

**ATTACHMENT A (DRAFT)  
SCOPE OF WORK**

**PART 1 – PRODUCTS & EXECUTION**

**Mountain View**

**A. ECM 1.1 Boiler Replacement**

The existing (2) fuel oil boilers at Mountain View facility are each 50-years-old, inefficient (combustion efficiency of 78%), and are in need of replacement. This measure will replace these boilers with two high efficiency (92% part load efficiency) propane condensing boilers. Currently the propane cost is lower than fuel oil per therm. Fuel switching will provide additional savings in addition to the energy consumption savings based on the efficiency improvements. It is the City’s intention to apply for the Department of Ecology Diesel Emission Reduction grant for the boiler upgrade project.

Specifications for the proposed equipment are as follows:

Hot Water Boiler Schedule															
Mark	Type	Water Flow (GPM)	EWT (F)	LWT (F)	Min Eff	Eff	WPD (FT)	Pressure Rating (pgsi)	Burner [4]			V	Hz	Phase	Basis of design
									Fuel	Input (MBH)	Min Inlet Press (In WG)				
B-1,2	Condensing	261	180	160	84% EC	93%	7	160	Propane	3000	4.5	208	60	3	AERCO BMK3000 or equivalent

Pump Schedule														
Mark	Location	Service	Pump					Motor					Basis of Design	Notes
			Type	Speed	RPM	Flow (GPM)	Total Head (FT)	BHP	HP	V	Hz	Phase		
P-1,2	Mech Rm	Boiler Primary	Cent, End Suction	VAR	1,750	287	60.5	7.33	10	208	60	3	B&G Series 1510 3BC or equivalent	Provide with VFD for speed control

Expansion Tank Schedule									
Mark	Location	Volume (gal)	Acceptance (gal)	Dimensions		Operating Temp Range (F)	Orientation	Mounting	Basis of Design
				DIA (IN)	Long (IN)				
ET-1	Boiler Room	33.6	11.3	16	43	160 - 120	Vertical	Suspended	Amtrol AX-60 or equivalent

Included are:

1. Demolition and disposal of existing boilers along with existing flue vent, fuel train, and controls.
2. Closure of existing fuel oil tank.
3. All equipment, materials and labor to install new propane condensing boilers, including a new propane tank and heat trace for the propane tank.
4. Modification of hydronic piping to accommodate new boilers.
5. Installation of new expansion tank.
6. New propane gas piping and connections.
7. Startup, commissioning and 4 hours of training for the City operator.
8. All engineering, construction management, permitting, operations and maintenance manuals as well as a one-year installation warranty and pass-through of the manufacturer’s warranty are included.

**B. ECM 3.1: Control System Upgrade – EMS, Retro-Commissioning, and Demand Control Ventilation at AHU-3**

Existing Barber Colman control system at the Mountain View facility is obsolete, and has minimal control capabilities along with communication issues with HVAC equipment. Most of the HVAC units are operated manually by hand, and equipment operation is not scheduled (operating 24/7).

This ECM involves the installation of an Energy Management Control System (EMCS) that will monitor and/or control the building’s HVAC systems including the boilers, pumps, air handling units, unit ventilators, fan coil units, exhaust fans, and reheat coils. The EMCS will consist of distributed controllers that will communicate with a

central computer with WEB access. The EMCS will provide Direct Digital Control (DDC) for the HVAC equipment, which will vastly improve the operation of the buildings by providing centralized monitoring, trend logging, alarming, equipment sequencing, scheduling, and other control capabilities. The comfort level of the building's occupants will be improved because the EMCS will provide for consistent air temperatures, rather than the existing manual system that adjusts temperatures based on operators' manual adjustments.

The EMCS will provide control strategies including:

- Scheduling
- Demand control ventilation
- Outside air ventilation control

Retro-commissioning and replacement of HVAC equipment (AHUs, FCs, and UVs) will be performed along with the installation of the new EMCS to allow automated equipment controls. Applied control strategies will reduce the energy consumption.

