38 | EXTR | 64 W | 2.43 KW | 2,150 KWH | 0 KWH | 2,150 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 7 | City Hall | 3 | | CORRIDOR NEAR 303 | | 2,808 | 8 | 24UT8 | 59 W | 0.47 KW | 1,325 KWH | 8 | LB32LPREF | 38 W | 0.30 KW | 854 KWH | 0 KWH | 854 KWH | | | 0.17 KW | 472 KWH | 0 KWH | 472 KWH |
| 8 | City Hall | 3 | 301 | CORRIDOR | | 2,808 | 6 | 24UT8 | 59 W | 0.35 KW | 994 KWH | 6 | LB32LPREF | 38 W | 0.23 KW | 640 KWH | 0 KWH | 640 KWH | | | 0.13 KW | 354 KWH | 0 KWH | 354 KWH |
| 9 | City Hall | 3 | | | | 2,808 | 3 | PL26X2 | 64 W | 0.19 KW | 539 KWH | 3 | EXTR | 64 W | 0.19 KW | 539 KWH | 0 KWH | 539 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 10 | City Hall | 3 | | BOOTH | | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 317 KWH | -95 KWH | 222 KWH | 30% | X | 0.14 KW | 339 KWH | 95 KWH | 434 KWH |
| 11 | City Hall | 3 | 318 | MECH | | 2,400 | 3 | 24T8 | 59 W | 0.18 KW | 425 KWH | 3 | LB24LP | 39 W | 0.12 KW | 281 KWH | 0 KWH | 281 KWH | | | 0.06 KW | 144 KWH | 0 KWH | 144 KWH |
| 11.01 | City Hall | 3 | 318 | MECH | | 2,400 | 1 | 24T8 | 59 W | 0.06 KW | 142 KWH | 1 | EXTR | 59 W | 0.06 KW | 142 KWH | 0 KWH | 142 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 12 | City Hall | 3 | | CORRIDOR | | 2,808 | 6 | 24UT8 | 59 W | 0.35 KW | 994 KWH | 6 | LB32LPREF | 38 W | 0.23 KW | 640 KWH | 0 KWH | 640 KWH | | | 0.13 KW | 354 KWH | 0 KWH | 354 KWH |
| 13 | City Hall | 3 | | MENS TOILET | | 2,600 | 1 | 24T8 | 59 W | 0.06 KW | 153 KWH | 1 | EXTR | 59 W | 0.06 KW | 153 KWH | -46 KWH | 107 KWH | 30% | X | 0.00 KW | 0 KWH | 46 KWH | 46 KWH |
| 14 | City Hall | 3 | | WOMENS TOILET | | 2,600 | 1 | 24T8 | 59 W | 0.06 KW | 153 KWH | 1 | EXTR | 59 W | 0.06 KW | 153 KWH | -46 KWH | 107 KWH | 30% | X | 0.00 KW | 0 KWH | 46 KWH | 46 KWH |
| 15 | City Hall | 3 | 313 | OFFICE | | 2,456 | 6 | 34T8 | 87 W | 0.52 KW | 1,282 KWH | 6 | LB24REF-RT | 43 W | 0.26 KW | 634 KWH | -95 KWH | 539 KWH | 15% | X | 0.26 KW | 648 KWH | 95 KWH | 743 KWH |
| 16 | City Hall | 3 | | UPPER LOBBY | | 2,808 | 3 | 24UT8 | 59 W | 0.18 KW | 497 KWH | 3 | LB32LPREF | 38 W | 0.11 KW | 320 KWH | 0 KWH | 320 KWH | | | 0.06 KW | 177 KWH | 0 KWH | 177 KWH |
| 17 | City Hall | 3 | | UPPER LOBBY | | 2,808 | 3 | PL26X2 | 64 W | 0.19 KW | 539 KWH | 3 | EXTR | 64 W | 0.19 KW | 539 KWH | 0 KWH | 539 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 18 | City Hall | 3 | | UPPER LOBBY | | 2,808 | 5 | 75 | 75 W | 0.38 KW | 1,053 KWH | 5 | EXTR | 75 W | 0.38 KW | 1,053 KWH | -737 KWH | 316 KWH | 70% | X | 0.00 KW | 0 KWH | 737 KWH | 737 KWH |
| 18.01 | City Hall | 3 | | UPPER LOBBY | | 2,808 | 4 | 75 | 75 W | 0.30 KW | 842 KWH | 4 | EXTR | 75 W | 0.30 KW | 842 KWH | 0 KWH | 842 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 19 | City Hall | 3 | | UPPER LOBBY | | 2,808 | 2 | 34T8 | 87 W | 0.17 KW | 489 KWH | 2 | LB34LP | 57 W | 0.11 KW | 320 KWH | 0 KWH | 320 KWH | | | 0.06 KW | 168 KWH | 0 KWH | 168 KWH |
| 20 | City Hall | 3 | | UPPER LOBBY | | 2,808 | 1 | 24UT8 | 59 W | 0.06 KW | 166 KWH | 1 | LB32LPREF | 38 W | 0.04 KW | 107 KWH | 0 KWH | 107 KWH | | | 0.02 KW | 59 KWH | 0 KWH | 59 KWH |
| 21 | City Hall | 3 | | MENS TOILET | | 5,797 | 6 | 24T8 | 59 W | 0.35 KW | 2,052 KWH | 6 | LB24LP | 39 W | 0.23 KW | 1,356 KWH | -678 KWH | 678 KWH | 50% | X | 0.12 KW | 696 KWH | 678 KWH | 1,374 KWH |
| 22 | City Hall | 3 | | WOMENS TOILET | | 5,797 | 6 | 24T8 | 59 W | 0.35 KW | 2,052 KWH | 6 | LB24LP | 39 W | 0.23 KW | 1,356 KWH | -678 KWH | 678 KWH | 50% | X | 0.12 KW | 696 KWH | 678 KWH | 1,374 KWH |
| 23 | City Hall | 3 | 322 | OPEN LOBBY | | 2,808 | 20 | 34T8 I/O | 89 W | 1.78 KW | 4,998 KWH | 20 | LB24PSDREF-RT | 43 W | 0.86 KW | 2,415 KWH | 0 KWH | 2,415 KWH | | | 0.92 KW | 2,583 KWH | 0 KWH | 2,583 KWH |
| 23.01 | City Hall | 3 | 322 | OPEN LOBBY | | 2,808 | 4 | 34T8 I/O | 89 W | 0.36 KW | 1,000 KWH | 4 | LB24PSDREF-RT-EM | 43 W | 0.17 KW | 483 KWH | 0 KWH | 483 KWH | | | 0.18 KW | 517 KWH | 0 KWH | 517 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 24 | City Hall | 3 | 328 | OFFICE | | 2,456 | 6 | 34T8 I/O | 89 W | 0.53 KW | 1,312 KWH | 6 | LB24PSDREF-RT | 43 W | 0.26 KW | 634 KWH | -95 KWH | 539 KWH | 15% | X | 0.28 KW | 678 KWH | 95 KWH | 773 KWH |
| 25 | City Hall | 3 | 330 | OFFICE | | 2,456 | 4 | 34T8 I/O | 89 W | 0.36 KW | 874 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 422 KWH | -63 KWH | 359 KWH | 15% | X | 0.18 KW | 452 KWH | 63 KWH | 515 KWH |
| 26 | City Hall | 3 | 329 | OFFICE | | 2,456 | 8 | 34T8 I/O | 89 W | 0.71 KW | 1,749 KWH | 8 | LB24PSDREF-RT | 43 W | 0.34 KW | 845 KWH | -127 KWH | 718 KWH | 15% | X | 0.37 KW | 904 KWH | 127 KWH | 1,031 KWH |
| 27 | City Hall | 3 | 308 | BREAK ROOM OFFICE | 48 | 2,515 | 6 | 34T8 I/O | 89 W | 0.53 KW | 1,343 KWH | 6 | LB34LP | 57 W | 0.34 KW | 860 KWH | -129 KWH | 731 KWH | 15% | X | 0.19 KW | 483 KWH | 129 KWH | 612 KWH |
| 28 | City Hall | 3 | 308 | | | 8,760 | 1 | DRINK | 400 W | 0.40 KW | 3,504 KWH | 1 | EXTR | 400 W | 0.40 KW | 3,504 KWH | -2,102 KWH | 1,402 KWH | 60% | X | 0.00 KW | 0 KWH | 2,102 KWH | 2,102 KWH |
| 29 | City Hall | 3 | 308 | | | 8,760 | 1 | SNACK | 100 W | 0.10 KW | 876 KWH | 1 | EXTR | 100 W | 0.10 KW | 876 KWH | -526 KWH | 350 KWH | 60% | X | 0.00 KW | 0 KWH | 526 KWH | 526 KWH |
| 30 | City Hall | 3 | 332 | EXERCISE ROOM | 46 | 2,456 | 5 | 34T8 I/O | 89 W | 0.45 KW | 1,093 KWH | 5 | LB24PSDREF-RT | 43 W | 0.22 KW | 528 KWH | 0 KWH | 528 KWH | | | 0.23 KW | 565 KWH | 0 KWH | 565 KWH |
| 30.01 | City Hall | 3 | 332 | EXERCISE ROOM | 46 | 2,456 | 1 | 34T8 I/O | 89 W | 0.09 KW | 219 KWH | 1 | LB24PSDREF-RT-EM | 43 W | 0.04 KW | 106 KWH | 0 KWH | 106 KWH | | | 0.05 KW | 113 KWH | 0 KWH | 113 KWH |
| 31 | City Hall | 3 | | WOMENS TOILET | 48 | 2,600 | 4 | 24T8 | 59 W | 0.24 KW | 614 KWH | 4 | LB24LP | 39 W | 0.16 KW | 406 KWH | -122 KWH | 284 KWH | 30% | X | 0.08 KW | 208 KWH | 122 KWH | 330 KWH |
| 32 | City Hall | 3 | | MENS TOILET | | 2,600 | 4 | 24T8 | 59 W | 0.24 KW | 614 KWH | 4 | LB24LP | 39 W | 0.16 KW | 406 KWH | -122 KWH | 284 KWH | 30% | X | 0.08 KW | 208 KWH | 122 KWH | 330 KWH |
| 33 | City Hall | 3 | | CORRIDOR | | 2,808 | 2 | 24UT8 | 59 W | 0.12 KW | 331 KWH | 2 | LB32LPREF | 38 W | 0.08 KW | 213 KWH | 0 KWH | 213 KWH | | | 0.04 KW | 118 KWH | 0 KWH | 118 KWH |
| 34 | City Hall | 3 | 339 | STORAGE | | 1,000 | 2 | 34T8 | 87 W | 0.17 KW | 174 KWH | 2 | LB24LPDL | 39 W | 0.08 KW | 78 KWH | 0 KWH | 78 KWH | | | 0.10 KW | 96 KWH | 0 KWH | 96 KWH |
| 34.01 | City Hall | 3 | 339 | STORAGE | | 1,000 | 1 | 34T8 | 87 W | 0.09 KW | 87 KWH | 1 | LB24LPDL | 39 W | 0.04 KW | 39 KWH | 0 KWH | 39 KWH | | | 0.05 KW | 48 KWH | 0 KWH | 48 KWH |
| 35 | City Hall | 3 | 340 | MECH | 21 | 2,400 | 2 | 24T8 | 59 W | 0.12 KW | 283 KWH | 2 | LB24LP | 39 W | 0.08 KW | 187 KWH | 0 KWH | 187 KWH | | | 0.04 KW | 96 KWH | 0 KWH | 96 KWH |
| 35.01 | City Hall | 3 | 340 | MECH | 21 | 2,400 | 1 | 24T8 | 59 W | 0.06 KW | 142 KWH | 1 | EXTR | 59 W | 0.06 KW | 142 KWH | 0 KWH | 142 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 36 | City Hall | 3 | 337 | CONFERENCE | | 2,456 | 24 | CF14 | 14 W | 0.34 KW | 825 KWH | 24 | EXTR | 14 W | 0.34 KW | 825 KWH | -165 KWH | 660 KWH | 20% | X | 0.00 KW | 0 KWH | 165 KWH | 165 KWH |
| 37 | City Hall | 3 | 337 | CONFERENCE | | 2,456 | 2 | 23T8 | 45 W | 0.09 KW | 221 KWH | 2 | LB23LP | 36 W | 0.07 KW | 177 KWH | -35 KWH | 141 KWH | 20% | | 0.02 KW | 44 KWH | 35 KWH | 80 KWH |
| 36.01 | City Hall | 3 | 337 | CONFERENCE | | 2,456 | 6 | 14T8 | 30 W | 0.18 KW | 442 KWH | 6 | LB14LP | 21 W | 0.13 KW | 309 KWH | -62 KWH | 248 KWH | 20% | | 0.05 KW | 133 KWH | 62 KWH | 195 KWH |
| 36.02 | City Hall | 3 | 337 | CONFERENCE | | 2,456 | 6 | 24T8 | 59 W | 0.35 KW | 869 KWH | 6 | LB24LP | 39 W | 0.23 KW | 575 KWH | -115 KWH | 460 KWH | 20% | | 0.12 KW | 295 KWH | 115 KWH | 410 KWH |
| 38 | City Hall | 3 | | STAIRS | 12 | 2,600 | 1 | 24T8 | 59 W | 0.06 KW | 153 KWH | 1 | LB24LP | 39 W | 0.04 KW | 101 KWH | 0 KWH | 101 KWH | | | 0.02 KW | 52 KWH | 0 KWH | 52 KWH |
| 39 | City Hall | 3 | | STAIRS | 12 | 2,600 | 1 | 23T8 | 45 W | 0.05 KW | 117 KWH | 1 | LB23LP | 36 W | 0.04 KW | 94 KWH | 0 KWH | 94 KWH | | | 0.01 KW | 23 KWH | 0 KWH | 23 KWH |
| 40 | City Hall | 3 | | LOBBY @ 337 | | 2,808 | 4 | 24UT8 | 59 W | 0.24 KW | 663 KWH | 4 | LB32LPREF | 38 W | 0.15 KW | 427 KWH | 0 KWH | 427 KWH | | | 0.08 KW | 236 KWH | 0 KWH | 236 KWH |
| 41 | City Hall | 3 | | STAIRS | | 2,600 | 1 | 24T8 | 59 W | 0.06 KW | 153 KWH | 1 | LB24LP | 39 W | 0.04 KW | 101 KWH | 0 KWH | 101 KWH | | | 0.02 KW | 52 KWH | 0 KWH | 52 KWH |
| 42 | City Hall | 3 | | STAIRS | | 2,600 | 2 | 23T8 | 45 W | 0.09 KW | 234 KWH | 2 | LB23LP | 36 W | 0.07 KW | 187 KWH | 0 KWH | 187 KWH | | | 0.02 KW | 47 KWH | 0 KWH | 47 KWH |
| 43 | City Hall | 2 | | LOBBY @ ELEVATOR | | 2,808 | 4 | 24UT8 | 59 W | 0.24 KW | 663 KWH | 4 | LB32LPREF | 38 W | 0.15 KW | 427 KWH | 0 KWH | 427 KWH | | | 0.08 KW | 236 KWH | 0 KWH | 236 KWH |
| 44 | City Hall | 2 | | IT DEPT | | 2,456 | 12 | 34T8 I/O | 89 W | 1.07 KW | 2,623 KWH | 12 | LB24PSDREF-RT | 43 W | 0.52 KW | 1,267 KWH | 0 KWH | 1,267 KWH | | | 0.55 KW | 1,356 KWH | 0 KWH | 1,356 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 44.01 | City Hall | 2 | | IT DEPT | | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT-EM | 43 W | 0.13 KW | 317 KWH | 0 KWH | 317 KWH | | | 0.14 KW | 339 KWH | 0 KWH | 339 KWH |
| 45 | City Hall | 2 | 245 | STORAGE | | 1,000 | 3 | 34T8 | 87 W | 0.26 KW | 261 KWH | 3 | LB24LPDL | 39 W | 0.12 KW | 117 KWH | 0 KWH | 117 KWH | | | 0.14 KW | 144 KWH | 0 KWH | 144 KWH |
| 46 | City Hall | 2 | 246 | MECH | | 2,400 | 4 | 24T8 | 59 W | 0.24 KW | 566 KWH | 4 | LB24LP | 39 W | 0.16 KW | 374 KWH | 0 KWH | 374 KWH | | | 0.08 KW | 192 KWH | 0 KWH | 192 KWH |
| 47 | City Hall | 2 | 247 | OFFICE | | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 317 KWH | -48 KWH | 269 KWH | 15% | X | 0.14 KW | 339 KWH | 48 KWH | 386 KWH |
| 48 | City Hall | 2 | 248 | OFFICE | 51 | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 317 KWH | -48 KWH | 269 KWH | 15% | X | 0.14 KW | 339 KWH | 48 KWH | 386 KWH |
| 49 | City Hall | 2 | 238 | SERVER ROOM OFFICE | | 2,456 | 8 | 34T8 I/O | 89 W | 0.71 KW | 1,749 KWH | 8 | LB24PSDREF-RT | 43 W | 0.34 KW | 845 KWH | 0 KWH | 845 KWH | | | 0.37 KW | 904 KWH | 0 KWH | 904 KWH |
| 49.01 | City Hall | 2 | 238 | SERVER ROOM OFFICE | | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24PSDREF-RT-EM | 43 W | 0.09 KW | 211 KWH | 0 KWH | 211 KWH | | | 0.09 KW | 226 KWH | 0 KWH | 226 KWH |
| 50 | City Hall | 2 | 249 | OFFICE | 59 | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 317 KWH | -48 KWH | 269 KWH | 15% | X | 0.14 KW | 339 KWH | 48 KWH | 386 KWH |
| 51 | City Hall | 2 | 250 | OFFICE | | 2,456 | 4 | 34T8 I/O | 89 W | 0.36 KW | 874 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 422 KWH | -63 KWH | 359 KWH | 15% | X | 0.18 KW | 452 KWH | 63 KWH | 515 KWH |
| 52 | City Hall | 2 | 251 | OFFICE | | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 211 KWH | -32 KWH | 180 KWH | 15% | X | 0.09 KW | 226 KWH | 32 KWH | 258 KWH |
| 53 | City Hall | 2 | 253 | STORAGE | | 1,000 | 1 | 34T8 | 87 W | 0.09 KW | 87 KWH | 1 | LB24LPDL | 39 W | 0.04 KW | 39 KWH | 0 KWH | 39 KWH | | | 0.05 KW | 48 KWH | 0 KWH | 48 KWH |
| 54 | City Hall | 2 | 252 | OFFICE | | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 211 KWH | -32 KWH | 180 KWH | 15% | X | 0.09 KW | 226 KWH | 32 KWH | 258 KWH |
| 55 | City Hall | 2 | | CORRIDOR | | 2,808 | 19 | 24UT8 | 59 W | 1.12 KW | 3,148 KWH | 19 | LB32LPREF | 38 W | 0.72 KW | 2,027 KWH | 0 KWH | 2,027 KWH | | | 0.40 KW | 1,120 KWH | 0 KWH | 1,120 KWH |
| 56 | City Hall | 2 | 233 | CONFERENCE | | 2,456 | 4 | 34T8 I/O | 89 W | 0.36 KW | 874 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 422 KWH | -63 KWH | 359 KWH | 15% | X | 0.18 KW | 452 KWH | 63 KWH | 515 KWH |
| 57 | City Hall | 2 | 234 | OFFICE | 54 | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 317 KWH | -48 KWH | 269 KWH | 15% | X | 0.14 KW | 339 KWH | 48 KWH | 386 KWH |
| 58 | City Hall | 2 | 255 | OFFICE | | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 211 KWH | -32 KWH | 180 KWH | 15% | X | 0.09 KW | 226 KWH | 32 KWH | 258 KWH |
| 59 | City Hall | 2 | 254 | OFFICE | | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 211 KWH | -32 KWH | 180 KWH | 15% | X | 0.09 KW | 226 KWH | 32 KWH | 258 KWH |
| 60 | City Hall | 2 | 235 | OFFICE | | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 211 KWH | -32 KWH | 180 KWH | 15% | X | 0.09 KW | 226 KWH | 32 KWH | 258 KWH |
| 61 | City Hall | 2 | 236 | OFFICE | 61 | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 317 KWH | -48 KWH | 269 KWH | 15% | X | 0.14 KW | 339 KWH | 48 KWH | 386 KWH |
| 62 | City Hall | 2 | 237 | OFFICE | 41 | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 317 KWH | -48 KWH | 269 KWH | 15% | X | 0.14 KW | 339 KWH | 48 KWH | 386 KWH |
| 63 | City Hall | 2 | | MENS TOILET | 17 | 5,797 | 6 | 24T8 | 59 W | 0.35 KW | 2,052 KWH | 6 | LB24LP | 39 W | 0.23 KW | 1,356 KWH | -678 KWH | 678 KWH | 50% | X | 0.12 KW | 696 KWH | 678 KWH | 1,374 KWH |
| 64 | City Hall | 2 | | WOMENS TOILET | | 5,797 | 6 | 24T8 | 59 W | 0.35 KW | 2,052 KWH | 6 | LB24LP | 39 W | 0.23 KW | 1,356 KWH | -678 KWH | 678 KWH | 50% | X | 0.12 KW | 696 KWH | 678 KWH | 1,374 KWH |
| 65 | City Hall | 2 | | LOBBY | 36 | 2,808 | 13 | 24UT8 | 59 W | 0.77 KW | 2,154 KWH | 13 | LB32LPREF | 38 W | 0.49 KW | 1,387 KWH | 0 KWH | 1,387 KWH | | | 0.27 KW | 767 KWH | 0 KWH | 767 KWH |
| 66 | City Hall | 2 | 203 | OFFICE | | 2,456 | 9 | 34T8 I/O | 89 W | 0.80 KW | 1,967 KWH | 9 | LB24PSDREF-RT | 43 W | 0.39 KW | 950 KWH | -143 KWH | 808 KWH | 15% | X | 0.41 KW | 1,017 KWH | 143 KWH | 1,159 KWH |
| 66.01 | City Hall | 2 | 203 | OFFICE | | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24PSDREF-RT-EM | 43 W | 0.09 KW | 211 KWH | -32 KWH | 180 KWH | 15% | | 0.09 KW | 226 KWH | 32 KWH | 258 KWH |
| 67 | City Hall | 2 | | STORAGE | | 1,000 | 3 | 24T8 | 59 W | 0.18 KW | 177 KWH | 3 | LB24LP | 39 W | 0.12 KW | 117 KWH | 0 KWH | 117 KWH | | | 0.06 KW | 60 KWH | 0 KWH | 60 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 68 | City Hall | 2 | 205 | OFFICE | 59 | 2,456 | 6 | 34T8 I/O | 89 W | 0.53 KW | 1,312 KWH | 6 | LB24PSDREF-RT | 43 W | 0.26 KW | 634 KWH | -95 KWH | 539 KWH | 15% | X | 0.28 KW | 678 KWH | 95 KWH | 773 KWH |
| 69 | City Hall | 2 | 206 | OFFICE | | 2,456 | 4 | 34T8 I/O | 89 W | 0.36 KW | 874 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 422 KWH | -63 KWH | 359 KWH | 15% | X | 0.18 KW | 452 KWH | 63 KWH | 515 KWH |
| 70 | City Hall | 2 | 209 | OFFICE | 55 | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 211 KWH | -32 KWH | 180 KWH | 15% | X | 0.09 KW | 226 KWH | 32 KWH | 258 KWH |
| 71 | City Hall | 2 | 207 | STORAGE | 51 | 1,000 | 3 | 34T8 I/O | 89 W | 0.27 KW | 267 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 129 KWH | 0 KWH | 129 KWH | | | 0.14 KW | 138 KWH | 0 KWH | 138 KWH |
| 72 | City Hall | 2 | 208 | COPY ROOM | 29 | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 317 KWH | 0 KWH | 317 KWH | | | 0.14 KW | 339 KWH | 0 KWH | 339 KWH |
| 73 | City Hall | 2 | 211 | OFFICE | | 2,456 | 4 | 34T8 I/O | 89 W | 0.36 KW | 874 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 422 KWH | -63 KWH | 359 KWH | 15% | X | 0.18 KW | 452 KWH | 63 KWH | 515 KWH |
| 74 | City Hall | 2 | 210 | STORAGE | | 1,000 | 1 | 34T8 I/O | 89 W | 0.09 KW | 89 KWH | 1 | LB24PSDREF-RT | 43 W | 0.04 KW | 43 KWH | 0 KWH | 43 KWH | | | 0.05 KW | 46 KWH | 0 KWH | 46 KWH |
| 75 | City Hall | 2 | 212 | OFFICE | | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 211 KWH | -32 KWH | 180 KWH | 15% | X | 0.09 KW | 226 KWH | 32 KWH | 258 KWH |
| 76 | City Hall | 2 | 213 | OFFICE | | 2,456 | 6 | 34T8 I/O | 89 W | 0.53 KW | 1,312 KWH | 6 | LB24PSDREF-RT | 43 W | 0.26 KW | 634 KWH | -95 KWH | 539 KWH | 15% | X | 0.28 KW | 678 KWH | 95 KWH | 773 KWH |
| 77 | City Hall | 2 | 215 | STORAGE | 47 | 1,000 | 3 | 34T8 I/O | 89 W | 0.27 KW | 267 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 129 KWH | 0 KWH | 129 KWH | | | 0.14 KW | 138 KWH | 0 KWH | 138 KWH |
| 78 | City Hall | 2 | | OPEN OFFICE | 64 | 2,456 | 17 | 34T8 I/O | 89 W | 1.51 KW | 3,716 KWH | 17 | LB24REF-RT | 43 W | 0.73 KW | 1,795 KWH | 0 KWH | 1,795 KWH | | | 0.78 KW | 1,921 KWH | 0 KWH | 1,921 KWH |
| 78.01 | City Hall | 2 | | OPEN OFFICE | 64 | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24REF-RT-EM | 43 W | 0.13 KW | 317 KWH | 0 KWH | 317 KWH | | | 0.14 KW | 339 KWH | 0 KWH | 339 KWH |
| 79 | City Hall | 2 | 214 | OFFICE | | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 211 KWH | -32 KWH | 180 KWH | 15% | X | 0.09 KW | 226 KWH | 32 KWH | 258 KWH |
| 80 | City Hall | 2 | | OPEN OFFICE | | 2,456 | 16 | 24UT8 | 59 W | 0.94 KW | 2,318 KWH | 16 | LB32LPREF | 38 W | 0.61 KW | 1,493 KWH | 0 KWH | 1,493 KWH | | | 0.34 KW | 825 KWH | 0 KWH | 825 KWH |
| 81 | City Hall | 2 | | UNISEX TOILET | | 2,600 | 1 | 24T8 | 59 W | 0.06 KW | 153 KWH | 1 | LB24LP | 39 W | 0.04 KW | 101 KWH | 0 KWH | 101 KWH | | | 0.02 KW | 52 KWH | 0 KWH | 52 KWH |
| 82 | City Hall | 2 | 217 | MECH | | 2,400 | 4 | 24T8 | 59 W | 0.24 KW | 566 KWH | 4 | LB24LP | 39 W | 0.16 KW | 374 KWH | 0 KWH | 374 KWH | | | 0.08 KW | 192 KWH | 0 KWH | 192 KWH |
| 83 | City Hall | 2 | | STAIRS | | 2,600 | 1 | 24T8 | 59 W | 0.06 KW | 153 KWH | 1 | LB24LP | 39 W | 0.04 KW | 101 KWH | 0 KWH | 101 KWH | | | 0.02 KW | 52 KWH | 0 KWH | 52 KWH |
| 84 | City Hall | 2 | | STAIRS | | 2,600 | 2 | 23T8 | 45 W | 0.09 KW | 234 KWH | 2 | LB23LP | 36 W | 0.07 KW | 187 KWH | 0 KWH | 187 KWH | | | 0.02 KW | 47 KWH | 0 KWH | 47 KWH |
| 85 | City Hall | 2 | | CORRIDOR @ 217 | | 2,808 | 9 | 24T8 | 59 W | 0.53 KW | 1,491 KWH | 9 | L24 | 46 W | 0.41 KW | 1,163 KWH | 0 KWH | 1,163 KWH | | | 0.12 KW | 329 KWH | 0 KWH | 329 KWH |
| 86 | City Hall | 2 | 222 | CONFERENCE | | 2,456 | 4 | 34T8 I/O | 89 W | 0.36 KW | 874 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 422 KWH | -63 KWH | 359 KWH | 15% | X | 0.18 KW | 452 KWH | 63 KWH | 515 KWH |
| 87 | City Hall | 2 | 223 | CONFERENCE | | 2,456 | 4 | 34T8 I/O | 89 W | 0.36 KW | 874 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 422 KWH | -63 KWH | 359 KWH | 15% | X | 0.18 KW | 452 KWH | 63 KWH | 515 KWH |
| 88 | City Hall | 2 | | CORRIDOR | | 2,808 | 2 | PL26X2 | 64 W | 0.13 KW | 359 KWH | 2 | EXTR | 64 W | 0.13 KW | 359 KWH | 0 KWH | 359 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 89 | City Hall | 1 | 102 | CORRIDOR | | 2,808 | 12 | 24UT8 | 59 W | 0.71 KW | 1,988 KWH | 12 | LB32LPREF | 38 W | 0.46 KW | 1,280 KWH | 0 KWH | 1,280 KWH | | | 0.25 KW | 708 KWH | 0 KWH | 708 KWH |
| 90 | City Hall | 1 | 125 | CONFERENCE | | 2,456 | 4 | 34T8 I/O | 89 W | 0.36 KW | 874 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 422 KWH | -63 KWH | 359 KWH | 15% | X | 0.18 KW | 452 KWH | 63 KWH | 515 KWH |
| 91 | City Hall | 1 | 126 | CONFERENCE | | 2,456 | 4 | 34T8 I/O | 89 W | 0.36 KW | 874 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 422 KWH | -63 KWH | 359 KWH | 15% | X | 0.18 KW | 452 KWH | 63 KWH | 515 KWH |
| 92 | City Hall | 1 | 124 | OFFICE | 49 | 2,456 | 4 | 34T8 I/O | 89 W | 0.36 KW | 874 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 422 KWH | -63 KWH | 359 KWH | 15% | X | 0.18 KW | 452 KWH | 63 KWH | 515 KWH |

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 93 | City Hall | 1 | | UNISEX TOILET | | 2,600 | 1 | 34T8 | 87 W | 0.09 KW | 226 KWH | 1 | LB34LP | 57 W | 0.06 KW | 148 KWH | 0 KWH | 148 KWH | | | 0.03 KW | 78 KWH | 0 KWH | 78 KWH |
| 94 | City Hall | 1 | 123 | OFFICE | 48 | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 211 KWH | -32 KWH | 180 KWH | 15% | X | 0.09 KW | 226 KWH | 32 KWH | 258 KWH |
| 95 | City Hall | 1 | 121 | OFFICE | | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 211 KWH | -32 KWH | 180 KWH | 15% | X | 0.09 KW | 226 KWH | 32 KWH | 258 KWH |
| 96 | City Hall | 1 | 119 | OFFICE | | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 317 KWH | -48 KWH | 269 KWH | 15% | X | 0.14 KW | 339 KWH | 48 KWH | 386 KWH |
| 97 | City Hall | 1 | 122 | STORAGE | | 1,000 | 1 | 34T8 | 87 W | 0.09 KW | 87 KWH | 1 | LB24LPDL | 39 W | 0.04 KW | 39 KWH | 0 KWH | 39 KWH | | | 0.05 KW | 48 KWH | 0 KWH | 48 KWH |
| 98 | City Hall | 1 | 118 | OFFICE | | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 317 KWH | -48 KWH | 269 KWH | 15% | X | 0.14 KW | 339 KWH | 48 KWH | 386 KWH |
| 99 | City Hall | 1 | 116 | COPY ROOM | | 2,456 | 5 | 34T8 I/O | 89 W | 0.45 KW | 1,093 KWH | 5 | LB24REF-RT | 43 W | 0.22 KW | 528 KWH | 0 KWH | 528 KWH | | | 0.23 KW | 565 KWH | 0 KWH | 565 KWH |
| 100 | City Hall | 1 | 117 | FILES | | 2,456 | 3 | 24T8 I/O | 60 W | 0.18 KW | 442 KWH | 3 | EXTR | 60 W | 0.18 KW | 442 KWH | 0 KWH | 442 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 101 | City Hall | 1 | 114 | OFFICE | | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 211 KWH | -32 KWH | 180 KWH | 15% | X | 0.09 KW | 226 KWH | 32 KWH | 258 KWH |
| 102 | City Hall | 1 | 115 | OFFICE | | 2,456 | 4 | 34T8 I/O | 89 W | 0.36 KW | 874 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 422 KWH | -63 KWH | 359 KWH | 15% | X | 0.18 KW | 452 KWH | 63 KWH | 515 KWH |
| 103 | City Hall | 1 | 112 | OFFICE | | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 317 KWH | -48 KWH | 269 KWH | 15% | X | 0.14 KW | 339 KWH | 48 KWH | 386 KWH |
| 104 | City Hall | 1 | 111 | OFFICE | | 2,456 | 1 | 34T8 | 87 W | 0.09 KW | 214 KWH | 1 | LB24REF-RT | 43 W | 0.04 KW | 106 KWH | -16 KWH | 90 KWH | 15% | X | 0.04 KW | 108 KWH | 16 KWH | 124 KWH |
| 105 | City Hall | 1 | 110 | OFFICE | | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 317 KWH | -48 KWH | 269 KWH | 15% | X | 0.14 KW | 339 KWH | 48 KWH | 386 KWH |
| 106 | City Hall | 1 | 109 | OFFICE | | 2,456 | 4 | 34T8 I/O | 89 W | 0.36 KW | 874 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 422 KWH | -63 KWH | 359 KWH | 15% | X | 0.18 KW | 452 KWH | 63 KWH | 515 KWH |
| 107 | City Hall | 1 | | CORRIDOR NEAR 105 | | 2,808 | 21 | 24UT8 | 59 W | 1.24 KW | 3,479 KWH | 21 | LB32LPREF | 38 W | 0.80 KW | 2,241 KWH | 0 KWH | 2,241 KWH | | | 0.44 KW | 1,238 KWH | 0 KWH | 1,238 KWH |
| 108 | City Hall | 1 | 108 | OFFICE | | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 317 KWH | -48 KWH | 269 KWH | 15% | X | 0.14 KW | 339 KWH | 48 KWH | 386 KWH |
| 109 | City Hall | 1 | 107 | OFFICE | | 2,456 | 4 | 34T8 I/O | 89 W | 0.36 KW | 874 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 422 KWH | -63 KWH | 359 KWH | 15% | X | 0.18 KW | 452 KWH | 63 KWH | 515 KWH |
| 110 | City Hall | 1 | 106 | OFFICE | | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 211 KWH | -32 KWH | 180 KWH | 15% | X | 0.09 KW | 226 KWH | 32 KWH | 258 KWH |
| 111 | City Hall | 1 | 105 | OFFICE | | 2,456 | 3 | 24T8 I/O | 60 W | 0.18 KW | 442 KWH | 3 | LB24LP | 39 W | 0.12 KW | 287 KWH | -43 KWH | 244 KWH | 15% | X | 0.06 KW | 155 KWH | 43 KWH | 198 KWH |
| 112 | City Hall | 1 | | MENS TOILET | | 5,797 | 6 | 24T8 | 59 W | 0.35 KW | 2,052 KWH | 6 | LB24LP | 39 W | 0.23 KW | 1,356 KWH | -678 KWH | 678 KWH | 50% | X | 0.12 KW | 696 KWH | 678 KWH | 1,374 KWH |
| 113 | City Hall | 1 | | WOMENS TOILET | | 5,797 | 6 | 24T8 | 59 W | 0.35 KW | 2,052 KWH | 6 | LB24LP | 39 W | 0.23 KW | 1,356 KWH | -678 KWH | 678 KWH | 50% | X | 0.12 KW | 696 KWH | 678 KWH | 1,374 KWH |
| 114 | City Hall | 1 | 134 | OPEN OFFICE | | 2,456 | 14 | 34T8 I/O | 89 W | 1.25 KW | 3,060 KWH | 14 | LB24PSDREF-RT | 43 W | 0.60 KW | 1,479 KWH | 0 KWH | 1,479 KWH | | | 0.64 KW | 1,582 KWH | 0 KWH | 1,582 KWH |
| 114.01 | City Hall | 1 | 134 | OPEN OFFICE | | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT-EM | 43 W | 0.13 KW | 317 KWH | 0 KWH | 317 KWH | | | 0.14 KW | 339 KWH | 0 KWH | 339 KWH |
| 115 | City Hall | 1 | 135 | OFFICE | | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24PSDREF-RT | 43 W | 0.13 KW | 317 KWH | -48 KWH | 269 KWH | 15% | X | 0.14 KW | 339 KWH | 48 KWH | 386 KWH |
| 116 | City Hall | 1 | 135 | STORAGE | | 1,000 | 2 | 24T8 | 59 W | 0.12 KW | 118 KWH | 2 | EXTR | 59 W | 0.12 KW | 118 KWH | 0 KWH | 118 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 117 | City Hall | 1 | 137 | STORAGE | | 1,000 | 8 | 34T8 I/O | 89 W | 0.71 KW | 712 KWH | 8 | LB24PSDREF-RT | 43 W | 0.34 KW | 344 KWH | 0 KWH | 344 KWH | | | 0.37 KW | 368 KWH | 0 KWH | 368 KWH |

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 118 | City Hall | 1 | 136 | COPY ROOM | | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24REF-RT | 43 W | 0.09 KW | 211 KWH | 0 KWH | 211 KWH | | | 0.09 KW | 226 KWH | 0 KWH | 226 KWH |
| 119 | City Hall | 1 | | LOBBY @ 142 | | 2,808 | 4 | 24UT8 | 59 W | 0.24 KW | 663 KWH | 4 | LB32LPREF | 38 W | 0.15 KW | 427 KWH | 0 KWH | 427 KWH | | | 0.08 KW | 236 KWH | 0 KWH | 236 KWH |
| 120 | City Hall | 1 | 142 | OFFICE | | 2,456 | 6 | 34T8 I/O | 89 W | 0.53 KW | 1,312 KWH | 6 | LB24PSDREF-RT | 43 W | 0.26 KW | 634 KWH | -95 KWH | 539 KWH | 15% | X | 0.28 KW | 678 KWH | 95 KWH | 773 KWH |
| 121 | City Hall | 1 | | MENS TOILET | | 2,600 | 1 | 24T8 | 59 W | 0.06 KW | 153 KWH | 1 | EXTR | 59 W | 0.06 KW | 153 KWH | -46 KWH | 107 KWH | 30% | X | 0.00 KW | 0 KWH | 46 KWH | 46 KWH |
| 122 | City Hall | 1 | | WOMENS TOILET | | 2,600 | 1 | 24T8 | 59 W | 0.06 KW | 153 KWH | 1 | EXTR | 59 W | 0.06 KW | 153 KWH | -46 KWH | 107 KWH | 30% | X | 0.00 KW | 0 KWH | 46 KWH | 46 KWH |
| 123 | City Hall | 1 | 146 | MECH | | 2,400 | 5 | 24T8 | 59 W | 0.30 KW | 708 KWH | 5 | LB24LP | 39 W | 0.20 KW | 468 KWH | 0 KWH | 468 KWH | | | 0.10 KW | 240 KWH | 0 KWH | 240 KWH |
| 124 | City Hall | 1 | 150 | KITCHEN | | 2,515 | 7 | 34T8 I/O | 89 W | 0.62 KW | 1,567 KWH | 7 | LB24REF-RT | 43 W | 0.30 KW | 757 KWH | -189 KWH | 568 KWH | 25% | X | 0.32 KW | 810 KWH | 189 KWH | 999 KWH |
| 124.01 | City Hall | 1 | 150 | KITCHEN | | 2,515 | 1 | 34T8 I/O | 89 W | 0.09 KW | 224 KWH | 1 | LB24REF-RT-EM | 43 W | 0.04 KW | 108 KWH | -27 KWH | 81 KWH | 25% | | 0.05 KW | 116 KWH | 27 KWH | 143 KWH |
| 125 | City Hall | 1 | | CORRIDOR | | 2,808 | 14 | 24UT8 | 59 W | 0.83 KW | 2,319 KWH | 14 | LB32LPREF | 38 W | 0.53 KW | 1,494 KWH | 0 KWH | 1,494 KWH | | | 0.29 KW | 826 KWH | 0 KWH | 826 KWH |
| 126 | City Hall | 1 | 151 | OFFICE | | 2,456 | 4 | 34T8 I/O | 89 W | 0.36 KW | 874 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 422 KWH | -63 KWH | 359 KWH | 15% | X | 0.18 KW | 452 KWH | 63 KWH | 515 KWH |
| 127 | City Hall | 1 | 153 | MAIL ROOM | | 2,456 | 3 | 34T8 I/O | 89 W | 0.27 KW | 656 KWH | 3 | LB24REF-RT | 43 W | 0.13 KW | 317 KWH | 0 KWH | 317 KWH | | | 0.14 KW | 339 KWH | 0 KWH | 339 KWH |
| 128 | City Hall | 1 | 154 | OFFICE | | 2,456 | 9 | 34T8 I/O | 89 W | 0.80 KW | 1,967 KWH | 9 | LB24PSDREF-RT | 43 W | 0.39 KW | 950 KWH | -143 KWH | 808 KWH | 15% | X | 0.41 KW | 1,017 KWH | 143 KWH | 1,159 KWH |
| 128.01 | City Hall | 1 | 154 | OFFICE | | 2,456 | 2 | 34T8 I/O | 89 W | 0.18 KW | 437 KWH | 2 | LB24PSDREF-RT-EM | 43 W | 0.09 KW | 211 KWH | -32 KWH | 180 KWH | 15% | | 0.09 KW | 226 KWH | 32 KWH | 258 KWH |
| 129 | City Hall | 1 | 155 | OFFICE | | 2,456 | 3 | 24T8 | 59 W | 0.18 KW | 435 KWH | 3 | LB24LP | 39 W | 0.12 KW | 287 KWH | -43 KWH | 244 KWH | 15% | X | 0.06 KW | 147 KWH | 43 KWH | 190 KWH |
| 130 | City Hall | 1 | | MAIN LOBBY | | 2,808 | 12 | 24UT8 | 59 W | 0.71 KW | 1,988 KWH | 12 | LB32LPREF | 38 W | 0.46 KW | 1,280 KWH | 0 KWH | 1,280 KWH | | | 0.25 KW | 708 KWH | 0 KWH | 708 KWH |
| 131 | City Hall | 1 | | MAIN LOBBY | | 2,808 | 11 | PL26X2 | 64 W | 0.70 KW | 1,977 KWH | 11 | EXTR | 64 W | 0.70 KW | 1,977 KWH | 0 KWH | 1,977 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 132 | City Hall | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 14 | PL26X2 | 64 W | 0.90 KW | 3,584 KWH | 14 | EXTR | 64 W | 0.90 KW | 3,584 KWH | 0 KWH | 3,584 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 131.01 | City Hall | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 9 | 70MH | 90 W | 0.81 KW | 3,240 KWH | 9 | EXTR | 90 W | 0.81 KW | 3,240 KWH | 0 KWH | 3,240 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 131.02 | City Hall | EXT | | EXTERIOR - PEDESTRIAN | | 4,000 | 5 | 150S | 188 W | 0.94 KW | 3,760 KWH | 5 | LED40-RETRO III | 40 W | 0.20 KW | 800 KWH | 0 KWH | 800 KWH | | | 0.74 KW | 2,960 KWH | 0 KWH | 2,960 KWH |
| 133 | Municipal Building | 3 | 319 | MECH | | 2,400 | 2 | 24T8 | 59 W | 0.12 KW | 283 KWH | 2 | LB24LP | 39 W | 0.08 KW | 187 KWH | 0 KWH | 187 KWH | | | 0.04 KW | 96 KWH | 0 KWH | 96 KWH |
| 134 | Municipal Building | 3 | | LOBBY | | 2,677 | 11 | PL26X2 | 64 W | 0.70 KW | 1,885 KWH | 11 | EXTR | 64 W | 0.70 KW | 1,885 KWH | -188 KWH | 1,696 KWH | 10% | X | 0.00 KW | 0 KWH | 188 KWH | 188 KWH |
| 135 | Municipal Building | 3 | 327 | OFFICE | | 2,339 | 8 | 24UT8 | 59 W | 0.47 KW | 1,104 KWH | 8 | LB32LPREF | 38 W | 0.30 KW | 711 KWH | -128 KWH | 583 KWH | 18% | X | 0.17 KW | 393 KWH | 128 KWH | 521 KWH |
| 136 | Municipal Building | 3 | 328 | FILE ROOM | | 52 | 8 | 34T8 | 87 W | 0.70 KW | 36 KWH | 8 | LB34LP | 57 W | 0.46 KW | 24 KWH | 0 KWH | 24 KWH | | | 0.24 KW | 12 KWH | 0 KWH | 12 KWH |
| 137 | Municipal Building | 3 | 329 | STAFF ROOM | | 405 | 14 | 34T8 | 87 W | 1.22 KW | 493 KWH | 14 | LB34LP | 57 W | 0.80 KW | 323 KWH | 0 KWH | 323 KWH | | | 0.42 KW | 170 KWH | 0 KWH | 170 KWH |
| 138 | Municipal Building | 3 | 329 | STORAGE | | 500 | 1 | 24T8 | 59 W | 0.06 KW | 30 KWH | 1 | EXTR | 59 W | 0.06 KW | 30 KWH | 0 KWH | 30 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 139 | Municipal Building | 3 | 332 | OFFICE | | 2,339 | 2 | 34T8 I/O | 89 W | 0.18 KW | 416 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 201 KWH | -36 KWH | 165 KWH | 18% | X | 0.09 KW | 215 KWH | 36 KWH | 251 KWH |

# CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 140 | Municipal Building | 3 | 330A | STORAGE | | 500 | 1 | 24T8 | 59 W | 0.06 KW | 30 KWH | 1 | EXTR | 59 W | 0.06 KW | 30 KWH | 0 KWH | 30 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 141 | Municipal Building | 3 | 331 | OFFICE | | 2,339 | 2 | 34T8 I/O | 89 W | 0.18 KW | 416 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 201 KWH | -36 KWH | 165 KWH | 18% | X | 0.09 KW | 215 KWH | 36 KWH | 251 KWH |
| 142 | Municipal Building | 3 | | CORRIDOR | | 2,677 | 5 | 24UT8 | 59 W | 0.30 KW | 790 KWH | 5 | LB22REF | 30 W | 0.15 KW | 402 KWH | -80 KWH | 321 KWH | 20% | X | 0.15 KW | 388 KWH | 80 KWH | 468 KWH |
| 143 | Municipal Building | 3 | 324 | OFFICE | | 2,339 | 2 | 34T8 I/O | 89 W | 0.18 KW | 416 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 201 KWH | -36 KWH | 165 KWH | 18% | X | 0.09 KW | 215 KWH | 36 KWH | 251 KWH |
| 144 | Municipal Building | 3 | 318 | OFFICE | | 2,339 | 2 | 34T8 I/O | 89 W | 0.18 KW | 416 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 201 KWH | -36 KWH | 165 KWH | 18% | X | 0.09 KW | 215 KWH | 36 KWH | 251 KWH |
| 145 | Municipal Building | 3 | | CORRIDOR | | 2,677 | 2 | 34T8 | 87 W | 0.17 KW | 466 KWH | 2 | LB34LP | 57 W | 0.11 KW | 305 KWH | 0 KWH | 305 KWH | | | 0.06 KW | 161 KWH | 0 KWH | 161 KWH |
| 146 | Municipal Building | 3 | 316 | OFFICE | | 2,339 | 2 | 34T8 I/O | 89 W | 0.18 KW | 416 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 201 KWH | -36 KWH | 165 KWH | 18% | X | 0.09 KW | 215 KWH | 36 KWH | 251 KWH |
| 147 | Municipal Building | 3 | 323 | MECH | | 2,400 | 1 | 24T8 | 59 W | 0.06 KW | 142 KWH | 1 | EXTR | 59 W | 0.06 KW | 142 KWH | 0 KWH | 142 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 148 | Municipal Building | 3 | 315 | OFFICE | | 2,339 | 2 | 34T8 I/O | 89 W | 0.18 KW | 416 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 201 KWH | -36 KWH | 165 KWH | 18% | X | 0.09 KW | 215 KWH | 36 KWH | 251 KWH |
| 149 | Municipal Building | 3 | 313 | OFFICE | | 2,339 | 2 | 34T8 I/O | 89 W | 0.18 KW | 416 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 201 KWH | -36 KWH | 165 KWH | 18% | X | 0.09 KW | 215 KWH | 36 KWH | 251 KWH |
| 150 | Municipal Building | 3 | 310 | MECH | | 2,400 | 2 | 24T8 | 59 W | 0.12 KW | 283 KWH | 2 | LB24LP | 39 W | 0.08 KW | 187 KWH | 0 KWH | 187 KWH | | | 0.04 KW | 96 KWH | 0 KWH | 96 KWH |
| 151 | Municipal Building | 3 | 333 | OFFICE | | 2,339 | 2 | 34T8 I/O | 89 W | 0.18 KW | 416 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 201 KWH | -36 KWH | 165 KWH | 18% | X | 0.09 KW | 215 KWH | 36 KWH | 251 KWH |
| 152 | Municipal Building | 3 | 311 | COPY ROOM | | 2,339 | 4 | 34T8 I/O | 89 W | 0.36 KW | 833 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 402 KWH | -72 KWH | 330 KWH | 18% | X | 0.18 KW | 430 KWH | 72 KWH | 503 KWH |
| 153 | Municipal Building | 3 | 314 | OFFICE | | 2,339 | 2 | 34T8 I/O | 89 W | 0.18 KW | 416 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 201 KWH | -36 KWH | 165 KWH | 18% | X | 0.09 KW | 215 KWH | 36 KWH | 251 KWH |
| 154 | Municipal Building | 3 | | WOMENS TOILET | | 2,985 | 2 | 34T8 | 87 W | 0.17 KW | 519 KWH | 2 | LB34LP | 57 W | 0.11 KW | 340 KWH | -136 KWH | 204 KWH | 40% | X | 0.06 KW | 179 KWH | 136 KWH | 315 KWH |
| 155 | Municipal Building | 3 | | MENS TOILET | | 2,985 | 2 | 34T8 | 87 W | 0.17 KW | 519 KWH | 2 | LB34LP | 57 W | 0.11 KW | 340 KWH | -136 KWH | 204 KWH | 40% | X | 0.06 KW | 179 KWH | 136 KWH | 315 KWH |
| 156 | Municipal Building | 3 | 306 | OFFICE | | 2,339 | 2 | 34T8 I/O | 89 W | 0.18 KW | 416 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 201 KWH | -36 KWH | 165 KWH | 18% | X | 0.09 KW | 215 KWH | 36 KWH | 251 KWH |
| 157 | Municipal Building | 3 | 304 | OFFICE | | 2,339 | 4 | 34T8 I/O | 89 W | 0.36 KW | 833 KWH | 4 | LB24PSDREF-RT | 43 W | 0.17 KW | 402 KWH | -72 KWH | 330 KWH | 18% | X | 0.18 KW | 430 KWH | 72 KWH | 503 KWH |
| 158 | Municipal Building | 3 | 305 | OFFICE | | 2,339 | 2 | 34T8 I/O | 89 W | 0.18 KW | 416 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 201 KWH | -36 KWH | 165 KWH | 18% | X | 0.09 KW | 215 KWH | 36 KWH | 251 KWH |
| 159 | Municipal Building | 3 | 302 | OFFICE | | 2,339 | 9 | 24UT8 | 59 W | 0.53 KW | 1,242 KWH | 9 | LB32LPREF | 38 W | 0.34 KW | 800 KWH | -144 KWH | 656 KWH | 18% | X | 0.19 KW | 442 KWH | 144 KWH | 586 KWH |
| 160 | Municipal Building | 3 | | CORRIDOR | | 2,677 | 13 | 24UT8 | 59 W | 0.77 KW | 2,053 KWH | 13 | LB22REF | 30 W | 0.39 KW | 1,044 KWH | -209 KWH | 835 KWH | 20% | X | 0.38 KW | 1,009 KWH | 209 KWH | 1,218 KWH |
| 161 | Municipal Building | 4 | | MECH | | 2,400 | 26 | 24T8 | 59 W | 1.53 KW | 3,682 KWH | 26 | LB24LP | 39 W | 1.01 KW | 2,434 KWH | 0 KWH | 2,434 KWH | | | 0.52 KW | 1,248 KWH | 0 KWH | 1,248 KWH |
| 162 | Municipal Building | 4 | | STAIRS | | 2,600 | 3 | 24T8 | 59 W | 0.18 KW | 460 KWH | 3 | LB24LP | 39 W | 0.12 KW | 304 KWH | 0 KWH | 304 KWH | | | 0.06 KW | 156 KWH | 0 KWH | 156 KWH |
| 163 | Municipal Building | 2 | 216 | OFFICE | | 2,339 | 2 | 44T8 | 114 W | 0.23 KW | 533 KWH | 2 | L44 | 88 W | 0.18 KW | 412 KWH | -74 KWH | 338 KWH | 18% | X | 0.05 KW | 122 KWH | 74 KWH | 196 KWH |
| 164 | Municipal Building | 2 | 215 | OFFICE | | 2,339 | 2 | 44T8 | 114 W | 0.23 KW | 533 KWH | 2 | L44 | 88 W | 0.18 KW | 412 KWH | -74 KWH | 338 KWH | 18% | X | 0.05 KW | 122 KWH | 74 KWH | 196 KWH |
| 165 | Municipal Building | 2 | | LOBBY | | 2,677 | 3 | 44T8 | 114 W | 0.34 KW | 916 KWH | 3 | L44 | 88 W | 0.26 KW | 707 KWH | -141 KWH | 565 KWH | 20% | X | 0.08 KW | 209 KWH | 141 KWH | 350 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 166 | Municipal Building | 2 | | LOBBY | | 2,677 | 1 | 44T8 | 114 W | 0.11 KW | 305 KWH | 1 | L44 | 88 W | 0.09 KW | 236 KWH | -47 KWH | 188 KWH | 20% | | 0.03 KW | 70 KWH | 47 KWH | 117 KWH |
| 166.01 | Municipal Building | 2 | | LOBBY | | 2,677 | 1 | 24T8 | 59 W | 0.06 KW | 158 KWH | 1 | L24 | 46 W | 0.05 KW | 123 KWH | -25 KWH | 99 KWH | 20% | | 0.01 KW | 35 KWH | 25 KWH | 59 KWH |
| 167 | Municipal Building | 2 | 219 | OFFICE | | 2,339 | 1 | 44T8 | 114 W | 0.11 KW | 267 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | -37 KWH | 169 KWH | 18% | X | 0.03 KW | 61 KWH | 37 KWH | 98 KWH |
| 167.01 | Municipal Building | 2 | 219 | OFFICE | | 2,339 | 1 | 24T8 | 59 W | 0.06 KW | 138 KWH | 1 | L24 | 46 W | 0.05 KW | 108 KWH | -19 KWH | 88 KWH | 18% | | 0.01 KW | 30 KWH | 19 KWH | 50 KWH |
| 168 | Municipal Building | 2 | 218 | OFFICE | | 2,339 | 1 | 44T8 | 114 W | 0.11 KW | 267 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | -37 KWH | 169 KWH | 18% | X | 0.03 KW | 61 KWH | 37 KWH | 98 KWH |
| 168.01 | Municipal Building | 2 | 218 | OFFICE | | 2,339 | 1 | 24T8 | 59 W | 0.06 KW | 138 KWH | 1 | L24 | 46 W | 0.05 KW | 108 KWH | -19 KWH | 88 KWH | 18% | | 0.01 KW | 30 KWH | 19 KWH | 50 KWH |
| 169 | Municipal Building | 2 | 220 | BREAK ROOM | 27 | 1,374 | 3 | 44T8 | 114 W | 0.34 KW | 470 KWH | 3 | L44 | 88 W | 0.26 KW | 363 KWH | -109 KWH | 254 KWH | 30% | X | 0.08 KW | 107 KWH | 109 KWH | 216 KWH |
| 170 | Municipal Building | 2 | 220 | | | 8,760 | 2 | DRINK | 400 W | 0.80 KW | 7,008 KWH | 2 | EXTR | 400 W | 0.80 KW | 7,008 KWH | -2,803 KWH | 4,205 KWH | 40% | X | 0.00 KW | 0 KWH | 2,803 KWH | 2,803 KWH |
| 171 | Municipal Building | 2 | 220 | | | 8,760 | 1 | SNACK | 100 W | 0.10 KW | 876 KWH | 1 | EXTR | 100 W | 0.10 KW | 876 KWH | -350 KWH | 526 KWH | 40% | X | 0.00 KW | 0 KWH | 350 KWH | 350 KWH |
| 172 | Municipal Building | 2 | | CORRIDOR | | 2,677 | 4 | PL26X2 | 64 W | 0.26 KW | 685 KWH | 4 | EXTR | 64 W | 0.26 KW | 685 KWH | 0 KWH | 685 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 173 | Municipal Building | 2 | 221 | STORAGE | | 1,000 | 2 | 34T8 I/O | 89 W | 0.18 KW | 178 KWH | 2 | LB24PSDREF-RT | 43 W | 0.09 KW | 86 KWH | -15 KWH | 71 KWH | 18% | X | 0.09 KW | 92 KWH | 15 KWH | 107 KWH |
| 174 | Municipal Building | 2 | | CORRIDOR | | 2,677 | 3 | 44T8 | 114 W | 0.34 KW | 916 KWH | 3 | L34 | 67 W | 0.20 KW | 538 KWH | 0 KWH | 538 KWH | | | 0.14 KW | 377 KWH | 0 KWH | 377 KWH |
| 175 | Municipal Building | 2 | | MENS TOILET | | 2,985 | 2 | 34T8 | 87 W | 0.17 KW | 519 KWH | 2 | LB34LP | 57 W | 0.11 KW | 340 KWH | -102 KWH | 238 KWH | 30% | X | 0.06 KW | 179 KWH | 102 KWH | 281 KWH |
| 176 | Municipal Building | 2 | | WOMENS TOILET | | 2,985 | 2 | 34T8 | 87 W | 0.17 KW | 519 KWH | 2 | LB34LP | 57 W | 0.11 KW | 340 KWH | -102 KWH | 238 KWH | 30% | X | 0.06 KW | 179 KWH | 102 KWH | 281 KWH |
| 177 | Municipal Building | 2 | | OFFICE | 52 | 2,339 | 3 | 44T8 | 114 W | 0.34 KW | 800 KWH | 3 | L44 | 88 W | 0.26 KW | 617 KWH | -111 KWH | 506 KWH | 18% | X | 0.08 KW | 182 KWH | 111 KWH | 294 KWH |
| 178 | Municipal Building | 2 | | ANIMAL CONTROL | 24 | 2,339 | 2 | 44T8 | 114 W | 0.23 KW | 533 KWH | 2 | L44 | 88 W | 0.18 KW | 412 KWH | -74 KWH | 338 KWH | 18% | X | 0.05 KW | 122 KWH | 74 KWH | 196 KWH |
| 178.01 | Municipal Building | 2 | | ANIMAL CONTROL | 24 | 2,339 | 2 | 24T8 | 59 W | 0.12 KW | 276 KWH | 2 | L24 | 46 W | 0.09 KW | 215 KWH | -39 KWH | 176 KWH | 18% | | 0.03 KW | 61 KWH | 39 KWH | 100 KWH |
| 179 | Municipal Building | 2 | 207 | OPEN OFFICE | | 2,339 | 4 | 44T8 | 114 W | 0.46 KW | 1,067 KWH | 4 | L44 | 88 W | 0.35 KW | 823 KWH | 0 KWH | 823 KWH | | | 0.10 KW | 243 KWH | 0 KWH | 243 KWH |
| 180 | Municipal Building | 2 | 210 | OPEN OFFICE | | 2,339 | 8 | 44T8 I/O | 118 W | 0.94 KW | 2,208 KWH | 8 | L44 | 88 W | 0.70 KW | 1,647 KWH | 0 KWH | 1,647 KWH | | | 0.24 KW | 561 KWH | 0 KWH | 561 KWH |
| 181 | Municipal Building | 2 | 209 | OFFICE | | 2,339 | 1 | 44T8 I/O | 118 W | 0.12 KW | 276 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | 0 KWH | 206 KWH | | | 0.03 KW | 70 KWH | 0 KWH | 70 KWH |
| 181.01 | Municipal Building | 2 | 209 | OFFICE | | 2,339 | 1 | 24T8 I/O | 60 W | 0.06 KW | 140 KWH | 1 | L24 | 46 W | 0.05 KW | 108 KWH | 0 KWH | 108 KWH | | | 0.01 KW | 33 KWH | 0 KWH | 33 KWH |
| 182 | Municipal Building | 2 | 203 | OFFICE | | 2,339 | 1 | 44T8 I/O | 118 W | 0.12 KW | 276 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | 0 KWH | 206 KWH | | | 0.03 KW | 70 KWH | 0 KWH | 70 KWH |
| 182.01 | Municipal Building | 2 | 203 | OFFICE | | 2,339 | 1 | 24T8 I/O | 60 W | 0.06 KW | 140 KWH | 1 | L24 | 46 W | 0.05 KW | 108 KWH | 0 KWH | 108 KWH | | | 0.01 KW | 33 KWH | 0 KWH | 33 KWH |
| 183 | Municipal Building | 2 | 204 | CONFERENCE | | 2,339 | 2 | 44T8 | 114 W | 0.23 KW | 533 KWH | 2 | L44 | 88 W | 0.18 KW | 412 KWH | 0 KWH | 412 KWH | | | 0.05 KW | 122 KWH | 0 KWH | 122 KWH |
| 184 | Municipal Building | 2 | 208 | OFFICE | | 2,339 | 1 | 44T8 I/O | 118 W | 0.12 KW | 276 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | 0 KWH | 206 KWH | | | 0.03 KW | 70 KWH | 0 KWH | 70 KWH |
| 184.01 | Municipal Building | 2 | 208 | OFFICE | | 2,339 | 1 | 24T8 I/O | 60 W | 0.06 KW | 140 KWH | 1 | L24 | 46 W | 0.05 KW | 108 KWH | 0 KWH | 108 KWH | | | 0.01 KW | 33 KWH | 0 KWH | 33 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 185 | Municipal Building | 2 | 202 | OFFICE | | 2,339 | 1 | 44T8 I/O | 118 W | 0.12 KW | 276 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | 0 KWH | 206 KWH | | | 0.03 KW | 70 KWH | 0 KWH | 70 KWH |
| 185.01 | Municipal Building | 2 | 202 | OFFICE | | 2,339 | 1 | 24T8 I/O | 60 W | 0.06 KW | 140 KWH | 1 | L24 | 46 W | 0.05 KW | 108 KWH | 0 KWH | 108 KWH | | | 0.01 KW | 33 KWH | 0 KWH | 33 KWH |
| 186 | Municipal Building | 2 | 212 | COPY ROOM | | 2,339 | 1 | 44T8 I/O | 118 W | 0.12 KW | 276 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | 0 KWH | 206 KWH | | | 0.03 KW | 70 KWH | 0 KWH | 70 KWH |
| 187 | Municipal Building | 2 | | MECH | | 2,400 | 1 | 24T8 | 59 W | 0.06 KW | 142 KWH | 1 | EXTR | 59 W | 0.06 KW | 142 KWH | 0 KWH | 142 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 188 | Municipal Building | 2 | | STAIRS | | 2,600 | 1 | 44T8 | 114 W | 0.11 KW | 296 KWH | 1 | L44 | 88 W | 0.09 KW | 229 KWH | 0 KWH | 229 KWH | | | 0.03 KW | 68 KWH | 0 KWH | 68 KWH |
| 188.01 | Municipal Building | 2 | | STAIRS | | 2,600 | 1 | 24T8 | 59 W | 0.06 KW | 153 KWH | 1 | L24 | 46 W | 0.05 KW | 120 KWH | 0 KWH | 120 KWH | | | 0.01 KW | 34 KWH | 0 KWH | 34 KWH |
| 189 | Municipal Building | 2 | | STAIRS | | 2,600 | 2 | 24T8 | 59 W | 0.12 KW | 307 KWH | 2 | LB24LP | 39 W | 0.08 KW | 203 KWH | 0 KWH | 203 KWH | | | 0.04 KW | 104 KWH | 0 KWH | 104 KWH |
| 190 | Municipal Building | 2 | | STAIRS | | 2,600 | 2 | 34T8 | 87 W | 0.17 KW | 452 KWH | 2 | LB34LP | 57 W | 0.11 KW | 296 KWH | 0 KWH | 296 KWH | | | 0.06 KW | 156 KWH | 0 KWH | 156 KWH |
| 191 | Municipal Building | 2 | | CORRIDOR | | 2,677 | 7 | PL26X2 | 64 W | 0.45 KW | 1,199 KWH | 7 | EXTR | 64 W | 0.45 KW | 1,199 KWH | 0 KWH | 1,199 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 192 | Municipal Building | 2 | | STAIRS | | 2,600 | 2 | 22T8 | 32 W | 0.06 KW | 166 KWH | 2 | EXTR | 32 W | 0.06 KW | 166 KWH | 0 KWH | 166 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 193 | Municipal Building | 1 | | OFFICE NEAR 102 | | 2,339 | 8 | 44T8 | 114 W | 0.91 KW | 2,133 KWH | 8 | L44 | 88 W | 0.70 KW | 1,647 KWH | -329 KWH | 1,317 KWH | 20% | X | 0.21 KW | 487 KWH | 329 KWH | 816 KWH |
| 193.01 | Municipal Building | 1 | | OFFICE NEAR 102 | | 2,339 | 8 | 24T8 | 59 W | 0.47 KW | 1,104 KWH | 8 | L24 | 46 W | 0.37 KW | 861 KWH | -172 KWH | 689 KWH | 20% | | 0.10 KW | 243 KWH | 172 KWH | 415 KWH |
| 194 | Municipal Building | 1 | 102 | OFFICE | | 405 | 1 | 44T8 | 114 W | 0.11 KW | 46 KWH | 1 | L44 | 88 W | 0.09 KW | 36 KWH | -4 KWH | 32 KWH | 10% | X | 0.03 KW | 11 KWH | 4 KWH | 14 KWH |
| 194.01 | Municipal Building | 1 | 102 | OFFICE | | 405 | 1 | 24T8 | 59 W | 0.06 KW | 24 KWH | 1 | L24 | 46 W | 0.05 KW | 19 KWH | -2 KWH | 17 KWH | 10% | | 0.01 KW | 5 KWH | 2 KWH | 7 KWH |
| 195 | Municipal Building | 1 | 103 | OFFICE | | 405 | 1 | 44T8 | 114 W | 0.11 KW | 46 KWH | 1 | L44 | 88 W | 0.09 KW | 36 KWH | -4 KWH | 32 KWH | 10% | X | 0.03 KW | 11 KWH | 4 KWH | 14 KWH |
| 195.01 | Municipal Building | 1 | 103 | OFFICE | | 405 | 1 | 24T8 | 59 W | 0.06 KW | 24 KWH | 1 | L24 | 46 W | 0.05 KW | 19 KWH | -2 KWH | 17 KWH | 10% | | 0.01 KW | 5 KWH | 2 KWH | 7 KWH |
| 196 | Municipal Building | 1 | 104 | OFFICE | | 405 | 1 | 44T8 | 114 W | 0.11 KW | 46 KWH | 1 | L44 | 88 W | 0.09 KW | 36 KWH | -4 KWH | 32 KWH | 10% | X | 0.03 KW | 11 KWH | 4 KWH | 14 KWH |
| 196.01 | Municipal Building | 1 | 104 | OFFICE | | 405 | 1 | 24T8 | 59 W | 0.06 KW | 24 KWH | 1 | L24 | 46 W | 0.05 KW | 19 KWH | -2 KWH | 17 KWH | 10% | | 0.01 KW | 5 KWH | 2 KWH | 7 KWH |
| 197 | Municipal Building | 1 | | CORRIDOR | | 2,677 | 3 | 44T8 | 114 W | 0.34 KW | 916 KWH | 3 | L44 | 88 W | 0.26 KW | 707 KWH | 0 KWH | 707 KWH | | | 0.08 KW | 209 KWH | 0 KWH | 209 KWH |
| 198 | Municipal Building | 1 | 127 | OFFICE | | 2,339 | 1 | 44T8 | 114 W | 0.11 KW | 267 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | -37 KWH | 169 KWH | 18% | X | 0.03 KW | 61 KWH | 37 KWH | 98 KWH |
| 199 | Municipal Building | 1 | 130 | OFFICE | | 2,339 | 1 | 44T8 | 114 W | 0.11 KW | 267 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | -37 KWH | 169 KWH | 18% | X | 0.03 KW | 61 KWH | 37 KWH | 98 KWH |
| 200 | Municipal Building | 1 | 126 | OFFICE | | 2,339 | 2 | 44T8 | 114 W | 0.23 KW | 533 KWH | 2 | L44 | 88 W | 0.18 KW | 412 KWH | -74 KWH | 338 KWH | 18% | X | 0.05 KW | 122 KWH | 74 KWH | 196 KWH |
| 201 | Municipal Building | 1 | | MENS TOILET | | 2,985 | 2 | 34T8 | 87 W | 0.17 KW | 519 KWH | 2 | LB34LP | 57 W | 0.11 KW | 340 KWH | -102 KWH | 238 KWH | 30% | X | 0.06 KW | 179 KWH | 102 KWH | 281 KWH |
| 202 | Municipal Building | 1 | | WOMENS TOILET | | 2,985 | 2 | 34T8 | 87 W | 0.17 KW | 519 KWH | 2 | LB34LP | 57 W | 0.11 KW | 340 KWH | -102 KWH | 238 KWH | 30% | X | 0.06 KW | 179 KWH | 102 KWH | 281 KWH |
| 203 | Municipal Building | 1 | 131 | OFFICE | | 2,339 | 1 | 44T8 I/O | 118 W | 0.12 KW | 276 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | -37 KWH | 169 KWH | 18% | X | 0.03 KW | 70 KWH | 37 KWH | 107 KWH |
| 203.01 | Municipal Building | 1 | 131 | OFFICE | | 2,339 | 1 | 24T8 I/O | 60 W | 0.06 KW | 140 KWH | 1 | L24 | 46 W | 0.05 KW | 108 KWH | -19 KWH | 88 KWH | 18% | | 0.01 KW | 33 KWH | 19 KWH | 52 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 204 | Municipal Building | 1 | 131 | OFFICE | | 2,339 | 9 | 44T8 I/O | 118 W | 1.06 KW | 2,484 KWH | 9 | L44 | 88 W | 0.79 KW | 1,852 KWH | -556 KWH | 1,297 KWH | 30% | X | 0.27 KW | 632 KWH | 556 KWH | 1,187 KWH |
| 205 | Municipal Building | 1 | 131 | OFFICE | | 2,339 | 8 | 44T8 I/O | 118 W | 0.94 KW | 2,208 KWH | 8 | L44 | 88 W | 0.70 KW | 1,647 KWH | -494 KWH | 1,153 KWH | 30% | X | 0.24 KW | 561 KWH | 494 KWH | 1,055 KWH |
| 206 | Municipal Building | 1 | 109 | STORAGE | | 1,000 | 1 | 44T8 I/O | 118 W | 0.12 KW | 118 KWH | 1 | L44 | 88 W | 0.09 KW | 88 KWH | -16 KWH | 72 KWH | 18% | X | 0.03 KW | 30 KWH | 16 KWH | 46 KWH |
| 207 | Municipal Building | 1 | 110 | STORAGE | | 1,000 | 1 | 44T8 I/O | 118 W | 0.12 KW | 118 KWH | 1 | L44 | 88 W | 0.09 KW | 88 KWH | -16 KWH | 72 KWH | 18% | X | 0.03 KW | 30 KWH | 16 KWH | 46 KWH |
| 208 | Municipal Building | 1 | 113 | OFFICE | | 2,339 | 1 | 44T8 I/O | 118 W | 0.12 KW | 276 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | -37 KWH | 169 KWH | 18% | X | 0.03 KW | 70 KWH | 37 KWH | 107 KWH |
| 208.01 | Municipal Building | 1 | 113 | OFFICE | | 2,339 | 1 | 24T8 I/O | 60 W | 0.06 KW | 140 KWH | 1 | L24 | 46 W | 0.05 KW | 108 KWH | -19 KWH | 88 KWH | 18% | | 0.01 KW | 33 KWH | 19 KWH | 52 KWH |
| 209 | Municipal Building | 1 | | CORRIDOR | | 2,677 | 2 | 44T8 I/O | 118 W | 0.24 KW | 632 KWH | 2 | L44 | 88 W | 0.18 KW | 471 KWH | 0 KWH | 471 KWH | | | 0.06 KW | 161 KWH | 0 KWH | 161 KWH |
| 209.01 | Municipal Building | 1 | | CORRIDOR | | 2,677 | 1 | 24T8 I/O | 60 W | 0.06 KW | 161 KWH | 1 | L24 | 46 W | 0.05 KW | 123 KWH | 0 KWH | 123 KWH | | | 0.01 KW | 37 KWH | 0 KWH | 37 KWH |
| 210 | Municipal Building | 1 | 114 | OFFICE | | 2,339 | 1 | 44T8 I/O | 118 W | 0.12 KW | 276 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | -37 KWH | 169 KWH | 18% | X | 0.03 KW | 70 KWH | 37 KWH | 107 KWH |
| 211 | Municipal Building | 1 | 115 | OFFICE | | 2,339 | 1 | 44T8 I/O | 118 W | 0.12 KW | 276 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | -37 KWH | 169 KWH | 18% | X | 0.03 KW | 70 KWH | 37 KWH | 107 KWH |
| 212 | Municipal Building | 1 | 116 | STORAGE | | 1,000 | 1 | 24T8 | 59 W | 0.06 KW | 59 KWH | 1 | EXTR | 59 W | 0.06 KW | 59 KWH | 0 KWH | 59 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 213 | Municipal Building | 1 | 18 | OFFICE | | 2,339 | 1 | 44T8 I/O | 118 W | 0.12 KW | 276 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | -37 KWH | 169 KWH | 18% | X | 0.03 KW | 70 KWH | 37 KWH | 107 KWH |
| 214 | Municipal Building | 1 | 119 | COPY ROOM | | 2,339 | 1 | 44T8 I/O | 118 W | 0.12 KW | 276 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | -37 KWH | 169 KWH | 18% | X | 0.03 KW | 70 KWH | 37 KWH | 107 KWH |
| 215 | Municipal Building | 1 | 120 | OFFICE | | 2,339 | 1 | 44T8 I/O | 118 W | 0.12 KW | 276 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | -37 KWH | 169 KWH | 18% | X | 0.03 KW | 70 KWH | 37 KWH | 107 KWH |
| 215.01 | Municipal Building | 1 | 120 | OFFICE | | 2,339 | 1 | 24T8 I/O | 60 W | 0.06 KW | 140 KWH | 1 | L24 | 46 W | 0.05 KW | 108 KWH | -19 KWH | 88 KWH | 18% | | 0.01 KW | 33 KWH | 19 KWH | 52 KWH |
| 216 | Municipal Building | 1 | 122 | OFFICE | | 2,339 | 1 | 44T8 I/O | 118 W | 0.12 KW | 276 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | -37 KWH | 169 KWH | 18% | X | 0.03 KW | 70 KWH | 37 KWH | 107 KWH |
| 217 | Municipal Building | 1 | 123 | OFFICE | | 2,339 | 5 | 44T8 I/O | 118 W | 0.59 KW | 1,380 KWH | 5 | L44 | 88 W | 0.44 KW | 1,029 KWH | -185 KWH | 844 KWH | 18% | X | 0.15 KW | 351 KWH | 185 KWH | 536 KWH |
| 218 | Municipal Building | 1 | | CORRIDOR | | 2,677 | 3 | 44T8 I/O | 118 W | 0.35 KW | 948 KWH | 3 | L44 | 88 W | 0.26 KW | 707 KWH | 0 KWH | 707 KWH | | | 0.09 KW | 241 KWH | 0 KWH | 241 KWH |
| 219 | Municipal Building | 1 | | CORRIDOR | | 2,677 | 1 | 44T8 I/O | 118 W | 0.12 KW | 316 KWH | 1 | L44 | 88 W | 0.09 KW | 236 KWH | 0 KWH | 236 KWH | | | 0.03 KW | 80 KWH | 0 KWH | 80 KWH |
| 220 | Municipal Building | 1 | | OFFICE | | 2,339 | 1 | 44T8 I/O | 118 W | 0.12 KW | 276 KWH | 1 | L44 | 88 W | 0.09 KW | 206 KWH | 0 KWH | 206 KWH | | | 0.03 KW | 70 KWH | 0 KWH | 70 KWH |
| 221 | Municipal Building | 1 | | LOBBY | | 2,677 | 11 | PL26X2 | 64 W | 0.70 KW | 1,885 KWH | 11 | EXTR | 64 W | 0.70 KW | 1,885 KWH | 0 KWH | 1,885 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 220.01 | Municipal Building | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 2 | PL26X2 | 64 W | 0.13 KW | 512 KWH | 2 | EXTR | 64 W | 0.13 KW | 512 KWH | 0 KWH | 512 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 221.01 | Municipal Building | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 3 | 400MH | 458 W | 1.37 KW | 5,496 KWH | 3 | EXTR | 458 W | 1.37 KW | 5,496 KWH | 0 KWH | 5,496 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 221.02 | Municipal Building | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 2 | 175MH | 210 W | 0.42 KW | 1,680 KWH | 2 | SP-LED WALLPACK-100 | 57 W | 0.11 KW | 456 KWH | 0 KWH | 456 KWH | | | 0.31 KW | 1,224 KWH | 0 KWH | 1,224 KWH |
| 222 | Police-Fire Rescue | 1 | | MENS TOILET | | 6,963 | 2 | 44EE | 144 W | 0.29 KW | 2,005 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 836 KWH | -251 KWH | 585 KWH | 30% | X | 0.17 KW | 1,170 KWH | 251 KWH | 1,420 KWH |
| 223 | Police-Fire Rescue | 1 | | WOMENS TOILET | | 6,963 | 2 | 44EE | 144 W | 0.29 KW | 2,005 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 836 KWH | -251 KWH | 585 KWH | 30% | X | 0.17 KW | 1,170 KWH | 251 KWH | 1,420 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 224 | Police-Fire Rescue | 1 | | VENDING LOBBY | | 6,864 | 2 | 44EE | 144 W | 0.29 KW | 1,977 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 824 KWH | -247 KWH | 577 KWH | 30% | X | 0.17 KW | 1,153 KWH | 247 KWH | 1,400 KWH |
| 225 | Police-Fire Rescue | 1 | | | | 8,760 | 2 | DRINK | 400 W | 0.80 KW | 7,008 KWH | 2 | EXTR | 400 W | 0.80 KW | 7,008 KWH | 0 KWH | 7,008 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 226 | Police-Fire Rescue | 1 | | MEETING ROOM "A" | | 5,526 | 12 | 44EE | 144 W | 1.73 KW | 9,549 KWH | 12 | LB24HPDL | 60 W | 0.72 KW | 3,979 KWH | -1,989 KWH | 1,989 KWH | 50% | X | 1.01 KW | 5,570 KWH | 1,989 KWH | 7,560 KWH |
| 227 | Police-Fire Rescue | 1 | | MEETING ROOM "A" | | 5,526 | 12 | PL13X2 | 32 W | 0.38 KW | 2,122 KWH | 12 | EXTR | 32 W | 0.38 KW | 2,122 KWH | -1,061 KWH | 1,061 KWH | 50% | | 0.00 KW | 0 KWH | 1,061 KWH | 1,061 KWH |
| 228 | Police-Fire Rescue | 1 | | CORRIDOR | | 6,864 | 8 | PL26X2 | 64 W | 0.51 KW | 3,514 KWH | 8 | EXTR | 64 W | 0.51 KW | 3,514 KWH | 0 KWH | 3,514 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 229 | Police-Fire Rescue | 1 | | CORRIDOR | | 1,783 | 20 | 14EE | 43 W | 0.86 KW | 1,533 KWH | 20 | LB14LP | 21 W | 0.42 KW | 749 KWH | 0 KWH | 749 KWH | | | 0.44 KW | 785 KWH | 0 KWH | 785 KWH |
| 230 | Police-Fire Rescue | 1 | | CONFERENCE | | 5,526 | 3 | 44EE | 144 W | 0.43 KW | 2,387 KWH | 3 | LB24HPDL | 60 W | 0.18 KW | 995 KWH | -497 KWH | 497 KWH | 50% | X | 0.25 KW | 1,393 KWH | 497 KWH | 1,890 KWH |
| 231 | Police-Fire Rescue | 1 | | CONFERENCE | | 5,526 | 6 | PL13X2 | 32 W | 0.19 KW | 1,061 KWH | 6 | EXTR | 32 W | 0.19 KW | 1,061 KWH | -530 KWH | 530 KWH | 50% | | 0.00 KW | 0 KWH | 530 KWH | 530 KWH |
| 232 | Police-Fire Rescue | 1 | | OPEN OFFICE | | 2,400 | 20 | 44EE | 144 W | 2.88 KW | 6,912 KWH | 20 | LB24HPDL | 60 W | 1.20 KW | 2,880 KWH | -144 KWH | 2,736 KWH | 5% | X | 1.68 KW | 4,032 KWH | 144 KWH | 4,176 KWH |
| 233 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 234 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 1 | 44EE | 144 W | 0.14 KW | 257 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 107 KWH | -16 KWH | 91 KWH | 15% | X | 0.08 KW | 150 KWH | 16 KWH | 166 KWH |
| 235 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 236 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 1 | 44EE | 144 W | 0.14 KW | 257 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 107 KWH | -16 KWH | 91 KWH | 15% | X | 0.08 KW | 150 KWH | 16 KWH | 166 KWH |
| 237 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 1 | 44EE | 144 W | 0.14 KW | 257 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 107 KWH | -16 KWH | 91 KWH | 15% | X | 0.08 KW | 150 KWH | 16 KWH | 166 KWH |
| 238 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 1 | 44EE | 144 W | 0.14 KW | 257 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 107 KWH | -16 KWH | 91 KWH | 15% | X | 0.08 KW | 150 KWH | 16 KWH | 166 KWH |
| 239 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 3 | 44EE | 144 W | 0.43 KW | 770 KWH | 3 | LB24HPDL | 60 W | 0.18 KW | 321 KWH | -48 KWH | 273 KWH | 15% | X | 0.25 KW | 449 KWH | 48 KWH | 497 KWH |
| 240 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 241 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 242 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 243 | Police-Fire Rescue | 1 | | STORAGE | | 1,000 | 1 | 44EE | 144 W | 0.14 KW | 144 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 60 KWH | 0 KWH | 60 KWH | | | 0.08 KW | 84 KWH | 0 KWH | 84 KWH |
| 244 | Police-Fire Rescue | 1 | | CORRIDOR | | 6,864 | 9 | 44EE | 144 W | 1.30 KW | 8,896 KWH | 9 | LB24HPDL | 60 W | 0.54 KW | 3,707 KWH | -927 KWH | 2,780 KWH | 25% | X | 0.76 KW | 5,189 KWH | 927 KWH | 6,116 KWH |
| 245 | Police-Fire Rescue | 1 | | | | 8,760 | 1 | DRINK | 400 W | 0.40 KW | 3,504 KWH | 1 | EXTR | 400 W | 0.40 KW | 3,504 KWH | 0 KWH | 3,504 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 246 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 3 | 44EE | 144 W | 0.43 KW | 770 KWH | 3 | LB24HPDL | 60 W | 0.18 KW | 321 KWH | -48 KWH | 273 KWH | 15% | X | 0.25 KW | 449 KWH | 48 KWH | 497 KWH |
| 247 | Police-Fire Rescue | 1 | | MECH | | 2,400 | 1 | PL13X2 | 32 W | 0.03 KW | 77 KWH | 1 | EXTR | 32 W | 0.03 KW | 77 KWH | 0 KWH | 77 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 248 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 249 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 4 | 44EE | 144 W | 0.58 KW | 1,027 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 428 KWH | -64 KWH | 364 KWH | 15% | X | 0.34 KW | 599 KWH | 64 KWH | 663 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 250 | Police-Fire Rescue | 1 | | STORAGE | | 1,000 | 1 | 44EE | 144 W | 0.14 KW | 144 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 60 KWH | 0 KWH | 60 KWH | | | 0.08 KW | 84 KWH | 0 KWH | 84 KWH |
| 251 | Police-Fire Rescue | 1 | | STORAGE | | 1,000 | 1 | 44EE | 144 W | 0.14 KW | 144 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 60 KWH | 0 KWH | 60 KWH | | | 0.08 KW | 84 KWH | 0 KWH | 84 KWH |
| 252 | Police-Fire Rescue | 1 | | MENS TOILET | | 1,783 | 1 | 24UT8 | 59 W | 0.06 KW | 105 KWH | 1 | LB22REF | 30 W | 0.03 KW | 53 KWH | 0 KWH | 53 KWH | | | 0.03 KW | 52 KWH | 0 KWH | 52 KWH |
| 253 | Police-Fire Rescue | 1 | | WOMENS TOILET | | 1,783 | 1 | 24UT8 | 59 W | 0.06 KW | 105 KWH | 1 | LB22REF | 30 W | 0.03 KW | 53 KWH | 0 KWH | 53 KWH | | | 0.03 KW | 52 KWH | 0 KWH | 52 KWH |
| 254 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 255 | Police-Fire Rescue | 1 | | STAIRS | | 2,600 | 1 | 24EE | 72 W | 0.07 KW | 187 KWH | 1 | LB24LP | 39 W | 0.04 KW | 101 KWH | 0 KWH | 101 KWH | | | 0.03 KW | 86 KWH | 0 KWH | 86 KWH |
| 256 | Police-Fire Rescue | 2 | | CORRIDOR | | 364 | 9 | 44EE | 144 W | 1.30 KW | 472 KWH | 9 | LB24HPDL | 60 W | 0.54 KW | 197 KWH | -49 KWH | 147 KWH | 25% | X | 0.76 KW | 275 KWH | 49 KWH | 324 KWH |
| 257 | Police-Fire Rescue | 2 | | STORAGE | | 1,000 | 1 | 44EE | 144 W | 0.14 KW | 144 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 60 KWH | 0 KWH | 60 KWH | | | 0.08 KW | 84 KWH | 0 KWH | 84 KWH |
| 258 | Police-Fire Rescue | 2 | | STORAGE | | 1,000 | 1 | 24EE | 72 W | 0.07 KW | 72 KWH | 1 | EXTR | 72 W | 0.07 KW | 72 KWH | 0 KWH | 72 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 259 | Police-Fire Rescue | 2 | | STORAGE | | 1,000 | 1 | 44EE | 144 W | 0.14 KW | 144 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 60 KWH | 0 KWH | 60 KWH | | | 0.08 KW | 84 KWH | 0 KWH | 84 KWH |
| 260 | Police-Fire Rescue | 2 | | MECH | | 2,400 | 1 | PL13X2 | 32 W | 0.03 KW | 77 KWH | 1 | EXTR | 32 W | 0.03 KW | 77 KWH | 0 KWH | 77 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 261 | Police-Fire Rescue | 2 | | MECH | | 2,400 | 1 | PL13X2 | 32 W | 0.03 KW | 77 KWH | 1 | EXTR | 32 W | 0.03 KW | 77 KWH | 0 KWH | 77 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 262 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 263 | Police-Fire Rescue | 2 | | DAY ROOM | | 1,000 | 11 | 44EE | 144 W | 1.58 KW | 1,584 KWH | 11 | LB24HPDL | 60 W | 0.66 KW | 660 KWH | -132 KWH | 528 KWH | 20% | X | 0.92 KW | 924 KWH | 132 KWH | 1,056 KWH |
| 264 | Police-Fire Rescue | 2 | | DAY ROOM | | 1,000 | 4 | PL13X2 | 32 W | 0.13 KW | 128 KWH | 4 | EXTR | 32 W | 0.13 KW | 128 KWH | 0 KWH | 128 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 265 | Police-Fire Rescue | 2 | | BREAK ROOM 1 | | 3,729 | 3 | 44EE | 144 W | 0.43 KW | 1,611 KWH | 3 | LB24HPDL | 60 W | 0.18 KW | 671 KWH | -336 KWH | 336 KWH | 50% | X | 0.25 KW | 940 KWH | 336 KWH | 1,275 KWH |
| 266 | Police-Fire Rescue | 2 | | BREAK ROOM 1 TOILET | | 6,963 | 1 | 24UEE | 72 W | 0.07 KW | 501 KWH | 1 | LB22REF | 30 W | 0.03 KW | 209 KWH | 0 KWH | 209 KWH | | | 0.04 KW | 292 KWH | 0 KWH | 292 KWH |
| 267 | Police-Fire Rescue | 2 | | BREAK ROOM 2 | | 3,729 | 3 | 44EE | 144 W | 0.43 KW | 1,611 KWH | 3 | LB24HPDL | 60 W | 0.18 KW | 671 KWH | -336 KWH | 336 KWH | 50% | X | 0.25 KW | 940 KWH | 336 KWH | 1,275 KWH |
| 268 | Police-Fire Rescue | 2 | | BREAK ROOM 2 TOILET | | 6,963 | 1 | 24UEE | 72 W | 0.07 KW | 501 KWH | 1 | LB22REF | 30 W | 0.03 KW | 209 KWH | 0 KWH | 209 KWH | | | 0.04 KW | 292 KWH | 0 KWH | 292 KWH |
| 269 | Police-Fire Rescue | 2 | | BREAK ROOM 3 | | 3,729 | 4 | 44EE | 144 W | 0.58 KW | 2,148 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 895 KWH | -447 KWH | 447 KWH | 50% | X | 0.34 KW | 1,253 KWH | 447 KWH | 1,700 KWH |
| 270 | Police-Fire Rescue | 2 | | BREAK ROOM 4 | | 3,729 | 3 | 44EE | 144 W | 0.43 KW | 1,611 KWH | 3 | LB24HPDL | 60 W | 0.18 KW | 671 KWH | -336 KWH | 336 KWH | 50% | X | 0.25 KW | 940 KWH | 336 KWH | 1,275 KWH |
| 271 | Police-Fire Rescue | 2 | | BREAK ROOM 5 | | 3,729 | 4 | 44EE | 144 W | 0.58 KW | 2,148 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 895 KWH | -447 KWH | 447 KWH | 50% | X | 0.34 KW | 1,253 KWH | 447 KWH | 1,700 KWH |
| 272 | Police-Fire Rescue | 2 | | BREAK ROOM 6 | | 3,729 | 4 | 44EE | 144 W | 0.58 KW | 2,148 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 895 KWH | -447 KWH | 447 KWH | 50% | X | 0.34 KW | 1,253 KWH | 447 KWH | 1,700 KWH |
| 273 | Police-Fire Rescue | 2 | | TOILET | | 6,963 | 2 | 14EE | 43 W | 0.09 KW | 599 KWH | 2 | LB14LP | 21 W | 0.04 KW | 292 KWH | 0 KWH | 292 KWH | | | 0.04 KW | 306 KWH | 0 KWH | 306 KWH |
| 274 | Police-Fire Rescue | 2 | | TOILET | | 6,963 | 2 | 44EE | 144 W | 0.29 KW | 2,005 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 836 KWH | -334 KWH | 501 KWH | 40% | X | 0.17 KW | 1,170 KWH | 334 KWH | 1,504 KWH |
| 275 | Police-Fire Rescue | 2 | | TOILET | | 6,963 | 2 | 24EE | 72 W | 0.14 KW | 1,003 KWH | 2 | LB24LP | 39 W | 0.08 KW | 543 KWH | -217 KWH | 326 KWH | 40% | | 0.07 KW | 460 KWH | 217 KWH | 677 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 276 | Police-Fire Rescue | 2 | | BREAK ROOM 7 | | 3,729 | 6 | 44EE | 144 W | 0.86 KW | 3,222 KWH | 6 | LB24HPDL | 60 W | 0.36 KW | 1,342 KWH | -671 KWH | 671 KWH | 50% | X | 0.50 KW | 1,879 KWH | 671 KWH | 2,551 KWH |
| 277 | Police-Fire Rescue | 2 | | BREAK ROOM 8 | | 3,729 | 4 | 44EE | 144 W | 0.58 KW | 2,148 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 895 KWH | -447 KWH | 447 KWH | 50% | X | 0.34 KW | 1,253 KWH | 447 KWH | 1,700 KWH |
| 278 | Police-Fire Rescue | 2 | | BREAK ROOM 9 | | 3,729 | 4 | 44EE | 144 W | 0.58 KW | 2,148 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 895 KWH | -447 KWH | 447 KWH | 50% | X | 0.34 KW | 1,253 KWH | 447 KWH | 1,700 KWH |
| 279 | Police-Fire Rescue | 2 | | EXERCISE ROOM | | 6,258 | 7 | 44EE | 144 W | 1.01 KW | 6,308 KWH | 7 | LB24HPDL | 60 W | 0.42 KW | 2,628 KWH | -526 KWH | 2,103 KWH | 20% | X | 0.59 KW | 3,680 KWH | 526 KWH | 4,205 KWH |
| 280 | Police-Fire Rescue | 2 | | STORAGE | | 1,000 | 1 | 44EE | 144 W | 0.14 KW | 144 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 60 KWH | 0 KWH | 60 KWH | | | 0.08 KW | 84 KWH | 0 KWH | 84 KWH |
| 281 | Police-Fire Rescue | 2 | | TOILET | | 6,963 | 3 | 44EE | 144 W | 0.43 KW | 3,008 KWH | 3 | LB24HPDL | 60 W | 0.18 KW | 1,253 KWH | -501 KWH | 752 KWH | 40% | X | 0.25 KW | 1,755 KWH | 501 KWH | 2,256 KWH |
| 282 | Police-Fire Rescue | 2 | | TOILET | | 6,963 | 1 | 24EE | 72 W | 0.07 KW | 501 KWH | 1 | LB24LP | 39 W | 0.04 KW | 272 KWH | 0 KWH | 272 KWH | | | 0.03 KW | 230 KWH | 0 KWH | 230 KWH |
| 283 | Police-Fire Rescue | 2 | | TOILET | | 6,963 | 1 | 24UEE | 72 W | 0.07 KW | 501 KWH | 1 | LB22REF | 30 W | 0.03 KW | 209 KWH | -84 KWH | 125 KWH | 40% | | 0.04 KW | 292 KWH | 84 KWH | 376 KWH |
| 284 | Police-Fire Rescue | 2 | | | | 6,258 | 4 | 44EE | 144 W | 0.58 KW | 3,605 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 1,502 KWH | 0 KWH | 1,502 KWH | | | 0.34 KW | 2,103 KWH | 0 KWH | 2,103 KWH |
| 285 | Police-Fire Rescue | 2 | | TOILET | | 6,963 | 2 | 44EE | 144 W | 0.29 KW | 2,005 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 836 KWH | -334 KWH | 501 KWH | 40% | X | 0.17 KW | 1,170 KWH | 334 KWH | 1,504 KWH |
| 286 | Police-Fire Rescue | 2 | | TOILET | | 6,963 | 1 | 24EE | 72 W | 0.07 KW | 501 KWH | 1 | LB24LP | 39 W | 0.04 KW | 272 KWH | 0 KWH | 272 KWH | | | 0.03 KW | 230 KWH | 0 KWH | 230 KWH |
| 287 | Police-Fire Rescue | 2 | | TOILET | | 6,963 | 1 | 24UEE | 72 W | 0.07 KW | 501 KWH | 1 | LB22REF | 30 W | 0.03 KW | 209 KWH | -84 KWH | 125 KWH | 40% | | 0.04 KW | 292 KWH | 84 KWH | 376 KWH |
| 288 | Police-Fire Rescue | 1 | | TRUCK BAY | | 5,000 | 11 | 250MH | 295 W | 3.25 KW | 16,225 KWH | 11 | NF28-43HO-OS | 182 W | 2.00 KW | 10,010 KWH | -3,003 KWH | 7,007 KWH | 30% | | 1.24 KW | 6,215 KWH | 3,003 KWH | 9,218 KWH |
| 289 | Police-Fire Rescue | 1 | | AIR ROOM | | 2,400 | 3 | 24EE | 72 W | 0.22 KW | 518 KWH | 3 | LB24LP | 39 W | 0.12 KW | 281 KWH | 0 KWH | 281 KWH | | | 0.10 KW | 238 KWH | 0 KWH | 238 KWH |
| 290 | Police-Fire Rescue | 1 | | LAUNDRY AREA | | 2,400 | 9 | 24EE | 72 W | 0.65 KW | 1,555 KWH | 9 | LB24LP | 39 W | 0.35 KW | 842 KWH | -168 KWH | 674 KWH | 20% | X | 0.30 KW | 713 KWH | 168 KWH | 881 KWH |
| 291 | Police-Fire Rescue | 1 | | BOAT ROOM | | 2,400 | 6 | 28SLEE | 126 W | 0.76 KW | 1,814 KWH | 6 | LB24HP-STP | 60 W | 0.36 KW | 864 KWH | -173 KWH | 691 KWH | 20% | X | 0.40 KW | 950 KWH | 173 KWH | 1,123 KWH |
| 292 | Police-Fire Rescue | 1 | | ELEVATOR | | 8,760 | 1 | 24EE | 72 W | 0.07 KW | 631 KWH | 1 | LB24LP | 39 W | 0.04 KW | 342 KWH | 0 KWH | 342 KWH | | | 0.03 KW | 289 KWH | 0 KWH | 289 KWH |
| 293 | Police-Fire Rescue | 3 | | COMMUNICATIONS | | 6,000 | 11 | 44EE | 144 W | 1.58 KW | 9,504 KWH | 11 | LB24HPDL | 60 W | 0.66 KW | 3,960 KWH | 0 KWH | 3,960 KWH | | | 0.92 KW | 5,544 KWH | 0 KWH | 5,544 KWH |
| 294 | Police-Fire Rescue | 3 | | COMMUNICATIONS | | 6,000 | 15 | 45 | 45 W | 0.68 KW | 4,050 KWH | 15 | LED15-DIMR30 | 15 W | 0.23 KW | 1,350 KWH | 0 KWH | 1,350 KWH | | | 0.45 KW | 2,700 KWH | 0 KWH | 2,700 KWH |
| 295 | Police-Fire Rescue | 3 | | BREAK ROOM | | 6,258 | 2 | 44EE | 144 W | 0.29 KW | 1,802 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 751 KWH | -150 KWH | 601 KWH | 20% | X | 0.17 KW | 1,051 KWH | 150 KWH | 1,202 KWH |
| 296 | Police-Fire Rescue | 3 | | BREAK ROOM | | 6,258 | 2 | 24UEE | 72 W | 0.14 KW | 901 KWH | 2 | LB22REF | 30 W | 0.06 KW | 375 KWH | -75 KWH | 300 KWH | 20% | | 0.08 KW | 526 KWH | 75 KWH | 601 KWH |
| 297 | Police-Fire Rescue | 3 | | MECH | | 2,400 | 1 | PL13X2 | 32 W | 0.03 KW | 77 KWH | 1 | EXTR | 32 W | 0.03 KW | 77 KWH | 0 KWH | 77 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 298 | Police-Fire Rescue | 3 | | STAIRS | | 2,600 | 5 | 24EE | 72 W | 0.36 KW | 936 KWH | 5 | LB24LP | 39 W | 0.20 KW | 507 KWH | 0 KWH | 507 KWH | | | 0.17 KW | 429 KWH | 0 KWH | 429 KWH |
| 299 | Police-Fire Rescue | 3 | | TOILET | | 6,963 | 2 | 44EE | 144 W | 0.29 KW | 2,005 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 836 KWH | -334 KWH | 501 KWH | 40% | X | 0.17 KW | 1,170 KWH | 334 KWH | 1,504 KWH |
| 300 | Police-Fire Rescue | 3 | | TOILET | | 6,963 | 1 | 24EE | 72 W | 0.07 KW | 501 KWH | 1 | LB24LP | 39 W | 0.04 KW | 272 KWH | -109 KWH | 163 KWH | 40% | | 0.03 KW | 230 KWH | 109 KWH | 338 KWH |
| 301 | Police-Fire Rescue | 3 | | TOILET | | 6,963 | 2 | 44EE | 144 W | 0.29 KW | 2,005 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 836 KWH | -334 KWH | 501 KWH | 40% | X | 0.17 KW | 1,170 KWH | 334 KWH | 1,504 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 302 | Police-Fire Rescue | 3 | | TOILET | | 6,963 | 1 | 24EE | 72 W | 0.07 KW | 501 KWH | 1 | LB24LP | 39 W | 0.04 KW | 272 KWH | -109 KWH | 163 KWH | 40% | | 0.03 KW | 230 KWH | 109 KWH | 338 KWH |
| 303 | Police-Fire Rescue | 3 | | MECH | | 2,400 | 1 | 24UEE | 72 W | 0.07 KW | 173 KWH | 1 | LB22REF | 30 W | 0.03 KW | 72 KWH | 0 KWH | 72 KWH | | | 0.04 KW | 101 KWH | 0 KWH | 101 KWH |
| 304 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 305 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 306 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 307 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 308 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 309 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 310 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 311 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 312 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 313 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 314 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 315 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 316 | Police-Fire Rescue | 3 | | CORRIDOR | | 364 | 27 | 44EE | 144 W | 3.89 KW | 1,415 KWH | 27 | LB24HPDL | 60 W | 1.62 KW | 590 KWH | -88 KWH | 501 KWH | 15% | X | 2.27 KW | 826 KWH | 88 KWH | 914 KWH |
| 317 | Police-Fire Rescue | 3 | | CORRIDOR | | 364 | 5 | 24UEE | 72 W | 0.36 KW | 131 KWH | 5 | LB22REF | 30 W | 0.15 KW | 55 KWH | -8 KWH | 46 KWH | 15% | | 0.21 KW | 76 KWH | 8 KWH | 85 KWH |
| 318 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 319 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 320 | Police-Fire Rescue | 3 | | CONFERENCE | | 3,600 | 3 | 44EE | 144 W | 0.43 KW | 1,555 KWH | 3 | LB24HPDL | 60 W | 0.18 KW | 648 KWH | -130 KWH | 518 KWH | 20% | X | 0.25 KW | 907 KWH | 130 KWH | 1,037 KWH |
| 321 | Police-Fire Rescue | 3 | | CONFERENCE | | 3,600 | 6 | PL26X2 | 64 W | 0.38 KW | 1,382 KWH | 6 | EXTR | 64 W | 0.38 KW | 1,382 KWH | -276 KWH | 1,106 KWH | 20% | | 0.00 KW | 0 KWH | 276 KWH | 276 KWH |
| 322 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 323 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 4 | 44EE | 144 W | 0.58 KW | 1,027 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 428 KWH | -64 KWH | 364 KWH | 15% | X | 0.34 KW | 599 KWH | 64 KWH | 663 KWH |
| 324 | Police-Fire Rescue | 3 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 325 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 326 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 327 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 328 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 329 | Police-Fire Rescue | 2 | | STORAGE | | 6,258 | 1 | 44EE | 144 W | 0.14 KW | 901 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 375 KWH | 0 KWH | 375 KWH | | | 0.08 KW | 526 KWH | 0 KWH | 526 KWH |
| 330 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 331 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 1 | 24UEE | 72 W | 0.07 KW | 128 KWH | 1 | LB22REF | 30 W | 0.03 KW | 53 KWH | -8 KWH | 45 KWH | 15% | X | 0.04 KW | 75 KWH | 8 KWH | 83 KWH |
| 332 | Police-Fire Rescue | 2 | | TOILET | | 6,963 | 1 | 24UEE | 72 W | 0.07 KW | 501 KWH | 1 | LB22REF | 30 W | 0.03 KW | 209 KWH | 0 KWH | 209 KWH | | | 0.04 KW | 292 KWH | 0 KWH | 292 KWH |
| 333 | Police-Fire Rescue | 2 | | MAIL ROOM | | 6,258 | 1 | 44EE | 144 W | 0.14 KW | 901 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 375 KWH | 0 KWH | 375 KWH | | | 0.08 KW | 526 KWH | 0 KWH | 526 KWH |
| 334 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 5 | 44EE | 144 W | 0.72 KW | 1,284 KWH | 5 | LB24HPDL | 60 W | 0.30 KW | 535 KWH | -80 KWH | 455 KWH | 15% | X | 0.42 KW | 749 KWH | 80 KWH | 829 KWH |
| 335 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 336 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 6 | 44EE | 144 W | 0.86 KW | 1,541 KWH | 6 | LB24HPDL | 60 W | 0.36 KW | 642 KWH | -96 KWH | 546 KWH | 15% | X | 0.50 KW | 899 KWH | 96 KWH | 995 KWH |
| 337 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 338 | Police-Fire Rescue | 2 | | STORAGE | | 1,000 | 1 | 24uee | 72 W | 0.07 KW | 72 KWH | 1 | EXTR | 72 W | 0.07 KW | 72 KWH | 0 KWH | 72 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 339 | Police-Fire Rescue | 2 | | OPEN OFFICE | | 6,258 | 21 | 44EE | 144 W | 3.02 KW | 18,924 KWH | 21 | LB24HPDL | 60 W | 1.26 KW | 7,885 KWH | -789 KWH | 7,097 KWH | 10% | X | 1.76 KW | 11,039 KWH | 789 KWH | 11,828 KWH |
| 340 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 341 | Police-Fire Rescue | 2 | | BREAK ROOM | | 6,258 | 3 | 44EE | 144 W | 0.43 KW | 2,703 KWH | 3 | LB24HPDL | 60 W | 0.18 KW | 1,126 KWH | -169 KWH | 957 KWH | 15% | X | 0.25 KW | 1,577 KWH | 169 KWH | 1,746 KWH |
| 342 | Police-Fire Rescue | 2 | | BREAK ROOM | | 6,258 | 6 | PL26X2 | 64 W | 0.38 KW | 2,403 KWH | 6 | EXTR | 64 W | 0.38 KW | 2,403 KWH | -360 KWH | 2,043 KWH | 15% | | 0.00 KW | 0 KWH | 360 KWH | 360 KWH |
| 343 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 344 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 345 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 346 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 1 | 44EE | 144 W | 0.14 KW | 257 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 107 KWH | -16 KWH | 91 KWH | 15% | X | 0.08 KW | 150 KWH | 16 KWH | 166 KWH |
| 347 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 1 | 44EE | 144 W | 0.14 KW | 257 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 107 KWH | -16 KWH | 91 KWH | 15% | X | 0.08 KW | 150 KWH | 16 KWH | 166 KWH |
| 348 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 349 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 350 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 351 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 352 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 3 | 44EE | 144 W | 0.43 KW | 770 KWH | 3 | LB24HPDL | 60 W | 0.18 KW | 321 KWH | -48 KWH | 273 KWH | 15% | X | 0.25 KW | 449 KWH | 48 KWH | 497 KWH |
| 353 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
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| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 354 | Police-Fire Rescue | 2 | | OFFICE | | 1,783 | 1 | 44EE | 144 W | 0.14 KW | 257 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 107 KWH | -16 KWH | 91 KWH | 15% | X | 0.08 KW | 150 KWH | 16 KWH | 166 KWH |
| 355 | Police-Fire Rescue | 2 | | OFFICE AREA | | 6,258 | 10 | 44EE | 144 W | 1.44 KW | 9,012 KWH | 10 | LB24HPDL | 60 W | 0.60 KW | 3,755 KWH | -375 KWH | 3,379 KWH | 10% | X | 0.84 KW | 5,257 KWH | 375 KWH | 5,632 KWH |
| 356 | Police-Fire Rescue | 1 | | MAIN LOBBY | | 6,864 | 6 | PL26X2 | 64 W | 0.38 KW | 2,636 KWH | 6 | EXTR | 64 W | 0.38 KW | 2,636 KWH | 0 KWH | 2,636 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 357 | Police-Fire Rescue | 1 | | RECEPTION LOBBY | | 6,864 | 5 | PL26X2 | 64 W | 0.32 KW | 2,196 KWH | 5 | EXTR | 64 W | 0.32 KW | 2,196 KWH | 0 KWH | 2,196 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 358 | Police-Fire Rescue | 1 | | RECEPTION LOBBY | | 6,864 | 4 | 44EE | 144 W | 0.58 KW | 3,954 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 1,647 KWH | 0 KWH | 1,647 KWH | | | 0.34 KW | 2,306 KWH | 0 KWH | 2,306 KWH |
| 359 | Police-Fire Rescue | 1 | | RECEPTION LOBBY | | 6,864 | 11 | 14EE | 43 W | 0.47 KW | 3,247 KWH | 11 | LB14LP | 21 W | 0.23 KW | 1,586 KWH | 0 KWH | 1,586 KWH | | | 0.24 KW | 1,661 KWH | 0 KWH | 1,661 KWH |
| 360 | Police-Fire Rescue | 1 | | | | 8,760 | 3 | EXIT PL7 | 22 W | 0.07 KW | 578 KWH | 3 | NF1-BATT | 4 W | 0.01 KW | 105 KWH | 0 KWH | 105 KWH | | | 0.05 KW | 473 KWH | 0 KWH | 473 KWH |
| 361 | Police-Fire Rescue | 1 | | DESK | | 6,258 | 5 | PL13X2 | 32 W | 0.16 KW | 1,001 KWH | 5 | EXTR | 32 W | 0.16 KW | 1,001 KWH | 0 KWH | 1,001 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 362 | Police-Fire Rescue | 1 | | MECH | | 2,400 | 1 | PL13X2 | 32 W | 0.03 KW | 77 KWH | 1 | EXTR | 32 W | 0.03 KW | 77 KWH | 0 KWH | 77 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 363 | Police-Fire Rescue | 1 | | CORRIDOR | | 6,864 | 4 | 44EE | 144 W | 0.58 KW | 3,954 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 1,647 KWH | 0 KWH | 1,647 KWH | | | 0.34 KW | 2,306 KWH | 0 KWH | 2,306 KWH |
| 364 | Police-Fire Rescue | 1 | | OFFICE | | 6,258 | 9 | 44EE | 144 W | 1.30 KW | 8,110 KWH | 9 | LB24HPDL | 60 W | 0.54 KW | 3,379 KWH | -507 KWH | 2,872 KWH | 15% | X | 0.76 KW | 4,731 KWH | 507 KWH | 5,238 KWH |
| 365 | Police-Fire Rescue | 1 | | C PLATOON OFFICE | | 6,258 | 2 | 44EE | 144 W | 0.29 KW | 1,802 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 751 KWH | -113 KWH | 638 KWH | 15% | X | 0.17 KW | 1,051 KWH | 113 KWH | 1,164 KWH |
| 366 | Police-Fire Rescue | 1 | | SARGEANT OFFICE | | 6,258 | 6 | 44EE | 144 W | 0.86 KW | 5,407 KWH | 6 | LB24HPDL | 60 W | 0.36 KW | 2,253 KWH | -338 KWH | 1,915 KWH | 15% | X | 0.50 KW | 3,154 KWH | 338 KWH | 3,492 KWH |
| 367 | Police-Fire Rescue | 1 | | BRIEFING ROOM | | 1,000 | 6 | 44EE | 144 W | 0.86 KW | 864 KWH | 6 | LB24HPDL | 60 W | 0.36 KW | 360 KWH | 0 KWH | 360 KWH | | | 0.50 KW | 504 KWH | 0 KWH | 504 KWH |
| 368 | Police-Fire Rescue | 1 | | COPY ROOM | | 4,612 | 1 | 44EE | 144 W | 0.14 KW | 664 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 277 KWH | 0 KWH | 277 KWH | | | 0.08 KW | 387 KWH | 0 KWH | 387 KWH |
| 369 | Police-Fire Rescue | 1 | | CORRIDOR | | 6,864 | 11 | 44EE | 144 W | 1.58 KW | 10,873 KWH | 11 | LB24HPDL | 60 W | 0.66 KW | 4,530 KWH | -680 KWH | 3,851 KWH | 15% | X | 0.92 KW | 6,342 KWH | 680 KWH | 7,022 KWH |
| 370 | Police-Fire Rescue | 1 | | ENDE | | 6,258 | 10 | 28SLEE | 126 W | 1.26 KW | 7,885 KWH | 10 | LB24HP-STP | 60 W | 0.60 KW | 3,755 KWH | 0 KWH | 3,755 KWH | | | 0.66 KW | 4,130 KWH | 0 KWH | 4,130 KWH |
| 371 | Police-Fire Rescue | 1 | | PROCESSING ROOM | | 6,258 | 2 | 44EE | 144 W | 0.29 KW | 1,802 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 751 KWH | 0 KWH | 751 KWH | | | 0.17 KW | 1,051 KWH | 0 KWH | 1,051 KWH |
| 372 | Police-Fire Rescue | 1 | | CORRIDOR | | 6,864 | 7 | 44EE | 144 W | 1.01 KW | 6,919 KWH | 7 | LB24HPDL | 60 W | 0.42 KW | 2,883 KWH | 0 KWH | 2,883 KWH | | | 0.59 KW | 4,036 KWH | 0 KWH | 4,036 KWH |
| 373 | Police-Fire Rescue | 1 | | MENS TOILET | | 6,963 | 1 | 24UEE | 72 W | 0.07 KW | 501 KWH | 1 | LB22REF | 30 W | 0.03 KW | 209 KWH | 0 KWH | 209 KWH | | | 0.04 KW | 292 KWH | 0 KWH | 292 KWH |
| 374 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 375 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 376 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 377 | Police-Fire Rescue | 1 | | OFFICE | | 1,783 | 2 | 44EE | 144 W | 0.29 KW | 514 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 214 KWH | -32 KWH | 182 KWH | 15% | X | 0.17 KW | 300 KWH | 32 KWH | 332 KWH |
| 378 | Police-Fire Rescue | 1 | | SUPPLY CLOSET | | 1,000 | 4 | 28SLEE | 126 W | 0.50 KW | 504 KWH | 4 | LB24HP-STP | 60 W | 0.24 KW | 240 KWH | 0 KWH | 240 KWH | | | 0.26 KW | 264 KWH | 0 KWH | 264 KWH |
| 379 | Police-Fire Rescue | 1 | | BOILER ROOM | | 2,400 | 3 | 24EE | 72 W | 0.22 KW | 518 KWH | 3 | LB24LP | 39 W | 0.12 KW | 281 KWH | 0 KWH | 281 KWH | | | 0.10 KW | 238 KWH | 0 KWH | 238 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EXISTING SYSTEM: EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | PROPOSED SYSTEM: RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSORS: SENSOR REDUCTION % | SENSORS | SAVINGS: KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 380 | Police-Fire Rescue | 1 | | MECH | | 2,400 | 1 | 24EE | 72 W | 0.07 KW | 173 KWH | 1 | LB24LP | 39 W | 0.04 KW | 94 KWH | 0 KWH | 94 KWH | | | 0.03 KW | 79 KWH | 0 KWH | 79 KWH |
| 379.01 | Police-Fire Rescue | EXT | | EXTERIOR - SOFFITS | | 4,000 | 11 | 100MH | 130 W | 1.43 KW | 5,720 KWH | 11 | SP-RCL 42W RETROFIT | 46 W | 0.51 KW | 2,024 KWH | 0 KWH | 2,024 KWH | | | 0.92 KW | 3,696 KWH | 0 KWH | 3,696 KWH |
| 380.01 | Police-Fire Rescue | EXT | | EXTERIOR - STEPS | | 4,000 | 6 | 50MH | 72 W | 0.43 KW | 1,728 KWH | 6 | EXTR | 72 W | 0.43 KW | 1,728 KWH | 0 KWH | 1,728 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 379.02 | Police-Fire Rescue | EXT | | EXTERIOR - BOLLARDS | | 4,000 | 6 | 70MH | 90 W | 0.54 KW | 2,160 KWH | 6 | EXTR | 90 W | 0.54 KW | 2,160 KWH | 0 KWH | 2,160 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 379.03 | Police-Fire Rescue | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 6 | 250MH | 295 W | 1.77 KW | 7,080 KWH | 6 | SP-LED WALLPACK-250 | 74 W | 0.44 KW | 1,776 KWH | 0 KWH | 1,776 KWH | | | 1.33 KW | 5,304 KWH | 0 KWH | 5,304 KWH |
| 381 | Park Maintenance Center | 1 | | OFFICE | | 2,536 | 4 | 44T8 | 114 W | 0.46 KW | 1,156 KWH | 4 | LB44LP | 76 W | 0.30 KW | 771 KWH | 0 KWH | 771 KWH | | | 0.15 KW | 385 KWH | 0 KWH | 385 KWH |
| 382 | Park Maintenance Center | 1 | | OFFICE | | 2,536 | 1 | 44T8 | 114 W | 0.11 KW | 289 KWH | 1 | L44 | 88 W | 0.09 KW | 223 KWH | 0 KWH | 223 KWH | | | 0.03 KW | 66 KWH | 0 KWH | 66 KWH |
| 383 | Park Maintenance Center | 1 | | WORK SHOP | | 3,000 | 6 | 28SLEE | 126 W | 0.76 KW | 2,268 KWH | 6 | LB24HP-STP | 60 W | 0.36 KW | 1,080 KWH | 0 KWH | 1,080 KWH | | | 0.40 KW | 1,188 KWH | 0 KWH | 1,188 KWH |
| 384 | Park Maintenance Center | 1 | | WORK SHOP | | 3,000 | 5 | 44EE | 144 W | 0.72 KW | 2,160 KWH | 5 | LB24HPDL | 60 W | 0.30 KW | 900 KWH | 0 KWH | 900 KWH | | | 0.42 KW | 1,260 KWH | 0 KWH | 1,260 KWH |
| 385 | Park Maintenance Center | 1 | | TOILET | | 2,600 | 1 | 60X3 | 180 W | 0.18 KW | 468 KWH | 1 | CF13X3 | 39 W | 0.04 KW | 101 KWH | 0 KWH | 101 KWH | | | 0.14 KW | 367 KWH | 0 KWH | 367 KWH |
| 386 | Park Maintenance Center | 1 | | STORAGE | | 1,000 | 2 | 44T8 | 114 W | 0.23 KW | 228 KWH | 2 | LB24DL | 43 W | 0.09 KW | 86 KWH | 0 KWH | 86 KWH | | | 0.14 KW | 142 KWH | 0 KWH | 142 KWH |
| 387 | Park Maintenance Center | 1 | | WELDING SHOP | | 3,000 | 7 | 44T8 | 114 W | 0.80 KW | 2,394 KWH | 7 | LB44LP | 76 W | 0.53 KW | 1,596 KWH | 0 KWH | 1,596 KWH | | | 0.27 KW | 798 KWH | 0 KWH | 798 KWH |
| 388 | Park Maintenance Center | 1 | | WORK SHOP | | 3,000 | 2 | 150 | 150 W | 0.30 KW | 900 KWH | 2 | CF42 | 42 W | 0.08 KW | 252 KWH | 0 KWH | 252 KWH | | | 0.22 KW | 648 KWH | 0 KWH | 648 KWH |
| 389 | Park Maintenance Center | 1 | | LAWN SHED | | 2,400 | 4 | 44EE | 144 W | 0.58 KW | 1,382 KWH | 4 | LB24HPDL-32 | 74 W | 0.30 KW | 710 KWH | 0 KWH | 710 KWH | | | 0.28 KW | 672 KWH | 0 KWH | 672 KWH |
| 390 | Park Maintenance Center | 1 | | CHAIN SAW SHED | | 2,400 | 1 | 28T8 | 110 W | 0.11 KW | 264 KWH | 1 | EXTR | 110 W | 0.11 KW | 264 KWH | 0 KWH | 264 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 391 | Park Maintenance Center | 1 | | RECYCLE SHED | | 2,400 | 2 | 28SLSE | 131 W | 0.26 KW | 629 KWH | 2 | NF8-42HP-32 | 74 W | 0.15 KW | 355 KWH | 0 KWH | 355 KWH | | | 0.11 KW | 274 KWH | 0 KWH | 274 KWH |
| 392 | Park Maintenance Center | 1 | | LUMBER SHED | | 2,400 | 2 | 28SLSE | 131 W | 0.26 KW | 629 KWH | 2 | LB24HP-STP-32 | 74 W | 0.15 KW | 355 KWH | 0 KWH | 355 KWH | | | 0.11 KW | 274 KWH | 0 KWH | 274 KWH |
| 393 | Park Maintenance Center | 1 | | LUMBER SHED | | 2,400 | 1 | 44EE | 144 W | 0.14 KW | 346 KWH | 1 | LB24HPDL-32 | 74 W | 0.07 KW | 178 KWH | 0 KWH | 178 KWH | | | 0.07 KW | 168 KWH | 0 KWH | 168 KWH |
| 394 | Park Maintenance Center | 1 | | PLUMBING ROOM | | 2,400 | 2 | 24EE | 72 W | 0.14 KW | 346 KWH | 2 | LB24LP | 39 W | 0.08 KW | 187 KWH | 0 KWH | 187 KWH | | | 0.07 KW | 158 KWH | 0 KWH | 158 KWH |
| 395 | Park Maintenance Center | 1 | | VACUUM ROOM | | 2,400 | 1 | 24EE | 72 W | 0.07 KW | 173 KWH | 1 | LB24LP | 39 W | 0.04 KW | 94 KWH | 0 KWH | 94 KWH | | | 0.03 KW | 79 KWH | 0 KWH | 79 KWH |
| 396 | Park Maintenance Center | 1 | | UNDO CANOPY | | 2,400 | 1 | 28SLSE | 131 W | 0.13 KW | 314 KWH | 1 | LB24HP-STP-32 | 74 W | 0.07 KW | 178 KWH | 0 KWH | 178 KWH | | | 0.06 KW | 137 KWH | 0 KWH | 137 KWH |
| 397 | Park Maintenance Center | 1 | | BREAK BUILDING | | 1,800 | 2 | 28T8 | 110 W | 0.22 KW | 396 KWH | 2 | EXTR | 110 W | 0.22 KW | 396 KWH | 0 KWH | 396 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 398 | Park Maintenance Center | 1 | | BREAK BUILDING | | 1,800 | 2 | 28SLSE | 131 W | 0.26 KW | 472 KWH | 2 | LB24HP-STP | 60 W | 0.12 KW | 216 KWH | 0 KWH | 216 KWH | | | 0.14 KW | 256 KWH | 0 KWH | 256 KWH |
| 399 | Park Maintenance Center | 1 | | LADDER ROOM | | 2,400 | 2 | 28SLSE | 131 W | 0.26 KW | 629 KWH | 2 | NF8-42HP-32 | 74 W | 0.15 KW | 355 KWH | 0 KWH | 355 KWH | | | 0.11 KW | 274 KWH | 0 KWH | 274 KWH |
| 400 | Park Maintenance Center | 1 | | TOILET | | 2,600 | 1 | 60X2 | 120 W | 0.12 KW | 312 KWH | 1 | CF13X2 | 26 W | 0.03 KW | 68 KWH | 0 KWH | 68 KWH | | | 0.09 KW | 244 KWH | 0 KWH | 244 KWH |
| 399.01 | Park Maintenance Center | EXT | | EXTERIOR - POLE MOUNTED FLOODS | | 4,000 | 7 | 400S | 464 W | 3.25 KW | 12,992 KWH | 7 | HLB320PS | 368 W | 2.58 KW | 10,304 KWH | 0 KWH | 10,304 KWH | | | 0.67 KW | 2,688 KWH | 0 KWH | 2,688 KWH |

