Golden Sustainability Initative

Report to City Council From
Community Working Groups and City Staff

July 6, 2007

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Executive Summary

BACKGROUND

In December of last year, Council identified "sustainability" as its number one priority for 2007 and adopted Resolution 1740 (included as Attachment A) stating in part that:

> *…local government actions taken to reduce greenhouse gas emissions and increase energy efficiency provide multiple local benefits by decreasing air pollution, creating jobs, reducing energy expenditures, and saving money for the local government, its businesses, and its residents.*

In January 2007, Council considered six broad categories of sustainability goals and objectives. These goals ranged from economic health to renewable energy to water conservation. The goals had been preliminarily vetted for feasibility, but were not supported by a thorough analysis or "baseline" data. Council's direction from the January meeting was twofold: (1) arrange for an energy efficiency audit of the City's operations and facilities, and (2) gain the community's input to Council's preliminary sustainability goals.

CITY AND GURA PROGRAMMING

City Manager Bestor established a committee chaired by Mark Heller and co-chaired by Chris Naber to coordinate the City's effort. The committee also includes:

Sabrina D'Agosta	Steve Holmes	Keith Isenberger
Ralph Jacques	Joe King	Ron Reavis
Maureen Wallen	Theresa Worsham	Kirk Watson
Greg Mortimer	Ashley Dalton	Peter Rusin

Staff quickly contacted the Governor's Office of Energy to gain that office's assistance in developing a "performance contract" energy efficiency audit RFP. Mr. John Canfield presented the program overview to Council. A key feature of the program is that the chosen energy services company (ESCo) will guarantee the expected annual savings that follow from the audit. Since the audit process and the implementation would be costs to the City, Staff has been working over the last several months to self-identify energy savings steps and programs that can be implemented outside of the scope of the audit, thereby allowing the City to use what would be audit expenses for actual implementation. Staff members from each department have developed a history of energy savings steps already implemented by the City over the years, as well as a new list of programs that the City could choose to implement at any time. Staff also expanded the scope of the RFP to include a solicitation for advice concerning broader issues of sustainability beyond just energy efficiency. This work was recently completed and the RFP was published on June 27, 2007. It is included as Attachment B to this Report. Staff's energy saving program history and list of future programs are included as Attachments C and D to this Report.

The Golden Urban Renewal Authority has also been pursuing a strong sustainability agenda this year. It has dedicated more than half its staff time towards the City's sustainability efforts, and has also developed a $20,000 energy efficiency audit and improvements pilot program for eight lucky small businesses. Unlike residences and large commercial buildings which can benefit from audit subsidies, smaller property owners and businesses, which are the majority in downtown Golden, are without such subsidies. GURA's program is designed to address that gap. The application period lasts from July 2-19 and the audits will be performed July 25 and 26. More information on this program and a copy of the energy efficiency audit conducted at the GURA office are included as Attachments E and F to this Report and at www.gura.com/eepilot.

Similarly, the Economic Development Commission is planning to allocate its "mini-grant" program for sustainability related issues. EDComm will target these funds as well as a renewable energy incentive program to further the selected recommendations from this report. EDComm is considering expanding the GURA energy efficiency pilot program depending on the success of the pilot.

COMMUNITY PROGRAMMING

Simultaneously to the work described above, Council, City staff, and GURA staff began to plan the community input process for the preliminary sustainability goals. Rather than take at least a year to develop baselines and fully analyze the energy and resource status of the City and the community, the decision was made to launch the input process immediately and to conduct the baseline research simultaneously.

The kick off event for the input process was a February 28, 2007 Open House at City Hall on what would be the last major storm of the '06-'07 winter. Despite the ice and cold, over 200 citizens offered their initial comments and over 60 of them volunteered for further work. Over 90% of the comments were supportive and urged even more ambitious goals. Sustainability consultant Hillary Mizia facilitated a very dynamic and lengthy discussion of the goals and the concept of sustainability, giving the community a working definition:

> *Sustainability is an attempt to meet the needs of the present without compromising the ability of future generations to meet their own needs.*

Mizia also led a discussion on the three pillars of sustainability: People, Profit, Planet. She explained that any community or government effort must reasonably satisfy all three pillars in order to be truly sustainable.

The 60 volunteers from the kick off meeting were convened on March 21, 2007 where they participated in another facilitated discussion on small group dynamics and decision-making. The seven "Community Working Groups" ("CWGs") were then formed, one for each of the original six goal sets and a new group for Education and Communication. They were tasked with the following:

> The purpose of the Golden Sustainability Initiative is to protect our quality of life and ensure a healthy, prosperous, sustainable community now and for the future.
>
> a. Evaluate the proposed goals and the public feedback on those goals and make a recommendation to City Council about how to adjust them;
> b. Make a recommendation to staff and Council about the City's action plan for the remainder of 2007, 2008 and the remaining program years (2009-2017);
> c. Craft the community action plans for each of the seven working groups with specific attention to how to implement the action plans.

The Community Working Groups met weekly for the next three months, turning in their final reports on June 27, 2007. Each CWG was asked to designate a moderator who became responsible for scheduling meetings and communicating within the group and among the other CWGs. The moderators also participated in the Coordinating Committee which met roughly bi-weekly to give progress reports and ultimately to make final edits to this Report. The amount of work volunteered by all the members of the CWG is commendable and the moderators deserve special recognition for their dedication and leadership:

John Spice	Building
Vickie Rightmyre and Don Parker	Economic Health
Saoirse Charis-Graves	Education and Communications
Leslie Pollock and Don Cameron	Energy Efficiency and Renewable Energy
Philip Baker	Solid Waste and Recycling
Sean Plumb and William Fisher	Transportation
Susan Buhr	Water

Each CWG was assigned a liaison from City staff and from a federal agency to provide advice and support. The CWGs used these liaisons to different degrees. In recognition of their work, the liaisons are:

Jerry George Doug Seiter (DOE)	Building
Steve Glueck and Mike Bestor David Christensen (NREL)	Economic Health
Sabrina D'Agosta	Education and Communications

Margie Bates (DOE)	
Mark Heller Stephanie Savage (NREL)	Energy Efficiency and Renewable Energy
Chris Naber	Solid Waste and Recycling
Steve Glueck and Theresa Worsham Gerry Harrow (NREL)	Transportation
Dan Hartman Jack Jenkins (DOE)	Water

In an effort to be as transparent as possible, the CWGs were required to post their communications and documents on publicly-viewable Yahoo! Group sites. These sites are available to anyone with a computer. This was a novel approach to community input and was particularly effective. Visit www.cityofgolden.net/sustainability to access these links.

HOW TO USE THIS DOCUMENT

Each CWG submitted a separate report, organized in similar fashion. Some CWGs used a slightly different format, but generally the formats follow this order:

- **Background**
- **Goals**
- **Recommendations**
  - **A. Recommendation A**
    - Rationale
    - Examples
    - Range of Alternatives
      - Ambitious
      - Moderate
      - Minimal
  - **B. Recommendation B**
  - **C. Recommendation C**
- **Conclusion**
- **Addendum** (including detailed research, resources, links, etc)

While this document is lengthy, its organization allows a reader to get a quick understanding of each CWGs recommendations by reading the first several sections of each report. The Addenda represent the bulk of the total document. They contain the detailed analysis and basis for the recommendations, additional recommendations that were not highest level priorities, and background support.

SUMMARY OF GOALS

The Community Working Groups endorsed the vast majority of Council's preliminary goals. The below text shows Council's preliminary goals, using ~~strikeout~~ to show where Council's goals were changed and underline to show the CWGs' substitutions.

Buildings

Improve the energy efficiency and reduce the environmental impact of new and existing buildings in Golden. Specifically:

- Ensure that within ten years 90% of all new buildings constructed in Golden each year are built to green building standards.
- Ensure that within ten years ~~10%~~ 50% of all remodels in Golden each year are built to green building standards.
- Revise Golden's land use code to reflect the best practices in sustainability once every five years.

Economic Health
Improve the economic health of our community by increasing business opportunities focused on energy efficiency and renewable energy and by reducing the energy costs of all Golden businesses. Specifically:

- ~~Double the number of jobs in Golden in the energy efficiency and renewable energy sectors within ten years.~~
- ~~Enable businesses located in Golden to lower their energy costs by reducing the average energy consumption by 15% within ten years.~~
- Encourage local businesses to improve their sustainability and profitability by developing their offerings of sustainable products and services and their use of sustainable products, services, and practices.
- Create/Attract new jobs and businesses in the sustainability sectors.

New: Education and Communication
Increase our community's awareness of and encourage commitment to actively take part in sustainability as a public value that supports cultural, economic and environmental health for all citizens. Specifically:

- Create effective, ongoing two-way communication that informs, educates and inspires community involvement in city-wide sustainability efforts; and,
- Support the Community Working Groups in crafting community action plans that effectively foster sustainable behavior.

Energy Efficiency and Renewable Energy
Increase our community's energy efficiency and our use of renewable sources of energy. Specifically:

- Reduce the City of Golden's energy usage by 25% and increase to 50% the proportion of its energy use derived from renewable energy sources within ten years (25 x 50 in 10).
- Reduce overall community energy usage in Golden by ~~15%~~ 20% and increase to ~~15%~~ 20% the proportion of its energy use derived from renewable energy sources within ten years ~~(15 x 15 in 10)~~ (20 x 20 x 10).

Solid Waste and Recycling
Reduce our solid waste stream contribution through the expanded use of recycling programs, waste diversion programs, and other tools. Specifically:

- Reduce our solid waste stream contribution by 25% in ten years.

Transportation
Increase the ability of Golden residents and visitors to travel to and through Golden using alternative transportation. Specifically:

- Reduce the communities total Vehicle Miles Traveled by 15% in ten years.

Water
Ensure that Golden sustains a clean, stable water supply into the future. Specifically:

- Reduce Golden's per capita water use by 15% in ~~10~~ 5 years.
- ~~Maintain the highest water quality standards for Golden's water supply.~~
- Maintain better than regulatory water quality from water treatment plant to end-user.

SUMMARY OF RECOMMENDATIONS MATRIX
A spreadsheet containing very short summaries of the core CWG recommendations side-by-side has been provided as Attachment G to this Report. It can be used to obtain an overall view of the main recommendations. This spreadsheet does not show the dozens and dozens of important and related ideas and implementation strategies which are described in the narrative of the Report.

TIME FRAME FOR RECOMMENDATIONS

Each CWG was asked to order its recommendations in terms of near, mid, and long term implementation. The below tables show this ranking. This has also been included as Attachment H to this Report.

BUILDINGS				
	Recommendations	**2007**	**2008**	**2009-2017**
A	Review existing code, fees, HOA restrictions and Zoning	x		
B	Adopt Green Building Standards for New/Remodel Commercial (Non-Residential) Buildings		x	
C	Adopt Green Building Standards for New/Remodel Residential Construction			x
D	Existing Buildings, "Point-of-Sale Green Audit"			x
E	Adopt Incentive Strategies to Exceed New/Remodel Construction Green Standards			x
F	Adopt Upgrade Strategies for Existing Residential Homes			x
G	Adopt Green Building Standards for Existing Commercial/Non-Residential Buildings		x	

ECONOMIC HEALTH				
	Recommendations	**2007**	**2008**	**2009-2017**
A	Sustainable Business Cluster		x	x
B	Sustainable Business Incubator		x	x
C	Energy Audits	x	x	x
D	Signs	x	x	x
E	Private Wind and Solar	x	x	x
F	Government Wind and Solar		x	x
G	Sustainable Development Staff		x	x
H	Sustainable Business Certification		x	x
I	Sustainable Business/Living Expo		?	x

EDUCATION AND COMMUNICATION				
	Recommendations	**2007**	**2008**	**2009-2017**
A	Sustainability Director	x	x	x
B	Permanent Citizens Sustainability Group	x	x	x
C	"Branding the Effort"	x		
D	Education and Communications Strategies/Methods	x	x	x
E	Evaluating Success	x	x	x

ENERGY EFFICIENCY AND RENEWABLE ENERGY				
	Recommendations	**2007**	**2008**	**2009-2017**
A	The EE/RE Group Endorses the City Actions	x		
B	City-Sponsored Incentives for Sustainable Energy Investments		x	x
C	Solar Access Ordnance	x	x	x
D	Increase Use of Alternative Fuels in Transportation			x
E	Funding Energy Efficiency Improvements and Rehabilitation of Existing Homes			x
F	Xcel Varied Electricity Rates		x	x
G	Energy Audit and Implementation Program	x	x	x
H	Dark Skies Community Lighting Standards		x	
I	Promoting Use CFLs	x	x	x

SOLID WASTE AND RECYCLING				
	Recommendations	**2007**	**2008**	**2009-2017**
A	Single Stream Recycling (SSR)		x	
B	Pay As You Throw (PAYT)		x	x
C	Organic composting: public facility		x	
D	Single vendor SW franchising		x	
E	Downtown recycling bins	x		
F	Organic composting: curbside pickup			x
G	Plastic shopping bag ban			x
H	Event recycling			x

TRANSPORTATION				
	Recommendations	**2007**	**2008**	**2009-2017**
A	Integrated Pedestrian transit	x	x	
B	Bicycle transit network	x	x	x
C	Timely, efficient public transit network	x	x	x
D	Demand Reduction	x	x	
E	Education & Cultural Awareness	x	x	

WATER				
	Recommendations	**2007**	**2008**	**2009-2017**
1.A	Encourage water-conserving landscape practices	x	x	x
1.B	Reduce indoor water use through incentives and education	x	x	x
1.C	Clarify and seek legal extensions to our ability to use gray-water and rainwater catchment	x	x	x
2.A	Continue and extend the City programs to eliminate dead-end lines and decrease residence time in the system	x		
2.B	Implement increased water quality treatment and testing	x	x	x
2.C	Provide education and encourage the use of devices that prevent backflow and cross contamination within buildings	x	x	
3.A	Set up a system to quantify, locate and resolve problems resulting in "unaccounted" water; or that water lost within the distribution system	x	x	
3.B	Administer and promote an active City and citizen leak detection program.	x	x	
3.C	Maintain high efficiency and energy conserving water system pumps	x	x	
4.A	Develop and implement overall action plans for management of the Golden drainage basins	x	x	x
4.B	Improve storm water runoff quality	x	x	x
S.A	Maintain awareness of scientific knowledge on Front Range climate projections and the changes predicted for water supply timing and quantity	x	x	x
S.B.	Develop educational opportunities at all levels-K12, college, public	x	x	x
S.C.	Determine responsibilities for recommendations, including a potential new position of Sustainability Director	x	x	

NEXT STEPS

The citizens who developed these recommendations put a great deal of thought and effort into their work. Similarly, City staff went above and beyond their daily duties to compile their plans. These efforts have been thoroughly communicated to the Golden community through the creation of a new page at the City's website (www.cityofgolden.net/sustainability), with coverage in most issues of the Informer, and with a recent series in the Transcript. This press coverage is included as Attachment I to this Report.

Yet, this is all still a beginning. This Report gives Council and the community a solid basis to start the conversation on sustainability. Many of the recommendations in this report can be implemented quickly, with little or no cost to the City. Others are more complicated and/or costly.

A key part to continuing the conversation is the determination of City and community energy and resource baselines. This work is ongoing and will be critical to establishing and evaluating our efforts. Similarly, the cost of these recommendations must be carefully evaluated and compared against each other and against other priorities of the City and community.

Buildings

Education and Communications Community Working Group: John Spice, Jim Dale, Jodi Muller, Gunter Ritter, John Hermanussen, Paul Imse, Robert Paulson, Doug Seiter, Adam Stevenson, Clay Wade, Rick Cowlishaw, Herny Tiberi and Greg Koss

BACKGROUND

As part of the City of Golden Sustainability Initiative, the Buildings Working Group (BWG) is charged with developing recommendations to support the specific goals to improve energy efficiency and reduce the environmental impact of new and existing buildings in Golden.

A comprehensive sustainability initiative must have benchmarks from which to gauge progress and success. Codes and standards are tools to measure this. The BWG focused on the development of green building standards through a combination of both regulation and market incentives, recognizing the crosscutting nature of other Community Working Groups such as Education, Energy Efficiency, Transportation and Water. The primary options to ensure that sustainable green building standards are implemented are to create a certification point system administered by the City or by an outside certifying organization. The BWG acknowledges that a comprehensive sustainability plan will ultimately be a systemic approach to future development and long-term health of the community.

GENERAL COMMENTS/DEFINITIONS:

- For the purposes of discussion, BWG has divided buildings into four general categories. BWG recognizes that there are many more building types than the four general areas defined. Remodels are defined as changes to existing buildings, which require a building permit. The four general areas are
    - New and Remodeled Residential – New construction, remodels, expansions, or upgrades for any kind of residential buildings where a building permit is required
    - Existing Residential - All other existing residential buildings where changes or upgrades may be made, but no building permit is required.
    - New and Remodeled Commercial/Non-Residential - New construction, remodels, expansions, or upgrades for any kind of non-residential buildings where a building permit is required.
    - Existing Commercial/Non-Residential - All other existing non-residential buildings where changes or upgrades may be made, but no building permit is required.
- The green standards should provide multiple opportunities to meet compliance and provide opportunities for exceeding the standard.
- Safety should be a preeminent component of the green standards.
- When remodeling existing buildings, only the remodeled section should be required to come into compliance with the green standards.
- Owners of historic properties should be allowed to apply for variances to the new green standards when remodeling would compromise the integrity of a historic restoration.
- In Colorado, the following residential marketing programs should be encouraged;
    - **Built Green® Colorado** is the nation's largest industry green building program. It has been the model for other programs around the country, and is soon launching a second level, *Built Green® High Performance Home* as an enhancement to the program.
    - **Environments for Living** is an industry program (Masco Contractor Services) with heavy emphasis on building science; verification is required for certification; includes a comfort and energy use guarantee.
    - **LEED Homes:** The US Green Building Council is working with Colorado builders in a pilot phase of the Leadership in Energy and Environmental Design (LEED) residential home program.
    - **Energy Star Homes:** the residential new home program of the Environmental Protection Agency; homes must be at least 15% more efficient than the International Energy Conservation Code, 2004 version.

GOALS

1. Ensure that within 10 years, 90% of all new buildings constructed in Golden each year are built to green building standards.
2. Ensure that within 10 years, 50% of all remodels in Golden each year are built to green building standards.
3. Revise Golden's land use code, to reflect the best practices in sustainability, once every five years.

RECOMMENDATIONS

A - Review existing code, fees, HOA restrictions and Zoning
Review current City building codes, fees, HOA restrictions and zoning regulations to identify code/regulations/fees that discourages/prohibits/precludes the use of sustainability practices and add/change/repeal regulations to promote sustainable practices where beneficial.

Rationale
Over time, many building codes, fees, HOA restrictions and zoning regulations were developed to address a problem or need at a given point in time. As times change, needs also change. Today, sustainability needs should be addressed. As a part of an overall sustainability effort, existing codes/restrictions, ordinances and zoning should be reviewed to evaluate the original benefit versus the benefit of sustainability. Sustainability promotes the health and welfare of the community's future.

Examples
1. The City adopts the most current International Building Code.
2. The City zones for greater density and mixed use along mass transit routes and near the business districts.

Alternatives
1. Form/performance based codes
2. Transit Oriented Development

B - Adopt Green Building Standards for New/Remodel Commercial (Non-Residential) Buildings
Effective January 2008, adopt the US Green Building Council's Leadership in Energy and Environmental Design (LEED) Silver standards for all new and remodeled commercial/non-residential buildings.

Rationale
The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings. LEED was developed as a program for voluntary adoption by entities wishing to promote environmental stewardship through building design and construction, with the added benefit of market recognition. As in other market programs the value of LEED is in part the motivation to seek higher levels of performance in the four-tiered (Certified, Silver, Gold, and Platinum system). Codifying market programs can have a chilling effect on motivation to improve beyond the minimum. However, municipalities have adopted LEED-Silver as a minimum standard as a way to demonstrate commitment to higher performance buildings in a leadership role, setting the tone for private sector involvement in similar projects.

LEED for New Construction and Major Renovations is a green building rating system that was designed to guide and distinguish high-performance commercial and institutional projects, with a focus on office buildings. This rating system has been applied to K-12 schools, multi-unit residential buildings, manufacturing plants, laboratories and many other building types.

Examples
1. Dallas-TX, Austin-TX, Boston-MS, and Salt Lake City-UT have adopted the LEED-Silver as their green standard.
2. The new building being built in Golden by Andrews and Anderson Architectures Inc is being built to the LEED-Silver standard.

Alternatives

1. Adopt either a higher or lower level of the LEED four-tiered system as Golden's Green Standard.
2. Adopt another of the established green building program as Golden's Green Standard.
3. Develop a unique "Green Standard" program for Golden.

C - Adopt Green Building Standards for New/Remodeled Residential Construction

Effective January 2009, adopt the ANSI-approved National Green Building Standard (NGBS), a nationally recognized multi-tiered green building standard as the baseline for all new residential and remodel construction.

Rationale

The National Association of Homebuilders released Model Green Home Building Guidelines in 2006, a result of a national representation of stakeholders that included established green building programs, industry and government. This document is currently being revised to serve as a national green building standard approved by the American National Standards Institute (ANSI). This process puts the Green Home Building Guidelines through further national review with a broad representation of industry representatives, and is ultimately subject to the approval of the ANSI. The ANSI-approved National Green Building Standard (NGBS) is scheduled for released in early 2008. The ANSI standard is a multi-tiered green building standard for residential buildings.

Examples

1. Built Green Colorado homes
2. Solar homes in Golden

Alternatives

1. Adopt a higher level of the ANSI three-tiered system as Golden's Green Standard.
2. Adopt another established residential green building program as Golden's Green Standard.
3. Develop a unique "Green Standard" program for Golden.

D - Existing Buildings, "Point-of-Sale Green Audit"

Effective with the adoption of "Green Standards", implement a "Point-of-Sale Green Audit" to document the current level of compliance for existing buildings to the adopted green standards.

Rationale

This recommendation is meant to provide the buyer, the seller and the City with the information required to determine whether the build being sold meets the City's adopted green standards for sustainable living. It is expected that the realty market would quickly tout property that exceed the City's green standards, encouraging sellers to minimally upgrade their property or lower their asking price. The advantage of a mandated audit over a mandated upgrade is that the audit provides the interested parties with the necessary information to make an informed economic decision.

Most buildings are already being inspected for lead paint, asbestos, radon, mold, etc. A green standard audit at the same time would be minimal additional work and cost. By providing a copy of the audit to the City, the information could be used by the City to document the level of compliance and the progress of the City's sustainability effort. This audit approach could be coupled with existing incentives such as the Energy Efficient Mortgage (EEM) and Energy Improvement Mortgage (EIM) to promote ongoing improvements to existing buildings.

Examples

1. Similar system to the routine home structure and safety inspection at sale
2. Similar system is used for septic systems in unincorporated Jefferson and Boulder Counties at sale
3. Currently, the State will audit buildings over 50,000 sf for free.

Alternatives

1. Implement a City subsidized Energy Audit Program, not tied to a sale.

E – Adopt Incentive Strategies to exceed New/Remodel Construction Green Standards
Through education and appropriate incentives, encourage market-driven programs that exceed minimum green standards (such as the current energy code) for both residential and commercial building construction.

Rationale
There are now numerous viable market programs that encourage voluntary improvement of building performance. In addition to already providing incentives to builders, these programs can also serve as alternative compliance paths for builders once the minimum green building standards have been adopted.

Examples
1. Priority status in the annual residential building permits allocation process.
2. Priority status in the review process of building plans to guarantee expedited turnaround.
3. Zoning Allowances.
4. Reductions of building permit fees.
5. Rebate of City Sales/Use Taxes for sustainable items purchased within the City. In addition to providing an incentive for builders, it also provides economic benefit for businesses within the City.

Alternatives
1. Adopt a higher green standard, thereby eliminating the need for incentives.

F - Adopt Upgrade Strategies for Existing Residential Homes
Develop a variety of incentive programs, coupled with education programs that highlight the value of energy efficiency, durability and indoor air quality. All incentives should have a cost/benefit analysis associated with it.