Included are:

1. New Energy Management Control System at the Mountain View facility.
2. Replacement of the existing controls and provide new controllers for all Air Handling Units (AHUs), Fan Coils (FCs), Unit Ventilators (UVs), Exhaust Fans (EFs), Heating Coils (HCs), Boilers, and heating hot water systems.
3. Repair / replace valves and actuators at HVAC equipment as necessary.
4. Provide and install CO2 sensor on the return duct to control ventilation airflow at AHU-3.
5. Controller programming and technical labor for check-out and testing of new controls for all mechanical systems. This will include scheduling, night setback control, and demand control ventilation control at the gym AHU (AHU-3).
6. Incorporate occupied / unoccupied time schedules and associated space temperature set-points into control strategies.
7. Provide BTU load monitoring for (4) hydronic heating systems: main campus space heating, gym and cafeteria space heating, pool and locker room heating, and pool water heat exchanger loop.
8. Startup, commissioning and 4 hours of training for the City operator.
9. All engineering, construction management, permitting, operations and maintenance manuals as well as a one-year installation warranty and pass-through of the manufacturer's warranty are included.

Exclusions:

1. Excludes any and all Interface and/or Connections to Third Party Fire Alarm Panels.
2. Excludes network LAN drops and IP addresses.

### **C. ECM 4.1 A.2: HVAC Mechanical Option A.2 - Replace AHU-7**

AHU-7 serves the natatorium at the Mountain View facility. The unit is located in the pool mechanical room. AHU-7 is in poor and damaged condition with corrosion on the ducts and electrical conduits. Hot water valves have leaks, creating puddles of water on the mechanical room floor.

Install like equipment in pool mechanical room to serve the natatorium. The existing unit is not equipped with a dehumidification system, and the natatorium has condensation issues along the perimeter walls of the facility. The new unit will be equipped with a dehumidification system to provide moisture control for the natatorium. Additionally, the new unit will provide better ventilation, and thus reduce existing chlorine odors. All damaged / corroded supporting structures, electrical conduit, and leaky valves will be replaced.

This measure, implemented together with ECM 3.1, will provide energy savings by enabling unit scheduling and temperature controls.

Included are:

1. Remove and dispose of existing AHU-7 and supporting structure, including removal of all damaged / corroded duct work, electrical line and conduit in the pool mechanical room.
2. Provide and install new DX unit to match the existing units heating and ventilation specifications. Provide and install all necessary supporting structure.

3. All other equipment, materials and labor to install new AHU-7.
4. Startup, commissioning and 4 hours of training for the City operator.
5. All engineering, construction management, permitting, operations and maintenance manuals as well as a one-year installation warranty and pass-through of the manufacturer's warranty are included.

Exclusions:

1. Excludes any and all Interface and/or Connections to Third Party Fire Alarm Panels.

**D. ECM 4.1 B: HVAC Mechanical Option B - Retro-commission AHU-1 - AHU-6**

AHU-1 and AHU-2 serve the classroom side (east side) of the building, and are located in the control room by the police department. Currently, both of the units are operated manually. The units have damaged duct work and air is leaking from the units. AHU-3 serves the gym, and is located above the ceiling in the gym closet. The filter on AHU-3 was removed, and dust is clogging the airflow. The unit is operated manually. During the site walk, the heating coil by AHU-3 was leaking. AHU-4 serves the library. AHU-4 is also missing the filter, and dust is clogging the airflow. The hot water valve actuator is attached upside down. AHU-5 and AHU-6 serve locker rooms. The men's locker room unit is not operational, and currently there is no heating and ventilation provided to the men's locker room. AHU-6 is missing the filter, and the dust is clogging the heating coil, plugging the airflow. All units are currently not controlled from the front-end control system, and are operated manually.

Honeywell recommends the City to retro-commission units to trouble shoot and allow automated controls, and achieve optimal operation efficiency. This measure will be implemented together with ECM 3.1: control system upgrade. Retro-commission will include complete unit cleaning of heating coils, ducts, blower wheels, and dampers. Existing operational conditions will be diagnosed and necessary repair / replacement of parts will be provided as required. Filters will be installed where filters are missing from the system.

This measure implemented with ECM 3.1 will provide energy savings by enabling unit scheduling and temperature controls.

Included are:

1. Provide complete unit cleaning. This includes cleaning heating coils, ducts, blower wheels, and dampers.
2. Repair damaged duct work attached to AHU-1 and AHU-2 in the mechanical room.
3. Retro-commission existing (6) AHUs for proper operation – diagnose existing conditions with damper, fan, and heating coil operations and provide repair / replacement of parts as needed.
4. Replace filters or install filters where filters were removed from the system.
5. Supply and install damper end switch for each AHU to indicate minimum OSA damper position.
6. Test and balance airflows through new AHUs and provide a report.
7. Provide documentation of work completed, including total number of failed parts and repairs made.

Exclusions:

1. Excludes any and all Interface and/or Connections to Third Party Fire Alarm Panels.

**E. ECM 4.2: HVAC Mechanical Option B - Retro-commission FCs and UVs**

Several of the existing units are not operating as designed due to their age, dust, and lack of maintenance on the units, causing the units to not turn on.

Retro-commission units to trouble shoot and allow automated controls, and achieve optimal operation efficiency. This measure will be implemented together with ECM 3.1: control system upgrade. Retro-commission will include complete unit cleaning of heating coils, ducts, blower wheels, and dampers. Existing operational conditions will be diagnosed and necessary repair / replacement of parts will be provided as required. Filters will be installed where filters are missing from the system.

This measure implemented with ECM 3.1 will provide energy savings by enabling unit scheduling and temperature controls.

Included are:

1. Provide complete unit cleaning. This includes cleaning heating coils, ducts, blower wheels, and dampers.

2. Retro-commission existing (16) UVs and (15) FCs for proper operation – diagnose existing conditions with damper, fan, and heating coil operations and provide repair / replacement of parts as needed.
3. Replace filters or install filters where filters were removed from the system.
4. Where power issues exist at controller and units, troubleshoot and repair up to control transformer.
5. Supply and install minimum OSA position switch for each AHU.
6. Verify proper airflows to UVs and FCs, and document and provide airflows.
7. Provide documentation of work completed, including total number of failed parts and repairs made.

Exclusions:

1. Excludes any and all Interface and/or Connections to Third Party Fire Alarm Panels.

**F. ECM 5.1: Lighting Retrofit**

Interior lighting affected by this measure consists of the T8 and T12 fluorescent lamps and incandescent lamps. Existing fluorescent lamps will be replaced with higher efficiency T8 lamps. Exit signs have incandescent lamps, and lamps will be replaced with LED lamps. Exterior lamps affected by this measure include high pressure sodium lamps, metal halide lamps, and incandescent lamps. These lamps will be replaced with appropriate size LED lamps.

Additional detail and counts of the existing lightings that will be affected by this measure are provided in Attachment 1: Lighting Audit.

Included are:

1. All labor and materials to install new fixtures, motion sensors and new components in any existing fixtures that we show being retrofitted in Attachment 1.
2. All engineering, construction management, permitting, operations and maintenance manuals as well as warranty service are included.

**G. ECM 6.1: Envelope Upgrade**

There are air infiltrations observed at Mountain View facility, including door weather-seals, window corner seals, and roof exhaust duct to the curb. Leaky doors will be sealed with weather-stripping and sweeps, window corners will be caulked, and roof exhaust duct to the curb will be sealed. This measure will reduce the infiltration through the building envelope, and improve occupant’s comfort. The building envelope audit report is provided in the Attachment 2. Recommended replacement of weather-seals, weather-strips, and caulking include the following:

Replace and close 4.40 Sq Ft of effective air leakage area at following locations:

- Seal roof exhausts (13 Roof Vents)
- Seal roof hatches/doors (2 roof hatches)
- Caulk and seal windows (180 linear feet and 608 window corners)
- Seal with weather-stripping and sweeps exterior door leaks (15 doors)

Included are:

1. All labor and materials to install new sealant and weather strips.
2. All engineering, construction management, permitting, operations and maintenance manuals as well as warranty service are included.

**City Hall, Library, Cotton Building, Pope Marine, and WWTP**

**H. ECM 3.1: Control System Upgrade – EMS  
City Hall**

City Hall has the Delta Control System, which was installed in 2005. The proposed installation will utilize / reuse the existing controls, and utilize the BACnet communications to bring the buildings HVAC operations into the new EMCS. Scheduling, programming, and technical labor will be included for testing and proper operation of EMCS.

This measure will provide improved operation, providing convenience to the facility operators to change equipment scheduling from remote locations.

Included are:

1. Bring existing controls into new Energy Management Control System through BACnet communications.
2. Controller programming and technical labor for check-out and testing of new controls for all mechanical systems.
3. Incorporate occupied / unoccupied time schedules and associated space temperature set-points into control strategies.
4. Startup, commissioning and 4 hours of training for the City operator.
5. All engineering, construction management, permitting, operations and maintenance manuals as well as a one-year installation warranty and pass-through of the manufacturer's warranty are included.