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 399.02 | Park Maintenance Center | EXT | | EXTERIOR - POLE MOUNTED FLOODS | | 4,000 | 1 | 250M | 285 W | 0.29 KW | 1,140 KWH | 1 | SP-LED WALLPACK-250 | 74 W | 0.07 KW | 296 KWH | 0 KWH | 296 KWH | | | 0.21 KW | 844 KWH | 0 KWH | 844 KWH |
| 401 | 5th Street Police Substation | 1 | | OFFICE | | 656 | 4 | 24T8 | 59 W | 0.24 KW | 155 KWH | 4 | EXTR | 59 W | 0.24 KW | 155 KWH | 0 KWH | 155 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 402 | 5th Street Police Substation | 1 | | KITCHEN | | 260 | 2 | 24T8 | 59 W | 0.12 KW | 31 KWH | 2 | EXTR | 59 W | 0.12 KW | 31 KWH | 0 KWH | 31 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 403 | 5th Street Police Substation | 1 | | LOCKER AREA | | 656 | 1 | 60X2 | 120 W | 0.12 KW | 79 KWH | 1 | CF13X2 | 26 W | 0.03 KW | 17 KWH | 0 KWH | 17 KWH | | | 0.09 KW | 62 KWH | 0 KWH | 62 KWH |
| 404 | 5th Street Police Substation | 1 | | CORRIDOR | | 656 | 2 | 60X2 | 120 W | 0.24 KW | 157 KWH | 2 | CF13X2 | 26 W | 0.05 KW | 34 KWH | 0 KWH | 34 KWH | | | 0.19 KW | 123 KWH | 0 KWH | 123 KWH |
| 405 | 5th Street Police Substation | 1 | | TOILET | | 468 | 1 | 40X4 | 160 W | 0.16 KW | 75 KWH | 1 | CF9G25X4 | 36 W | 0.04 KW | 17 KWH | 0 KWH | 17 KWH | | | 0.12 KW | 58 KWH | 0 KWH | 58 KWH |
| 406 | 5th Street Police Substation | 1 | | TOILET | | 468 | 1 | 65 | 65 W | 0.07 KW | 30 KWH | 1 | CF18R30 | 18 W | 0.02 KW | 8 KWH | 0 KWH | 8 KWH | | | 0.05 KW | 22 KWH | 0 KWH | 22 KWH |
| 407 | 5th Street Police Substation | 1 | | OFFICE | | 656 | 2 | PL26X2 | 64 W | 0.13 KW | 84 KWH | 2 | EXTR | 64 W | 0.13 KW | 84 KWH | 0 KWH | 84 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 408 | 5th Street Police Substation | 1 | | TOILET #2 | | 468 | 1 | 40X6 | 240 W | 0.24 KW | 112 KWH | 1 | CF9G25X6 | 54 W | 0.05 KW | 25 KWH | 0 KWH | 25 KWH | | | 0.19 KW | 87 KWH | 0 KWH | 87 KWH |
| 409 | 5th Street Police Substation | 1 | | OFFICE | | 656 | 2 | 24T8 | 59 W | 0.12 KW | 77 KWH | 2 | EXTR | 59 W | 0.12 KW | 77 KWH | 0 KWH | 77 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 410 | 5th Street Police Substation | 1 | | OFFICE | | 656 | 2 | 24T8 | 59 W | 0.12 KW | 77 KWH | 2 | EXTR | 59 W | 0.12 KW | 77 KWH | 0 KWH | 77 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 411 | 5th Street Police Substation | 1 | | GARAGE | | 250 | 4 | 28SLSE | 131 W | 0.52 KW | 131 KWH | 4 | LB24HP-STP | 60 W | 0.24 KW | 60 KWH | 0 KWH | 60 KWH | | | 0.28 KW | 71 KWH | 0 KWH | 71 KWH |
| 411.01 | 5th Street Police Substation | EXT | | EXTERIOR LTS | | 4,000 | 10 | EXCLUDE | 0 W | 0.00 KW | 0 KWH | 10 | EXCLUDE | 0 W | 0.00 KW | 0 KWH | 0 KWH | 0 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 412 | Epps Recreation Center / Thomas Foreman Park | 1 | | LOBBY | | 2,600 | 4 | PL32X2 | 69 W | 0.28 KW | 718 KWH | 4 | EXTR | 69 W | 0.28 KW | 718 KWH | 0 KWH | 718 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 413 | Epps Recreation Center / Thomas Foreman Park | 1 | | | | 2,600 | 5 | 34T8 | 87 W | 0.44 KW | 1,131 KWH | 5 | LB24LPDL | 39 W | 0.20 KW | 507 KWH | 0 KWH | 507 KWH | | | 0.24 KW | 624 KWH | 0 KWH | 624 KWH |
| 414 | Epps Recreation Center / Thomas Foreman Park | 1 | 109 | OFFICE | | 312 | 2 | 34T8 | 87 W | 0.17 KW | 54 KWH | 2 | L34 | 67 W | 0.13 KW | 42 KWH | 0 KWH | 42 KWH | | | 0.04 KW | 12 KWH | 0 KWH | 12 KWH |
| 415 | Epps Recreation Center / Thomas Foreman Park | 1 | | BOYS TOILET | | 3,623 | 1 | 24T8 | 59 W | 0.06 KW | 214 KWH | 1 | LB24LP | 39 W | 0.04 KW | 141 KWH | 0 KWH | 141 KWH | | | 0.02 KW | 72 KWH | 0 KWH | 72 KWH |
| 416 | Epps Recreation Center / Thomas Foreman Park | 1 | | BOYS TOILET | | 3,623 | 2 | 34T8 | 87 W | 0.17 KW | 630 KWH | 2 | LB24LPDL | 39 W | 0.08 KW | 283 KWH | 0 KWH | 283 KWH | | | 0.10 KW | 348 KWH | 0 KWH | 348 KWH |
| 417 | Epps Recreation Center / Thomas Foreman Park | 1 | | BOYS TOILET | | 3,623 | 1 | PL32X2 | 69 W | 0.07 KW | 250 KWH | 1 | EXTR | 69 W | 0.07 KW | 250 KWH | 0 KWH | 250 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 418 | Epps Recreation Center / Thomas Foreman Park | 1 | | GIRLS TOILET | | 3,623 | 1 | 24T8 | 59 W | 0.06 KW | 214 KWH | 1 | LB24LP | 39 W | 0.04 KW | 141 KWH | 0 KWH | 141 KWH | | | 0.02 KW | 72 KWH | 0 KWH | 72 KWH |
| 419 | Epps Recreation Center / Thomas Foreman Park | 1 | | GIRLS TOILET | | 3,623 | 3 | 34T8 | 87 W | 0.26 KW | 946 KWH | 3 | LB24LPDL | 39 W | 0.12 KW | 424 KWH | 0 KWH | 424 KWH | | | 0.14 KW | 522 KWH | 0 KWH | 522 KWH |
| 420 | Epps Recreation Center / Thomas Foreman Park | 1 | | GIRLS TOILET | | 3,623 | 1 | PL32X2 | 69 W | 0.07 KW | 250 KWH | 1 | EXTR | 69 W | 0.07 KW | 250 KWH | 0 KWH | 250 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 421 | Epps Recreation Center / Thomas Foreman Park | 1 | 105 | STORAGE | | 1,000 | 1 | 34T8 | 87 W | 0.09 KW | 87 KWH | 1 | EXTR | 87 W | 0.09 KW | 87 KWH | 0 KWH | 87 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 422 | Epps Recreation Center / Thomas Foreman Park | 1 | 106 | MECH | | 2,400 | 1 | 34T8 | 87 W | 0.09 KW | 209 KWH | 1 | EXTR | 87 W | 0.09 KW | 209 KWH | 0 KWH | 209 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 423 | Epps Recreation Center / Thomas Foreman Park | 1 | | CORRIDOR | | 2,600 | 5 | 24EE | 72 W | 0.36 KW | 936 KWH | 5 | LB24LP | 39 W | 0.20 KW | 507 KWH | 0 KWH | 507 KWH | | | 0.17 KW | 429 KWH | 0 KWH | 429 KWH |
| 424 | Epps Recreation Center / Thomas Foreman Park | 1 | | HIGH SCHOOL ROOM | | 1,544 | 5 | 24T8 | 59 W | 0.30 KW | 455 KWH | 5 | LB24LP | 39 W | 0.20 KW | 301 KWH | 0 KWH | 301 KWH | | | 0.10 KW | 154 KWH | 0 KWH | 154 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 425 | Epps Recreation Center / Thomas Foreman Park | 1 | | HIGH SCHOOL ROOM | | 1,544 | 3 | 24T8 | 59 W | 0.18 KW | 273 KWH | 3 | LB24LP | 39 W | 0.12 KW | 181 KWH | 0 KWH | 181 KWH | | | 0.06 KW | 93 KWH | 0 KWH | 93 KWH |
| 426 | Epps Recreation Center / Thomas Foreman Park | 1 | | HIGH SCHOOL ROOM | | 1,544 | 4 | 24T8 | 59 W | 0.24 KW | 364 KWH | 4 | LB24LP | 39 W | 0.16 KW | 241 KWH | 0 KWH | 241 KWH | | | 0.08 KW | 124 KWH | 0 KWH | 124 KWH |
| 427 | Epps Recreation Center / Thomas Foreman Park | 1 | | CLASSROOM | | 520 | 3 | 24EE | 72 W | 0.22 KW | 112 KWH | 3 | LB24LP | 39 W | 0.12 KW | 61 KWH | 0 KWH | 61 KWH | | | 0.10 KW | 51 KWH | 0 KWH | 51 KWH |
| 428 | Epps Recreation Center / Thomas Foreman Park | 1 | | CLASSROOM | | 520 | 6 | 24EE | 72 W | 0.43 KW | 225 KWH | 6 | LB24LP | 39 W | 0.23 KW | 122 KWH | 0 KWH | 122 KWH | | | 0.20 KW | 103 KWH | 0 KWH | 103 KWH |
| 429 | Epps Recreation Center / Thomas Foreman Park | 1 | | CLASSROOM | | 520 | 4 | 24EE | 72 W | 0.29 KW | 150 KWH | 4 | LB24LP | 39 W | 0.16 KW | 81 KWH | 0 KWH | 81 KWH | | | 0.13 KW | 69 KWH | 0 KWH | 69 KWH |
| 430 | Epps Recreation Center / Thomas Foreman Park | 1 | | CORRIDOR | | 2,600 | 1 | 24EE | 72 W | 0.07 KW | 187 KWH | 1 | LB24LP | 39 W | 0.04 KW | 101 KWH | 0 KWH | 101 KWH | | | 0.03 KW | 86 KWH | 0 KWH | 86 KWH |
| 431 | Epps Recreation Center / Thomas Foreman Park | 1 | | STORAGE | | 1,000 | 1 | 24EE | 72 W | 0.07 KW | 72 KWH | 1 | LB24LP | 39 W | 0.04 KW | 39 KWH | 0 KWH | 39 KWH | | | 0.03 KW | 33 KWH | 0 KWH | 33 KWH |
| 432 | Epps Recreation Center / Thomas Foreman Park | 1 | | GYM | | 3,297 | 35 | 44T5HO | 241 W | 8.44 KW | 27,810 KWH | 35 | EXTR | 241 W | 8.44 KW | 27,810 KWH | 0 KWH | 27,810 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 433 | Epps Recreation Center / Thomas Foreman Park | 1 | | JANITOR CLOSET | | 300 | 1 | 24T8 | 59 W | 0.06 KW | 18 KWH | 1 | EXTR | 59 W | 0.06 KW | 18 KWH | 0 KWH | 18 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 434 | Epps Recreation Center / Thomas Foreman Park | 1 | | WOMENS TOILET | | 3,623 | 2 | 24EE | 72 W | 0.14 KW | 522 KWH | 2 | LB24LP | 39 W | 0.08 KW | 283 KWH | 0 KWH | 283 KWH | | | 0.07 KW | 239 KWH | 0 KWH | 239 KWH |
| 435 | Epps Recreation Center / Thomas Foreman Park | 1 | | MENS TOILET | | 3,623 | 1 | 24EE | 72 W | 0.07 KW | 261 KWH | 1 | LB24LP | 39 W | 0.04 KW | 141 KWH | 0 KWH | 141 KWH | | | 0.03 KW | 120 KWH | 0 KWH | 120 KWH |
| 436 | Epps Recreation Center / Thomas Foreman Park | 1 | | SNACK BAR | | 1,544 | 2 | 24EE | 72 W | 0.14 KW | 222 KWH | 2 | LB24LP | 39 W | 0.08 KW | 120 KWH | 0 KWH | 120 KWH | | | 0.07 KW | 102 KWH | 0 KWH | 102 KWH |
| 437 | Epps Recreation Center / Thomas Foreman Park | 1 | | BOILER ROOM | | 2,400 | 2 | 24T8 | 59 W | 0.12 KW | 283 KWH | 2 | EXTR | 59 W | 0.12 KW | 283 KWH | 0 KWH | 283 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 438 | Epps Recreation Center / Thomas Foreman Park | 1 | | OFFICE | | 312 | 2 | 44EE | 144 W | 0.29 KW | 90 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 37 KWH | 0 KWH | 37 KWH | | | 0.17 KW | 52 KWH | 0 KWH | 52 KWH |
| 439 | Epps Recreation Center / Thomas Foreman Park | 1 | | WEIGHT ROOM | | 1,544 | 7 | 24EE | 72 W | 0.50 KW | 778 KWH | 7 | LB24LP | 39 W | 0.27 KW | 422 KWH | 0 KWH | 422 KWH | | | 0.23 KW | 357 KWH | 0 KWH | 357 KWH |
| 440 | Epps Recreation Center / Thomas Foreman Park | 1 | | REC ROOM | | 1,544 | 11 | 24EE | 72 W | 0.79 KW | 1,223 KWH | 11 | LB24LP | 39 W | 0.43 KW | 662 KWH | 0 KWH | 662 KWH | | | 0.36 KW | 560 KWH | 0 KWH | 560 KWH |
| 441 | Epps Recreation Center / Thomas Foreman Park | 1 | | KITCHEN | | 1,800 | 2 | 44EE | 144 W | 0.29 KW | 518 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 216 KWH | 0 KWH | 216 KWH | | | 0.17 KW | 302 KWH | 0 KWH | 302 KWH |
| 442 | Epps Recreation Center / Thomas Foreman Park | 1 | | CORRIDOR | | 2,600 | 1 | 24EE | 72 W | 0.07 KW | 187 KWH | 1 | LB24LP | 39 W | 0.04 KW | 101 KWH | 0 KWH | 101 KWH | | | 0.03 KW | 86 KWH | 0 KWH | 86 KWH |
| 443 | Epps Recreation Center / Thomas Foreman Park | 1 | | STORAGE | | 500 | 1 | 60 | 60 W | 0.06 KW | 30 KWH | 1 | CF13 | 13 W | 0.01 KW | 7 KWH | 0 KWH | 7 KWH | | | 0.05 KW | 24 KWH | 0 KWH | 24 KWH |
| 444 | Epps Recreation Center / Thomas Foreman Park | 1 | 101A | MULTIPURPOSE ROOM | | 2,677 | 12 | 38HOSE | 362 W | 4.34 KW | 11,629 KWH | 12 | CR84 | 85 W | 1.02 KW | 2,731 KWH | 0 KWH | 2,731 KWH | | | 3.32 KW | 8,898 KWH | 0 KWH | 8,898 KWH |
| 445 | Epps Recreation Center / Thomas Foreman Park | 1 | | STORAGE | | 1,000 | 1 | 24EE | 72 W | 0.07 KW | 72 KWH | 1 | LB24LP | 39 W | 0.04 KW | 39 KWH | 0 KWH | 39 KWH | | | 0.03 KW | 33 KWH | 0 KWH | 33 KWH |
| 446 | Epps Recreation Center / Thomas Foreman Park | 1 | | CONCESSION (OUTSIDE) | | 1,544 | 8 | 24EE | 72 W | 0.58 KW | 889 KWH | 8 | LB24LP | 39 W | 0.31 KW | 482 KWH | 0 KWH | 482 KWH | | | 0.26 KW | 408 KWH | 0 KWH | 408 KWH |
| 447 | Epps Recreation Center / Thomas Foreman Park | 1 | | CONCESSION | | 1,544 | 12 | 24EE | 72 W | 0.86 KW | 1,334 KWH | 12 | LB24LP | 39 W | 0.47 KW | 723 KWH | 0 KWH | 723 KWH | | | 0.40 KW | 611 KWH | 0 KWH | 611 KWH |
| 446.01 | Epps Recreation Center / Thomas Foreman Park | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 2 | 100 | 100 W | 0.20 KW | 800 KWH | 2 | CF23 | 23 W | 0.05 KW | 184 KWH | 0 KWH | 184 KWH | | | 0.15 KW | 616 KWH | 0 KWH | 616 KWH |
| 446.02 | Epps Recreation Center / Thomas Foreman Park | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 9 | 100MH | 130 W | 1.17 KW | 4,680 KWH | 9 | SP-LED WALLPACK-100 | 57 W | 0.51 KW | 2,052 KWH | 0 KWH | 2,052 KWH | | | 0.66 KW | 2,628 KWH | 0 KWH | 2,628 KWH |
| 448 | Guy Smith Stadium | EXT | | EXTERIOR - BLEACHERS | | 1,200 | 10 | 24EE | 72 W | 0.72 KW | 864 KWH | 10 | LB24LP-32 | 48 W | 0.48 KW | 576 KWH | 0 KWH | 576 KWH | | | 0.24 KW | 288 KWH | 0 KWH | 288 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 449 | Guy Smith Stadium | 1 | | CORRIDOR | | 1,800 | 18 | 24EE | 72 W | 1.30 KW | 2,333 KWH | 18 | LB24LP | 39 W | 0.70 KW | 1,264 KWH | 0 KWH | 1,264 KWH | | | 0.59 KW | 1,069 KWH | 0 KWH | 1,069 KWH |
| 450 | Guy Smith Stadium | 1 | | SNACK BAR | | 1,800 | 6 | 24EE | 72 W | 0.43 KW | 778 KWH | 6 | LB24LP | 39 W | 0.23 KW | 421 KWH | 0 KWH | 421 KWH | | | 0.20 KW | 356 KWH | 0 KWH | 356 KWH |
| 451 | Guy Smith Stadium | 1 | | STORAGE | | 1,000 | 1 | 14EE | 43 W | 0.04 KW | 43 KWH | 1 | LB14LP | 21 W | 0.02 KW | 21 KWH | 0 KWH | 21 KWH | | | 0.02 KW | 22 KWH | 0 KWH | 22 KWH |
| 452 | Guy Smith Stadium | 1 | | STORAGE | | 1,000 | 1 | 24EE | 72 W | 0.07 KW | 72 KWH | 1 | LB14LPDL | 21 W | 0.02 KW | 21 KWH | 0 KWH | 21 KWH | | | 0.05 KW | 51 KWH | 0 KWH | 51 KWH |
| 453 | Guy Smith Stadium | 1 | | MENS TOILET | | 1,800 | 5 | 24EE | 72 W | 0.36 KW | 648 KWH | 5 | LB24LP | 39 W | 0.20 KW | 351 KWH | 0 KWH | 351 KWH | | | 0.17 KW | 297 KWH | 0 KWH | 297 KWH |
| 454 | Guy Smith Stadium | 1 | | STORAGE | | 1,000 | 2 | 24EE | 72 W | 0.14 KW | 144 KWH | 2 | LB14LPDL | 21 W | 0.04 KW | 42 KWH | 0 KWH | 42 KWH | | | 0.10 KW | 102 KWH | 0 KWH | 102 KWH |
| 455 | Guy Smith Stadium | 1 | | WOMENS TOILET | | 1,800 | 3 | 24EE | 72 W | 0.22 KW | 389 KWH | 3 | LB24LP | 39 W | 0.12 KW | 211 KWH | 0 KWH | 211 KWH | | | 0.10 KW | 178 KWH | 0 KWH | 178 KWH |
| 456 | Guy Smith Stadium | 1 | | STORAGE | | 1,000 | 2 | 24EE | 72 W | 0.14 KW | 144 KWH | 2 | LB14LPDL | 21 W | 0.04 KW | 42 KWH | 0 KWH | 42 KWH | | | 0.10 KW | 102 KWH | 0 KWH | 102 KWH |
| 457 | Guy Smith Stadium | 1 | | STORAGE | | 1,000 | 2 | 24EE | 72 W | 0.14 KW | 144 KWH | 2 | LB14LPDL | 21 W | 0.04 KW | 42 KWH | 0 KWH | 42 KWH | | | 0.10 KW | 102 KWH | 0 KWH | 102 KWH |
| 458 | Guy Smith Stadium | 1 | | TICKET BOOTH | | 2,000 | 2 | 24EE | 72 W | 0.14 KW | 288 KWH | 2 | LB24LP | 39 W | 0.08 KW | 156 KWH | 0 KWH | 156 KWH | | | 0.07 KW | 132 KWH | 0 KWH | 132 KWH |
| 459 | Guy Smith Stadium | 1 | | TICKET BOOTH CORRIDOR | | 1,800 | 2 | 14EE | 43 W | 0.09 KW | 155 KWH | 2 | LB14LP | 21 W | 0.04 KW | 76 KWH | 0 KWH | 76 KWH | | | 0.04 KW | 79 KWH | 0 KWH | 79 KWH |
| 460 | Guy Smith Stadium | 1 | | TOILET | | 1,800 | 2 | 24EE | 72 W | 0.14 KW | 259 KWH | 2 | LB24LP | 39 W | 0.08 KW | 140 KWH | 0 KWH | 140 KWH | | | 0.07 KW | 119 KWH | 0 KWH | 119 KWH |
| 461 | Guy Smith Stadium | 1 | | STORAGE | | 1,000 | 1 | 24EE | 72 W | 0.07 KW | 72 KWH | 1 | LB14LPDL | 21 W | 0.02 KW | 21 KWH | 0 KWH | 21 KWH | | | 0.05 KW | 51 KWH | 0 KWH | 51 KWH |
| 462 | Guy Smith Stadium | 1 | | GARBAGE ROOM | | 500 | 1 | 14EE | 43 W | 0.04 KW | 22 KWH | 1 | LB14LP | 21 W | 0.02 KW | 11 KWH | 0 KWH | 11 KWH | | | 0.02 KW | 11 KWH | 0 KWH | 11 KWH |
| 463 | Guy Smith Stadium | 1 | | BABE RUTH ROOM | | 500 | 2 | 24EE | 72 W | 0.14 KW | 72 KWH | 2 | LB14LPDL | 21 W | 0.04 KW | 21 KWH | 0 KWH | 21 KWH | | | 0.10 KW | 51 KWH | 0 KWH | 51 KWH |
| 464 | Guy Smith Stadium | 1 | | WOMENS TOILET | | 1,800 | 3 | 24EE | 72 W | 0.22 KW | 389 KWH | 3 | LB24LP | 39 W | 0.12 KW | 211 KWH | 0 KWH | 211 KWH | | | 0.10 KW | 178 KWH | 0 KWH | 178 KWH |
| 465 | Guy Smith Stadium | 1 | | STORAGE | | 500 | 1 | 100 | 100 W | 0.10 KW | 50 KWH | 1 | CF23 | 23 W | 0.02 KW | 12 KWH | 0 KWH | 12 KWH | | | 0.08 KW | 39 KWH | 0 KWH | 39 KWH |
| 466 | Guy Smith Stadium | 1 | | MENS TOILET | | 1,800 | 3 | 24EE | 72 W | 0.22 KW | 389 KWH | 3 | LB24LP | 39 W | 0.12 KW | 211 KWH | 0 KWH | 211 KWH | | | 0.10 KW | 178 KWH | 0 KWH | 178 KWH |
| 467 | Guy Smith Stadium | 1 | | LOFT | | 500 | 2 | 44EE | 144 W | 0.29 KW | 144 KWH | 2 | LB24HPDL-32 | 74 W | 0.15 KW | 74 KWH | 0 KWH | 74 KWH | | | 0.14 KW | 70 KWH | 0 KWH | 70 KWH |
| 468 | Guy Smith Stadium | 1 | | PRESS BOX | | 2,000 | 2 | 44EE | 144 W | 0.29 KW | 576 KWH | 2 | LB24HPDL-32 | 74 W | 0.15 KW | 296 KWH | 0 KWH | 296 KWH | | | 0.14 KW | 280 KWH | 0 KWH | 280 KWH |
| 469 | Guy Smith Stadium | 1 | | WOMENS TOILET | | 1,800 | 1 | 100 | 100 W | 0.10 KW | 180 KWH | 1 | CF23 | 23 W | 0.02 KW | 41 KWH | 0 KWH | 41 KWH | | | 0.08 KW | 139 KWH | 0 KWH | 139 KWH |
| 470 | Guy Smith Stadium | 1 | | MENS TOILET | | 1,800 | 1 | 100 | 100 W | 0.10 KW | 180 KWH | 1 | CF23 | 23 W | 0.02 KW | 41 KWH | 0 KWH | 41 KWH | | | 0.08 KW | 139 KWH | 0 KWH | 139 KWH |
| 471 | Guy Smith Stadium | 1 | | STORAGE | | 1,000 | 1 | 100 | 100 W | 0.10 KW | 100 KWH | 1 | CF23 | 23 W | 0.02 KW | 23 KWH | 0 KWH | 23 KWH | | | 0.08 KW | 77 KWH | 0 KWH | 77 KWH |
| 472 | Guy Smith Stadium | 1 | | OLD SNACK | | 1,800 | 2 | 100 | 100 W | 0.20 KW | 360 KWH | 2 | CF23 | 23 W | 0.05 KW | 83 KWH | 0 KWH | 83 KWH | | | 0.15 KW | 277 KWH | 0 KWH | 277 KWH |
| 472.01 | Guy Smith Stadium | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 4 | 250M | 285 W | 1.14 KW | 4,560 KWH | 4 | SP-LED SHOEBOX-250 | 110 W | 0.44 KW | 1,760 KWH | 0 KWH | 1,760 KWH | | | 0.70 KW | 2,800 KWH | 0 KWH | 2,800 KWH |
| 473 | City Warehouse | 1 | | | | 2,000 | 12 | 28SLSE | 131 W | 1.57 KW | 3,144 KWH | 12 | LB24HP-STP | 60 W | 0.72 KW | 1,440 KWH | 0 KWH | 1,440 KWH | | | 0.85 KW | 1,704 KWH | 0 KWH | 1,704 KWH |