Rationale
Homeowners can be encouraged to make improvements in their homes for better performance and comfort by higher energy costs, comfort and health problems, or purely a desire to "do the right thing." While there are ample resources, the volume of information is overwhelming for most. A community education program can focus on the local needs and resources, and with the right mix of community partnerships can be a win-win for local businesses and residents. To the extent there are financial resources available to offer low/no-interest loans, rebates, etc, informed citizens can and will take advantage of these services.

Examples
1. Denver Metro provides rebates for low water use fixtures and washers
2. Xcel and Home Depot providing low cost CFL bulbs
3. Incentives for installing Energy Star rated appliances.
4. Incentives for installation of higher grades of insulation, energy efficient windows, tank-less water heaters, etc.
5. Program stressing the benefits, energy and cost savings, of switching to CFL bulbs.

G - Adopt Green Building Standards for Existing Commercial/Non-Residential Buildings
Adopt the US Green Building Council's Leadership in Energy and Environmental Design Rating for Existing Buildings (LEED-EB) Silver standard for all existing commercial/non-residential buildings. This standard differs from LEED-Silver standard for new buildings in that it addresses whole-building cleaning and maintenance issues including chemical use, ongoing indoor air quality, energy efficiency, water efficiency, recycling programs and facilities exterior maintenance programs, and systems upgrades to meet green building energy, water, Internal Air Quality(IAQ), and lighting performance standards.

Rationale
The LEED Rating for Existing Buildings (LEED-EB) Silver standard should be the reference for developing the minimum standard. LEED-EB Silver certification could also stand as an alternative compliance for the Golden standard for existing commercial/non-residential buildings.

A goal should be set for sustainable improvements of existing buildings in terms of time and effort. A catalog of sustainable improvements/modifications should be established. This way an owner can

choose an improvement that might be on his to-do list any way. The sustainability measures must be reachable, and there must be exceptions such as grandfather clauses and other recognizable situations.

Examples

1. If a parking lot needs to be resurfaced, the owner could choose concrete pavement over asphalt pavement to reduce the effect of heat islands.
2. Planting trees to provide shade to reduce energy requirements.

Alternatives

1. Adopt either a higher or lower level of the LEED-EB system as Golden's Green Standard for existing buildings.
2. Adopt the same standard as adopted for new/remodel construction. (Recommendation #B)
3. Adopt another established green building program as Golden's Green Standard.
4. Develop a unique "Green Standard" program for Golden.

TIME FRAME FOR RECOMMENDATIONS:

	Recommendations	**2007**	**2008**	**2009-2017**
A	Review existing code, fees, HOA restrictions and Zoning	x		
B	Adopt Green Building Standards for New/Remodel Commercial (Non-Residential) Buildings		x	
C	Adopt Green Building Standards for New/Remodel Residential Construction			x
D	Existing Buildings, "Point-of-Sale Green Audit"			x
E	Adopt Incentive Strategies to Exceed New/Remodel Construction Green Standards			x
F	Adopt Upgrade Strategies for Existing Residential Homes			x
G	Adopt Green Building Standards for Existing Commercial/Non-Residential Buildings		x	

ADDENDUM:

Website resources:

- Built Green® Colorado**:** http://www.builtgreen.org/homebuilders/default.htm
- Energy Efficient Mortgage (EEM): http://www.hud.gov/offices/hsg/sfh/eem/energy-r.cfm http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.energy_efficient_mortgage
- Energy Improvement Mortgage (EIM): http://www.e-star.com/homeowners/home_loans.html
- Energy Rated Homes of Colorado**:** http://www.state.co.us/oemc/publications/erhc/index.htm
- Energy Star Homes**:** http://www.energystar.gov/index.cfm?c=home.index
- Environments for Living**:** http://www.eflhome.com/
- Innovative building technologies http://www.nrel.gov/buildings/technology_research.html
- Leadership in Energy and Environmental Design (LEED): http://www.usgbc.org/
    - Rating System for Existing Buildings (LEED-EB): http://www.usgbc.org/DisplayPage.aspx?CMSPageID=221
- National Assoc. Home Builders (ANSI Standards): http://www.nahbrc.org/technical/standards/greenbuilding.aspx

Economic Health

Education and Communications Community Working Group: Ken Jacobs, Kris Nelson, Vicky Wagner, Susan Riebe, Susan Rhea, Vickie Rightmyre, Chris Ball, Don Parker

BACKGROUND

Golden has a special advantage by being the home to several world class technical resources, including but not limited to the Colorado School of Mines (CSM) and the National Renewable Energy Laboratory (NREL), and Molson/Coors, in addition to other innovative existing businesses of various sizes in and near Golden, and many educated and interested citizens. We want to capitalize on those strengths by having a variety of sustainability-sector businesses including leading-edge business in some areas of sustainable economic activity.

A diverse economy provides the flexibility and variety of locally available products and services necessary for sustainability, so we do not seek to concentrate Golden's economy only into economic sectors currently related to sustainability, renewable energy, conservation, or the environment. We do seek to help all of Golden's businesses to move in directions that are both sustainable and profitable by removing or reducing barriers for companies to use sustainable practices and products, identifying market opportunities related to sustainability, and by developing partnerships to help companies develop skills to improve their profitability through meeting the growing market demand related to sustainable practices, services, and goods.

GOALS

We changed the goals with which we were originally charged. We changed the first goal regarding energy conservation for existing businesses to broader goals of helping existing businesses implement sustainable practices and use sustainability as a marketing attraction. And we changed the new business goal from one setting a doubling of jobs in the sustainability-sectors to a more general goal of increasing our job and business base in the sustainability-sectors, then recommending that a measure for this goal be to look for a doubling of jobs in sustainability-sectors.

> **Goal 1: Encourage local businesses to improve their sustainability and profitability by developing their offerings of sustainable products and services and their use of sustainable products, services, and practices.**
>
> **Goal 2: Create/Attract new jobs and businesses in the sustainability sectors.**

RECOMMENDATIONS

A. Sustainable Business Cluster. Direct staff to identify existing resources, partnerships, and relationships that are integral to a Sustainable Business Cluster. A business cluster is a geographic concentration of interconnected companies and institutions in a particular field; a business cluster is characterized by extensive institutional relationships and networks. Their collective and individual business activities result in a critical mass of unusual competitive success in that field. That success draws recognition, visitors, new business, and venture capital, all of which perpetuate the success of the business cluster.

This initial recommendation toward achieving such a business cluster is staff work (which could be an assignment to new sustainability staff) to identify our strengths and weaknesses and to find partnerships to stretch our resources. A feasibility study by a consultant could follow this initial staff work.

> Rationale, Benefits, Examples, and Alternatives:
> Golden is uniquely qualified to pursue business clusters in several technology fields because it enjoys the presence of several world class technological assets. The City of Golden and the Golden Economic Development Commission have already recognized the value of business clusters and have integrated this concept into their economic strategies. The City & the Economic Development Commission have done research into identifying potential business clusters and have identified sustainable energy technologies

(including renewable energies, energy conservation, and energy efficiency) as business sectors that currently pose the best match for Golden's existing resources and to have a strong potential for economic growth.

B. Sustainable Business Incubator. Undertake a feasibility study of creating a Golden Sustainable Business Incubator. The incubator would provide services at low or no cost to help the companies, such as business consulting, networking opportunities, payroll and/or bookkeeping, assistance in seeking venture capital, and/or many other possible services. The concept is to establish a facility for new businesses with a purpose related to sustainability. In return, the community would increase its own prospects for becoming a recognized center for sustainable businesses, and potentially attract more jobs and businesses to the community. This would also be part of a larger effort to form a sustainability-sector business cluster.

Rationale, Benefits, Examples, and Alternatives:
Unlike formation of a business cluster, an incubator is a sufficiently specific pursuit, so the City could go ahead with a feasibility study. This might start with a Request for Information (RFI), or Request for Proposals (RFP) or Request for Quotes (RFQ). In fact by beginning with more general open-ended inquiries to firms and experts doing this work, Golden could get quite a bit of free information and thinking about this, while evaluating who might be best to work with. Successful businesses that begin in the incubator could move to nearby facilities as they grow, and could contribute to the success of new incubator tenants. Potential economic benefits to the City government and its citizens are enormous. A realistic plan for how to accomplish this is critical to success, which is why we recommend starting with a professional feasibility study. Alternatively, the study could include both the incubator and the business cluster.

Proximity to NREL, CSM, Coors, Coors Tek, and other nearby businesses might also be an encouragement to locate in the business incubator. Synergy and some early successes might be achieved by coordinating with the CSM Office of Technology Transfer, which focuses on incubating the technology and associated research, but we understand does not focus on business/entrepreneurial issues.

Many small business incubators have been established to foster the development of small businesses in communities throughout the country. There are several of these in the Denver area. To our knowledge, none of these focus on sustainability. It would be best to have an incubator within the City of Golden, but having one near Golden could further our goals.

C. Energy Audits. Direct staff to research energy audit services for businesses._ Xcel, NREL's Federal Energy Management Program, the Environmental Protection Agency Energy Star Program, the Governor's Office of Energy Management (OEM) have information on or conduct energy audits. GURA is already undertaking this project for businesses within its district.

Rationale, Benefits, Examples, and Alternatives:
This is a way to begin the processes of: 1) Helping Golden's businesses save money, and 2) Helping Golden's businesses receive various awards and certifications for sustainability and help green-brand Golden.

D. Signs Promoting Local Businesses and Attractions. Request GURA and EDComm to work with local business to design and install signs informing people about local businesses and other sites of interest. Place signs at attractions in the City about Golden's businesses of interest to tourists, like restaurants and shops, emphasizing that they are within easy 5-10 minute walks.

Rationale, Benefits, Examples, and Alternatives:
This could help reduce vehicle traffic, and support local businesses and the economy. The costs are low and any added business will be a plus. Also once visitors explore more of Golden they are more likely to tell their friends about the City's downtown and its businesses and more likely to want to come back. Some signs are already in place. We encourage placement of more signs, including signs about Golden's businesses, wherever tourists and/or local people gather and where those people can take advantage of businesses and other attractions within walking distance. The Cherry Creek shopping areas in Denver and various malls have signs showing locations of businesses and other attractions.

E. Encourage Private Wind Generators and Solar Panels. By ordinance, reduce or eliminate permit fees for these projects. We actually encourage placement in conspicuous locations throughout Golden, so they are seen and talked about. Build these costs and reduced revenues into future budgets.

Rationale, Benefits, Examples, and Alternatives:
As these projects go up they will help brand Golden as green, especially in the technical/engineering sense. This also helps businesses save money and do their own individual green-branding. Golden could also establish incentives, for up to one-half of the after-tax-credit-costs, up to the amounts allowed in the Charter, for businesses to place wind generators and solar collectors on poles or elsewhere, especially in conspicuous locations. Any incentives can be set at whatever levels the City considers effective and which Golden can afford.

F. City Government Wind Generators and Solar Panels. Direct staff to research the costs of placing some wind generators or solar panels in downtown Golden and putting hot water or photovoltaic collectors on the Recreation Center. Included would be exploring how the generators could be installed by a for-profit entity(ies) which could obtain the Federal tax credits and then lease or sell to Golden. If found feasible then include costs in future capital budgets.

Rationale, Benefits, Examples, and Alternatives:
An example is Belmar Shopping Center in Lakewood where there are wind generators on light poles, and their placement of photovoltaic generators on the top of a parking lot. We encourage conspicuous locations, because this would enhance and add credibility to Golden's green-branding efforts. It might also provide opportunity for a project for cooperation and cost-sharing with CSM or NREL or some other organization. Golden could concentrate on the downtown area or use such a project in other parts of town like Golden Road.

G. Sustainable Development Staff. Hire a Sustainable Development Officer or Director. A primary function of the staff would be to seek and support partnerships and other sources of support from businesses, other government entities, foundations, and local and national non-profit organizations to meet sustainability goals.

Rationale, Benefits, Examples, and Alternatives:
Anecdotal evidence we obtained indicated that for success in sustainability activities, some dedicated staff is necessary. All the other recommendations would be supported with dedicated staff. Having knowledgeable staff dedicated to the sustainability priorities of the Council makes success with many of the adopted recommendations more likely. If some of the business goals are achieved the position(s) can be more than paid for, after an initial time, with the added revenues achieved. New position(s) can be created or existing position(s) re-defined.

A Sustainability Board or Commission with powers to be defined could also be created. This could be a way to get some inexpensive ongoing advice and recommendations.

H. Sustainable Business Certification. Create and promote a certification program that would encourage businesses to participate, and then prominently display or advertise to their customers.

Rationale, Benefits, Examples, and Alternatives:
We see it as adopting existing sustainability certification standards and/or developing our own Golden standards. This would be another leg of the green-branding effort, as well as raise awareness of the range of sustainability issues and topics. Ways of certifying might include meeting a standard set of criteria; or having an energy audit done & implementing the changes; or documented reduction of energy use; or other industry specific ideas such as coffee shops might qualify by serving only shade grown coffee.

I. Sustainable Business Expo or Sustainable Living Fair . Hold annual Expositions or Fairs starting in 2008.

Rationale, Benefits, Examples, and Alternatives:
This is another effort to help establish Golden as a center of sustainability-sector businesses. This could be a "Sustainable Living Fair "or Expo which would include businesses as well as other entities involved with sustainability. This is to encourage and assist local businesses to market sustainable products and services

to Golden residents and to other businesses. This would also help with "green" branding of Golden. Examples of participants include providers of energy conservation and renewable energy products, green builders and contractors, organic gardening suppliers, bicycle shops, alternative fuel vendors, local agricultural producers. If it was a sustainable living fair it could include various other entities related to sustainability also. Ideally a local non-profit or service group(s) might organize this.

ECONOMIC HEALTH AND BUSINESS SUSTAINABILITY IMPLEMENTATION TIME FRAME

	Recommendations	2007	2008	2009-2017
A	Sustainable Business Cluster		x*	x
B	Sustainable Business Incubator		x*	x
C	Energy Audits	x	x	x
D	Signs	x	x	x
E	Private Wind and Solar	x**	x	x
F	Government Wind and Solar		x	x
G	Sustainable Development Staff		x	x
H	Sustainable Business Certification		x	x
I	Sustainable Business/Living Expo		?	x

* Begin feasibility studies in 2008 for a Business Incubator and possibly a Business Cluster in 2008. Establishment would evolve over many years and never really be fully completed.

**Begin incentives, such as permit fee elimination this year, as recommended in the Energy report.

ADDENDUM

A goal of the Sustainability Initiative was to brainstorm about all kinds of ideas related to sustainability. This Addendum contains ideas from this brainstorming that were not included in the main body of this report, but which the Economic Health CWG felt were important to include.

The resources of the Golden City government and its taxpayers are limited so with all the goals, strategies, tactics, and recommendations we encourage partnering, and use of leverage anywhere costs are involved.

Strategies, Tactics and Measurements

The Economic Health group discussed strategies, tactics, and ways to measure progress in achieving the selected goals. Those are below. Some of the strategies and tactics were developed into the specific recommendations offered to Council.

Measures for Goal 1: We recognize that achievements in these areas are not always readily measurable. Some measures might include:

- Reductions in average energy uses and costs by businesses. These might include reductions resulting from net metering of solar or wind generators owned by those businesses.
- Number of solar and wind generators installed by local businesses
- Number of businesses achieving one or another sustainability rating or award
- Amounts of trash generated or recycled
- City government's conservation achievements, use of renewable energy, and the City government's own levels of recycling and trash generation
- Number of Golden's business accepting or providing locations for recyclable wastes

- Number of Golden's businesses and commercial buildings responding to the plan such as by seeking one or another sustainability certifications or having audits. (We recognize the success or failure of the economic health and sustainability portion of the plan depends upon businesses choosing to respond to it.)

Strategies and Tactics for Goal 1: Strategies to assist all local businesses with sustainable activities

- Brand Golden as green, although we would not necessarily use the word "green". We support existing EDComm efforts in this direction because we believe this will help Golden's existing businesses and make Golden more attractive to new businesses but have no specific recommendation beyond that.
- Provide consumers with information on sustainable resources and how to calculate carbon footprints (possibly a booth at the Farmers' Market and possibly a "Conservation Kiosk" in the Visitors Center, and possibly articles in the Golden Informer).
- Offer economic incentives such as reductions or abolition of building permit fees for businesses to put up wind turbines and solar energy collectors, conservation projects, and other projects enhancing sustainability. One way to define what projects get this exemption is to say it is anything that qualifies for Federal Energy Tax Credits.
- Create a local certification program, such as an energy-star and or sustainability-star program which businesses apply for and can display the logo of.
- Sponsor seminars on sustainable practices, probably put on by organizations rather than the City government.
- Conduct a series of “Sustainable Business Expos” to encourage local businesses to market sustainable products and services to Golden residents and to other businesses.
- Encourage businesses to work together in ways related toward sustainability that benefit them all.
- Encourage telecommuting.
- Provide information and education to existing businesses (particularly local, independent businesses that may not have access to information and education on the scale that larger businesses have) on how to become more energy efficient, how to maintain a competitive advantage and how to meet new markets created by this growing sector. This could be accomplished through both a virtual center (web site) as well as brochures, seminars, and workshops.
- Have the City government set an example.
- Encourage local business and other entities to adopt prominent environmentally “cool” practices, both for the environmental benefit and for the green branding benefit. One example would be environmentally friendly vans.
- Direct staff to research energy audit services. Xcel, NREL's Federal Energy Management Program, the Environmental Protection Agency Energy Star Program, the Governor's Office of Energy Management (OEM) have information on or conduct energy audits. (OEM and/or the Colorado Department of Health and Environment may be providing free energy audits.) and others to determine how Golden might provide energy audits for free or at discounted prices to Golden businesses and obtain audits for City-owned buildings. Several resources and contacts are provided in *Energy Efficiency: Bottom Line Opportunities for Metro Denver Companies*, June 2006, Metro Denver Economic Development Corporation.
- Help businesses conserve such as by reducing energy use and water use, and save money as a result. This could include free or low priced energy audits. Maybe we could do these for home-based businesses and even for all residents who want the audits. Audits are also a way to get baselines.
- Develop various partnerships to leverage City resources, e.g. work with Xcel, CSM, NREL, and local businesses to develop test/pilot projects. And encourage partnerships between landlords and tenants recognizing that many businesses do not own or control their place of business, although they pay the utility bills;
- Encourage local shopping to reduce miles traveled as well as helping local economy.
- Encourage businesses to provide more of the needs and desires of local population.

Strategies and Tactics for Goal 1: Strategies to assist local businesses to stay competitive and profit from the growing demand for sustainable products, services, and practices.

- Brand and market Golden as a center of sustainable and green practices, technologies, and businesses. (Many people in Golden are very interested in sustainability. Make Golden, and vicinity, a great place to go to learn about, support or participate in various sustainability activities.) And we need to do this branding in a way that seems fun and interesting and does not seem political or self-righteous.
- Green branding should be in the nature of “technological, engineering, problem-solving, leading edge, innovative, and profitably green”; as opposed to “politically correct green”, “greener than thou” or otherwise self-righteously green. And we see it as meshed with our historical and vacation branding as in "We value our history…and our future” to mesh with current branding.
- Place recycling bins in various conspicuous locations around the City, which will help to brand Golden as “green”, as well as increase recycling.
- Produce communications such as a brochure on the sustainable business practices of the businesses in the City. This could help reduce vehicle traffic, and support the economy.
- Establish a Sustainability Resource Center for residents, tourists and businesses, providing education and information about alternative energy and sustainable practices, as well as services and products available from Golden Businesses.
- Encourage formation or attraction of businesses which would further the green image/brand.
- Partner with NREL for a Visitor Center type display like a "Conservation Kiosk". Provide resources to help businesses implement conservation measures, such as reducing energy use and water use, and save money as a result.
- Green branding could include the City setting an example with conspicuous projects to help promote the green brand by going onto a greater proportion or even all renewable energy, by reducing trash generation and increasing recycling and/or putting solar hot water collector system on Recreation Center.
- Place wind and solar energy collectors and recycling bins by the City and/or by businesses, maybe especially in visible locations.
- Partner with businesses to act as resources for the community on sustainable products and services. (e.g. with hardware store(s) to provide products, services, and information).
- Develop and fund advertising, as Golden's Economic Development Commission is already planning to do, around a green-branding of the City.
- Sponsor and promote seminars and other information on the developing sustainability markets.
- Highlight existing businesses in the sustainability sectors with a business expo.
- Place signs about Golden's businesses and what they are doing for sustainability.

Measures for Goal 2:
Goals for new businesses or expansions of existing sustainability-sector businesses for next 10 years:

- 1 business with more than 50 employees
- 5 businesses with 5-50 employees
- 10 startups or businesses with 1-4 employees

Strategies and Tactics for Goal 2:

- -Partner with educational and research facilities, like the CSM Office of Technology Transfer (www.mines.edu/research/ott). See if we can get joint grants for scale-ups or other research where they can research application of their technologies on Golden's businesses, government buildings, or residential properties.
- -Establish/solicit/encourage establishment of a Golden Sustainable Business Incubator or research park specializing in or at least catering to businesses in the areas of sustainability, perhaps in partnership with local education and research facilities or businesses or developers. Examples include renewable energy companies, recycling companies, manufacturers who use recycled or recyclable materials, socially responsible financial services, companies who train and employ otherwise under-employed workers with excellent labor practices and benefits, cooperatives, and many others.
- -Establish a business cluster of businesses in sustainability-sectors. This would begin with studies. These existing resources & partnerships would include obvious world-class Golden based organizations CSM and

NREL, and also CU, CSU, NCAR, Colorado Collaboration, Colorado Fuel Cell Center, Golden Energy Computing Organization, Colorado Center for Biorefining and Biofuels, and Coors, which is national leader in bioethanol production. Explore partnerships with the school district, county, state, and federal agencies.

- -Provide subsidies or incentives which could be granted by the Council to promote goals 1 and 2. The purposes and limits of this program need to be defined effectively, so that the money goes only or primarily to support sustainability. For example we don't want a new retail store to qualify just because it sells some compact florescent light bulbs, or uses recycled paper bags, or stocks books on energy conservation, or sells some shade grown coffee. The basic purpose of the business would need to be sustainability, **or** the activity of an existing business would need to be toward greater sustainability for itself such as to install more insulation, to put up solar panels, or transition to a line of sustainability- sector products. Perhaps small grants to promote use of recycled materials or install energy efficient lighting could be included. Larger grants could be to encourage sustainability-sector business to form or locate here. This could include a carefully defined incentives package for grants exceeding City charter limits, which might be needed for an incubator or toward establishing a business cluster, to be proposed for voter consideration in 2008 or later.
- -Review existing home-based business ordinances and see where barriers exist that could be removed.
- -Work with Golden Economic Development Commission, Golden Urban Renewal Authority, Jefferson County government, governments of nearby cities, and Jefferson Economic Council to encourage development and growth of businesses in the sustainability sectors.
- -Consider promoting and encouraging desired developments that would bring businesses and job growth in sustainability sectors, by reviewing and updating our planned uses and zoning for industrial and commercial properties.
- -Remain financially attractive to existing and new companies and their employees by maintaining and even improving our situation regarding taxes; operating an effective, efficient, and fiscally responsible City government; and by ensuring that City regulations and ordinances do not provide unnecessary barriers to a vital economy.
- -Reinforce that Golden's natural environment, historic significance, historical resources, small town atmosphere, cultural resources, and educational and technical resources are all key to Golden's unique identity and economic vitality.

Other items not captured elsewhere

- A minority of members of this Subcommittee believe that as a part of the Sustainability Initiative we should also make efforts to attract/create new businesses which are not in the sustainability-sectors, for balance and to maintain the general health of our economy. The majority agreed that a healthy economy is important, even key, to pursuing greater sustainability, but believe that general efforts to attract/create business are outside the scope of the Sustainability Initiative.
- How do we encourage tourism and address access/mobility issues? A downtown commuter bus has been tried, but failed. Possibilities include a park & ride, making Golden a shopping/dining spot for gambling traffic.
- Village economy: encourage businesses and housing together as is happening in some places
- Vanover Park Tree – use a slice of the trunk to show Golden's history.
- Encourage and incentivize local businesses to use sustainable or returnable bags, containers, or packaging materials for the delivery of specified goods. Examples would include providing low cost "Sustainable Golden" shopping bags for sale at local businesses.

