Building Energy Use Policy

Alaska Housing Finance Corporation

Anchorage Headquarters Building
Anchorage Chugach Manor
Seward Glacier View

State of Alaska

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Section 1

Introduction

BACKGROUND

This energy policy provides guidelines for operating the following three AHFC buildings

- AHFC Headquarters
- Chugach Manor
- Glacier View

The purpose of the energy use policy is to describe building operation that was derived from control sequences and current operation. Building operators should monitor the building and adjust systems as needed to bring them in-line with the policy. In addition, the policy includes opportunities for optimizing building operation and energy efficiency.

The ultimate goal of the building energy policy is to work toward gaining optimal efficiency of the building. Energy monitoring equipment will be installed in the three buildings as a separate deliverable under this project. The monitoring system data, used in conjunction with an energy audit and the proposed AHFC Energy Policy (another deliverable under this project), will be invaluable toward observing building operation and adjusting the systems for optimal operation.

Section 2

AHFC Headquarters Energy Policy

INTRODUCTION

This section details the operating parameters for the AHFC Headquarters Building. The purpose of the energy policy is to provide guidelines for proper operation of the building. The building should be monitored for proper operation and to assess optimization opportunities.

The AHFC Headquarters is a four story building plus basement with a total area of 77,900 sqft. The building has an average occupancy of 200 people.

Energy Efficiency Opportunities

The following areas offer the greatest potential for improving the building energy efficiency.

Unoccupied Periods

Consistent use of the building during periods when the systems are scheduled off can have significant impacts on energy use. The following are two areas where close monitoring of system operation and occupant use of the building may provide opportunities to reduce energy consumption:

- The building has a central rooftop unit (RTU) that supplies the entire building. When any suite is occupied during nights and weekends, the entire floor is conditioned so the AHU operates properly.
- The lighting in each suite is scheduled to operate together. During periods when it is scheduled off, an occupant must override the system and turn on all the lighting in the suite.

Control Strategies

The control strategies for the HVAC systems are developed to optimize system operation and reduce energy consumption. However, they have not been optimized for this building. There is significant incentive to monitor system operation and fine-tune the control strategies. The following are apparent opportunities:

- Boiler staging
- Heating water temperature reset
- RTU supply air temperature reset
- RTU fan speed control
- Ventilation controls
- Morning warm-up controls

Maintenance

The energy efficiency of the building is dependent upon proper maintenance and repair of the building systems by trained mechanics. While this work is rightly focused on maintaining proper system operation and longevity, it must also be geared toward improving system efficiency.

Setpoints

Occupied: Each room thermostat has a manual temperature setpoint. Recommended settings are 70°F heating and 75°F cooling.

Unoccupied: The DDC system has unoccupied setpoints of 65°F heating and 85°F cooling.

Warm Weather Shutdown: Heating plant is disabled when outside temperature is over 70°F.

SECONDARY (BUILDING) PUMPS

Description

Two pumps, both sized for 100% of the heating load, supply heating water to the building. Only one pump operates.

Control Settings

Sequence: Pumps operate in a lead/standby configuration with weekly switchover. Standby pump operates only upon failure of the lead pump.

Pump Speed: Pump speed modulates based on average heating demand according to the following table:

Average Heating Demand	VFD Pump Speed Command
0%	33%
50%	100%

Optimization Opportunities

Observe system operation for potential energy saving modifications.

- Increase the average heating demand setpoint up to 100% and monitor if the zones temperatures are maintained.
- Observe heating glycol supply and return pressure differential to determine if modulating the pumps to maintain a constant differential pressure is more optimal.

BOILERS AND BOILER PUMPS

Description

Three Weil McLain condensing boilers operate in lead/lag/standby configuration. Each boiler has a boiler pump. A Boiler Control Panel provides boiler sequencing and boiler staging.

Control Settings

Staging

- The boiler control panel stages the boilers in a lead/lag/standby configuration, to maintain the heating glycol supply setpoint.