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 474 | City Warehouse | 1 | | | | 2,000 | 6 | 28SLSE | 131 W | 0.79 KW | 1,572 KWH | 6 | LB24HP-STP | 60 W | 0.36 KW | 720 KWH | 0 KWH | 720 KWH | | | 0.43 KW | 852 KWH | 0 KWH | 852 KWH |
| 475 | City Warehouse | 1 | | GARAGE | | 1,000 | 14 | 44EE | 144 W | 2.02 KW | 2,016 KWH | 14 | LB24HPDL | 60 W | 0.84 KW | 840 KWH | 0 KWH | 840 KWH | | | 1.18 KW | 1,176 KWH | 0 KWH | 1,176 KWH |
| 476 | City Warehouse | 1 | | TOILET | | 2,600 | 1 | 100 | 100 W | 0.10 KW | 260 KWH | 1 | CF23 | 23 W | 0.02 KW | 60 KWH | 0 KWH | 60 KWH | | | 0.08 KW | 200 KWH | 0 KWH | 200 KWH |
| 477 | City Warehouse | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 1 | 250MH | 295 W | 0.30 KW | 1,180 KWH | 1 | SP-LED WALLPACK-250 | 74 W | 0.07 KW | 296 KWH | 0 KWH | 296 KWH | | | 0.22 KW | 884 KWH | 0 KWH | 884 KWH |
| 478 | City Warehouse | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 1 | 150S | 188 W | 0.19 KW | 752 KWH | 1 | EXTR | 188 W | 0.19 KW | 752 KWH | 0 KWH | 752 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 479 | City Warehouse | 1 | | STORAGE | | 2,000 | 12 | 28SLSE | 131 W | 1.57 KW | 3,144 KWH | 12 | LB24HP-STP | 60 W | 0.72 KW | 1,440 KWH | 0 KWH | 1,440 KWH | | | 0.85 KW | 1,704 KWH | 0 KWH | 1,704 KWH |
| 480 | City Warehouse | 1 | | STORAGE | | 1,000 | 2 | 24EE | 72 W | 0.14 KW | 144 KWH | 2 | LB24LP | 39 W | 0.08 KW | 78 KWH | 0 KWH | 78 KWH | | | 0.07 KW | 66 KWH | 0 KWH | 66 KWH |
| 481 | City Warehouse | 1 | | STORAGE | | 1,000 | 4 | 28SLSE | 131 W | 0.52 KW | 524 KWH | 4 | LB24HP-STP | 60 W | 0.24 KW | 240 KWH | 0 KWH | 240 KWH | | | 0.28 KW | 284 KWH | 0 KWH | 284 KWH |
| 482 | City Warehouse | 1 | | STORAGE | | 1,000 | 2 | 28SLSE | 131 W | 0.26 KW | 262 KWH | 2 | LB24HP-STP | 60 W | 0.12 KW | 120 KWH | 0 KWH | 120 KWH | | | 0.14 KW | 142 KWH | 0 KWH | 142 KWH |
| 483 | City Warehouse | 1 | | | | 1,000 | 2 | 44EE | 144 W | 0.29 KW | 288 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 120 KWH | 0 KWH | 120 KWH | | | 0.17 KW | 168 KWH | 0 KWH | 168 KWH |
| 484 | City Warehouse | 1 | | GARAGE AREA | | 2,000 | 3 | 28SLSE | 131 W | 0.39 KW | 786 KWH | 3 | LB24HP-STP | 60 W | 0.18 KW | 360 KWH | 0 KWH | 360 KWH | | | 0.21 KW | 426 KWH | 0 KWH | 426 KWH |
| 485 | City Warehouse | 1 | | GARAGE AREA | | 2,000 | 8 | 400MH | 458 W | 3.66 KW | 7,328 KWH | 8 | NF29-44HO-OS | 241 W | 1.93 KW | 3,856 KWH | -1,157 KWH | 2,699 KWH | 30% | | 1.74 KW | 3,472 KWH | 1,157 KWH | 4,629 KWH |
| 486 | City Warehouse | 1 | | GARAGE AREA | | 2,000 | 8 | 28SLSE | 131 W | 1.05 KW | 2,096 KWH | 8 | LB24HP-STP | 60 W | 0.48 KW | 960 KWH | 0 KWH | 960 KWH | | | 0.57 KW | 1,136 KWH | 0 KWH | 1,136 KWH |
| 487 | City Warehouse | 1 | | GARAGE AREA | | 2,000 | 4 | 28SLSE | 131 W | 0.52 KW | 1,048 KWH | 4 | LB24HP-STP | 60 W | 0.24 KW | 480 KWH | 0 KWH | 480 KWH | | | 0.28 KW | 568 KWH | 0 KWH | 568 KWH |
| 488 | City Warehouse | 2 | | LOFT | | 1,000 | 10 | 28SLSE | 131 W | 1.31 KW | 1,310 KWH | 10 | LB24HP-STP | 60 W | 0.60 KW | 600 KWH | 0 KWH | 600 KWH | | | 0.71 KW | 710 KWH | 0 KWH | 710 KWH |
| 489 | City Warehouse | 1 | | TOILET | | 2,600 | 1 | 100 | 100 W | 0.10 KW | 260 KWH | 1 | CF23 | 23 W | 0.02 KW | 60 KWH | 0 KWH | 60 KWH | | | 0.08 KW | 200 KWH | 0 KWH | 200 KWH |
| 490 | City Warehouse | 1 | | TOILET | | 2,600 | 1 | 100 | 100 W | 0.10 KW | 260 KWH | 1 | CF23 | 23 W | 0.02 KW | 60 KWH | 0 KWH | 60 KWH | | | 0.08 KW | 200 KWH | 0 KWH | 200 KWH |
| 491 | City Warehouse | 1 | | TOILET | | 2,600 | 1 | 100 | 100 W | 0.10 KW | 260 KWH | 1 | CF23 | 23 W | 0.02 KW | 60 KWH | 0 KWH | 60 KWH | | | 0.08 KW | 200 KWH | 0 KWH | 200 KWH |
| 492 | City Warehouse | 1 | | OFFICE | | 2,000 | 1 | 24EE | 72 W | 0.07 KW | 144 KWH | 1 | LB24LP | 39 W | 0.04 KW | 78 KWH | 0 KWH | 78 KWH | | | 0.03 KW | 66 KWH | 0 KWH | 66 KWH |
| 493 | City Warehouse | 1 | | OFFICE | | 2,000 | 1 | 24EE | 72 W | 0.07 KW | 144 KWH | 1 | LB24LP | 39 W | 0.04 KW | 78 KWH | 0 KWH | 78 KWH | | | 0.03 KW | 66 KWH | 0 KWH | 66 KWH |
| 494 | City Warehouse | 1 | | OFFICE | | 2,000 | 1 | 24EE | 72 W | 0.07 KW | 144 KWH | 1 | LB24LP | 39 W | 0.04 KW | 78 KWH | 0 KWH | 78 KWH | | | 0.03 KW | 66 KWH | 0 KWH | 66 KWH |
| 495 | City Warehouse | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 3 | 250MH | 295 W | 0.89 KW | 3,540 KWH | 3 | SP-LED WALLPACK-250 | 74 W | 0.22 KW | 888 KWH | 0 KWH | 888 KWH | | | 0.66 KW | 2,652 KWH | 0 KWH | 2,652 KWH |
| 496 | City Warehouse | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 1 | 250S | 295 W | 0.30 KW | 1,180 KWH | 1 | SP-LED SHOEBOX-250 | 110 W | 0.11 KW | 440 KWH | 0 KWH | 440 KWH | | | 0.19 KW | 740 KWH | 0 KWH | 740 KWH |
| 497 | Public Works - SHOPS | 1 | | PURCHASING | | 3,276 | 5 | 44EE | 144 W | 0.72 KW | 2,359 KWH | 5 | LB24HPDL | 60 W | 0.30 KW | 983 KWH | 0 KWH | 983 KWH | | | 0.42 KW | 1,376 KWH | 0 KWH | 1,376 KWH |
| 498 | Public Works - SHOPS | 1 | | PURCHASING KITCHEN | | 2,256 | 2 | 44EE | 144 W | 0.29 KW | 650 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 271 KWH | 0 KWH | 271 KWH | | | 0.17 KW | 379 KWH | 0 KWH | 379 KWH |
| 499 | Public Works - SHOPS | 1 | | PURCHASING STORAGE | | 4,007 | 6 | 250MH | 295 W | 1.77 KW | 7,092 KWH | 6 | NF29-43HO-OS | 182 W | 1.09 KW | 4,376 KWH | -1,313 KWH | 3,063 KWH | 30% | | 0.68 KW | 2,717 KWH | 1,313 KWH | 4,029 KWH |

