

**WEEKLY INFORMATION PACKET
MEMORANDUM**

TO: Mayor McGrath and Members of Council

FROM: Stephanie Grainger, Interim City Manager
Paul Fetherston, Deputy City Manager
Maureen Rait, Executive Director of Public Works
Jonathan Koehn, Environmental Affairs Manager
Bill Boyes, Acting Facilities and Fleet Manager
John Frazer, Facilities & Fleet Services Financial Manager
Chris Hagelin, Senior Transportation Planner

DATE: June 5, 2008

SUBJECT: Information Item: Update on City of Boulder Operations – Energy Strategy

EXECUTIVE SUMMARY

At the April 22, 2008 Budget Study Session, City Council requested that future budgets illustrate how energy savings are achieved in city operations. Additionally, Council requested an update on energy saving initiatives involving city operations.

In response to Council’s request, a WIP item was issued on May 1, 2008 that provided information on energy use in city operations, a brief summary of past and recent initiatives and outlined actions being taken by city organizations to manage energy use and reduce greenhouse gas (GHG) emissions. In response to the May 1, 2008 WIP item, council members outlined several questions. The purpose of this Weekly Information Packet (WIP) item is to respond to council questions related to energy-saving projects and the city fleet.

Over the past two decades the city has reduced energy consumption in city buildings. Initial energy saving efforts included hiring an energy services company (ESCO) to perform assessments in the buildings that use the most energy. In July 2005, Council accepted the Facilities & Asset Management (FAM) Master Plan. The plan identified the payback period required for energy savings projects to meet under various funding strategies. Energy savings are being realized and in many cases the savings can be replicated in other buildings.

A strategic plan is being prepared for Fleet Services to provide a framework for considering policies related to the management of the city’s fleet operations. Rising fuel prices highlight the need to invest in hybrid and alternative fuel vehicle (HAFV) technologies. The city currently has 240 HAFV units in service. The city also sponsors several programs that encourage staff to use alternative modes of transportation. These programs are popular with staff, are effective and are continually being expanded and improved.

BACKGROUND

Over the past two decades the city has reduced energy consumption in city buildings. Initial energy saving efforts included hiring an ESCo (EUA Highland Energy) to perform assessments in the buildings that use the most energy. Approximately twenty assessments were completed and several

projects were identified for completion under the terms of the contract. In most cases, EUA Highland Energy provided up-front financing for these projects and was repaid using the money resulting from these energy savings. These projects were completed in the 1994 to 1997 timeframe, as shown in Attachment A.

Staff recognized at the time that using an ESCo was an excellent starting point, but projects identified by the ESCo for completion were often large projects that met the profit criteria of the ESCo and did not capture all energy savings possible at the facility. The city then hired a professional engineering consultant (Joe Roberts & Sons) to assess the same buildings and others in order to identify smaller projects that would result in additional energy savings. These projects were completed in the 1999 to 2000 timeframe, as shown in Attachment B.

At the April 22, 2008 Budget Study Session, City Council requested that future budgets illustrate how energy savings are achieved in city operations. Additionally, Council requested an update on energy saving initiatives involving city operations.

In response to Council's request, a WIP item was issued on May 1, 2008 that provided information on energy use in city operations, a brief summary of past and recent initiatives and outlined actions being taken by city organizations to manage energy use and reduce their greenhouse gas (GHG) emissions. See link below:

<http://www.bouldercolorado.gov/files/City%20Council/WIPS/2008/05-01-08/2b.pdf>

In response to the May 1, 2008 WIP item, council members outlined several questions as discussed in the next section.

RESPONSES TO COUNCIL QUESTIONS

1. How much energy has been saved (by building and project)?

Please see attachments A and B for specific project savings by building and project. Attachment A lists the projects completed using an ESCo and Attachment B lists projects identified by an engineering consultant and completed by contractors hired by the city.

Due to budget reductions beginning in 2001, energy saving projects have primarily been accomplished in conjunction with maintenance, renovation and replacement projects, with a few exceptions noted below:

- North Boulder Recreation Center solar-hot water system - 2003
- North Boulder Recreation Center gym lighting retrofit and power correction upgrades - 2006
- Installing automated HVAC control systems - 2003 to present

These projects are discussed in more detail in Attachment C.

Attachment D shows a complete listing of projects completed by the city that includes energy-saving projects and those completed as part of normal maintenance, renovation and replacement activities.

2. Have predicted energy savings been realized?

In all cases, the answer is yes. Calculations of energy savings by engineers have proven to be accurate, and in many cases the calculations are verified by Xcel Energy as part of the rebate qualification process.

3. What are the success stories / positive case studies and what are the conservation improvements that have generated the most savings?

Success stories include:

- North Boulder Recreation Center energy savings as part of LEED silver certification
- Main Library evaporative cooling system installation
- Fleet Services conversion from electric heat to natural gas
- North Boulder Recreation Center gym lighting and power correction upgrades

Improvements that have generated the most savings:

- Lighting retrofits that install T-8 or T-5 bulbs and ballasts.
- Lighting retrofits that replace high intensity discharge (HID) lighting with fluorescent lighting.
- Replace exit lighting with light-emitting diode (LED) type.
- Installing additional roof insulation and reflective coatings when roofs are replaced.
- Installing third-party financed solar-PV systems.
- Replacing electric heating systems with natural gas systems
- Installing automated HVAC control systems

4. Can the savings be replicated in other city buildings?

In most cases, the answer is yes. However, each building is different in design and at a unique point in their replacement cycles for major systems and equipment. In July 2005, Council accepted the Facilities & Asset Management (FAM) Master Plan, which identified the payback period required for energy savings projects to meet under various funding strategies. Specifically, under the present fiscally constrained plan, a project must meet a simple payback criteria of three years or less to be scheduled for completion. As the city's resources increase to action plan levels, projects with a five year or less payback period will be scheduled. Projects should be compared and those providing the best return on investment should be scheduled for accomplishment as resources allow and in accordance with criteria outlined in the FAM Master Plan.

5. Does it make the most sense to focus on improving the efficiency of a couple of buildings, tracking and publicizing the energy savings or spreading each year's investments over many buildings?

A strategy is to do both. There is certainly a high impact associated with doing a number of improvements at a facility that gains recognition, such as LEED-EB certification.

There is also merit in doing many smaller projects, especially those associated with maintenance efforts that can provide information and resources for businesses and residents.

6. How can we most effectively report these efforts to the public?

The communications methods need to be diverse. Major projects, such as the North Boulder Recreation Center renovation, could be featured at a national and international level through magazine articles, group tours and press releases. Projects of interest to the public that are under construction or recently completed are routinely featured on departmental Web pages and could highlight the energy-saving components of each project. Cooperative efforts with the Boulder Valley School District and other educational forums could be enhanced. The Office of Environmental Affairs could include this information in an annual report that is made available to the public.

7. How many hybrid vehicles does the city have in its fleet?

A strategic plan is being prepared for Fleet Services to provide a framework for considering policies related to the management of the city’s fleet operations. Rising fuel prices highlight the need to invest in hybrid and alternative fuel vehicle (HAFV) technologies.

The city’s fleet of 470 vehicles currently has 164 vehicles (35 percent) which are classified as hybrid/alternative fuel vehicles (HAFV): 18 are gasoline/electric (hybrid) vehicles. Please see chart below.

<u>Type of Fuel</u>	<u>Number of Units</u>
Diesel / BioDiesel	99
Gasoline / Electric (Hybrid)	18
Gasoline / Ethanol (E85)	38
Gasoline / Propane	8
Propane	1
TOTAL	164

8. What are the city’s policies to decrease vehicle miles traveled by employees (in other words, does the city encourage use of alternative modes by city employees)?

As part of a fleet study conducted in 1996, VMT (vehicle miles traveled) targets were established for each department. The city’s total annual VMT target is 3,187,908 miles. Over the past 12 years (1996 – 2007), the VMT target has only been exceeded once and that was in 1998. In addition, the city encourages employees to use alternative modes of transportation through a variety of programs including:

- City Employee Transportation Coordinator (ETC) Program
- Transit
- Bicycle commuting
- Alternative work schedules
- Parking management
- Carpool/vanpool Parking Pass Program

The Transportation Division of Public Works is also planning some improvements to the programs and has identified some strategies to be considered in the future. Please see Attachment D for detailed information on these programs.

9. How could the city accelerate usage of electric cars once they become cost-effective?

At the present time there are no electric cars available that meet the city's operational needs. One major problem is the speed limitation of 25 mph imposed on these vehicles. Staff have test driven several models of these vehicles on city streets and has found that they impede traffic and could only be used in off-road applications where electric carts are already in use.

The technology with the most appeal is plug-in hybrid technology. OEA is researching opportunities in this area but has found that the city's original fleet of nine Toyota Prius vehicles cannot be retrofitted with the plug-in technology. However, newer model Prius vehicles can be retrofitted with plug-in technology. In 2008, the city purchased three new Prius vehicles. OEA will continue to work with departments to determine if plug-in technology is beneficial in each of these applications. In addition, the new Smart Grid that will be installed this summer will allow these vehicles to charge and discharge to the grid. Vehicles can be set to charge at night when energy costs are least expensive and feed the grid during peak times when energy is most expensive.

NEXT STEPS

An interdepartmental Energy Strategy Team is being convened by OEA and Facilities & Fleet Services staff to continue with the implementation of sustainable energy management in city operations and the work program noted. The 2009 budget will also highlight energy issues and illustrate how energy savings are proposed to be achieved.

For additional information regarding Facilities and Fleet Services operations and on-going energy reduction initiatives, please contact Bill Boyes, acting Facilities & Fleet manager at 303-441-4125 or boyesb@bouldercolorado.gov.

ATTACHMENT A
Projects Completed Using an ESCo

Year	Building	Project	Net Cost After Rebates	KWh Saved (Annual)	Simple Payback (years)
1997	Public Safety Bldg.	Lighting Retrofit	\$29,836	**	3.9
1996	Youth Services	Lighting Retrofit	\$ 2,837	**	8.2
1995	Fleet Services	Replace Elec. Space Heaters with Gas	\$39,730	198,986	6.3
1994	Main Library	Replace DX A/C With Evap. Cooling	\$35,322	**	5.5
1994	Iris Center	Lighting Retrofit	\$ 8,188	15,579	5.2
1994	West Senior Center	Lighting Retrofit	\$23,420	52,525	6.9
1994	75 th St. WWTP	Lighting Retrofit	\$37,098	131,697	4.2
		TOTALS	\$173,942	398,787	

** No information in files.

ATTACHMENT B

Projects Recommended By An Engineering Consultant and Completed By Contractors

Year	Building	Project	Net Cost After Rebates	KWh Saved (Annual)	Simple Payback* (in years)
2000	75 th St. WWTP	Lighting upgrades	\$ 5,878	19,993	4.9
2000	Sunshine Hydro	Lighting upgrades	\$ 300	537	9.3
2000	Meadows Library	Lighting upgrades	\$ 2,084	21,708	1.6
2000	Flatirons Golf	Lighting upgrades	\$ 1,999	10,411	3.2
2000	Park Operations	Lighting upgrades	\$ 3,152	8,904	5.9
2000	MSC Bldg. A	Lighting upgrades	\$ 6,165	18,682	5.5
1999	New Britain	Lighting upgrades	\$ 3,046	25,083	2.0
1999	Atrium Bldg.	Lighting upgrades	\$ 2,501	5,464	7.6
1999	Carnegie Library	Lighting upgrades	\$ 1,899	5,996	5.3
1999	East Boulder Community Center	Lighting upgrades	\$12,778	86,125	2.5
1999	Fire Station #3	Lighting upgrades	\$ 1,356	7,250	3.1
1999	Fire Station #4	Lighting upgrades	\$ 814	7,278	1.9
1999	Fire Station #5	Lighting upgrades	\$ 467	8,070	1.0
1999	Fire Station #6	Lighting upgrades	\$ 1,058	12,165	1.4
1999	Municipal Bldg.	Lighting upgrades	\$ 1,168	5,626	3.5
1999	Park Central	Lighting upgrades	\$ 570	3,251	2.9
1999	Reservoir Concessions (Funded by Parks & Recreation)	Lighting upgrades	\$ 2,374	18,873	2.1
1999	Scott Carpenter Pool	Lighting upgrades	\$ 1,127	6,992	2.7
1999	South Boulder Recreation Center	Lighting upgrades	\$ 3,190	15,113	3.5
1999	Spruce Pool	Lighting upgrades	\$ 1,300	1,428	15.2
1999	Stazio Concessions	Lighting upgrades	\$ 2,473	1,925	21.4
1999	West Senior Center	Lighting upgrades	\$ 2,847	32,581	1.5
1999	Fleet Services (Funded by Fleet)	Lighting upgrades	\$ 4,611	18,667	4.1
TOTALS			\$63,157	342,122	

* Simple payback period is calculated using energy cost of \$.06 per KWh

ATTACHMENT C

Projects Completed that Are Not Combined with Maintenance Work

North Boulder Recreation Center Solar-Hot Water System – 2002

System consists of 142, 4ft. X 10 ft. flat plate collectors
System designed to produce 20,000 therms of energy per year.
April 2008 cost of natural gas at this facility is \$.90 per therm
Annual calculated savings = \$18,000
System cost = \$265,000
Simple payback as of April 2008 = 14.7 years

North Boulder Recreation Center Gym Lighting Retrofit and Power Correction Upgrades – 2006

These projects were accomplished concurrently
Replace HID lighting in Gym with fluorescent lighting
Installed power correction equipment on major pumps and HVAC equipment
Cost of both projects = \$45,750
Annual savings (actual) = \$23,643
Simple payback = 1.94 years
KWh saved per year = 423,194

Installing Automated HVAC Control Systems¹

The following buildings have automated HVAC control systems installed:

- Main Library
- Reynolds Library
- Meadows Library
- Public Safety Building
- North Boulder Recreation Center
- East Boulder Community Center
- South Boulder Recreation Center
- Fleet Services
- Municipal Building
- Park Central Building
- Atrium Building
- New Britain Building
- West Senior Center
- Iris Center

¹ No estimate of energy savings was calculated for these installations

ATTACHMENT D

Projects that Reduced Energy Consumption

Note 1: All project funded by Facilities & Asset Management (FAM) unless otherwise noted.

Note 2: ***Projects completed as part of normal maintenance, renovation and replacement activities are shown in bold italics.*** No information on energy saved or separate costs for the energy-saving portion of the project is easily available.

1994 - \$104,028 total

- | | |
|---|-----------|
| 1. Main Library - Replace DX A/C With Evap. Cooling | \$35,322 |
| 2. Iris Center lighting retrofit | \$ 8,188 |
| 3. West Senior Center lighting retrofit | \$ 23,420 |
| 4. 75 th St. WWTP lighting retrofit | \$ 37,098 |

1995 - \$39,730 total

- | | |
|--|-----------|
| 1. Fleet Services - Replace Elec. Space Heaters with Gas
(Funded by Fleet Services) | \$ 39,730 |
|--|-----------|

1996 - \$89,092 total

- | | |
|--|-------------------------|
| 1. <i>Park Central Bldg. - Install MAU for 2nd & 3rd floor (partial).</i> | <i>\$ 85,052</i> |
| 2. <i>Fire Station #6 - Replace west windows with double pane.</i> | <i>\$ 1,203</i> |
| 3. Youth Services - Upgrade lighting system | \$ 2,837 |

1997 - \$214,924 total

- | | |
|--|-------------------------|
| 1. <i>Criminal Justice Center – HVAC distribution upgrades.</i> | <i>\$ 15,000</i> |
| 2. <i>Children’s Services – Replace MAU.</i> | <i>\$ 20,037</i> |
| 3. <i>Mustard’s – Replace Swamp Cooler.</i> | <i>\$ 19,511</i> |
| 4. <i>Atrium – Engineering to replace HVAC Units.</i> | <i>\$ 4,500</i> |
| 5. <i>Fire Station #6 – Repair Solar Heating System.</i>
(Costs shared equally by OEA and FAM) | <i>\$ 8,835</i> |
| 6. <i>Main Library – Cooler adjustments & HVAC upgrades.</i> | <i>\$ 18,624</i> |
| 7. <i>Maintenance Bldg. – Upgrade lighting & HVAC Systems</i> | <i>\$ 30,000</i> |
| 8. <i>BMOCA – Replace Gas Furnace.</i> | <i>\$ 10,000</i> |
| 9. <i>West Senior Center – Lighting Upgrades.</i> | <i>\$ 6,500</i> |
| 10. <i>Municipal Building – Boiler Replacement (partial)</i> | <i>\$ 2,710</i> |
| 11. <i>Park Central – 4th Floor VAV Upgrades.</i> | <i>\$ 24,340</i> |
| 12. <i>Park Central Bldg. - Install MAU for 2nd & 3rd floor.</i> | <i>\$ 1,908</i> |
| 13. <i>Fire Station #6 – Lighting Upgrades.</i> | <i>\$ 23,123</i> |
| 14. Public Safety Bldg. – Lighting upgrades.
(Funded by Police, 777 fixtures completed) | \$ 29,836 |

1998 - \$240,033 total

- | | |
|---|-------------------------|
| 1. <i>Salberg Meeting House – Replace furnace.</i> | <i>\$ 2,756</i> |
| 2. <i>South Boulder Recreation Center – Lighting upgrades.</i> | <i>\$ 80,000</i> |

(Funded by Parks & Recreation)

3. <i>South Boulder Recreation Center – Replace DHW Boiler.</i>	<i>\$ 50,618</i>
4. <i>South Boulder Recreation Center – Replace HHW Boiler.</i>	<i>\$ 20,536</i>
5. <i>Municipal Building – Replace Boiler (partial).</i>	<i>\$ 62,678</i>
6. <i>Main Library – Tune up Main AHU.</i>	<i>\$ 3,600</i>
7. <i>Fire Station #2 – Replaced window A/C units.</i>	<i>\$ 7,103</i>
8. <i>Mustard’s – Replace exhaust fan.</i>	<i>\$ 12,742</i>

1999 - \$276,236 total

1. <i>East Boulder Community Center – Replace pool boilers.</i>	<i>\$ 33,078</i>
2. <i>Youth Services – Replace HVAC Units</i>	<i>\$ 48,055</i>
3. <i>Municipal Building – Replace Boiler (partial).</i>	<i>\$ 1,524</i>
4. <i>New Britain – Add boiler & VAV system.</i>	<i>\$ 85,500</i>
5. <i>New Britain – Add ductwork & dampers.</i>	<i>\$ 64,500</i>
6. <i>New Britain – Lighting upgrades.</i>	<i>\$ 3,046</i>
7. <i>Atrium Bldg. – Lighting upgrades.</i>	<i>\$ 2,501</i>
8. <i>Carnegie Library – Lighting upgrades.</i>	<i>\$ 1,899</i>
9. <i>East Boulder Community Center – Lighting upgrades.</i>	<i>\$ 12,778</i>
10. <i>Fire Station #3 – Lighting upgrades.</i>	<i>\$ 1,356</i>
11. <i>Fire Station #4 – Lighting upgrades.</i>	<i>\$ 814</i>
12. <i>Fire Station #5 – Lighting upgrades.</i>	<i>\$ 467</i>
13. <i>Fire Station #6 – Lighting upgrades.</i>	<i>\$ 1,058</i>
14. <i>Municipal Bldg. – Lighting upgrades.</i>	<i>\$ 1,168</i>
15. <i>Park Central – Lighting upgrades.</i>	<i>\$ 570</i>
16. <i>Reservoir Concessions – Lighting upgrades.</i>	<i>\$ 2,374</i>
<i>(Funded by Parks & Recreation)</i>	
17. <i>Scott Carpenter Pool Locker Rooms – Lighting upgrades.</i>	<i>\$ 1,127</i>
18. <i>South Boulder Recreation Center – Lighting upgrades.</i>	<i>\$ 3,190</i>
19. <i>Spruce Pool Locker Rooms – Lighting upgrades.</i>	<i>\$ 1,300</i>
20. <i>Stazio Concessions – Lighting upgrades.</i>	<i>\$ 2,473</i>
21. <i>West Senior Center – Lighting upgrades.</i>	<i>\$ 2,847</i>
22. <i>Fleet Services – Lighting upgrades.</i>	<i>\$ 4,611</i>

(Funded by Fleet)

2000 - \$207,474 total (Note: May 1, 2008 WIP, page 3, was in error noting \$203,550)

1. <i>Athletics – Replace furnace.</i>	<i>\$ 4,833</i>
2. <i>BMOCA – Replace condensing units.</i>	<i>\$ 10,000</i>
3. <i>East Boulder Community Center – Replace DHW Heater.</i>	<i>\$ 3,948</i>
4. <i>Fire Station #2 – Replaced dorm HVAC units.</i>	<i>\$ 11,657</i>
5. <i>Fire Station #3 – Replaced dorm HVAC units.</i>	<i>\$ 7,000</i>
6. <i>Fleet Services – Replace HVAC unit</i>	<i>\$ 11,960</i>
<i>(Funded by Fleet)</i>	
7. <i>Iris Center – Install MAU.</i>	<i>\$ 7,876</i>
8. <i>Iris Center – Lighting upgrades.</i>	<i>\$ 3,459</i>
9. <i>Main Library – Lighting upgrades.</i>	<i>\$ 25,614</i>
10. <i>Main Library – Lighting upgrades (stack lighting).</i>	<i>\$ 15,345</i>
11. <i>Main Library – Lighting upgrades.</i>	<i>\$ 19,675</i>

12. Municipal Bldg. – Replace CMO Windows.	\$ 21,000
13. Municipal Bldg. – Replace HVAC Unit #6.	\$ 9,597
14. New Britain Bldg. – Air balance & install dampers.	\$ 1,608
15. New Britain Bldg. – Install boiler.	\$ 32,781
16. Pottery Lab – Lighting upgrades. (Funded by Parks & Recreation)	\$ 1,543
17. 75th St. WWTP – Lighting upgrades. (Funded by Utilities)	\$ 5,878
18. Flatirons Pro Shop – Lighting upgrades. (Funded by Parks & Recreation)	\$ 1,999
19. Meadows Library – Lighting upgrades.	\$ 2,084
20. MSC Bldg. A – Lighting upgrades. (Funded by Trans/Utilities Maint.)	\$ 6,165
21. New Parks Shop – Lighting upgrades. (Funded by Parks & Recreation)	\$ 3,152
22. Sunshine Hydro – Lighting upgrades. (Funded by Utilities)	\$ 300

2001 - \$173,698 total

1. CYF Services – Replace roof and add insulation.	\$ 36,348
2. East Boulder Community Center – Replace Senior’s HW Heater.	\$ 8,606
3. Fire Station #2 – Replace roof and add insulation.	\$ 64,300
4. Municipal Bldg. – Replace 2 HVAC Units.	\$ 34,444
5. Salberg Meeting House – Upgrade lighting, replaces windows.	\$ 30,000

2002 - \$ 724,925 total

1. Carnegie Library – Replace roof and add insulation.	\$ 45,000
2. North Boulder Rec. Center – Replace Gymnastics HVAC Units (Funded by Parks & Recreation)	\$ 45,686
3. North Boulder Rec. Center – LEED Design Additions (Funded by Parks & Recreation)	\$ 150,605
4. North Boulder Rec. Center – Building Commissioning. (Funded by Parks & Recreation)	\$ 32,150
5. North Boulder Rec. Center – Install Solar HW System (Funded by Parks & Recreation)	\$ 265,000
6. Municipal Building – Replace North Wing windows.	\$ 57,425
7. Municipal Building – Replace Lunchroom windows.	\$ 32,716
8. Public Safety - HVAC Improvements (DDC Controls). (Funded by Police)	\$ 34,000
9. MSC Bldg. A – Boiler Replacement. (Funded by Trans/Utilities Maint.)	\$ 17,500
10. MSC Bldg. A – Sign shop heater replacement. (Funded by Trans/Utilities Maint.)	\$ 16,588
11. Fire Station #2 – Patio Door replacement.	\$ 2,195
12. Fire Station #3 – Replace exterior doors.	\$ 4,400
13. Fire Station #4 – Replace exterior windows.	\$ 11,934

14. IBM Rec. Bldg. – Replace HW Heater. \$ 9,726

2003 - \$ 186,227 total

1. Municipal Building – Replace windows and doors	\$ 35,000
2. Park Central – Add roof insulation	\$ 36,208
3. Main Library HVAC Controls Upgrade	\$ 5,000
4. BMOCA Furnace Replacement	\$ 3,000
5. BMOCA DHW Heater Replacement	\$ 3,193
6. Public Safety - HVAC Improvements (VSDs). (Funded by Police)	\$ 50,000
7. Public Safety - HVAC Controls Upgrade (Funded by Police)	\$ 16,301
8. Public Safety - HVAC Test & Balance (Funded by Police)	\$ 4,650
9. Fire Station #6 – DHW Boiler Replacement	\$ 9,000
10. North Boulder Recreation Center – Solar BTU Meter Install	\$ 3,550
11. East Boulder Community Center – DHW Boiler Replacement	\$ 20,325

2004 - \$ 453,267 total

1. Meadows Library HVAC Controls Upgrade	\$ 12,250
2. NBRC LEED Signage (Funded by Parks & Recreation)	\$ 496
3. Reservoir Security Bldg. Window Replacement	\$ 7,315
4. Fleet Services – HVAC Control Upgrade (Funded by Fleet)	\$ 22,020
5. Atrium – HVAC Replacement & Controls	\$373,000
6. Atrium – Added Roof Insulation from R-2.74 to R-22.6	\$ 38,186

2005 - \$ 164,801 total

1. Municipal Building – Install HVAC Control System and VFD on CAO HVAC	\$ 35,263
2. Municipal Building – Added 1” Roof Insulation	\$ 18,000
3. East Boulder Community Center – Upgrade HVAC Control Syst.	\$ 41,923
4. Pottery Lab – Furnace Replacement	\$ 6,038
5. Fleet Services – Replaced Chiller (Funded by Fleet)	\$ 18,997
6. Municipal Bldg. HVAC Replacement	\$ 38,485
7. South Bldr. Rec. Ctr. HVAC Controls	\$ 6,095

2006 - \$ 421,569 total

1. MSC Building A – Replace 2 HVAC Units (Funded by Trans/Utilities Maint.)	\$ 37,620
2. Iris Center - Replace Auditorium Windows	\$ 2,730
3. New Britain HVAC Units Replaced	\$246,974
4. Main Library Auditorium HVAC Replaced	\$ 21,298
5. Fire Station #3 – Replace Kitchen HVAC	\$ 7,537

6. Fire Station #4 – Replace Hot Water Heater	\$ 3,011
7. West Senior Center HVAC Controls	\$ 5,847
8. West Senior Center Boiler Pumps Replaced	\$ 10,208
9. East Bldr. Rec. Ctr. HRU Insulation Installed	\$ 16,480
10. Municipal Bldg. Recommissioning (Partial)	\$ 24,114
11. North Bldr. Rec. Ctr. Energy Improvements	\$ 10,480
Total cost was \$12,880- received a rebate from Xcel for \$2,400.	
12. North Boulder Rec. Ctr. Power Correction Upgrades (Funded by Parks & Recreation)	\$ 35,270

2007 - \$ 86,884

1. West Senior Center HVAC Controls / Insulation	\$ 17,695
2. New Britain HVAC Units Replaced	\$ 3,534
3. New Britain HVAC Upgrades 3rd Floor	\$ 37,339
4. Fire Station #6 – Add 3” Insulation for R-18.5	\$ 5,652
5. Reservoir Concessions – Added insulation (Rec. Funded)	\$ 9,353
6. Municipal Bldg. HVAC Upgrades	\$ 10,491
7. Main Library Auditorium Lighting Improvements	\$ 2,820

ATTACHMENT E

TDM Program for city of Boulder Employees

GO Boulder offers a variety of programs and services to encourage the use of alternative transportation modes and reduce vehicle trips, miles and emissions in support of the goals of the Transportation Master and Climate Action plans.

City Employee Transportation Coordinator (ETC) Program

- Ellen Orleans is our city ETC (0.5 FTE funded through parking coupon revenues. Total annual budget about \$48K). Ellen is responsible for assisting city employees with transportation issues and reducing vehicle trips, miles and emissions by city employees and departments.
 - Ellen coordinates a team of 35 city of Boulder employee-liaisons who represent 35 city departments and worksites. She assists them with a variety of commuting needs including biking, busing, carpooling and telework.
 - Ellen works individually with city employees to develop a customized commute trip reduction plan, including bicycle and transit itineraries.
 - Ellen maintains and updates a web page on the city's intraweb site entitled Commuting Options, which provides information on options as well as city programs and policies.
 - Ellen participates in GO Boulder's ETC Network, attending meetings with ETCs from the private sector, receiving training and keeping informed about regional TDM efforts.
 - Twice a month, Ellen participates in Human Resources' New Employee Orientation, providing all new city employees with information on transportation options. In order to provide individualized service, she distributes a survey for new employees to complete. She also offers a "New Employee Challenge" that rewards employees for using alternative transportation at least five times during their first month on the job.
 - Ellen has surveyed city employees to understand travel behavior, frequency of alternative mode use and barriers to using an alternative. Due to low response rates, the findings were not robust statistically. Future efforts will be made to increase response rates through incentives and increased buy-in from department heads and supervisors.

Transit

- Regular full-time and part-time city employees, excluding seasonal, contract and temporary employees, receive an Eco Pass. Both the Travel Diary and the Boulder Valley Employee Surveys indicate that the Eco Pass is one of the most powerful tools for shifting travel behavior.
- In most city buildings, employees have access to bus maps and schedules and, through their departmental liaison, assistance with RTD's Trip Planner Web site program. Employees regularly e-mail or phone Ellen for help choosing the best route from their home. Additionally, Ellen periodically offers a training for new bus riders called "Bus 101."

Bicycle commuting

- The city provides bicycle racks or internal bike parking at all city buildings for employees. Most buildings have public bike parking as well. In addition, a bicycle cage is located under the Park Central Building.

- City employees receive bicycle maps, safety equipment and commuting tips from Ellen or their department liaison.
- GO Boulder maintains a Bike Pool Program, which provides 15 bicycles at 11 worksites that city employees can check out to run errands, go out to lunch or attend meetings. The Bike Pool Program also supplies helmets, locks and bike pumps to bicyclists. These are maintained by bike captains at each worksite.
- GO Boulder and Ellen coordinate employee participation in Walk and Bike Month activities, especially Bike to Work Day.
- GOBikeBoulder.net, GO Boulder's turn by turn bicycle route tool, is available to assist city employees bicycle around the city.

Alternative Work Schedules

- Many city employees telework, work compressed work weeks and take advantage of flexible schedules to reduce vehicle trips and use alternative transportation modes.
- Over the last several months, city staff has updated the telework policy, which sets clear guidelines for and between supervisors and teleworking employees.
- Once the telework policy is complete and approved, city staff will work on developing a formal compressed work week and flextime policy.
- Human Resources will soon introduce telework hours as a separate category on payroll timesheets. This act will both normalize telework and help supervisors have a clearer picture of their employees work schedules.

Parking Management

- The city charges employees to park in downtown lots. Employees can purchase coupon books or annual passes. This revenue funds the ETC program

Carpool/vanpool Parking Pass Program

- Working with DRCOG and Fort Collins' SmartTrips, Ellen helps employees connect with carpools and vanpools throughout the Front Range. To encourage ride sharing, Ellen's budget subsidizes the first two months of vanpooling for city employees.
- City employees that carpool can receive parking passes for free. Carpoolers must fill out a form to demonstrate that their ridesharing arrangement eliminates at least one vehicle trip.

Fleet Vehicles

- Many city employees also have access to fleet vehicles, which enables them to use an alternative mode to commute to work while still having access to a vehicle in order to attend meetings and other events during the work day.

Planned improvements

Conduct more rigorous city of Boulder Employee Travel Behavior Survey in fall 2008. Changes focus on:

- Improving online and paper survey design
- Increasing response rate through incentives and/or more buy-in from department heads
- Repeating survey annually or bi-annually to track changes over time and measure return on investment

Strategies and ideas under consideration

- Investigate the feasibility of offering IRS Code 132(f) Qualified Transportation Fringe Benefits for any vanpoolers. This federal benefit allows employees to deduct vanpool or transit fares from their taxable income, up to \$115/month.
- Explore pilot program with Boulder CarShare for online fleet vehicle reservation to better manage city fleet and reduce fleet size.
- Increase access to showers and changing facilities
- Consider charging for parking in the Library lot.
- Explore idea of using parking kiosks to allow free parking for library patrons for up to two hours by using library card at kiosk. All other users would pay regular fees, which would increase revenues and discourage the significant employee use of the lot.
- Preferential parking for carpools/vanpools
- Explore concept of financial or other rewards for employees that use other modes to get to work.