Occupied Hours with Outside Temperature above 15°F

- The heating glycol supply temperature is reset by the average heating demand from all VAV zone controllers according to the following schedule:

Average Heating Demand	Boiler HGS Setpoint
0%	110° F
30%	140° F

Occupied Hours with Outside Temperature Below 15°F

- The heating glycol supply temperature is reset by outside temperature according to the following schedule:

Cold Weather Reset Schedule	
Outside Air Temperature	Boiler HGS Setpoint
15° F	140° F
0° F	160° F

Unoccupied Hours

- The heating plant is disabled. The heating glycol supply setpoint is set at 80°F.
- If an unoccupied override button is pushed (Bypass Mode) and the respective zone has a heating demand, then the heating plant is enabled and the heating glycol supply setpoint is 140°F.
- If a zone temperature falls below its unoccupied heating setpoint, that zone will produce a “building heating demand” and the heating plant is enabled in occupied mode.

Optimization Opportunities

Observe system operation for potential energy saving modifications.

- Condensing boilers are most efficient at part-loads. If a single boiler is operating above 40% capacity, the plant will be more efficient if two boilers are operating simultaneously.
- The control scheme calls for many hours of operating above condensing temperatures. Plant efficiency will increase if the heating glycol supply setpoint can be reduced so it is in the condensing range.

VENTILATION SYSTEM - ROOFTOP UNIT RTU-1

Description

Roof top unit with mixing box, filter section, cooling coil, heating coil, supply fan and return fan. The system supplies cooling and ventilation air to fan-powered mixing boxes with reheat coils serving each zone.

Control Settings

Occupied Mode

- Schedule: System operates in occupied mode according to the following schedule:

  Monday 6:00 AM thru 5:15 PM
  Tuesday – Friday 7:00 AM thru 5:15 PM

- Supply Air Temperature: Supply air temperature is reset by VAV box average cooling demand according to the following summer and winter schedules:

Summer Reset Schedule	
Average Cooling Demand	RTU Supply Air Setpoint
0%	60° F
40%	50° F

Winter Reset Schedule	
Average Cooling Demand	RTU Supply Air Setpoint
0%	68° F
50%	55° F

- Minimum Outside Air: The minimum outside air setpoint is set at 10% and is reset by a CO_2 sensor in the return air to maintain 800 ppm of CO_2. Outside air damper position varies from 10-50% to maintain the CO2 setpoint.
- Supply Fan Speed: The supply fan speed modulates to maintain supply duct static pressure. The setpoint varies with VAV box average cooling demand according to the following schedule:

Avg. VAV Damper Position	Duct Static Setpoint
25%	1.1" W.C.
50%	1.6" W.C.

- Building Static Pressure: The exhaust air dampers modulate to maintain a building static pressure of .05" W.C.
- Cooling Lockout: Mechanical cooling is disabled when outside temperature is below 55°F. There is 2° F hysteresis associated with the lockout.

Unoccupied Mode

- The rooftop unit is disabled, the dampers are positioned for full recirculation, the heating coil control valve is closed, and the cooling coil is disabled.
- If unoccupied cooling is required by any zone, RTU-1 operates and that entire floor enters occupied mode. The occupied mode ends when the space temperature is cooled to 82°F. The entire floor is placed in occupied mode so RTU-1 maintains the minimum airflow necessary for potential DX refrigeration operation.

Bypass Mode

- When any zone Bypass button is pushed, the system enters bypass mode for 3 hours.
    1. If a zone in bypass mode requires heating from the fan-powered VAV Box, then RTU-1 remains in unoccupied mode.
    2. If the zone in bypass mode requires cooling or non-fan powered VAV heating, then RTU-1will operate in occupied mode.
    3. When RTU-1 operates in bypass mode, the entire floor is set to temporary occupied mode. The temporary occupied mode ends when the bypass duration of 3 hours elapses. The entire floor is placed in occupied mode so RTU-1 maintains the minimum airflow necessary for potential DX refrigeration operation.

Morning Warm-Up Mode

- Morning warm-up mode is the same as occupied mode except the mixing dampers are in their full recirculation positions.
- Between the hours of 4:00 AM and 7:30 AM (3:00 AM Mondays) if the average building heating demand exceeds 70%, then RTU-1 is enabled and the supply air setpoint is set to 90 degrees.
- When the average building heating demand drops below 20%, RTU-1 returns to occupied supply air temperature control. The mixing dampers remain in their full recirculation positions until the occupied period begins.

Optimization Opportunities

Observe system operation for potential energy saving modifications.