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 500 | Public Works - SHOPS | 1 | | PURCHASING OFFICE | | 3,276 | 8 | 24EE | 72 W | 0.58 KW | 1,887 KWH | 8 | LB24LP | 39 W | 0.31 KW | 1,022 KWH | 0 KWH | 1,022 KWH | | | 0.26 KW | 865 KWH | 0 KWH | 865 KWH |
| 501 | Public Works - SHOPS | 1 | | PURCHASING OFFICE | | 3,276 | 4 | 44EE | 144 W | 0.58 KW | 1,887 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 786 KWH | 0 KWH | 786 KWH | | | 0.34 KW | 1,101 KWH | 0 KWH | 1,101 KWH |
| 502 | Public Works - SHOPS | 1 | | PURCHASING TOILET | | 2,600 | 1 | 40X4 | 160 W | 0.16 KW | 416 KWH | 1 | CF9G25X4 | 36 W | 0.04 KW | 94 KWH | 0 KWH | 94 KWH | | | 0.12 KW | 322 KWH | 0 KWH | 322 KWH |
| 503 | Public Works - SHOPS | 1 | | PURCHASING TOILET | | 2,600 | 1 | 24UEE | 72 W | 0.07 KW | 187 KWH | 1 | LB22REF | 30 W | 0.03 KW | 78 KWH | 0 KWH | 78 KWH | | | 0.04 KW | 109 KWH | 0 KWH | 109 KWH |
| 504 | Public Works - SHOPS | 1 | | PURCHASING | | 3,276 | 2 | 44EE | 144 W | 0.29 KW | 943 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 393 KWH | 0 KWH | 393 KWH | | | 0.17 KW | 550 KWH | 0 KWH | 550 KWH |
| 505 | Public Works - SHOPS | 1 | | BUILDING & GROUNDS | | 2,697 | 3 | 44EE | 144 W | 0.43 KW | 1,165 KWH | 3 | LB24HPDL | 60 W | 0.18 KW | 485 KWH | 0 KWH | 485 KWH | | | 0.25 KW | 680 KWH | 0 KWH | 680 KWH |
| 506 | Public Works - SHOPS | 1 | | BUILDING & GROUNDS STORAGE | | 3,221 | 2 | 44EE | 144 W | 0.29 KW | 928 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 387 KWH | 0 KWH | 387 KWH | | | 0.17 KW | 541 KWH | 0 KWH | 541 KWH |
| 507 | Public Works - SHOPS | 1 | | B & G MENS TOILET | | 2,600 | 1 | 44EE | 144 W | 0.14 KW | 374 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 156 KWH | 0 KWH | 156 KWH | | | 0.08 KW | 218 KWH | 0 KWH | 218 KWH |
| 508 | Public Works - SHOPS | 1 | | B&G WOMENS TOILET | | 2,600 | 1 | 44EE | 144 W | 0.14 KW | 374 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 156 KWH | 0 KWH | 156 KWH | | | 0.08 KW | 218 KWH | 0 KWH | 218 KWH |
| 509 | Public Works - SHOPS | 1 | | B & G BREAK ROOM | | 3,276 | 2 | 44T8 | 114 W | 0.23 KW | 747 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 393 KWH | 0 KWH | 393 KWH | | | 0.11 KW | 354 KWH | 0 KWH | 354 KWH |
| 510 | Public Works - SHOPS | 1 | | B & G MAP ROOM | | 3,276 | 3 | 44T8 | 114 W | 0.34 KW | 1,120 KWH | 3 | L44 | 88 W | 0.26 KW | 865 KWH | 0 KWH | 865 KWH | | | 0.08 KW | 256 KWH | 0 KWH | 256 KWH |
| 511 | Public Works - SHOPS | 1 | | B&G OFFICE | | 3,276 | 2 | 44EE | 144 W | 0.29 KW | 943 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 393 KWH | 0 KWH | 393 KWH | | | 0.17 KW | 550 KWH | 0 KWH | 550 KWH |
| 512 | Public Works - SHOPS | 1 | | B&G OFFICE | | 3,276 | 2 | 44EE | 144 W | 0.29 KW | 943 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 393 KWH | 0 KWH | 393 KWH | | | 0.17 KW | 550 KWH | 0 KWH | 550 KWH |
| 513 | Public Works - SHOPS | 1 | | CARPENTER SHOP | | 4,007 | 3 | 250MH | 295 W | 0.89 KW | 3,546 KWH | 3 | NF29-43HO | 182 W | 0.55 KW | 2,188 KWH | 0 KWH | 2,188 KWH | | | 0.34 KW | 1,358 KWH | 0 KWH | 1,358 KWH |
| 514 | Public Works - SHOPS | 1 | | PAINT SHED | | 3,221 | 2 | 24EE | 72 W | 0.14 KW | 464 KWH | 2 | LB24LP-32 | 48 W | 0.10 KW | 309 KWH | 0 KWH | 309 KWH | | | 0.05 KW | 155 KWH | 0 KWH | 155 KWH |
| 515 | Public Works - SHOPS | 1 | | PAINT SHED | | 3,221 | 1 | 250MH | 295 W | 0.30 KW | 950 KWH | 1 | NF29-43HO | 182 W | 0.18 KW | 586 KWH | 0 KWH | 586 KWH | | | 0.11 KW | 364 KWH | 0 KWH | 364 KWH |
| 516 | Public Works - SHOPS | 1 | | MOWER SHED | | 2,500 | 22 | 24EE | 72 W | 1.58 KW | 3,960 KWH | 22 | NF9-42LP-32 | 48 W | 1.06 KW | 2,640 KWH | 0 KWH | 2,640 KWH | | | 0.53 KW | 1,320 KWH | 0 KWH | 1,320 KWH |
| 517 | Public Works - SHOPS | 1 | | RECYCLE BUILDING | | 2,400 | 6 | 24T8 | 59 W | 0.35 KW | 850 KWH | 6 | LB24LP | 39 W | 0.23 KW | 562 KWH | 0 KWH | 562 KWH | | | 0.12 KW | 288 KWH | 0 KWH | 288 KWH |
| 518 | Public Works - SHOPS | 1 | | PESTICIDE STORAGE | | 3,221 | 3 | 24EE | 72 W | 0.22 KW | 696 KWH | 3 | LB24LP | 39 W | 0.12 KW | 377 KWH | 0 KWH | 377 KWH | | | 0.10 KW | 319 KWH | 0 KWH | 319 KWH |
| 519 | Public Works - SHOPS | 1 | | CONCRETE ROOM | | 3,221 | 2 | 44EE | 144 W | 0.29 KW | 928 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 387 KWH | 0 KWH | 387 KWH | | | 0.17 KW | 541 KWH | 0 KWH | 541 KWH |
| 520 | Public Works - SHOPS | 1 | | STORM ROOM | | 2,400 | 2 | 44EE | 144 W | 0.29 KW | 691 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 288 KWH | 0 KWH | 288 KWH | | | 0.17 KW | 403 KWH | 0 KWH | 403 KWH |
| 521 | Public Works - SHOPS | 1 | | MAINTENANCE CREW | | 3,221 | 2 | 44EE | 144 W | 0.29 KW | 928 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 387 KWH | 0 KWH | 387 KWH | | | 0.17 KW | 541 KWH | 0 KWH | 541 KWH |
| 522 | Public Works - SHOPS | 1 | | NO SMOKING | | 3,221 | 2 | 44EE | 144 W | 0.29 KW | 928 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 387 KWH | 0 KWH | 387 KWH | | | 0.17 KW | 541 KWH | 0 KWH | 541 KWH |
| 523 | Public Works - SHOPS | 1 | | TOOL SHED | | 2,500 | 4 | 24T8 | 59 W | 0.24 KW | 590 KWH | 4 | EXTR | 59 W | 0.24 KW | 590 KWH | 0 KWH | 590 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 524 | Public Works - SHOPS | 1 | | ASPHALT CREW | | 2,500 | 2 | 24T8 | 59 W | 0.12 KW | 295 KWH | 2 | LB24LP-32 | 48 W | 0.10 KW | 240 KWH | 0 KWH | 240 KWH | | | 0.02 KW | 55 KWH | 0 KWH | 55 KWH |
| 525 | Public Works - SHOPS | 1 | | SWEEPERS | | 2,500 | 2 | 24T8 | 59 W | 0.12 KW | 295 KWH | 2 | EXTR | 59 W | 0.12 KW | 295 KWH | 0 KWH | 295 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EXISTING SYSTEM: EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | PROPOSED SYSTEM: RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSORS: SENSOR REDUCTION % | SENSORS | SAVINGS: KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 526 | Public Works - SHOPS | 1 | | BREAK ROOM | | 2,237 | 5 | 44T8 | 114 W | 0.57 KW | 1,275 KWH | 5 | LB24HPDL | 60 W | 0.30 KW | 671 KWH | 0 KWH | 671 KWH | | | 0.27 KW | 604 KWH | 0 KWH | 604 KWH |
| 527 | Public Works - SHOPS | 1 | | TOILET | | 2,600 | 1 | 40X2 | 80 W | 0.08 KW | 208 KWH | 1 | CF9G25X2 | 18 W | 0.02 KW | 47 KWH | 0 KWH | 47 KWH | | | 0.06 KW | 161 KWH | 0 KWH | 161 KWH |
| 528 | Public Works - SHOPS | 1 | | CORRIDOR | | 2,697 | 2 | 44T8 | 114 W | 0.23 KW | 615 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 324 KWH | 0 KWH | 324 KWH | | | 0.11 KW | 291 KWH | 0 KWH | 291 KWH |
| 529 | Public Works - SHOPS | 1 | | OFFICE | | 1,508 | 2 | 34T8 | 87 W | 0.17 KW | 262 KWH | 2 | LB34LP | 57 W | 0.11 KW | 172 KWH | 0 KWH | 172 KWH | | | 0.06 KW | 90 KWH | 0 KWH | 90 KWH |
| 530 | Public Works - SHOPS | 1 | | OFFICE | | 1,508 | 2 | 34T8 | 87 W | 0.17 KW | 262 KWH | 2 | LB34LP | 57 W | 0.11 KW | 172 KWH | 0 KWH | 172 KWH | | | 0.06 KW | 90 KWH | 0 KWH | 90 KWH |
| 531 | Public Works - SHOPS | 1 | | OFFICE | | 1,508 | 2 | 34T8 | 87 W | 0.17 KW | 262 KWH | 2 | LB34LP | 57 W | 0.11 KW | 172 KWH | 0 KWH | 172 KWH | | | 0.06 KW | 90 KWH | 0 KWH | 90 KWH |
| 532 | Public Works - SHOPS | 1 | | ROAD CREW SHED | | 2,500 | 8 | 28SLSE | 131 W | 1.05 KW | 2,620 KWH | 8 | NF11-82-32 | 48 W | 0.38 KW | 960 KWH | 0 KWH | 960 KWH | | | 0.66 KW | 1,660 KWH | 0 KWH | 1,660 KWH |
| 533 | Public Works - SHOPS | 1 | | SIGN SHOP | | 4,007 | 5 | 24T8 | 59 W | 0.30 KW | 1,182 KWH | 5 | LB24LP | 39 W | 0.20 KW | 781 KWH | 0 KWH | 781 KWH | | | 0.10 KW | 401 KWH | 0 KWH | 401 KWH |
| 534 | Public Works - SHOPS | 1 | | PAINT SHOP | | 4,007 | 15 | 24UT8 | 59 W | 0.89 KW | 3,546 KWH | 15 | LB32REF | 44 W | 0.66 KW | 2,645 KWH | 0 KWH | 2,645 KWH | | | 0.23 KW | 902 KWH | 0 KWH | 902 KWH |
| 535 | Public Works - SHOPS | 1 | | TOILET | | 2,600 | 1 | 44EE | 144 W | 0.14 KW | 374 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 156 KWH | 0 KWH | 156 KWH | | | 0.08 KW | 218 KWH | 0 KWH | 218 KWH |
| 536 | Public Works - SHOPS | 1 | | SIGN ROOM | | 4,007 | 10 | 24EE | 72 W | 0.72 KW | 2,885 KWH | 10 | LB24LP | 39 W | 0.39 KW | 1,563 KWH | 0 KWH | 1,563 KWH | | | 0.33 KW | 1,322 KWH | 0 KWH | 1,322 KWH |
| 537 | Public Works - SHOPS | 1 | | TRAFFIC LITE ROOM | | 4,007 | 5 | 250MH | 295 W | 1.48 KW | 5,910 KWH | 5 | NF29-43HO | 182 W | 0.91 KW | 3,646 KWH | 0 KWH | 3,646 KWH | | | 0.57 KW | 2,264 KWH | 0 KWH | 2,264 KWH |
| 538 | Public Works - SHOPS | 1 | | TRAFFIC LITE ROOM | | 1,508 | 2 | 44EE | 144 W | 0.29 KW | 434 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 181 KWH | 0 KWH | 181 KWH | | | 0.17 KW | 253 KWH | 0 KWH | 253 KWH |
| 539 | Public Works - SHOPS | 1 | | TRUCK MAINT SHOP | | 4,007 | 6 | 44EE | 144 W | 0.86 KW | 3,462 KWH | 6 | LB24HPDL | 60 W | 0.36 KW | 1,443 KWH | 0 KWH | 1,443 KWH | | | 0.50 KW | 2,020 KWH | 0 KWH | 2,020 KWH |
| 540 | Public Works - SHOPS | 1 | | WATER PUMP ROOM | | 4,007 | 2 | 24EE | 72 W | 0.14 KW | 577 KWH | 2 | LB24LP | 39 W | 0.08 KW | 313 KWH | 0 KWH | 313 KWH | | | 0.07 KW | 264 KWH | 0 KWH | 264 KWH |
| 541 | Public Works - SHOPS | 1 | | FLEET SUPERVISOR OFFICE | | 3,276 | 2 | 44EE | 144 W | 0.29 KW | 943 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 393 KWH | 0 KWH | 393 KWH | | | 0.17 KW | 550 KWH | 0 KWH | 550 KWH |
| 542 | Public Works - SHOPS | 1 | | HEAVY SHOP | | 4,007 | 2 | 44T8 | 114 W | 0.23 KW | 914 KWH | 2 | L44 | 88 W | 0.18 KW | 705 KWH | 0 KWH | 705 KWH | | | 0.05 KW | 208 KWH | 0 KWH | 208 KWH |
| 543 | Public Works - SHOPS | 1 | | ENGINE SHOP | | 2,400 | 1 | 28T8 | 110 W | 0.11 KW | 264 KWH | 1 | EXTR | 110 W | 0.11 KW | 264 KWH | 0 KWH | 264 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 544 | Public Works - SHOPS | 1 | | BREAK ROOM | | 2,256 | 2 | 24T8 | 59 W | 0.12 KW | 266 KWH | 2 | LB24LP | 39 W | 0.08 KW | 176 KWH | 0 KWH | 176 KWH | | | 0.04 KW | 90 KWH | 0 KWH | 90 KWH |
| 545 | Public Works - SHOPS | 1 | | BREAK ROOM | | 8,760 | 1 | DRINK | 400 W | 0.40 KW | 3,504 KWH | 1 | EXTR | 400 W | 0.40 KW | 3,504 KWH | 0 KWH | 3,504 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 546 | Public Works - SHOPS | 1 | | OFFICE | | 1,508 | 3 | 44EE | 144 W | 0.43 KW | 651 KWH | 3 | LB24HPDL | 60 W | 0.18 KW | 271 KWH | 0 KWH | 271 KWH | | | 0.25 KW | 380 KWH | 0 KWH | 380 KWH |
| 547 | Public Works - SHOPS | 1 | | MENS TOILET | | 3,871 | 2 | 24EE | 72 W | 0.14 KW | 557 KWH | 2 | LB24LP | 39 W | 0.08 KW | 302 KWH | 0 KWH | 302 KWH | | | 0.07 KW | 255 KWH | 0 KWH | 255 KWH |
| 548 | Public Works - SHOPS | 1 | | MENS TOILET | | 3,871 | 3 | 44EE | 144 W | 0.43 KW | 1,672 KWH | 3 | LB24HPDL | 60 W | 0.18 KW | 697 KWH | 0 KWH | 697 KWH | | | 0.25 KW | 975 KWH | 0 KWH | 975 KWH |
| 549 | Public Works - SHOPS | 1 | | WOMENS TOILET | | 3,871 | 1 | 22SS | 53 W | 0.05 KW | 205 KWH | 1 | LB22LP | 26 W | 0.03 KW | 101 KWH | 0 KWH | 101 KWH | | | 0.03 KW | 105 KWH | 0 KWH | 105 KWH |
| 550 | Public Works - SHOPS | 1 | | TIRE SHOP | | 4,007 | 9 | 24EE | 72 W | 0.65 KW | 2,597 KWH | 9 | LB24LP-32 | 48 W | 0.43 KW | 1,731 KWH | 0 KWH | 1,731 KWH | | | 0.22 KW | 866 KWH | 0 KWH | 866 KWH |
| 551 | Public Works - SHOPS | 1 | | ENTIRE GARAGE | | 4,007 | 37 | 250S | 295 W | 10.92 KW | 43,736 KWH | 37 | NF29-43HO | 182 W | 6.73 KW | 26,983 KWH | 0 KWH | 26,983 KWH | | | 4.18 KW | 16,753 KWH | 0 KWH | 16,753 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 552 | PUBLIC WORKS - ADMIN BUILDING | 1 | | MAIN OFFICE BLDG CORRIDOR | | 2,600 | 2 | 24T8 | 59 W | 0.12 KW | 307 KWH | 2 | LB24LP | 39 W | 0.08 KW | 203 KWH | 0 KWH | 203 KWH | | | 0.04 KW | 104 KWH | 0 KWH | 104 KWH |
| 553 | PUBLIC WORKS - ADMIN BUILDING | 1 | | TRAFFIC CONTROL | | 2,349 | 4 | 34T8 I/O | 89 W | 0.36 KW | 836 KWH | 4 | L34 | 67 W | 0.27 KW | 630 KWH | 0 KWH | 630 KWH | | | 0.09 KW | 207 KWH | 0 KWH | 207 KWH |
| 554 | PUBLIC WORKS - ADMIN BUILDING | 1 | | | | 2,349 | 4 | 34T8 I/O | 89 W | 0.36 KW | 836 KWH | 4 | L34 | 67 W | 0.27 KW | 630 KWH | 0 KWH | 630 KWH | | | 0.09 KW | 207 KWH | 0 KWH | 207 KWH |
| 555 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 2 | 34T8 I/O | 89 W | 0.18 KW | 418 KWH | 2 | L34 | 67 W | 0.13 KW | 315 KWH | 0 KWH | 315 KWH | | | 0.04 KW | 103 KWH | 0 KWH | 103 KWH |
| 556 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 4 | 34T8 I/O | 89 W | 0.36 KW | 836 KWH | 4 | L34 | 67 W | 0.27 KW | 630 KWH | 0 KWH | 630 KWH | | | 0.09 KW | 207 KWH | 0 KWH | 207 KWH |
| 557 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 2 | 34T8 | 87 W | 0.17 KW | 409 KWH | 2 | LB34LP | 57 W | 0.11 KW | 268 KWH | 0 KWH | 268 KWH | | | 0.06 KW | 141 KWH | 0 KWH | 141 KWH |
| 558 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 2 | 34T8 | 87 W | 0.17 KW | 409 KWH | 2 | LB34LP | 57 W | 0.11 KW | 268 KWH | 0 KWH | 268 KWH | | | 0.06 KW | 141 KWH | 0 KWH | 141 KWH |
| 559 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 19 | 24T8 | 59 W | 1.12 KW | 2,633 KWH | 19 | LB24LP | 39 W | 0.74 KW | 1,741 KWH | 0 KWH | 1,741 KWH | | | 0.38 KW | 893 KWH | 0 KWH | 893 KWH |
| 560 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 2 | 34T8 | 87 W | 0.17 KW | 409 KWH | 2 | LB34LP | 57 W | 0.11 KW | 268 KWH | 0 KWH | 268 KWH | | | 0.06 KW | 141 KWH | 0 KWH | 141 KWH |
| 561 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 2 | 34T8 | 87 W | 0.17 KW | 409 KWH | 2 | LB34LP | 57 W | 0.11 KW | 268 KWH | 0 KWH | 268 KWH | | | 0.06 KW | 141 KWH | 0 KWH | 141 KWH |
| 562 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 2 | 34T8 | 87 W | 0.17 KW | 409 KWH | 2 | LB34LP | 57 W | 0.11 KW | 268 KWH | 0 KWH | 268 KWH | | | 0.06 KW | 141 KWH | 0 KWH | 141 KWH |
| 563 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 4 | 34T8 | 87 W | 0.35 KW | 817 KWH | 4 | LB34LP | 57 W | 0.23 KW | 536 KWH | 0 KWH | 536 KWH | | | 0.12 KW | 282 KWH | 0 KWH | 282 KWH |
| 564 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 4 | 34T8 | 87 W | 0.35 KW | 817 KWH | 4 | LB34LP | 57 W | 0.23 KW | 536 KWH | 0 KWH | 536 KWH | | | 0.12 KW | 282 KWH | 0 KWH | 282 KWH |
| 565 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 4 | 34T8 I/O | 89 W | 0.36 KW | 836 KWH | 4 | L34 | 67 W | 0.27 KW | 630 KWH | 0 KWH | 630 KWH | | | 0.09 KW | 207 KWH | 0 KWH | 207 KWH |
| 566 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 2 | 34T8 | 87 W | 0.17 KW | 409 KWH | 2 | LB34LP | 57 W | 0.11 KW | 268 KWH | 0 KWH | 268 KWH | | | 0.06 KW | 141 KWH | 0 KWH | 141 KWH |
| 567 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 4 | 34T8 I/O | 89 W | 0.36 KW | 836 KWH | 4 | L34 | 67 W | 0.27 KW | 630 KWH | 0 KWH | 630 KWH | | | 0.09 KW | 207 KWH | 0 KWH | 207 KWH |
| 568 | PUBLIC WORKS - ADMIN BUILDING | 1 | | CONFERENCE | | 2,349 | 3 | 34T8 I/O | 89 W | 0.27 KW | 627 KWH | 3 | L34 | 67 W | 0.20 KW | 472 KWH | 0 KWH | 472 KWH | | | 0.07 KW | 155 KWH | 0 KWH | 155 KWH |
| 569 | PUBLIC WORKS - ADMIN BUILDING | 1 | | CONFERENCE | | 2,349 | 12 | PL26X2 | 64 W | 0.77 KW | 1,804 KWH | 12 | EXTR | 64 W | 0.77 KW | 1,804 KWH | 0 KWH | 1,804 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 570 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 2 | 44EE | 144 W | 0.29 KW | 677 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 282 KWH | 0 KWH | 282 KWH | | | 0.17 KW | 395 KWH | 0 KWH | 395 KWH |
| 571 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 4 | 34T8 | 87 W | 0.35 KW | 817 KWH | 4 | LB34LP | 57 W | 0.23 KW | 536 KWH | 0 KWH | 536 KWH | | | 0.12 KW | 282 KWH | 0 KWH | 282 KWH |
| 572 | PUBLIC WORKS - ADMIN BUILDING | 1 | | IT ROOM | | 2,349 | 1 | 44T8 | 114 W | 0.11 KW | 268 KWH | 1 | L44 | 88 W | 0.09 KW | 207 KWH | 0 KWH | 207 KWH | | | 0.03 KW | 61 KWH | 0 KWH | 61 KWH |
| 573 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 2 | 34T8 | 87 W | 0.17 KW | 409 KWH | 2 | LB34LP | 57 W | 0.11 KW | 268 KWH | 0 KWH | 268 KWH | | | 0.06 KW | 141 KWH | 0 KWH | 141 KWH |
| 574 | PUBLIC WORKS - ADMIN BUILDING | 1 | | MENS TOILET | | 5,459 | 2 | 34T8 | 87 W | 0.17 KW | 950 KWH | 2 | LB34LP | 57 W | 0.11 KW | 622 KWH | 0 KWH | 622 KWH | | | 0.06 KW | 328 KWH | 0 KWH | 328 KWH |
| 575 | PUBLIC WORKS - ADMIN BUILDING | 1 | | WOMENS TOILET | | 5,459 | 2 | 34T8 | 87 W | 0.17 KW | 950 KWH | 2 | LB34LP | 57 W | 0.11 KW | 622 KWH | 0 KWH | 622 KWH | | | 0.06 KW | 328 KWH | 0 KWH | 328 KWH |
| 576 | PUBLIC WORKS - ADMIN BUILDING | 1 | | BREAK ROOM | | 2,349 | 2 | 34T8 | 87 W | 0.17 KW | 409 KWH | 2 | LB34LP | 57 W | 0.11 KW | 268 KWH | 0 KWH | 268 KWH | | | 0.06 KW | 141 KWH | 0 KWH | 141 KWH |
| 577 | PUBLIC WORKS - ADMIN BUILDING | 1 | | CORRIDOR | | 2,600 | 4 | 24UEE | 72 W | 0.29 KW | 749 KWH | 4 | LB22REF | 30 W | 0.12 KW | 312 KWH | 0 KWH | 312 KWH | | | 0.17 KW | 437 KWH | 0 KWH | 437 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 578 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 4 | 34T8 I/O | 89 W | 0.36 KW | 836 KWH | 4 | L34 | 67 W | 0.27 KW | 630 KWH | 0 KWH | 630 KWH | | | 0.09 KW | 207 KWH | 0 KWH | 207 KWH |
| 579 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 2 | 34T8 | 87 W | 0.17 KW | 409 KWH | 2 | LB34LP | 57 W | 0.11 KW | 268 KWH | 0 KWH | 268 KWH | | | 0.06 KW | 141 KWH | 0 KWH | 141 KWH |
| 580 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 2 | 34T8 I/O | 89 W | 0.18 KW | 418 KWH | 2 | L34 | 67 W | 0.13 KW | 315 KWH | 0 KWH | 315 KWH | | | 0.04 KW | 103 KWH | 0 KWH | 103 KWH |
| 581 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 2 | 34T8 | 87 W | 0.17 KW | 409 KWH | 2 | LB34LP | 57 W | 0.11 KW | 268 KWH | 0 KWH | 268 KWH | | | 0.06 KW | 141 KWH | 0 KWH | 141 KWH |
| 582 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 6 | 34T8 I/O | 89 W | 0.53 KW | 1,254 KWH | 6 | L34 | 67 W | 0.40 KW | 944 KWH | 0 KWH | 944 KWH | | | 0.13 KW | 310 KWH | 0 KWH | 310 KWH |
| 583 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 5 | 44EE | 144 W | 0.72 KW | 1,691 KWH | 5 | LB24HPDL | 60 W | 0.30 KW | 705 KWH | 0 KWH | 705 KWH | | | 0.42 KW | 987 KWH | 0 KWH | 987 KWH |
| 584 | PUBLIC WORKS - ADMIN BUILDING | 1 | | COPY ROOM | | 2,349 | 1 | 44EE | 144 W | 0.14 KW | 338 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 141 KWH | 0 KWH | 141 KWH | | | 0.08 KW | 197 KWH | 0 KWH | 197 KWH |
| 585 | PUBLIC WORKS - ADMIN BUILDING | 1 | | | | 8,760 | 1 | SNACK | 100 W | 0.10 KW | 876 KWH | 1 | EXTR | 100 W | 0.10 KW | 876 KWH | 0 KWH | 876 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 586 | PUBLIC WORKS - ADMIN BUILDING | 1 | | | | 8,760 | 3 | DRINK | 400 W | 1.20 KW | 10,512 KWH | 3 | EXTR | 400 W | 1.20 KW | 10,512 KWH | 0 KWH | 10,512 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 587 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OPEN ROOM | | 2,964 | 20 | 250MH | 295 W | 5.90 KW | 17,488 KWH | 20 | NF3-244HP | 144 W | 2.88 KW | 8,536 KWH | 0 KWH | 8,536 KWH | | | 3.02 KW | 8,951 KWH | 0 KWH | 8,951 KWH |
| 588 | PUBLIC WORKS - ADMIN BUILDING | 1 | | JANITOR CLOSET | | 1,000 | 2 | 34EE | 115 W | 0.23 KW | 230 KWH | 2 | LB34LP | 57 W | 0.11 KW | 114 KWH | 0 KWH | 114 KWH | | | 0.12 KW | 116 KWH | 0 KWH | 116 KWH |
| 589 | PUBLIC WORKS - ADMIN BUILDING | 1 | | MENS TOILET | | 3,324 | 5 | 24EE | 72 W | 0.36 KW | 1,197 KWH | 5 | LB24LP | 39 W | 0.20 KW | 648 KWH | 0 KWH | 648 KWH | | | 0.17 KW | 548 KWH | 0 KWH | 548 KWH |
| 590 | PUBLIC WORKS - ADMIN BUILDING | 1 | | TOILET | | 5,459 | 1 | 24EE | 72 W | 0.07 KW | 393 KWH | 1 | LB24LP | 39 W | 0.04 KW | 213 KWH | 0 KWH | 213 KWH | | | 0.03 KW | 180 KWH | 0 KWH | 180 KWH |
| 591 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 1 | 34T8 | 87 W | 0.09 KW | 204 KWH | 1 | LB34LP | 57 W | 0.06 KW | 134 KWH | 0 KWH | 134 KWH | | | 0.03 KW | 70 KWH | 0 KWH | 70 KWH |
| 592 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 2 | 34T8 | 87 W | 0.17 KW | 409 KWH | 2 | LB34LP | 57 W | 0.11 KW | 268 KWH | 0 KWH | 268 KWH | | | 0.06 KW | 141 KWH | 0 KWH | 141 KWH |
| 593 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 2 | 34T8 | 87 W | 0.17 KW | 409 KWH | 2 | LB34LP | 57 W | 0.11 KW | 268 KWH | 0 KWH | 268 KWH | | | 0.06 KW | 141 KWH | 0 KWH | 141 KWH |
| 594 | PUBLIC WORKS - ADMIN BUILDING | 1 | | OFFICE | | 2,349 | 1 | 34T8 | 87 W | 0.09 KW | 204 KWH | 1 | LB34LP | 57 W | 0.06 KW | 134 KWH | 0 KWH | 134 KWH | | | 0.03 KW | 70 KWH | 0 KWH | 70 KWH |
| 595 | PUBLIC WORKS - ADMIN BUILDING | 1 | | CORRIDOR | | 2,600 | 1 | 34T8 | 87 W | 0.09 KW | 226 KWH | 1 | LB34LP | 57 W | 0.06 KW | 148 KWH | 0 KWH | 148 KWH | | | 0.03 KW | 78 KWH | 0 KWH | 78 KWH |
| 596 | PUBLIC WORKS - ADMIN BUILDING | 1 | | CORRIDOR | | 2,600 | 2 | 24T8 | 59 W | 0.12 KW | 307 KWH | 2 | LB24LP | 39 W | 0.08 KW | 203 KWH | 0 KWH | 203 KWH | | | 0.04 KW | 104 KWH | 0 KWH | 104 KWH |
| 595.01 | Public Works - SHOPS | 1 | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 20 | 70S | 91 W | 1.82 KW | 7,280 KWH | 20 | NF24-1X42 CUTOFF | 46 W | 0.92 KW | 3,680 KWH | 0 KWH | 3,680 KWH | | | 0.90 KW | 3,600 KWH | 0 KWH | 3,600 KWH |
| 595.02 | Public Works - SHOPS | 1 | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 5 | 150S | 188 W | 0.94 KW | 3,760 KWH | 5 | SP-LED WALLPACK-100 | 57 W | 0.29 KW | 1,140 KWH | 0 KWH | 1,140 KWH | | | 0.66 KW | 2,620 KWH | 0 KWH | 2,620 KWH |
| 597 | South Greenville Rec Center Building | 1 | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 6 | 70S | 91 W | 0.55 KW | 2,184 KWH | 6 | NF16-2X26 | 54 W | 0.32 KW | 1,296 KWH | 0 KWH | 1,296 KWH | | | 0.22 KW | 888 KWH | 0 KWH | 888 KWH |
| 598 | South Greenville Rec Center Building | 1 | | DAY ROOM | | 2,856 | 16 | 24EE | 72 W | 1.15 KW | 3,290 KWH | 16 | LB24LP | 39 W | 0.62 KW | 1,782 KWH | -356 KWH | 1,426 KWH | 20% | X | 0.53 KW | 1,508 KWH | 356 KWH | 1,864 KWH |
| 599 | South Greenville Rec Center Building | 1 | | OFFICE | | 3,000 | 2 | 24EE | 72 W | 0.14 KW | 432 KWH | 2 | LB24LP | 39 W | 0.08 KW | 234 KWH | -70 KWH | 164 KWH | 30% | X | 0.07 KW | 198 KWH | 70 KWH | 268 KWH |
| 600 | South Greenville Rec Center Building | 1 | | CLASSROOM | | 929 | 8 | 24EE | 72 W | 0.58 KW | 535 KWH | 8 | LB24LP | 39 W | 0.31 KW | 290 KWH | -58 KWH | 232 KWH | 20% | X | 0.26 KW | 245 KWH | 58 KWH | 303 KWH |
| 601 | South Greenville Rec Center Building | 1 | | TOILET | | 3,967 | 1 | 44T8 | 114 W | 0.11 KW | 452 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 238 KWH | 0 KWH | 238 KWH | | | 0.05 KW | 214 KWH | 0 KWH | 214 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 602 | South Greenville Rec Center Building | 1 | | KITCHEN | | 1,800 | 2 | 44T8 | 114 W | 0.23 KW | 410 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 216 KWH | 0 KWH | 216 KWH | | | 0.11 KW | 194 KWH | 0 KWH | 194 KWH |
| 603 | South Greenville Rec Center Building | 1 | | STORAGE | | 1,000 | 2 | 24EE | 72 W | 0.14 KW | 144 KWH | 2 | LB24LP | 39 W | 0.08 KW | 78 KWH | 0 KWH | 78 KWH | | | 0.07 KW | 66 KWH | 0 KWH | 66 KWH |
| 604 | South Greenville Rec Center Building | 1 | | CORRIDOR | | 3,917 | 6 | 44EE | 144 W | 0.86 KW | 3,384 KWH | 6 | LB24HPDL | 60 W | 0.36 KW | 1,410 KWH | 0 KWH | 1,410 KWH | | | 0.50 KW | 1,974 KWH | 0 KWH | 1,974 KWH |
| 605 | South Greenville Rec Center Building | 1 | | OFFICE | | 3,000 | 3 | 44EE | 144 W | 0.43 KW | 1,296 KWH | 3 | LB24HPDL | 60 W | 0.18 KW | 540 KWH | -162 KWH | 378 KWH | 30% | X | 0.25 KW | 756 KWH | 162 KWH | 918 KWH |
| 606 | South Greenville Rec Center Building | 1 | | WEIGHT ROOM | | 2,856 | 6 | 28SLSE | 131 W | 0.79 KW | 2,245 KWH | 6 | LB24HP-STP | 60 W | 0.36 KW | 1,028 KWH | -206 KWH | 823 KWH | 20% | X | 0.43 KW | 1,217 KWH | 206 KWH | 1,422 KWH |
| 607 | South Greenville Rec Center Building | 1 | | MENS TOILET | | 3,967 | 6 | 44EE | 144 W | 0.86 KW | 3,427 KWH | 6 | LB24HPDL | 60 W | 0.36 KW | 1,428 KWH | -500 KWH | 928 KWH | 35% | X | 0.50 KW | 1,999 KWH | 500 KWH | 2,499 KWH |
| 608 | South Greenville Rec Center Building | 1 | | GYM | | 3,666 | 24 | 400MH | 458 W | 10.99 KW | 40,297 KWH | 24 | NF28-44HO-OS | 241 W | 5.78 KW | 21,204 KWH | -2,120 KWH | 19,084 KWH | 10% | | 5.21 KW | 19,093 KWH | 2,120 KWH | 21,213 KWH |
| 609 | South Greenville Rec Center Building | 1 | | STORAGE | | 1,000 | 1 | 24T8 | 59 W | 0.06 KW | 59 KWH | 1 | EXTR | 59 W | 0.06 KW | 59 KWH | 0 KWH | 59 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 610 | South Greenville Rec Center Building | 1 | | POLICE ROOM | | 3,000 | 2 | 24EE | 72 W | 0.14 KW | 432 KWH | 2 | LB24LP | 39 W | 0.08 KW | 234 KWH | 0 KWH | 234 KWH | | | 0.07 KW | 198 KWH | 0 KWH | 198 KWH |
| 611 | South Greenville Rec Center Building | 1 | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 8 | EXIT PL7 | 22 W | 0.18 KW | 704 KWH | 8 | NF1-BATT | 4 W | 0.03 KW | 128 KWH | 0 KWH | 128 KWH | | | 0.14 KW | 576 KWH | 0 KWH | 576 KWH |
| 612 | South Greenville Rec Center Building | 1 | | WOMENS TOILET | | 3,967 | 5 | 44EE | 144 W | 0.72 KW | 2,856 KWH | 5 | LB24HPDL | 60 W | 0.30 KW | 1,190 KWH | -417 KWH | 774 KWH | 35% | X | 0.42 KW | 1,666 KWH | 417 KWH | 2,083 KWH |
| 613 | South Greenville Rec Center Building | 1 | | EXTERIOR - POLE MOUNTED | | 4,000 | 3 | 250M | 285 W | 0.86 KW | 3,420 KWH | 3 | SP-LED SHOEBOX-250 | 110 W | 0.33 KW | 1,320 KWH | 0 KWH | 1,320 KWH | | | 0.53 KW | 2,100 KWH | 0 KWH | 2,100 KWH |
| 614 | Evans Park Building | 1 | | EXTERIOR - LANDSCAPE FLOODS | | 4,000 | 11 | 100MH | 130 W | 1.43 KW | 5,720 KWH | 11 | EXTR | 130 W | 1.43 KW | 5,720 KWH | 0 KWH | 5,720 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 615 | Evans Park Building | 1 | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 17 | PL13 | 16 W | 0.27 KW | 1,088 KWH | 17 | EXTR | 16 W | 0.27 KW | 1,088 KWH | 0 KWH | 1,088 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 616 | Evans Park Building | 1 | | ABOVE COUNTER | | 520 | 3 | 14T8 | 30 W | 0.09 KW | 47 KWH | 3 | L14 | 24 W | 0.07 KW | 37 KWH | 0 KWH | 37 KWH | | | 0.02 KW | 9 KWH | 0 KWH | 9 KWH |
| 617 | Evans Park Building | 1 | | STAFF | | 521 | 4 | 24T8 | 59 W | 0.24 KW | 123 KWH | 4 | L24 | 46 W | 0.18 KW | 96 KWH | 0 KWH | 96 KWH | | | 0.05 KW | 27 KWH | 0 KWH | 27 KWH |
| 618 | Evans Park Building | 1 | | LOBBY | | 2,520 | 7 | 4 BIAX | 110 W | 0.77 KW | 1,940 KWH | 7 | EXTR | 110 W | 0.77 KW | 1,940 KWH | -1,164 KWH | 776 KWH | 60% | X | 0.00 KW | 0 KWH | 1,164 KWH | 1,164 KWH |
| 619 | Evans Park Building | 1 | | | | 520 | 4 | 24UT8 | 59 W | 0.24 KW | 123 KWH | 4 | LB22REF | 30 W | 0.12 KW | 62 KWH | 0 KWH | 62 KWH | | | 0.12 KW | 60 KWH | 0 KWH | 60 KWH |
| 620 | Evans Park Building | 1 | | MENS TOILET | | 2,521 | 5 | 24UT8 | 59 W | 0.30 KW | 744 KWH | 5 | EXTR | 59 W | 0.30 KW | 744 KWH | -372 KWH | 372 KWH | 50% | X | 0.00 KW | 0 KWH | 372 KWH | 372 KWH |
| 621 | Evans Park Building | 1 | | MENS TOILET | | 2,521 | 2 | 14T8 | 30 W | 0.06 KW | 151 KWH | 2 | L14 | 24 W | 0.05 KW | 121 KWH | 0 KWH | 121 KWH | | | 0.01 KW | 30 KWH | 0 KWH | 30 KWH |
| 622 | Evans Park Building | 1 | | MENS TOILET | | 2,521 | 2 | 24T8 | 59 W | 0.12 KW | 297 KWH | 2 | LB24LP | 39 W | 0.08 KW | 197 KWH | -98 KWH | 98 KWH | 50% | | 0.04 KW | 101 KWH | 98 KWH | 199 KWH |
| 623 | Evans Park Building | 1 | | WOMENS TOILET | | 2,521 | 5 | 24UT8 | 59 W | 0.30 KW | 744 KWH | 5 | EXTR | 59 W | 0.30 KW | 744 KWH | -372 KWH | 372 KWH | 50% | X | 0.00 KW | 0 KWH | 372 KWH | 372 KWH |
| 624 | Evans Park Building | 1 | | WOMENS TOILET | | 2,521 | 2 | 14T8 | 30 W | 0.06 KW | 151 KWH | 2 | L14 | 24 W | 0.05 KW | 121 KWH | 0 KWH | 121 KWH | | | 0.01 KW | 30 KWH | 0 KWH | 30 KWH |
| 625 | Evans Park Building | 1 | | WOMENS TOILET | | 2,521 | 2 | 24T8 | 59 W | 0.12 KW | 297 KWH | 2 | LB24LP | 39 W | 0.08 KW | 197 KWH | -98 KWH | 98 KWH | 50% | | 0.04 KW | 101 KWH | 98 KWH | 199 KWH |
| 628 | Evans Park Building | EXT | | TOILET | | 2,521 | 2 | 24UT8 | 59 W | 0.12 KW | 297 KWH | 2 | LB22REF | 30 W | 0.06 KW | 151 KWH | 0 KWH | 151 KWH | | | 0.06 KW | 146 KWH | 0 KWH | 146 KWH |
| 629 | Evans Park Building | EXT | | STORAGE | | 5,201 | 2 | 44T8 | 114 W | 0.23 KW | 1,186 KWH | 2 | LB24DL | 43 W | 0.09 KW | 447 KWH | -179 KWH | 268 KWH | 40% | X | 0.14 KW | 739 KWH | 179 KWH | 917 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 630 | Evans Park Building | EXT | | TOILET | | 2,521 | 2 | 24UT8 | 59 W | 0.12 KW | 297 KWH | 2 | LB22REF | 30 W | 0.06 KW | 151 KWH | 0 KWH | 151 KWH | | | 0.06 KW | 146 KWH | 0 KWH | 146 KWH |
| 631 | Evans Park Building | EXT | | WOMENS TOILET | | 2,521 | 2 | 44T8 | 114 W | 0.23 KW | 575 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 303 KWH | 0 KWH | 303 KWH | | | 0.11 KW | 272 KWH | 0 KWH | 272 KWH |
| 632 | Evans Park Building | EXT | | MENS TOILET | | 2,521 | 2 | 44T8 | 114 W | 0.23 KW | 575 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 303 KWH | 0 KWH | 303 KWH | | | 0.11 KW | 272 KWH | 0 KWH | 272 KWH |
| 633 | Evans Park Building | EXT | | STORAGE | | 5,201 | 1 | 44T8 | 114 W | 0.11 KW | 593 KWH | 1 | LB24DL | 43 W | 0.04 KW | 224 KWH | -89 KWH | 134 KWH | 40% | X | 0.07 KW | 369 KWH | 89 KWH | 459 KWH |
| 634 | Elm Street Recreation Center | 1 | | OPEN ROOM | | 3,000 | 15 | 44EE | 144 W | 2.16 KW | 6,480 KWH | 15 | LB24HPDL | 60 W | 0.90 KW | 2,700 KWH | -270 KWH | 2,430 KWH | 10% | X | 1.26 KW | 3,780 KWH | 270 KWH | 4,050 KWH |
| 635 | Elm Street Recreation Center | 1 | | CORRIDOR | | 2,600 | 1 | 24UEE | 72 W | 0.07 KW | 187 KWH | 1 | LB22REF | 30 W | 0.03 KW | 78 KWH | 0 KWH | 78 KWH | | | 0.04 KW | 109 KWH | 0 KWH | 109 KWH |
| 636 | Elm Street Recreation Center | 1 | | MENS TOILET | | 3,311 | 2 | 44EE | 144 W | 0.29 KW | 954 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 397 KWH | -199 KWH | 199 KWH | 50% | X | 0.17 KW | 556 KWH | 199 KWH | 755 KWH |
| 637 | Elm Street Recreation Center | 1 | | CORRIDOR | | 2,600 | 1 | 24UEE | 72 W | 0.07 KW | 187 KWH | 1 | LB22REF | 30 W | 0.03 KW | 78 KWH | 0 KWH | 78 KWH | | | 0.04 KW | 109 KWH | 0 KWH | 109 KWH |
| 638 | Elm Street Recreation Center | 1 | | WOMENS TOILET | | 3,311 | 2 | 44EE | 144 W | 0.29 KW | 954 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 397 KWH | -199 KWH | 199 KWH | 50% | X | 0.17 KW | 556 KWH | 199 KWH | 755 KWH |
| 639 | Elm Street Recreation Center | 1 | | STORAGE | | 1,000 | 1 | 44EE | 144 W | 0.14 KW | 144 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 60 KWH | 0 KWH | 60 KWH | | | 0.08 KW | 84 KWH | 0 KWH | 84 KWH |
| 640 | Elm Street Recreation Center | 1 | | OFFICE | | 3,000 | 2 | 44EE | 144 W | 0.29 KW | 864 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 360 KWH | 0 KWH | 360 KWH | | | 0.17 KW | 504 KWH | 0 KWH | 504 KWH |
| 641 | Elm Street Recreation Center | 1 | | BOILER ROOM | | 2,400 | 1 | 44EE | 144 W | 0.14 KW | 346 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 144 KWH | 0 KWH | 144 KWH | | | 0.08 KW | 202 KWH | 0 KWH | 202 KWH |
| 642 | Elm Street Recreation Center | 1 | | | | 8,760 | 3 | EXIT PL7 | 22 W | 0.07 KW | 578 KWH | 3 | NF1-BATT | 4 W | 0.01 KW | 105 KWH | 0 KWH | 105 KWH | | | 0.05 KW | 473 KWH | 0 KWH | 473 KWH |
| 643 | Elm Street Recreation Center | 1 | | CONCESSION STAND | | 3,000 | 3 | 44EE | 144 W | 0.43 KW | 1,296 KWH | 3 | LB24HPDL | 60 W | 0.18 KW | 540 KWH | 0 KWH | 540 KWH | | | 0.25 KW | 756 KWH | 0 KWH | 756 KWH |
| 644 | Elm Street Recreation Center | 1 | | MENS TOILET | | 3,311 | 2 | 24T8 | 59 W | 0.12 KW | 391 KWH | 2 | L24 | 46 W | 0.09 KW | 305 KWH | 0 KWH | 305 KWH | | | 0.03 KW | 86 KWH | 0 KWH | 86 KWH |
| 645 | Elm Street Recreation Center | 1 | | WOMENS TOILET | | 3,311 | 2 | 24T8 | 59 W | 0.12 KW | 391 KWH | 2 | L24 | 46 W | 0.09 KW | 305 KWH | 0 KWH | 305 KWH | | | 0.03 KW | 86 KWH | 0 KWH | 86 KWH |
| 646 | Elm Street Recreation Center | 1 | | SNACK BAR | | 3,000 | 3 | 24T8 | 59 W | 0.18 KW | 531 KWH | 3 | L24 | 46 W | 0.14 KW | 414 KWH | 0 KWH | 414 KWH | | | 0.04 KW | 117 KWH | 0 KWH | 117 KWH |
| 647 | Elm Street Recreation Center | 1 | | STORAGE | | 1,000 | 3 | 24T8 | 59 W | 0.18 KW | 177 KWH | 3 | L24 | 46 W | 0.14 KW | 138 KWH | 0 KWH | 138 KWH | | | 0.04 KW | 39 KWH | 0 KWH | 39 KWH |
| 648 | Jaycee Park Building | 1 | | LOBBY | | 2,600 | 4 | 34T8 | 87 W | 0.35 KW | 905 KWH | 4 | LB24DL | 43 W | 0.17 KW | 447 KWH | 0 KWH | 447 KWH | | | 0.18 KW | 458 KWH | 0 KWH | 458 KWH |
| 649 | Jaycee Park Building | 1 | | STORAGE | | 1,000 | 1 | 34T8 | 87 W | 0.09 KW | 87 KWH | 1 | L34 | 67 W | 0.07 KW | 67 KWH | 0 KWH | 67 KWH | | | 0.02 KW | 20 KWH | 0 KWH | 20 KWH |
| 650 | Jaycee Park Building | 1 | 201 | OFFICE | | 1,450 | 2 | 34T8 | 87 W | 0.17 KW | 252 KWH | 2 | L34 | 67 W | 0.13 KW | 194 KWH | -39 KWH | 155 KWH | 20% | X | 0.04 KW | 58 KWH | 39 KWH | 97 KWH |
| 651 | Jaycee Park Building | 1 | 202 | OFFICE | | 2,239 | 3 | 34T8 | 87 W | 0.26 KW | 584 KWH | 3 | L34 | 67 W | 0.20 KW | 450 KWH | -90 KWH | 360 KWH | 20% | X | 0.06 KW | 134 KWH | 90 KWH | 224 KWH |
| 652 | Jaycee Park Building | 1 | 207 | CLASSROOM | | 1,144 | 6 | 38HOSE | 362 W | 2.17 KW | 2,485 KWH | 6 | CR84HP | 124 W | 0.74 KW | 851 KWH | 0 KWH | 851 KWH | | | 1.43 KW | 1,634 KWH | 0 KWH | 1,634 KWH |
| 653 | Jaycee Park Building | 1 | 203 | CLASSROOM | | 1,144 | 6 | 34T8 | 87 W | 0.52 KW | 597 KWH | 6 | L34 | 67 W | 0.40 KW | 460 KWH | 0 KWH | 460 KWH | | | 0.12 KW | 137 KWH | 0 KWH | 137 KWH |
| 654 | Jaycee Park Building | 1 | 204A | CLASSROOM | | 1,144 | 6 | 38HOSE | 362 W | 2.17 KW | 2,485 KWH | 6 | CR84HP | 124 W | 0.74 KW | 851 KWH | 0 KWH | 851 KWH | | | 1.43 KW | 1,634 KWH | 0 KWH | 1,634 KWH |
| 655 | Jaycee Park Building | 1 | 206A | POTTERY | | 1,144 | 3 | 38HOSE | 362 W | 1.09 KW | 1,242 KWH | 3 | CR84HP | 124 W | 0.37 KW | 426 KWH | 0 KWH | 426 KWH | | | 0.71 KW | 817 KWH | 0 KWH | 817 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 656 | Jaycee Park Building | 1 | 205 | CLASSROOM | | 1,144 | 4 | 38HOSE | 362 W | 1.45 KW | 1,657 KWH | 4 | CR84HP | 124 W | 0.50 KW | 567 KWH | 0 KWH | 567 KWH | | | 0.95 KW | 1,089 KWH | 0 KWH | 1,089 KWH |
| 657 | Jaycee Park Building | 1 | | | | 8,760 | 1 | SNACK | 100 W | 0.10 KW | 876 KWH | 1 | EXTR | 100 W | 0.10 KW | 876 KWH | -350 KWH | 526 KWH | 40% | X | 0.00 KW | 0 KWH | 350 KWH | 350 KWH |
| 658 | Jaycee Park Building | 1 | | GIRLS TOILET | | 2,527 | 2 | 34T8 | 87 W | 0.17 KW | 440 KWH | 2 | LB24DL | 43 W | 0.09 KW | 217 KWH | -109 KWH | 109 KWH | 50% | X | 0.09 KW | 222 KWH | 109 KWH | 331 KWH |
| 659 | Jaycee Park Building | 1 | | MENS TOILET | | 2,527 | 2 | 34T8 | 87 W | 0.17 KW | 440 KWH | 2 | LB24DL | 43 W | 0.09 KW | 217 KWH | -109 KWH | 109 KWH | 50% | X | 0.09 KW | 222 KWH | 109 KWH | 331 KWH |
| 660 | Jaycee Park Building | 1 | | CORRIDOR | | 2,600 | 2 | PL26X2 | 64 W | 0.13 KW | 333 KWH | 2 | EXTR | 64 W | 0.13 KW | 333 KWH | 0 KWH | 333 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 661 | Jaycee Park Building | 1 | | SODA MACHINE | | 2,600 | 1 | 34T8 | 87 W | 0.09 KW | 226 KWH | 1 | LB24LPDL | 39 W | 0.04 KW | 101 KWH | 0 KWH | 101 KWH | | | 0.05 KW | 125 KWH | 0 KWH | 125 KWH |
| 662 | Jaycee Park Building | 1 | | CORRIDOR | | 2,600 | 5 | 34T8 | 87 W | 0.44 KW | 1,131 KWH | 5 | LB24LPDL | 39 W | 0.20 KW | 507 KWH | 0 KWH | 507 KWH | | | 0.24 KW | 624 KWH | 0 KWH | 624 KWH |
| 663 | Jaycee Park Building | 1 | 120C | OFFICE | | 2,239 | 6 | 44EE | 144 W | 0.86 KW | 1,934 KWH | 6 | LB24HPDL | 60 W | 0.36 KW | 806 KWH | -81 KWH | 725 KWH | 10% | X | 0.50 KW | 1,128 KWH | 81 KWH | 1,209 KWH |
| 664 | Jaycee Park Building | 1 | | OFFICE | | 1,450 | 2 | 44EE | 144 W | 0.29 KW | 418 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 174 KWH | -35 KWH | 139 KWH | 20% | X | 0.17 KW | 244 KWH | 35 KWH | 278 KWH |
| 665 | Jaycee Park Building | 1 | | OFFICE | | 2,239 | 2 | 44EE | 144 W | 0.29 KW | 645 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 269 KWH | -54 KWH | 215 KWH | 20% | X | 0.17 KW | 376 KWH | 54 KWH | 430 KWH |
| 666 | Jaycee Park Building | 1 | | OFFICE | | 2,239 | 2 | 44EE | 144 W | 0.29 KW | 645 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 269 KWH | -54 KWH | 215 KWH | 20% | X | 0.17 KW | 376 KWH | 54 KWH | 430 KWH |
| 667 | Jaycee Park Building | 1 | | OFFICE | | 2,239 | 2 | 44EE | 144 W | 0.29 KW | 645 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 269 KWH | -54 KWH | 215 KWH | 20% | X | 0.17 KW | 376 KWH | 54 KWH | 430 KWH |
| 668 | Jaycee Park Building | 1 | | OFFICE | | 1,450 | 2 | 44EE | 144 W | 0.29 KW | 418 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 174 KWH | -35 KWH | 139 KWH | 20% | X | 0.17 KW | 244 KWH | 35 KWH | 278 KWH |
| 669 | Jaycee Park Building | 1 | | CORRIDOR | | 2,600 | 4 | 44EE | 144 W | 0.58 KW | 1,498 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 624 KWH | 0 KWH | 624 KWH | | | 0.34 KW | 874 KWH | 0 KWH | 874 KWH |
| 670 | Jaycee Park Building | 1 | | SHOWCASE | | 2,600 | 3 | 13SS | 46 W | 0.14 KW | 359 KWH | 3 | LB13 | 27 W | 0.08 KW | 211 KWH | 0 KWH | 211 KWH | | | 0.06 KW | 148 KWH | 0 KWH | 148 KWH |
| 671 | Jaycee Park Building | 1 | | CORRIDOR | | 2,600 | 6 | 44EE | 144 W | 0.86 KW | 2,246 KWH | 6 | LB24HPDL | 60 W | 0.36 KW | 936 KWH | 0 KWH | 936 KWH | | | 0.50 KW | 1,310 KWH | 0 KWH | 1,310 KWH |
| 672 | Jaycee Park Building | 1 | | SHOWCASE | | 2,600 | 3 | 13SS | 46 W | 0.14 KW | 359 KWH | 3 | LB13 | 27 W | 0.08 KW | 211 KWH | 0 KWH | 211 KWH | | | 0.06 KW | 148 KWH | 0 KWH | 148 KWH |
| 673 | Jaycee Park Building | 1 | | MENS TOILET | | 2,527 | 4 | 44EE | 144 W | 0.58 KW | 1,456 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 606 KWH | 0 KWH | 606 KWH | | | 0.34 KW | 849 KWH | 0 KWH | 849 KWH |
| 674 | Jaycee Park Building | 1 | | WOMENS TOILET | | 2,527 | 4 | 44EE | 144 W | 0.58 KW | 1,456 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 606 KWH | 0 KWH | 606 KWH | | | 0.34 KW | 849 KWH | 0 KWH | 849 KWH |
| 675 | Jaycee Park Building | 1 | | STAFF MENS TOILET | | 2,527 | 1 | 24UT8 | 59 W | 0.06 KW | 149 KWH | 1 | EXTR | 59 W | 0.06 KW | 149 KWH | 0 KWH | 149 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 676 | Jaycee Park Building | 1 | | STAFF WOMENS TOILET | | 2,527 | 1 | 24UT8 | 59 W | 0.06 KW | 149 KWH | 1 | EXTR | 59 W | 0.06 KW | 149 KWH | 0 KWH | 149 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 677 | Jaycee Park Building | 1 | | COPY ROOM | | 2,912 | 4 | 44EE | 144 W | 0.58 KW | 1,677 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 699 KWH | 0 KWH | 699 KWH | | | 0.34 KW | 978 KWH | 0 KWH | 978 KWH |
| 678 | Jaycee Park Building | 1 | | KITCHEN | | 1,800 | 1 | 44EE | 144 W | 0.14 KW | 259 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 108 KWH | 0 KWH | 108 KWH | | | 0.08 KW | 151 KWH | 0 KWH | 151 KWH |
| 679 | Jaycee Park Building | 1 | | CORRIDOR | | 2,600 | 5 | 24UT8 | 59 W | 0.30 KW | 767 KWH | 5 | LB22REF | 30 W | 0.15 KW | 390 KWH | 0 KWH | 390 KWH | | | 0.15 KW | 377 KWH | 0 KWH | 377 KWH |
| 680 | Jaycee Park Building | 1 | | CORRIDOR | | 2,600 | 1 | 44T8 | 114 W | 0.11 KW | 296 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 156 KWH | 0 KWH | 156 KWH | | | 0.05 KW | 140 KWH | 0 KWH | 140 KWH |
| 681 | Jaycee Park Building | 1 | | OFFICE | | 2,239 | 2 | 44EE | 144 W | 0.29 KW | 645 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 269 KWH | -54 KWH | 215 KWH | 20% | X | 0.17 KW | 376 KWH | 54 KWH | 430 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 682 | Jaycee Park Building | 1 | | WAR ROOM | | 2,239 | 8 | 44EE | 144 W | 1.15 KW | 2,579 KWH | 8 | LB24HPDL | 60 W | 0.48 KW | 1,075 KWH | -215 KWH | 860 KWH | 20% | X | 0.67 KW | 1,505 KWH | 215 KWH | 1,720 KWH |
| 683 | Jaycee Park Building | 1 | | OFFICE | | 2,239 | 4 | 44EE | 144 W | 0.58 KW | 1,290 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 537 KWH | 0 KWH | 537 KWH | | | 0.34 KW | 752 KWH | 0 KWH | 752 KWH |
| 684 | Jaycee Park Building | 1 | | BIG ACTIVITY ROOM | | 1,601 | 18 | 44EE | 144 W | 2.59 KW | 4,150 KWH | 18 | LB24HPDL | 60 W | 1.08 KW | 1,729 KWH | 0 KWH | 1,729 KWH | | | 1.51 KW | 2,421 KWH | 0 KWH | 2,421 KWH |
| 685 | Jaycee Park Building | 1 | | STAGE | | 1,000 | 8 | 44EE | 144 W | 1.15 KW | 1,152 KWH | 8 | LB24HPDL | 60 W | 0.48 KW | 480 KWH | 0 KWH | 480 KWH | | | 0.67 KW | 672 KWH | 0 KWH | 672 KWH |
| 686 | Jaycee Park Building | 1 | | STAGE | | 1,450 | 8 | 120 | 120 W | 0.96 KW | 1,392 KWH | 8 | CF23-DIMR40 | 23 W | 0.18 KW | 267 KWH | 0 KWH | 267 KWH | | | 0.78 KW | 1,125 KWH | 0 KWH | 1,125 KWH |
| 687 | Jaycee Park Building | 1 | | | | 8,760 | 12 | EXIT PL7 | 22 W | 0.26 KW | 2,313 KWH | 12 | NF1-BATT | 4 W | 0.05 KW | 420 KWH | 0 KWH | 420 KWH | | | 0.22 KW | 1,892 KWH | 0 KWH | 1,892 KWH |
| 688 | Sports Connection | 1 | | | | 3,476 | 6 | 44EE | 144 W | 0.86 KW | 3,003 KWH | 6 | LB24HPDL | 60 W | 0.36 KW | 1,251 KWH | 0 KWH | 1,251 KWH | | | 0.50 KW | 1,752 KWH | 0 KWH | 1,752 KWH |
| 689 | Sports Connection | 1 | | CORRIDOR | | 3,476 | 15 | 44EE | 144 W | 2.16 KW | 7,508 KWH | 15 | LB24HPDL | 60 W | 0.90 KW | 3,128 KWH | 0 KWH | 3,128 KWH | | | 1.26 KW | 4,380 KWH | 0 KWH | 4,380 KWH |
| 690 | Sports Connection | 1 | | JANITOR CLOSET | | 1,000 | 1 | 24UEE | 72 W | 0.07 KW | 72 KWH | 1 | LB22REF | 30 W | 0.03 KW | 30 KWH | 0 KWH | 30 KWH | | | 0.04 KW | 42 KWH | 0 KWH | 42 KWH |
| 691 | Sports Connection | 1 | | MECH | | 2,400 | 1 | 24UEE | 72 W | 0.07 KW | 173 KWH | 1 | LB22REF | 30 W | 0.03 KW | 72 KWH | 0 KWH | 72 KWH | | | 0.04 KW | 101 KWH | 0 KWH | 101 KWH |
| 692 | Sports Connection | 1 | | STORAGE | | 1,159 | 5 | 44EE | 144 W | 0.72 KW | 834 KWH | 5 | LB24HPDL | 60 W | 0.30 KW | 348 KWH | -174 KWH | 174 KWH | 50% | X | 0.42 KW | 487 KWH | 174 KWH | 661 KWH |
| 693 | Sports Connection | 1 | | STORAGE | | 1,159 | 1 | 65 | 65 W | 0.07 KW | 75 KWH | 1 | CF18 | 18 W | 0.02 KW | 21 KWH | 0 KWH | 21 KWH | | | 0.05 KW | 54 KWH | 0 KWH | 54 KWH |
| 694 | Sports Connection | 1 | | BASEBALL HITTING AREA | | 2,798 | 12 | 250MH | 295 W | 3.54 KW | 9,905 KWH | 12 | NF28-44HO-OS | 241 W | 2.89 KW | 8,092 KWH | -1,618 KWH | 6,473 KWH | 20% | | 0.65 KW | 1,813 KWH | 1,618 KWH | 3,431 KWH |
| 695 | Sports Connection | 1 | | GYM | | 2,798 | 9 | 250MH | 295 W | 2.66 KW | 7,429 KWH | 9 | NF28-44HO-OS | 241 W | 2.17 KW | 6,069 KWH | -1,214 KWH | 4,855 KWH | 20% | | 0.49 KW | 1,360 KWH | 1,214 KWH | 2,574 KWH |
| 696 | Sports Connection | 2 | | OPEN ROOM | | 546 | 13 | 44T8 | 114 W | 1.48 KW | 809 KWH | 13 | L44 | 88 W | 1.14 KW | 625 KWH | 0 KWH | 625 KWH | | | 0.34 KW | 185 KWH | 0 KWH | 185 KWH |
| 697 | Sports Connection | 2 | | MECH | | 2,400 | 1 | 28SLSE | 131 W | 0.13 KW | 314 KWH | 1 | LB24HP-STP | 60 W | 0.06 KW | 144 KWH | 0 KWH | 144 KWH | | | 0.07 KW | 170 KWH | 0 KWH | 170 KWH |
| 698 | Sports Connection | 2 | | MECH | | 2,400 | 1 | 28SLSE | 131 W | 0.13 KW | 314 KWH | 1 | LB24HP-STP | 60 W | 0.06 KW | 144 KWH | 0 KWH | 144 KWH | | | 0.07 KW | 170 KWH | 0 KWH | 170 KWH |
| 699 | Sports Connection | 2 | | STAIRS | | 546 | 1 | 14EE | 43 W | 0.04 KW | 23 KWH | 1 | LB14 | 25 W | 0.03 KW | 14 KWH | 0 KWH | 14 KWH | | | 0.02 KW | 10 KWH | 0 KWH | 10 KWH |
| 700 | Sports Connection | 1 | | OFFICE | | 3,000 | 6 | 44EE | 144 W | 0.86 KW | 2,592 KWH | 6 | LB24HPDL | 60 W | 0.36 KW | 1,080 KWH | 0 KWH | 1,080 KWH | | | 0.50 KW | 1,512 KWH | 0 KWH | 1,512 KWH |
| 700.1 | Sports Connection | 1 | | MEN'S | | 3,414 | 2 | 44EE | 144 W | 0.29 KW | 983 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 410 KWH | -164 KWH | 246 KWH | 40% | X | 0.17 KW | 574 KWH | 164 KWH | 737 KWH |
| 700.11 | Sports Connection | 1 | | WOMENS TOILET | | 3,414 | 2 | 44EE | 144 W | 0.29 KW | 983 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 410 KWH | -164 KWH | 246 KWH | 40% | X | 0.17 KW | 574 KWH | 164 KWH | 737 KWH |
| 701 | Gardner Training Center | 1 | | OPEN ROOM | | 1,000 | 15 | 44EE | 144 W | 2.16 KW | 2,160 KWH | 15 | LB24HPDL | 60 W | 0.90 KW | 900 KWH | -270 KWH | 630 KWH | 30% | X | 1.26 KW | 1,260 KWH | 270 KWH | 1,530 KWH |
| 702 | Gardner Training Center | 1 | | | | 1,000 | 10 | 65 | 65 W | 0.65 KW | 650 KWH | 10 | CF23-DIMR40 | 23 W | 0.23 KW | 230 KWH | -69 KWH | 161 KWH | 30% | | 0.42 KW | 420 KWH | 69 KWH | 489 KWH |
| 703 | Gardner Training Center | 1 | | CORRIDOR | | 2,600 | 2 | 60 | 60 W | 0.12 KW | 312 KWH | 2 | CF13 | 13 W | 0.03 KW | 68 KWH | 0 KWH | 68 KWH | | | 0.09 KW | 244 KWH | 0 KWH | 244 KWH |
| 704 | Gardner Training Center | 1 | | OFFICE | | 1,000 | 4 | 44EE | 144 W | 0.58 KW | 576 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 240 KWH | -48 KWH | 192 KWH | 20% | X | 0.34 KW | 336 KWH | 48 KWH | 384 KWH |
| 705 | Gardner Training Center | 1 | | OFFICE | | 1,000 | 6 | 44EE | 144 W | 0.86 KW | 864 KWH | 6 | LB24HPDL | 60 W | 0.36 KW | 360 KWH | -72 KWH | 288 KWH | 20% | X | 0.50 KW | 504 KWH | 72 KWH | 576 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 706 | Gardner Training Center | 1 | | TOILET | | 2,600 | 1 | 100X2 | 200 W | 0.20 KW | 520 KWH | 1 | CF23X2 | 46 W | 0.05 KW | 120 KWH | 0 KWH | 120 KWH | | | 0.15 KW | 400 KWH | 0 KWH | 400 KWH |
| 707 | Gardner Training Center | 1 | | TOILET | | 2,600 | 1 | 100 | 100 W | 0.10 KW | 260 KWH | 1 | CF23 | 23 W | 0.02 KW | 60 KWH | 0 KWH | 60 KWH | | | 0.08 KW | 200 KWH | 0 KWH | 200 KWH |
| 708 | Gardner Training Center | 1 | | TOILET | | 2,600 | 1 | 100 | 100 W | 0.10 KW | 260 KWH | 1 | CF23 | 23 W | 0.02 KW | 60 KWH | 0 KWH | 60 KWH | | | 0.08 KW | 200 KWH | 0 KWH | 200 KWH |
| 709 | Gardner Training Center | 1 | | TOILET | | 2,600 | 2 | 100 | 100 W | 0.20 KW | 520 KWH | 2 | CF23 | 23 W | 0.05 KW | 120 KWH | 0 KWH | 120 KWH | | | 0.15 KW | 400 KWH | 0 KWH | 400 KWH |
| 710 | Gardner Training Center | 1 | | STORAGE | | 1,000 | 1 | 100 | 100 W | 0.10 KW | 100 KWH | 1 | CF23 | 23 W | 0.02 KW | 23 KWH | 0 KWH | 23 KWH | | | 0.08 KW | 77 KWH | 0 KWH | 77 KWH |
| 711 | Gardner Training Center | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 2 | 100MH | 130 W | 0.26 KW | 1,040 KWH | 2 | SP-LED WALLPACK-100 | 57 W | 0.11 KW | 456 KWH | 0 KWH | 456 KWH | | | 0.15 KW | 584 KWH | 0 KWH | 584 KWH |
| 712 | Gardner Training Center | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 2 | 100 | 100 W | 0.20 KW | 800 KWH | 2 | CF23 | 23 W | 0.05 KW | 184 KWH | 0 KWH | 184 KWH | | | 0.15 KW | 616 KWH | 0 KWH | 616 KWH |
| 714 | H. Boyd Lee Park Buildings | 1 | | LOBBY | | 3,457 | 6 | 24T8 | 59 W | 0.35 KW | 1,224 KWH | 6 | LB24LP | 39 W | 0.23 KW | 809 KWH | 0 KWH | 809 KWH | | | 0.12 KW | 415 KWH | 0 KWH | 415 KWH |
| 715 | H. Boyd Lee Park Buildings | 1 | | | | 3,071 | 4 | PL26X2 | 64 W | 0.26 KW | 786 KWH | 4 | EXTR | 64 W | 0.26 KW | 786 KWH | 0 KWH | 786 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 716 | H. Boyd Lee Park Buildings | 1 | | | | 3,071 | 2 | 175MH | 210 W | 0.42 KW | 1,290 KWH | 2 | EXTR | 210 W | 0.42 KW | 1,290 KWH | 0 KWH | 1,290 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 717 | H. Boyd Lee Park Buildings | 1 | | CORRIDOR AT GYM | | 3,071 | 9 | 24T8 | 59 W | 0.53 KW | 1,631 KWH | 9 | LB24LP | 39 W | 0.35 KW | 1,078 KWH | 0 KWH | 1,078 KWH | | | 0.18 KW | 553 KWH | 0 KWH | 553 KWH |
| 718 | H. Boyd Lee Park Buildings | 1 | | GYM | | 3,956 | 32 | 44T5HO | 241 W | 7.71 KW | 30,509 KWH | 32 | EXTR | 241 W | 7.71 KW | 30,509 KWH | -3,051 KWH | 27,458 KWH | 10% | X | 0.00 KW | 0 KWH | 3,051 KWH | 3,051 KWH |
| 719 | H. Boyd Lee Park Buildings | 1 | | CORRIDR | | 52 | 10 | 150 | 150 W | 1.50 KW | 78 KWH | 10 | EXTR | 150 W | 1.50 KW | 78 KWH | 0 KWH | 78 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 720 | H. Boyd Lee Park Buildings | 1 | A | STORAGE | | 521 | 1 | 24T8 | 59 W | 0.06 KW | 31 KWH | 1 | EXTR | 59 W | 0.06 KW | 31 KWH | 0 KWH | 31 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 721 | H. Boyd Lee Park Buildings | 1 | B | STORAGE | | 521 | 1 | 24T8 | 59 W | 0.06 KW | 31 KWH | 1 | EXTR | 59 W | 0.06 KW | 31 KWH | 0 KWH | 31 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 722 | H. Boyd Lee Park Buildings | 1 | C | STORAGE | | 521 | 2 | 24T8 | 59 W | 0.12 KW | 61 KWH | 2 | EXTR | 59 W | 0.12 KW | 61 KWH | 0 KWH | 61 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 723 | H. Boyd Lee Park Buildings | 1 | | | | 8,760 | 2 | DRINK | 400 W | 0.80 KW | 7,008 KWH | 2 | EXTR | 400 W | 0.80 KW | 7,008 KWH | -2,803 KWH | 4,205 KWH | 40% | X | 0.00 KW | 0 KWH | 2,803 KWH | 2,803 KWH |
| 724 | H. Boyd Lee Park Buildings | 1 | | CORRIDOR | | 3,071 | 3 | 24T8 | 59 W | 0.18 KW | 544 KWH | 3 | LB24LP | 39 W | 0.12 KW | 359 KWH | 0 KWH | 359 KWH | | | 0.06 KW | 184 KWH | 0 KWH | 184 KWH |
| 725 | H. Boyd Lee Park Buildings | 1 | | BOYS TOILET | | 2,600 | 1 | 24T8 | 59 W | 0.06 KW | 153 KWH | 1 | LB24LP | 39 W | 0.04 KW | 101 KWH | -20 KWH | 81 KWH | 20% | | 0.02 KW | 52 KWH | 20 KWH | 72 KWH |
| 726 | H. Boyd Lee Park Buildings | 1 | | BOYS TOILET | | 2,600 | 2 | 24T8 | 59 W | 0.12 KW | 307 KWH | 2 | LB24LP | 39 W | 0.08 KW | 203 KWH | -41 KWH | 162 KWH | 20% | | 0.04 KW | 104 KWH | 41 KWH | 145 KWH |
| 727 | H. Boyd Lee Park Buildings | 1 | | BOYS TOILET | | 2,600 | 3 | 24T8 | 59 W | 0.18 KW | 460 KWH | 3 | LB24LP | 39 W | 0.12 KW | 304 KWH | -61 KWH | 243 KWH | 20% | X | 0.06 KW | 156 KWH | 61 KWH | 217 KWH |
| 728 | H. Boyd Lee Park Buildings | 1 | | GIRLS TOILET | | 2,600 | 1 | 24T8 | 59 W | 0.06 KW | 153 KWH | 1 | LB24LP | 39 W | 0.04 KW | 101 KWH | -20 KWH | 81 KWH | 20% | | 0.02 KW | 52 KWH | 20 KWH | 72 KWH |
| 729 | H. Boyd Lee Park Buildings | 1 | | GIRLS TOILET | | 2,600 | 2 | 24T8 | 59 W | 0.12 KW | 307 KWH | 2 | LB24LP | 39 W | 0.08 KW | 203 KWH | -41 KWH | 162 KWH | 20% | | 0.04 KW | 104 KWH | 41 KWH | 145 KWH |
| 730 | H. Boyd Lee Park Buildings | 1 | | GIRLS TOILET | | 2,600 | 4 | 24T8 | 59 W | 0.24 KW | 614 KWH | 4 | LB24LP | 39 W | 0.16 KW | 406 KWH | -81 KWH | 324 KWH | 20% | X | 0.08 KW | 208 KWH | 81 KWH | 289 KWH |
| 731 | H. Boyd Lee Park Buildings | 1 | | GIRLS TOILET | | 2,600 | 5 | 24T8 | 59 W | 0.30 KW | 767 KWH | 5 | LB24LP | 39 W | 0.20 KW | 507 KWH | 0 KWH | 507 KWH | | | 0.10 KW | 260 KWH | 0 KWH | 260 KWH |
| 732 | H. Boyd Lee Park Buildings | 1 | | CORRIDOR | | 3,071 | 7 | 24T8 | 59 W | 0.41 KW | 1,268 KWH | 7 | LB24LP | 39 W | 0.27 KW | 838 KWH | -252 KWH | 587 KWH | 30% | X | 0.14 KW | 430 KWH | 252 KWH | 681 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 733 | H. Boyd Lee Park Buildings | 1 | | OFFICE | | 3,000 | 2 | 34T8 I/O | 89 W | 0.18 KW | 534 KWH | 2 | L34 | 67 W | 0.13 KW | 402 KWH | -40 KWH | 362 KWH | 10% | X | 0.04 KW | 132 KWH | 40 KWH | 172 KWH |
| 734 | H. Boyd Lee Park Buildings | 1 | | MECH | | 2,400 | 2 | 34T8 I/O | 89 W | 0.18 KW | 427 KWH | 2 | L34 | 67 W | 0.13 KW | 322 KWH | -32 KWH | 289 KWH | 10% | X | 0.04 KW | 106 KWH | 32 KWH | 138 KWH |
| 735 | H. Boyd Lee Park Buildings | 1 | | OFFICE | | 3,000 | 2 | 34T8 I/O | 89 W | 0.18 KW | 534 KWH | 2 | L34 | 67 W | 0.13 KW | 402 KWH | -40 KWH | 362 KWH | 10% | X | 0.04 KW | 132 KWH | 40 KWH | 172 KWH |
| 736 | H. Boyd Lee Park Buildings | 1 | | WOMENS TOILET | | 52 | 1 | 24T8 | 59 W | 0.06 KW | 3 KWH | 1 | EXTR | 59 W | 0.06 KW | 3 KWH | 0 KWH | 3 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 737 | H. Boyd Lee Park Buildings | 1 | | TOILET | | 52 | 1 | 24T8 | 59 W | 0.06 KW | 3 KWH | 1 | EXTR | 59 W | 0.06 KW | 3 KWH | 0 KWH | 3 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 738 | H. Boyd Lee Park Buildings | 1 | | OFFICE | | 3,000 | 2 | 34T8 I/O | 89 W | 0.18 KW | 534 KWH | 2 | L34 | 67 W | 0.13 KW | 402 KWH | -40 KWH | 362 KWH | 10% | X | 0.04 KW | 132 KWH | 40 KWH | 172 KWH |
| 739 | H. Boyd Lee Park Buildings | 1 | | OFFICE | | 3,000 | 2 | 34T8 I/O | 89 W | 0.18 KW | 534 KWH | 2 | L34 | 67 W | 0.13 KW | 402 KWH | -40 KWH | 362 KWH | 10% | X | 0.04 KW | 132 KWH | 40 KWH | 172 KWH |
| 740 | H. Boyd Lee Park Buildings | 1 | | OFFICE | | 3,000 | 4 | 34T8 I/O | 89 W | 0.36 KW | 1,068 KWH | 4 | L34 | 67 W | 0.27 KW | 804 KWH | -80 KWH | 724 KWH | 10% | X | 0.09 KW | 264 KWH | 80 KWH | 344 KWH |
| 741 | H. Boyd Lee Park Buildings | 1 | | CONFERENCE A | | 3,000 | 16 | 34T8 I/O | 89 W | 1.42 KW | 4,272 KWH | 16 | L34 | 67 W | 1.07 KW | 3,216 KWH | 0 KWH | 3,216 KWH | | | 0.35 KW | 1,056 KWH | 0 KWH | 1,056 KWH |
| 742 | H. Boyd Lee Park Buildings | 1 | | CORRIDOR | | 52 | 8 | 150 | 150 W | 1.20 KW | 62 KWH | 8 | EXTR | 150 W | 1.20 KW | 62 KWH | 0 KWH | 62 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 743 | H. Boyd Lee Park Buildings | 1 | | STORAGE | | 521 | 4 | 24T8 | 59 W | 0.24 KW | 123 KWH | 4 | LB24LP | 39 W | 0.16 KW | 81 KWH | 0 KWH | 81 KWH | | | 0.08 KW | 42 KWH | 0 KWH | 42 KWH |
| 744 | H. Boyd Lee Park Buildings | 1 | | BAY WINDOW AREA | | 3,071 | 4 | 65 | 65 W | 0.26 KW | 798 KWH | 4 | CF18R30 | 18 W | 0.07 KW | 221 KWH | -88 KWH | 133 KWH | 40% | X | 0.19 KW | 577 KWH | 88 KWH | 666 KWH |
| 745 | H. Boyd Lee Park Buildings | 1 | | OUTSIDE TOILET GIRLS | | 2,600 | 4 | 24T8 | 59 W | 0.24 KW | 614 KWH | 4 | LB24LP | 39 W | 0.16 KW | 406 KWH | -81 KWH | 324 KWH | 20% | X | 0.08 KW | 208 KWH | 81 KWH | 289 KWH |
| 746 | H. Boyd Lee Park Buildings | 1 | | OUTSIDE TOILET BOYS | | 2,600 | 4 | 24T8 | 59 W | 0.24 KW | 614 KWH | 4 | LB24LP | 39 W | 0.16 KW | 406 KWH | -81 KWH | 324 KWH | 20% | X | 0.08 KW | 208 KWH | 81 KWH | 289 KWH |
| 747 | H. Boyd Lee Park Buildings | 1 | | SNACK BAR | | 3,000 | 4 | PL26X2 | 64 W | 0.26 KW | 768 KWH | 4 | EXTR | 64 W | 0.26 KW | 768 KWH | 0 KWH | 768 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 748 | H. Boyd Lee Park Buildings | 1 | | SNACK BAR | | 3,000 | 4 | PL26X2 | 64 W | 0.26 KW | 768 KWH | 4 | EXTR | 64 W | 0.26 KW | 768 KWH | 0 KWH | 768 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 749 | H. Boyd Lee Park Buildings | 1 | | SCARE TOWER | | 2,400 | 4 | 150 | 150 W | 0.60 KW | 1,440 KWH | 4 | EXTR | 150 W | 0.60 KW | 1,440 KWH | 0 KWH | 1,440 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 750 | River Park North Building | 1 | | OFFICE | | 2,236 | 6 | PL26X2 | 64 W | 0.38 KW | 859 KWH | 6 | EXTR | 64 W | 0.38 KW | 859 KWH | 0 KWH | 859 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 751 | River Park North Building | 1 | | STORE | | 2,236 | 6 | PL26X2 | 64 W | 0.38 KW | 859 KWH | 6 | EXTR | 64 W | 0.38 KW | 859 KWH | 0 KWH | 859 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 752 | River Park North Building | 1 | 108 | CORRIDOR | | 2,600 | 5 | PL26X2 | 64 W | 0.32 KW | 832 KWH | 5 | EXTR | 64 W | 0.32 KW | 832 KWH | 0 KWH | 832 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 753 | River Park North Building | 1 | 104 | OFFICE | | 2,236 | 2 | 44T8 I/O | 118 W | 0.24 KW | 528 KWH | 2 | LB24HPREF | 60 W | 0.12 KW | 268 KWH | -40 KWH | 228 KWH | 15% | X | 0.12 KW | 259 KWH | 40 KWH | 300 KWH |
| 754 | River Park North Building | 1 | 105 | OFFICE | | 2,236 | 2 | 44T8 I/O | 118 W | 0.24 KW | 528 KWH | 2 | LB24HPREF | 60 W | 0.12 KW | 268 KWH | -40 KWH | 228 KWH | 15% | X | 0.12 KW | 259 KWH | 40 KWH | 300 KWH |
| 755 | River Park North Building | 1 | 106 | OFFICE | | 2,236 | 2 | 44T8 I/O | 118 W | 0.24 KW | 528 KWH | 2 | LB24HPREF | 60 W | 0.12 KW | 268 KWH | 0 KWH | 268 KWH | | | 0.12 KW | 259 KWH | 0 KWH | 259 KWH |
| 756 | River Park North Building | 1 | | STAFF TOILET | | 2,600 | 1 | 44T8 | 114 W | 0.11 KW | 296 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 156 KWH | 0 KWH | 156 KWH | | | 0.05 KW | 140 KWH | 0 KWH | 140 KWH |
| 757 | River Park North Building | 1 | | STORAGE | | 1,000 | 1 | 24T8 | 59 W | 0.06 KW | 59 KWH | 1 | EXTR | 59 W | 0.06 KW | 59 KWH | 0 KWH | 59 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 758 | River Park North Building | 1 | | THEATER | | 416 | 34 | PL26X2 | 64 W | 2.18 KW | 905 KWH | 34 | EXTR | 64 W | 2.18 KW | 905 KWH | 0 KWH | 905 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 759 | River Park North Building | 1 | | THEATER | | 416 | 9 | 90 | 90 W | 0.81 KW | 337 KWH | 9 | LED18-DIMR38 | 18 W | 0.16 KW | 67 KWH | 0 KWH | 67 KWH | | | 0.65 KW | 270 KWH | 0 KWH | 270 KWH |
| 760 | River Park North Building | 1 | | PROJECTION ROOM | | 416 | 2 | 24T8 | 59 W | 0.12 KW | 49 KWH | 2 | LB24LP | 39 W | 0.08 KW | 32 KWH | 0 KWH | 32 KWH | | | 0.04 KW | 17 KWH | 0 KWH | 17 KWH |
| 761 | River Park North Building | 1 | 115 | CLASSROOM | | 1,800 | 6 | 34T8 I/O | 89 W | 0.53 KW | 961 KWH | 6 | L34 | 67 W | 0.40 KW | 724 KWH | 0 KWH | 724 KWH | | | 0.13 KW | 238 KWH | 0 KWH | 238 KWH |
| 762 | River Park North Building | 1 | | WOMENS TOILET | | 2,600 | 3 | 24T8 | 59 W | 0.18 KW | 460 KWH | 3 | LB24LP | 39 W | 0.12 KW | 304 KWH | -91 KWH | 213 KWH | 30% | X | 0.06 KW | 156 KWH | 91 KWH | 247 KWH |
| 763 | River Park North Building | 1 | 113 | JANITOR CLOSET | | 1,000 | 2 | 24T8 | 59 W | 0.12 KW | 118 KWH | 2 | EXTR | 59 W | 0.12 KW | 118 KWH | 0 KWH | 118 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 764 | River Park North Building | 1 | | MENS TOILET | | 2,600 | 3 | 24T8 | 59 W | 0.18 KW | 460 KWH | 3 | LB24LP | 39 W | 0.12 KW | 304 KWH | -91 KWH | 213 KWH | 30% | X | 0.06 KW | 156 KWH | 91 KWH | 247 KWH |
| 765 | River Park North Building | 1 | | SHOWCASE | | 2,600 | 21 | 90 | 90 W | 1.89 KW | 4,914 KWH | 21 | EXTR | 90 W | 1.89 KW | 4,914 KWH | 0 KWH | 4,914 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 766 | River Park North Building | 1 | | OPEN AREA | | 2,400 | 47 | PL26X2 | 64 W | 3.01 KW | 7,219 KWH | 47 | EXTR | 64 W | 3.01 KW | 7,219 KWH | 0 KWH | 7,219 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 766.01 | River Park North Building | 1 | | OPEN AREA | | 2,236 | 10 | EXCLUDE | 0 W | 0.00 KW | 0 KWH | 10 | EXCLUDE | 0 W | 0.00 KW | 0 KWH | 0 KWH | 0 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 767 | River Park North Building | 1 | | CORRIDOR | | 2,600 | 5 | PL26X2 | 64 W | 0.32 KW | 832 KWH | 5 | EXTR | 64 W | 0.32 KW | 832 KWH | 0 KWH | 832 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 768 | River Park North Building | 1 | | DISPLAY AREA | | 2,600 | 7 | 90 | 90 W | 0.63 KW | 1,638 KWH | 7 | LED18-DIMR38 | 18 W | 0.13 KW | 328 KWH | 0 KWH | 328 KWH | | | 0.50 KW | 1,310 KWH | 0 KWH | 1,310 KWH |
| 769 | River Park North Building | 1 | | WAREHOUSE FOR SNAKES | | 1,000 | 13 | 44T8 | 114 W | 1.48 KW | 1,482 KWH | 13 | L44 | 88 W | 1.14 KW | 1,144 KWH | 0 KWH | 1,144 KWH | | | 0.34 KW | 338 KWH | 0 KWH | 338 KWH |
| 770 | River Park North Building | 2 | | STORAGE | | 1,000 | 6 | 24T8 | 59 W | 0.35 KW | 354 KWH | 6 | L24 | 46 W | 0.28 KW | 276 KWH | 0 KWH | 276 KWH | | | 0.08 KW | 78 KWH | 0 KWH | 78 KWH |
| 771 | River Park North Building | 1 | | MA;IN LOBBY | | 2,600 | 16 | PL26X2 | 64 W | 1.02 KW | 2,662 KWH | 16 | EXTR | 64 W | 1.02 KW | 2,662 KWH | 0 KWH | 2,662 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 772 | River Park North Building | 1 | | MAIN LOBBY | | 2,600 | 16 | 90 | 90 W | 1.44 KW | 3,744 KWH | 16 | LED18-DIMR38 | 18 W | 0.29 KW | 749 KWH | 0 KWH | 749 KWH | | | 1.15 KW | 2,995 KWH | 0 KWH | 2,995 KWH |
| 773 | River Park North Building | 1 | | | | 2,600 | 4 | 75 | 75 W | 0.30 KW | 780 KWH | 4 | LED18-DIMR38 | 18 W | 0.07 KW | 187 KWH | 0 KWH | 187 KWH | | | 0.23 KW | 593 KWH | 0 KWH | 593 KWH |
| 774 | River Park North Building | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 2 | 100MH | 130 W | 0.26 KW | 1,040 KWH | 2 | SP-LED CANOPY-100 | 60 W | 0.12 KW | 480 KWH | 0 KWH | 480 KWH | | | 0.14 KW | 560 KWH | 0 KWH | 560 KWH |
| 775 | River Park North Building | EXT | | MENS TOILET | | 3,001 | 1 | 24T8 | 59 W | 0.06 KW | 177 KWH | 1 | LB24LP | 39 W | 0.04 KW | 117 KWH | -35 KWH | 82 KWH | 30% | X | 0.02 KW | 60 KWH | 35 KWH | 95 KWH |
| 776 | River Park North Building | EXT | | WOMENS TOILET | | 3,001 | 1 | 24T8 | 59 W | 0.06 KW | 177 KWH | 1 | LB24LP | 39 W | 0.04 KW | 117 KWH | -35 KWH | 82 KWH | 30% | X | 0.02 KW | 60 KWH | 35 KWH | 95 KWH |
| 777 | River Park North Building | EXT | | | | 2,600 | 4 | PL26X2 | 64 W | 0.26 KW | 666 KWH | 4 | EXTR | 64 W | 0.26 KW | 666 KWH | 0 KWH | 666 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 778 | River Park North Building | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 11 | 100MH | 130 W | 1.43 KW | 5,720 KWH | 11 | SP-LED CANOPY-100 | 60 W | 0.66 KW | 2,640 KWH | 0 KWH | 2,640 KWH | | | 0.77 KW | 3,080 KWH | 0 KWH | 3,080 KWH |
| 777.01 | River Park North Building | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 1 | 100MH | 130 W | 0.13 KW | 520 KWH | 1 | NF24-1X42 CUTOFF | 46 W | 0.05 KW | 184 KWH | 0 KWH | 184 KWH | | | 0.08 KW | 336 KWH | 0 KWH | 336 KWH |
| 778.01 | River Park North Building | EXT | | EXTERIOR - FLAGPOLE FLOODLIGHT | | 4,000 | 1 | 250MH | 295 W | 0.30 KW | 1,180 KWH | 1 | EXTR | 295 W | 0.30 KW | 1,180 KWH | 0 KWH | 1,180 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 778.02 | River Park North Building | EXT | | EXTERIOR - PARKING LOT SHOEBOXES | | 4,000 | 6 | 250S | 295 W | 1.77 KW | 7,080 KWH | 6 | SP-LED SHOEBOX-250 | 110 W | 0.66 KW | 2,640 KWH | 0 KWH | 2,640 KWH | | | 1.11 KW | 4,440 KWH | 0 KWH | 4,440 KWH |
| 779 | Greenfield Terrace Building | 1 | | OPEN ROOM | | 3,000 | 24 | 34T8 | 87 W | 2.09 KW | 6,264 KWH | 24 | LB34LP | 57 W | 1.37 KW | 4,104 KWH | -821 KWH | 3,283 KWH | 20% | X | 0.72 KW | 2,160 KWH | 821 KWH | 2,981 KWH |
| 780 | Greenfield Terrace Building | 1 | | WOMENS TOILET | | 2,600 | 4 | 24T8 | 59 W | 0.24 KW | 614 KWH | 4 | L24 | 46 W | 0.18 KW | 478 KWH | -191 KWH | 287 KWH | 40% | X | 0.05 KW | 135 KWH | 191 KWH | 327 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 781 | Greenfield Terrace Building | 1 | | MENS TOILET | | 2,600 | 4 | 24T8 | 59 W | 0.24 KW | 614 KWH | 4 | L24 | 46 W | 0.18 KW | 478 KWH | -191 KWH | 287 KWH | 40% | X | 0.05 KW | 135 KWH | 191 KWH | 327 KWH |
| 782 | Greenfield Terrace Building | 1 | | JANITOR CLOSET | | 1,000 | 1 | 24T8 | 59 W | 0.06 KW | 59 KWH | 1 | L24 | 46 W | 0.05 KW | 46 KWH | 0 KWH | 46 KWH | | | 0.01 KW | 13 KWH | 0 KWH | 13 KWH |
| 783 | Greenfield Terrace Building | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 4 | 100MH | 130 W | 0.52 KW | 2,080 KWH | 4 | SP-LED WALLPACK-100 | 57 W | 0.23 KW | 912 KWH | 0 KWH | 912 KWH | | | 0.29 KW | 1,168 KWH | 0 KWH | 1,168 KWH |
| 784 | Greenfield Terrace Building | 1 | | MENS TOILET | | 2,600 | 1 | 24EE | 72 W | 0.07 KW | 187 KWH | 1 | LB24LP | 39 W | 0.04 KW | 101 KWH | 0 KWH | 101 KWH | | | 0.03 KW | 86 KWH | 0 KWH | 86 KWH |
| 785 | Greenfield Terrace Building | 1 | | WOMENS TOILET | | 2,600 | 1 | 24EE | 72 W | 0.07 KW | 187 KWH | 1 | LB24LP | 39 W | 0.04 KW | 101 KWH | 0 KWH | 101 KWH | | | 0.03 KW | 86 KWH | 0 KWH | 86 KWH |
| 786 | Greenfield Terrace Building | 1 | | STORAGE | | 126 | 1 | 60X2 | 120 W | 0.12 KW | 15 KWH | 1 | CF13X2 | 26 W | 0.03 KW | 3 KWH | 0 KWH | 3 KWH | | | 0.09 KW | 12 KWH | 0 KWH | 12 KWH |
| 787 | Grenville Aquatics and Fitness Center | 1 | | CORRIDOR | | 2,600 | 12 | 24UEE | 72 W | 0.86 KW | 2,246 KWH | 12 | LB22REF | 30 W | 0.36 KW | 936 KWH | 0 KWH | 936 KWH | | | 0.50 KW | 1,310 KWH | 0 KWH | 1,310 KWH |
| 788 | Grenville Aquatics and Fitness Center | 1 | | CORRIDOR | | 2,600 | 6 | 75 | 75 W | 0.45 KW | 1,170 KWH | 6 | CF18 | 18 W | 0.11 KW | 281 KWH | 0 KWH | 281 KWH | | | 0.34 KW | 889 KWH | 0 KWH | 889 KWH |
| 789 | Grenville Aquatics and Fitness Center | 1 | | OFFICE | | 3,346 | 2 | 44EE | 144 W | 0.29 KW | 964 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 402 KWH | 0 KWH | 402 KWH | | | 0.17 KW | 562 KWH | 0 KWH | 562 KWH |
| 790 | Grenville Aquatics and Fitness Center | 1 | | OFFICE | | 3,346 | 1 | 44EE I/O | 144 W | 0.14 KW | 482 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 201 KWH | -4,015 KWH | -3,814 KWH | 20 | X | 0.08 KW | 281 KWH | 4,015 KWH | 4,296 KWH |
| 791 | Grenville Aquatics and Fitness Center | 1 | | OFFICE | | 3,346 | 2 | 44EE I/O | 144 W | 0.29 KW | 964 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 402 KWH | -8,030 KWH | -7,629 KWH | 20 | X | 0.17 KW | 562 KWH | 8,030 KWH | 8,593 KWH |
| 792 | Grenville Aquatics and Fitness Center | 1 | | OFFICE | | 3,346 | 1 | 44EE I/O | 144 W | 0.14 KW | 482 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 201 KWH | -4,015 KWH | -3,814 KWH | 20 | X | 0.08 KW | 281 KWH | 4,015 KWH | 4,296 KWH |
| 793 | Grenville Aquatics and Fitness Center | 1 | | OFFICE | | 3,346 | 1 | 44EE | 144 W | 0.14 KW | 482 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 201 KWH | -4,015 KWH | -3,814 KWH | 20 | X | 0.08 KW | 281 KWH | 4,015 KWH | 4,296 KWH |
| 794 | Grenville Aquatics and Fitness Center | 1 | | CORRIDOR | | 2,600 | 1 | 24UEE | 72 W | 0.07 KW | 187 KWH | 1 | LB22REF | 30 W | 0.03 KW | 78 KWH | 0 KWH | 78 KWH | | | 0.04 KW | 109 KWH | 0 KWH | 109 KWH |
| 795 | Grenville Aquatics and Fitness Center | 1 | | TOILET | | 2,600 | 1 | 60X2 | 120 W | 0.12 KW | 312 KWH | 1 | CF13X2 | 26 W | 0.03 KW | 68 KWH | 0 KWH | 68 KWH | | | 0.09 KW | 244 KWH | 0 KWH | 244 KWH |
| 796 | Grenville Aquatics and Fitness Center | 1 | | DAY CARE | | 2,392 | 6 | 44T8 | 114 W | 0.68 KW | 1,636 KWH | 6 | L44 | 88 W | 0.53 KW | 1,263 KWH | 0 KWH | 1,263 KWH | | | 0.16 KW | 373 KWH | 0 KWH | 373 KWH |
| 797 | Grenville Aquatics and Fitness Center | 1 | | DAY CARE | | 2,392 | 2 | 44T8 | 114 W | 0.23 KW | 545 KWH | 2 | L44 | 88 W | 0.18 KW | 421 KWH | 0 KWH | 421 KWH | | | 0.05 KW | 124 KWH | 0 KWH | 124 KWH |
| 798 | Grenville Aquatics and Fitness Center | 1 | | FITNESS ROOM | | 4,680 | 12 | 250MH | 295 W | 3.54 KW | 16,567 KWH | 12 | NF29-43HO-ARCH | 182 W | 2.18 KW | 10,221 KWH | -1,533 KWH | 8,688 KWH | 15% | X | 1.36 KW | 6,346 KWH | 1,533 KWH | 7,879 KWH |
| 799 | Grenville Aquatics and Fitness Center | 1 | | OPEN | | 3,346 | 12 | 24UEE | 72 W | 0.86 KW | 2,891 KWH | 12 | LB32REF | 44 W | 0.53 KW | 1,767 KWH | 0 KWH | 1,767 KWH | | | 0.34 KW | 1,124 KWH | 0 KWH | 1,124 KWH |
| 800 | Grenville Aquatics and Fitness Center | 1 | | STORAGE | | 1,000 | 1 | 14EE | 43 W | 0.04 KW | 43 KWH | 1 | LB14LP | 21 W | 0.02 KW | 21 KWH | 0 KWH | 21 KWH | | | 0.02 KW | 22 KWH | 0 KWH | 22 KWH |
| 801 | Grenville Aquatics and Fitness Center | 1 | | STORAGE | | 1,000 | 1 | 14EE | 43 W | 0.04 KW | 43 KWH | 1 | LB14LP | 21 W | 0.02 KW | 21 KWH | 0 KWH | 21 KWH | | | 0.02 KW | 22 KWH | 0 KWH | 22 KWH |
| 802 | Grenville Aquatics and Fitness Center | 1 | | STORAGE | | 1,000 | 1 | 14EE | 43 W | 0.04 KW | 43 KWH | 1 | LB14LP | 21 W | 0.02 KW | 21 KWH | 0 KWH | 21 KWH | | | 0.02 KW | 22 KWH | 0 KWH | 22 KWH |
| 803 | Grenville Aquatics and Fitness Center | 1 | | CORRIDOR | | 2,600 | 6 | 24T8 | 59 W | 0.35 KW | 920 KWH | 6 | LB24LP | 39 W | 0.23 KW | 608 KWH | 0 KWH | 608 KWH | | | 0.12 KW | 312 KWH | 0 KWH | 312 KWH |
| 804 | Grenville Aquatics and Fitness Center | 1 | | GYM | | 4,680 | 30 | 44T5HO | 241 W | 7.23 KW | 33,836 KWH | 30 | EXTR | 241 W | 7.23 KW | 33,836 KWH | 0 KWH | 33,836 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 805 | Grenville Aquatics and Fitness Center | 1 | | AEROBICS ROOM | | 1,317 | 9 | 44EE I/O | 144 W | 1.30 KW | 1,707 KWH | 9 | LB24HPDL | 60 W | 0.54 KW | 711 KWH | 0 KWH | 711 KWH | | | 0.76 KW | 996 KWH | 0 KWH | 996 KWH |
| 806 | Grenville Aquatics and Fitness Center | 1 | | STAGE | | 3,558 | 4 | 28SLSE | 131 W | 0.52 KW | 1,864 KWH | 4 | LB24HP-STP | 60 W | 0.24 KW | 854 KWH | 0 KWH | 854 KWH | | | 0.28 KW | 1,010 KWH | 0 KWH | 1,010 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 807 | Grenville Aquatics and Fitness Center | 1 | | STAGE | | 3,558 | 7 | 24EE | 72 W | 0.50 KW | 1,793 KWH | 7 | LB24LP | 39 W | 0.27 KW | 971 KWH | 0 KWH | 971 KWH | | | 0.23 KW | 822 KWH | 0 KWH | 822 KWH |
| 808 | Grenville Aquatics and Fitness Center | 1 | | OFFICE | | 3,346 | 5 | 44EE | 144 W | 0.72 KW | 2,409 KWH | 5 | LB24HPDL | 60 W | 0.30 KW | 1,004 KWH | -201 KWH | 803 KWH | 20% | X | 0.42 KW | 1,405 KWH | 201 KWH | 1,606 KWH |
| 809 | Grenville Aquatics and Fitness Center | 1 | | WEIGHT ROOM | | 4,680 | 9 | 44EE | 144 W | 1.30 KW | 6,065 KWH | 9 | LB24HPDL | 60 W | 0.54 KW | 2,527 KWH | -379 KWH | 2,148 KWH | 15% | X | 0.76 KW | 3,538 KWH | 379 KWH | 3,917 KWH |
| 810 | Grenville Aquatics and Fitness Center | 1 | | CORRIDOR AT LOOKERS | | 2,600 | 5 | 24EE | 72 W | 0.36 KW | 936 KWH | 5 | LB24LP | 39 W | 0.20 KW | 507 KWH | 0 KWH | 507 KWH | | | 0.17 KW | 429 KWH | 0 KWH | 429 KWH |
| 811 | Grenville Aquatics and Fitness Center | 1 | | MECH | | 2,400 | 2 | 28T8 | 110 W | 0.22 KW | 528 KWH | 2 | EXTR | 110 W | 0.22 KW | 528 KWH | 0 KWH | 528 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 812 | Grenville Aquatics and Fitness Center | 1 | | GIRLS LOCKER ROOM | | 4,855 | 5 | 24T8 | 59 W | 0.30 KW | 1,432 KWH | 5 | LB24LP | 39 W | 0.20 KW | 947 KWH | 0 KWH | 947 KWH | | | 0.10 KW | 486 KWH | 0 KWH | 486 KWH |
| 813 | Grenville Aquatics and Fitness Center | 1 | | GIRLS LOCKER ROOM | | 4,855 | 2 | 44EE | 144 W | 0.29 KW | 1,398 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 583 KWH | 0 KWH | 583 KWH | | | 0.17 KW | 816 KWH | 0 KWH | 816 KWH |
| 814 | Grenville Aquatics and Fitness Center | 1 | | GIRLS LOCKER ROOM | | 4,855 | 4 | 24EE | 72 W | 0.29 KW | 1,398 KWH | 4 | LB24LP | 39 W | 0.16 KW | 757 KWH | 0 KWH | 757 KWH | | | 0.13 KW | 641 KWH | 0 KWH | 641 KWH |
| 815 | Grenville Aquatics and Fitness Center | 1 | | GIRLS LOCKER ROOM | | 4,855 | 3 | 28T8 | 110 W | 0.33 KW | 1,602 KWH | 3 | EXTR | 110 W | 0.33 KW | 1,602 KWH | 0 KWH | 1,602 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 816 | Grenville Aquatics and Fitness Center | 1 | | MENS LOCKER ROOM | | 4,855 | 3 | 24T8 | 59 W | 0.18 KW | 859 KWH | 3 | LB24LP | 39 W | 0.12 KW | 568 KWH | 0 KWH | 568 KWH | | | 0.06 KW | 291 KWH | 0 KWH | 291 KWH |
| 817 | Grenville Aquatics and Fitness Center | 1 | | MENS LOCKER ROOM | | 4,855 | 3 | 28T8 | 110 W | 0.33 KW | 1,602 KWH | 3 | EXTR | 110 W | 0.33 KW | 1,602 KWH | 0 KWH | 1,602 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 818 | Grenville Aquatics and Fitness Center | 1 | | MENS LOCKER ROOM | | 4,855 | 1 | 24EE | 72 W | 0.07 KW | 350 KWH | 1 | LB24LP | 39 W | 0.04 KW | 189 KWH | 0 KWH | 189 KWH | | | 0.03 KW | 160 KWH | 0 KWH | 160 KWH |
| 819 | Grenville Aquatics and Fitness Center | 1 | | SHOWERS BOYS & GIRLS | | 4,855 | 10 | 60 | 60 W | 0.60 KW | 2,913 KWH | 10 | CF13 | 13 W | 0.13 KW | 631 KWH | 0 KWH | 631 KWH | | | 0.47 KW | 2,282 KWH | 0 KWH | 2,282 KWH |
| 820 | Grenville Aquatics and Fitness Center | 1 | | MENS LOCKER ROOM | | 4,855 | 4 | 28T8 | 110 W | 0.44 KW | 2,136 KWH | 4 | EXTR | 110 W | 0.44 KW | 2,136 KWH | 0 KWH | 2,136 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 821 | Grenville Aquatics and Fitness Center | 1 | | MENS LOCKER ROOM | | 4,855 | 3 | 24T8 | 59 W | 0.18 KW | 859 KWH | 3 | LB24LP | 39 W | 0.12 KW | 568 KWH | 0 KWH | 568 KWH | | | 0.06 KW | 291 KWH | 0 KWH | 291 KWH |
| 822 | Grenville Aquatics and Fitness Center | 2 | | MECH | | 2,400 | 11 | 24EE | 72 W | 0.79 KW | 1,901 KWH | 11 | LB24LP | 39 W | 0.43 KW | 1,030 KWH | 0 KWH | 1,030 KWH | | | 0.36 KW | 871 KWH | 0 KWH | 871 KWH |
| 823 | Grenville Aquatics and Fitness Center | 2 | | MECH | | 2,400 | 9 | 24T8 | 59 W | 0.53 KW | 1,274 KWH | 9 | LB24LP | 39 W | 0.35 KW | 842 KWH | 0 KWH | 842 KWH | | | 0.18 KW | 432 KWH | 0 KWH | 432 KWH |
| 824 | Grenville Aquatics and Fitness Center | 1 | | LAUNDRY ROOM | | 3,346 | 2 | 24EE | 72 W | 0.14 KW | 482 KWH | 2 | LB24LP | 39 W | 0.08 KW | 261 KWH | 0 KWH | 261 KWH | | | 0.07 KW | 221 KWH | 0 KWH | 221 KWH |
| 825 | Grenville Aquatics and Fitness Center | 1 | | POOL | | 4,681 | 10 | 400MH | 458 W | 4.58 KW | 21,439 KWH | 12 | NF30-44HO | 241 W | 2.89 KW | 13,537 KWH | 0 KWH | 13,537 KWH | | | 1.69 KW | 7,902 KWH | 0 KWH | 7,902 KWH |
| 826 | Grenville Aquatics and Fitness Center | 1 | | POOL | | 4,681 | 3 | 24T8 | 59 W | 0.18 KW | 829 KWH | 3 | LB24LP | 39 W | 0.12 KW | 548 KWH | 0 KWH | 548 KWH | | | 0.06 KW | 281 KWH | 0 KWH | 281 KWH |
| 827 | Grenville Aquatics and Fitness Center | 1 | | STORAGE | | 1,000 | 2 | 24EE | 72 W | 0.14 KW | 144 KWH | 2 | LB24LP | 39 W | 0.08 KW | 78 KWH | 0 KWH | 78 KWH | | | 0.07 KW | 66 KWH | 0 KWH | 66 KWH |
| 828 | Grenville Aquatics and Fitness Center | 1 | | PUMP ROOM | | 4,124 | 5 | 44T8 | 114 W | 0.57 KW | 2,351 KWH | 5 | LB24HPDL | 60 W | 0.30 KW | 1,237 KWH | -619 KWH | 619 KWH | 50% | X | 0.27 KW | 1,113 KWH | 619 KWH | 1,732 KWH |
| 829 | Grenville Aquatics and Fitness Center | 1 | | STORAGE | | 4,124 | 1 | 24T8 | 59 W | 0.06 KW | 243 KWH | 1 | LB24LP | 39 W | 0.04 KW | 161 KWH | 0 KWH | 161 KWH | | | 0.02 KW | 82 KWH | 0 KWH | 82 KWH |
| 830 | Grenville Aquatics and Fitness Center | 1 | | TOILET | | 4,124 | 1 | 24T8 | 59 W | 0.06 KW | 243 KWH | 1 | LB24LP | 39 W | 0.04 KW | 161 KWH | 0 KWH | 161 KWH | | | 0.02 KW | 82 KWH | 0 KWH | 82 KWH |
| 830.01 | Grenville Aquatics and Fitness Center | 1 | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 1 | 175MH | 210 W | 0.21 KW | 840 KWH | 1 | SP-LED WALLPACK-100 | 57 W | 0.06 KW | 228 KWH | 0 KWH | 228 KWH | | | 0.15 KW | 612 KWH | 0 KWH | 612 KWH |
| 831 | Bradford Creek Golf Course | EXT | | EXTERIOR - RECESSED IN CANOPY | | 4,000 | 40 | 65 | 65 W | 2.60 KW | 10,400 KWH | 40 | CF18R30 | 18 W | 0.72 KW | 2,880 KWH | 0 KWH | 2,880 KWH | | | 1.88 KW | 7,520 KWH | 0 KWH | 7,520 KWH |