Education & Communications

Education and Communications Community Working Group: *Saoirse Charis-Graves (moderator), Marcia Claxton, Sabrina D'Agosta (City of Golden Communications Manager), Susan Peacock, Karen Smith, Steve Stevens, Adam Stevenson*

BACKGROUND

When the Golden's citizen-led Sustainability Initiative began, citizens identified education and communications as an area that needed to be addressed by a group separate from the original six identified. As such, this additional overarching group was formed and, unlike the other groups that had goals outlined for them to work from, the Education and Communications group had to develop its own mission (See **Goals** below).

Our group believes that a public education and information component is absolutely necessary to the city's sustainability efforts, and we feel strongly that it must be coupled with the more targeted strategies developed by the other Community Working Groups (CWG). As a result, our work focused on developing an overall strategy rather than individual action plans. We felt it was important to develop a framework that would enable us to begin examining how to successfully involve the public in broader city-wide sustainability efforts as soon as possible. We believe the framework we adopted will also be useful as the other CWGs plans are approved because it can be easily applied to more specific goals.

We drew upon existing research and models to develop a framework for communication and education. Specific resources include methodology developed by the Institute for Participatory Management and Planning, the Natural Capitalism Solutions' *Climate Protection Manual*, Doug McKenzie-Mohr's Community-Based Social Marketing model, and *Creating a Climate for Change: Communicating Climate Change and Facilitating Social Change* (S. C. Moser and L. Dilling, ed., February 2007). More information about each of these resources and our utilization of them is provided in the Addendum to this section.

Following the Community-Based Social Marketing model, we created a list of stakeholder groups and identified the unique barriers and benefits these groups may have regarding openness to and participation in the sustainability initiative. We have taken initial steps to develop programs that address as many perceived barriers and benefits for as many stakeholders as possible. In addition, an emphasis has been placed on programs and strategies that include a public commitment on the part of the participants because such programs are much more likely to produce behavior changes. Following this model will allow the City to implement the most effective education and communication programs because it specifically targets and seeks to provide solutions to the explicit reasons why people may not embrace the initiative and/or participate in the specific activities the City wants to encourage.

GOAL/OBJECTIVES

Working from the stated purpose of the Golden Sustainability Initiative, "to protect our quality of life and ensure a healthy, prosperous, sustainable community now and for the future," the Education and Communications group laid out a goal and two objectives as follows:

Increase our community's awareness of and encourage commitment to actively take part in sustainability as a public value that supports cultural, economic and environmental health for all citizens. Specifically:

- Create effective, ongoing two-way communication that informs, educates and inspires community involvement in city-wide sustainability efforts; and,

- Support the Community Working Groups in crafting community action plans that effectively foster sustainable behavior.

RECOMMENDATIONS

A. Sustainability Director

We recommend that the City Manager hire a staff member whose primary responsibility is to act as the city's Sustainability Director. We recommend that Council adopt an appropriate budget to properly staff this effort in 2008, with job description and search criteria defined in 2007.

> Rationale: According to the Rocky Mountain Institute, which has studied efforts by multiple communities to develop municipality-led sustainability programs, every community that is succeeding in fostering sustainable behaviors has a strong organizational framework that includes a dedicated program director. This person will be responsible for coordinating with multiple City departments as well as creating partnerships with community stakeholders and organizations. This position would be accountable for creating a schedule for sustainability programs and producing measurable results.
>
> Examples: A number of cities are currently posting job descriptions and hiring for similar positions (e.g., Beverly Hills, CA; Santa Rosa, CA; Eugene, OR). Members of a "Green Team" within the Steamboat Springs City government (population 9,815) are requesting a full-time sustainability coordinator to implement the city's new sustainability management plan. Carbondale, CO (pop. 5,196) created a full-time Energy Manager to implement their Energy & Climate Change Plan. Aspen, CO (pop. 5,804) employs a full-time Director to oversee the Aspen Canary Initiative Climate Action Plan.

B. Permanent Citizens Sustainability Group

We recommend that Council appoint a permanent citizens group (board/commission) on sustainability. Ideally, all significant stakeholder groups within the community would be represented. This group would be responsible for coordinating education and communication efforts in tandem with strategic planning for all sustainability efforts. The citizens sustainability group (CSG) would provide quarterly progress reports to Council, and conduct an annual review. The Sustainability Director would serve as the City staff liaison.

> Rationale: It is vital to involve key stakeholders as collaborative partners in implementing Golden's sustainability program. Through this process, citizen leaders help residents understand their choices, the resulting trade-offs, and are able to define everyone's role in implementation. They become active partners in achieving success and credible messengers on behalf of the overall program. Research indicates that people are persuaded to change their behavior by peers. Key individuals — those who are credible, trusted, legitimate leaders — are more effective in disseminating ideas about change to their communities.
>
> Examples: The City of Lawrence (Kansas) Sustainability Advisory Board is a 10-member Board appointed by the Mayor; members serve a three-year term. The purpose of the Lawrence Sustainability Advisory Board is to support, strengthen and expand recycling and resource conservation activities and programs. Eugene, Oregon passed an ordinance in February, 2007 creating a sustainability commission comprised of 12 citizens appointed for four-year terms and 1 City Councilor. Eugene's sustainability commission was created "to act as a policy advisory body … in the development or initiation of programs or actions that will enhance, develop and create sustainable practices within the community."
> Range of Alternatives: The CSG could vary by the following variables: size, length of term, selection process, and scope of authority (including budgetary authority).

C. "Branding the effort"

We recommend that the CSG and the Sustainability Director engage a marketing firm to create several name concepts with corresponding logos and any slogans, taglines and other visual materials necessary. These concepts should then be presented to focus groups consisting of a representative sample of a broad cross section of the Golden public. We recommend conducting this research in 2007 so that it can be applied to all of the efforts that will launch in 2008. Putting this off until 2008 would cause a significant delay in the launch of the program or else a premature launch of the program without an appropriately tested name and brand. The latter would create confusion for the public when a campaign is eventually rolled out.

Rationale: It is essential that solid market research be conducted using focus groups before any name, slogan or brand is decided. Choosing the wrong name — one that may not inspire or that may offend some — could potentially cripple the entire sustainability effort. Our own group discussions, while fruitful, failed to arrive at an obvious consensus. We have attached a list of some of the many ideas generated by the group (and others) for your perusal (see Addendum). Focus groups would be the strongest way to get citizen feedback on the various options, and they would also allow us to "drill down" and find out exactly why someone reacts positively or negatively to any given name or image.

Examples: There are many examples of communities that have adopted the terms "sustainable" or "sustainability." Others have chosen to focus on climate change and/or global warming. Other communities have adopted a "green" label. These examples provide a wide selection to choose from as the basis for initial marketing research.

Range of Alternatives: The level of effort and breadth of scope will be determined by the budget allocated to this task.

D. Education and Communications Strategies

As discussed above, our group followed the Community-Based Social Marketing model to begin developing education and communications strategies. This process, described further in the Addendum (see Table in Addendum), entailed creating a list of groups or organizations with a "perceived interest" in a community sustainability initiative, grouping stakeholders by perceived interest (e.g., homeowners), identifying unique barriers and benefits these stakeholder groups might have, and developing a variety of educational venues. We recommend that Council task the CSG with using the stakeholder/benefits-barriers method we have initiated to identify specific strategies for achieving specific program goals. These focused strategies would support all elements of the sustainability initiative and would reach all stakeholders. These strategies can address both voluntary initiatives and mandates, if mandates are enacted.

We recommend that Council provide an appropriate budget for implementation of the sustainability education/communications program, beginning with a general education/communications effort in the first half of 2008 and followed by the launch and implementation of programs designed to achieve the specific goals of the other CWGs. To ensure that all CWGs implement this unified package of focused strategies/methods as well as a coordinated rollout of individual programs, we recommend that the CSG and Sustainability Director oversee all programs related to this sustainability initiative.

Our CWG developed a number of sample programs that could be implemented for broad sustainability education goals and some specific goal areas. These sample programs are summarized below and spelled out in detail in the Addendum:

- "All in Degrees" – a community-wide plan by which citizens can adopt their own individual sustainability goals and actions to achieve them, and publicly pledge their commitment via household window "thermometers"
- Public Art Project – create roving large-scale public art pieces reflecting various areas of sustainability and invite the community to add to them
- Creation of a program series for Golden's cable Channel 8 and in the Golden Informer recognizing and promoting examples of successful local sustainability programs and citizen and business efforts to the broader community
- Educational programs in conjunction with the community's primary and secondary schools, and Colorado School of Mines
    - Collaboration with Colorado School of Mines to convert the Mt. Zion M-blem to sustainability appropriate symbols (like the reduce-reuse-recycle arrows) and maybe even converting the M-blem to solar power
    - A sustainability play geared toward school children
- Interactive booth at Golden Farmers' Market
- A sustainability bus demonstrating a variety of sustainability measures
- A home energy makeover contest
- Working with local/regional realtors to incorporate energy efficiency as a marketing tool and perhaps provide energy audits to home sellers

- Street theater incorporating giveaway items promoting sustainability
- Offering a series of classes through the Golden Community Center (e.g., Green Team, Low Cardon Diet) to provide a step-by-step plan for turning concern about the problem to actual in sustainable behaviors, household by household with social support built in.
- Including a Buffalo Bill Days Best of the West Parade entry for sustainable vehicles, including partnership with local car dealerships.
- "Green is the new black" — fashion show with Golden clothing shops featuring "green" materials and/or even recycled (aka vintage) clothing.

It is anticipated that all of the efforts detailed above could be accomplished by a combination of:

- Partnerships with existing stakeholder groups;
- Partnerships with key organizations already providing education and training on sustainability issues (e.g., National Renewable Energy Lab — see Addendum for discussion);
- Partnerships with local schools at the primary, secondary, and higher education levels (e.g., Colorado School of Mines — see Addendum for discussion);
- Tapping into volunteer resources;
- Hiring an outside marketing firm, such as the City's Economic Development Commission (EDComm) employs for community marketing; and/or,
- Hiring additional City staff with a communications/marketing/graphic design background.

Rationale: These strategies were developed through a rigorous process intended to produce the most comprehensive and effective education/communication programs (See Table in Addendum). Adopting strategies in a piece-meal fashion dilutes their effectiveness. Furthermore, current research on effective strategies suggests that a community will engage more easily in behavior change if they are receiving a common, achievable, and compelling vision of a desirable future and the path for getting there. It is not enough to identify possible actions. Change will occur most effectively by creating a vibrant vision together, drawing up pathways for getting there, and supporting each other in working toward this goal. (*Creating a Climate for Change*, Moser & Dilling, 2007)

Examples: Some municipalities and utilities in Colorado have already invested in education of sustainable practices. In many cases, the municipality-led efforts have been limited to endorsing education efforts by non-profit organizations. In other Colorado communities, a number of organizations have joined together to sponsor educational events, such as the annual Rocky Mountain Sustainable Living Association's Sustainable Living Fair in Fort Collins and the recent Boulder Global Warming Expo. Across the US, other communities are taking steps to spread messages about sustainability. Two examples of city-sponsored education efforts are Salt Lake City Green (http://www.slcgreen.com/) and the Live Green campaign in Plano, Texas (http://www.plano.gov/Departments/Environmental+Services/GreenLiving/). A number of organizations in Colorado, listed in the Addendum, could be valuable partners to Golden's program. (See Addendum for links to local and national organizations providing sustainability-related education.)

Range of Alternatives: The City could solicit the services of a highly effective social marketing subject matter expert, e.g., Natural Capitalism Solutions, to guide and advance implementation strategies for effective behavior change actions and to recommend possible funding streams, partnership opportunities, and other program development both short- and long-term. Alternatively, the City could adopt existing programs that are less tailored to our community but still based on sound social marketing strategies, under the guidance of the CSG and the Sustainability Director. Also, the City could choose to underwrite the full cost of the education/communications program or it could rely extensively upon partnerships to leverage the City's investment.

E. Evaluating Success

We recommend that Council evaluate the success of the sustainability program based on both qualitative and quantitative measures by conducting a statistically valid telephone survey specifically on sustainability (separate from the city's annual citizen's survey). An initial survey in late 2007 could be conducted to set a baseline by which to measure progress. We recommend this survey then be conducted annually. This survey will allow the ongoing

CSG and Sustainability Director to evaluate which programs are working and which are not, and make recommendations to Council on which should continue with funding into the future.

Rationale: Our group looked at how to best measure the effectiveness and success of any given program and of the education and communications efforts overall. While education and communications efforts can be difficult to measure with quantifiable data, the above measures, along with many qualitative measures, would accomplish this aim.

Examples: Santa Monica, CA released a Report Card to measure and report their indicator progress. The report card describes how the City is meeting its goals and highlights challenges and successes. Golden's annual Citizens Survey is a good example of how a telephone survey can be used to measure citizen satisfaction and engagement, and improvement from year to year. This can be paired with the annual report to Council by the CSG and Sustainability Director to ensure accountability.

Range of Alternatives: The City could conduct the sustainability survey annually or biannually. Budget considerations could determine the length of the survey.

TIME FRAME FOR RECOMMENDATIONS

	Recommendations	**2007**	**2008**	**2009-2017**
A	Sustainability Director	x	x	x
B	Permanent Citizens Sustainability Group	x	x	x
C	"Branding the Effort"	x		
D	Education and Communications Strategies/Methods	x	x	x
E	Evaluating Success	x	x	x

ADDENDUM: BACKGROUND

Community-Based Social Marketing (CBSM) (http://www.cbsm.com/) was developed by Douglas McKenzie-Mohr, environmental psychologist, as a response to extensive research showing that environmental programs driven solely by public education/information campaigns are ineffective. Instead, research indicates, people have the information but lack the motivation to overcome their barriers to change day-to-day behaviors. CBSM helps program initiators design and evaluate programs to overcome barriers to change and thus foster sustainable behavior.

The Institute for Participatory Management & Planning (http://www.ipmp-bleiker.com/) is devoted to helping make public-sector agencies more effective in accomplishing their missions through the use of a unique methodology, which City staff currently utilize in their program planning. Using these methods, we began by trying to identify as many Potentially-Affected Interests (or stakeholders and stakeholder groups) as we could. The idea was to create a comprehensive list of all the different types of people or groups living, working or spending time in Golden.

Natural Capitalism Solutions (NCS) (http://www.natcapsolutions.org/home.htm) is a Colorado-based nonprofit widely recognized for its leadership in educating decision-makers about the principles of sustainability. NCS creates innovative, practical tools and implementation strategies for companies, communities and countries utilizing a unique whole-system approach. They recently developed a *Climate Protection Manual for Cities* that shows mayors and municipalities how to reduce greenhouse gas emissions in their unique community; this manual was released at the ICLEI Sundance Summit. The Education/Communications CWG incorporated elements from this manual addressing stakeholder engagement and long-term initiatives to support sustainability.

Creating a Climate for Change: Communicating Climate Change and Facilitating Social Change, edited by Susanne C. Moser and Lisa Dilling, published February 2007. This book is the first to take a comprehensive look at communication and social change specifically targeted to the impacts of climate change. It is a unique collection of ideas examining the challenges associated with communicating about climate change in order to facilitate societal response. It offers well-founded, practical suggestions on how to communicate climate change and how to approach

related social change more effectively. Specifically, it gives many examples of how to excite and engage different audiences constructively in cultivating sustainable behavior.

Addendum: **"Branding the Effort"**

This is a list of potential slogans for Golden's sustainability effort:

Sustaining Golden's Future
Greening of Golden
Golden's Going Green
A Greener Golden
A Brighter Future for Golden
Sustainable Golden
Conserving Today, Preserving Tomorrow
Golden's Vibrant Future
Sustainable Golden: A Vibrant Future
People, Profit, Planet
Reduce, Reuse, Recycle
Golden Age to Golden Future
Gateway to Golden Future
Future Golden
Golden Green
Go Golden, Go Green
A Brighter, More Sustainable Golden
A Brighter Golden, A Sustainable Future
Sustains Golden's Brilliance
Working Together to Sustain the Golden Glow
The Golden Glow in the West
Sustaining the Golden Brilliance
Sustain Golden's Glimmer
Sustain Golden's Shine
Sustain the Golden Glow in the West
Working Together to Sustain the Golden Glow
Sustainability: the Enduring Gem in the Golden Setting
Where the West Conserves
Where the West Recycles
Where the West Energizes Renewably
Where the West Lives … Sustainably!

ADDENDUM: EDUCATION AND COMMUNICATIONS STRATEGIES/METHODS

Education/Information Sharing:

- workshop / film / author series / (both general and/or topic-specific; e.g., workshop for real estate agents about mandated audit for real estate listings)
- print publications (Golden Informer, Golden Transcript, Rocky Mountain News, Denver Post)
- electronic publications & info sharing methods (cutting edge interactive website, eblasts, enewsletter, egroups)
- speakers bureau
- database of stakeholder organizations & stakeholder groups
- traveling exhibits / kiosks / hands-on demonstrations / tours
- information resource "bank"
    - Two-way, i.e., clearinghouse for referrals to participating merchants/businesses, service industries (e.g., green painters, green cleaning services, etc.). Also, support for educational resources (e.g., relevant websites), helping citizens/businesses find desired information

"Motivating" Programs:

- Green Teams / EcoTeams / Low Carbon Diet program / 10% Challenge
  neighborhoods
  businesses ("like" groups support one another, e.g., restaurants, downtown merchants, etc., pair up or team up to motivate/support each other)
- awards / publicity for "going green"
    - PROFILES / Awards profiling businesses, builders, citizens
- community competition: e.g., "theme of the month", home energy make-over (maybe a donation from CERC)
- endorsement/certification program (similar to Salt Lake City) / energy "pledge"
- voluntary energy "audit" (homes and businesses)

Outreach (personal contact):

- HOAs, apartment complexes, block parties
- Buffalo Bill Days, Mesa Music Fest with sustainability theme, Farmers' Market (solar oven bake sale)
- City sustainability/community fair [Rocky Mountain Sustainable Living Fair and Tour de Fat, examples of partnership with sponsoring agency/organization]
- Chamber of Commerce, local merchants
- solicit partnerships with energy-education organizations, e.g., Colorado Energy Science Center, National Renewable Energy Laboratory
- schools
    - Colorado School of Mines: explore partnership, internships, curricula-based projects
    - Jeffco/charter/private schools: PTAs, clubs, science fairs, student logo contest, car idling, safe route programs
- local citizen groups: nonprofit / activist / cultural / museums
    - customized "projects" tied to "mission", e.g., suggest recycled art "exhibit" to Foothills Art Center
    - partner with Miners Alley playhouse in sustainability-themed theater production
- service projects for citizen groups: service / social / faith-based
- organized non-car trips (bike/hike, etc.)

Promotional products:

- give-aways: CFLs; prompts for classrooms, comm'ty spaces (e.g., sticker for light switches), info for energy/water/other audits, canvas bags, etc. These could go into "welcome basket" for all new residents, could also go to new homeowners at time of closing.
- low-cost or promotional price: bike & pedestrian maps, coffee mugs, water bottles

"All In Degrees"

The Sustainability Education and Communications working group could create a program called "All In Degrees." This program would acknowledge the fact that the biggest barrier to change for all citizens is making and adjusting to change in their lives.

The program would entail creating a thermometer drawing with five or 10 blank lines spaced out equally along one side. Accompanying the thermometer would be a list of say 30-100 things people could do in their homes and workplaces to live more sustainably. A letter would ask citizens to commit themselves to sustainability "in degrees" by taking small steps toward much larger collective change. We would ask people to pick one thing from the list that they will commit to doing for/in the following six weeks. This might be changing all the bulbs in the house to CFLs, it might be to start recycling, it might be to insulate the attic, bike to work once a week – whatever they can commit to doing.

We would ask them to write down that goal on the bottom blank line on the thermometer and hang it in the window of their home to proudly proclaim their dedication to sustainability – to say "I'm doing my part." This concept takes advantage of environmental psychologist Doug McKenzie-Mohr's concept of making a public commitment. He claims that making a commitment, combined with making it a public commitment greatly increases the success of these types of programs.

Once the citizen has achieved their publicly stated objective, we would ask them to color in that section of their thermometer and move on to a new goal, which would go on the next line up. The idea is that by making one change (no matter how small) in our lives and committing to it for a period of even just six weeks, we can create lasting change in our lives. As we continue this process, over time, all of the small changes we each make add up to a significant contribution.

We could then ask citizens to continue this process until they have "filled" their thermometer, at which time, we would ask them to copy it and send it in to the City with their name and address, and, if they would like, an accompanying photo. Some of these stories could be chosen for publication in the Informer, reinforcing the public commitment aspect of the program, and further educating others in the community to the value of taking change in degrees.

We could also use citizens filled thermometers to create a community-wide huge thermometer outside City Hall, maybe even somewhere more visible, like downtown (the arch or Visitors Center?). The large scale community thermometer could include a display that explains to passersby about the program. We could set a goal of say 50% of the households in Golden completing our challenge and put that number on the top of the thermometer. We could then color in the thermometer for every 25 of the citizens' thermometers we receive back.

Of course, this is a long-term program, which means we would want to offer some incentive to citizens for not only participating, but keeping track over the long term and also for taking the time to send them in to the City when complete. Perhaps we could solicit businesses in town to help us come up with a giveaway idea. Perhaps Home Depot or Myers would be willing to give out a coupon for one free CFL and an auto store could comp free tire gages, and maybe the City would do free passes to the Splash – soliciting small things from lots of places could add up to a nice package you receive if you complete the thermometer and send it in.

This program could be easily publicized in the *Informer* and via press release to local media. It would probably also be extremely beneficial to have The CSG go to HOAs and service organizations and tell them about it in person, creating valuable personal contact.

A major upside to this program is that it would cost the City virtually nothing to run if the CSG would take on the leg work of administering the program. Additionally, the City organization could be asked to join in with each of the divisions and departments creating their own thermometers and contributing those to a large City internal thermometer.

This program could be started up immediately at little cost and carried out throughout the winter months when other programs would be difficult to do. The program should probably be limited to several months long. It would serve the valuable purpose of bringing visibility to and encouraging interest and participation in the sustainability efforts as it officially kicks off and gets under way.

Public Art Project

Each of the CWGs should be asked to come up with its own large-scale piece of public art. Each group's piece should reflect its work area (water, recycling, etc.) in the most creative way possible. The work should be light enough and stable enough to endure being outside in the elements for long periods of time and to be easily transported from one place to another. Each group will understand that the goal is for the pieces to elicit the public to add to the artwork when they come across the various pieces and in a manner they see fit. As such, a means for

writing on them, pinning things to them, etc., should be incorporated into the design. The CWGs could create their works of art throughout the winter and roll them out in the Spring when weather permits.

Ideally, no one would know about this program outside of the Sustainability Initiative until after it launched. A press release and article in the Informer would be issued letting people know about what the program is and that they can be looking for the pieces a week after the launch to build suspense. The Education and Communications CWG would place its piece Placing one of these pieces (probably the education group's) in the *Golden Transcript's* parking lot would compel the newspaper to acknowledge its existence and write a story on it. Imagine – the first week they have to write a story that a random object was found in their parking lot and they have no idea what it is, then the next week they receive a press release telling them about the program and a follow up story is written. It could be lots of fun.

These pieces would be placed at various random locations throughout the city. They would randomly be moved to new locations. Some could be in very public places, like in front of an elementary school (or in the art classroom with the cooperation of an art teacher), or at the Visitors Center, or on a path of the golf course, at a City Council meeting, or in a hidden corner at Heritage Square. We could make this like a game of "Where's Waldo" for the public.

The press release and article in the *Informer* would explain that we want people to contribute to the art pieces by contributing their own thoughts on each of the subjects as they come across the pieces in public. It could get really wild with amazingly complex collages with tons of written messages and even some things being tacked on or taped to them.

In the end, all seven of the pieces could be placed on display in one place, like Stonehenge, in the middle of a park. This could be accompanied by a display explaining the initiative and what the public art is.

This concept utilizes the idea of public art and mystery to stimulate curiosity and excitement about what we are doing and spurs the citizenry to think and talk about what sustainability means to them.

This would also cost the City little or nothing, with the exception of possibly providing a truck and driver to help move the pieces. Having the CWGs move their own sculptures whenever they want and to what ever places would be much better and would ensure the creation of light, moveable pieces of art.