Exclusions:

1. Excludes any and all Interface and/or Connections to Third Party Fire Alarm Panels.
2. Excludes network LAN drops and IP addresses.

#### **I. ECM 3.2: Control System Upgrade – Programmable Thermostat Library, Cotton Building, Pope Marine**

Space temperature at Library, Cotton Building, and Pope Marine are currently adjusted manually by occupants and City clerks. 7-day programmable thermostats will be installed to allow temperature scheduling. Thermostats will be networked into the new EMCS. This measure will provide convenience to the City clerks and improve the occupants' comfort.

1. Provide and install programmable space thermostats to replace the existing manual control thermostats. (3) Thermostats at Library, (3) thermostats at Cotton Building, and (1) thermostat at Pope Marine.
2. Central monitoring system for thermostats
3. Incorporate occupied / unoccupied time schedules and associated space temperature set-points into control strategies.
4. Startup and commissioning, and 4 hours of customer training for the City operator.
5. All engineering, construction management, permitting, operations and maintenance manuals as well as a one-year installation warranty and pass-through of the manufacturer's warranty are included.
6. Excludes network LAN drops and IP addresses.
7. Excludes wall, floor or ceiling patching and painting

#### **J. ECM 5.1: Lighting Retrofit City Wide**

Interior lighting affected by this measure consists of the T8 and T12 fluorescent lamps and incandescent lamps. Existing fluorescent lamps will be replaced with higher efficiency T8 lamps. Exit signs have incandescent lamps, and lamps will be replaced with LED lamps. Exterior lamps affected by this measure include high pressure sodium lamps, metal halide lamps, and incandescent lamps. These lamps will be replaced with appropriate size LED lamps.

Additional detail and counts of the existing lightings that will be affected by this measure are provided in Attachment 1: Lighting Audit.

1. All labor and materials to install new fixtures, motion sensors and new components in any existing fixtures that we show being retrofitted in Attachment 1.
2. All engineering, construction management, permitting, operations and maintenance manuals as well as warranty service are included.

#### **K. ECM 6.1: Envelope Upgrade City Hall**

There are air infiltrations observed at Mountain View facility, including door weather-seals, window corner seals, and roof exhaust duct to the curb. Leaky doors will be sealed with weather-stripping and sweeps, window corners

will be caulked, and roof exhaust duct to the curb will be sealed. This measure will reduce the infiltration through the building envelope, and improve occupant's comfort. The building envelope audit report is provided in the Attachment 2. Recommended replacement of weather-seals, weather-strips, and caulking include the following:

Replace and close 9.47 Sq Ft of effective air leakage area at following locations

- Seal roof exhausts (6 roof vents)
- Seal roof hatches/doors (2 roof hatches)
- Caulk in areas the door/window intersection (24 lineal feet of transom)
- Caulk and seal windows (115 windows/2117 lineal feet of V-strip or foam tape)
- Seal with weather-stripping and sweeps exterior door leaks (13 doors)
- Caulk and seal lower jail storage (132 linear feet)

Included are:

1. All labor and materials to install new sealant and weather strips.
2. All engineering, construction management, permitting, operations and maintenance manuals as well as warranty service are included.

### **Water Meter AMI – Preliminary Scope**

Two preliminary scope options for the Water Meter AMI project are provided: AMI installation with all meter replacement, and AMI installation with meter retrofit. This ECM scope will be further developed upon agreement of the cost of operations savings and scope of work. This project will be implemented as an addition/change order to the initial construction contract for the facility measures.

#### **L. ECM 18.1 A: Water Meter AMI – All Meter Replacement**

This measure description is preliminary, and is intended for informational purposes only.

Replace all meters with new low-lead meters to comply with new Safe Drinking Water Act of 2014. All meters replaced will be equipped with two-way transceivers for AMI operation. Small meters (1.5" and smaller) will be replaced with positive displacement meters. Large meters (2" and larger) will be replaced with electromagnetic meters. All meters will be integrated into the new AMI system. Honeywell will provide and install data collectors, interface computer hardware and software for AMI operation and system setup and commissioning. This measure will provide cost benefit in the following areas:

- Future meter reader cost and vehicle cost
- Meter repair and replacement cost
- Utility billing operation cost

#### **M. ECM 18.1 B: Water Meter AMI –Meter Retrofit**

This measure description is preliminary, and is intended for informational purposes only.