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 832 | Bradford Creek Golf Course | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 10 | 60X4 | 240 W | 2.40 KW | 9,600 KWH | 10 | EXTR | 240 W | 2.40 KW | 9,600 KWH | 0 KWH | 9,600 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 833 | Bradford Creek Golf Course | 1 | | DINING ROOM | | 648 | 9 | 60 | 60 W | 0.54 KW | 350 KWH | 9 | EXTR | 60 W | 0.54 KW | 350 KWH | 0 KWH | 350 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 834 | Bradford Creek Golf Course | 1 | | DINING ROOM | | 648 | 22 | 65 | 65 W | 1.43 KW | 927 KWH | 22 | CF18R30 | 18 W | 0.40 KW | 257 KWH | 0 KWH | 257 KWH | | | 1.03 KW | 670 KWH | 0 KWH | 670 KWH |
| 835 | Bradford Creek Golf Course | 1 | | KITCHEN | | 3,605 | 4 | 44EE | 144 W | 0.58 KW | 2,076 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 865 KWH | -346 KWH | 519 KWH | 40% | X | 0.34 KW | 1,211 KWH | 346 KWH | 1,557 KWH |
| 836 | Bradford Creek Golf Course | 1 | | | | 648 | 1 | 60X6 | 360 W | 0.36 KW | 233 KWH | 1 | EXTR | 360 W | 0.36 KW | 233 KWH | 0 KWH | 233 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 837 | Bradford Creek Golf Course | 1 | | CORRIDOR | | 648 | 3 | 65 | 65 W | 0.20 KW | 126 KWH | 3 | CF18R30 | 18 W | 0.05 KW | 35 KWH | 0 KWH | 35 KWH | | | 0.14 KW | 91 KWH | 0 KWH | 91 KWH |
| 838 | Bradford Creek Golf Course | 1 | | CARD ROOM | | 648 | 12 | 65 | 65 W | 0.78 KW | 505 KWH | 12 | CF18R30 | 18 W | 0.22 KW | 140 KWH | 0 KWH | 140 KWH | | | 0.56 KW | 365 KWH | 0 KWH | 365 KWH |
| 839 | Bradford Creek Golf Course | 1 | | MENS TOILET | | 7,801 | 2 | 24EE | 72 W | 0.14 KW | 1,123 KWH | 2 | LB24LP | 39 W | 0.08 KW | 608 KWH | 0 KWH | 608 KWH | | | 0.07 KW | 515 KWH | 0 KWH | 515 KWH |
| 840 | Bradford Creek Golf Course | 1 | | MENS TOILET | | 7,801 | 1 | 60X6 | 360 W | 0.36 KW | 2,808 KWH | 1 | CF13X6 | 78 W | 0.08 KW | 608 KWH | 0 KWH | 608 KWH | | | 0.28 KW | 2,200 KWH | 0 KWH | 2,200 KWH |
| 841 | Bradford Creek Golf Course | 1 | | WOMENS TOILET | | 7,801 | 2 | PL26X2 | 64 W | 0.13 KW | 999 KWH | 2 | EXTR | 64 W | 0.13 KW | 999 KWH | 0 KWH | 999 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 842 | Bradford Creek Golf Course | 1 | | WOMENS TOILET | | 7,801 | 3 | 24EE | 72 W | 0.22 KW | 1,685 KWH | 3 | LB24LP | 39 W | 0.12 KW | 913 KWH | 0 KWH | 913 KWH | | | 0.10 KW | 772 KWH | 0 KWH | 772 KWH |
| 843 | Bradford Creek Golf Course | 1 | | SNACK BAR | | 3,473 | 4 | 65 | 65 W | 0.26 KW | 903 KWH | 4 | CF18R30 | 18 W | 0.07 KW | 250 KWH | 0 KWH | 250 KWH | | | 0.19 KW | 653 KWH | 0 KWH | 653 KWH |
| 844 | Bradford Creek Golf Course | 1 | | STORE | | 3,473 | 17 | 65 | 65 W | 1.11 KW | 3,838 KWH | 17 | CF18R30 | 18 W | 0.31 KW | 1,063 KWH | 0 KWH | 1,063 KWH | | | 0.80 KW | 2,775 KWH | 0 KWH | 2,775 KWH |
| 845 | Bradford Creek Golf Course | 1 | | CORRIDOR | | 2,600 | 3 | 65 | 65 W | 0.20 KW | 507 KWH | 3 | CF18R30 | 18 W | 0.05 KW | 140 KWH | 0 KWH | 140 KWH | | | 0.14 KW | 367 KWH | 0 KWH | 367 KWH |
| 846 | Bradford Creek Golf Course | 1 | | STORAGE | | 4,521 | 2 | 44EE | 144 W | 0.29 KW | 1,302 KWH | 2 | LB24HPDL | 60 W | 0.12 KW | 543 KWH | -217 KWH | 326 KWH | 40% | X | 0.17 KW | 760 KWH | 217 KWH | 977 KWH |
| 847 | Bradford Creek Golf Course | 1 | | STORAGE | | 4,521 | 1 | 44EE | 144 W | 0.14 KW | 651 KWH | 1 | LB24HPDL | 60 W | 0.06 KW | 271 KWH | 0 KWH | 271 KWH | | | 0.08 KW | 380 KWH | 0 KWH | 380 KWH |
| 848 | Bradford Creek Golf Course | 1 | | MECH | | 2,132 | 1 | 24EE | 72 W | 0.07 KW | 154 KWH | 1 | LB24LP | 39 W | 0.04 KW | 83 KWH | 0 KWH | 83 KWH | | | 0.03 KW | 70 KWH | 0 KWH | 70 KWH |
| 849 | Bradford Creek Golf Course | 1 | | OFFICE | | 648 | 1 | 24EE | 72 W | 0.07 KW | 47 KWH | 1 | LB24LP | 39 W | 0.04 KW | 25 KWH | 0 KWH | 25 KWH | | | 0.03 KW | 21 KWH | 0 KWH | 21 KWH |
| 850 | Bradford Creek Golf Course | 1 | | COPY ROOM | | 1,601 | 1 | 24EE | 72 W | 0.07 KW | 115 KWH | 1 | LB24LP | 39 W | 0.04 KW | 62 KWH | 0 KWH | 62 KWH | | | 0.03 KW | 53 KWH | 0 KWH | 53 KWH |
| 851 | Bradford Creek Golf Course | 1 | | OFFICE | | 648 | 2 | 44EE | 144 W | 0.29 KW | 187 KWH | 2 | LB24LP | 39 W | 0.08 KW | 51 KWH | -15 KWH | 35 KWH | 30% | X | 0.21 KW | 136 KWH | 15 KWH | 151 KWH |
| 852 | Bradford Creek Golf Course | 1 | | CORRIDOR | | 2,600 | 3 | 65 | 65 W | 0.20 KW | 507 KWH | 3 | CF18R30 | 18 W | 0.05 KW | 140 KWH | 0 KWH | 140 KWH | | | 0.14 KW | 367 KWH | 0 KWH | 367 KWH |
| 853 | Bradford Creek Golf Course | 1 | | OFFICE | | 3,473 | 5 | 65 | 65 W | 0.33 KW | 1,129 KWH | 5 | CF18R30 | 18 W | 0.09 KW | 313 KWH | 0 KWH | 313 KWH | | | 0.24 KW | 816 KWH | 0 KWH | 816 KWH |
| 854 | Bradford Creek Golf Course | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 8 | 90 | 90 W | 0.72 KW | 2,880 KWH | 8 | EXTR | 90 W | 0.72 KW | 2,880 KWH | 0 KWH | 2,880 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 855 | Bradford Creek Golf Course | 1 | | MAINT SHED | | 2,132 | 6 | 400MH | 458 W | 2.75 KW | 5,859 KWH | 6 | NF29-44HO-OS | 241 W | 1.45 KW | 3,083 KWH | -462 KWH | 2,620 KWH | 15% | | 1.30 KW | 2,776 KWH | 462 KWH | 3,238 KWH |
| 856 | Bradford Creek Golf Course | 1 | | | | 2,132 | 5 | 28SLSE | 131 W | 0.66 KW | 1,396 KWH | 5 | LB24HP-STP | 60 W | 0.30 KW | 640 KWH | 0 KWH | 640 KWH | | | 0.36 KW | 757 KWH | 0 KWH | 757 KWH |
| 857 | Bradford Creek Golf Course | 1 | | OFFICE | | 3,473 | 2 | 28SLSE | 131 W | 0.26 KW | 910 KWH | 2 | LB24HP-STP | 60 W | 0.12 KW | 417 KWH | -125 KWH | 292 KWH | 30% | X | 0.14 KW | 493 KWH | 125 KWH | 618 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 858 | Bradford Creek Golf Course | 1 | | BREAK ROOM | | 3,473 | 2 | 28SLSE | 131 W | 0.26 KW | 910 KWH | 2 | LB24HP-STP | 60 W | 0.12 KW | 417 KWH | -125 KWH | 292 KWH | 30% | X | 0.14 KW | 493 KWH | 125 KWH | 618 KWH |
| 859 | Bradford Creek Golf Course | 1 | | TOILET | | 2,600 | 1 | 24EE | 72 W | 0.07 KW | 187 KWH | 1 | LB24LP | 39 W | 0.04 KW | 101 KWH | 0 KWH | 101 KWH | | | 0.03 KW | 86 KWH | 0 KWH | 86 KWH |
| 860 | Bradford Creek Golf Course | 1 | | OFFICE | | 2,132 | 4 | 44EE | 144 W | 0.58 KW | 1,228 KWH | 4 | LB24HPDL | 60 W | 0.24 KW | 512 KWH | -154 KWH | 358 KWH | 30% | X | 0.34 KW | 716 KWH | 154 KWH | 870 KWH |
| 861 | Bradford Creek Golf Course | 1 | | TOILET | | 2,600 | 1 | 24EE | 72 W | 0.07 KW | 187 KWH | 1 | LB24LP | 39 W | 0.04 KW | 101 KWH | 0 KWH | 101 KWH | | | 0.03 KW | 86 KWH | 0 KWH | 86 KWH |
| 862 | Bradford Creek Golf Course | 1 | | STORAGE | | 1,000 | 1 | 100 | 100 W | 0.10 KW | 100 KWH | 1 | CF23 | 23 W | 0.02 KW | 23 KWH | 0 KWH | 23 KWH | | | 0.08 KW | 77 KWH | 0 KWH | 77 KWH |
| 863 | Bradford Creek Golf Course | 1 | | MOWER SHED | | 2,132 | 15 | 28SLSE | 131 W | 1.97 KW | 4,189 KWH | 15 | LB24HP-STP | 60 W | 0.90 KW | 1,919 KWH | -576 KWH | 1,343 KWH | 30% | X | 1.07 KW | 2,271 KWH | 576 KWH | 2,846 KWH |
| 864 | Bradford Creek Golf Course | EXT | | EXTERIOR - BUILDING MOUNTED | | 4,000 | 7 | 250MH | 295 W | 2.07 KW | 8,260 KWH | 7 | SP-LED WALLPACK-250 | 74 W | 0.52 KW | 2,072 KWH | 0 KWH | 2,072 KWH | | | 1.55 KW | 6,188 KWH | 0 KWH | 6,188 KWH |
| 865 | Bradford Creek Golf Course | EXT | | EXTERIOR - BUILDING MOUNTED LANTERNS | | 4,000 | 6 | 40X4 | 160 W | 0.96 KW | 3,840 KWH | 6 | LED3WX4 | 12 W | 0.07 KW | 288 KWH | 0 KWH | 288 KWH | | | 0.89 KW | 3,552 KWH | 0 KWH | 3,552 KWH |
| 866 | Epps Recreation Center / Thomas Foreman Park - SPORTS/EXTERIOR | EXT | | EXTERIOR - BALLFIELD | | 275 | 24 | 1500MH | 1620 W | 38.88 KW | 10,692 KWH | 24 | EXTR | 1620 W | 38.88 KW | 10,692 KWH | 0 KWH | 10,692 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 867 | Epps Recreation Center / Thomas Foreman Park - SPORTS/EXTERIOR | EXT | | EXTERIOR -TENNIS | | 275 | 12 | 1000MH | 1080 W | 12.96 KW | 3,564 KWH | 12 | EXTR | 1080 W | 12.96 KW | 3,564 KWH | 0 KWH | 3,564 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 868 | Epps Recreation Center / Thomas Foreman Park - SPORTS/EXTERIOR | EXT | | EXTERIOR -PARKING | | 4,000 | 2 | 400S | 464 W | 0.93 KW | 3,712 KWH | 2 | EXTR | 464 W | 0.93 KW | 3,712 KWH | 0 KWH | 3,712 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 869 | Guy Smith Stadium - SPORTS | EXT | | EXTERIOR - STADIUM | | 750 | 134 | 1500MH | 1620 W | 217.08 KW | 162,810 KWH | 134 | EXTR | 1620 W | 217.08 KW | 162,810 KWH | 0 KWH | 162,810 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 870 | Guy Smith Stadium - SPORTS | EXT | | EXTERIOR - PREP FIELD | | 750 | 71 | 1500MH | 1620 W | 115.02 KW | 86,265 KWH | 71 | EXTR | 1620 W | 115.02 KW | 86,265 KWH | 0 KWH | 86,265 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 871 | Evans Park Building - SPORTS/EXTERIOR | EXT | | EXTERIOR - BALLFIELD | | 275 | 92 | 1500MH | 1620 W | 149.04 KW | 40,986 KWH | 92 | EXTR | 1620 W | 149.04 KW | 40,986 KWH | 0 KWH | 40,986 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 872 | Evans Park Building - SPORTS/EXTERIOR | EXT | | EXTERIOR - PEDESTRIAN | | 4,000 | 2 | 150S | 188 W | 0.38 KW | 1,504 KWH | 2 | EXTR | 188 W | 0.38 KW | 1,504 KWH | 0 KWH | 1,504 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 873 | Evans Park Building - SPORTS/EXTERIOR | EXT | | EXTERIOR - TENNIS - LOWER | | 1,095 | 56 | 400MH | 458 W | 25.65 KW | 28,085 KWH | 56 | EXTR | 458 W | 25.65 KW | 28,085 KWH | 0 KWH | 28,085 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 874 | Evans Park Building - SPORTS/EXTERIOR | EXT | | EXTERIOR - TENNIS - UPPER | | 1,095 | 20 | 1000MH | 1080 W | 21.60 KW | 23,652 KWH | 20 | EXTR | 1080 W | 21.60 KW | 23,652 KWH | 0 KWH | 23,652 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 875 | Elm Street Recreation Center - SPORTS | EXT | | EXTERIOR - BALLFIELD | | 260 | 26 | 1500MH | 1620 W | 42.12 KW | 10,951 KWH | 26 | EXTR | 1620 W | 42.12 KW | 10,951 KWH | 0 KWH | 10,951 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 876 | Elm Street Recreation Center - SPORTS | EXT | | EXTERIOR - TENNIS | | 1,922 | 38 | 400MH | 458 W | 17.40 KW | 33,450 KWH | 38 | SP-LED SHOEBOX-400 | 146 W | 5.55 KW | 10,663 KWH | 0 KWH | 10,663 KWH | | | 11.86 KW | 22,787 KWH | 0 KWH | 22,787 KWH |
| 877 | Elm Street Recreation Center - SPORTS | EXT | | EXTERIOR - PARKING/ROADWAY | | 4,000 | 7 | 250S | 295 W | 2.07 KW | 8,260 KWH | 7 | SP-LED SHOEBOX-250 | 110 W | 0.77 KW | 3,080 KWH | 0 KWH | 3,080 KWH | | | 1.30 KW | 5,180 KWH | 0 KWH | 5,180 KWH |
| 878 | Jaycee Park Building - SPORTS/EXTERIOR | EXT | | EXTERIOR - BALLFIELD | | 275 | 48 | 1500MH | 1620 W | 77.76 KW | 21,384 KWH | 48 | EXTR | 1620 W | 77.76 KW | 21,384 KWH | 0 KWH | 21,384 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 879 | Jaycee Park Building - SPORTS/EXTERIOR | EXT | | EXTERIOR - TENNIS | | 275 | 20 | 1000MH | 1080 W | 21.60 KW | 5,940 KWH | 20 | EXTR | 1080 W | 21.60 KW | 5,940 KWH | 0 KWH | 5,940 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 880 | Jaycee Park Building - SPORTS/EXTERIOR | EXT | | EXTERIOR - EXTREME PARK | | 275 | 8 | 1000MH | 1080 W | 8.64 KW | 2,376 KWH | 8 | EXTR | 1080 W | 8.64 KW | 2,376 KWH | 0 KWH | 2,376 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 881 | Jaycee Park Building - SPORTS/EXTERIOR | EXT | | EXTERIOR - PEDESTRIAN | | 4,000 | 12 | 150S | 188 W | 2.26 KW | 9,024 KWH | 12 | EXTR | 188 W | 2.26 KW | 9,024 KWH | 0 KWH | 9,024 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 882 | Jaycee Park Building - SPORTS/EXTERIOR | EXT | | EXTERIOR - PARKING FLOODS | | 4,000 | 4 | 400S | 464 W | 1.86 KW | 7,424 KWH | 4 | EXTR | 464 W | 1.86 KW | 7,424 KWH | 0 KWH | 7,424 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 883 | H. Boyd Lee Park Buildings - SPORTS/EXTERIOR | EXT | | EXTERIOR - BALLFIELD | | 1,100 | 150 | 1500MH | 1620 W | 243.00 KW | 267,300 KWH | 150 | EXTR | 1620 W | 243.00 KW | 267,300 KWH | 0 KWH | 267,300 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |

CITY OF GREENVILLE - FINAL DESIGN

| | | | | | | | EXISTING SYSTEM | | | | | PROPOSED SYSTEM | | | | | | | SENSORS | | SAVINGS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REF # | BUILDING NAME | FLR # | RM # | AREA NAME | LIGHT LEVELS | ANNUAL OPERATING HOURS | EX QTY | EXISTING CODE | EXISTING WATTAGE | PRESENT KW | PRESENT KWH | RETRO QTY | RETROFIT CODE | RETROFIT WATTAGE | RETROFIT KW | RETROFIT KWH Lighting | RETROFIT KWH Sensor | TOTAL RETROFIT KWH | SENSOR REDUCTION % | SENSORS | KW SAVINGS | KWH SAVINGS Lighting | KWH SAVINGS Sensors | TOTAL KWH SAVINGS |
| 884 | H. Boyd Lee Park Buildings - SPORTS/EXTERIOR | EXT | | EXTERIOR - RECESSED IN GRADE | | 4,000 | 26 | 100MH | 130 W | 3.38 KW | 13,520 KWH | 26 | EXTR | 130 W | 3.38 KW | 13,520 KWH | 0 KWH | 13,520 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 885 | H. Boyd Lee Park Buildings - SPORTS/EXTERIOR | EXT | | EXTERIOR -PATHWAY | | 4,000 | 6 | 250 | 250 W | 1.50 KW | 6,000 KWH | 6 | EXTR | 250 W | 1.50 KW | 6,000 KWH | 0 KWH | 6,000 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 886 | H. Boyd Lee Park Buildings - SPORTS/EXTERIOR | EXT | | EXTERIOR - SOFFITS | | 4,000 | 2 | PL32 | 35 W | 0.07 KW | 280 KWH | 2 | EXTR | 35 W | 0.07 KW | 280 KWH | 0 KWH | 280 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 887 | H. Boyd Lee Park Buildings - SPORTS/EXTERIOR | EXT | | EXTERIOR - ENTRY | | 4,000 | 1 | 175MH | 210 W | 0.21 KW | 840 KWH | 1 | EXTR | 210 W | 0.21 KW | 840 KWH | 0 KWH | 840 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 888 | H. Boyd Lee Park Buildings - SPORTS/EXTERIOR | EXT | | EXTERIOR - ENTRY CANOPIES | | 4,000 | 3 | 100MH | 130 W | 0.39 KW | 1,560 KWH | 3 | EXTR | 130 W | 0.39 KW | 1,560 KWH | 0 KWH | 1,560 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 889 | H. Boyd Lee Park Buildings - SPORTS/EXTERIOR | EXT | | EXTERIOR - POST TOP LANTERNS | | 4,000 | 13 | 150S | 188 W | 2.44 KW | 9,776 KWH | 13 | EXTR | 188 W | 2.44 KW | 9,776 KWH | 0 KWH | 9,776 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| 890 | Bradford Creek Golf Course - SPORTS/EXTERIOR | EXT | | EXTERIOR - DRIVING RANGE | | 672 | 9 | 1500MH | 1620 W | 14.58 KW | 9,798 KWH | 9 | EXTR | 1620 W | 14.58 KW | 9,798 KWH | 0 KWH | 9,798 KWH | | | 0.00 KW | 0 KWH | 0 KWH | 0 KWH |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | 4,707 | | | 1459.87 KW | 2,089,164 KWH | 4,709 | | | 1263.979 KW | 1,527,414 KWH | -90,034 KWH | 1,437,379 KWH | | | 195.89 KW | 561,750 KWH | 90,034 KWH | 651,784 KWH |

** Sensors that are supplied with or as part of the fixture are included in the "Lighting" totals.

# Appendix B: Water Audit Documentation

**H2O Applied Technologies LLC**
**Project:** **Greenville, City of 50935**
**CM:** **Domestic Water**
**Eng:** **JSK**
**Date:** **3/30/12**

**Domestic Model Assumptions**

1 Toilet, urinal, and sink counts and flow rates were determined as follows: For each building, fixture counts and fixure types were recorded during the inspection.

2 Building water use data was provided by Schneider and the Greenville NC Utilities Commission. It is assumed that the provided data includes all accounts for all buildings with the exception of the 5th Street Police Substation, for which no data was available.

**Table 1: Occupancy Assumptions**

| Site Type | Population | % male | Avg hrs/wk/person | Wks/ yr | % Occupancy | % of population showering | # of showers/ wk/ person | % male access to urinals | # of days/yr that cleaning occurs | Reference | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Office/Municipal Svcs Facility*** | | | | | | | | | | | |
| City Hall | 70 | 50% | 60 | 52 | 95% | 1% | 1 | 100% | 260 | See Note 7 | 70 people, 7am-7pm, M-F |
| Police-Fire-Rescue | 100 | 75% | 40 | 52 | 95% | 4% | 1 | 100% | 360 | | |
| Park Maintenance Center | 18 | 100% | 40 | 52 | 95% | | | | 52 | | |
| Public Works Complex | 40 | 50% | 84 | 52 | 85% | 1% | 1 | 100% | 360 | See Note 7 | 40 people, 7am-7pm, M-F, limited occupancy |
| Gardner Training Center | 2 | 50% | 40 | 52 | 95% | | | 100% | 156 | See Note 7 | 2 people, 8am - 5pm, M-F (matches H2O's |
| 5th St. Police Substation | 3 | 50% | 40 | 52 | 95% | | | | 104 | See Note 7 | 3 people, 8am - 5pm, M-F |
| ***Park/Athletic Recreational Facility*** | | | | | | | | | | | |
| Epps Rec Ctr/T Foreman Park | 331 | 50% | 7.5 | 52 | 95% | | | 100% | 260 | See Note 6 | Data provided = average daily attendance per season. |
| Guy Smith Stadium | 647 | 50% | 40 | 52 | 100% | 1% | 1 | 100% | 360 | | |
| S Greenville Rec Ctr | 188 | 50% | 10 | 52 | 95% | | | 100% | 260 | See Note 6 | Data provided = average daily attendance per season. |
| Elm Street Rec Ctr | 181 | 50% | 40 | 52 | 95% | | | 100% | 312 | See Note 6 | Data provided = average daily attendance per season. |
| Evans Park | 19 | 50% | 40 | 52 | 100% | 1% | 1 | 100% | 360 | | |
| Jaycee Park | 20 | 50% | 56 | 52 | 95% | | | 100% | 360 | See Note 7 | 20 people, 8am-5pm, M-Sun |
| Sports Connection | 63 | 50% | 15 | 52 | 95% | | | 100% | 360 | See Note 6 | |
| Greenville Aquatics & Fitness | 9036 | 50% | 2 | 52 | 95% | 10% | 1 | 100% | 360 | See Note 6 | Population = average of annual Total Attendance headcount |

3 Site populations were provided for some sites (see Column L, "Reference," in Table 1 below). Baseline annual water consumption attributable to domestic fixtures was estimated as a percentage of each site's total water use (see Table 2). These percentages are assumptions, based on H2O's experience with sites of similar type. The following assumptions about population counts and occupancy were made in order to approximate the estimated domestic baseline and savings:

4 It is assumed that all buildings are air-cooled, i.e. there is no cooling tower water use.

5 Bathroom cleanings are estimated as follows. For the Park Maintenance Center and the 5th St Police Substation, it is estimated that the bathrooms are cleaned once per week; for the Gardner Training Center, it is estimated the bathrooms are cleaned once every two weeks. For all other buildings, it is estimated that bathrooms are cleaned every day the facility is open.

6 Population count provided by Schneider Electric (email to John Kowalski from Andy Nightengale dated 3/7/2012)

7 Population count provided by Schneider Electric (email to John Kowalski from Andy Nightengale dated 3/12/2012)

**H2O Applied Technologies LLC**
**Project:** Greenville, City of 50935
**CM:** Domestic Water
**Eng:** JSK
**Date:** 3/30/12

**Domestic Model Assumptions**

**Table 2: Annual Consumption (kgal) by Building**

| (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sum of W kgal** | **Year** | | | | 2-year | 3-year | Assumed | Estimated | Modeled | Modeled | |
| **Building** | **2009** | **2010** | **2011** | | average | average | % of total | baseline | baseline | baseline | |
| City Hall | 218 | 224 | 87 | | 221 | | 80% | 177 | 141 | 64% | |
| Police-Fire-Rescu | 605 | 539 | 221 | | 572 | | 45% | 257 | 256 | | 45% |
| Park Maintenance | 77 | 126 | 134 | | | 112 | 50% | 56 | 55 | | |
| Epps Rec Ctr/T Fo | 130 | 101 | 183 | | | 138 | 80% | 110 | 125 | | 113% |
| Guy Smith | 1,169 | 2,643 | 2,093 | | | 1,968 | 70% | 1,378 | 1,373 | | 100% |
| S Greenville Rec ( | 70 | 88 | 90 | | | 83 | 80% | 66 | 118 | | |
| Public Works | 2,188 | 2,599 | 830 | | 2,393 | | 9% | 215 | 165 | | 77% |
| Elm St Rec Ctr | 672 | 785 | 776 | | | 744 | 60% | 447 | 288 | | 65% |
| Evans Park | 49 | 42 | 70 | | | 54 | 80% | 43 | 43 | | |
| Jaycee Park Bldg | 192 | 193 | 179 | | | 188 | 80% | 150 | 80 | | 53% |
| Sports Complex | 70 | 51 | 48 | | | 56 | 80% | 45 | 39 | | 87% |
| Greenville Aquatic | 1,471 | 1,823 | 1,692 | | | 1,662 | 70% | 1,163 | 1,246 | | 107% |
| Gardner Training ( | 8 | 8 | 3 | | 8 | | 80% | 7 | 7 | | |
| | | | | | | | | | | | |
| 5th Street Police Substation | | | | | | n/a | | | 10 | | |

**Notes:**
No data available for 5th Street Police Substation
Includes accounts with water and sewer charges only: irrigation (water-only) accounts are excluded
July and August 2011 data for Evans Park has been adjusted - see notes on Utility Bill Data tab

* 2011 data incomplete
** Savings Summary tab, Column C

**Table 3: Monthly Consumption by Building**

| **Sum of W kgal** | | **Building** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Year** | Date | City Hall | Police-Fire Rescue | Park Maintenance Ctr | Epps Rec Ctr/T Foreman Park | Guy Smith | S Greenville Rec Ctr | Public Works | Elm St Rec Ctr | Evans Park | Jaycee Park Bldg | Sports Complex | Greenville Aquatics & Fitness | Gardner Training Ctr |
| **2009** | Jan | 10 | 37 | 6 | 5 | 0 | 4 | 174 | 3 | 2 | 13 | 2 | 98 | |
| | Feb | 14 | 40 | 7 | 5 | 2 | 4 | 130 | 9 | 3 | 10 | 4 | 151 | 1 |
| | Mar | 14 | 41 | 6 | 7 | 4 | 4 | 199 | 18 | 3 | 12 | 3 | 129 | 1 |
| | Apr | 19 | 34 | 7 | 11 | 10 | 6 | 200 | 21 | 4 | 16 | 3 | 159 | 1 |
| | May | 15 | 36 | 7 | 9 | 73 | 4 | 170 | 46 | 5 | 22 | 4 | 150 | |
| | Jun | 14 | 36 | 6 | 10 | 253 | 6 | 210 | 107 | 4 | 25 | 15 | 91 | 1 |
| | Jul | 14 | 40 | 8 | 16 | 318 | 6 | 204 | 126 | 5 | 19 | 7 | 102 | 1 |
| | Aug | 16 | 38 | 6 | 28 | 164 | 11 | 150 | 86 | 4 | 22 | 22 | 87 | 1 |
| | Sep | 15 | 41 | 7 | 13 | 190 | 11 | 218 | 85 | 6 | 13 | 2 | 134 | 1 |
| | Oct | 20 | 48 | 7 | 13 | 98 | 4 | 219 | 71 | 4 | 15 | 2 | 134 | 1 |
| | Nov | 31 | 62 | 6 | 7 | 57 | 4 | 228 | 58 | 6 | 11 | 4 | 128 | |
| | Dec | 35 | 153 | 4 | 7 | 1 | 5 | 85 | 43 | 1 | 14 | 2 | 109 | 1 |
| **2010** | Jan | 18 | 40 | 5 | 1 | 0 | 6 | 105 | 1 | 2 | 17 | 3 | 123 | 1 |
| | Feb | 20 | 39 | 4 | 14 | 1 | 7 | 141 | 4 | 1 | 13 | 4 | 61 | 1 |
| | Mar | 18 | 37 | 7 | 5 | 8 | 7 | 177 | 14 | 3 | 16 | 4 | 66 | 1 |
| | Apr | 27 | 40 | 7 | 4 | 60 | 7 | 231 | 46 | 4 | 16 | 4 | 69 | 1 |
| | May | 16 | 36 | 9 | 6 | 189 | 13 | 197 | 75 | 4 | 16 | 3 | 70 | 1 |
| | Jun | 16 | 56 | 10 | 7 | 419 | 6 | 434 | 145 | 2 | 17 | 4 | 720 | 1 |
| | Jul | 28 | 42 | 19 | 10 | 440 | 7 | 194 | 147 | 5 | 19 | 4 | 118 | |
| | Aug | 16 | 76 | 29 | 16 | 458 | 10 | 183 | 114 | 4 | 19 | 3 | 99 | 1 |
| | Sep | 18 | 50 | 13 | 12 | 499 | 8 | 224 | 123 | 3 | 17 | 3 | 129 | 1 |
| | Oct | 16 | 43 | 7 | 9 | 226 | 5 | 226 | 54 | 5 | 15 | 11 | 143 | 1 |
| | Nov | 16 | 37 | 6 | 7 | 313 | 5 | 200 | 49 | 4 | 14 | 4 | 125 | 1 |
| | Dec | 16 | 43 | 9 | 9 | 30 | 4 | 286 | 12 | 3 | 13 | 3 | 100 | |
| **2011** | Jan | 15 | 39 | 22 | 6 | 0 | 3 | 160 | 3 | 2 | 10 | 3 | 129 | 1 |
| | Feb | 15 | 40 | 12 | 7 | 1 | 5 | 261 | 9 | 1 | 16 | 4 | 116 | 1 |
| | Mar | 19 | 48 | 5 | 11 | 16 | 5 | 201 | 84 | 4 | 15 | 4 | 177 | 1 |
| | Apr | 19 | 53 | 7 | 8 | 20 | 4 | 208 | 29 | 5 | 16 | 3 | 154 | 1 |
| | May | 19 | 40 | 11 | 13 | 66 | 5 | | 65 | 10 | 14 | 4 | 174 | |
| | Jun | | | 13 | 30 | 576 | 5 | | 132 | 13 | 13 | 7 | 186 | |
| | Jul | | | 13 | 17 | 442 | 9 | | 129 | 13 | 22 | 4 | 102 | |
| | Aug | | | 13 | 47 | 449 | 10 | | 124 | 13 | 17 | 2 | 106 | |
| | Sep | | | 11 | 15 | 141 | 5 | | 51 | 1 | 10 | 2 | 134 | |
| | Oct | | | 11 | 10 | 193 | 6 | | 22 | 3 | 22 | 4 | 272 | |
| | Nov | | | 7 | 10 | 176 | 28 | | 105 | 4 | 12 | 3 | 143 | |
| | Dec | | | 7 | 7 | 14 | 4 | | 22 | 0 | 11 | 8 | | |

APPENDIX

**H2O Applied Technologies LLC**
**Project: Greenville, City of 50935**
**CM: Domestic Water**
**Eng: JSK**
**Date: 3/30/12**

**Domestic Model Assumptions**

1 Toilet, urinal, and sink counts and flow rates were determined as follows: For each building, fixture counts and fixure types were recorded during the inspection.

2 Building water use data was provided by Schneider and the Greenville NC Utilities Commission. It is assumed that the provided data includes all accounts for all buildings with the exception of the 5th Street Police Substation, for which no data was available.

3 Site populations were provided for some sites (see Column L, "Reference," in Table 1 below). Baseline annual water consumption attributable to domestic fixtures was estimated as a percentage of each site's total water use (see Table 2). These percentages are assumptions, based on H2O's experience with sites of similar type. The following assumptions about population counts and occupancy were made in order to approximate the estimated domestic baseline and savings:

**Table 1: Occupancy Assumptions**

| Site Type | Population | % male | Avg hrs/wk/person | Wks/yr | % Occupancy | % of population showering | # of showers/wk/person | % male access to urinals | # of days/yr that cleaning occurs | Reference | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Office/Municipal Svcs Facility*** | | | | | | | | | | | |
| City Hall | 70 | 50% | 60 | 52 | 95% | 1% | 1 | 100% | 260 | See Note 7 | 70 people, 7am-7pm, M-F |
| Police-Fire-Rescue | 100 | 75% | 40 | 52 | 95% | 4% | 1 | 100% | 360 | | |
| Park Maintenance Center | 18 | 100% | 40 | 52 | 95% | | | | 52 | | |
| Public Works Complex | 40 | 50% | 84 | 52 | 85% | 1% | 1 | 100% | 360 | See Note 7 | 40 people, 7am-7pm, M-F, limited occupancy Sa-Su |
| Gardner Training Center | 2 | 50% | 40 | 52 | 95% | | | 100% | 156 | See Note 7 | 2 people, 8am - 5pm, M-F (matches H2O's original assumptions) |
| 5th St. Police Substation | 3 | 50% | 40 | 52 | 95% | | | | 104 | See Note 7 | 3 people, 8am - 5pm, M-F |
| ***Park/Athletic Recreational*** | | | | | | | | | | | |
| Epps Rec Ctr/T Foreman Park | 331 | 50% | 7.5 | 52 | 95% | | | 100% | 260 | See Note 6 | Data provided = average daily attendance per season. |
| Guy Smith Stadium | 647 | 50% | 40 | 52 | 100% | 1% | 1 | 100% | 360 | | |
| S Greenville Rec Ctr | 188 | 50% | 10 | 52 | 95% | | | 100% | 260 | See Note 6 | Data provided = average daily attendance per season. |
| Elm Street Rec Ctr | 181 | 50% | 40 | 52 | 95% | | | 100% | 312 | See Note 6 | Data provided = average daily attendance per season. |
| Evans Park | 19 | 50% | 40 | 52 | 100% | 1% | 1 | 100% | 360 | | |
| Jaycee Park | 20 | 50% | 56 | 52 | 95% | | | 100% | 360 | See Note 7 | 20 people, 8am-5pm, M-Sun |
| Sports Connection | 63 | 50% | 15 | 52 | 95% | | | 100% | 360 | See Note 6 | |
| Greenville Aquatics & Fitness | 9036 | 50% | 2 | 52 | 95% | 10% | 1 | 100% | 360 | See Note 6 | Population = average of annual Total Attendance headcount |

4 It is assumed that all buildings are air-cooled, i.e. there is no cooling tower water use.

5 Bathroom cleanings are estimated as follows. For the Park Maintenance Center and the 5th St Police Substation, it is estimated that the bathrooms are cleaned once per week; for the Gardner Training Center, it is estimated the bathrooms are cleaned once every two weeks. For all other buildings, it is estimated that bathrooms are cleaned every day the facility is open.

6 Population count provided by Schneider Electric (email to John Kowalski from Andy Nightengale dated 3/7/2012)

7 Population count provided by Schneider Electric (email to John Kowalski from Andy Nightengale dated 3/12/2012)

**Table 2: Annual Consumption (kgal) by Building**

| (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | (i) | (j) | (k) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sum of W kgal** | **Year** | | | | | | | | | | |
| **Building** | **2009** | **2010** | **2011** | | 2-year average (2009-2010)* | 3-year average (2009-2011) | Assumed % of total used by domestic fixtures | Estimated baseline domestic use as % of total use | Modeled baseline domestic use** | Modeled baseline domestic use as % of total use | |
| City Hall | 218 | 224 | 87 | | 221 | | 80% | 177 | 141 | 64% | |
| Police-Fire-Rescue | 605 | 539 | 221 | | 572 | | 45% | 257 | 256 | | 45% |
| Park Maintenance Ctr | 77 | 126 | 134 | | | 112 | 50% | 56 | 55 | | |
| Epps Rec Ctr/T Foreman Park | 130 | 101 | 183 | | | 138 | 80% | 110 | 125 | | 113% |
| Guy Smith | 1,169 | 2,643 | 2,093 | | | 1,968 | 70% | 1,378 | 1,373 | | 100% |
| S Greenville Rec Ctr | 70 | 88 | 90 | | | 83 | 80% | 66 | 118 | | |
| Public Works | 2,188 | 2,599 | 830 | | 2,393 | | 9% | 215 | 165 | | 77% |
| Elm St Rec Ctr | 672 | 785 | 776 | | | 744 | 60% | 447 | 288 | | 65% |
| Evans Park | 49 | 42 | 70 | | | 54 | 80% | 43 | 43 | | |
| Jaycee Park Bldg | 192 | 193 | 179 | | | 188 | 80% | 150 | 80 | | 53% |
| Sports Complex | 70 | 51 | 48 | | | 56 | 80% | 45 | 39 | | 87% |
| Greenville Aquatics & Fitness | 1,471 | 1,823 | 1,692 | | | 1,662 | 70% | 1,163 | 1,246 | | 107% |
| Gardner Training Ctr | 8 | 8 | 3 | | 8 | | 80% | 7 | 7 | | |
| | | | | | | | | | | | |
| 5th Street Police Substation | | | | | n/a | | | | 10 | | |

* 2011 data incomplete
** Savings Summary tab, Column C

**Notes:**

No data available for 5th Street Police Substation
Includes accounts with water and sewer charges only: irrigation (water-only) accounts are excluded
July and August 2011 data for Evans Park has been adjusted - see notes on Utility Bill Data tab

**Table 3: Monthly Consumption by Building**

| **Sum of W kgal** | | **Building** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Year** | Date | City Hall | Police-Fire-Rescue | Park Maintenance Ctr | Epps Rec Ctr/T Foreman Park | Guy Smith | S Greenville Rec Ctr | Public Works | Elm St Rec Ctr | Evans Park | Jaycee Park Bldg | Sports Complex | Greenville Aquatics & Fitness | Gardner Training Ctr |
| **2009** | Jan | 10 | 37 | 6 | 5 | 0 | 4 | 174 | 3 | 2 | 13 | 2 | 98 | |
| | Feb | 14 | 40 | 7 | 5 | 2 | 4 | 130 | 9 | 3 | 10 | 4 | 151 | 1 |
| | Mar | 14 | 41 | 6 | 7 | 4 | 4 | 199 | 18 | 3 | 12 | 3 | 129 | 1 |
| | Apr | 19 | 34 | 7 | 11 | 10 | 6 | 200 | 21 | 4 | 16 | 3 | 159 | 1 |
| | May | 15 | 36 | 7 | 9 | 73 | 4 | 170 | 46 | 5 | 22 | 4 | 150 | |
| | Jun | 14 | 36 | 6 | 10 | 253 | 6 | 210 | 107 | 4 | 25 | 15 | 91 | 1 |
| | Jul | 14 | 40 | 8 | 16 | 318 | 6 | 204 | 126 | 5 | 19 | 7 | 102 | 1 |
| | Aug | 16 | 38 | 6 | 28 | 164 | 11 | 150 | 86 | 4 | 22 | 22 | 87 | 1 |
| | Sep | 15 | 41 | 7 | 13 | 190 | 11 | 218 | 85 | 6 | 13 | 2 | 134 | 1 |
| | Oct | 20 | 48 | 7 | 13 | 98 | 4 | 219 | 71 | 4 | 15 | 2 | 134 | 1 |
| | Nov | 31 | 62 | 6 | 7 | 57 | 4 | 228 | 58 | 6 | 11 | 4 | 128 | |
| | Dec | 35 | 153 | 4 | 7 | 1 | 5 | 85 | 43 | 1 | 14 | 2 | 109 | 1 |
| **2010** | Jan | 18 | 40 | 5 | 1 | 0 | 6 | 105 | 1 | 2 | 17 | 3 | 123 | 1 |
| | Feb | 20 | 39 | 4 | 14 | 1 | 7 | 141 | 4 | 1 | 13 | 4 | 61 | 1 |
| | Mar | 18 | 37 | 7 | 5 | 8 | 7 | 177 | 14 | 3 | 16 | 4 | 66 | 1 |
| | Apr | 27 | 40 | 7 | 4 | 60 | 7 | 231 | 46 | 4 | 16 | 4 | 69 | 1 |
| | May | 16 | 36 | 9 | 6 | 189 | 13 | 197 | 75 | 4 | 16 | 3 | 70 | 1 |
| | Jun | 16 | 56 | 10 | 7 | 419 | 6 | 434 | 145 | 2 | 17 | 4 | 720 | 1 |
| | Jul | 28 | 42 | 19 | 10 | 440 | 7 | 194 | 147 | 5 | 19 | 4 | 118 | |
| | Aug | 16 | 76 | 29 | 16 | 458 | 10 | 183 | 114 | 4 | 19 | 3 | 99 | 1 |
| | Sep | 18 | 50 | 13 | 12 | 499 | 8 | 224 | 123 | 3 | 17 | 3 | 129 | 1 |
| | Oct | 16 | 43 | 7 | 9 | 226 | 5 | 226 | 54 | 5 | 15 | 11 | 143 | 1 |
| | Nov | 16 | 37 | 6 | 7 | 313 | 5 | 200 | 49 | 4 | 14 | 4 | 125 | 1 |
| | Dec | 16 | 43 | 9 | 9 | 30 | 4 | 286 | 12 | 3 | 13 | 3 | 100 | |
| **2011** | Jan | 15 | 39 | 22 | 6 | 0 | 3 | 160 | 3 | 2 | 10 | 3 | 129 | 1 |
| | Feb | 15 | 40 | 12 | 7 | 1 | 5 | 261 | 9 | 1 | 16 | 4 | 116 | 1 |
| | Mar | 19 | 48 | 5 | 11 | 16 | 5 | 201 | 84 | 4 | 15 | 4 | 177 | 1 |
| | Apr | 19 | 53 | 7 | 8 | 20 | 4 | 208 | 29 | 5 | 16 | 3 | 154 | 1 |
| | May | 19 | 40 | 11 | 13 | 66 | 5 | | 65 | 10 | 14 | 4 | 174 | |
| | Jun | | | 13 | 30 | 576 | 5 | | 132 | 13 | 13 | 7 | 186 | |
| | Jul | | | 13 | 17 | 442 | 9 | | 129 | 13 | 22 | 4 | 102 | |
| | Aug | | | 13 | 47 | 449 | 10 | | 124 | 13 | 17 | 2 | 106 | |
| | Sep | | | 11 | 15 | 141 | 5 | | 51 | 1 | 10 | 2 | 134 | |
| | Oct | | | 11 | 10 | 193 | 6 | | 22 | 3 | 22 | 4 | 272 | |
| | Nov | | | 7 | 10 | 176 | 28 | | 105 | 4 | 12 | 3 | 143 | |
| | Dec | | | 7 | 7 | 14 | 4 | | 22 | 0 | 11 | 8 | | |

**H2O Applied Technologies LLC**
**Project:** **Greenville, City of 50935**
**CM:** **Domestic Water**
**Eng:** **JSK**
**Date:** **3/30/2012**
Rev Date:12/30/11

| | Baseline Allocation | | Post Allocation | | Savings | |
|---|---|---|---|---|---|---|
| | kgal | MMBtu* | kgal | MMBtu* | kgal | MMBtu* |
| Toilets | 2,341 | | 1,246 | | 1,095 | |
| Urinals | 491 | | 491 | | 0 | |
| Sinks | 725 | 258 | 178 | 63 | 547 | 195 |
| Showers | 381 | 159 | 368 | 153 | 13 | 6 |
| Total | 3,937 | 417 | 2,282 | 217 | 1,655 | 201 |
| | | | | | 42% | 48% |

* Point of use, not including boiler efficiency

| Building/ Population Name: | City Hall | Police-Fire Rescue | Park Maintenance Center | Epps Recreation Center / Thomas Foreman Park | Guy Smith Stadium | South Greenville Rec Center Building | Public Works Complex | Elm Street Recreation Center | Evans Park Building | Jaycee Park Building | Sports Connection | Greenville Aquatics and Fitness Center | Gardner Training Center | 5th Street Police Substation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Population | 70 | 100 | 18 | 331 | 647 | 188 | 40 | 181 | 19 | 20 | 63 | 9036 | 2 | 3 |
| % Male | 50% | 75% | 100% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% |
| Avg Hours/Week/Person (**for FTE only**)** | 60 | 40 | 40 | 7.5 | 40 | 10 | 84 | 40 | 40 | 56 | 15 | 2 | 40 | 40 |
| Weeks per Year | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 |
| Avg % Occupancy During Weeks/Year | 95% | 95% | 95% | 95% | 100% | 95% | 85% | 95% | 100% | 95% | 95% | 95% | 95% | 95% |
| FTE* (see definition below) | 104 | 99 | 18 | 61 | 673 | 46 | 74 | 179 | 20 | 28 | 23 | 446 | 2 | 3 |
| % of Population Showering | 1% | 4% | 0% | 0% | 1% | 0% | 1% | 0% | 1% | 0% | 0% | 10% | 0% | 0% |
| Number of Showers/Week/Person | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| % male access to urinals | 100% | 100% | | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 0% |
| # of Days/Year That Cleaning Occurs | 260 | 360 | 52 | 260 | 360 | 260 | 360 | 312 | 360 | 360 | 360 | 360 | 156 | 104 |
| % of Occupancy Using Bathrooms | | | | | | | | | | | | | | |
| Number of Uses/Person/Day (toilet,urinal,sink) | | | | | | | | | | | | | | |
| Number of Days/Year | | | | | | | | | | | | | | |

| ** FTE Based on the Following Occupancy | |
|---|---|
| 8 | Hours/Day |
| 5 | Days/Week |
| 50 | Weeks/Year |

Use amber cells whenever calculations are based on bathroom uses/day/person as opposed to people occupancy-hours

| FTE-Based Usage Profiles | | | | |
|---|---|---|---|---|
| | **Toilet** | **Urinal** | **Sink** | **Shower** |
| Sec/Use | | | 15 | |
| Min/Use | | | | 5 |
| Cold Water Temp | | | 60 | 60 |
| Warm Water Temp | | | 105 | 110 |
| Female FTE Uses/Day | **3.0** | | **3.0** | |
| Male FTE Uses/Day | **1.0** | **2.0** | **3.0** | |
| Sink blended warm water consumption as % of total sink water consumption | | | | 95% |
| Shower blended warm water consumption as a % of total shower water consumption | | | | 100% |

| Residential and other Non-FTE-Based Usage Profiles | | | | |
|---|---|---|---|---|
| | **Toilet** | **Urinal** | **Sink** | **Shower** |
| Sec/Use | | | 35 | |
| Min/Use | | | | 8.5 |
| Cold Water Temp | | | 60 | 60 |
| Warm Water Temp | | | 105 | 110 |
| Female Uses as % of U | 100% | | 100% | |
| Male Uses as % of UPD | 33% | 67% | 100% | |
| Sink blended warm water consumption as % of total sink water consumption | | | | 80% |
| Shower blended warm water consumption as a % of total shower water | | | | 100% |

| Cleaning Profiles | | | | |
|---|---|---|---|---|
| | **Toilet** | **Urinal** | **Sink** | **Shower** |
| Washes/Day | | | 1 | 1 |
| Sec/Wash | | | 30 | 60 |
| Flushes/Day | 1 | 1 | | |

| Cleaning Profiles | | | | |
|---|---|---|---|---|
| | **Toilet** | **Urinal** | **Sink** | **Shower** |
| Washes/Day | | | 1 | 1 |
| Sec/Wash | | | 30 | 60 |
| Flushes/Day | 1 | 1 | | |

**H2O Applied Technologies LLC**
**Project:** Greenville, City of 50935
**CM:** Domestic Water
**Eng:** JSK
**Date:** 3/30/2012
Rev Date:12/30/11

**Bathroom Group Table**

**DOMESTIC WATER FIXTURE UTILIZATION MODEL**

| Facility and/or Restroom Designation: | | City Hall | Police-Fire Rescue | Park Maintenance Center | Epps Recreation Center / Thomas Foreman Park | Guy Smith Stadium | South Greenville Rec Center Building | Public Works Complex | Elm Street Recreation Center | Evans Park Building | Jaycee Park Building | Sports Connection | Greenville Aquatics and Fitness Center | Gardner Training Center | 5th Street Police Substation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fixture Utilization (gallons)** | | | | | | | | | | | | | | | |
| Number of FTEs | | 104 | 99 | 18 | 61 | 673 | 46 | 74 | 179 | 20 | 28 | 23 | 446 | 2 | 3 |
| Number male FTEs | | 52 | 74 | 18 | 31 | 336 | 23 | 37 | 89 | 10 | 14 | 12 | 223 | 1 | 1 |
| Toilet Usage FTE Flushes/FTE Day | | 207 | 148 | 53 | 123 | 1,346 | 93 | 149 | 358 | 40 | 55 | 47 | 893 | 4 | 9 |
| Toilet Average Cleaning Flushes/Cleaning Day | | 17 | 26 | 2 | 17 | 24 | 5 | 17 | 6 | 8 | 14 | 6 | 9 | 3 | 2 |
| Toilet Usage Assigned Person Flushes/Day | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Urinal Usage FTE Flushes/FTE Day | | 104 | 148 | 0 | 61 | 673 | 46 | 74 | 179 | 20 | 28 | 23 | 446 | 2 | 0 |
| Urinal Average Cleaning Flushes/Cleaning Day | | 3 | 5 | 0 | 6 | 13 | 1 | 6 | 1 | 4 | 5 | 2 | 4 | 1 | 0 |
| Urinal Usage Assigned Person Flushes/Day | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sink Usage FTE Min/FTE Day | | 78 | 74 | 13 | 46 | 505 | 35 | 56 | 134 | 15 | 21 | 18 | 335 | 1 | 2 |
| Sink Average Cleaning Min/Cleaning Day | | 7 | 15 | 2 | 8 | 9 | 3 | 9 | 2 | 4 | 5 | 2 | 5 | 2 | 1 |
| Sink Usage Assigned Person Min/Day | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Number of Persons | | 70 | 100 | 18 | 331 | 647 | 188 | 40 | 181 | 19 | 20 | 63 | 9,036 | 2 | 3 |
| % Occupancy | | 95% | 95% | 95% | 95% | 100% | 95% | 85% | 95% | 100% | 95% | 95% | 95% | 95% | 95% |
| % of Population Showering | | 1% | 4% | 0% | 0% | 1% | 0% | 1% | 0% | 1% | 0% | 0% | 10% | 0% | 0% |
| Number of Showers/Week/Person | | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Minutes/shower | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Shower Usage Min/week | | 3 | 19 | 0 | 0 | 32 | 0 | 2 | 0 | 1 | 0 | 0 | 4,292 | 0 | 0 |
| Shower Average Cleaning Min/Cleaning Day | | 4 | 15 | 0 | 0 | 10 | 0 | 3 | 0 | 8 | 0 | 0 | 17 | 0 | 0 |
| **Baseline Annual kgal Water Consumption** | | | | | | | | | | | | | | | |
| Toilets | 2,341 | 90 | 149 | 47 | 84 | 930 | 86 | 105 | 146 | 20 | 56 | 21 | 601 | 5 | 9 |
| Urinals | 491 | 27 | 39 | 0 | 17 | 173 | 12 | 21 | 68 | 6 | 9 | 7 | 113 | 1 | 0 |
| Sinks | 725 | 22 | 53 | 8 | 24 | 260 | 21 | 36 | 75 | 11 | 15 | 11 | 188 | 2 | 1 |
| Showers | 381 | 3 | 16 | 0 | 0 | 10 | 0 | 3 | 0 | 5 | 0 | 0 | 344 | 0 | 0 |
| Total Baseline kgal | 3,937 | 141 | 256 | 55 | 125 | 1,373 | 118 | 165 | 288 | 43 | 80 | 39 | 1,246 | 7 | 10 |
| **Baseline annual MMbtu Consumption** | | | | | | | | | | | | | | | |
| Sinks | 258 | 8 | 19 | 3 | 9 | 93 | 7 | 13 | 27 | 4 | 5 | 4 | 67 | 1 | 1 |
| Showers | 159 | 1 | 7 | 0 | 0 | 4 | 0 | 1 | 0 | 2 | 0 | 0 | 143 | 0 | 0 |
| Totals | 417 | 9 | 25 | 3 | 9 | 97 | 7 | 14 | 27 | 6 | 5 | 4 | 210 | 1 | 1 |
| **Post-Retrofit Annual gal Water Consumption** | | | | | | | | | | | | | | | |
| Toilets | 1,246 | 90 | 74 | 17 | 52 | 502 | 35 | 60 | 146 | 20 | 26 | 21 | 201 | 2 | 3 |
| Urinals | 491 | 27 | 39 | 0 | 17 | 173 | 12 | 21 | 68 | 6 | 9 | 7 | 113 | 1 | 0 |
| Sinks | 178 | 11 | 12 | 2 | 7 | 65 | 5 | 9 | 17 | 3 | 3 | 3 | 43 | 0 | 0 |
| Showers | 368 | 2 | 10 | 0 | 0 | 8 | 0 | 0 | 0 | 4 | 0 | 0 | 344 | 0 | 0 |
| Total Post-Retrofit kgal | 2,282 | 129 | 135 | 19 | 75 | 747 | 51 | 90 | 231 | 34 | 38 | 30 | 701 | 3 | 3 |
| **Post-Retrofit annual MMBtu Consumption** | | | | | | | | | | | | | | | |
| Sinks | 63 | 4 | 4 | 1 | 2 | 23 | 2 | 3 | 6 | 1 | 1 | 1 | 15 | 0 | 0 |
| Showers | 153 | 1 | 4 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 143 | 0 | 0 |
| Totals | 217 | 5 | 8 | 1 | 2 | 26 | 2 | 3 | 6 | 3 | 1 | 1 | 159 | 0 | 0 |
| **Annual kgal Water Savings** | | | | | | | | | | | | | | | |
| Toilets | 1,095 | 0 | 75 | 30 | 32 | 428 | 51 | 45 | 0 | 0 | 30 | 0 | 400 | 3 | 5 |
| Urinals | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sinks | 547 | 11 | 41 | 6 | 17 | 196 | 16 | 28 | 58 | 9 | 12 | 9 | 145 | 1 | 1 |
| Showers | 13 | 1 | 6 | 0 | 0 | 2 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Total Annual kgal Savings | 1,655 | 12 | 122 | 36 | 49 | 626 | 67 | 76 | 58 | 9 | 42 | 9 | 545 | 4 | 7 |
| **Annual mmbtu Savings** | | | | | | | | | | | | | | | |
| Sinks | 195 | 4 | 15 | 2 | 6 | 70 | 6 | 10 | 21 | 3 | 4 | 3 | 52 | 0 | 0 |
| Showers | 6 | 1 | 3 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Annual mmbtu Savings | 201 | 4 | 17 | 2 | 6 | 71 | 6 | 11 | 21 | 3 | 4 | 3 | 52 | 0 | 0 |

APPENDIX

**H2O Applied Technologies LLC**
**Project:** **Greenville, City of 50935**
**CM:** **Domestic Water**
**Eng:** **JSK**
**Date:** **3/30/2012**
Rev Date:12/30/11

If a bathroom is repeated in several columns below for the various populations being served,
apply cleaning days to the bathroom in the first column only, and shade all columns but the first one.

| Fixture Quantities and Characteristics | City Hall | Police-Fire Rescue | Park Maintenance Center | Epps Recreation Center / Thomas Foreman Park | Guy Smith Stadium | South Greenville Rec Center Building | Public Works Complex | Elm Street Recreation Center | Evans Park Building | Jaycee Park Building | Sports Connection | Greenville Aquatics and Fitness Center | Gardner Training Center | 5th Street Police Substation | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Toilets** | | | | | | | | | | | | | | | | |
| # of groups of toilets with different pre/post combos (1, 2 or 3) | 1 | 2 | 1 | 2 | 3 | 2 | 3 | 1 | 1 | 2 | 2 | 3 | 1 | 1 | | |
| Total Number of Toilets | 17 | 26 | 2 | 17 | 24 | 5 | 17 | 6 | 8 | 14 | 6 | 9 | 3 | 2 | 156 | 81 |
| Number High Flow toilets (group 1) including not to be retrofit | 17 | 22 | 2 | 7 | 10 | 3 | 8 | 6 | 8 | 10 | 6 | 5 | 3 | 2 | | |
| % of population using high flow toilets | 100% | 85% | 100% | 41% | 42% | 60% | 47% | 100% | 100% | 71% | 100% | 56% | 100% | 100% | | |
| Number of High Flow toilets being retrofitted | 0 | 22 | 2 | 7 | 10 | 3 | 8 | 0 | 0 | 10 | 0 | 5 | 3 | 2 | 72 | |
| High Flow toilet gpf | 1.6 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 1.6 | 1.6 | 3.5 | 1.5 | 3.5 | 3.5 | 3.5 | | |
| Retrofit High FlowToilet gpf | | 1.6 | 1.28 | 1.28 | 1.28 | 1.28 | 1.28 | | | 1.28 | | 1.28 | 1.28 | 1.28 | | |
| Number of intermediate flow toilets (ie., group 2) | 0 | 4 | 0 | 10 | 4 | 2 | 6 | 0 | 0 | 4 | 0 | 3 | 0 | 0 | | |
| % of population using intermediate flow toilets | 0% | 15% | 0% | 59% | 17% | 40% | 35% | 0% | 0% | 29% | 0% | 33% | 0% | 0% | | |
| Number of intermediate flow toilets being retrofitted | | 0 | | 0 | 4 | 2 | 0 | | | 0 | | 3 | | | 9 | |
| Intermediate flow toilet gpf | | 1.6 | | 1.6 | 3.5 | 3.5 | 1.6 | | | 1.6 | | 1.6 | | | | |
| Retrofit intermediate flow toilet gpf | | | | | 1.6 | 1.6 | | | | | | | | | | |
| Number of lowest flow toilets (ie., group 3) | | | 0 | 0 | 10 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | | |
| % of population using lowest flow toilets | 0% | 0% | 0% | 0% | 42% | 0% | 18% | 0% | 0% | 0% | 0% | 11% | 0% | 0% | | |
| Number of lowest flow toilets being retrofitted | | | | | 0 | | 0 | | | | | 0 | | | 0 | |
| Lowest Flow toilet gpf | | | | | 1.6 | | 1.28 | | | | | 1.6 | | | | |
| Retrofit lowest flow toilet gpf | | | | | | | | | | | | | | | | |
| | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | | |
| **Urinals** | | | | | | | | | | | | | | | | |
| Total Number of Urinals | 3 | 5 | | 6 | 13 | 1 | 6 | 1 | 4 | 5 | 2 | 4 | 1 | | 51 | 0 |
| Number High Flow Urinals | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| % of population using high flow urinals | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | | |
| Number of High Flow urinals being retrofitted | | | | | | | | | | | | | | | 0 | |
| High Flow urinal gpf | | | | | | | | | | | | | | | | |
| Retrofit High Flow urinal gpf | | | | | | | | | | | | | | | | |
| Number of low flow urinals | 3 | 5 | 0 | 6 | 13 | 1 | 6 | 1 | 4 | 5 | 2 | 4 | 1 | 0 | | |
| % of population using low flow urinals | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | | |
| Number of low flow urinals being retrofitted | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | |
| Low Flow urinal gpf | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 | 1.0 | 1.5 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | | | |
| Retrofit Low Flow Urinal gpf. | | | | | | | | | | | | | | | | |
| | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | | |
| **Sinks** | | | | | | | | | | | | | | | | |
| Total Number of Sinks | 13 | 30 | 3 | 16 | 18 | 5 | 18 | 3 | 8 | 10 | 4 | 9 | 4 | 2 | 143 | 127 |
| Number High Flow Sinks | 4 | 30 | 3 | 12 | 16 | 5 | 17 | 3 | 8 | 10 | 4 | 9 | 4 | 2 | | |
| % of population using high flow sinks | 31% | 100% | 100% | 75% | 89% | 100% | 94% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | | |
| Number of High Flow Sinks being retrofitted | 4 | 30 | 3 | 12 | 16 | 5 | 17 | 3 | 8 | 10 | 4 | 9 | 4 | 2 | 127 | |
| High Flow Sink gpm | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | | |
| Retrofit High Flow Sink gpm | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | | |
| Number of low flow Sinks | 9 | 0 | 0 | 4 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| % of population using low flow Sinks | 69% | 0% | 0% | 25% | 11% | 0% | 6% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | | |
| Number of low flow Sinks being retrofitted | 0 | | | 0 | 0 | | 0 | | | | | | | | 0 | |
| Low Flow Sink gpm | 0.5 | | | 0.5 | 0.5 | | 0.5 | | | | | | | | | |
| Retrofit Low Flow Sink gpm | | | | | | | | | | | | | | | | |
| | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | | |
| **Showers** | | | | | | | | | | | | | | | | |
| Total Number of Showers | 4 | 15 | 1 | | 10 | | 3 | | 8 | | | 17 | | | 58 | 29 |
| Number High Flow Showers | 4 | 15 | 1 | | 4 | | 3 | | 2 | | | 0 | | | | |
| % of population using high flow Showers | 100% | 100% | 100% | 0% | 40% | 0% | 100% | 0% | 25% | 0% | 0% | 0% | 0% | 0% | | |
| Number of High Flow Showers being retrofitted | 4 | 15 | 1 | | 4 | | 3 | | 2 | | | | | | 29 | |
| High Flow Shower gpm | 2.5 | 2.5 | 2.5 | | 2.5 | | 2.5 | | 2.5 | | | | | | | |
| Retrofit High Flow Shower gpm | 1.5 | 1.5 | 1.5 | | 1.5 | | | | 1.5 | | | | | | | |
| Number of low flow Showers | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 6 | 0 | 0 | 17 | 0 | 0 | | |
| % of population using low flow Showers | 0% | 0% | 0% | 100% | 60% | 100% | 0% | 100% | 75% | 100% | 100% | 100% | 100% | 100% | | |
| Number of low flow Showers being retrofitted | | | | | 0 | | | | 0 | | | 0 | | | 0 | |
| Low Flow Shower gpm | | | | | 1.5 | | | | 1.5 | | | 1.5 | | | | |
| Retrofit Low Flow Shower gpm | | | | | | | | | | | | | | | | |
| | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | ok | | |

