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A. Overview

The City of Greeley selected Ameresco to perform an Investment Grade Audit (IGA). This report is the culmination site survey work, engineering analysis, and coordination with the City.

The table below summarizes the work scope for the audit.

Building	Building Area (square feet)	Address	Year Built	No. of Stories	Notes
Recreation Center	117,776	651 10th Avenue	1982	2/basement	Included in Original Facility Scope
Union Colony Civic Center	71,000	701 10th Avenue	1985	3	Included in Original Facility Scope
Senior Activity Center	31,470	1010 6th Street	1982	1/basement	Included in Original Facility Scope
Family Funplex	51,400	1506 65th Avenue	2005	2	Included in Original Facility Scope
Lincoln Park Annex	68,785	919 7th Street	1966	1 full level / 1 partial level	Included in Original Facility Scope
Police Headquarters	49,922	2875 10th Street	2007	2	Included in Original Facility Scope
Police Headquarters Secondary Building	26,450	810 30th Avenue	2007	1	Included in Original Facility Scope
Pool Area and Other Recreational Equipment at Family Funplex and Recreation Center	28,536	See addresses above	See dates above.	See information above.	Evaluated at No Additional Charge

*Note: Ameresco included an energy efficiency audit for the pool area and other recreational equipment at the Recreation Center and Family Funplex at no charge. This was offered as an added value with zero cost to the customer, because this equipment was located in buildings that were already included in the scope of work.

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Summary of Recommended Measures

The following tables provide an overview of the recommended energy conservation measures (ECMs) that the City reviewed during the preliminary IGA review meeting. Ameresco has provided a pro forma, or business case, to demonstrate how the annual energy savings that results from these ECMs would pay for the ECM implementation and measurement and verification costs, delivering an Energy Savings Performance Contract cost neutral solution. Descriptions of all ECMs evaluated in this IGA are detailed in later sections, and additional backup calculations and evidence of ECM costs and savings are listed in the Appendices. The financial pro forma illustrating a potential Energy Savings Performance Contract follows the tables.

List of Energy Conservation Measures

ECM	Name	Description
1	Lighting	Replace, relamp, and reconfigure interior and exterior lighting systems
2	Lighting Controls	Install occupancy, daylighting, and timed controls for lighting systems
3	Envelope	Install fire retardant, polyurethane foam, sealants, and appropriate weather stripping materials to building envelopes
4	VAV Retrofit	Retrofit existing air handling systems for variable volume operation
5	Boiler Retrofit	Replace existing boilers with high efficiency condensing units
6	Premium Efficiency Motors	Replace existing air handler motors with premium efficiency motors
7	Retrocommissioning	Systematically verify, check, test, repair, recalibrate, and modify existing HVAC and controls systems
8	Demand Controlled Ventilation	Implement carbon dioxide level based ventilation control for air handling systems
9	Pool Pump VFDs	Commission pool circulation pumping system operation
10	Cooling Tower Retrofit	Measure investigated but not recommended, removed from proposed scope of work
11	Variable-flow Pumping	Implement variable speed pumping for hot water heating loop
12	Exhaust Fan Speed Control	Measure investigated but not recommended, removed from proposed scope of work
13	Solar PV	Install roof mounted solar power generating system
14	Solar Thermal	Measure investigated but not recommended, removed from proposed scope of work
15	Energy Efficient Transformers	Replace existing voltage step down transformers with high efficiency units

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Matrix of Locations for Applied Energy Conservation Measures

This chart depicts the buildings where each ECM was applied within the Investment Grade Audit analysis and proposed pro forma. If the City of Greeley approved this scope of work, the IGA would serve as the basis of an Energy Savings Performance Contract. The City may review the IGA and determine an alternate scope of work is justified. Ameresco will work in partnership with the City to cater our approach to the City's needs.

Facility	Lighting	Lighting Controls	Envelope	VAV Retrofit	Boiler Retrofit	Premium Efficiency Motors	Retro Commissioning	Demand Controlled Ventilation	Pool Pump VFDs	Variable-flow Pumping	Solar PV
Recreation Center	X	X	X	X	X						
Union Colony Civic Center	X	X	X			X				X	
Senior Center	X	X	X								
FunPlex	X	X	X		X		X	X	X		X
Lincoln Park Annex	X	X	X	X	X	X		X			
Police HQ	X	X	X					X			
Police HQ Secondary Building	X	X	X								

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Annual Energy Conservation Measure Costs and Savings by ECM

For each Energy Conservation Measure*, Ameresco has provided the estimated annual utility consumption and demand charge reduction, projected energy savings for the first year, annual operation and maintenance savings, and implementation costs. The estimated savings represents "projected savings" within the pro forma. Ameresco has reduced the projected savings slightly when calculating the guaranteed savings to account for a measure of uncertainty. The total implementation cost is a guaranteed maximum price that includes design-build services and all general conditions, profit and overhead. Per the two pro forma cases illustrated in this section, Xcel Energy rebates reduce the costs that need to be financed, while annual solar PV renewable energy incentives augment the annual utility savings that service the financing. Similarly, any grants that may become available to apply to the project would reduce the costs that need to be financed. The cost of the audit is not included in the total implementation cost as Ameresco's Investment Grade Audit fee was paid for by the City of Greeley's Department of Energy American Recovery and Reinvestment Act grants and will not impact the financing of the project.

#	ECM	Electric Demand Savings		Electric Consumption Savings		Gas Consumption Savings		Operation & Maintenance Savings	Total ECM Savings	Total Implementation Cost
		kW	$	kWh	$	Therms	$	$	$	
1	Lighting	1,714	$30,335	559,979	$22,399	-	$0	$23,473	$76,207	$ 596,077
2	Lighting Controls	-	$0	108,811	$4,352	-	$0	$0	$4,352	$ 72,657
3	Envelope	-	$0	10,193	$408	12,702	$8,328	$0	$8,736	$ 106,231
4	VAV Retrofit	296	$5,086	158,730	$6,349	-	$0	$0	$11,435	$ 286,950
5	Boiler Retrofit	-	$0	-	$0	10,602	$7,348	$0	$7,348	$ 356,958
6	Premium Efficiency Motors	17	$279	2,666	$107	-	$0	$0	$386	$ 48,405
7	Retrocommissioning	-	$0	90,891	$3,636	2,969	$2,061	$0	$5,697	$ 47,808
8	Demand Controlled Ventilation	-	$0	19,341	$774	6,467	$4,667	$0	$5,441	$ 60,833
9	Pool Pump VFDs	180	$3,305	134,016	$5,361	-	$0	$0	$8,665	$ 25,526
10	Cooling Tower Retrofit - Removed from Scope	-	$0	-	$0	-	$0	$0	$0	$ -
11	Variable-flow Pumping	14	$239	11,910	$476	-	$0	$0	$716	$ 19,520
12	Exhaust Fans Speed Control - Removed from Scope	-	$0	-	$0	-	$0	$0	$0	$ -
13	Solar PV	-	$0	185,677	$7,427	-	$0	$0	$7,427	$ 511,121
14	Solar Thermal - Removed from Scope	-	$0	-	$0	-	$0	$0	$0	$ -
15	Energy Efficient Transformers	226	$4,141	82,140	$3,286	-	$0	$0	$7,426	$ 143,278
	Total	2,446	$43,385	1,364,354	$54,574	32,740	$22,405	$23,473	$143,837	$2,275,364

*If an ECM is removed from the scope of work, Ameresco reserves the right to adjust general conditions, overhead and profit accordingly.

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Annual Energy Conservation Measure Costs and Savings by Building

Ameresco has provided the estimated annual utility consumption and demand charge reduction, projected energy savings for the first year, annual operation and maintenance savings, and implementation costs for each building*.

Building	Electric Demand Savings		Electric Consumption Savings		Gas Consumption Savings		Operation & Maintenance Savings	Total ECM Savings	Total Implementation Cost
	kW	$	kWh		Therms	$	$	$	$
Recreation Center	606	$10,072	240,281	$9,611	11,373	$8,075	$6,648	$34,406	$374,504
Union Colony Civic Center	245	$4,068	85,936	$3,437	695	$493	$4,008	$12,006	$194,627
Senior Center	184	$3,391	66,675	$2,667	751	$541	$1,776	$8,375	$83,655
FunPlex	590	$10,827	574,611	$22,984	4,776	$2,531	$2,901	$39,244	$909,120
Lincoln Park Annex	457	$8,335	215,134	$8,605	5,149	$3,707	$3,883	$24,531	$449,217
Police HQ	270	$4,943	147,120	$5,885	7,965	$5,575	$2,818	$19,220	$209,927
Police HQ Secondary Building	95	$1,750	34,597	$1,384	2,031	$1,483	$1,439	$6,056	$54,314
Total	2,446	$43,385	1,364,354	$54,574	32,740	$22,405	$23,473	$143,837	$2,275,364

*If a building is removed from the scope of work, Ameresco reserves the right to adjust general conditions, overhead and profit for the project accordingly.

Pro Forma Options

The previous two pages illustrate two preliminary Energy Savings Performance Contract Pro Forma alternatives that characterize two recommended project scope options based on the Investment Grade Audit analysis. These business cases deliver the financial benefits and considerations for each option. Option 1 incorporates all viable energy conservation measures (ECMs) plus the Solar PV System at the Family Funplex. Option 2 consists of all viable ECMs without the solar PV system at the Family Funplex. A description of each viable ECM – 1 through 9, 11, 13 and 15 – as well as three ECMs deemed not viable – 10, 12, and 14 relating to a cooling tower retrofit, variable exhaust fan speed control, and a solar thermal system – can be found in Section D of this report. In the Appendices, Ameresco has provided details related to energy savings calculations for each ECM in numbered tabs that correspond to the ECM number.

Option 1 – All Viable ECMs including a Solar PV System

The guaranteed maximum price for all viable ECMs including a solar PV system at the Family Funplex is $2,275,364. Estimated Xcel Energy rebates are listed as $541,875, including rebates for a reduction in consumption based on the solar PV system and a rebate for half the cost of the audit that can be applied to project costs. A description of how these rebates are calculated is provided in Section C – Utility Rebates, Incentives, and Grant Opportunities. The initial projected energy savings, guaranteed savings, and operations and maintenance (O&M) savings are listed in lines 1, 2, and 3 respectively. **The first year savings – guaranteed savings plus O&M savings – for this option totals $131,801.** In each subsequent year, the savings grows based on an assumed energy cost escalation rate – in this case, 3 percent. During years 1 through 20, the City is expected to receive $16,711 in Xcel Energy SolarReward Incentives for the solar PV system Renewable Energy Credits. Annual costs are deducted from the overall yearly savings including payments to service the financing (assumed a 15 year term at 3.5 percent interest for this illustration) and payments to Ameresco for measurement and verification services during the period of the guarantee (assumed 3 years). This pro forma illustrates that an ESPC based on this scope of work and other identified assumptions would provide positive cash flow in every year of the financing term (a requirement by state statute) **generating $1.8 million in net annual savings, above and beyond the net annual costs, over 20 years.** In addition, the project achieves **return on investment within 13 years.** The pro forma demonstrates that all viable ECMs could be implemented with **zero capital invested from the City.**

Option 2 – All Viable ECMs without the Solar PV System

The guaranteed maximum price for all viable ECMs without a solar PV system is $1,764,243. Estimated Xcel Energy rebates are estimated at $534,912 without the reduction in energy use from solar PV renewable energy. **The first year savings for this option totals $125,116.** This pro forma illustrates an ESPC based on this scope of work and other identified assumptions listed above would be cash positive in every year of a 12 year financing term, **generating $2 million in net annual savings, above and beyond net annual costs, over 20 years.** In addition, the project achieves a **return on investment of just over 10 years.**

Conclusions and Recommendations

The proposed Pro Forma and Energy Savings Performance Contract project options are technically strong with exceptional savings. Each business case provides an overall Return on Investment (ROI) between 10 and 15 years. The Investment Grade Audit is based on sound engineering analysis resulting in improved facility performance, while advancing sustainability within the community. Ameresco will deliver the following strategic benefits to the City:

- Zero capital investment from the City to implement energy efficiency and facility improvements.
- Durable assets that will continue to deliver cash flow and reliability s beyond the debt service term.
- A reduction in energy consumption that will increase operating budget savings as energy costs escalate over time.
- Access to capital with desirable financial terms and interest rates for funding.
- Ability to leverage lucrative incentives from Xcel Energy's Energy Savings Performance Contracting Standard Offer Rebate and SolarRewards programs.
- Improved staff and citizen comfort within the updated facilities.
- Minimal City staff time commitment during implementation and reduced maintenance burden following implementation.
- A reduction in greenhouse gas emissions for improved sustainability per the tables below.

GHG Emissions	Current Emissions		Proposed Emissions Reductions	
Carbon dioxide (CO_2)	14,228,348	lbs	2,579,382	lbs
Methane (CH_4)	34	lbs	7	lbs
Nitrous oxide (N_2O)	85	lbs	10	lbs
Nitrogen Oxides (NOx)	26,264	lbs	5,003	lbs
Sulfur Dioxide (SO_2)	32,834	lbs	6,937	lbs
Particulate Matter (PM10)	61	lbs	6	lbs
Volatile Organic Compounds (VOC)	177	lbs	18	lbs
Carbon Monoxide (CO)	787	lbs	79	lbs

Energy Reduction Equivalent to:		
Taking	177	cars off the road
Planting	3,829	trees
CO2 emissions from	109,423	gallons of gasoline consumed
CO2 emissions from the electricity use of	134	homes for one year
Carbon sequestered annually by	219	acres of pine or fir forests
CO2 emissions from burning	5	railcars' worth of coal

Existing Facility Systems

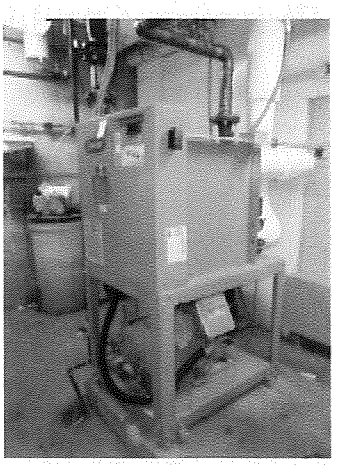
In developing this Investment Grade Energy Audit for the City of Greeley, Ameresco initially established the existing conditions at each of the seven facilities within the scope of work. These seven facilities include: the Recreation Center, the Union Colony Civic Center, the Senior Activity Center, the Family FunPlex, the Lincoln Park Annex, the Police Headquarters, and the Police Headquarters Secondary building. Ameresco's project development engineers performed comprehensive facility audits at each building and the team interviewed City personnel regarding the state of existing equipment as well as current occupant comfort The City also provided a number of technical building documents, including drawings, schematic plans, and equipment schedules to Ameresco . A narrative describing each facility's existing conditions is provided below.

Recreation Center

The Recreation Center is a 117,776 square-foot facility that was built in 1982. The building has one below-ground floor, two above-ground floors, and a mechanical mezzanine above the second floor. A common wall is shared with the Union Colony Civic Center, located immediately to the south, as well as a common electrical meter. The main entrance to the Rec Center lies on the east side of the building and is located under a substantial roof overhang. The entrance opens to the main lobby and admissions area. Primary spaces in the building include an archery and a pistol shooting range, a weight room, and fitness rooms in the basement level, a pool area, a large and small gymnasium, locker rooms, a medium-sized commercial kitchen, meeting rooms, and office space on the first floor, and racquetball courts, a climbing wall, and office space on the second floor. Summer hours of operation are Monday – Friday, 6:00AM – 7:00PM, Saturday 8:00AM – 5:00PM and closed on Sundays. The Rec Center may occasionally host special events that occur outside of typical operating hours.

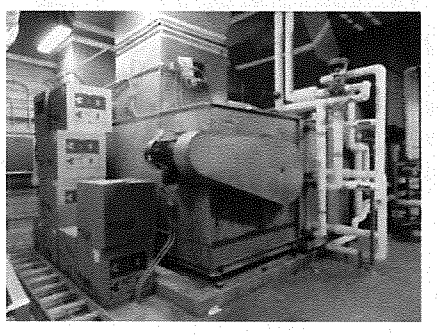
The building façade is composed primarily of red brick and tinted storefront glazing. Exterior walls are furred and insulated concrete masonry. The roof is a combination of sloped, standing-seam metal and built-up insulation with a ballasted membrane. There are several clerestories and angled skylights that provide daylight to interior spaces. Inside the lobby and in other public areas, typically the floor is carpet or tile on concrete, the walls are painted drywall or architectural brick, and the ceiling is drywall or a dropped grid with 2' x 4' acoustic ceiling tile. Interior finishes vary from space to space.

Building HVAC Systems



The Recreation Center is heated, cooled, and ventilated by a mix of systems. All spaces are conditioned except for the locker rooms, which do not receive mechanical cooling. A brief narrative detailing the systems is provided below.

Conditioned air is supplied to the spaces by a number of fan coil units (FCUs) and constant- and variable-volume air handling units (AHUs) located in mechanical rooms throughout the building. Supply airflow to the spaces from the variable-volume AHUs is controlled by shutoff type, pneumatic variable air volume (VAV) boxes. The VAV AHUs are typically equipped with supply-fan variable frequency drives (VFDs), as well as mixed air economizers. Larger spaces in the building, such as the pool area, gymnasiums, and locker rooms, are typically served by dedicated, single zone AHUs. The pool and locker room AHUs, specifically, are constant volume and utilize 100% outdoor air. The units are equipped with air-to-air heat exchangers to pre-condition the outside air.



Cold air for space cooling is created by chilled water coils in approximately thirteen of the facility's AHUs and FCUs. These coils are served by five liquid-cooled Carrier chillers located in several basement mechanical rooms. Two cooling towers, one located in the mezzanine and the other located in an outside-access mechanical room, provide heat rejection for the chillers.

Space heating is provided by a central hot water loop that is heated by three Patterson Kelley Thermific boilers located in the second floor boiler room. The hot water loop serves baseboards, unit heaters, and hot water coils in several of the facility's AHUs and FCUs.

HVAC controls are a mix of DDC and pneumatic. DDC controls are equipped on most of the primary mechanical equipment pieces, such as the AHUs, and tie in to the City's Metasys front end. Return-air-temperature sensors provide temperature modulation control to the DDC equipment.

Ameresco noted during the facility walkthrough that some of the air-handler VFDs were not actually connected to the DDC system. According to facility personnel, these VFDs are manually controlled on a periodic basis. The field devices, such as the VAV boxes and hot water valves, are pneumatic and controlled by zone thermostats.

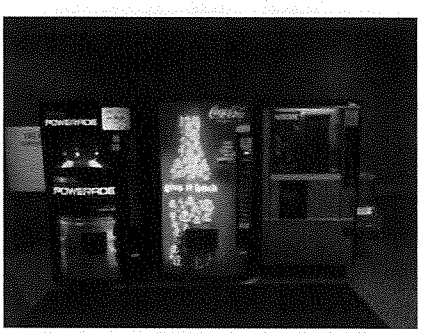
Domestic hot water is heated by two Lochinvar boilers and stored in two large domestic hot water storage tanks. These boilers are nearing their end of life expectancy and are in poor condition.

The swimming pools are heated by a dedicated, original Teledyne Laars boiler located in the filter room adjacent to the pools. The boiler is also in poor condition, though facility personnel stated the equipment remains relatively reliable. Replaced 2012

Lighting Systems

The general lighting for the Recreation Center consists of fluorescent, compact fluorescent and incandescent lamp sources that are used in different styles of fixtures. In the administration areas, the majority of fixtures contain 32-watt T8 fluorescent lamp and electronic ballast combinations and T12 fluorescent lamps and magnetic ballasts. The fixtures types include recessed troffers, strip, cove, and track cans. Restroom area fixtures contain 32-watt T8 fluorescent combinations in wall and ceiling mounted fixture types. Other fixtures and lamp combinations include recessed fixtures that use compact fluorescent and incandescent lamps in office, hall, and restroom areas. Hallways have wrap and box fixtures, as well as fluorescent cove and troffers fixtures. A small quantity of 34-watt T12 fluorescent lamps and magnetic ballast combinations exist in storage and office areas. The mechanical fixture types include industrial hooded and strip fixtures.

Plug Load Equipment

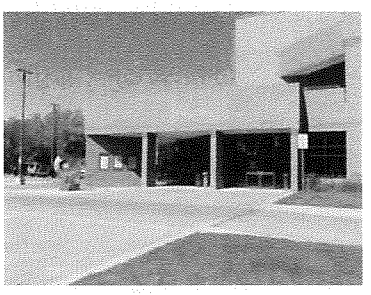


The Recreation Center has a significant amount of plug-in equipment, including: computer workstations, vending machines, television monitors, floor fans, light office equipment such as printers and copiers, workout machines such as treadmills, and commercial kitchen equipment. Facility personnel noted that formerly, fully cooked meals were prepared with the kitchen equipment, but currently the kitchen is only used to heat and reheat food.

University Colony Civic Center

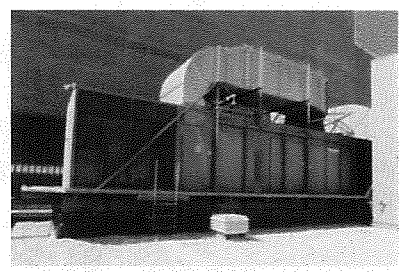
The Union Colony Civic Center (UCCC), built in 1988, is a 71,000 square-foot performing arts facility for amateur and professional theatrical and other various productions. The building has one small, below-ground floor with electrical distribution equipment, three above-ground floors, and theater catwalks above the third floor. A common wall is shared with the Recreation Center, located immediately to the north, as well as a common electrical meter. The main entrance to the building lies on the south-east corner and opens to the main lobby. Primary spaces in the building include the lobby and atrium, a staging and set area, and two theaters. The main theater, known as the Monfort Concert Hall, is a 1,665-seat grand auditorium with second and third-story balconies. There is also a 214-seat black box theater (the Hensel Phelps Theater) located on the second floor. Both theaters are equipped with

professional studio lighting and audio systems. The performance calendar runs year-long with performances and shows typically in the evenings. The Hensel Phelps Theater and Monfort Hall are used approximately 100 days and 170 days a year, respectively, for rehearsals, practices, shows, and other events. Ticket office hours are Monday – Friday, noon – 6:00PM, most Saturdays, noon – 4:00PM and closed on Saturdays during the summer and Sundays.



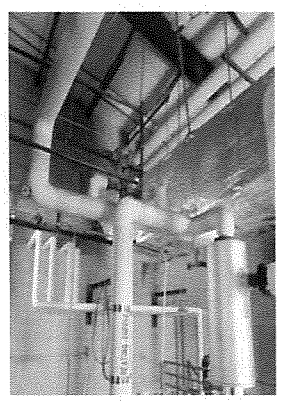
The building façade is primarily red brick. There is a substantial amount of east and south-east facing tinted storefront glazing reaching, in some areas, from the ground floor to the high ceilings of the third floor. Direct morning and mid-day sun is plentiful. Exterior walls are furred and insulated concrete masonry. The roof is primarily built-up insulation with a ballasted single-ply membrane. On the inside, there are high ceilings and decorative finishes and fixtures in the lobby and auditoriums. The full-height east-facing glazing encloses an atrium with a central staircase.

Building HVAC Systems

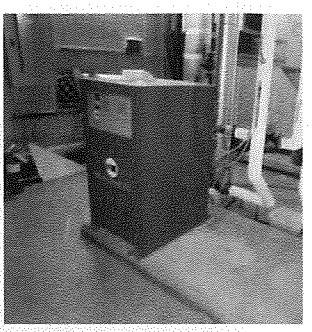


The UCCC is heated, cooled, and ventilated by a mix of systems. Facility personnel remarked that the mechanical equipment is typically only used during days on which there is a scheduled performance. A brief narrative describing the systems is provided below.

Conditioned air is delivered to the spaces primarily by one variable- and five constant-air volume (CAV) packaged roof top units (RTUs). The single variable-volume RTU is a large, cooling-only (packaged DX cooling). Carrier unit and serves the three-story lobby. The unit is equipped with a supply-fan VFD and mixed air economizer, and its return fan was removed because it was deemed unnecessary. Air is ducted to the lobby through pneumatic, shutoff type VAV boxes with hot water reheat coils. CAV RTUs of varying size provide air to the rest of the building. The larger RTUs are equipped with mixed air economizers.



Two systems primarily provide space heating to different areas of the building rooftop units and a hot water loop. Four RTUs supply heated air to all areas in the building except the lobby and third floor, which are equipped with natural gas heating. Perimeter baseboard heating units and VAV box reheat coils heat the lobby and third floor via the central hot water loop. Two Patterson Kelley Modu-Fire boilers supply hot water to the hydronic loop and two 5-HP Bell and Gossett hot water pumps operate in a parallel / lead-standby arrangement to circulate the hot water in the pipes. Differential pressure in the heating loop is maintained by a valve in a bypass loop installed between the hot water supply and return headers immediately near the pumps. A differential-pressure sensor in the main loop controls the bypass valve. Facility personnel noted that a minimum pressure in the main heating loop must be maintained to ensure the hydronic system operates properly. In the past,



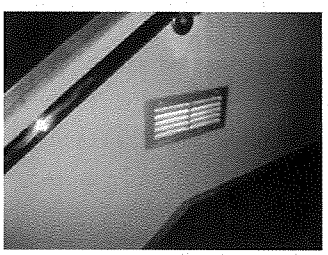
to much head

inadequate pressure has resulted in insufficient pumping head and water cavitation in the pipes. In addition, two natural gas infrared heaters, provide heat to the facility's loading and shop area.

Controls are a mix of DDC and pneumatic. The largest RTU (the lobby's VAV Carrier unit) is equipped with a supply fan VFD that is connected to the DDC system - the City's Metasys front end. All VAV boxes and heating valves are pneumatic and controlled by zone thermostats.

Domestic hot water is provided by a single natural gas water heater.

Lighting Systems

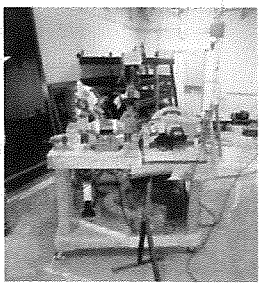


The general lighting for the Union Colony Civic Center consists of fluorescent, compact fluorescent, LED, and incandescent lamp sources that are used in different fixture styles.

The administration and utility room areas utilize fixtures containing 32-watt T8 fluorescent lamp and electronic ballast combinations. Hallways and common areas have LED and compact fluorescent recessed and sconce fixtures, as well as fluorescent cove and troffers fixtures. The fixtures types include recessed parabolic and acrylic troffers, recessed cans, and decorative fixtures. Rest room areas fixtures contain 32-watt T8 fluorescent combinations in wall and ceiling mounted fixture types. Other fixtures and lamp combinations include interior recessed fixtures that use compact fluorescent and LED lamps in offices, hall, and restroom areas. The mechanical fixture types include industrial hooded and strip fixtures.

Exterior fixtures consist of a combination of HID and quartz halogen lamp sources that are used in strip, pole, wallpack, recessed can, bollard, and flood style fixtures Plug Load Equipment.

Plug Load Equipment



The UCCC has a significant amount of plug-in equipment, including: television monitors, floor fans, clothes washers and dryers, power tools, and light office equipment such as printers and copiers.

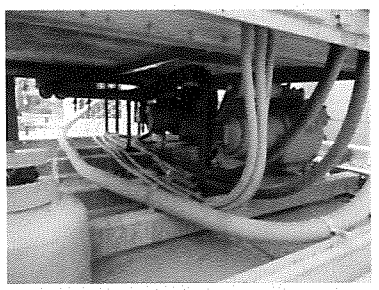
Senior Activity Center

The Senior Activity Center was built in 1982 and is a 31,470 square-foot building with one below-ground floor and one above-ground floor. The Senior Center provides a host of recreational and functional activities and services to Greeley's senior community, including various recreations such as billiards and shuffleboard, various classes such as ceramics and wood working, cooked meals, and a health clinic. The building's main entrance faces south-west and opens to the admissions and central commons area. Primary spaces in the building include several large common areas, a small commercial-grade kitchen, a health clinic, a computer room, wood and ceramics shops, a large IT room, meeting rooms, offices, and storage spaces. The Senior Center is open Monday – Friday, 8:00AM – 5:00PM and Saturdays, noon – 3:00PM.

The building façade is composed primarily of white masonry block with tinted, double-paned windows. The roof is flat in some areas and sloped in others, and the surface is composed primarily of polyvinyl chloride (PVC). On the interior, the floor is typically carpeted, the walls are white brick or drywall, and the ceiling is typically dropped with 2' x 2' acoustic ceiling tile. The ceiling in central common area is high and exposed.

Building HVAC Systems

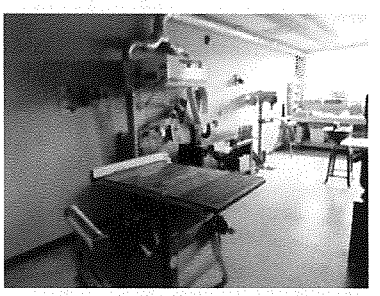
The Senior Center is heated, cooled, and ventilated by a mix of systems. Cooling and ventilation are provided largely by the same system. Conditioned supply air is ducted to the spaces from a Carrier VAV commercial split system with DX cooling and no heating. The evaporator section is located in the VAV air handler in the basement mechanical room. A VFD is installed on the supply fan and connected to the DDC system. The remote condenser section is located outdoors. Supply airflow to the spaces is controlled by shutoff type VAV boxes. A central hot water loop provides space heating through cabinet unit heaters, cabinet radiators, fan coil units, and ceiling radiant panels. Radiant ceiling panels are only located over the shuffleboard area on the main floor. The hot water loop is heated by two Patterson Kelley Thermific boilers located in the basement mechanical room. Approximately four VAV boxes with electric reheat provide heating to the health clinic area on the lower level.



Lighting Systems

The general lighting for the Senior Center Building consists of 32-watt T8 fluorescent lamp and electronic ballast combinations and compact fluorescent lamp sources. The fixtures types include recessed parabolic large cell and acrylic troffers. Hallways have wrap fixtures, as well as fluorescent parabolic and acrylic troffers fixtures. Rest room area fixtures contain fluorescent combinations in wall and ceiling mounted fixture types and decorative fixtures. In storage, shop and mechanical areas fixture types include wrap, troffer, and strip fixtures. Exterior lighting consists of a combination of HID lamps that are used in acorn pole and wallpack fixture types.

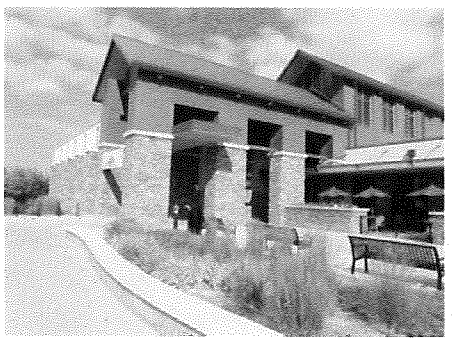
Plug Load Equipment



The Senior Center includes a considerable amount of plug-in equipment, including: computer workstations, vending machines, television monitors, floor fans, light office equipment such as printers and copiers, wood-working power tools, and light commercial kitchen equipment.

Family FunPlex

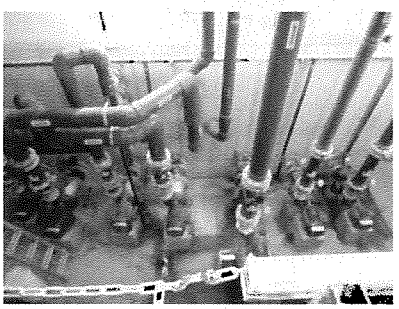
Built in 2005, the Family FunPlex consists of a 51,400 square-foot building that offers recreational facilities and activities to the community. Outside the building there are ballparks, grassy areas, and a small miniature-golf course. The south-facing main entrance to the building opens to the main lobby via a covered outdoor walkway. There is no entrance airlock, so outdoor air enters the conditioned space directly whenever the doors are opened. Primary spaces inside the building include an atrium-like lobby, a natatorium, gymnasium, large exercise/weight room, fitness/dance studios, locker rooms, meeting rooms, and offices. Hours of operation are Monday – Friday, 5:00AM – 10:00PM, Saturday, 7:00AM – 8:00PM, and Sunday, 11:00AM – 8:00 PM.



The building façade is composed of different materials, including concrete masonry units (CMU), exterior insulation finishing systems (EIFS), vinyl siding, and metal and architectural-stone accents. Windows and clerestories are typically tinted and double paned. The roof in some sections is flat with single-ply thermoset membrane and sloped in other sections with a painted standing seam metal surface. Typically on the interior, floors are concrete or tiled, walls are painted CMU or drywall, and ceilings consist of exposed or dropped with acoustic ceiling tile. The floor in the gymnasium is rubberized, and in the fitness studios the floor is wood.

Building HVAC Systems

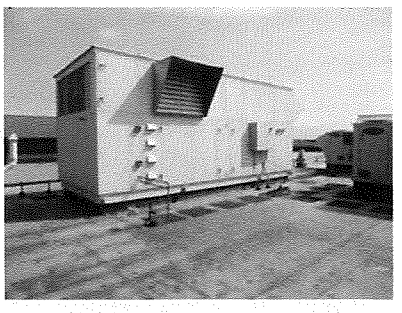
The FunPlex is primarily heated, cooled, and ventilated by a variable-volume airside system served by eight packaged RTUs. Each RTU is equipped with DX cooling and natural gas heating, as well as an outdoor-air economizer and a supply-fan VFD*. According to facility personnel, the VFDs installed on the two RTUs that serve the gymnasium are maintained at 100% output and are never reduced. There are two large Innovent RTUs serving the natatorium which are equipped with air-to-air heat exchangers and provide dehumidification in addition to heating and cooling. Conditioned air from the RTUs is delivered to the facility's perimeter zones through fan-powered VAV boxes and to the core zones through shutoff type VAV boxes. The VAV boxes are equipped with electric reheat coils**. All mechanical systems are DDC controlled.



Domestic hot water to the restrooms and showers is provided by two Lochinvar boilers and stored in two large, adjacent storage tanks.

Pool water is heated by two Lochinvar natural draft boilers. The City has scheduled replacement for both boilers toward the end of summer 2012. A plate-and-frame heat exchanger provides water preheating for the children's pool. There are seven pumps that provide pool circulation, filter circulation, and service to the water-features, such as geysers and slides. These pumps range in size from 7.5-HP to 25-HP, with four of the seven being 15-HP. Several of the pumps are equipped with VFDs, however it was noted that they were not connected to the DDC system.

***Note – At the time of the walkthrough, only one RTU had an outdoor-air economizer that was operating correctly. All RTUs should have been operating in economizer mode based on the weather and in-door climate conditions. Ameresco also observed that one of the supply-fan VFDs (installed on RTU-7) was malfunctioning.**



****Note – The building design originally intended for the electric reheat coils to provide the majority of the space heating requirements, but facility personnel stated that they rarely use the reheat coils during normal operations. Instead, the City runs the mechanical equipment 24/7 and avoids programming for a nighttime setback. This allows for the gas heating in the RTUs to maintain a relatively constant building temperature, negating the need for a high-capacity morning warm-up period whenthe electric reheat coils would be energized. Facility personnel stated that this heating strategy results in lower utility costs to the City.**

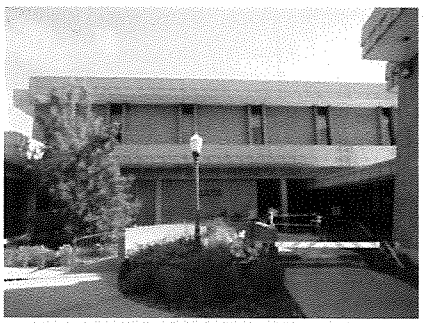
Lighting Systems

The general lighting for the Funplex building consists of 32-watt T8 fluorescent lamp and electronic ballast combinations and compact fluorescent lamp sources. The existing decorative strip lights are efficient 28 watt T5 fixtures. For the storage, shop, and mechanical areas, fixture types are strip, surface, and industrials. Exterior fixtures consist of a combination of HID lamp sources that are used in pole, wallpack, jar, area, bollard, and flood style fixtures.

Plug Load Equipment

The FunPlex includes the following plug load equipment: computer workstations, vending machines, television monitors, floor fans, light office equipment such as printers and copiers, workout machines such as treadmills, and light commercial kitchen equipment.

Lincoln Park Annex



The Lincoln Park Annex (LPA) is a 68,785 square-foot multi-use facility that houses the Greeley Municipal Court, the City's IT department, Fire Station No. 1, and the Lincoln Park Library. The library is leased to Weld County by the City of Greeley. The LPA was built in 1966 and has an above-ground floor and a partial second story. Primary spaces in the building include the library, a small television studio, the courthouse, a large garage bay for fire emergency vehicles, several small kitchen and break rooms, meeting rooms, offices, and open office areas. Hours of operation vary by department. The fire station is open 24 hours a day, 7 days a week. The courthouse and IT department generally follow standard business hours (Monday-Friday, 7:30AM – 5:30PM). The library is open Monday – Thursday, 9:00AM – 8:00PM, Friday & Saturday, 10:00AM – 5:00PM, and Sunday, 1:00PM – 5:00PM.

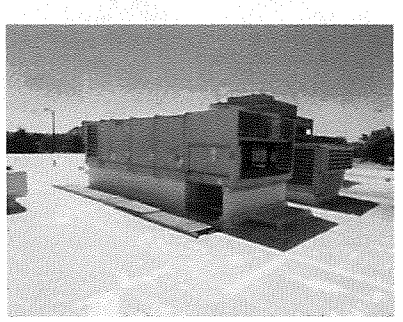
The building façade is composed primarily of exposed aggregate concrete walls with tinted and double-paned windows. The roof surface consists of white, single-ply membrane. There is a modest roof overhang over both the first and second-story windows for sunlight glare control, as well as window side-fins on some south-facing windows. On the interior, typically the floors are carpeted or tiled, the walls are drywall, and the ceiling is dropped with acoustic ceiling tile or exposed in several areas, such as the book stacks area in the library.

The LPA has a diesel-fueled backup electrical generator that supports the 24/7 fire department in the event of a grid-level power outage. The generator's fuel circulation pumps operate 24/7 in order to keep the fuel clean and better maintain the generator for startup.

Building HVAC Systems

Several systems heat, cool, and ventilate the LPA. Air handlers and packaged RTUs located in the mezzanine and on the roof deliver conditioned air to the interior spaces. The packaged RTUs are equipped with DX cooling and natural gas heating and tend to be constant volume serving single zones. There are several split DX AC systems serving variable volume air handlers located on the roof. These variable volume air handlers deliver conditioned air to the spaces through approximately 30 VAV boxes, 22 of which are DDC-controlled and 8 are pneumatic. Zone thermostats control the pneumatic systems and return air temperature sensors connect to the DDC systems.

A constant volume, multizone, industrial split air handler, set at the mezzanine level, serves 11 zones in the building. This air handler modulates airflow over both a hot deck and cold deck in order to maintain relatively constant zone temperatures. The hot deck contains hot water coils and the cold deck has multi-circuit DX coils. Chilled refrigerant is supplied by two unit-mounted reciprocal chillers with a closed loop, water cooled condensing unit located on the roof. Facility personnel stated that this unit modulates supply air temperature to the 11 zones based on a single return air temperature sensor.



Additional space heating is provided by a central hot water loop serving terminal units that include: perimeter baseboards, unit heaters, heating coils in several of the air handlers, and reheat coils in a portion of the VAV boxes. Facility personnel stated that when the building is in heating mode, the perimeter baseboards run 24/7. The hot water loop is heated by three Patterson Kelley Modu-line boilers located in the second floor boiler room. Circulation through the loop is provided by two 15-HP hot water pumps operating in a parallel / lead-standby arrangement. Temperature setpoints are maintained at approximately 72°-74° F throughout the year.

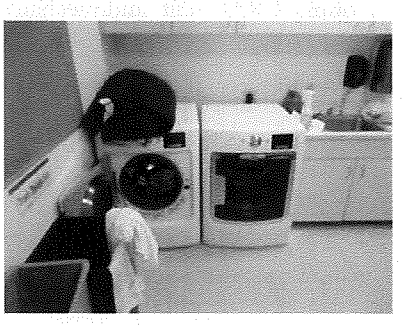
And Boilers

Domestic hot water to faucets and showers is provided by one natural gas Rheem boiler, located in the second floor boiler room, and one electric Rheem water heater, located in the first floor generator room. Hot water from the natural gas unit is stored in an adjacent storage tank.

Lighting Systems

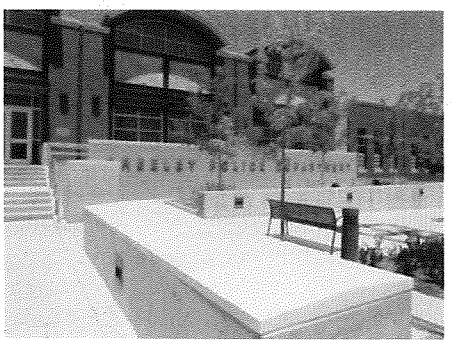
The general lighting for the Lincoln Park Annex building consists of 34-40 watt T12 fluorescent lamps and magnetic ballast combinations, 32-watt T8 fluorescent lamp and electronic ballast combinations, as well as incandescent and compact fluorescent lamp sources. The existing bay lights are efficient 54 watt T5 highbay fixtures. For the storage, shop, and mechanical areas, fixture types are strip, surface, and industrial style. Exterior fixtures consist of a combination of HID and incandescent lamp sources that are used in pole, wallpack, LED, area, and flood style fixtures.

Plug Load Equipment



The LPA includes a significant amount of plug-in equipment such as: a substantial number of computer workstations, IT equipment, vending machines, television monitors, floor fans, office equipment such as plotters and copiers, clothes washers and dryers, and light kitchen equipment.

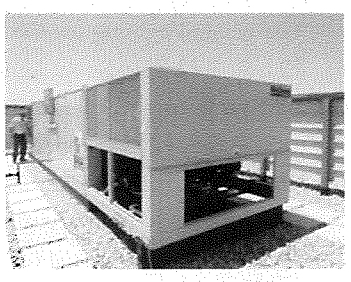
Police Headquarters



The Police Headquarters (PHQ) is a 49,922 square-foot facility that was built in 2007. It has one above-ground floor and one partially below-ground floor. The main entrance to the building faces south and opens to a small lobby and visitor check-in area. Offices account for the majority of the building space, with other primary spaces including a large investigations area, an exercise facility, locker rooms, and various meeting rooms and assembly areas. Operating hours for the main building are Monday-Friday, 8:00AM-5:00PM; however, the investigations area operates 24 hours a day, 7 days a week.

The building's front façade is composed primarily of brick and architectural masonry with double paned and tinted windows and storefront glazing. The rear façade consists of concrete masonry units (CMU). Overhangs at south-facing windows provide sunlight glare control.

Building HVAC Systems



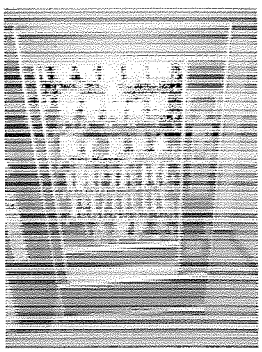
Three packaged McQuay RTUs heat, cool and ventilate the facility. Each unit is equipped with DX cooling, natural gas heating, and an outdoor air economizer. Two of the three RTUs are original, while the third was later installed to take over HVAC duties for the 24/7 investigations area. This allows the larger primary units to be shut off during unoccupied hours in the rest of the building. Conditioned air from the primary RTUs is delivered to the spaces through fan-powered and shutoff type VAV boxes. Several VAV boxes include hot water reheat coils. A number of residential-sized split AC units deliver localized cooling to smaller areas of the building, including computer rooms (CRAC unit) and mechanical spaces. Additional space heating is provided by a central hot water loop that serves baseboards and VAV box reheat coils. Two Burnham natural draft boilers, located in the boiler room, heat the hot water loop. Hot water is circulated through the loop by two Bell & Gossett pumps operating in a parallel / lead-standby arrangement. Each pump has a 3-HP motor and VFD installed. The building is entirely DDC controlled. Domestic hot water to faucets and showers is provided by two 100 gallon, natural gas water heaters.

Lighting Systems

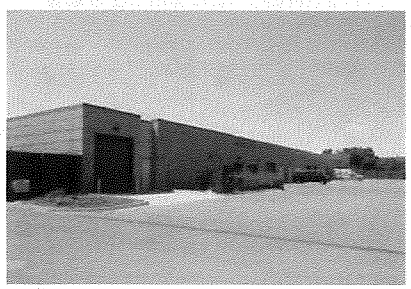
The general lighting for the Police Headquarters building consists of 32-watt T8 fluorescent lamp and electronic ballast combinations as well as compact fluorescent lamp sources. The existing can lights are efficient compact fluorescent 26, 32, and 42 watt fixtures. For the storage, shop, and mechanical areas, fixture types are strip, surface, and industrial style. Exterior fixtures consist of a combination of HID and LED lamp sources that are used in pole, wallpack, decorative, and flood style fixtures.

Plug Load Equipment

The PHQ includes a significant amount of plug-in equipment: computer workstations, vending machines, television monitors, floor fans, light office equipment such as printers and copiers, workout machines such as treadmills, and light kitchen equipment including refrigerators and microwaves.



Police Secondary Building



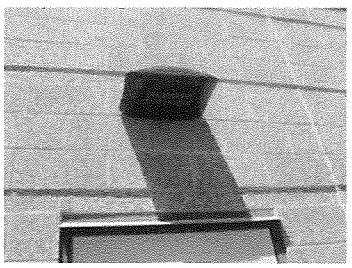
The Police Headquarters Secondary Building is a 26,450 square-foot, one-story facility that provides auxiliary office and storage space to the Police Department. The building was constructed in 2007 and is located adjacent to the Police Headquarters. In addition to office space, there are several medium-to-large garage bays in the building, a large evidence storage area, as well as several other dedicated storage areas. The main public entrance faces west and opens to a small receiving and check-in area.

The building façade is primarily composed of CMU. Windows are tinted and double paned and there are a substantial amount of overhead doors for vehicle access. The roof is built up with gravel-fill on single membrane.

Building HVAC Systems

The Police HQ Secondary Building is heated, cooled, and ventilated by several HVACsystems. There are six packaged Carrier RTUs providing the majority of space conditioning. Each unit is equipped with DX cooling and natural gas heating. There are several sensitive areas in the building, such as the SWAT area and evidence storage, that are served by approximately five Reznor makeup air units (MAUs). Each MAU is equipped with evaporative cooling in order to pre-condition the air. Heating in the garage bays and sally ports is provided by overhead linear infrared heaters. The building is entirely DDC controlled.

Lighting Systems



The general lighting for the Police HQ Secondary Building consists of 32-watt T8 fluorescent lamp and electronic ballast combinations as well as compact fluorescent lamp sources. The existing can lights are efficient compact fluorescent 13 and 26 watt fixtures. For the storage, shop, and mechanical areas, fixture types are strip, surface, and industrial style. Exterior fixtures consist of a combination of HID and LED lamp sources that are used in wallpack and decorative style fixtures.

Plug Load Equipment

The Police HQ Secondary Building has a significant amount of plug-in equipment, including: computer workstations, vending machines, television monitors, floor fans, light office equipment such as printers and copiers, and light kitchen equipment including refrigerators and microwaves.

Summary

In reviewing the existing facilities within the scope of work, Ameresco determined there are a number of energy efficiency and capital improvements that would benefit both the operations of the facilities as well as the City of Greeley's staff who serve the community and its citizens. In the next section, Ameresco explains the benchmarking data that provided a baseline comparison to prioritize energy saving opportunities at each facility. The resulting Energy Conservation Measures include both short term return on investment energy efficiency improvements as well as long range return on investment equipment and facility upgrades that primarily target enhanced building performance.

AMERESCO
Green • Clean • Sustainable

City of Greeley - Investment Grade Audit, Project Pro Forma
Option 1 - All ECMs Including Solar PV System

Initial Project Costs:		
Detailed Energy Audit	$	-
Performance and Payment Bond (if applicable)	$	-
Implementation costs	$	-
Total Initial Project Costs	$	2,275,364
Utility Rebates	$	(541,875)
Net Project Costs	$	1,733,489
Total Amount Financed	$	1,733,489

Financial Assumptions	
Term of Project (yrs)	15.0 yrs
Term of Financing (yrs)	15.0 yrs
Estimated Financing Rate	3.50%
Payments per year (frequency)	12
Discount Rate	3.50%
Energy Escalation rate (annual)	3.50%
O&M Savings Escalation rate (annual)	3.00%
M&V Cost escalation rate (annual)	3.00%
O&M Cost escalation rate (annual)	3.00%
Project Simple Payback	13.15

Pro-forma			Year									
		Initial Values	1	2	3	4	5	6	7	8	9	10
1	Projected Annual Energy Cost Savings	$ 120,364	$ 124,577	$ 128,937	$ 133,450	$ 138,120	$ 142,955	$ 147,958	$ 153,137	$ 158,496	$ 164,044	$ 169,785
2	Guaranteed Energy Cost Savings	$ 108,328	$ 112,119	$ 116,043	$ 120,105	$ 124,308	$ 128,659	$ 133,162	$ 137,823	$ 142,647	$ 147,639	$ 152,807
3	O&M Savings	$ 23,473	$ 24,177	$ 24,903	$ 25,650	$ 26,419	$ 27,212	$ 28,028	$ 28,869	$ 29,735	$ 30,627	$ 31,546
4	Utility Rebates (Note 4)		$ 16,711	$ 16,711	$ 16,711	$ 16,711	$ 16,711	$ 16,711	$ 16,711	$ 16,711	$ 16,711	$ 16,711
5	**TOTAL PROJECT SAVINGS (Line 2 + Line 3 + Line 4)**	**$ 131,801**	**$ 153,007**	**$ 157,657**	**$ 162,466**	**$ 167,438**	**$ 172,582**	**$ 177,901**	**$ 183,403**	**$ 189,093**	**$ 194,977**	**$ 201,064**
	Year Over Year Savings	$ -	$ 153,007	$ 310,664	$ 473,129	$ 640,567	$ 813,149	$ 991,050	$ 1,174,453	$ 1,363,546	$ 1,558,523	$ 1,759,586
6	Payments for financing equipment		$ 130,671	$ 144,254	$ 144,031	$ 151,682	$ 151,682	$ 151,682	$ 151,682	$ 151,682	$ 151,682	$ 151,682
7	Payments for Measurement & Verification Services	$ 20,399	$ 21,011	$ 7,428	$ 7,651	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Payments for Operation & Maintenance Services	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	**TOTAL PAYMENTS**	**$ 20,399**	**$ 151,682**	**$ 151,682**	**$ 151,682**	**$ 151,682**	**$ 151,682**	**$ 151,682**	**$ 151,682**	**$ 151,682**	**$ 151,682**	**$ 151,682**
10	**NET ANNUAL BENEFIT**		**$ 1,325**	**$ 5,974**	**$ 10,783**	**$ 15,756**	**$ 20,900**	**$ 26,219**	**$ 31,721**	**$ 37,411**	**$ 43,295**	**$ 49,382**
11	Cumulative cash flow	**$ 1,879,330**	$ 1,325	$ 7,299	$ 18,083	$ 33,839	$ 54,738	$ 80,957	$ 112,678	$ 150,089	$ 193,384	$ 242,765
12	**Net Present Value of cash flow**	**$ 1,103,430**										
13	Interest Rate	3.50%										
14	Discount Rate	3.50%										

Line #	11	12	13	14	15	16	17	18	19	20	Totals
1	$ 175,728	$ 181,878	$ 188,244	$ 194,833	$ 201,652	$ 208,709	$ 216,014	$ 223,575	$ 231,400	$ 239,499	$ 3,522,991
2	$ 158,155	$ 163,690	$ 169,420	$ 175,349	$ 181,487	$ 187,839	$ 194,413	$ 201,217	$ 208,260	$ 215,549	$ 3,170,691
3	$ 32,492	$ 33,467	$ 34,471	$ 35,505	$ 36,570	$ 37,667	$ 38,797	$ 39,961	$ 41,160	$ 42,395	$ 649,650
4	$ 16,711	$ 16,711	$ 16,711	$ 16,711	$ 16,711	$ 16,711	$ 16,711	$ 16,711	$ 16,711	$ 16,711	$ 334,220
5	**$ 207,358**	**$ 213,868**	**$ 220,602**	**$ 227,565**	**$ 234,768**	**$ 242,217**	**$ 249,921**	**$ 257,889**	**$ 266,131**	**$ 274,655**	**$ 4,154,561**
Year Over Year Savings	$ 1,966,945	$ 2,180,812	$ 2,401,414	$ 2,628,979	$ 2,863,747	$ 3,105,965	$ 3,355,886	$ 3,613,775	$ 3,879,906	$ 4,154,561	$ 8,309,122
6	$ 151,682	$ 151,682	$ 151,682	$ 151,682	$ 151,682	$ -	$ -	$ -	$ -	$ -	$ 2,239,141
7	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36,090
8	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	**$ 151,682**	**$ 151,682**	**$ 151,682**	**$ 151,682**	**$ 151,682**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,275,232**
10	**$ 55,676**	**$ 62,186**	**$ 68,920**	**$ 75,883**	**$ 83,086**	**$ 242,217**	**$ 249,921**	**$ 257,889**	**$ 266,131**	**$ 274,655**	**$ 1,879,330**
11	$ 298,441	$ 360,627	$ 429,547	$ 505,430	$ 588,516	$ 830,733	$ 1,080,654	$ 1,338,544	$ 1,604,675	$ 1,879,330	

Notes:

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AMERESCO
Green • Clean • Sustainable

City of Greeley - Investment Grade Audit, Project Pro Forma
Option 2 - All ECMs Without Solar PV System

Initial Project Costs:		
Detailed Energy Audit	$	-
Performance and Payment Bond (if applicable)	$	-
Implementation costs	$	-
Total Initial Project Costs	**$**	**1,764,243**
Utility Rebates	$	(534,912)
Net Project Costs	**$**	**1,229,331**
Total Amount Financed	**$**	**1,229,331**

Financial Assumptions	
Term of Project (yrs)	12.0 yrs
Term of Financing (yrs)	12.0 yrs
Estimated Financing Rate	3.50%
Payments per year (frequency)	12
Discount Rate	3.50%
Energy Escalation rate (annual)	3.50%
O&M Savings Escalation rate (annual)	3.00%
M&V Cost escalation rate (annual)	3.00%
O&M Cost escalation rate (annual)	3.00%
Project Simple Payback	9.83

Pro-forma			Year									
		Initial Values	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	Projected Annual Energy Cost Savings	$ 112,937	$ 116,890	$ 120,981	$ 125,215	$ 129,598	$ 134,134	$ 138,828	$ 143,687	$ 148,716	$ 153,922	$ 159,309
2	Guaranteed Energy Cost Savings	$ 101,643	$ 105,201	$ 108,883	$ 112,694	$ 116,638	$ 120,720	$ 124,946	$ 129,319	$ 133,845	$ 138,529	$ 143,378
3	O&M Savings	$ 23,473	$ 24,177	$ 24,903	$ 25,650	$ 26,419	$ 27,212	$ 28,028	$ 28,869	$ 29,735	$ 30,627	$ 31,546
4	Utility Rebates (Note 4)		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	**TOTAL PROJECT SAVINGS (Line 2 + Line 3 + Line 4)**	**$ 125,116**	**$ 129,378**	**$ 133,786**	**$ 138,344**	**$ 143,057**	**$ 147,932**	**$ 152,974**	**$ 158,188**	**$ 163,580**	**$ 169,156**	**$ 174,924**
	Year Over Year Savings	$ -	$ 129,378	$ 263,164	$ 401,507	$ 544,564	$ 692,496	$ 845,470	$ 1,003,658	$ 1,167,238	$ 1,336,394	$ 1,511,317
6	Payments for financing equipment		$ 108,136	$ 121,719	$ 121,496	$ 129,147	$ 129,147	$ 129,147	$ 129,147	$ 129,147	$ 129,147	$ 129,147
7	Payments for Measurement & Verification Services	$ 20,399	$ 21,011	$ 7,428	$ 7,651	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Payments for Operation & Maintenance Services	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	**TOTAL PAYMENTS**	**$ 20,399**	**$ 129,147**	**$ 129,147**	**$ 129,147**	**$ 129,147**	**$ 129,147**	**$ 129,147**	**$ 129,147**	**$ 129,147**	**$ 129,147**	**$ 129,147**
10	**NET ANNUAL BENEFIT**		**$ 231**	**$ 4,638**	**$ 9,196**	**$ 13,910**	**$ 18,784**	**$ 23,827**	**$ 29,040**	**$ 34,432**	**$ 40,009**	**$ 45,776**
11	Cumulative cash flow	**$ 2,074,927**	$ 231	$ 4,869	$ 14,065	$ 27,975	$ 46,759	$ 70,586	$ 99,626	$ 134,059	$ 174,067	$ 219,843
12	**Net Present Value of cash flow**	**$ 1,231,232**										
13	Interest Rate	3.50%										
14	Discount Rate	3.50%										

Line #	11	12	13	14	15	16	17	18	19	20	Totals
1	$ 164,885	$ 170,656	$ 176,629	$ 182,811	$ 189,209	$ 195,831	$ 202,685	$ 209,779	$ 217,122	$ 224,721	$ 3,305,606
2	$ 148,396	$ 153,590	$ 158,966	$ 164,529	$ 170,288	$ 176,248	$ 182,417	$ 188,801	$ 195,409	$ 202,249	$ 2,975,046
3	$ 32,492	$ 33,467	$ 34,471	$ 35,505	$ 36,570	$ 37,667	$ 38,797	$ 39,961	$ 41,160	$ 42,395	$ 649,650
4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	**$ 180,888**	**$ 187,057**	**$ 193,437**	**$ 200,034**	**$ 206,858**	**$ 213,915**	**$ 221,214**	**$ 228,762**	**$ 236,569**	**$ 244,644**	**$ 3,624,696**
Year Over Year Savings	$ 1,692,206	$ 1,879,262	$ 2,072,699	$ 2,272,733	$ 2,479,591	$ 2,693,507	$ 2,914,721	$ 3,143,483	$ 3,380,052	$ 3,624,696	$ 3,624,696
6	$ 129,147	$ 129,147	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,513,678
7	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36,090
8	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	**$ 129,147**	**$ 129,147**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,549,769**
10	**$ 51,741**	**$ 57,909**	**$ 193,437**	**$ 200,034**	**$ 206,858**	**$ 213,915**	**$ 221,214**	**$ 228,762**	**$ 236,569**	**$ 244,644**	**$ 2,074,927**
11	$ 271,584	$ 329,494	$ 522,931	$ 722,965	$ 929,823	$ 1,143,738	$ 1,364,952	$ 1,593,714	$ 1,830,284	$ 2,074,927	

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