Channel 8 Programming

The Education and Communications Group could film an ongoing series on Sustainability and work with Media Services Capt. Tom Young in the Golden Fire Department to professionally edit it for Channel 8 broadcast. This could include interviewing each of the working groups about their proposals as well as taping the presentations to Council and doing shows about the education strategies being employed. This could be done at relatively little cost to the City as we can train our group to use our equipment to film and all editing can be done in-house.

This programming could also be made available on the City's web site, but this would have an initial cost of several hundred dollars and then would require a monthly hosting fee.

Educating Youth

Educating the youth of our community on the benefits and objectives of the Golden Sustainability Initiative is key to promoting the initiative community-wide. Children have open minds and are often enthusiastic about educating their parents. With adequate planning and organization, education on sustainability issues should complement and supplement existing school curricula and educational standards.

The City of Golden could develop a wide variety of educational programs in conjunction with the community's primary and secondary schools, as well as with the Colorado School of Mines (CSM). The educational programs could span all topics relevant to the Golden Sustainability Initiative and could be a combination of one-time educational events, as well as ongoing opportunities. Specific content and structure of the programs would vary by age group and, potentially, by individual schools. Collaboration between schools could occur, wherever appropriate.

In order to develop the most beneficial programs, the City should work directly with school principals, parent-teacher associations (PTAs), and individual teachers or professors. Potential educational programs at the primary and secondary levels could include (1) hosting art contests to produce illustrations to supplement City-sponsored advertising; (2) developing thematic material for science fairs or contests; (3) sponsoring classroom-based educational programs or school-wide assemblies; (4) supporting the creation of sustainability groups within individual schools; and (5) providing educational materials specific to school-related sustainability issues (e.g., to discourage car idling; encourage recycling, conservation, composting, etc.; educate regarding bicycle safety and

alternative transportation methods). Regarding the CSM, the City could work with the school's newly formed sustainability organization to augment the efforts of that organization and develop collaborative relationships of mutual benefit. CSM students could possibly serve as a resource supporting educational programs in the local primary and secondary schools.

The costs of educational programs could vary widely depending upon specific details. School resources typically are quite limited; however, financial support from the PTAs should be thoroughly explored as well as school district funds and grant opportunities.

Golden Farmers' Market

The Golden Sustainability Initiative could be promoted by having a stand / kiosk at the weekly farmers market in Golden. During the first few weeks, the large display boards from the first town meeting of the city's initiatives and goals could be displayed. These could serve as an educational spring board to make more folks aware of what the City is doing as well as talk more about the goals. From week to week, the displays could shift to cover all the goals and topics of interest.

Sustainability Bio-Bus

The NOLS (National Outdoor Leadership School) has purchased a 36-ft bus for their national road-trip educational series. The catch – this bus is equipped with a on-board fuel system designed to run on waste vegetable oil and 8 solar PV modules on the roof to support all of their electrical needs. http://www.nols.edu/bus/

The City of Golden, in partnership with a coalition of corporate sponsors, could purchase a diesel bus of some size, and have it converted into a traveling kiosk / free-shuttle for the City and its sustainability initiatives.

- The City would have to purchase the bus.
- Local residents / garages could sponsor/provide the change (do the work) to retro-fit it to process its own vegetable oil. (This is not a hard process)
- Local restaurants (Chinese food and Mexican food works best - and we have lots of those) could supply the vegetable oil.
- The bus would act as a mobile kiosk for events anywhere in Jefferson County (or the state) to provide education and publicity on any number of topics.
- Install recycling bins on the bus -- so in addition to educating on renewable energies, it acts as a traveling recycling bin for events.
- Install water filtration / purification system on the bus to offer re-fill of water bottles at events.
- The bus could double as a Golden free-shuttle

Partnership with Realtors

The City could actively work with Chamber of Commerce and Local Real Estate commission and agents to increase the marketing of Energy Efficient homes during the sale.

- Real-estate agent sponsored energy audits by the selling agent to both encourage seller to make simple modifications to increase the energy efficiency of a home for marketing purposes, as well as market the house base on efficiency.
- Add 'symbol' to the MLS to allow homes to list (be searched upon) energy efficient labels (Built-Green, Energy-Star, etc) and/or maybe a energy rating – that ultimately compares the overall efficiency or footprint of your home to other homes in your community.

While this might sound like a goal of the Building Group (it is), by working with CoC and RE-agents, it will also be a tool to both affect and educate many members of the community during the time of sale or purchase of a new home.

Recognition of Sustainability "Stars"

The City could create a sustainable 'person of the month' and 'home of the month' and 'business of the month' program. Winners would be profiled in the Informer each month, including details on what they to achieve this award. The City could also consider selecting a winning home for an open-house to allow others in the community to see what they have done, as well as to report the statistics of their investments and benefits. This would create a

monthly article to the community which would hopefully educate people on what they could do to lead a more sustainable lifestyle.

Mt. Zion "M"

Ask the Colorado School of Mines to convert the "M" into appropriate symbols during the GSI kickoff week.

- Reduce/Reuse/Recycle arrows
- a green "G"
- outline of the Castle Rock mesa (as in the City logo)
- GSI logo or slogan, TBD

Street Theater

As a form of street theater, a person in an appropriately goofy costume could wander festivals, downtown and Clear Creek on busy weekends. He/she could distribute a "10 things you can do" list printed--not on paper--but on something reusable or functional, such as:.

- water bottle
- cloth shopping bag
- refrigerator magnet

The cost of the items could be off-set by printing corporate logos.

These "10 things" would be simple, immediate things an individual could do with out much, or any, expense. E.g.: conserve water; recycle; BYOB (bag) to the store; convert to CFL's; shop locally; walk/cycle/bus/carpool; turn off unused lights; etc. (Hopefully with a bit of humor thrown in, as in "Save water, shower with a friend.")

The organizers could enlist members of the (award winning!) Golden High School percussion team (or other musicians) to tag along with the "green machine" guy to "Beat the Heat."

Sustainability Play

Plays and movies tell stories and sell ideas. Venues could include schools and neighborhood theaters. One possible idea would be a play that shows kids as heroes, getting involved in adopting sustainable practices, with a slower but well-intentioned adult coming along and taking the necessary actions after being informed. The point of this play would be to get the dollar savings by "finding" money in the attic, in the car, in the basement, utility room, on the bike, on the bus, etc. The child would be the instigator, forcing the awareness and action. Having individual student groups perform a play such as this could be very engaging.

Partnerships with Key Organizations, Higher Education: National Renewable Energy Laboratory (NREL) and Colorado School of Mines (CSM)

Rationale: NREL and CSM have scientific and intellectual resources to support sustainability programs that Golden could never duplicate in-house. Golden is a convenient laboratory for demonstrating projects and ideas that have been, or could be, developed by NREL and CSM staff. Since NREL and CSM personnel work here, and many live here, they are likely to be relatively easily motivated to work on projects in Golden.

Examples: NREL and CSM have entered into collaborative agreements with one another and with the University of Colorado and Colorado State University to promote sustainable communities. Both have implemented sustainability programs in advance of Golden's sustainability initiative. Fort Collins is an example of a City that has worked with its local university to conserve energy and increase use of renewable energy sources. CSM has collaborated with the City of Golden to upgrade facilities and processes in the Water Treatment Plant.

Local and National Organizations Involved in Education for Sustainability

Connected Organizations for a Responsible Economy (http://www.corecolorado.org/)
Colorado Alliance for Environmental Education (http://www.caee.org/)
Colorado Energy Science Center (http://www.energyscience.org/index.html) and its Smart Energy Living program (http://www.smartenergyliving.org/cm/Home.html)
Colorado Office for Resource Efficiency (http://www.aspencore.org/)
Colorado School of Mines and its Colorado Energy Research Institute (http://ceri-mines.org/)
Colorado Renewable Energy Society (http://www.cres-energy.org/)
ConservED Project (http://conserved.the-member-ship.com/)
Greenprint Denver (http://www.greenprintdenver.org/)
Homeenergy.org (http://www.homeenergy.org/index.php)
National Renewable Energy Laboratory (http://www.nrel.gov/learning/)
Natural Capitalism Solutions (http://www.natcapsolutions.org/ and http://www.climatemanual.org/Cities/Chapter5/LongTermInitiatives/CPM_Chapter5_LocalActionPlan_LongTermInitiatives_Education.htm#resources)
Rocky Mountain Institute (http://www.rmi.org/)
Solar Energy International (http://www.solarenergy.org).
U.S. Department of Energy, Energy Efficiency and Renewable Energy (http://www.eere.energy.gov/consumer/)
U.S. Department of Energy, Energy Savers.gov (http://energysavers.gov/)
U.S. Environmental Protection Agency's Energy Star Program (http://www.energystar.gov/) Xcel Energy (http://www.corecolorado.org/)

EXTENDED STAKEHOLDER PROFILES

NOTE: The following table is included here to represent our process for targeting strategies and methods to specific stakeholder groups. Our intention is to identify programs that best overcome the "perceived barriers" experienced by the stakeholder groups. We intend to begin with programs that address perceived barriers of the broadest stakeholder group, then supplement with programs that address perceived barriers for smaller stakeholder groups not already captured. All programs outlined in the Addendum under Education/Communications Strategies were taken from Column Four, Focused Strategies/Methods. This general process of identifying targeted strategies for overcoming perceived barriers of our stakeholder groups is recommended by the Education/Communications CWG for strategic planning of implementing specific programs recommended by other sustainability CWGs.

Goal: Aware & committed	**Projected profile**	**Perceived benefits of changing behavior**	**Perceived barriers to changing behavior**	**Focused strategies/methods**
Homeowners (includes HOAs)	• Includes families and singles, middle- or high-income brackets • broad range from those with time to those with none • more likely to invest in home • may already be engaged in reducing energy consumption • broad range of conservative to liberal views affecting view of sustainability • may be resistant to activities that change appearance of home exterior, turf, etc. • may not be aware of opportunity for individual savings from individual actions • may be subject to HOA restrictions	• Community pride • Fear of climate change • Save money long-term • Tax and rebate benefits • Affordable • Better health, air/breathing • Personal comfort • Feel good • Save the planet • Aligns with "green" beliefs • Sense of personal responsibility • Legacy for children, grandchildren • Social status, peer approval	• HOA may disallow • Lifestyle changes • Knowledge of how to • Costs too much • Too much effort • Labor intensive • Resistance to change • Forget • Convenience • Not available • No incentive • Aesthetics • Limited space • "green" resistant • payback/payoff too long-term • don't understand tax and rebate benefits • religious beliefs • Fear of regulatory control	• Personal contact • Visual prompts • Organize neighborhood "teams" • In-school programs to involve at family level • Profile engaged citizens • Profile citizen efforts to change • Single-topic workshops with demos, how-tos, follow up • Community-wide program • Comm'ty center classes for tots, seniors, gardeners, etc. • Recruit **great** teachers for workshops • Early outreach to citizens • Invitations to participate in small actions • Presentations to HOAs

Goal: Aware & committed	Projected profile	Perceived benefits of changing behavior	Perceived barriers to changing behavior	Focused strategies/methods
Renterss (includes Landlords)	• College students ▪ Younger crowd ▪ May perceive as having less time ▪ Low or limited income ▪ Possibly already educated on topics ▪ Possibly passionate about the topic, open to newer and more extreme ideas (not set in their ways) ▪ Less certain of future plans • Lower or fixed incomes ▪ Possibly lower education ▪ Possibly lower awareness on topics ▪ Most to gain from big $$$ saving on small changes to lifestyle • Younger and/or not fixed to an area ▪ May have more disposable income ▪ Possibly already educated on topics ▪ Could range from lower to higher education brackets ▪ Could range from lower to higher income brackets	• Save planet! • Feel good • Save money in utilities bill • Sense of personal responsibility • Social status, Peer approval • Fear of climate change • Community pride • Personal pride • Better health, air/breathing • Personal comfort • Aligns with "green" beliefs • Sense of personal responsibility • Legacy for children, grandchildren • Ease of monthly expenses • Be educated for when they do one-day purchase a home	• no budget for "nonessentials" • costs too much upfront • not invested in Golden's future • short-term resident • payback too long-term • no incentive • too much time/effort • lacks awareness of science • lacks awareness of what they can do • limited ability to change surroundings if not a home owner	RENTERS: • educate on zero and low cost alternatives to current lifestyle • educate on near-term and immediate savings • educate simple alternatives to current lifestyles • educate on global impacts of choices LANDLORDS: • promote existing and new complexes (apartments, dorms) to be more green • promote existing complexes to offer immediate green alternatives (local recycling bins, efficient appliances, etc) • promote existing and new complexes to install local utility meters in all units (ends sense of free utilities from a complex if taken to the individual level)

	• Common to all sub-groups ▪ May be more interested in immediate or short-term payback ▪ Less likely to remain in Golden long-term ▪ Large education range ▪ Less likely to care (or have control over) building or property related topics			

Goal: Aware & committed	**Projected profile**	**Perceived benefits of changing behavior**	**Perceived barriers to changing behavior**	**Focused strategies/methods**
Business Owners: merchants + restaurants + healthcare + service industry	• Need to show a profit to stay in business • ranges from small single owner to multiple-site corporation • has a reason for being located in small town Golden • likely to be concerned about mandates • likely to be interested in incentive programs • ranges from long-term to short-term in Golden	• Attract customers with "green" certification • Reduce cost of overhead for utilities • Positive leadership • Look good to city, customers • Community pride • Sense of personal responsibility	• May cost more upfront • Labor intensive • Lack space • No requirement • Employees not committed • Payback too long-term • Lack knowledge how to • Convenience of status quo • No incentive • Fear of regulatory control	• Recruit business **leaders** • Partner with groceries, hardware stores • In store audits (voluntary) • Profile engaged business owners • Profile businesses involved in change action • Refer business to "green" businesses • Annual awards • Offer workshops for employees • Create business "teams" for support in changes, give examples of how to • Recruit business "leaders" for ongoing Sustainability Council

Goal: Aware & committed	Projected profile	Perceived benefits of changing behavior	Perceived barriers to changing behavior	Focused strategies/methods
Builders/ Developers realtors • architects	• need to show profit to stay in business • may be accustomed to status quo, resistant to change • may foresee changes, want to be proactive • sensitive to financial climate • sensitive to interest rates • sensitive to future market potential	• Positive leadership • Attract buyers with innovation • Status in community • Save the planet • Concern for legacy of children, grandchildren • Fear of climate change • Sense of personal responsibility • Community pride • Aligns with "green" beliefs	• Knowledge of how to • Costs too much • Too much effort • Labor intensive • Resistant to change • Difficult to change habits • Convenience • Lack of availability • No incentive • No requirement • Aesthetics • Legality • "green" resistant • payback too long-term • Fear of regulatory control	• Spotlight green builders • Certification of green builders • Create "green teams" for stream of knowledge, examples, support • Arrange workshops for builders, employees • Share knowledge about other communities, payoffs, etc. • Solicit expertise • Hear opinions • Early outreach • Invitations to participate • Deal with fears about proposed changes • Recruit "leaders"

Goal: Aware & committed	Projected profile	Perceived benefits of changing behavior	Perceived barriers to changing behavior	Focused strategies/methods
Educators and students	• Colorado School of Mines, includes both faculty and students • High level of education • Already aligned with science of climate change • Critical mass of population • Have already initiated programs and awareness of climate change • Knowledge base is deep and broad •	• Save planet! • Feel good • Save money in utilities bill • Sense of personal responsibility • Social status, peer approval • Fear of climate change • Community pride • Better health, air/breathing • Personal comfort • Aligns with "green" beliefs • Sense of personal responsibility	• Lack of leadership • Too busy • Not clearly tied to specific curricula • Lack of attachment to comm'ty	• outreach, set up partnerships with faculty/student groups • establish internships with City programs • film/speaker series • merge with specific curricula

	• Jeffco Schools, including charter schools plus some private schools • ages range from preschool to high school • includes adult staff • age range from young children to teens in student population • families of children reside in Golden, ~ 25% of homeowners • children tuned into saving animals, people in need, etc. • children bring enthusiasm and energy • science and math is core topic in all schools parents like to support/purchase student-made art, projects, etc. • new HS with energy saving and "green" • Compass Montessori "Sustainability Farm"	• Save planet! • Feel good • Fear of climate change • Community pride • Better health, air/breathing • Aligns with "green" beliefs • Sense of personal responsibility	• Lack of leadership • Too busy • Conflict with existing curricula	• outreach to elementary schools • student logo contest, • partnership to print up on canvas bags • Support to school science fairs • Partner with PTA to develop extracurricular clubs, contests, activities • Film and speaker series • Tours of new high school, sustainability farm • Speaker: architect of new HS • Service projects

Goal: Aware & committed	Projected profile	Perceived benefits of changing behavior	Perceived barriers to changing behavior	Focused strategies/methods
Citizens groups, service groups	• purpose is already defined • have interest in serving the needs of their membership • already organized • some have space in which to meet • some already keyed in to serving community • members already have social interest in serving community of Golden • may be interested in partnership with Golden as part of curriculum • individuals may be interested in partnership with Golden as part of study project or research project	• Have Golden's best interests at heart • Self improvement • Meeting diverse needs of members • Part of community wide effort	• May not fit with organization's primary purpose • Too many things already on agenda • People too busy, rely on volunteers	• website, workshop series at library, comm'ty center • Use meeting rooms, facilities • Sponsor workshops • Host speaker on sustainability • Display exhibit • Service project, e.g. church youth group • Fundraisers • Publicity, participation, partnership possibilities

Goal: Aware & committed	Projected profile	Perceived benefits of changing behavior	Perceived barriers to changing behavior	Focused strategies/methods
Local Activist Groups	• may already have investment in "green" activities • already have "passion" for action/change • memberships may be outdoors-oriented, special interest in preserving environment • accustomed to providing leadership for change	• Build on what they already are doing • Offer another avenue to achieve goals • Partnering opportunities for success • Increased awareness of what they do – more members • Enthusiasm	• May have too specific agenda • May "turn off" others who have negative opinion of group	• early outreach • invitations to participate • explore partnerships • Strength in numbers-endorsements • Write ups in publications • Speakers, exhibits, workshops • Look for "fit", common elements, complementary skill sets

Goal: Aware & committed	Projected profile	Perceived benefits of changing behavior	Perceived barriers to changing behavior	Focused strategies/methods
Nonprofits, Museums, Cultural Groups	• may be open to forming partnerships with City program for establishing baselines, organizing necessary research • already have altruistic mission • built-in organizational structure, may be able to access membership easily • reach wider audience • entertainment • vested in community • unique perspective	• Save money • Support something worthwhile • Get the word out • Build support in more subtle, fun, less threatening way	• Limited budget • Already full calendar • Limited staff • Reliance on volunteers • Not related to mission	• early outreach • invitations to participate • explore partnerships • Fundraising events • Service projects • Traveling exhibit • Speakers bureau • Mailing lists • Projects tied to their mission, e.g .recycled art at Foothills Art Ctr.

Goal: Aware & committed	Projected profile	Perceived benefits of changing behavior	Perceived barriers to changing behavior	Focused strategies/methods
Government (city & county)	• Already concerned about energy conservation • Want to get on board • "Idea whose time has come" • In the education business already, e.g. libraries • Light rail west line, existing bus systems, RTD	• Save money • Responsive to citizens • Demonstrate leadership • Overlapping, spillover effects addressed • Coordination of efforts • Passage of laws, regs, ordinances to facilitate sustainability	• Politics • Red tape • Not provided for in current regs, codes, etc. • Initial investment too expensive to wait for long term savings	• Establish Sustainable Golden "council" … ongoing steering committee with reps who have been recruited from significant stakeholder groups, e.g., business leaders, builder/developers, CSM, Jeffco Schools, realtors, citizen-at-large, etc. • Site for workshop series • Traveling exhibit, kiosks • Interface to light rail • Integrate with bus system • Parking for cars, bikes, shuttle/trolley

Energy Efficiency & Renewable Energy

Energy Efficiency & Renewable Energy Community Working Group: Karen Smith, Stephanie Savage, Glen Maynard, John Hicks, Leslie Pollock, Joshua Pollock, Steve Stevens, Don Cameron, Peter Keppler, Dick Sugg, Scott Morrissey, Joe Wrona, Greg Koss, Mark Heller, Peter Rusin, Tim Bloom, Tom Atkins, Tim Rehder, Matt Worswick

BACKGROUND

The City charged the Energy-Efficiency/Renewable Energy (EE/RE) working group with the following tasks: (1) evaluate the proposed goals and the public feedback on those goals and make a recommendation to City Council about how to adjust them; (2) make a recommendation to staff and Council about the City's action plan for the remainder of 2007, 2008 and the remaining program years (2009-2016); and (3) craft the community action plan for the energy efficiency/renewable energy with specific attention to how to implement the action plans.

Our evaluation of the proposed goals is discussed in the following Goals section. Our recommendations regarding the City's action plan and a community action plan are presented in the Recommendations section. Supporting information for the discussion on the goals and recommendations are provided in an Addendum.

GOALS

The EE/RE working group recommends that City Council adopt the following as its preliminary ten-year goals for energy use in Golden, subject to evaluation in the future:

- Reduce the City of Golden's overall energy usage as an organization by 25% and increase to 50% the proportion of its energy use derived from renewable energy sources by 2017.
- Reduce overall community-wide energy usage in Golden by 20% and increase to 20% the proportion of its energy use derived from renewable energy sources by 2017.

In order to evaluate these goals in the future, and make appropriate adjustments, the City should (1) establish energy use baseline information for both the City and community and (2) develop and implement valid mechanisms for measuring progress toward the goals at discrete intervals (e.g., quarterly for City operations and yearly for community-wide efforts).

The City energy use goals presented here match those proposed by the City for public comment in February 2007. The goals for community-wide energy use, however, represent an increase over those proposed by the City in February. The initial goals called for a community-wide reduction in energy use of 15% and increase in use of renewable energy sources of 15%. With respect to the energy efficiency goal, we believe that individual homeowners who have not yet invested in energy efficiency improvements may be able to achieve well over the initial 15% goal, often at relatively little cost with rapid pay back.

With respect to the renewable energy goal, the state legislature recently passed a law requiring Xcel to generate 20% of its electricity from renewable resources by 2020. We propose the City also adopt a goal of 20% of energy from renewable resources for the community. A goal of 20% renewables overall puts pressure on the non-electrical sources to meet the goal. However through education and implementation of alternative energy sources by residences (ground source heat pumps, solar hot water, Windsource®, solar PV, biofuels, etc.) it is believed that 20% from renewables is achievable overall. A homeowner who makes use of Windsource® for example could be getting 100% of their electricity, not 20% from renewable sources.

RECOMMENDATIONS

The EE/RE working group has developed 1 recommendation specific to the City's energy use action plan and 8 recommendations regarding a community-wide energy use action plan. The following sections present the working group's recommendations. ***These are not in order of priority*** but are seen in total as being required for a

comprehensive approach to energy efficiency and use of renewable energy resources for the community and City of Golden. Although we urge adoption for each recommendation, we have provided a range of implementation options within each recommendation to allow Golden the flexibility it needs to create workable solutions.
The process for establishing the community-wide recommendations is discussed in the Addendum.

A. The EE/RE group endorses the City Action Plan for EE/RE

The working group endorses the City' current energy use action plan, which primarily involves (1) establishing an energy performance contract (EPC) to assess the City's energy use and implement mechanisms to increase energy efficiency and (2) conducting a greenhouse gas (GHG) emissions inventory. In addition, the working group recommends the following specific future actions:

- The City should create a Sustainability Director position on City staff, whose primary responsibility will be to implement the City's sustainability programs, which will include an energy efficiency role.
- The City should establish an oversight group of technical experts and citizens that can review the efforts that will be undertaken as part of the EPC, or other staff initiatives, with respect to sustainability, including a focus on energy efficiency and renewable energy. (This group could include the current citizens' energy working group, as well as others.)
- The City should proceed with its plans to establish an energy performance contract (EPC) and take steps to ensure that information collected as part of the EPC will be adequate to support baseline energy use studies considered necessary to evaluate the appropriateness of the City's goals regarding energy efficiency and renewable energy.
- The City should establish a process for developing an assessment of baseline community-wide energy use. Such a study potentially could be included in the scope of the EPC, or alternate methods could be devised; either way, this is a critical component for evaluating the effectiveness of the community action plan. There are numerous ways to generate baseline data regarding community-wide energy use (e.g., purchased from Xcel, extrapolated from energy use data about typical homes and business) and the City needs to determine which approach will provide adequate data in the most cost-effective fashion.

Rationale**:** The City's current action plan involves taking initial steps to assess the City's current energy use and establishing an EPC under which future actions will be identified and implemented to increase energy efficiency. It is generally agreed that the City's approach makes good sense; however, in order to ensure the greatest possible success, adequate resources must be allocated for management and oversight of the sustainability initiative. In addition, in order to evaluate success with respect to the community-wide action plan, it is critical to generate baseline data regarding community-wide energy use.

Examples**:** According to the Rocky Mountain Institute, which has studied efforts by multiple communities to develop sustainable energy programs, every community that is succeeding in making energy-efficiency improvements has a strong organizational framework that includes a dedicated program director.

Range of Alternatives: The Sustainability Director could be full-time, part-time, or shared with another department as long as his/her primary responsibility is to manage the sustainability program and he/she is provided with adequate resources to do so (i.e., budget and decision-making authority).

B. City-Sponsored Incentives for Sustainable Energy Investments

The EE/RE working group recommends that the City establish an incentive program that will encourage residents and businesses to invest in energy efficiency improvements and renewable energy technologies. These incentives would be in the forms of either fee reductions, fee waivers, tax reductions, grants, or other direct dollar savings for certain progressive activities. The activities which should be encouraged through an incentive program include:

1. Energy saving activities, including such measures as
    a. increasing insulation in homes and business structures,
    b. increasing energy management in homes and businesses,
    c. installing higher efficiency heating or cooling plants,
    d. installing higher efficiency water heating,
    e. replacing older, inefficient appliances with Energy Star-rated appliances (see also Recommendation I, Promoting Use of Compact Fluorescent Lights), and

f. upgrading the efficiency of lighting (see also Recommendation I).

2. Renewable energy generation and/or utilization, including such measures as
   a. installing solar photovoltaic power generation systems,
   b. installing small wind power generation, and
   c. investing in WindSource or other renewable energy purchase programs (see Recommendation F, Xcel Tiered Electricity Rates).

In addition, we recommend the City pass an ordinance that creates a category of building improvements for which there are no user fees and no charges for the building permits. EDCOMM has been considering this and has concluded that not charging fees for certain categories of building projects would not be a waiver of fees as defined in and limited by the City Charter because there is no fee to waive once the project fits into the category the Council has created.

Rationale: Specifically, we recommend a "base level" incentive program in which the City would waive building permit fees for all construction projects which involve the activities that are to be encouraged, including those listed above and possibly more. This would *not mean* that fees would be waived for an entire project or new structure; fees would be waived just for those portions of the project that tie to sustainable energy investments. Additional degrees of incentives could be implemented on a year-by-year basis, as discussed in the range of alternatives below. The logic for waiving these fees is that the activities are desired, yet optional activities. In order to meet the community-wide sustainable energy goals, these desired activities must be promoted and facilitated.

Examples: A number of financial incentive programs have already been established in Colorado to encourage investments in energy efficiency improvements or renewable energy technologies. A comprehensive review of these programs is available at http://www.dsireusa.org/library/includes/map2.cfm?state=CO&currentpageid=1. Aspen, Colorado is the municipality leading the way in this arena, with incentive programs for solar power and micro-hydropower. Other financial incentive programs have been established by utilities, including, along the Front Range, Xcel, Fort Collins Utilities, Colorado Springs Utilities, and Aquila. Information about other programs across the country is available at http://www.dsireusa.org/index.cfm?EE=0&RE=1.

Range of Alternatives: We recommend that the base level program discussed above be adopted by the City. The City could then modify the program on a year-to-year basis as needed to fit annual projected budgets. Three possible implementation approaches are recommended:

- Ambitious implementation. In addition to a category of improvements, for which no fee is realized, a building owner would get a credit or grant for the encouraged activity in the amount of 10% of the contracted or incurred costs for the energy specific improvement.
- Moderate implementation. In addition to a category of improvements, for which no fee is realized, a building owner would get a credit or grant for the encouraged activity in the amount of 5% of the contracted or incurred costs for the energy specific improvement.
- Low-level implementation. In addition to a category of improvements, for which no fee is realized, a building owner would get a credit or grant for the encouraged activity in the amount of 2% of the contracted or incurred costs for the energy specific improvement.

C. Solar Access Ordinance

We recommend that the City provide reasonable protections, through ordinances, to ensure that the citizens' investments in solar energy technologies and other passive solar or energy efficiency improvements that are dependent upon sunlight (e.g., solar tubes) are not threatened by external circumstances. Specifically, the ordinance should restrict property owners from building tall structures, or planting or growing tall evergreen trees that would act as a devastating sun block to any neighboring properties to the north, northeast, or northwest, if those neighboring properties have invested in solar energy technologies, passive solar design, and/or sunlight-dependent energy efficiency improvements.

Rationale**:** A solar access ordinance would help ensure that costly investments have a pay-off both to individual property owners, as well as to the overall objectives of the community-wide sustainable energy goals. Investments in active solar energy systems and passive solar design, typically are (1) long term

investments and (2) very capital-intensive (costly). Because such activities are important elements of a sustainable energy program, residents and businesses who make these types of investments need to be protected from loss of access to sunlight.

Examples**:** Leading sustainable communities in the U.S. and abroad have enacted solar access ordinances. A few include Boulder, Colorado; Springfield, Oregon; and Sydney, New South Wales, Australia. A sampling of materials and design guides are available on the Internet at sites maintained by the following organizations:

- Building Services Department, Boulder, Colorado (http://www.bouldercolorado.gov/files/PDS/codes/solrshad.pdf).
- Planning Division, Springfield, Oregon (http://www.ci.springfield.or.us/dsd/Planning/Springfield%20Develoment%20Code/SDCART39.pdf).
- Sustainable Energy Development Authority, Sydney, Australia (http://www.energysmart.com.au/brochures/Solar_Access_for_Lots_Guide.pdf).

Range of Alternatives**:** The City could consider the following range of alternatives in implementing a solar access ordinance:

- Ambitious implementation. Solar access protection would apply to all new and existing structures in regard to requiring that vegetation be trimmed by the property owner if it grew to a point which would deny solar access for either active or passive solar energy capture. It would be restricted only to shading which reached a height of 5 foot on a south wall of the protected home which is built within the build able area of the lot (after setbacks).
- Moderate implementation. In addition to the new construction protection below, limited solar access protection would be provided to existing homes to limit shading from neighboring evergreen vegetation. It would prevent shading which, at the winter solstice, would shadow the installed hot water, PV, or other solar collection from a second floor (south view) roof surface which is built within the building portion of a lot (excluding setback). This does not protect passive solar heating on walls/windows on either first or second floors (south view).
- Low-level implementation. Solar access protection would apply to all new construction. It would prohibit structures and plantings which would cast winter solstice shadows onto adjacent lots within the lots build able areas (after setback) at a height above 5 foot above foundation wall grade. This would protect adjacent owners to receive both active and passive solar benefits, since windows would not be covered by neighboring cast shadows.

D. Increase Use of Alternative Fuels in Transportation

We recommend that the City take the following actions to increase the use of alternative fuels for transportation in Golden:

1. Where and when cost effective, convert the City fleet of vehicles to ones that use ethanol, bio-diesel, compressed natural gas (CNG) and/or to hybrid gas/electric (plug-in when possible), hybrid bio-diesel/electric (plug-in when possible), or plug-in all-electric vehicles.
2. Promote, and educate citizens to make a pledge to move towards increased use of biodiesel/alternative fuel vehicles and hybrid or all-electric vehicles whose batteries can be charged from plug-in sources.
3. Promote that ethanol and biodiesel supply pumps are available in the Golden area and, if there becomes a demand for other alternative vehicle fuels, such as CNG, ensure that they are available in the Golden area.
4. Provide preferred parking in the Community Center lot, as well as on Washington Avenue for plug-in hybrid-electric or all-electric cars and provide them with electrical outlets.

Rationale**:** These recommendations are directed primarily towards reaching the renewable energy goals of the Golden Sustainability Initiative. Actions 1, 3 and 4 apply to the City goals, and Action 2 applies to the community-wide goals. The reasons for promoting the use of vehicles that use alternative transportation fuels vs. current gasoline engines is to reduce some dependence on foreign oil, and reduce the contribution of CO2 greenhouse gas emissions.

Examples**:** A number of alternative transportation fuels initiatives have been undertaken in Colorado. Eagle County has purchased hybrid vehicles for its fleet, but has acknowledged that the expense makes the cost-effectiveness questionable. The fleet manager says that the investment is more of a sustainability statement than one with a significant financial payoff. CNG powered vehicles are in use all over the world. The City and County of Broomfield has implemented a program of collecting used cooking oil from restaurants and converting it to biodiesel fuel; five gallons of cooking oil produces four gallons of biodiesel fuel. The Governor has signed a bill to increase the number of ethanol pumps by 100. The City of Boulder (as well as Portland, Oregon) has preferred parking with electric plug-ins for electric cars in multiple locations.

Range of Alternatives**:** The following range of alternatives is possible:

- Ambitious implementation. Set a deadline for conversion of the City fleet and other internal combustion (IC) engine powered equipment to alternative fuel use and hybrid electric or all electric vehicles. Install preferred parking for plug in electric vehicles in 3 City locations, with 2 slots per location. Consider making electric cars to be free of Golden's share of the sales tax.
- Moderate implementation. Allow the City to make the conversion based on cost-effectiveness analyses, and how much the City and citizens are willing to contribute to, and pay for reducing dependence on foreign oil and fighting global warming. Install preferred parking for plug in electric vehicles in 3 City locations, with 1 slot per location.
- Low-level implementation. Recognize that conservation measures and increasing other renewable energy sources (solar, wind) will have to play a major part in reducing dependence on foreign oil and reducing the production of greenhouse gasses. Wait until engine efficiency of alternative fuels is raised to that of gasoline engines. Let the market determine when and how much renewable fuels are used in IC engines. Install preferred parking for plug in electric vehicles in 2 City locations, with 1 slot per location.

E. Funding Energy Efficiency Improvements and Rehabilitation of Existing Homes

1. We recommend that the City require that some portion of the sales price of a home be used for energy efficiency improvements. Homes that meet a defined energy efficiency level would be exempt from this requirement.
2. In addition, we recommend that the City create a revolving loan fund to fund energy efficiency improvements and rehabilitation of owner occupied homes.

Rationale**:** Many households in Golden are older and do not meet current energy efficiency standards. Other cities address current housing stock over time by bringing capital to bear on the problem (see Examples). The City should identify Energy Conservation Measures, (ECMs), or Building Codes (or a point system) for all housing. Then sellers, or their agents, could be required to implement some of these ECMs, up to 1% of the sales price for example, so the housing stock would improve each time an energy inefficient house is sold. Once a house conforms to the measures, or points required, it would be exempt for further investment requirements. The City can add other exemptions from this as needed, but they should consider age of seller, transfers, foreclosures, like exchanges, and other real estate transfers that are not true sales or are for hardship. With a 1% growth cap, the cities housing stock is getting older faster than it is getting newer (99% get one year older, while 1% are new), so it is critical to a sustainability plan that Golden work to improve the existing housing stock in a way that new construction building codes alone can not address.

In parallel, a revolving loan fund would be used to finance ECM activity on existing homes by resident owners or motivated landlords. Residents would immediately save energy and money. Loan terms could be tied to savings so that greater savings would result in shorter loan terms and faster turnover of the fund.

The first source of revenue for a revolving loan fund would be a "permit premium" for large homes and those exceeding a certain predicted energy usage. The Aspen and Pitkin County plan is funded in this fashion. A second source of revenue would be the excess electric fees charged to high electric users (See Recommendation 6, Xcel Varied Electric Rates). The City of Boulder has a similar fund financed in this fashion.

Examples**:** Aspen and Pitkin County have created a loan fund for rehabilitation with their Renewable Energy Mitigation Program. Other cities require homes to meet certain Energy Conservation Measures (ECM) at time of sale. While no City in Colorado has adopted this, it has been in place for over a decade in San Francisco, CA, and Berkeley, CA.

Greenprint Denver, the recently released plan by Denver to address GHG includes a proposal similar to this recommendation. Boulder sustainability personnel said they are considering a more ambitious proposal (including a time-of-sale improvement provision), but would be happy to see Golden take this step and follow their lead.

Range of Alternatives**:** The City could consider the following range of alternatives in implementing this recommendation:

- Ambitious implementation. Criteria that finance the loan fund at a greater rate would include setting a smaller square foot criteria, and a lower energy level at which people would have to pay into the fund with new construction, or for the varied electrical rates. The ECMs would be stringent.
- Moderate implementation. Allow larger homes to consider renewable energy offsets, such as solar panels, which benefit those homes, and they don't have to pay into the revolving fund. Increase the allowed energy use before being required to pay into the fund. The provision for ECM at time of sale could use older, less stringent building codes, grandfather in some homes built after a given year (2000 for example), and allow a point system instead of specific ECM measures.
- Low-level implementation. Only the largest homes would be taxed to finance revolving loan fund, and they would be allowed offsets for both energy efficiency improvements above a base level, and renewable energy upgrades (e.g. PV panels). Relatively high (greater than 125% of local average?) energy users would be taxed to finance the loan fund. ECM measures would be grandfathered in for some structures and/or the maximum spent at time of sale could be less than 1%, such as 0.5% of sales price toward ECM measures.

F. Xcel Varied Electricity Rates

We recommend that the City of Golden work with Xcel to implement a variable electricity rate – known as a step rate structure in the water industry – that charges residences and businesses an additional amount per kilowatt-hour for electricity usage beyond an established baseline level. Or, if this Public Utility Commission (PUC) related issue can not be managed at a municipal level, we propose an "inefficiency tax" that accomplishes the same thing.

Rationale**:** This recommendation simultaneously incentivizes energy conservation and raises funds for additional sustainability programs by the City. Moreover, it is based on a "polluter pays" principle that forces those who use energy inefficiently to pay a higher premium. The proceeds of this program would be dedicated to the Golden Sustainability Initiative.

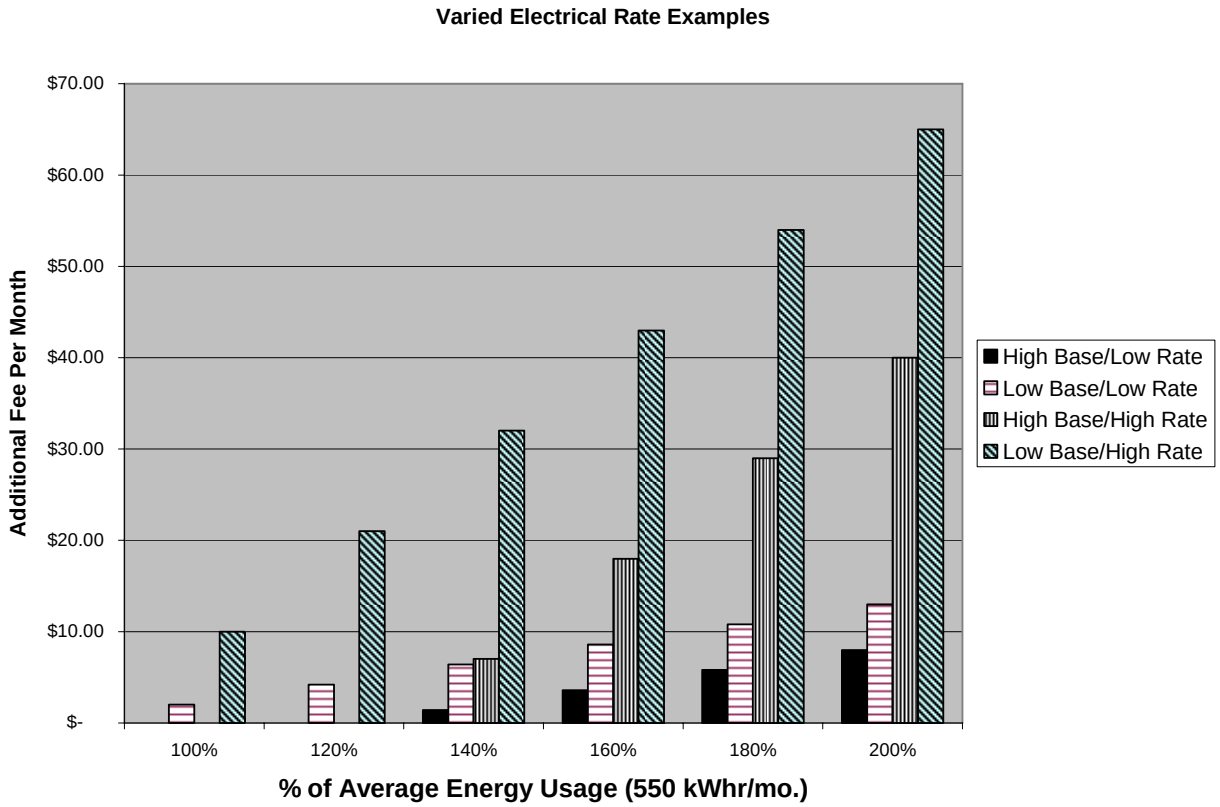
Examples**:** Boulder residents voted in November 2006 to implement a Climate Action Plan Tax (i.e., a carbon tax), which is based on a similar principle. However, Boulder taxes residences on every kilowatt-hour of energy used, rather than charging a higher rate only on excessive levels of usage. Boulder also uses this tax as a means to incentivize Xcel's WindSource, because citizens enrolled in the program are exempt from the tax.

Boulder expects to generate $860K-$1.3M in new revenue to be used towards weatherization services, energy audits, contractor training, public workshops, promoting renewable energy, recognition programs for achievers, light bulb incentive programs and neighborhood sweeps where energy conservation kits and information will be distributed to residences. Boulder has roughly five times the population of Golden.

Range of Alternatives**:** There are two mechanisms that can be adjusted to make this proposal more or less ambitious: the baseline energy level (kilowatt-hours used per month), and the additional cost per kilowatt-hour. From the table shown below, it is possible to devise four different scenarios for implementation. **Note: the numbers used in the examples below are for discussion purposes only and are not a proposal**

Additional Cost per kilowatt-hour		Baseline Energy Level (kWh/month)	
		Low (450 kWhr)	High (700 kWhr)
	Low	1 - $.02	2 - $.02
	High	3 - $.10	4 - $.10

The chart below shows, as an example, how much a resident would pay extra, each month, depending on how much energy they use above a baseline value, and if there was a premium charged.



The chart above shows how a household using more than the average amount of electricity would pay a fee that depends on how the baseline and additional rate are chosen, as well as by how much they exceed the average. For Golden to effectively fund an energy efficiency improvement fund, realistically most residents should pay a small amount into the fund, unless they are using less than the average amount of electricity. The discussion below provides additional detail, for an average user (100% of average value of 550 kWhr/mo)

- Ambitious implementation. Average User (550 kWhr/mo) Pays - $10/month more. Adoption of Scenario 3 (low baseline/high additional cost). This approach would be more effective because more citizens would pay, and the high additional cost would be a strong disincentive to energy inefficiency. For example, a residence under this option could be subject to an additional [high] charge of $0.10 for every kilowatt-hour used over a [low] 450 kilowatt-hours per month baseline. This approach might be less politically feasible than the other approaches.
- Moderate implementation (1). Average User (550 kWhr/mo) Pays - $2/month more. Adoption of Scenario 1 (low baseline/low additional cost). This approach would be less effective than the Ambitious implementation because the low additional rate may not be a deterrent. For example, a residence under this

option could be subject to an additional [low] charge of $0.02 for every kilowatt-hour used over a [low] 450 kilowatt-hours per month baseline. This approach might be less politically feasible than the moderate (2) and low-level implementation approaches because additional cost would be imposed on more users.

- Moderate implementation (2). Average User (550 kWhr/mo) Pays - $0/month more. Adoption of Scenario 4 (high baseline/high additional cost). This approach would be less effective than the two above because only the most energy inefficient would pay, but there may be a strong incentive to reduce energy below the baseline level if the additional cost is high enough. For example, a residence under this option could be subject to an additional [high] charge of $0.10 for every kilowatt-hour used over a [high] 700 kilowatt-hours per month baseline.
- Low-level implementation. Average User (550 kWhr/mo) Pays - $0/month more. Adoption of Scenario 2 (high baseline/low additional cost). This approach would be the least effective because few citizens would pay the additional rate, and the additional cost would not be a disincentive. For example, a residence under this option could be subject to an additional [low] charge of $0.02 for every kilowatt-hour used over a [high] 700 kilowatt-hours per month baseline. It would be the most politically feasible.

Some consideration may need to be made for square feet, household members, and multiple unit dwellings. The idea is to capture use charges from inefficient users, not necessarily greater users. Inefficient users would have the greatest incentive to make improvements due to their use patterns, and home.

G. City of Golden Energy Audit and Implementation Program

We recommend that the City of Golden develop an Energy Audit Program to provide reduced-cost energy audits to residents and local businesses. These audits would identify potential energy efficient improvements and cost/payback information so the home/business owner could evaluate various options. Improvements could range from low/no-cost improvements (e.g., turning down thermostats, sealing duct leaks, installing CFLs) to more expensive improvements (e.g., window, HVAC, appliance replacements). The home or business owner would receive an analysis report of their energy usage with recommendations on how to conserve energy and recommendations of professional contractors qualified to perform these services.

The City would work with third-party auditors, such as E-Star certified home energy raters, (http://www.e-star.com/) to complete audits. In addition to energy audit information, participants would also receive information on applicable state, local, and utility rebate programs and tax incentives for various improvements. The homeowner's cost would be based on the home's conditioned square footage, approximately ranging from $100-300 per audit (based on rates from the City of Boulder energy audit program). Audits for commercial businesses would also vary according to building square footage.

Information from these audits could be collected and used to estimate baseline energy use community-wide.

Rationale**:** An Energy Audit Program, with implementation actions, would produce a "big bang for the buck." It would provide a way to leverage our investments to ensure the most effective changes take place first.

Examples**:** There are several existing programs that provide relevant examples. The Colorado Governor's Energy Office (GEO) Energy Saving Partners provides Colorado's income-qualified clients with free, cost-effective energy efficient upgrades. The weatherization program helps low-income Coloradoans reduce their energy bills and enjoy safer and more comfortable homes.

The Boulder Residential Energy Audit Program provides low-cost, professional energy audits and energy conservation information to participating homeowners. The homeowner's cost is based on the home's conditional square footage, ranging from $100-250 of which the City of Boulder and Boulder County each provide a $100 subsidy per audit for Boulder homes. These audits are provided by local energy service professional and include a blower door test, insulation assessment, and appliance and HVAC system assessments. The homeowner receives a report analysis of their energy usage along with recommendations on how to conserve energy as well as recommendations as to the professional contractors qualified to perform these services.

Range of Alternatives**:** The City could consider the following range of alternatives in implementing an energy audit program:

- Ambitious implementation. The City would cover the full cost of the energy audit, so audits would be free to residents and local businesses within City limits. Residents would be reimbursed

up to the cost of the audit after they implemented improvements of the same value. For example, if an audit costs $300, and the owner completes $300 in improvements, the City would cover their $300 audit upon proof of improvement (i.e. receipts).

- Moderate implementation. The City would offer energy audits at a reduced cost where the City would pay for a portion of each energy audit (e.g., $100?). In similar fashion to the above suggestion, only after some action is taken would the City reimburse the cost of the audit.
- Low-level implementation. The City would launch a marketing campaign to encourage businesses and residents to obtain energy audits. The City would provide small rebates (e.g., $25-50?) for those who obtain audits within a certain time frame and pledge to make one improvement of their choice.

Note: The EE/RE group endorses GURA's plan to implement a similar program for businesses in Golden.

H. Dark Skies Initiative/Community Lighting Standards

We recommend that the City of Golden adopt a dark skies initiative that maximizes the community-wide energy savings resulting from lighting changes by:

- Adopting lighting ordinances that specify or encourage the replacement of older inefficient light sources with more energy efficient types.
- Applying appropriate lighting ordinances to the maximum range of residents (i.e., businesses, single- and multi-family residential units, and City facilities);
- Applying appropriate lighting ordinances to existing lighting as well as new installations (with an appropriate time window as well as exceptions built in to allow for maximum compliance with minimal conflict or undue burden); and

Rationale**:** Dark skies initiatives are generally concerned with reducing light pollution by limiting the type, intensity, and direction of outdoor lighting. While such initiatives are often undertaken primarily to address the quality of life issues that stem from reduced light pollution, reduced light encroachment from neighboring properties, and more visible stars in the night sky, they can also help reduce overall community energy use and can encourage energy efficiency improvements. In this way, adoption of a dark skies initiative for Golden would both address our sustainability goals and improve our community's overall livability.

Examples**:** Examples of dark sky ordinances can be viewed at http://www.darksky.org/resources; a few are listed here:

- In 2003 Boulder, CO approved a new outdoor lighting ordinance to prevent light trespass, reduce light pollution and excessive glare, promote energy conservation, and improve safety and security.
- Santa Fe, NM adopted an Outdoor Lighting Ordinance to regulate outdoor lighting in order to reduce light pollution, reduce or prevent glare, reduce or prevent light trespass, conserve energy, promote a sense of safety and security, and ensure aesthetically appropriate outdoor lighting in keeping with the character of Santa Fe.
- In 2002, Sandy, OR (Pop 7,000) passed a dark skies ordinance to reduce glare, light pollution, and wasted resources.

Range of Alternatives**:** The City could consider the following range of alternatives in implementing this recommendation:

- Ambitious implementation. In order to maximize the energy efficiency and energy conservation advantages of a dark skies ordinance or ordinances, the City should:
  1. make all provisions apply to all City-owned, commercial, and residential properties, including detached single-family units ("low density residential" units);
  2. make all provisions apply retroactively to all exterior lighting fixtures on all properties;
  3. mandate the use of certain highly efficient lighting types (including LEDs, low- and high-pressure sodium lamps, and compact fluorescent lights [CFLs]) in all outdoor lighting applications;
  4. prohibit the use of certain inefficient lighting types (such as incandescent flood lights or flood lights without motion-sensing or automatic cutoff switches) in all outdoor lighting applications (section 18.34.070 of the current draft of the Community Lighting Standards);

5. limit the number and type of exceptions to the outdoor lighting requirements in the Community Lighting Standards; and
6. apply the requirement for a lighting plan approved by the Planning Department for new construction projects to detached single-family residential units as well as other building types.

- Moderate Implementation. In order to make significant energy efficiency and energy conservation improvements through the Community Lighting Standards while also streamlining the implementation of the ordinance and increasing its likelihood of favorable reception from residents, the City should:
  1. make all provisions apply to all City-owned, commercial, and residential properties, including detached single-family units ("low density residential" units);
  2. as is proposed in the current draft of the Community Lighting Standards, make all provisions apply only to all new exterior lighting fixtures on all properties and to existing lighting fixtures only at the time of repair or replacement (i.e. do not require retroactive compliance for existing outdoor lighting applications);
  3. prohibit the use of the most inefficient lighting types in all outdoor lighting applications; and
  4. make only reasonable exceptions to the outdoor lighting requirements in the Community Lighting Standards (for example, holiday lighting).
- Low-level Implementation. If the City must limit the applicability of certain requirements under the Community Lighting Standards, but wishes to retain at least some of the energy efficiency and energy conservation advantages of such an ordinance, the City should:
  1. allow for limitations or exceptions to the applicability of the Community Lighting Standards;
  2. allow the prohibitions to include lighting types that are energy efficient but are not desirable for other aesthetic reasons (such as LEDs or some CFLs); and
  3. allow for a larger range of exceptions to the Community Lighting Standards, such as an exception for "ornamental lighting."

I. Promoting Use of Compact Fluorescent Lights

We recommend that the City promote increased use of energy efficient lighting (such as compact fluorescent lights [CFLs] and light-emitting diode [LED] holiday lights). This initiative would involve some combination of education, publicity, and (optionally) incentives (see Recommendation B, City Sponsored Incentives). One aspect of promoting increased use of CFLs would include making it relatively easy for users to recycle the used bulbs at the end of their life cycle.

Rationale**:** Today's incandescent bulbs are energy gluttons. Less than 10 percent of their power is used for light; the rest generates heat. A shift toward super-efficient light bulbs could be a swift, easy, and significant early step in curbing energy use, including energy related to home cooling. CFLs use about a quarter of the energy of a comparable incandescent bulb. For industrialized countries, lighting makes up about one-fifth of electricity consumption and 9% of home electricity use, so there are potentially significant benefits. If every American home replaced just one light bulb with an EnergyStar-rated CFL, we would save enough energy to light more than 2.5 million homes for a year. LED holiday lights use $1/10^{th}$ the electricity of a mini-incandescent holiday light (per bulb) and less than $1/100^{th}$ the electricity of a large incandescent holiday light.

CFLs contain small amounts of mercury and CFL disposal is a concern for landfills and waste incinerators where the mercury from lamps may be released and contribute to air and water pollution. Safe disposal requires storing the bulbs unbroken until they can be processed. The Jefferson County Rooney Road waste disposal facility will accept CFLs; however, they charge a modest fee for each waste drop-off regardless of volume. Many residents and businesses that use CFLs may be unaware of the risks of improper disposal.

Examples**:** Osage, IA (pop. 3,600) has a program to give away free CFLs. This type of promotion is frequently included in energy education events or community sustainability fairs. Xcel has run rebate programs periodically to promote the use of CFLs and some retailers also have run CFL promotions.

Range of Alternatives**:** The City could consider the following range of alternatives in implementing this recommendation:

- Ambitious implementation. The City would purchase CFLs/LEDs and give them away free to residents and businesses. Also, the City would offer free CFL recycling services.

- Moderate implementation. The City would purchase CFLs/LEDs and sell them at cost to residents and businesses. Also, the City would offer free CFL recycling services.
- Low-level implementation. The City would adopt an education program to urge residents and businesses to use CFLs/LEDs and provide information on to how to recycle them.

TIMEFRAME FOR RECOMMENDATIONS

	Recommendations	2007	2008	2009-2017
A	The EE/RE Group Endorses the City Actions	x		
B	City-Sponsored Incentives for Sustainable Energy Investments		x	x
C	Solar Access Ordnance	x	x	x
D	Increase Use of Alternative Fuels in Transportation			x
E	Funding Energy Efficiency Improvements and Rehabilitation of Existing Homes			x
F	Xcel Varied Electricity Rates		x	x
G	Energy Audit and Implementation Program	x	x	x
H	Dark Skies Community Lighting Standards		x	
I	Promoting Use CFLs	x	x	x

ADDENDUM

The following information supplements the discussion provided in the EE/RE working group report. Some information is repeated from the report in order to present complete discussions.

ADDITIONAL DISCUSSION OF GOALS

At the community open house on Feb. 28, 2007, citizens provided feedback to the City on its two initial goals for increasing Golden's energy efficiency and use of renewable energy: (1) Reduce the City of Golden's overall energy usage as an organization by 25% and increase to 50% the proportion of its energy use derived from renewable energy sources in 10 years; and (2) reduce overall community-wide energy usage in Golden by 15% and increase to 15% the proportion of its energy use derived from renewable energy sources in 10 years. The working group recommends the adoption of the City goals as stated as preliminary goals until after the City baseline is completed, and recommends the adoption of more ambitious goals for the community than the initial goals.

Regarding the city-specific goals, the City has already undertaken a number of initiatives designed to increase energy efficiency. These efforts, posted on the City's website, include many that are relevant to the energy use goals, such as installing high efficiency fluorescent lights in many City facilities; installing LED lights in a portion of the stoplights, pedestrian crossing lights, and exit lights in City buildings; and the Building Department's adoption of the 2006 International Energy Conservation Code. Additional steps have been taken to identify additional energy efficiency opportunities. While the list of efforts is extensive, their effectiveness has never been quantified across all City operations. This is a significant task and one that should be considered as part of the energy baseline study the City is undertaking this summer; the City needs to know how much it has already accomplished with these measures so that it can evaluate the cost/benefit ratios and the new goals it has established for itself.

Regarding the community-wide goals, the working group recommends the City increase them for a number of reasons. With respect to the energy efficiency goal, any individual homeowner who has not yet invested in energy efficiency improvements may be able to achieve well over the initial 15% goal, often at relatively little cost with rapid pay back. The degree to which this is true will vary by home and is impossible to gauge at a community-wide level at this time.

With respect to the initial community renewable energy goal of 15%, the state legislature recently passed a law requiring Xcel to generate 20% of its electricity from renewable resources by 2020. Since this effectively means that 20% of electricity used by residences and businesses in Golden will be from renewable resources through Xcel, our initial goal of 15% by 2017 becomes much less meaningful. Xcel's 20% renewable energy base does not take into account the residences and businesses in Golden with their own renewable energy technologies installed or the WindSource participants. Therefore, setting a community goal of 20% renewable energy by 2017 is relatively conservative.

Although it is important for the City to set specific energy use reduction and renewable energy goals at this time, evaluating the progress toward meeting those goals will be difficult without information on current energy use for both the City and the community. The City is in the process of contracting for a city-specific baseline study that will provide this information; a similar study focused on the community will be necessary, as well. In addition, definitive data describing related achievements by other cities are not readily available and often are presented in values not directly comparable to Golden's goals (e.g., in terms of tons of CO2 emissions reduced rather than percentage of energy consumption reduced). These factors make it difficult not only to assess progress toward the goals, but also to directly evaluate their appropriateness or feasibility.

Despite these considerations, the energy working group recommends that the City move forward with these preliminary goals, as stated above, provided the City's efforts include (1) establishment of meaningful baseline information and (2) development and implementation of valid mechanisms for measuring progress toward the goals at discrete intervals (e.g., quarterly for City operations and yearly for community-wide efforts).

ADDITIONAL DISCUSSION OF RECOMMENDATIONS

The EERE working group established a framework within which to develop specific recommendations for the community action plan:

- The working group brainstormed to identify almost 100 items to meet the City's goals, with a particular focus on community based goals.
- The items were prioritized, summarized, and grouped by common objective and overlap.
- Approximately 30 items were selected as priority items. These items were narrowed down to the recommendations presented in the report. Collectively, these recommendations address energy efficiency and renewable energy in a comprehensive fashion. Attachment 1 provides a list of the items that were identified in the brainstorming session but were not included in the shorter list.
- Each recommendation was written to include detail on the approach, history of other cities' actions in the area, discussion, and a tiered approach to implementation. Each recommendation had at least two editors and multiple reviews by the full working group. The committee adopted a set of tiered options to consider for implementation of each recommendation. The "Ambitious implementation," option summarizes those actions that would typically have the greatest impact on energy efficiency, or use of renewable energy resources, or both. A recommendation may also have been defined as Ambitious if it had the greatest monetary cost, or a lower level of perceived community acceptance. The "moderate implementation" option would have less impact on energy efficiency or renewable energy use, or could be lower in cost. The "low level implementation" option would likely have the least impact on energy efficiency or renewable energy resources, but have the lowest cost, both monetarily and politically.
- Some of the EERE working group recommendations ultimately were integrated into recommendations of other working groups because of the overlap in actions and objectives.

A. City Action Plan

According to GURA Director Mark Heller, the City's action plan for energy efficiency and renewable energy consists of three activities:

- City staff are to identify ways to reach the City's goal;
- The City will issue a request for proposals (RFP) for an EPC. Under the EPC, the selected ESCO will assess the City's energy systems, make recommendations about ways to manage energy more efficiently and upgrade facilities, and support the installation, management, and/or maintenance of new, more efficient systems. EPCs establish guaranteed installation costs, energy savings projections, and payback periods against which the City can finance capital improvements. If EPC cost and payback projections are not realized, the ESCO will be responsible for covering the differences; and

- The City will conduct a greenhouse gas emissions inventory using software developed by ICLEI Local Governments for Sustainability and other resources.

The working group feels that an oversight committee, including members with specific expertise in energy efficiency and renewable energy technologies, will help ensure that the City's future efforts are well-focused and effective. It is critical that the City establish a position of staff with the primary responsibility for overseeing the City's sustainability program. According to the Rocky Mountain Institute, which has studied efforts by multiple communities to develop sustainable energy programs, every community that is succeeding in making energy-efficiency improvements has a strong organizational framework that includes a dedicated program director.1

The City's current action plan involves taking initial steps to assess the City's current energy use and establishing an EPC under which future actions will be identified and implemented to increase energy efficiency. The working group concluded that a full assessment of the City's action plan, therefore, is not possible until the EPC work has generated specific recommendations. That said, it is generally agreed that the City's approach makes good sense, since it calls for assessing current systems, defining suggested conservation measures and new facilities, and eventually measuring the success of the measures undertaken against long-term goals.

Currently, the scope of the RFP does not include conducting a baseline assessment of community-wide energy use. Just as a baseline assessment is critical for defining the City's future actions and subsequent evaluation of progress, the lack of a baseline assessment of community-wide energy use is an obstacle to planning and evaluating a community action plan. At this time, there does not appear to be a clear path forward for defining the baseline community-wide energy use, but the working group is in agreement that one should be established.

B. City-Sponsored Incentives for Sustainable Energy Investments

The recommendations presented in the main body of the report are presented in greater detail here to provide specific information about each of the energy saving activities. The activities which should be encouraged through an incentive program include:

Energy saving activities, including such measures as

1. Increasing insulation in homes and business structures
    i. install attic and wall insulation
    ii. replace inefficient windows with EnergyStar windows
    iii. upgrade or wrap water heaters
2. Increasing energy management in homes and businesses
    i. install a programmable thermostats
3. Installing higher efficiency heating or cooling plants
    i. for natural gas heating, install or convert to a 94% or higher efficiency furnace
    ii. install or convert to a geothermal heat pump
    iii. add solar heating panels to a home or business
    iv. add or replace an existing air conditioner with an evaporative cooling system
4. Installing higher efficiency water heating
    i. install or convert to solar water heating
5. Replacing older, inefficient appliances with Energy Star-rated appliances
    i. refrigerator
    ii. washing machine
    iii. clothes dryer
6. Upgrading the efficiency of lighting
    i. replace incandescent lamps with CFLs
    ii. add solar tubes to displace electric powered light in daytime
7. Those building improvements as defined in Federal IRS regulations to be eligible for Residential Energy Tax Credits, if not already included herein
8. Including in that category any project that uses only or primarily recycled materials (e.g., an ecoboard staircase or deck), or water conservation building projects or products; and
9. Changing the list of building improvements over time as technology and fees change.

1 Hubbard, A. and C. Fong, 1995, *Community Energy Workbook. A Guide to Building a Sustainable Economy*, Rocky Mountain Institute, Snowmass, Colorado.

The residents and businesses of Golden are rapidly becoming aware of sustainability issues and the value and possibilities of both energy efficiency improvements and renewable energy generation. City-sponsored incentives could be very effective in moving individuals beyond awareness and toward action that would support the City's community-wide sustainable energy goals.

Cost. It is recognized that the City will have variable revenue streams over time due to economic periods of good and bad times. It recommended that the City establish a program that provides it the flexibility to adjust the incentive package each year on the basis of the anticipated yearly budget. Thus, this proposal provides a tiered plan of incentives (see Section IV, Range of Alternatives). Its adoption will not unduly tie the City to high costs when budgets are lean but it will provide appropriate incentives when it can be afforded within the City budget.

It is important to note that incentives involving the waiver of fees and taxes as proposed for the base level program may not, in and of themselves, represent a loss of revenue to the City. If the incentives are a primary driver in encouraging individuals to invest in energy efficiency improvements and/or renewable energy technologies and, without them, the activities would not have been undertaken, then there would have been no revenue to the City without the incentives. Incentives involving tax reductions, grants, and other financial investments would translate into real costs to the city. These costs, which are hard to predict in advance, could be limited on a year-by-year basis by projecting the City's revenues and costs and then selecting a specific tier of incentives, as discussed below in Section IV, Range of Alternatives.

Alternatively, or additionally, the City could contain costs on a year-to-year basis by establishing specific caps on the program. For example, the City could elect to make incentives available on a first come, first served basis up to a specific limit. Another option for controlling the costs of the incentive program would be to establish priorities for which activities would be included in the incentive program.

Effectiveness. The City could elect to provide incentives only for those activities that have a high energy reduction payoff (e.g., for installation of insulation, conversions to evaporative cooling systems, installation of compact fluorescent lighting and solar tubes, and weather stripping). Other activities that have a lower energy reduction payoff could be excluded from the incentive program or covered with a less Ambitious degree of incentives.

Political Feasibility/Community Acceptability. Incentives that only defer revenue that was not going to be realized anyway (such as permit fees to encourage energy efficiency measures), should have a high degree of acceptance. To the degree real revenue is reduced, or financial incentives are given in the form of grants or credits, there would be less feasibility. That is why it is proposed that for maximal effectiveness the greatest efficiency gains be promoted first, so the rewards will be seen to effectively offset the costs.

Energy Equivalences. In order to properly discuss energy use and to quantify energy efficiency achievements, it is necessary to reduce the differing energy measures to a common unit of measure. In the energy community, the common unit typically is the British Thermal Unit (Btu). Since auto fuels, home heating, home lighting, etc., are measured in other units (e.g., gallons of gasoline, gallons of diesel fuel, gallons of fuel oil, therms (for natural gas), kilowatt hours (kWh) for electricity), it is necessary to have the conversions from these fuel source measures to Btu so our progress across all of the areas can be combined and tallied. The following relationships should be used to normalize resource measures.

Electricity:

1 KW = 3,413 Btu/hr

Natural gas:

1 cu ft natural gas = 1,030 Btu

1 CCF = 100 cu ft = 1 Therm = 103,000 Btu

1 MCF = 1,000 cu ft = 10 Therms = 1,034,000 Btu's = 1.034 MMBtu

Propane:

1 gal propane = 91,600 Btu
1 cu ft propane = 2,500 Btu

Gasoline:
1 gal gasoline (mid grade) = 125,000 Btu

Ethanol:
1 gal ethanol = 76,000 Btu

Fuel Oil:
1 gal #2 fuel oil = 139,000 Btu
1 gal #4 fuel oil = 145,000 Btu
1 gal #6 fuel oil = 150,000 Btu

Other Potentially Relevant Equivalences:
1 barrel of oil = 42 gal of oil
1 Btu = 252 calories
1 ton of refrigeration = 12,000 Btu/hr
1 lb residential garbage = 2,500 Btu
1 lb coal = 12,000 Btu
1 lb wood = 3,500 Btu
1 hp = 746 watts
1 hp = 33, 479 Btu/hr (boiler)
1hp = 33,000 foot-lbs/min
1hp = 42,440 Btu/min
1 watt-hour = 3.412 Btu
1 kilowatt = 1,000 watts
1 kilowatt = 1.341 horsepower
1,000 kilowatts = 1 Megawatt

C. Solar Access Ordinance
The U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy has addressed solar access issues saying "Solar access is the availability of (or access to) unobstructed, direct sunlight. Your access to sunlight becomes important if you use solar energy for space heating (and cooling), water heating, electricity, and/or daylighting…Early efforts to protect solar access took the view that every landowner's right to natural sunlight deserved protection. It was later realized that broad solar access substantially benefited the entire community in many ways. Energy/cost savings, comfort, construction cost savings, enhanced market value, future solar energy utilization potential, and aesthetics were all improved"
http://www.eere.energy.gov/consumer/renewable_energy/solar/index.cfm/mytopic=50013).

Cost. The City's costs would be in permitting checks and enforcement, and possibly litigation to ensure compliance. "Loser Pay" provisions could be put into force so that a homeowner or business owner who violates the provision must pay for litigation if they lose.

Effectiveness. A solar access ordnance would help ensure that costly investments have a pay-off both to individual property owners, as well as to the overall objectives of the community-wide sustainable energy goals. Investments in active solar energy systems and passive solar design, typically are (1) long term investments and (2) very capital-intensive (costly). Because such activities are important elements of a

sustainable energy program, residents and businesses who make these types of investments need to be protected from loss of access to sunlight.

Political Feasibility /Community Acceptance. A solar access ordinance would not preclude property owners from making any improvements along the north, northeast, or northwest sides of their property. However, such improvements would be constrained by the lowest position of the sun on the horizon during the year (i.e., on the winter solstice) and the shadows that would be cast on neighboring properties where solar energy and sunlight-dependent energy efficiency measures have already been installed.

The solar access ordinance would be restricted in application only to those properties adjacent to other properties on which investments have been made in active solar energy systems, passive solar design, and other sunlight-dependent energy efficiency improvements. Property owners wishing to make such investments would not be granted the right to demand that neighbors remove structures or vegetation that would block sunlight. However, the ordinance should include provisions that would help resolve situations in which existing vegetation (e.g., a row of evergreen trees) along a north lot line has the potential to shade the neighboring home enough to compromise the performance of existing or new sunlight-dependent systems. Such resolution could include requiring property owners to maintain such vegetation to a reasonable height.

D. Increase Use of Alternative Fuels in Transportation

Using ethanol in currently available internal combustion (IC) engines is less energy efficient than using gasoline or gasoline with 10% ethanol because ethanol has less than 70% of the energy of gasoline. CNG is not from a renewal source, but it is much cleaner than gasoline. Most available hybrid vehicle engines today do not use alternative energy sources because they run on gasoline to charge the batteries. Because of the high gas mileage performance of hybrids, those engines also make a contribution to energy efficiency goals. IC engines in hybrid vehicles can be converted to renewable energy fuels, and the batteries can be charged from the power grid sources and from City, residential, and business installations of solar PV panels. All-electric, battery powered (charge from the power grid) vehicles do not produce harmful emissions on the road. While our electric grid power is now generated primarily from burning coal, the savings in CO2 production by all-electric over gasoline engines remains a problem. Xcel is in process of building CO2 sequestration into new power plants in Colorado.

Cost. The cost of hybrid vehicles is higher than for comparable capacity and performance gasoline powered vehicles. The cost of alternative fuels has to be 10% to 25% less per gallon than for gasoline to cost about the same on a per mile basis in current gasoline or multi-fuel engines. Rising prices of corn can raise the price of ethanol that is produced from corn. If the City does cost-effectiveness analyses, as recommended, before making major fleet changes, the costs to the City should be affordable and considered to be part of our contribution to fighting global warming.

Effectiveness. Adoption of these recommendations will contribute primarily to renewable energy and to a lesser extent to energy efficiency.

Political Feasibility/Community Acceptability. The City has already taken some action in this area. These actions included "Incorporating more electric utility vehicles into the fleet and phasing out some of the gas powered vehicles, as well as considering alternative fuel powered equipment" and "Downsized by two staff vehicles for fuel efficiency in the Fire Department." These actions by the City are an indication that Council will consider favorably the purchase of alternative fuel vehicles. Adoption of alternative fuel vehicles by individuals in the community will depend on how well the public is informed and convinced that greater use of biodiesel/alternative fuels is a good idea.

There is some resistance to increased use of ethanol for IC engine fuel because is raises the price of corn. Another objection to increased use of ethanol is that it has been shown that it contributes some pollutants of its own (ozone in particular) and that increased production of corn requires additional water, fertilizer, and pesticides (the latter two requiring additional petrochemical feedstock). Cellulose is a more energy efficient source of ethanol than corn, and methanol (wood alcohol) can supplement ethanol as engine fuel; NASCAR will use 100% alcohol (ethanol and methanol) in race cars this year. Ethanol in multi-fuel gas engines provides lower gas mileage than gasoline does; however, the better antiknock properties of ethanol allow its use in higher compression ratio engines that outperform gasoline engines in power and thermal efficiency (gas mileage). The Energy Working group is recommending City

collaboration with NREL and CSM (see recommendation E); they could make a contribution to improving the efficiency of IC engines using alternative fuels. The U.S. cannot supply enough ethanol to allow all of our IC engines to use it, but every gallon used in lieu of gasoline reduces our dependence on foreign oil. Combustion of alcohol in engines produces some pollutants of its own, but produces less greenhouse gas CO2 than gasoline on a per gallon or per mile basis. It appears that the market has determined that these disadvantages of using ethanol are outweighed by reducing dependence on foreign oil and reducing CO2 emissions, whether or not higher efficiency engines that take advantage of the better antiknock properties of ethanol are mass produced.