# Appendix C: Energy Model Documentation

# ECM Building Simulation Modeling Modifications
# City of Greenville
# 5th Street Police Substation

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**ECM 5.5 – Building Envelope**
Space (All):

- Reduced infiltration by 15%

**ECM 1.5 – Lighting**

- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.5 – Controls**
HVAC System:

- Scheduled fans for occupied hours
- Changed night cycle control to cycle on any

Thermal Zone:

- Scheduled thermostats for rooms to 74F/70F 80F/64F

# ECM Building Simulation Modeling Modifications
# City of Greenville
# Bradford Creek Golf Course

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**ECM 5.201 – Building Envelope**

Layers (EL1 Roof Cons Layers):

- Added a layer of R13 insulation

Space (All):

- Reduced infiltration by 15%

**ECM 1.201 – Lighting**

- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet
- Changed lighting schedules for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.201 – Controls**

HVAC System (All):

- Scheduled fans for occupied hours

Thermal Zone:

- Scheduled thermostats for rooms to 74F/70F 80F/64F

# ECM Building Simulation Modeling Modifications
# City of Greenville
# City Hall

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**Baseline Adjustment – Ventilation**
HVAC System (AHU 2 Assembly):
- Scheduled minimum outside air ratio to 0.53 based ventilation requirements

**ECM 5.1 – Building Envelope**
Construction (EL2 Roof Construction):
- Change U-value to 0.068

Global Parameter:
- Reduced Infil 1, 2, 3, 4, & 5 by 10%

**ECM 1.1 – Lighting**
- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet
- Changed lighting schedules for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.1 – Controls**
HVAC System (AHU 1):
- Scheduled fans for occupied hours with a 2 hour optimum start

HVAC System (AHU 1, 2, & 3):
- Changed maximum cooling reset temperature to 70F
- Changed outside air economizers control to OA temperature
- Changed outside air economizer DB high limit to 70F
- Changed economizer compressor lockout to NO
- Changed maximum OA fraction to 1
- Changed fan minimum flow ratio to 0.35

Thermal Zone (Served by AHU 1, 2, & 3):
- Scheduled thermostats for all rooms to 74F/70F 80F/64F

Thermal Zone (All except Council Chambers):
- Changed VAV minimum flow ratio for areas to 0.35
- Scheduled VAV minimum flow ratio to occupied hours and allowed it to go to 0 during unoccupied hours

**ECM 3.1 – Mechanical**
HVAC System:
- Installed EMI unit for room EL3-14 (Rm 303) per scope
    - Input fan power at 0.000295 kW/CFM
    - Input cooling EIR at 0.2967
    - Input cooling capacity at 2 tons

    - Input supply airflow at 750 CFM
- Scheduled fans for occupied hours with a 2 hour optimum start for AHU 3

# ECM Building Simulation Modeling Modifications
# City of Greenville
# City Warehouse

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**Baseline Adjustment – Building Change of Use**

Space (Proposed Office Area):

- Increase people in this area to be approximately 40 people
- Changed people sensible load to 250 and latent load to 200
- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet
- Changed lighting schedules for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

HVAC System (Office Area Split):

- Changed supply CFM to 5,500
- Changed fan power to 0.0004 kW/CFM
- Changed fan schedule to all system to run all the time
- Changed cooling EIR to 0.2843
- Changed minimum OA ratio to 0.27 based on proposed ventilation requirements
- Changed cooling capacity to 168 MBH
- Changed heating capacity to 311 MBH
- Changed maximum OA fraction to 0.27

Thermal Zone (Proposed Office Area):

- Scheduled thermostats for rooms to 74F/70F

**ECM 1.8 – Lighting**

- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.8 – Controls**

HVAC System (Office Area Split & Warehouse Unit Heaters):

- Scheduled fans for occupied hours
- Changed night cycle control to cycle on any

Thermal Zone:

- Scheduled thermostats for proposed office area rooms to 74F/70F 80F/64F
- Scheduled thermostats for warehouse area to 68F/50F

## ECM Building Simulation Modeling Modifications
## City of Greenville
## Elm Street Recreation Center

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**ECM 5.12 – Building Envelope**
Space (All):

- Reduced infiltration by 15%

**ECM 1.12 – Lighting**

- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet
- Changed lighting schedules for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM Building Simulation Modeling Modifications**
**City of Greenville**
**Eppes Recreation Center/Thomas Foreman Park**

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**Baseline Adjustment – Ventilation**
HVAC System (Gym & Multipurpose):
- Changed minimum outside air ratio to 0.22 based on design ventilation requirements

**ECM 5.6 – Building Envelope**
Space (All w/ infiltration):
- Reduced infiltration by 25%

**ECM 1.6 – Lighting**
- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.6 – Controls**
HVAC System (Gym, Multipurpose, Game Rm, & Gym Lobby):
- Scheduled fans for occupied hours with a 2 hour optimum start
- Changed night cycle control to cycle on any

HVAC System (Gym & Multipurpose):
- Scheduled minimum air ventilation for occupied hours

Thermal Zone:
- Scheduled thermostats for all rooms to 74F/70F 80F/64F
- Scheduled exhaust fans for occupied hours

# ECM Building Simulation Modeling Modifications
# City of Greenville
# Evans Park Building

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**ECM 5.11 – Building Envelope**
Space (All):

- Reduced infiltration by 15%

**ECM 1.11 – Lighting**

- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet
- Changed lighting schedules for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.11 – Controls**
HVAC System (All):

- Scheduled fans for occupied hours
- Changed night cycle control to cycle on any

Thermal Zone (All):

- Scheduled thermostats for rooms to 74F/70F 80F/64F
- Scheduled exhaust fans to occupied hours

**ECM 3.11 – Mechanical**
HVAC System (Lobby Area Unit):

- Changed cooling EIR to 0.2625
- Changed economizer outside air control to OA temperature
- Changed economizer DB high limit to 70F

# ECM Building Simulation Modeling Modifications
# City of Greenville
# Gardner Training Center

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**ECM 5.15 – Building Envelope**
Space (All):

- Reduced infiltration by 15%

**ECM 1.15 – Lighting**

- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet
- Changed lighting schedules for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.15 – Controls**
HVAC System (All):

- Scheduled fans for occupied hours
- Changed night cycle control to cycle on any

Thermal Zone:

- Scheduled thermostats for rooms to 74F/70F 80F/64F

# ECM Building Simulation Modeling Modifications
# City of Greenville
# Greenfield Terrace Building

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**ECM 1.18 – Lighting**

- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet
- Changed lighting schedules for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.18 – Controls**

HVAC System (All):

- Scheduled fans for occupied hours with a 2 hour optimum start
- Changed night cycle control to cycle on any

Thermal Zone:

- Scheduled thermostats for all rooms to 74F/70F 80F/64F

# ECM Building Simulation Modeling Modifications
# City of Greenville
# Greenville Aquatics & Fitness Center

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**Baseline Adjustment – Ventilation**
HVAC System:

- Changed cooling fan control to constant volume for RTU 1 (Exercise), RTU 2 (Room B), RTU 3 (Daycare), RTU 4 (Weight Room), RTU 5 (Locker), & Aerobics RTU
- Changed indoor fan mode to continuous for RTU 1 (Exercise), RTU 2 (Room B), RTU 3 (Daycare), RTU 4 (Weight Room), RTU 5 (Locker), & Aerobics RTU
- Changed minimum outside air ratio to 0.2 based on design ventilation requirements for RTU1 (Exercise) ), RTU 2 (Room B), RTU 3 (Daycare), Gym & Stage AHU, & RTU 5 (Locker)
- Changed minimum outside air ratio to 0.17 based on design ventilation requirements for the pool system
- Changed cooling minimum supply temperature to 55F for the pool system
- Changed maximum humidity to 60% for the pool system

**ECM 5.19 – Building Envelope**
Global Parameter:

- Reduced Infil 1, 2, 3, 4, 5, 6, & 7 by 15%

**ECM 1.19 – Lighting**

- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet
- Changed lighting schedules for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.19 – Controls**
HVAC System:

- Scheduled fans for occupied hours with a 2 hour optimum start for RTU 1 (Exercise), RTU 2 (Room B), RTU 3 (Daycare), RTU 4 (Weight Room), RTU 5 (Locker), Gym & Stage AHU, & Aerobics RTU
- Changed outside air economizer DB high limit to 70F for the Gym & Stage AHU
- Changed economizer compressor lockout to NO for the Gym & Stage AHU
- Changed maximum OA fraction to 1 for the Gym & Stage AHU
- Scheduled minimum air ventilation for occupied hours for RTU 1 (Exercise), RTU 2 (Room B), RTU 3 (Daycare), RTU 5 (Locker), Gym & Stage AHU, and the pool system

Thermal Zone:

- Scheduled thermostats for all rooms served by RTU 1 (Exercise), RTU 2 (Room B), RTU 3 (Daycare), RTU 4 (Weight Room), RTU 5 (Locker), Gym & Stage AHU, & Aerobics RTU to 74F/70F 80F/64F
- Scheduled exhaust fans for occupied hours

**ECM 3.19 – Mechanical**

Space (Pool):

- Scheduled internal energy source (pool load) to 10% during unoccupied
- Changed internal energy source (pool load) type to process

HVAC System (Pool System):

- Changed cooling minimum supply temperature to 65F
- Changed outside air economizers control to OA temperature
- Changed outside air economizer DB high limit to 70F
- Changed maximum OA fraction to 1

**ECM Building Simulation Modeling Modifications**
**City of Greenville**
**H. Boyd Lee Park Buildings**

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**ECM 5.16 – Building Envelope**
Space:
- Reduced infiltration by 15% everywhere except gym
- Reduced infiltration by 25% in the gym

**ECM 1.16 – Lighting**
- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet
- Changed lighting schedules for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.16 – Controls**
HVAC System (VAV System, Game Room, & Gym):
- Scheduled fans for occupied hours with a 2 hour optimum start
- Changed night cycle control to cycle on any
- Scheduled minimum air ventilation for occupied hours for the gym unit

Thermal Zone:
- Scheduled thermostats for all rooms served by the VAV system, game room unit, & gym unit to 74F/70F 80F/64F
- Scheduled exhaust fans for occupied hours

# ECM Building Simulation Modeling Modifications
# City of Greenville
# Jaycee Park Building

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**Baseline Adjustment – Ventilation**
HVAC System:

- Changed indoor fan mode to continuous for all systems
- Changed minimum outside air ratio to the following based on design ventilation requirements
    - AC 1 – 0.2
    - AC 2 – 0.2
    - AC 3 – 0.25
    - AC 4 – 0.1
    - AC 5 – 0.08
    - AC 6 – 0.08
    - AC 7 – 0.08
    - RTU 1 – 0.09
    - RTU 2 – 0.15
    - RTU 3 – 0.09
    - RTU 4 – 0.15
    - RTU 5 – 0.2

**ECM 5.13 – Building Envelope**
Space (All w/ infiltration):

- Reduced infiltration by 20%

**ECM 1.13 – Lighting**

- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet
- Changed lighting schedules for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.13 – Controls**
HVAC System:

- Scheduled fans for occupied hours with a 2 hour optimum start for all systems
- Changed night cycle control to cycle on any for all systems
- Changed furnace heating input ratio to 1.25 for AC 1, 2, 4, 5, 6, & 7
- Changed furnace heating input ratio to 1.23 for AC 3
- Scheduled minimum air ventilation for occupied hours for AC 3
- Changed cooling EIR to 0.3102 for AC 1, 2, 3, 4, 5, & 6
- Changed cooling EIR to 0.3074 for AC 7

Thermal Zone:

- Scheduled thermostats for all rooms to 74F/70F 80F/64F
- Scheduled exhaust fans for occupied hours

# ECM Building Simulation Modeling Modifications
# City of Greenville
# Municipal Building

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**Baseline Adjustment – Ventilation**
HVAC System (Third Floor Split Systems):

- Changed minimum outside air ratio to 0.41 based on calculated ventilation requirements

**ECM 5.2 – Building Envelope**
Construction (EL1 Roof Construction):

- Change U-value to 0.05

Global Parameter:

- Reduced Infil 1, 2, & 3 by 10%

**ECM 1.2 – Lighting**

- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet
- Changed lighting schedules for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.2 – Controls**
HVAC System (All):

- Scheduled fans for occupied hours with a 2 hour optimum start
- Changed night cycle control to cycle on any

HVAC System (1st & 2nd Floor VAV):

- Changed cooling control reset priority to airflow first
- Changed outside air economizers control to OA temperature
- Changed outside air economizer DB high limit to 70F
- Changed economizer compressor lockout to NO
- Changed maximum OA fraction to 1
- Scheduled minimum air ventilation for occupied hours
- Changed fan minimum flow ratio to 0.35
- Scheduled fans for occupied hours with a 2 hour optimum start

Thermal Zone:

- Scheduled thermostats for all rooms to 74F/70F 80F/64F
- Scheduled exhaust fans for occupied hours
- Changed VAV minimum flow ratio for areas served by 1st & 2nd Floor VAV to 0.35
- Scheduled VAV minimum flow ratio to occupied hours and allowed it to go to 0 during unoccupied hours

**ECM 3.2 – Mechanical**
HVAC System (Third Floor Split Systems):

- Changed HVAC system type to packaged variable volume

- Changed maximum humidity to 55%
- Changed fan control to variable speed
- Changed fan power to 0.0003 kW/CFM
- Changed supply CFM to 7,525
- Changed cooling EIR to 0.2752
- Changed cooling control to warmest
- Changed cooling reset priority to airflow first
- Changed maximum cooling reset temperature to 75F
- Changed outside fan electric to 0
- Removed AHU heating source
- Set AHU heating capacity to 0
- Changed zone heating source to electric
- Changed outside air economizers control to OA temperature
- Changed outside air economizer DB high limit to 70F
- Changed economizer compressor lockout to NO
- Changed maximum OA fraction to 1
- Scheduled minimum air ventilation for occupied hours
- Changed fan minimum flow ratio to 0.35

Thermal Zone:

- Changed VAV minimum flow ratio for areas served by Third Floor Split Systems to 0.35
- Scheduled VAV minimum flow ratio to occupied hours and allowed it to go to 0 during unoccupied hours

**ECM Building Simulation Modeling Modifications**
**City of Greenville**
**Park Maintenance Center**

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**ECM 5.4 – Building Envelope**
Space (All):

- Reduced infiltration by 15%

**ECM 1.4 – Lighting**

- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.4 – Controls**
HVAC System (Split AC & Unit Heaters):

- Scheduled fans for occupied hours
- Changed night cycle control to cycle on any

Thermal Zone:

- Scheduled thermostats for rooms served by Split AC & Unit Heaters (except warehouse) to 74F/70F 80F/64F
- Scheduled thermostats for the warehouse to 50F

# ECM Building Simulation Modeling Modifications
# City of Greenville
# Police – Fire Rescue

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**ECM 5.3 – Building Envelope**
Space (Truck Bays 159 Spc):

- Reduced infiltration by 15%

Global Parameter:

- Reduced Infil by 15%

**ECM 1.3 – Lighting**

- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.3 – Controls**
HVAC System (Fire & Police RTUs):

- Changed fan control to Fan EIR FPLR
- Input fan EIR f(PLR) curve Fan-Pwr-fPLR-w/VFD
- Changed cooling minimum flow ratio to 0.3
- Changed heating minimum flow ratio to 0.3
- Changed cooling minimum fan ratio to 0.3
- Scheduled minimum air ventilation for occupied hours

Thermal Zone:

- Changed VAV minimum flow ratio for areas served by Fire & Police RTUs to 0.35
- Scheduled VAV minimum flow ratio to occupied hours and allowed it to go to 0 during unoccupied hours

**ECM Building Simulation Modeling Modifications**
**City of Greenville**
**Public Works Complex**

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**Baseline Adjustment – Ventilation**
Building A
HVAC System (2005 Gas Packs):
- Changed indoor fan mode to continuous

Building B
HVAC System (Split Systems):
- Changed indoor fan mode to continuous
- Changed minimum OA ratio to 0.1

Building C
HVAC System (Split Systems):
- Changed indoor fan mode to continuous
- Changed minimum OA ratio to 0.13

Building E
HVAC System (Gas Packs):
- Changed indoor fan mode to continuous
- Changed minimum OA ratio to 0.1

**ECM 5.9 – Building Envelope**
Building A, B, D, E, & F
Space (All):
- Reduced infiltration by 15%

Building C
Space (All):
- Reduced infiltration by 25%

Layers (EL1 EWall Cons Layer):
- Added a layer of ½ inch insulation board

**ECM 1.9 – Lighting**
All Buildings
- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.9 – Controls**
Building A
HVAC System (All):
- Scheduled fans for occupied hours with a 2 hour optimum start
- Changed night cycle control to cycle on any
- Scheduled minimum air ventilation for occupied hours

Thermal Zone:

- Scheduled thermostats for all rooms to 74F/70F 80F/64F

Building B, C, D, E, & F

HVAC System (All):

- Scheduled fans for occupied hours
- Changed night cycle control to cycle on any

Thermal Zone:

- Scheduled thermostats for all rooms to 74F/70F 80F/64F

**ECM 3.9 – Mechanical**

Building A

HVAC System (Assembly Area RTUs):

- Changed cooling EIR to 0.3046

**ECM Building Simulation Modeling Modifications**
**City of Greenville**
**River Park North Building**

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**ECM 1.17 – Lighting**

- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet
- Changed lighting schedules for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.17 – Controls**

HVAC System (All):

- Scheduled fans for occupied hours with a 2 hour optimum start
- Changed night cycle control to cycle on any

Thermal Zone:

- Scheduled thermostats for all rooms to 74F/70F 80F/64F
- Scheduled exhaust fans for occupied hours

## ECM Building Simulation Modeling Modifications
## City of Greenville
## South Greenville Recreation Center

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**ECM 5.101 – Building Envelope**
Space (All):

- Reduced infiltration by 40%

**ECM 1.101 – Lighting**

- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet
- Changed lighting schedules for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.101 – Controls**
HVAC System (Split System & Gym Unit Heaters):

- Scheduled fans for occupied hours with 2 hour optimum start
- Changed night cycle control to cycle on any

Thermal Zone:

- Scheduled thermostats for rooms served by Split System & Gym Unit Heaters to 74F/70F 80F/64F

**ECM Building Simulation Modeling Modifications**
**City of Greenville**
**Sports Connection**

The following modifications were executed to the original calibrated baseline to simulate potential Energy Conservation Measures (ECM). Each following ECM incorporates the previous change to account for measure interaction in a cascading manner.

**ECM 5.14 – Building Envelope**
Space (All):
- Reduced infiltration by 40%

**ECM 1.14 – Lighting**
- Changed lighting wattage densities for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet
- Changed lighting schedules for the building based on Ally version of Atlantic Energy Concepts lighting spreadsheet

**ECM 2.14 – Controls**
HVAC System (All):
- Scheduled fans for occupied hours with 2 hour optimum start
- Changed night cycle control to cycle on any

Thermal Zone:
- Scheduled thermostats for rooms to 74F/70F 80F/64F
- Scheduled exhaust fans for occupied hours

# Appendix D: Controls Points Documentation

| City Hall | | | | | INPUT DEVICE | | | | | | | | | | | | | | | | | | | | OUTPUT DEVICE | | | | | | | | | | TRACKING | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| x: denotes new point<br>e: denotes existing point to be reused | I/O Count | | | | Analog | | | | | | | | | Digital | | | | | | | | | | P | Analog | | | | | Digital | | | | | | | | | |
| | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| **System: Air Handling Unit** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** **Existing; See DCV DID** | **2** | **-** | **3** | **-** | | | | | | | | | **Typical of:** | **3** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Indoor Air Quality | 2 | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | AHU1 and AHU3 (DCV is already present on AHU2) |
| Electrical Resistance Heater Ouptut | | | 3 | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | **ADD ALTERNATE SCOPE 01 ITEM** |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



Schneider Electric

| Municipal Building | I/O Count | | | | INPUT DEVICE: Analog | | | | | | | | | INPUT DEVICE: Digital | | | | | | | | | | P | OUTPUT DEVICE: Analog | | | | | OUTPUT DEVICE: Digital | | | | | TRACKING | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| x: denotes new point<br>e: denotes existing point to be reused | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | |
| **System: 1st & 2nd Floor VAV AHU** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: Existing; See DCV DID** | 1 | - | - | - | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Indoor Air Quality | 1 | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| **System: Air Handling Unit** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: SZCV-DX-EH** | 13 | 8 | 3 | 12 | | | | | | | | | Typical of: | 4 | | | | | | | | | | | | | | | | | | | | | | | | | INCLUDE AS DEDUCT FOR ADD ALTERNATE SCOPE 02 |
| Supply Air Fan Start / Stop | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | 4 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Temperature | 4 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Cooling Command | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | One or Two stages as applicable |
| Electric Heating Command | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | One or Two stages as applicable |
| Space Temperature | 4 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 4 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 4 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| VVT Damper Position | | | 2 | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | | | | | x | | | AHU #1 Only |
| Bypass Damper Position | | | 1 | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | x | | | AHU#1 Only |
| Supply Air Static Pressure | 1 | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | AHU#1 Only |
| **System: 3rd Floor VAV AHU** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: Refer to 1st & 2nd Floor** | 5 | 2 | 2 | 4 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | ADD ALTERNATE SCOPE 02 ITEM |
| Outside Air Damper Position | | | 1 | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | x | | | | New unit |
| Exhaust Air Fan Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Exhaust Air Fan Status | | 1 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Fan Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | x | x | |
| Supply Air Fan Feedback | | 1 | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | | | | x | | | | |
| Supply Air Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Supply Air Fan Speed | | | 1 | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | x | | | | |
| Return Air Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Mixed Air Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Supply Air Static Pressure | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Indoor Air Quality | 1 | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Stage 1 Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| DX Stage 2 Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| **System: Fan Powered Terminal Boxes** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: ATB-PI-EH-SF** | 24 | 6 | 6 | 6 | | | | | | | | | Typical of: | 6 | | | | | | | | | | | | | | | | | | | | | | | | | ADD ALTERNATE SCOPE 02 ITEM |
| Electric Heating Command | | | | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Space Temperature | 6 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Temperature Adjust | 6 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Temperature Over-ride | 6 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | |
| Damper Position | | | 6 | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | x | | | | |
| Box Primary Air Flow | 6 | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Supply Air Fan Command | | 6 | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | x | | | |



Schneider Electric

## Aquatics and Fitness Center

x: denotes new point
e: denotes existing point to be reused

| | | | | | INPUT DEVICE | | | | | | | | | | | | | | | | | | | OUTPUT DEVICE | | | | | | | | | | TRACKING | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I/O Count | | | | Analog | | | | | | | | | Digital | | | | | | | | | | P | Analog | | | | | Digital | | | | | | | | | |
| | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| **System: Recreational Room AHU** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: SZCV-GH** | 9 | 3 | - | 6 | | | | | | | | | Typical of: | 3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Temperature | 3 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Gas Heating Command | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Space Temperature | 3 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 3 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 3 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| **System: Gymnasium AHU** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: SZCV-HY-DX-EOA** | 3 | 1 | - | 4 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | One or Two stages as applicable |
| Hot Water Valve Position | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Space Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Economizer Damper Position | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | Full economizer |
| Local User Override | | 1 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| **System: Natatorium HP** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: SZCV-HP-EOA** | 12 | 4 | - | 20 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | New Air Handling unit to be installed under Mechanical Scope |
| Supply Air Temperature | 4 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | Air to Air recovery with flat plate w/ economizer |
| Compressor 1 Command | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| Compressor 2 Command | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| Reversing Valve Command | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| Space Temperature | 4 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Economizer Damper Position | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | x | | | | |
| Space Setpoint Adjust | 4 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 4 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| **System: RTUS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: SZCV-GH-DX** | 12 | 4 | - | 12 | | | | | | | | | Typical of: | 4 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | Four packaged RTU |
| Supply Air Temperature | 4 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Command | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| Auxillary Gas Heating Command | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| Space Temperature | 4 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 4 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 4 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| **System: Exhaust Air Fans** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: n/a** | - | - | - | 3 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exhaust Air Fan Enable / Disable | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | 6 | | | | | | x | | | 6 Exhaust fans to be controlled in 3 discrete zones |
| **System: VAV Air Handling Units** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: N/A** | 2 | 10 | 2 | 2 | | | | | | | | | Typical of: | 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Relief Damper Position | | | 2 | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | x | | | Independent outside and return air actuators. |
| Exhaust Air Fan Command | | 2 | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | x | x | x | |
| Exhaust Air Fan Status | | 2 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | x | | | | |
| Supply Air Fan Command | | 2 | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Fan Feedback | | 2 | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | | | | x | | | | |
| Supply Air Temperature | 2 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Supply Air Fan Speed | | 2 | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | | | | x | | | | |
| Hot Water Valve Command | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |

## H. Boyd Lee Park Building

x: denotes new point
e: denotes existing point to be reused

| H. Boyd Lee Park Building | I/O Count | | | | INPUT DEVICE: Analog | | | | | | | | | INPUT DEVICE: Digital | | | | | | | | | | P | OUTPUT DEVICE: Analog | | | | | OUTPUT DEVICE: Digital | | | | | TRACKING | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| **System: Gymnasium HVU** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** SZCV-GH-EOA-CO2 | 6 | 2 | 2 | 1 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | 1 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | x | x | |
| Supply Air Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Return Air Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Mixed Air Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Gas Heating Command | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | x | | | |
| Economizer Damper Position | | | 1 | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | x | | | | |
| Space CO2 | 1 | | | | | | | | e | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | Reuse protective cover for sensors |
| Space Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | Reuse protective cover for sensors |
| Space Setpoint Adjust | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 1 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: Atrium RTU** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** SZCV-GH-DX | 3 | 2 | - | 3 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | A packaged RTU w/ DX cooling and gas heating package. |
| Supply Air Fan Status | | 1 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Auxillary Gas Heating Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Space Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 1 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: Exhaust Air Fans** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** n/a | 2 | - | 2 | 3 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exhaust Air Fan Enable / Disable | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | 6 | | | | | | x | | | 6 Exhaust fans to be controlled in 3 discrete zones |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: VVT Roof Top Unit** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** SZCV-DX-GH-VVT | 1 | - | 1 | - | | | | | | | | | Typical of: | 4 | | | | | | | | | | | | | | | | | | | | | | | | | INCLUDE AS DEDUCT FOR ADD ALTERNATE SCOPE 02 |
| Supply Air Fan Start / Stop | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Temperature | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Cooling Command | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | One or Two stages as applicable |
| Gas Heating Command | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | One or Two stages as applicable |
| Return Air Temperature | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Mixed Air Temperature | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Bypass Damper Position | | | 1 | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | x | | | AHU#1 Only |
| Supply Air Static Pressure | 1 | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | AHU#1 Only |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: VVT Zone Dampers** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** ATB-PD | 18 | 9 | 9 | - | | | | | | | | | Typical of: | 9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Space Temperature | 9 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Temperature Adjust | 9 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 9 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| Damper Position | | | 9 | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | x | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



Schneider Electric

x: denotes new point
e: denotes existing point to be reused

| Eppes Rec. Center | I/O Count | | | | INPUT DEVICE: Analog | | | | | | | | | INPUT DEVICE: Digital | | | | | | | | | | P | OUTPUT DEVICE: Analog | | | | | OUTPUT DEVICE: Digital | | | | | TRACKING | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| **System: Classroom AHUs** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** SZCV-GH | 9 | 6 | - | 6 | | | | | | | | | Typical of: | 3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | 3 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | x | x | |
| Supply Air Temperature | 3 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Gas Heating Command | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| Space Temperature | 3 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | | 3 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | 3 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | |
| **System: Recreational Room AHU** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** SZCV-GH-DX | 19 | 10 | 4 | 15 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | 1 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | x | x | |
| Supply Air Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| Gas Heating Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| Space Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | | 1 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | |
| **System: Gymnasium RTU** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** SZCV-GH-DX-EOA-CO2 | 8 | 4 | 2 | 6 | | | | | | | | | Typical of: | 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | 2 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | x | x | |
| Supply Air Temperature | 2 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Command | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| Gas Heating Command | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| Outside Air Damper Position | | | 2 | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | x | | | | |
| Space Carbon Dioxide | 2 | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Temperature | 2 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | | 2 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | 2 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | |
| **System: MultiPurpose Room RTU** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** SZCV-GH-DX-MOA | 3 | 2 | - | 4 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | 1 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | x | x | |
| Supply Air Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| Gas Heating Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| Outside Air Damper Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | |
| Space Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | | 1 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | |
| **System: Exhaust Air Fans** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** n/a | - | - | - | 2 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exhaust Air Fan Enable / Disable | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | 5 | | | | | | x | | | 5 Exhaust fans to be controlled in 2 discrete zones |

**Police-Fire Rescue**

x: denotes new point
e: denotes existing point to be reused

| | | | | | INPUT DEVICE | | | | | | | | | | | | | | | | | | | | OUTPUT DEVICE | | | | | | | | | | TRACKING | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I/O Count | | | | Analog | | | | | | | | | Digital | | | | | | | | | | P | Analog | | | | | Digital | | | | | | | | | |
| | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| System: Hot Water Plant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sequence: HW-2BLR-2HWP | 5 | 5 | - | 6 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Boiler 1 Enable | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | x | x | |
| Boiler 1 Alarm | | 1 | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | x | | | |
| Boiler 2 Alarm | | 1 | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | x | | | |
| Boiler 1 Enable | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | x | x | |
| Boiler 2 Enable | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | x | x | |
| Hot Water Pump 1 Start / Stop | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | x | x | |
| Hot Water Pump 1 Status | | 1 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Boiler 1 Pump Start / Stop | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | x | x | |
| Boiler 1 Pump Status | | 1 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Boiler 2 Pump Start / Stop | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | x | x | |
| Boiler 2 Pump Status | | 1 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Boiler 1 Supply Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Boiler 2 Supply Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Hot Water Supply Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Hot Water Return Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Outside Air Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| System: Air Handling Unit | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sequence: SZCV-GH-DX | 3 | 1 | - | 3 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | A packaged RTU |
| Supply Air Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Compressor Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| Auxillary Gas Heating Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | x | | | | |
| Space Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | | 1 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| System: Exhaust Air Fans | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sequence: n/a | - | - | - | 2 | | | | | | | | | Typical of: | 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exhaust Air Fan Enable / Disable | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | | | | | | x | | | 4 Exhaust fans to be controlled in 2 discrete zones |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| System: VAV Air Handling Units | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sequence: N/A | - | 2 | 2 | 12 | | | | | | | | | Typical of: | 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Relief Damper Position | | | 2 | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | x | | | Independent outside and return air actuators. |
| Exhaust Air Fan Command | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | x | x | Existing ABB Supply Air Fan VFDs are to remain. |
| Exhaust Air Fan Status | | 2 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | x | | | | |
| Supply Air Fan Command | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Feedback | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | x | | | | |
| DX 1 Command | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | x | x | |
| DX 2 Command | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | x | x | |
| Supply Air Fan Speed | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | x | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| System: Fan Powered Terminal Boxes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sequence: n/a | 300 | 75 | 150 | 75 | | | | | | | | | Typical of: | 75 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hot Water Command | | | | 75 | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | x | | | Existing Poptop actuators are to be reused. |
| Space Temperature | 75 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | |
| Space Temperature Adjust | 75 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | |
| Space Temperature Over-ride | 75 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | |
| Damper Increase | | | 75 | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | x | | | |
| Damper Decrease | | | 75 | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | | x | | | |
| Box Primary Air Flow | 75 | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Fan Command | | 75 | | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | x | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| System: Zone Enable | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sequence: RW-3ZN-HEN | 1 | 1 | - | 3 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Zone Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | Night Setback Sensor |
| Zone Heating Enable | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | 13 | | | | | | x | x | x | 13 Thermostats to be enabled / disabled in 3 discrete zones |
| Local User Override | | 1 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | Locate at sensor or panel as more cost effective |

## Police-Fire Rescue

x: denotes new point
e: denotes existing point to be reused

| | I/O Count | | | | INPUT DEVICE | | | | | | | | | | | | | | | | | | | | OUTPUT DEVICE | | | | | | | | | | TRACKING | | | | |
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| | | | | | Analog | | | | | | | | | Digital | | | | | | | | | | P | Analog | | | | | Digital | | | | | | | | | |
| | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Jaycee Park Building | I/O Count | | | | INPUT DEVICE | | | | | | | | | | | | | | | | | | | | OUTPUT DEVICE | | | | | | | | | | TRACKING | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| x: denotes new point<br>e: denotes existing point to be reused | | | | | Analog | | | | | | | | | Digital | | | | | | | | | | P | Analog | | | | | Digital | | | | | | | | | |
| | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| **System: Air Handling Unit** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: SZCV-HP-GH-(EOA)-(CO2)** | 39 | 36 | 3 | 57 | | | | | | | | | Typical of: | 12 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | 12 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Temperature | 12 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| First Stage Compressor Command | | | | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Second Stage Compressor Command | | | | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | Not applicable to all units |
| Reversing Valve Command | | 12 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Auxillary Gas Heating Command | | | | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Outside Air Damper Command / Position | | | 3 | 9 | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | x | | | | Economimzer operation for only 3 of the units |
| Space CO2 | 3 | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | Demand controlled ventilation for only 3 of the units |
| Space Temperature | 12 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 12 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 12 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: Exhaust Air Fans** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: n/a** | - | - | - | 1 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exhaust Air Fan Enable / Disable | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | x | | | 2 Exhaust fans to be controlled in 1 zone |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Street Police Substation**

x: denotes new point
e: denotes existing point to be reused

| | I/O Count | | | | INPUT DEVICE Analog | | | | | | | | | INPUT DEVICE Digital | | | | | | | | | | P | OUTPUT DEVICE Analog | | | | | OUTPUT DEVICE Digital | | | | | TRACKING | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| **System: Split System Air Handling Unit** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** **SZCV-GH-DX** | 3 | 2 | - | 3 | | | | | | | | **Typical of:** | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | 1 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Cooling Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Gas Heating Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Space Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 1 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |



Schneider Electric

| Bradford Creek Golf Course | I/O Count | | | | INPUT DEVICE | | | | | | | | | | | | | | | | | | | | OUTPUT DEVICE | | | | | | | | | | TRACKING | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| x: denotes new point<br>e: denotes existing point to be reused | | | | | Analog | | | | | | | | | Digital | | | | | | | | | | P | Analog | | | | | Digital | | | | | | | | | |
| | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | |
| **System: Split System Air Handling Unit** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** SZCV-GH-DX | 12 | 8 | - | 12 | | | | | | | | | Typical of: | 4 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | 4 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Temperature | 4 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Cooling Command | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Gas Heating Command | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Space Temperature | 4 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 4 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 4 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: Exhaust Air Fans** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** n/a | - | - | - | 1 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exhaust Air Fan Enable / Disable | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | x | | | 1 Exhaust fan to be controlled |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| River Park North | I/O Count | | | | INPUT DEVICE Analog | | | | | | | | | INPUT DEVICE Digital | | | | | | | | | | P | OUTPUT DEVICE Analog | | | | | OUTPUT DEVICE Digital | | | | | TRACKING | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| x: denotes new point<br>e: denotes existing point to be reused | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| **System: Air Handling Unit** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: SZCV-DX-EH** | **15** | **10** | **-** | **15** | | | | | | | | | **Typical of:** | **5** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | Shared outside air intake between all units |
| Supply Air Fan Status | | 5 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Temperature | 5 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Cooling Command | | | | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | One or Two stages as applicable |
| Electric Heating Command | | | | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | One or Two stages as applicable |
| Space Temperature | 5 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 5 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 5 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



Schneider Electric

**Greenfield Terrace Building**

x: denotes new point
e: denotes existing point to be reused

| | | | | | INPUT DEVICE | | | | | | | | | | | | | | | | | | | | OUTPUT DEVICE | | | | | | | | | | | | | | |
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| | I/O Count | | | | Analog | | | | | | | | | Digital | | | | | | | | | | P | Analog | | | | | Digital | | | | | TRACKING | | | | |
| | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| System: Air Handling Unit | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sequence: SZCV-GH-DX | 6 | 4 | - | 6 | | | | | | | | | Typical of: | 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | 2 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Temperature | 2 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Cooling Command | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | One or Two stages as applicable |
| Gas Heating Command | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Space Temperature | 2 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 2 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 2 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Gardener Training Center | | | | | INPUT DEVICE | | | | | | | | | | | | | | | | | | | | OUTPUT DEVICE | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| x: denotes new point | I/O Count | | | | Analog | | | | | | | | | Digital | | | | | | | | | | P | Analog | | | | | Digital | | | | | TRACKING | | | | |
| e: denotes existing point to be reused | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| **System: Air Handling Unit** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: SZCV-GH-DX** | 6 | 4 | - | 6 | | | | | | | | | Typical of: | 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | 2 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Temperature | 2 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Cooling Command | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Gas Heating Command | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Space Temperature | 2 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 2 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 2 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Sports Connection<br>x: denotes new point<br>e: denotes existing point to be reused | I/O Count | | | | INPUT DEVICE | | | | | | | | | | | | | | | | | | | | OUTPUT DEVICE | | | | | | | | | | TRACKING | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Analog | | | | | | | | | Digital | | | | | | | | | | P | Analog | | | | | Digital | | | | | | | | | |
| | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | |
| **System: Air Handling Unit** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: SZCV-GH-DX** | 9 | 6 | - | 9 | | | | | | | | | Typical of: | 3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | 3 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Temperature | 3 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Cooling Command | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Gas Heating Command | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Space Temperature | 3 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 3 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 3 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: Exhaust Air Fans** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: n/a** | - | - | - | 3 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exhaust Air Fan Enable / Disable | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | | | | | | x | | | 3 Exhaust fans to be controlled by in 3 discrete zones |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: Zone Enable** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: RW-1ZN-HEN** | 2 | 2 | - | 2 | | | | | | | | | Typical of: | 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Zone Temperature | 2 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | Night Setback Sensor |
| Zone Heating Enable | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | | | | | | x | | | 4 Unit Heaters  to be controlled in 2 zones |
| Local User Override | | 2 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | Locate at senor or panel as more cost effective |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



Schneider Electric

x: denotes new point
e: denotes existing point to be reused

| Elm Street Center | I/O Count | | | | INPUT DEVICE: Analog | | | | | | | | | Digital | | | | | | | | | | P | OUTPUT DEVICE: Analog | | | | | Digital | | | | | TRACKING | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| **System: Air Handling Unit** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: SZCV-GH-DX** | 3 | 2 | - | 3 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | DX Cooling Split Sytem w/ twinned furnaces. |
| Supply Air Fan Status | | 1 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Cooling Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | One or Two stages as applicable |
| Gas Heating Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Space Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 1 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: Exhaust Air Fans** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: n/a** | - | - | - | 1 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exhaust Air Fan Enable / Disable | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | x | | | 2 Exhaust fans to be controlled in 1 zone |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Evans Park Building | I/O Count | | | | INPUT DEVICE | | | | | | | | | | | | | | | | | | | | OUTPUT DEVICE | | | | | | | | | | TRACKING | | | | |
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| x: denotes new point<br>e: denotes existing point to be reused | | | | | Analog | | | | | | | | | Digital | | | | | | | | | | P | Analog | | | | | Digital | | | | | | | | | |
| | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| **System: Air Handling Unit** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: SZCV-GH-DX** | 7 | 4 | 1 | 6 | | | | | | | | | Typical of: | 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | Two packaged padmounted units |
| Supply Air Fan Status | | 2 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Temperature | 2 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Cooling Command | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Gas Heating Command | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Outside Air Damper Position | | | 1 | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | x | | | | Economimzer operation for common area unit |
| Space CO2 | 1 | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | Demand controlled ventilation for common area unit |
| Space Temperature | 2 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 2 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 2 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: Exhaust Air Fans** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: n/a** | - | - | - | 1 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exhaust Air Fan Enable / Disable | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | x | | | 2 Exhaust fans to be controlled as 1 zone |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: Zone Enable** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: RW-1ZN-HEN** | 2 | 2 | - | 2 | | | | | | | | | Typical of: | 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Zone Temperature | 2 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | Night Setback Sensor |
| Zone Heating Enable | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | x | | | 2 Unit Heaters and 2 associated transfer Fans |
| Local User Override | | 2 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | Locate at panel |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**South Greenville Rec. Center**

x: denotes new point
e: denotes existing point to be reused

| | I/O Count | | | | INPUT DEVICE | | | | | | | | | | | | | | | | | | | | OUTPUT DEVICE | | | | | | | | | | TRACKING | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Analog | | | | | | | | | Digital | | | | | | | | | | P | Analog | | | | | Digital | | | | | | | | | |
| | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| **System: Air Handling Unit** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: SZCV-GH-DX** | 3 | 2 | - | 3 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | 1 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Cooling Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Gas Heating Command | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Space Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 1 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: Exhaust Air Fans** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: n/a** | - | - | - | 2 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exhaust Air Fan Enable / Disable | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | | | | | | x | | | 4 Exhaust fans to be controlled in 2 zones |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: Zone Enable** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: RW-1ZN-HEN** | 2 | 2 | - | 2 | | | | | | | | | Typical of: | 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Zone Temperature | 2 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | Night Setback Sensor |
| Zone Heating Enable | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | | | | | | x | | | 2 Unit Heaters and 2 Electric Baseboard to be controlled in 2 zones |
| Local User Override | | 2 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | Locate at senor or panel as more cost effective |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Public Works Complex | I/O Count | | | | INPUT DEVICE | | | | | | | | | | | | | | | | | | | | OUTPUT DEVICE | | | | | | | | | | TRACKING | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| x: denotes new point<br>e: denotes existing point to be reused | | | | | Analog | | | | | | | | | Digital | | | | | | | | | | P | Analog | | | | | Digital | | | | | | | | | |
| | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| **System: Air Handling Unit** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** SZCV-GH-DX | 55 | 36 | 3 | 54 | | | | | | | | | Typical of: | 18 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 18 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | 18 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Temperature | 18 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Cooling Command | | | | 18 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Gas Heating Command | | | | 18 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Outside Air Damper Position | | | 3 | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | | | | x | | | | Economimzer operation for assembly area units |
| Space CO2 | 1 | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | Demand controlled ventilation for assembly area (shared sensor) |
| Space Temperature | 18 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 18 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 18 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: Exhaust Air Fans** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** n/a | - | - | - | 4 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exhaust Air Fan Enable / Disable | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | 7 | | | | | | x | | | 7 Exhaust fans to be controlled in 4 zones |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: Zone Enable** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence:** RW-1ZN-HEN | 1 | 1 | - | 4 | | | | | | | | | Typical of: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Zone Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | Night Setback Sensor |
| Zone Heating Enable | | | | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | 10 | | | | | | x | | | 10 Thermostats to be enabled / disabled in 4 discrete zones |
| Local User Override | | 1 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | Locate at senor or panel as more cost effective |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| City Warehouse | | | | | INPUT DEVICE | | | | | | | | | | | | | | | | | | | | OUTPUT DEVICE | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | I/O Count | | | | Analog | | | | | | | | | Digital | | | | | | | | | | P | Analog | | | | | Digital | | | | | TRACKING | | | | |
| x: denotes new point<br>e: denotes existing point to be reused | Analog Input | Digital Input | Analog Output | Digital Output | Temperature | Humidity | Pressure | Current Sensor | CO2 Sensor | Flow | Level | Unit Term | Networked Point | Dry Contact | Limit Switch | Current Switch | Relay | Low Temp Cutout | Pressure Switch | Duct Smoke | Aux Contact | Unit Term | Networked Point | Pulse | 0-10/4-20ma | Damper Act | Valve Act | Pneu. Xducer | Unit Term | Relay | Damper Act | Valve Act | Unit Term | E/P Relay | 15M Trend | COV Trend | Totalize | Totalize Monthly | Remarks |
| **System: Air Handling Unit** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: SZCV-GH-DX** | **13** | **10** | **-** | **9** | | | | | | | | | **Typical of:** | **3** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Air Fan Start / Stop | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Supply Air Fan Status | | 3 | | | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | x | | | |
| Supply Air Temperature | 3 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| DX Cooling Command | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Gas Heating Command | | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | | | x | | | |
| Space Temperature | 3 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Space Setpoint Adjust | 3 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | |
| Local User Override | | 3 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: Exhaust Air Fans** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: n/a** | **2** | **2** | **-** | **1** | | | | | | | | | **Typical of:** | **1** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exhaust Air Fan Enable / Disable | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | x | | | 2 Exhaust fans to be controlled by one zone |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **System: Zone Enable** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sequence: RW-1ZN-HEN** | **1** | **1** | **-** | **1** | | | | | | | | | **Typical of:** | **1** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Zone Temperature | 1 | | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | x | | | | Night Setback Sensor |
| Zone Heating Enable | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | x | | | 2 Thermostats to be enabled / disabled in 1 discrete zones |
| Local User Override | | 1 | | | | | | | | | | | | x | | | | | | | | | | | | | | | | | | | | | | x | | | Locate at senor or panel as more cost effective |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |