

# CITY COUNCIL COMMUNICATION



Rescheduled for: January 26, 2010 Item Number: 6A

**MEETING DATE:** January 19, 2010

**ITEM NUMBER:** 6

**TYPE OF ITEM:** Study Session

**PRESENTED BY:** Mike Frailey, LPC Energy Services Specialist, 303-774-4767  
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**SUBJECT/AGENDA TITLE:** Energy Savings Performance Contract Status Update

**EXECUTIVE SUMMARY:** Phase I construction of City facility improvement measures under the Energy Savings Performance Contract are mostly completed. Commissioning new equipment, retro-commissioning old equipment and the installation of the solar skylight at the Civic Center should be finished by the end of February. The Phase I measures will save the City \$165k annually through utility savings. The City's Energy Service Company, McKinstry, is also working with City staff to develop a list of potential Phase II improvement measures in additional facilities. This list will be presented to City Council for consideration later this year.

**COUNCIL OPTIONS:** N/A

**RECOMMENDED OPTIONS:** N/A

**FISCAL IMPACT & FUND SOURCE FOR RECOMMENDED ACTION:** N/A

## BACKGROUND AND ISSUE ANALYSIS:

Last year (2/24/09) City Council approved an Energy Savings Performance Contract (ESPC) with McKinstry Essention Inc. for widespread energy efficiency improvements and three renewable energy systems at six City facilities (Centennial Pool, Civic Center, Development Services Center, Library, Recreation Center and Safety & Justice). This is a \$2.76M project for which the City assumed a \$2.25M lease purchase agreement to finance. The City invested \$25k and was able to leverage almost \$475k in grants and rebates for the balance. Energy savings from this project are projected to save the City at least \$165k annually in reduced utility costs and will pay back in a little more than thirteen years.

The Notice to Proceed was issued on April 6, 2009. McKinstry started Phase I construction in mid-May and is currently on schedule to complete work by the end of February. The project schedule has been delayed due to some unforeseen complications. The remaining work is limited to the solar skylight installation at the Civic Center and equipment commissioning of new and old HVAC equipment in all Phase I facilities. The commissioning study is complete and McKinstry is set to begin work on the identified deficiency list and begin optimizing event schedules. It is currently estimated that the savings from Phase I commissioning will exceed the projected amount.



Facilities currently on the potential Phase II list include the Service Center, Fleet Services, Utility Center, Memorial Building, Museum and Senior Center.

**Next Steps**

- Develop list of Facility Improvement Measures (FIM) in additional facilities for a potential Phase II Energy Savings Performance Contract
  - Verify facilities and needs
  - Estimate FIM metrics (costs, savings, eligible grants/rebates, etc.)
  - Review with City staff and City Council

**ATTACHMENTS:**

1. PowerPoint presentation



# Phase I Energy Performance Contract Project Status & Next Steps

Longmont City Council  
January 19, 2010



# How Does Energy Performance Contracting Work?

**Before Improvements**



**After Improvements**





## Project Background

- » Phase I Energy Performance Contract
  - » Focused on 6 buildings – large utility users
    - » Quail Recreation Center
    - » Centennial Pool
    - » Civic Center
    - » Safety & Justice Center
    - » Longmont Library
    - » Development Services Center
  - » Contracts signed in late March 2009
  - » Notice to proceed April 2009
  - » Project is 95% complete



## Project Goals

- » Project achieves numerous goals – we're on track to achieve ALL goals
  - » Reduce utility costs & CO2
    - » Project achieves 32% reduction
  - » Solve health, safety and/or comfort problems
  - » Upgrade older infrastructure
  - » Leverage funding
    - » City Capital = \$25,000 = < 1% of project cost
- » Grant Funding/Rebates
  - » City with partners (LDDA, SVVSD) received \$500k in DOLA grant funding - \$300k for this project
  - » GEO provided \$82,500k in rebates/grants for solar thermal installations at the pools
  - » Utility rebates from PRPA = \$90,000+
  - » Total = +\$470k to “buy down” total project cost



## FIMs 1,2 & 3: Lighting & Lighting Control Measures

- » Existing Conditions:
  - » Older inefficient T-12 technology in many areas
  - » Metal halide at gymnasiums & pool areas
- » Solutions:
  - » T-8 lamps with premium efficiency ballasts
  - » Photocells on outdoor lighting fixtures
  - » Occupancy/daylight sensors
  - » Replace old lighting panels with new; tying in Trane controls at Rec Center & Library
- » Benefits:
  - » Reduced energy costs
  - » Reduced material costs and standardized materials
  - » Improved lighting quality
  - » Reduced lighting runtimes
- » Financials
  - » GEO grant = \$100,000
  - » Utility Rebate = \$74,344
  - » First Year Cost Savings = \$40,816
  - » CO2 Reduction = 1.3M lbs/year
- » Installation Complete in early December



## Other Energy Savings Measures

- » FIM 4 – Install Vending Misers
  - » 13 vending misers on cold beverage machines installed by City to cycle compressor and shut down the light
- » FIM 5 – DHW Control: Engineering
  - » Domestic hot water recirculation pump at Civic Center Engineering runs 24/7
  - » Tie in to Trane controls and schedule
- » FIM 8– Install Vestibule Air Curtain at QRC
  - » Mitigates heating/cooling loss through doors
- » FIMs 10 & 11– Replace Boiler Motors/Pumps
  - » High efficiency pumps and motors at Safety & Justice and Library reduces electric use & load



## FIMs 13, 14 & 17: Solar

### » Solar Thermal Installations

- » QRC and Centennial Pool Installations Completed by June 20, 2009 to meet GEO grant requirements
- » DOLA Grants secured of \$50,000
- » GEO Grants secured of \$82,500
- » First Year Cost Savings = \$30,568
- » CO2 Reduction = 379k lbs/years

### » Solar Photovoltaic (PV) Skylight

- » PV Installation at the Civic Center
- » Fully funded by DOLA grant - \$150,000
- » Installation delayed- PV vendor change





## FIM 15 & 16: Retro-commissioning and DDC Controls

- » Retro-commissioning (RCx) Study
  - » Many systems weren't commissioned properly when installed and weren't functioning properly
    - » Un-calibrated or broken sensors
    - » Non-functioning air-side economizers
    - » Non-working controls, sequences and setbacks
    - » Unassigned schedules or modes
  - » RCx Implementation (started Dec, on-going)
    - » First Year Cost Savings Guarantee = \$65,751
    - » CO2 Reduction = 1.6M lbs/years
- » Direct Digital Control Upgrades
  - » Older HVAC controls were replaced and standardized to Trane Tracer Summit
  - » Web-based (on City network)



## FIM 18: Active Energy Management

- » Real-time energy data analysis and issue management
  - » Metered electric and gas consumption data fed into McKinstry Infocentre
  - » Alarms set up for energy “events” – sends e-mail alerts to appropriate staff
  - » Infocentre diagnosis and analysis – feedback to appropriate staff
  - » Drives 5% energy savings across the board
    - » CO2 reduction = 797k lbs/year
  - » Energy Dashboard – public display of energy generation/savings at Civic Center (and pools)



# Facility Improvement Measures

- » FIM 6: Centennial Pool Air-Side Mechanical
  - » Problems
    - » Lack of humidity and temperature control
    - » Uncomfortable environment
    - » Premature aging of facility and equipment
    - » Not energy efficient
  - » Solution
    - » Replaced 4 pieces of HVAC equipment with 3 new energy efficient systems



# Facility Improvement Measures

- » FIM 12: Upgrade Mechanical Distribution System – Engineering
  - » Existing condition: Major mechanical systems at Civic Center were upgraded but not distribution systems
  - » Solution: Re-design and replace system to utilize new mechanical systems properly
    - » Eliminate outdated baseboard radiators where possible
    - » Reconfigure and add ducting
    - » Replace VAV boxes and add hot water reheat
    - » Install Trane controls
  - » New system improves air quality and comfort





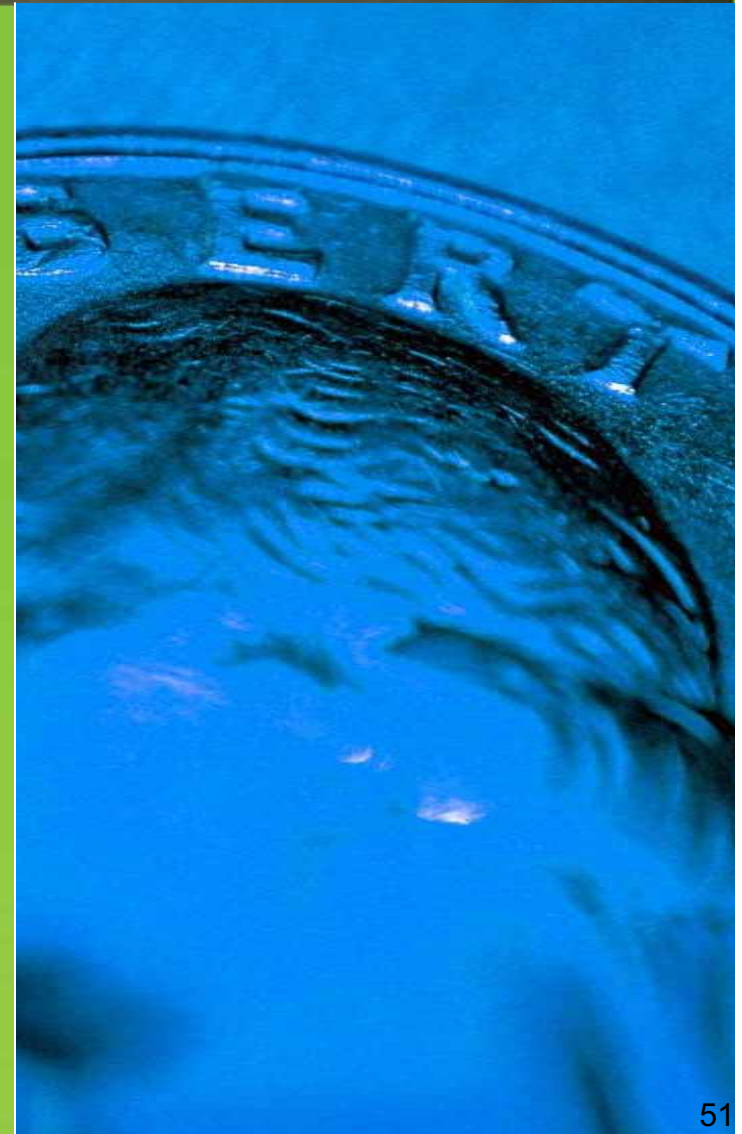
## Phase I Project Financials

» Total Estimated Project Cost = \$2,755,632

- » DOLA Grant = \$300,000
- » GEO Solar Grants - \$82,500
- » Utility Rebates = \$90,886
- » Project Cost to the City = \$2,264,246

### » Savings

- » First Year Savings = \$177,321
- » CO2 Savings = 4.7 million lbs/year
- » All savings projections are on track





## Next Steps

- » Installation of Solar Skylight
- » Complete RCx Implementation
  - » Complete Phase I installation 1Q2010
- » Potential Phase II ESPC Analysis
  - » Focuses on 6 additional buildings
    - » Memorial Center
    - » Service Center
    - » Fleet Center
    - » Utility Center
    - » Senior Center
    - » Longmont Museum
  - » Preliminary estimates \$60,000-\$80,000 annual savings
  - » Potential Phase II project to be presented to Council within next 3 months