E. Funding Energy Efficiency Improvements and Rehabilitation of Existing Homes

Cost. Administrative costs for this program would primarily accrue to Jefferson County real estate agents who are already part of the sales process and title transfer. The City of Golden would have to inject itself into the sales process to ensure compliance with any ordinance that requires ECM compliance. Sellers or their agents would bear the costs of compliance, proof of compliance, and any improvements. The City would realize some costs associated with a loan fund, billing, defaults, etc. However, the funding of the loan fund itself could be done in several fashions to eliminate risk of City funds, and some losses would be covered by interest.

Effectiveness. The rate at which the housing stock improves can be accelerated only if there is a driving force for this change. To be effective, these provisions need to be integrated into standards for buildings, revenue from time of sale, and financing of a loan fund. Given that Golden has a 1% growth rate the current housing stock represents 99% of the homes in a given year. There is a greater number of homes sold than built. The cost of a building represents only about 1-2% of its costs over time, and buildings account for approximately 35% of all energy usage in this country. This recommendation would jump-start ECM activity in a way that would be gradual, but effective over time.

Political Feasibility/Community Acceptability. A requirement to improve the energy efficiency of a property would be seen as the heavy hand of government by many people. On the other hand, recent news on limited resources and global warming have led some people to ask what they can do to make a difference. We believe a revolving loan fund, that does not risk City funds, and is funded by excessive users of resources, would be acceptable. The education committee could be effective in teaching how a community fund would benefit existing housing stock and thereby improve all home values.

Requiring investment in all homes at time of sale, unless and until they meet all ECM criteria may meet with greater resistance. It has been in place for a long time in other cities, however, and once it becomes known, recognized, and well communicated, it may simply fall into that category of "cost of doing business," that is better than a moving target and unknown or hidden costs. The range of alternatives discussed in the report presents a tiered approach for suggestions on how to mitigate this.

F. Xcel Varied Electricity Rates

Cost. Boulder paid Xcel a one-time administrative fee of $40,000 to cover the cost of updating billing systems to charge, collect, and remit the tax. The only other cost is paid by citizens, which averages $16/year for homes, $46/year for businesses, and $3,226 for industry.

Effectiveness. This would be a highly effective means to energy reduction, because the baseline could be set at whatever level necessary to achieve the 15% reduction. The program would necessarily reduce energy consumption or raise revenues that could be used for other energy reduction programs. This revenue could be used to make lower-income homes more energy efficient.

Political Feasibility/Community Acceptability. Boulder became the first City in the nation to implement a carbon tax, so passage by Council would require some progressive thought. However, this recommendation does not go as far as Boulder's program. The recommendation must be publicized in such a way as to make it more acceptable to the community - as stated earlier, this is a "polluter pays" structure.

G. City of Golden Energy Audit Program and Implementation Plan

Cost. This program could be funded with excess fees from high energy users (See Recommendation G, Xcel Tiered Electricity Rates). Therefore, only administrative costs would accrue to the City. This is the

kind of initiative for which Federal grant money exists from U.S. Department of Energy, Environmental Protection Agency, and other organizations. Alternatively, a small City investment, such as $5,000 could be used to provide 50 grants of $100 each. The recent $75,000 grant proposal from the Economic Development Commission could be a funding source for this initiative, as well.

Effectiveness. Golden's current housing stock and commercial space offers many opportunities for cost-effective energy efficiency improvements. Energy audits are the first step in choosing cost-effective energy efficiency improvements for homes and businesses and are educational (see Recommendation C, Energy Education Program). By showing potential savings opportunities and paybacks on paper (and mentioning available incentives), residents and business owners are more likely to make improvements. By making energy efficiency improvements, property owners add value to buildings, save money, increase comfort levels and help Golden achieve its energy goals.

Political Feasibility/Community Acceptability. Because citizens would have to seek out the energy audits, and the community grants for the audits, it is expected that it would be acceptable to the population that is utilizing the service. As for utilizing community resources for only a few citizens, this is no different than the senior citizen or veterans tax credits that meet with muted opposition. If funding is primarily through grants and user fees, it should meet with even lower opposition.

H. Dark Skies Initiative/Community Lighting Standards

Adopting dark skies ordinance(s) is a good step for the City to take as part of its "early action plan" to address our community's sustainability goals. Based on Council interest, the City staff are already drafting a specific version of a dark skies initiative for Golden. Therefore, adopting "Community Lighting Standards" is an action the City is already considering that addresses our community's sustainability goals as well as other purposes. Based on the most likely timing for the introduction of the city's "Community Lighting Standards," these standards could be adopted shortly after the introduction of the full set of sustainability recommendations from the citizen working groups.

Cost. The cost of implementing the Community Lighting Standards will vary depending on which requirements are adopted and how broadly they are applied. In general, the costs of implementation are likely to be partially and even significantly offset by the potential long-term energy cost savings for the City and for residents more generally.

Effectiveness. The actual impact of adopting these standards on community-wide energy consumption and energy efficiency would be determined by the specific requirements in those standards. Assuming the standards adopted were crafted to maximize energy conservation and energy efficiency gains (one of the stated goals of the Community Lighting Standards), doing so would be an effective element of a multi-faceted approach to addressing Golden's community-wide energy consumption and energy efficiency.

Political Feasibility/Community Acceptability. Adopting the Community Lighting Standards would be supported by many citizens as well. While there are some concerns about implementation of the Community Lighting Standards expressed by some citizens (such as maintaining adequate lighting to promote public safety), these concerns are generally easily addressed through limited public education and specific elements of the standards (indeed, providing adequate lighting for safety and security is one of the stated goals of the Community Lighting Standards). Many Golden residents would support the adoption of some form of dark skies initiative due to enhanced nighttime sky views (and enhanced telescope opportunities) to reduced energy consumption and lower environmental impact.

I. Promoting Use of Compact Fluorescent Lights

Cost. Education costs would be low because the City could use existing communication avenues (e.g., the *Golden Informer*) to educate residents and businesses on the benefits of using more efficient lights. Implementation costs could range from low to high depending on whether the City offered incentives to replace inefficient lights with efficient ones; therefore, the City would have flexibility to implement a specific plan that fit within its budget. CFL recycling costs could be relatively low if the City simply established a collection point for used CFLs and then periodically transported them to the Jefferson County disposal facility or some other recycler. The cost for the City to purchase and operate a CFL recycling

device is not known and would have to be researched. LED light strings may initially cost more than conventional lights, but more than pay for themselves within a season or two, depending on how often they are used.

Effectiveness. Home electricity use would be reduced by approximately 1% for each 60-watt incandescent bulb replaced by a 15-watt CFL (assuming 850 kilowatt-hours per year total home electricity use). The reduction would be greater for each higher-watt bulb replaced. The savings for businesses could also be greater because many businesses tend to have more light bulbs turned on for longer periods of time. Every CFL can prevent more than 450 pounds of emissions from a power plant over its lifetime.

Political Feasibility/Community Acceptability. The political feasibility of promoting the use of CFLs and LED holiday lights would be high. Modern CFLs provide bright, warm light so individuals do not have to sacrifice quality to make the switch. LED lights can be attractive, more durable than incandescents, are shatterproof and shock resistant, and have a life span of more than 50,000 hours. CFLs are relatively low-cost, extremely simple to use, and should be relatively non-controversial. The cost to the City could be relatively low, and the potential impact relatively high. This is truly low-hanging fruit.

ATTACHMENT 1
BRAINSTORM ITEMS NOT INCLUDED IN SPECIFIC RECOMMENDATIONS

This list represents items that did not make top "priority" list, but that should be passed forward for later consideration. This list has been further pared down where overlap exists with proposals that were put forward already, or existed in this list.

NOTE: if an item is italicized, it also appears in another bucket, as indicated in parentheses

ACTIONS APPLYING TO RESIDENTS AND BUSINESSES

V: Motivation/Facilitation for Voluntary Actions

1. Voluntary program where residents/businesses commit to improving their energy efficiency by taking various actions, to potentially include:
    a. sign on to clean their refrigerator coils at a certain frequency
    b. commit to only purchasing relatively energy-efficient appliances/devices
2. Residential roof colors (light)
3. *Distribute water saving devices, such as low-flow shower heads and faucet aerators*
4. Tree planting program to maximize shading of buildings
5. Sponsor city-wide contest to get residents to enroll in a voluntary program to pledge to reduce their energy consumption by 15% in one year. Give out donated prizes (ranging from free CFLs, to free passes to workshops, up to a grand prize of one energy audit) through random drawings.
6. Sponsor educational workshops and lecture series.
7. Education programs on energy use should tie to water education programs: a significant portion of a home's energy consumption is related to heating water so using less water will reduce energy consumption.
8. *Promote construction of smaller homes in our community. (I)*

O: Ordinances/Mandates

9. Ordinance establishing energy efficiency requirements for new industrial permits
10. Ordinance requiring industries to develop and implement energy conservation programs
11. Ordinance lowering business fees or waiving permits for energy efficiency improvements and fuel switching (including use of solar energy), heat recovery/co-generation systems
12. The City shall outlaw up-pointing lights completely, not grandfathered in.
13. The City shall require that businesses in Golden remove from their inventory lights which do not meet the above requirements.
14. The City shall eliminate sales tax on compact fluorescent fixtures in the city, for other Energy Star rated lights.
15. City street lights turned off at specific time during the night (e.g., 4:00am)
16. Sustainability from a materials and energy standpoint shall take precedence over historic preservation. The City of Golden is currently struggling with what is "historic" and also looking toward sustainability. These are going to be in conflict with each other in some cases. While certain structures may be historic, they may not be worth keeping. And the cost to have them meet enhanced energy standards in particular may be prohibitive. I would recommend that the City NOT give the Historic Preservation Board any veto rights over upgrades and renovations IF, the owner of the home/business is making changes to substantially improve the energy efficiency (To be defined in the code), or green materials content of their home or business.
17. Increased density is desirable from a sustainability standpoint. However this is in conflict with the character of some neighborhoods. The City of Golden shall convene a citizen board whose task, along with City personnel, shall be to identify streets or plots that can be rezoned for increased density by 2010. Emphasis shall be placed on properties near existing public transportation and walk-able shopping distances, not just an increased density of car drivers. No violation of easements or setbacks shall be allowed, with the proviso that two dwellings shall be possible if the square feet of the lot exceed 7000.
18. Green space is desirable from a sustainability standpoint. The City shall look at undeveloped land in the City boundary and the zoning of same, and make a clear statement as to the ability of developers to change the zoning, or act on existing R1/R3 zoning. Where possible the City shall minimize the additional area that is zoned R1/R3.

I: Incentives

19. Lower business fees or waive permits for energy efficiency improvements and use of solar energy
20. For contracts less than $20,000 (indexed to inflation), preference shall be given to women, disabled, and minority owned businesses and those that are in Jefferson County limits. This shall be done by reducing by 5% their bid price for cost comparison (up to 10% for both minority owned and local). The purpose and intention is to specifically help locally owned businesses over those not locally owned. This both helps to sustain Golden's businesses, as well as minimizes energy use for non-local business. Publicly/privately owned entities with substantial (>50%) revenue from within Jefferson County shall be considered local.
21. For contracts greater than $20,000 (indexed to inflation), preference shall be given to Colorado based business over out of state businesses with a 5% reduction in bid price for comparison purposes.
22. Golden shall select, or recommend among several Green Certification (Such as "Cradle to Cradle" ™ by MBDC) organizations and promote through City literature, website presence, yearly award ceremony, or other means the promotion of businesses that are certified to be "green".
23. Businesses that upgrade/renovate (at least 50% of their annual revenue invested) and make use of sustainable practices shall see a reduction in their City sales tax receipts of 5% (this can not be combined with the above incentive).
24. *Promote construction of smaller homes in our community. (V)*

P: Programs/Projects

25. Get involved with Sierra Club's Cool Cities campaign and sign the US Mayors Climate Protection agreement (Res. 1740)
26. *Provide energy services to business/industry, e.g. audits, assessments for energy efficiency improvements, other technical assistance (I/M)*
27. Negotiate aggregate purchasing contracts that specify renewable power for commercial and residential sectors
28. *Implement program offering residents and businesses the option of purchasing renewable power for a surcharge (V)*
29. Establish a program to collect and properly dispose of non-efficient appliances. If old not efficient appliances are given away to others to use (e.g., donated through a support agency), there is not as great a gain in reducing energy consumption community-wide.
30. Establish a voluntary program which residents can enroll in to pledge to reduce their energy consumption by 15%. This could be a fee-based program through which residents get access to energy audits, energy bill analyses, workshops, etc. Or it could be more symbolic and free. Also, this program could be the mechanism by which baseline energy use data are collected.
31. Create a broad scale sustainability project to pilot in the community (e.g., Glen Maynard's proposal)

M: Measurements (determine baselines)

32. City of Golden satellite infrared study done.
33. *Provide energy services to business/industry, e.g. audits, assessments for energy efficiency improvements, other technical assistance (I/P)*
34. Less rigorous and comprehensive: Use voluntary enrollment program to collect baseline energy use data and then extrapolate.
35. More rigorous and comprehensive: establish city-funded project to collect and evaluate energy use data community-wide.

ACTIONS APPLYING TO CITY OPERATIONS

V: Motivation/Facilitation for Voluntary Actions

36. *Use fluorescent lighting and/or LED lighting in City buildings, signs, and street lighting vs. incandescent lighting.*
37. *Use the energy efficient bulbs in all new construction. (I)*
38. *Use highest efficiency HVAC equipment in all City buildings*
    a. *Replace lower efficiency equipment in existing buildings on a schedule, based on cost effectiveness. (I)*
    b. *Use the highest energy efficient HVAC equipment in all new construction. (I)*

P: Programs/Projects

39. Investigate with NREL how to get manufacturers of fixtures to accommodate the energy efficient bulbs; florescent bulbs with wide bases will not fit into some current fixtures.
40. The City shall speed up their conversion to LED traffic signals.

41. Investigate opportunities for City to collaborate with NREL on City renewable energy projects.
    a. It is known that ethanol C2H6O has less energy per gallon than gasoline CnHn+10; for this reason ethanol in gasoline engines produces lower gas mileage. It is also known that ethanol has better anti-knock properties than gasoline. Fuel efficiency is increased with increasing compression ratio: in higher compression ratio engines designed for ethanol use, fuel mileage can be better than that of gasoline. NREL might be the place where high efficiency ethanol engines are proposed for general use (Jaguar already has them).
42. Negotiate minimum standards for renewable energy portfolio with Xcel
43. The City shall have a goal of obtaining their own energy from renewable resources that meet or exceed Colorado renewable energy standards.
44. The City shall develop a strategic plan to create and maintain a gray water system throughout the city, particularly where new construction is taking place. This shall be metered and allow residents to *not pay* for waste treatment.
45. The City shall develop a comprehensive water reduction strategy that may include City provided shower heads, incentives to remove high flow toilets and appliances (dishwashers and washers) and start mandatory watering restrictions even when the reservoirs are full. Why wait for a crisis to act.

ITEMS POTENTIALLY COVERED BY THE BUILDING GROUP:

- City require new homes to meet certain efficiency requirements in terms of household appliances
- Require certain HVAC efficiency level in new construction or for any replacements.
- Residential building codes:
  - setting energy efficiency standards for new construction or major renovations
  - requiring light colored, high albedo rooftops and pavement
- Commercial building codes:
  - raising energy efficiency standards for new construction, significant renovations, remodeling, additions, other activities requiring permit
  - requiring light colored, high albedo rooftops and pavement
- The City shall adopt building codes, such as those from Green Building Council. While it is desirable to obtain at least Silver Leed™ Certification for City construction, it may be impractical due to costs of the certification itself. However the City should either develop the expertise within the building department to develop a "Green Golden" certification that mirrors the Green Building Council certification, or be willing to provide incentives to business that either build and meet these criteria on their own during construction or seek certification later.
- City: A pledge to move to carbon-neutral government buildings through a combination of WindSource/Xcel rebates/Demand Side Management/LEED certification.

Solid Waste & Recycling

Solid Waste & Recycling (SW/R) Team: *Dave Carver, Bob Nelson, Larry Larson, Kaye Johnson, Ron Lillich, Karen Lord Paris, Lynda Wentworth, Betsy Bishop, Jan Battiste, Kristen Wrona, Don Cameron, Akira Rattenbury and Philip Bake,* **SW/R City Representative:** *Chris Naber*

BACKGROUND

As part of the Sustainable Golden Initiative the Solid Waste/Recycling (SW/R) team was tasked with developing recommendations that would:

Reduce our solid waste stream contribution through reduced consumption, the expanded use of recycling programs, waste diversion programs and other tools that would reduce our solid waste stream by 25% in 10 years.

The SW/R team felt that this objective is achievable. However, an accurate baseline for current SW/R levels is not available so a specific percentage change in behavior would not be meaningful at this time. However, as these recommendations are implemented improved tracking and record keeping will allow for more accurate data to be compiled which will allow the City to monitor SW/R trends.

This team has chosen to focus on the single family dwelling residential market within the City of Golden, which accounts for the majority of the City of Golden's population, rather than the Colorado School of Mines (CSM), commercial or the industrial markets. Multi-family dwellings such as apartments, condominiums and group living communities may also benefit from these recommendations if their unique SW/R contracts are considered. It is believed that the residential SW/R market can provide the largest and most immediate environmental benefits and impact the majority of Golden residents.

After reviewing pertinent industry research, surveying 117 Golden residents, listening to presentations by local SW/R industry experts, and considering best practices from cities around the country and the world, the SW/R team has generated eight recommendations. The first four recommendations, "A" through "D", are expected to provide the greatest environmental benefit, be the most feasible to implement, and be amenable to the residents of Golden. Recommendations "E" through "H" are, in essence, secondary recommendations that they were supported by Golden citizens but were believed to be economically and/or politically more difficult to implement and/or provided fewer environmental benefits.

RECOMMENDATIONS

A. Single Stream Recycling (SSR)

It is recommended that the City of Golden implement a SSR system to achieve a higher participation of recycling, and increase current level of recycled materials in the residential communities. SSR is accomplished by using a single recycling bin for all recyclable materials. No sorting is required by the residents and all recyclable materials are disposed of together until they reach a recycling center, at which point sorting is accomplished by both automated and manual efforts.

Rationale

Many communities in the US and abroad have switched to single stream curbside recycling because it increases the volume of recycled materials, captures the intrinsic value of the material, and increases revenues that can be shared among haulers and municipalities. It also increases the scope of materials that can be recycled, and decreases the volume of trash sent to landfills. Haulers favor SSR because it reduces the number of trucks and the frequency of pick-ups. Single-compartment trucks are cheaper to purchase and operate, collection can be automated, and collection routes can be serviced more efficiently.

SSR is aligned with Golden's sustainability goals; it increases both volume and participation in recycling by making it easier for residents to recycle. By collecting larger volumes of recycled materials, Golden can reduce energy wastes embedded in materials that are land filled. (For example, recycling

aluminum saves at least 75% of the energy it takes to make a new can.) The City of Golden can become an ally in reducing greenhouse gases, and an advocate for policy changes that will increase recycling even more.

A potential downside to SSR over conventional recycling is that commingled materials increases contamination primarily as a result of glass that becomes pulverized in the other materials, such as paper. However, several studies have shown that the average increase in contamination is minimal; two percent or lower, which is a gain compared to not implementing SSR.

Golden is fortunate to have several options for single stream sorting facilities including locations in Denver and Boulder which have already absorbed the capital costs of upgrading their facilities.

Examples

- Denver Recycles switched to SSR for four primary reasons: to provide operational efficiencies, to offer expanded material collection options, to increase customer satisfaction, and to save money. Immediate success was attained within all four categories. This facility also has the capacity to support Golden's SSR stream.

- A Dallas study demonstrated a 46% participation increase and a volume increase of 120%.

- A Collier County, Florida study demonstrated recycled volume increased as residents discovered greater capacity in 64-gallon carts rather than 18-gallon bins.

Alternatives

Ambitious: Write a detailed ordinance that ensures a high level of performance and accountability by the selected recycling vendor(s). The ordinance should specify frequency of pickup, quality standards to be maintained in recycled goods, and distribution of revenues from recycled goods. The city's in-house resources or a contracted consultant should be tasked with this effort. All residential recycling offered by one or more vendors will be of the SSR type.

Moderate: Ensure vendor compliance as per a detailed ordinance but allow residents to choose to use SSR or the current system of manually sorting their recycling and to contract with recycling vendors that will pick up on multi-stream recycling.

Minimum: Status quo.

B. Pay As You Throw (PAYT)

Golden should implement a PAYT program to achieve higher participation of recycling, and increase current level of recycled materials in the residential communities. With PAYT a resident's trash bill is tied to the amount of trash collected. The more you recycle, the less you pay, or conversely, the more you throw away the more you pay. The amount of trash that is disposed of is measured by the size of the trash container used by each resident.

Rationale

PAYT is aligned with Golden's sustainability goals; it increases both volume and participation in recycling. By collecting larger volumes of recycled materials, Golden can reduce energy wastes embedded in materials that are land filled. The primary benefits are less trash to the landfill and more reusable material to the recycling center.

As a PAYT program is introduced to the residents in Golden and the citizens become educated about the financial benefits of PAYT, it is believed the practice of recycling will increase. The monetary incentive results in less trash and correspondingly more recyclables. According to the EPA, "Up to 75 percent of trash in an average trash can is recyclable, but typically only 25 percent gets recycled." Under PAYT, the EPA says, "Municipalities often see 25-35 percent decreases in waste.

Typical PAYT implementations provide three sizes of trash containers: 32, 64, and 96 gallon, with the monthly price for each closely tied to container size. The trash hauler provides each residence with a container of the customer's choice along with optional specially marked plastic bags for overflow, include recycling fees within one monthly bill. The City decides the number and sizes of available trash containers to be supplied to the residents by the hauler. The hauler (or haulers) bids for the franchise serving all of

Golden for a specified number of years. Each bid specifies the price that household's pay monthly for the different sized containers and recycling pick-up.
A detailed SW/R ordinance should include the performance expectations and measurements for all potential haulers. Lafayette, which has a population comparable to Golden, has crafted a detailed ordinance that addresses a PAYT model. Golden should review this ordinance as a model to emulate.

Example figures from PAYT programs:

Lafayette, CO:

Trash container size		Recycling	Cost per month
32 gallons	$5.99	$1.00	$6.99
64 gallons	$11.98	$1.00	$12.98
96 gallons	$17.97	$1.00	$18.97

$3.00 stickers for extra trash bags when needed

San Jose, CA:

Recycling is included in the cost for trash hauling

Trash container size	Cost per month
20 gallons	$18.98
32 gallons	$20.15
64 gallons	$40.30
96 gallons	$60.45

$4.90 for extra garbage stickers to place on overflow trash bags

Fort Collins, CO:

Data from four years covering the success of PAYT, adopted in 1995:

Population	Year	#Single-Family Residences	# Recycling	% Recycling
88,439	1991	21,368	3,843	18%
95,899	1994	23,552	8,892	38%
102,569	1995	24,488	14,813	61%
102,569	1996	25,444	20,497	81%

Examples

- Lafayette, Colorado: recently adopted PAYT program that provides trash and recycling pickup for $7 a month for those residents using the 32-gallon trash container. Program participants have voiced few complaints.
- Boulder, Colorado: six months into Boulder's volume based trash ordinance (adopted in November, 2000), 52% of Boulder's households subscribed to one can or less per week trash service, compared with 26% of households before. This change represented 3,800 households who switched from two or three cans of trash service per week down to one can per week.
- San Jose, California: 80% of residents opted for the 32-gallon container and, as of 2000, the City reached a diversion rate of 64%
- Kansas City, Missouri: adopted PAYT in 2004 resulting in a 32% decrease in trash going to the landfill. Additionally, their recycling program continues to grow in popularity, despite initial concerns that PAYT would cause a financial burden in lower income areas.

Alternatives

Ambitious: Implement mandatory PAYT with steep price increases commensurate with the larger trash containers. This will incent greater recycling and smaller trash containers.

Moderate: Include the ability for larger households to pay per capita, instead of per household. This will address concerns of those who think it is a burden on large families, but still capture small households with excessive waste.

Moderate: Moderately scaled price difference between each trash container.

Minimum: Status quo.

C. Organic composting – Central Public Drop Location

Golden should provide a publicly located and supported facility for free public drop off of organic matter including yard waste such as leaves, grass and branches and kitchen food waste. Once composted, this material could either be given back to the public or sold to help offset the costs of operating the composting facility.