- Monitor the supply air temperature to determine if excessive reheat is occurring or if there are a few critical cooling zones dictating the supply air setpoint.
- Monitor the supply duct static pressure to determine if the control scheme is operating the supply fan too fast and excessively pressurizing the supply air duct.
- Verify if operation of RTU-1 during unoccupied hours is necessary for occupant comfort or if such operation is creating significant energy penalties.
- Verify if morning warm-up mode is optimally warming up the building just prior to occupancy or if it is warming the building too soon prior to occupancy.

VAV BOXES (ZONE CONTROLLERS)

Description

Zone ventilation and conditioning is provided by variable air volume boxes. Perimeter zones have fan-powered boxes while interior zones have reheat boxes. The VAV boxes supply minimum ventilation air, cooling air supplied by the rooftop unit, heating from the ceiling plenum (1st stage) (perimeter zones only) and heat supplied by the hydronic heating system (2nd stage).

Control Settings

Occupied or Bypass Mode

- The Variable Air Volume (VAV) boxes controllers provide space ventilation via the minimum flow setpoint.
- The VAV boxes provide cooling by modulating the VAV damper between the minimum and maximum airflow setpoints.
- The perimeter VAV boxes provide heating by a local fan that supplies ceiling plenum air to the room and a reheat coil and associated control valve which is modulated based upon the controllers heating demand. Interior boxes do not have a local fan.
- Each VAV room sensor has a room setpoint adjustment slider (with the exception of the public area sensor in the arctic entry and lobby). The functional range of the setpoint adjuster is limited to a maximum of 76° F for heating and a minimum of 64° F for cooling.
- Basement VAV: The basement VAV box has its own schedule: Monday – Friday 8:00 AM thru 4:30 PM.

Bypass Mode

- Each VAV room sensor has both a bypass button. The override duration of the bypass button is 3 hours.

Unoccupied Mode

- If a perimeter fan-powered VAV box zone temperature falls below the unoccupied setpoint the local fan, heating valve, and heating plant are activated.
- If an interior (no fan) VAV heat box zone temperature falls below the unoccupied setpoint, RTU-1 operates in unoccupied mode, the respective heating valve and the heating plant are enabled.
- If any VAV box space temperature exceeds the unoccupied cooling setpoint the VAV damper opens for cooling and RTU-1 is enabled in unoccupied mode.

Warm-Up or Cool-Down Mode

The VAV controllers operate in the same way as the Occupied Mode except that no minimum ventilation is required.

Occupancy Mode	Htg Demand	Clg Demand	Damper % Flow	Htg Valve	Series Fan
Occupied	0%	0%	Min. (30%)	0%	On
Occupied	100%	0%	Min. (30%)	100%	On
Occupied	0%	100%	Max. (100%)	0%	On
Unoccupied	0%	0%	0%	0%	Off
Unoccupied	100%	0%	0%	100%	Cycles
Unoccupied	0%	100%	0-100%	0%	Cycles
Warm-Up	100%	0%	0%	100%	On
Cool-Down	0%	100%	0-100%	0%	On

Optimization Opportunities

Observe system operation for potential energy saving modifications.

- Monitor unoccupied heating and cooling demand and system operation for opportunities to reduce unoccupied operation of RTU-1 and the heating plant.

IT ROOM COOLING

Description

Four split air-conditioning units with rooftop condenser units provide cooling for the IT room.

Control Settings

- Room thermostat operates units to maintain setpoints.

Optimization Opportunities

Observe system operation for potential energy saving modifications.

- Quantify rejected heat for opportunity to reclaim it as part of the proposed renovation projects.

TOILET EXHAUST FAN

Description

A rooftop exhaust fan draws exhaust air from toilets, janitor spaces and other exhaust rooms.

Control Settings

The exhaust fan operates on Monday – Friday 7:00 AM thru 5:00 PM.

DOMESTIC HOT WATER SYSTEM

Description

A 50 gallon electric hot water heater supplies domestic hot water to the building.

Control Settings

The HW heater maintains a HW temperature of 120°F.

LIGHTING SYSTEMS

Description

Interior: Light fixtures consist of fluorescent fixtures and lamps.

Exterior: Fixtures consist of high intensity discharge fixtures and lamps.

Control Settings

- Interior: A lighting control panel controls the lighting for each suite. The lighting is schedule on Monday to Friday from 7 am to 7 pm. During unoccupied periods, an occupant calls the system to turn on all the lighting in the suite.
- Exterior: A photocell operates the lighting from dawn to dusk.

Optimization Opportunities

Observe system operation for potential energy saving modifications.

- Monitor building occupancy and unoccupied lighting determine feasibility of installing occupancy sensors to control lighting locally.
- Evaluate the potential for scheduling the parking lot lighting off from 11pm to 5 am.
- Monitor light levels in offices on all four exposures of the building and assess the potential for daylighting control.

Section 3

AHFC Chugach Manor Energy Policy

INTRODUCTION

This section details the operating parameters for the AHFC Chugach Manor Senior Housing. The purpose of the energy policy is to provide guidelines for proper operation of the building. The building should be monitored for proper operation and to assess optimization opportunities.

Chugach Manor is a three story building with 120 housing units and a total area of 114,431 sqft.

Energy Efficiency Opportunities

The following areas offer the greatest potential for improving the building energy efficiency.

- Reducing pumping energy
- Developing optimal boiler staging control
- Optimizing heating water temperature reset
- Optimizing heating plant operation under high instantaneous domestic hot water loads
- Optimizing snowmelt controls and quantifying snowmelt energy use
- Reducing AHU operating hours and setpoints
- Reducing SF-1 and SF-2 air flow
- Evaluate the need for engine block heaters; reduce operating hours and bill tenants for the total cost of the energy
- Occupancy sensor control of lighting

Maintenance

The energy efficiency of the building is dependent upon proper maintenance and repair of the building systems by trained mechanics. While this work is rightly focused on maintaining proper system operation and longevity, it must also be geared toward improving system efficiency.

Setpoints

Occupied: Each room thermostat has a manual temperature setpoint. Recommended settings are:

- Common Areas: 70°F heating
- Entrances: 55°F heating
- Apartments: 70-75°F heating

SECONDARY (BUILDING) PUMPS

Description

The building has the following heating pumps:

- PMP-1/1A: Supplies west end of building
- PMP-2/2A: Supplies east end of building.
- PMP-6: Supplies AHU-1 heating coils HC-2 and HC-3
- PMP-8: Supplies SF-1/ HC-4
- PMP-9: Supplies SF-2/ HC-5

Control Settings

Pumps PMP-1/1A

- Operation: DDC system operates pumps in lead/standby configuration with 14 day switchover. Only one pump operates a time.
- Warm Weather Shutdown: Pumps are disabled when outside temperature exceeds 65°F, except upon domestic hot water heating demand.
- Pump Speed: Pump speed modulates to maintain pressure differential in heating supply and return mains.
- Minimum Flow: A three-way control valve modulates to maintain system flow above the minimum pump flow rate.

Pumps PMP-2/2A

- Operation: DDC system operates pumps in lead/standby configuration with 14 day switchover. Only one pump operates a time.
- Heating Supply Reset: The heating supply temperature is reset with outside temperature.
- Warm Weather Shutdown: Pumps are disabled when outside temperature exceeds 65°F, except upon domestic hot water heating demand.
- Pump Speed: Pump speed modulates to maintain pressure differential in heating supply and return mains.
- Minimum Flow: A three-way control valve modulates to maintain system flow above the minimum pump flow rate.

Pump PMP-6

- Pump operates when AHU-1 operates.

Pump PMP-8

- Pump operates when SF-1 operates and there is a call for heat.

PMP-9

- Pump operates when SF-2 operates and there is a call for heat.

Optimization Opportunities

Observe system operation for potential energy saving modifications.

- Monitor the PMP-1A/1B and PMP-2A/2B supply and return water temperature differential to determine if the flow rate through the heating units is too high. Reduce pressure differential setpoint to achieve a minimum 20°F differential during cold weather.
- Monitor PMP-6, PMP-8, and PMP-9 operation to determine if the pumps are operating a considerable number of hours when heat is not required. Modify controls so pumps only operate when heating is required.
- Monitor opportunity to reduce the heating supply temperature.

BOILERS AND BOILER PUMPS

Description

Four modulating gas boilers with high-low burners, each with a primary boiler pump.

Control Settings

- A boiler control panel stages the boilers as required, maintaining the heating supply temperature of 170°F.
- The boilers are manually locked into low fire operation.
- Boiler pump operates when boiler is enabled.

Optimization Opportunities

Observe system operation for potential energy saving modifications.