Replace all meters installed prior to 2000 with new low-lead meters and retrofit meters installed after 2000. All meters replaced / retrofitted will be equipped with two-way transceivers for AMI operation. Small meters (1.5" and smaller) will be replaced with positive displacement meters. Large meters (2" and larger) will be replaced with electromagnetic meters. All meters will be integrated into the new AMI system. Honeywell will provide and install data collectors, interface computer hardware and software for AMI operation, and system setup and commissioning.

## **PART 2 – GENERAL**

### **A. GENERAL CONDITIONS**

1. Honeywell is not responsible for bringing existing lighting/electrical systems up to code.
2. A five (5) year ballast warranty will be provided by the ballast manufacturer and a one (1) year lamp warranty will be provided by the lamp manufacturer. The five (5) year warranty on the ballasts operates by the Customer sending the old ballasts back to the manufacturer and in return a new ballast will be provided to be installed by the Customer's work force.
3. If Honeywell encounters any materials or substances classified as toxic or hazardous in performance of the Work, including asbestos, Honeywell will notify Customer and will stop work in that area until such area has been made safe by the Customer, or Customer's Representative, at Customer's expense. In the event such conditions cause a delay in Honeywell's performance, Honeywell shall be entitled to recovery of all costs associated with such delay, as well as an extension of time of performance.
4. Where demolition of certain areas of a building are required for removal and installation of equipment and that demolition is included in the scope of work defined herein, Honeywell will make every effort to replace such areas with similar materials as available. If such materials are not available, materials of similar quality will be supplied and installed.
5. Electrical: Honeywell will only be responsible for repairing existing electrical wiring problems that occur within three feet (36 inches) of the device being installed or the nearest wall or ceiling penetration, whichever is smaller.
6. Piping: Honeywell will only be responsible for repairing existing piping problems that occur within two feet (24 inches) of the device being installed or the nearest wall or ceiling penetration, whichever is smaller. Piping includes, but is not limited to, domestic hot and cold water, cooling cold water, heating hot water, condensate, fuel oil, and cooling tower condensing water.
7. Routine Maintenance: Routine maintenance up such as vacuuming, coil cleaning and filter change of air handling devices, etc. is the responsibility of the Customer, or as included in Attachment D.
8. Utility Meter: If new utility meters are required, provision and coordination of utility meters is the responsibility of the customer.
9. Phone Lines: CUSTOMER is responsible for implementation and costs for remote Honeywell access through CUSTOMER's firewall(s) to the controllers and front-end computer(s) by one (1) Measurement and Verification Specialist using one or more of the following processes:  

Phone Lines: To be provided by customer for off-site monitoring, two (2) lines for each front end, one (1) line for each separate remote bus, as well as on-going maintenance of the lines. OR

TCP/IP Remote Access: A dedicated static IP address, installation and on-going maintenance and subscription and licensing fees for access hardware and software and one (1) station license dedicated to the remote user
10. Efficiency Values: Honeywell will install equipment and lighting components (hereto referred as "equipment") under the scope described herein with specific energy and water efficiency values. The customer is required to replace any failed "equipment" no longer warranted by Honeywell or a Honeywell subcontractor, with "equipment" of equal or greater efficiency for the full contract guarantee term.
11. Limitation of Liability – Security Systems, Fire Alarm Systems and/or Components - Honeywell's total liability for damages of any kind or nature arising out of or relating to any aspect or component of the security or fire alarm systems and/or components provided under this Agreement is limited to \$\_\_0.00\_\_ due to the fact that Honeywell will be doing no work on any Security Systems, Fire Alarm Systems and/or Components of any sort. This has been specifically excluded in our Scope.
12. Honeywell will provide information necessary to apply for utility incentives. Actual dollar amount of incentive will be determined by the Utility and is not guaranteed by Honeywell.
13. The following areas are specifically excluded from this scope of work. Correction of problems in these areas, if required by Federal, State or local law or ordinance, will be considered additional work and will be chargeable (with approval) to the Customer.

- a. Any work not specifically stated and outlined in this scope of work.
- b. Painting and patching of areas beyond those areas directly related to work.
- c. Existing non-code conditions (examples: existing electrical wiring which requires correction or approval by appropriate inspectors, existing penetrations in need of fire stopping, etc).
- d. Excludes any and all Interface and/or Connections to Third Party Fire Alarm Panels.

**B. RELATED WORK SPECIFIED ELSEWHERE**

Provision of equipment, material, and labor to provide functional measurement and verification systems coordinated under Attachment G – Schedule of Savings.