- Monitor boiler operation and determine if higher efficiency is achieved by utilizing low-high burner operation instead of turning on another boiler to meet the heating load.
- Monitor boiler operation and determine if all four boilers are needed for reasonable redundancy. Turn off and isolate any unneeded boilers.

DOMESTIC WATER SYSTEM

Description

Two instantaneous plate heat exchanger water heaters WH-1 and WH-2 and respective tertiary pumps PMP-WH1 and PMP-WH2. Secondary pump PMP-10 maintains heating supply flow to the water heaters.

Control Settings

- Pump PMP-10 operates continuously to maintain heating flow to the HW heaters.
- Internal controller enables respective pump PMP-WH1 or PMP-WH2 to maintain respective setpoint.
- Hot water recirculation pump PMP-4 operates continuously.

Optimization Opportunities

- Observe if instantaneous hot water loads are causing additional boilers to operate for short periods, reducing plant efficiency.
- Determine if one heater can be turned off during low demand periods.

SNOWMELT SYSTEM

Description

A snowmelt system serves the sidewalk on the north side of the building.

A second snowmelt system (HX-1) serves the sidewalk and bus stop area on the south side of the building.

Control Settings

- Enabled when outside temperature is below 50°F.
- When slab sensor detects moisture, modulate a 4-way valve to maintain slab temperature of 50°F.
- When slab sensor does not detect moisture, enter idle mode and modulate the 4-way valve to maintain a slab temperature of 26°F.

Optimization Opportunities

Observe system operation for potential energy saving modifications.

- Monitor the snowmelt system to determine how much heat is supplied to the sidewalks.
- Evaluate if less energy use can be achieved by reducing temperature setpoints and/or manually control to operate the system.

AIR HANDLING UNIT AHU-1

Description

Air handling unit serving the second and third floor lounges. Unit has a return fan, mixing box, cooling coil with compressor/condenser unit, and supply fan.

Control Settings

- Supply and return fans operate continuously.
- Mixing dampers modulate to provide 80°F mixed air temperature.
- Chiller unit modulates to maintain 55°F supply air temperature.
- Room thermostats modulate reheat coil valve to maintain room setpoint.

Optimization Opportunities

Observe system operation for potential energy saving modifications.

- Verify room occupancy to determine if fan is needed 24/7.
- Verify operation of cooling unit.
- Determine optimal control of system to reduce fan energy

CORRIDOR SUPPLY FAN SF-1 AND SF-2

Description

Inline fan with preheat coil, supply fan, and heating coil. Heat exchanger supplies glycol heating water to the preheat coil.

Control Settings

- Fan operates continuously.
- Preheat coil automatic valve modulates to maintain 55°F (not verified) supply air temperature.
- Heating coil automatic valve modulates to maintain room thermostat setpoint (not verified).

Optimization Opportunities

- Observe if system is over-pressurizing the corridor.

BOILER ROOM VENTILATION FAN VF-1

Description

An inline fan with mixing box supplies cooling air to the boiler room.

Control Settings

- Room thermostat operates fan when room temperature exceeds 80°F and disables when room temperature drops below 70°F.
- Mixing dampers modulate to maintain 55F supply air temperature.

Optimization Opportunities

- Increase boiler room temperature as much as practical to increase boiler efficiency.

CRAWLSPACE EXHAUST FAN (TYPICAL OF 2)

Description

Exhaust fan ducted to outside

Control Settings

- Fan operates to maintain humidity level below setpoint.

AUTOMOBILE ENGINE BLOCK HEATERS

Description

Automobile owners are allowed to plug in their cars during cold weather to keep the engines warm.

Control Settings

- Enabled when outside temperature is below 32°F

Optimization Opportunities

- Observe if the system can be enabled at a lower temperature to reduce energy consumption.
- Evaluate added energy consumption and determine if car owners are properly charged for this service.

LIGHTING

Description

Interior: Fluorescent T-8 and CFL light fixtures and lamps.

Exterior: High intensity discharge lighting fixtures and lamps.

Control Settings

- Interior: Lighting in the common spaces, meeting rooms, and lounges are on all the time.
- Exterior: Photocell controlled

Optimization Opportunities

Observe system operation for potential energy saving modifications.

- Observe if interior lighting can be occupancy sensor controlled to reduce light energy and lamp replacements.

Section 4

Glacier View Senior Housing Energy Policy

INTRODUCTION

This section details the operating parameters for the AHFC Glacier View Senior Housing. The purpose of the energy policy is to provide guidelines for proper operation of the building. The building should be monitored for proper operation and to assess optimization opportunities.

Glacier View is a three story building with 30 housing units and a total area of 27,729 sqft.

Energy Efficiency Opportunities

The following areas offer the greatest potential for improving the building energy efficiency.

- Developing optimal boiler staging control
- Optimizing heating water temperature reset
- Reducing pumping energy
- Reducing hot water standby losses
- Reduce lighting energy

Maintenance

The energy efficiency of the building is dependent upon proper maintenance and repair of the building systems by trained mechanics. While this work is rightly focused on maintaining proper system operation and longevity, it must also be geared toward improving system efficiency.

Setpoints

Occupied: Each room thermostat has a manual temperature setpoint. Recommended settings are:

- Common Areas: 70°F heating
- Entrances: 55°F heating
- Apartments: 70-75°F heating

BOILERS AND BOILER HEATING LOOP

Description

Two low mass, oil-fired boilers, 357 MBH each operate in lead/lag configuration to heat the building and generate domestic hot water. Each boiler has a recirculating pump and a boiler pump. The heating water is circulated within a boiler loop that supplies the building heating loop and the domestic hot water tanks.

Control Settings

- A Tekmar control panel enables the lead boiler to maintain the boiler heating loop at 160°F +/- 5°F.
- The lag boiler is enabled if the boiler loop drops below 140°F or if the loop drops below 155°F for over 30 minutes.
- When a boiler is enabled, it fires and the respective recirculation pump operates until the boiler temperature exceeds 140°F. Then the boiler pump injects heated water into the boiler heating loop.
- The boiler loop pump operates continuously to maintain flow in the boiler loop.

Optimization Opportunities

Observe system operation for potential energy saving modifications.

- Monitor lag boiler operation for short cycles, indicating that the heating system is capable of heating with one boiler without enabling the lag boiler.

BUILDING LOOP

Description

A variable speed injection pump supplies heated water from the boiler loop to the building loop.

Two variable speed pumps, operating in lead/standby configuration, supply heating water to the building heating units.

Control Settings

- The injection pump resets the building loop temperature with outside temperature according to the following schedule:

Outside Temperature	Building Loop Temperature
-10°F	170°F
75°F	80°F

- Tekmar control panel sequences the building pumps in lead/standby configuration with switchover every seven days. The pumps modulate to maintain differential pressure between the heating supply and return mains.

Optimization Opportunities

Observe system operation for potential energy saving modifications.

- Monitor building pumps during cold weather and reduce pump differential pressure setpoint as low as possible while supplying sufficient heat.
- Monitor building temperature and reduce building loop temperature as low as possible while supplying sufficient heat to the building.

DOMESTIC HOT WATER SYSTEM

Description

Two indirect hot water tanks are heated by the boilers and supply hot water to the building. Each tank has a hot water pump that supplies heating water from the boiler loop to the tanks. The hot water from the tank is blended with cold water at a thermostatic mixing valve to supply 120°F water to the building.

A hot water recirculation pump maintains hot water in the piping mains.

Control Settings

- The respective hot water pump operates to maintain the tank temperature at 140°F.
- The thermostatic mixing valve mixes and hot and cold water to supply 120°F tempered water to the building.
- The hot water recirculation pump operates continuously to maintain hot water in the distribution piping.

Optimization Opportunities

Observe system operation for potential energy saving modifications.

- Monitor domestic hot water loads and determine if two tanks are required to meet the load.
- Reduce tank temperature as low as practical while retaining operation of the thermostatic mixing valve.
- Install a thermostatic control on the hot water recirculating pump to turn it off when the hot water main is up to temperature.

LIGHTING SYSTEMS

Description

Interior lighting consists of fluorescent lighting.

Exterior lighting consists of high intensity discharge lighting.

Control Settings

- Interior lighting is manually controlled. Corridor lighting remains on continuously.
- Exterior lighting is controlled by a photocell.

Optimization Opportunities

Observe system operation for potential energy saving modifications.

- Determine if corridor lighting can be reduced by occupancy sensors during nighttime hours when there is little circulation within the building.
- Determine if exterior lighting can be scheduled off with a time clock from 11 pm to 6 am.