Rationale

Composting is the transformation of organic material (plant matter) through decomposition into a soil-like material called compost. Invertebrates (insects and earthworms), and microorganisms (bacteria and fungi) help in transforming the material into compost. Composting is a natural form of recycling, which continually occurs in nature.

Currently, each person in the United States throws away about 4.5 pounds of garbage every day. About 20 – 25 percent of this is organic food waste, which could become a valuable, marketable soil amendment if composted. Composting organic waste streams reduces the amount of Municipal Solid Waste (MSW) requiring disposal by almost one fourth, at the same time providing a nutrient-rich soil amendment. Compost added to gardens improves soil structure, texture, aeration, and water retention. When mixed with compost, clay soils are lightened, and sandy soils retain water better. Mixing compost with soil also contributes to erosion control, soil fertility, proper pH balance, and healthy root development in plants.

Implementation of a publicly provided organic composting facility includes the designation of a central location for residents to drop off their organic material at no cost. This organic material will then be collected by a designated provider and hauled to their location or a new site to be composted.

Examples

- Boulder is running a pilot composting where compost is picked up at the curbside of approximately 2,500 households.

- Whole Foods in Cherry Creek showed a 75 percent reduction of solid waste when food wastes were composted.

- The City of Toronto has very aggressive goals of diverting 60 percent of their solid waste by 2006 and 80 percent by 2009; composting is a major part of meeting these goals.

Alternatives

Ambitious: The City of Golden should establish and maintain a no-cost public drop-off facility for organic waste. The City would also move the accumulated organic waste to an appropriate commercial site for processing. One possible source of funding to pay for this option are grants from EPA Region 8, which is designed to help cities address solid waste reduction, recycling and management.

Moderate: The City would manage the public site but charge for organic waste drop-offs.

Minimum: Status quo. Residents are free to recycle organic waste with existing organic waste vendors.

D. Single Vendor Solid Waste Franchising

It is recommended that the City of Golden select a single SW hauler who will provide exclusive SW service to all of Golden's residents.

Rationale

Single Vendor SW franchising is aligned with Golden's sustainability goals; it cuts down on the residential street traffic and the requisite energy to power the redundant SW trucks, reduces air and noise pollution, increases street safety and lowers the amount of wear and tear on the streets of Golden. Additionally, if effectively negotiated, the average household SW disposal bill can be reduced.

The current system in Golden allows any hauler who is willing to pay the $50 license fee to provide service to Golden residents. Currently six haulers, which can equate to numerous trucks on the same street throughout a week, provide pickup for trash and recyclables collection. This adds to noise pollution and street deterioration. The single hauler proposal increases energy savings, and reduces noise pollution and street maintenance, by allowing one hauler to service all residences. If the single SW vendor is unable to provide curbside recycling pickup it may be necessary to have a second vendor provide this service. However, it is preferable for one vendor to provide both SW and recycling services from the same vehicle.

Soliciting trash/recycling services bids requires competition, which results in lower cost and better recycling services. The awarded hauler's contract with the City should extend to three to five years, and then is re-bid to ensure competitive prices and excellent service. A carefully worded ordinance should be in crafted to dictate the expected level of customer service quality (i.e., violations result in severe financial penalties to the trash hauler and/or contract termination at which point another hauler is selected) and to ensure effective reporting of services rendered and the quantities of SW/R handled.

The precedents set in other cities that have gone with a single SW/R vendor can assuage the concern that a single SW/R vendor will charge higher monopolistic prices. The greater density of customers served by a single vendor means that a hauler serves more customers per mile driven which results in greater operating efficiencies, lower costs and higher profits; which are passed on to the customers. With a carefully worded ordinance and a competitive bidding process it is expected that the average SW/R bill will be less than what is currently being paid.

The effective implementation of a single vendor franchise will likely require extensive public education because citizen buy-in is necessary for this new system to be understood and accepted. It is reasonable to have a time frame of six to twelve months to conduct a public education campaign prior to this system being implemented.

Examples

Fort Collins and Lafayette utilize private haulers for collection. Each differs on how they use the private hauler.

- Fort Collins mandates (through ordinance) that six private haulers offer a blended disposal recycling fee, which includes curbside recycling, and PAYT pricing.

- Lafayette solicits private haulers who compete for a single contract with the city. The contract includes curbside recycling with PAYT pricing but only a single vendor is selected. Lafayette's population is similar in size to Golden's so they may provide a model to follow.

Alternatives

Ambitious: Craft a detailed ordinance specifying performance measures and award the entire City to a single vendor.

Moderate: Craft a detailed ordinance specifying performance measures and award specific areas of the City to a limited number of vendors.

Minimum: Status quo. Allow an unlimited number of SW/R vendors to service the City.

Second Tier Recommendations

Although more residents supported the following recommendations than rejected them, they were labeled "second tier" by the SW/R team because they were considered to be economically and/or politically more difficult to implement and/or provided fewer environmental benefits than the four primary recommendations.

E. Downtown Recycling Bins

It is recommended that the City of Golden provide recycling bins in downtown areas such as along Washington Street, the Clear Creek walkway, Parfet and Lions Parks.

Rationale

Well-designed trash/recycle bins in downtown Golden could be both effective and attractive. Tourists, shoppers and residents would use the bins to keep municipalities clean and divert recycled goods from landfills. Thus, this initiative is in line with Golden's sustainability goals; it increases both volume and participation in recycling. By collecting larger volumes of recycled materials, Golden can reduce energy wastes embedded in materials that are land filled. The presence of public recycling bins also provides an ever present reminder to tourists and residents alike that Golden is a City that is concerned about its image and the environment.

The trash bins that exist in downtown Golden today are built into stone planters. The recommendation is to replace those with combination trash/recycle bins. This recommendation was supported by over 85% of respondents of the Golden resident survey. Ideally, downtown business owners, the Chamber of Commerce and the City of Golden could cost-share the expenses for this redesign.

Examples

Many cities have recycling bins in their business districts. It is unknown how successful these efforts have been in to removing recyclables from landfills.

Alternatives

Ambitious: Replace existing trash containers on Washington Street with combination trash/recycling containers. Add new trash/recycling containers along the Clear Creek walkway and Lions and Parfet park. The City would maintain these and ensure that the trash and recycling materials are dealt with accordingly.

Moderate: Leave existing trash containers on Washington Street but add stand-alone recycling containers. Add new trash/recycling containers along the Clear Creek walkway and Lions and Parfet park. The City would maintain these and ensure that the trash and recycling materials are dealt with accordingly.

Minimum: Status quo. Do not implement downtown recycle bins.

F. Organic Composting – Curbside Pickup

Mandate that the SW/R hauler, or a contracted vendor, provide residential curbside pickup for organic materials for an additional fee or as part of a total SW/R fee. The selected hauler would provide the appropriate bins for compost waste (kitchen scraps and yard waste).

Rationale

Curbside organic pickup increases recycled material, which directly correlates with Golden's sustainability goals. Also, Golden could be recognized as one of the first cities in the nation to offer *integrated* composting service.

Complete composting (kitchen and yard waste) can increase solid waste diversion up to 50%. Composting can be cheaper than landfilling the same waste. The City can also purchase the compost for landscaping, thus reusing the waste and lowering compost costs.

Organic waste bins, which are available in various sizes, need to be durable and sanitary much like a normal trash bin must be to ensure that wind, wildlife and odors are not issues. Pickup services should reflect the increased demand from spring, summer, and fall yard waste.

Several local vendors have the transport capabilities and facilities to service the City of Golden.

Examples

Many cities currently have weekly to seasonal curbside pickups ranging from free to ~$15/month per household to compost residential yard waste. A few cities, including Boulder, are piloting composting programs that integrate kitchen scraps as well as yard waste. Currently, Boulder has 2,400 homes participating in a pilot of an integrated compost program.

Alternatives

Ambitious: Require the SW/R hauler(s) selected by the City, to provide residential curbside pickup for organic materials. The cost of this bin and pickup service would be included in the total SW/R monthly fee.

Moderate: Require the SW/R hauler(s) selected by the City, to provide residential curbside pickup for organic materials. The cost of this service would be in addition to the SW/R fees and residents are free not to use this service.

Minimum: Status quo. Maintain the current practice in which individual residents determine how to dispose of their organic waste. If the City provides a public disposal site for organic waste (Recommendation C) this option works well.

G. Plastic Shopping Bag Ban

It is proposed that the City of Golden require local businesses to stop offering plastic shopping bags to their customers. Instead, paper bags are to be made available and the use of reusable cloth bags is to be encouraged.

Rationale

A ban on plastic bags will support the Sustainable Golden Initiative goals of reducing waste in landfills and encouraging Golden shoppers to make more environmentally sound decisions.

Plastic shopping bags, like those offered at the typical grocery store, are considered by some environmentalists to be more harmful to the environment than their paper counterparts partially due to the fact that the plastic bags cannot be recycled. Although paper bags are not without environmental concerns, they are, at least, recyclable. In addition, plastic shopping bags have been known to cause problems with City drainage and sewage systems.

In addition to encouraging Golden businesses to offer paper bags it is recommended that reusable cloth bags be made available at no, or low, cost to shoppers. The City will incur no incremental costs with this recommendation. It is not known if Golden incurs expenses in correcting problems caused by plastic bags, but, if there are, the City may reduce some associated costs.

Examples

The City of San Francisco has recently banned plastic shopping bags. While San Francisco is on the leading edge of environmental policy, their rationale for banning the plastic bags had more to do with the estimated $6M burden the bags cost the City to fix drainage and sewage problems.

Alternatives

Ambitious: Require Golden businesses to stop offering plastic bags to customers. Recyclable paper and cloth bags are encouraged.

Moderate: Require Golden businesses to charge a fee for every plastic bag used. The benefit of this action would be enhanced if the businesses also refunded the fee for every bag returned.

Status quo. Maintain the current practice where Golden merchants are free to offer whatever form of wrapping or container they choose.

H. Event Recycling

It is recommended that the City of Golden develop an event-recycling program that applies to all events held in the city. Currently, there is no recycling at Buffalo Bill Days, the Wild West Car show or other Chamber of Commerce sponsored events.

Rationale

Event Recycling is aligned with Golden's sustainability goals; it increases both the volume and participation in recycling. By collecting larger volumes of recycled materials, Golden can reduce energy wastes embedded in materials that are land filled.

Cost is the primary reason why recycling is not utilized at the Buffalo Bill Days. Currently trash hauling is donated. Recycling collection would cost upwards of $2,500. In past years, recycling has been attempted, but with very little success. Keeping the trash in trash containers is a challenge, it is dumped everywhere even though there are plenty of trash receptacles throughout the town and parks.

Traditional recycling costs can be recuperated through the reduced cost of trash hauling. Since it is donated for Buffalo Bill Days, the costs will have to come from another source.

Successful implementation of this recommendation might include assigning an event recycling coordinator (possibly an additional charge for a current City employee.) Educate vendors and staff on the recycling program. Have the goal for the event's recycling program be "zero waste," where only single-use polycarbonate and polypropylene mugs, cups, champagne glasses, deep and flat plates, dishes, and cutlery suitable for use at outdoor events are used. Using the single-use approach will also reduce the amount of trash thrown about the parks and City streets. If there is less trash to throw and an incentive to return the single-use item (e.g. money), trash collection will be less of a problem.

The concept with the single-use cups, plates, bowls, and cutlery is that you pay for each item and upon return of the item; you get your money back. If all the vendors are using the single-use items, then return can be done at any booth. This can virtually eliminate of the trash produced at these events.

An event recycling coordinator could help re-write the City ordinance regarding events that mandates the amount of single-use and/or recycling that must be done at each event. The event recycling coordinator would work with the event planner to secure those vendors who agree to work with Golden to meet the established goals. Funding for a recycling coordinator and a recycling program might be offset through grants that help cities address solid waste reduction, recycling, and management.

Examples

Event recycling has proven successful in other cities in the United States and throughout Germany. Increasing regulation on the use of "single-use" cups, plates, bowls, and cutlery in Germany has resulted in the creation of a new industry. Numerous German communities ban the use of some single-use products; others tax them heavily.

One company, Cup Concept, developed a returnable system using polycarbonate and polypropylene mugs, cups, champagne glasses, deep and flat plates, dishes, and cutlery suitable for use at outdoor events. Cup Concept supplies the reusable items, delivers them, collects them after the event, and washes them at centralized points. The company plans to extend its service area all over Germany and in neighboring countries.

New York City requires all street fair recycling programs to collect, at a minimum, corrugated cardboard. At events in which vendors sell food and/or beverages, the program must also collect metal cans, glass bottles and jars, plastic bottles, and aluminum foil.

Sonoma County, CA, bans the use of polystyrene containers at all county-owned facilities. As a result of the ban, vendors and event organizers often choose recyclable paper and #1 and #2 plastic products in lieu of polystyrene products.

Alternatives

Ambitious: Rewrite the City ordinance that deals with events so that vendors are required to participate in event recycling efforts which would include utilizing single-use containers. Also, hire an event recycling coordinator to help educate vendors on the recycling program.

Moderate: Use either City funds or seek outside donations to cover the cost of providing and servicing recycling containers at Golden events.

Minimum: Status quo.

TIMEFRAME FOR RECOMMENDATIONS

	Recommendations	2007	2008	2009-2017
A	Single Stream Recycling (SSR)		x	
B	Pay As You Throw (PAYT)		x	x
C	Organic composting: public facility		x	
D	Single vendor SW franchising		x	
E	Downtown recycling bins	x		
F	Organic composting: curbside pickup			x
G	Plastic shopping bag ban			x
H	Event recycling			x

CONCLUSION

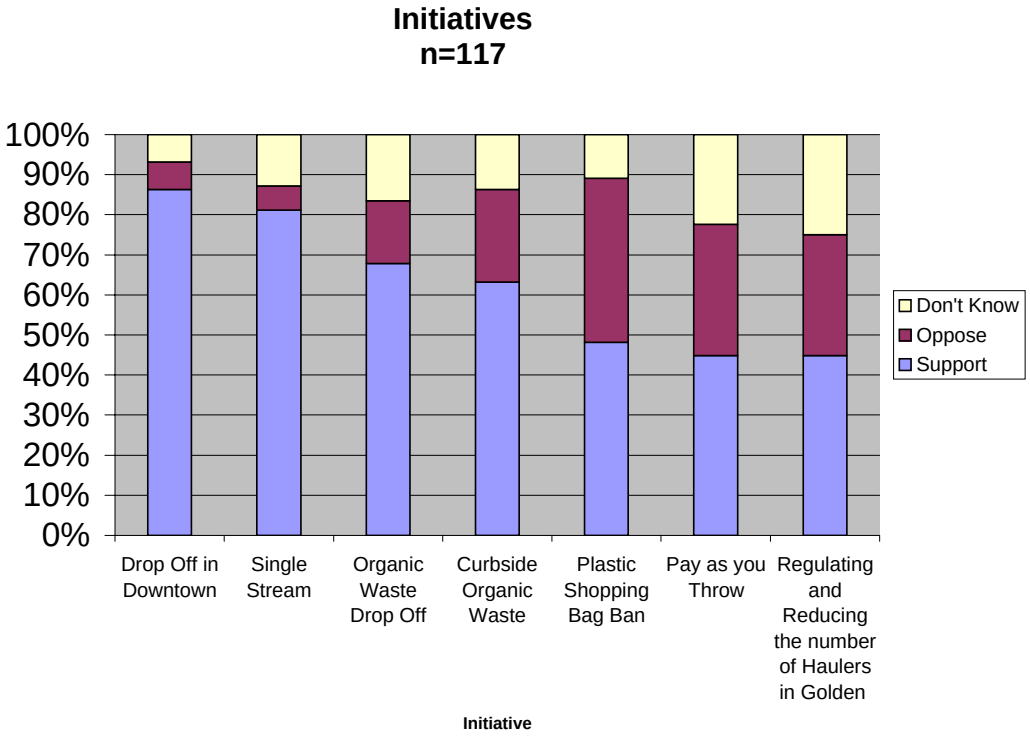
The SW/R team recommends that the City council adopt and implement recommendations "A" through "D" and consider for possible and future implementation recommendations "E" through "H". To address the remaining SW/R issues facing the City of Golden it is recommended that additional research and effort be directed toward CSM, commercial and industrial.

SOLID WASTE & RECYCLING ADDENDA

Useful SW/R Links

http://www.republicservices.com/
http://www.zerowaste.co.nz/default,110.sm
http://www.zerowaste.co.nz/default,113.sm
http://www.ccc.govt.nz/Waste/
http://www.thegreenguide.com/
http://eartheasy.com/homepage.htm
http://www.co.jefferson.co.us/health/health_T111_R63.htm
http://www.greendimes.com/

GOLDEN RESIDENT SW/R SURVEY SUMMARY RESULTS



Transportation

Transportation Community Working Group: *William "BilFish" Fisher, Steve Stevens, Jerry Muller, Arne Claxton, Diane Pasquarelli, Dave Damouth, Sean Plumb*

BACKGROUND

The transportation CWG has been tasked with reducing vehicle transportation by 15% over 10 years. A super majority of the 200 attendees at the recent Golden Sustainability conference supported this as reasonable or even too conservative. The Transportation CWG adopted the 15% target, which translates into a 25% reduction per capita amount, due to planned growth through 2017.

The cornerstones of this effort must include connection to major commuting public transportation hubs, circulating public carriers in town, short distance alternative transit options such as bicycles and walking, demand and use reduction, and related solutions such as parking management around the CSM campus.

With excellent potential public transport access and a future of increased density within Golden due to geographic boundaries, Golden has an opportunity to develop over the next decade into a functional, community-oriented transit City to the benefit of employees, students and residents in Golden.

Transportation is a major component of Golden's infrastructure, and planning must begin soon to ensure the opportunity to have a sustainable, successful community transportation infrastructure for the next century. Implemented effectively, this could improve the quality of life for our city's residents and commuters.

GOALS

To meet vehicle travel reduction targets, the City of Golden should establish a comprehensive alternative transit network plan to be implemented over the next decade, simultaneously focusing on encouragement of economic growth and ensuring the city's beauty and heritage remain intact.

Our research indicates that a successful plan will implement:

- Fully-integrated pedestrian transit options
- Cyclist transit options for both intra- and inter-city transit
- Timely, efficient intra-city public transport as well as inter-city public transit connections
- Travel demand reduction
- Alternative transit cultural education for residents, staff and students

RECOMMENDATIONS

A. Integrated Pedestrian transit

Creating a viable pedestrian transportation network will provide significant reductions in vehicle traffic. Golden must implement many additions, changes, and upgrades to create pedestrian transit options for residents, students, and employees within the City to meet this recommendation.

Rationale & Benefits:

Golden has a well-designed, compact central district and convenient, linear-oriented residential and commercial settlements. A fairly new and growing system of trails exists, yet these are primarily suited for recreational pedestrian travel. An inter-connected network with appropriate signage and other conveniences will help people make the choice of pedestrian integrated transportation. For those without vehicular or public transit options, a well-constructed pedestrian transit alternative becomes of paramount importance to their quality of life.

Implementation Strategies: Historical sidewalk and current trail construction do not comprehensively encompass the needs of modern pedestrian use. Here are ways we can improve the likelihood of people choosing to walk to their destination.

- Remove obstructions to pedestrian access on sidewalks and roadways,.

- Increase pedestrian comfort level and safety, particularly in school and retail zones.
- Install more public water fountains.
- Improve management of existing and no-longer-used crosswalks.
- Establish, fund, and maintain a public promotional program ("*Think Hike/Bike/Ride before Drive*").
- Create more consistent mileage marker and transit time signage.
- Ensure the Bike Master Plan's excellent work on identifying missing connectors is expanded to include pedestrian-related connector issues to avoid the "sidewalk to nowhere" phenomenon that often exists.

Examples:

- City of Los Angeles has pedestrian initiatives as part of overall transportation management plan, including showers and lockers available for pedestrians and bicyclists.
- Denver, Boulder, Fort Collins and other area cities have designated streets, previously available for cars and parking, as pedestrian or pedestrian and shuttle only.

Range of alternatives:

Ambitious: In certain locations, the City can implement public transit to accommodate areas where pedestrian transit network options are limited.

Ambitious: Washington Ave between 11th and 13th converted to pedestrian and bus only.

Ambitious: The City could initiate additional pedestrian-only bridges and underpasses along key transportation routes.

Moderate: Golden can overlap pedestrian and bicycle transit options to improve efficiency in both transit networks with special signage, comprehensive ground striping and unique pedestrian-path identifiers, dedicated lanes, and proper maintenance.

Low Level: Maintain already existing walkways and sidewalks in terms of cracks, debris and other obstructions, and higher snow-plowing priority.

Low Level: Conduct a walkability study and create a Pedestrian Master Plan, possibly integrated with the Bicycle Master Plan.

B. Bicycle transit network

Golden must have a complete, contiguous bicycle transit network accommodating residents, students and employees. Only a well-funded, serious and concerted effort will provide a cycling network that will be a preferred choice over car transit.

Rationale & Benefits:

Many cities in the U. S. and around the world have successfully reduced motor vehicle miles traveled by facilitating and encouraging bicycle use among their residents and visitors. Golden has made a good start by establishing a Bicycle Master Plan several years ago. Along with existing trails, this effort has created a framework of opportunity for the City to significantly boost bicycle travel over the next decade without the massive infrastructure costs and effort that many cities and towns must deal with to achieve significant results.

Now is the time to review and extend the Bicycle Master Plan to include cycling as a significant transit option and adopt best practices demonstrated by other cities to speed and ensure success. Such a network has the additional benefit of providing significant freedom and travel options to those who cannot or choose not to drive by car.

Implementation Strategies:

- **Most Important:** Appoint or hire a Bicycle/Pedestrian Coordinator (at least 50% time) on staff for Golden. (Could be shared with another City if applicable)
- Develop "Safe Routes To Schools" program for children to ride bikes to school.
- Establish a Citizen Board to assist in guiding the future of the City's bicycle initiatives.
- Update Golden's street surface repair standards and procedures to recognize bicycle needs and begin structured implementation of the Bike Master Plan.
- Paint bike lanes on roads which are determined as bike routes.

- Improve the availability of bicycle routing information.
- Create aggressive on-and off-street bike route maintenance.
- Bike Locker and Showers

Examples:

- As noted above LA has bike lockers and showers
- Seattle, WA has comprehensive Bike plan
- City Bike Wien (Vienna) is a metered shared bike system
- Arcata, CA bike library
- Alameda, CA Cycles of Change program

Range of alternatives:

Ambitious: Full-time alternative transit coordinator focused on integrating and managing the improvement in Golden's transit mix in order to improve the quality of life for our citizens.

Ambitious: create a free or subsidized bicycle distribution and maintenance facility.

Ambitious: provide financial incentives for employees who switch to cycling for the majority of their commute.

Ambitious: Establish a metered bike system like Vienna's

Moderate: The coordinator position is one that is seen as important across the range of sustainability initiatives. Combining this position with other needs of the City could provide an integrated framework at a reduced cost, however, potentially with reduced focus and effectiveness.

Low-level: begin implementation of unfinished areas of already accepted Bike Master Plan.

Low-level: Expand Golden Optimist Free Bike program to accommodate more donations and more bikes available, like other bike exchange programs

C. Timely, efficient public transit network

Alternative transit methods developed with an eye to reducing vehicle miles traveled must provide similar levels of convenience and access to locations across Golden and to neighboring cities. Shuttles, busses, ride-sharing, taxis, and other public transit options should be added and/or coordinated together to provide an integrated, effective and convenient level of access for citizens to achieve a reduction in individual car travel. Golden's public transit system must connect the City's workers, residents and students with primary RTD terminals as well as intra-Golden destination points. The Transportation CWG understands the City and CSM are already working on a study regarding transportation. The CWG has outlined a few items which is felt are value-added.

Rationale & Benefits:

Golden has unparalleled access to points across the greater Denver Metro area. However, it remains on the fringes of public transport access. Slight improvements in inter-city mass transit could see tremendous gains in the choice to use such transit over individual vehicle use. Integrated with the other recommendations, benefits could include a reduction in the number of vehicles a family must maintain as well as provide complete transit services for those who cannot or choose not to use car travel as their primary mode of transportation.

Implementation Strategies:

- A local circulator bus that offers transport to Mines students, Visitors to Golden, commuters into and out of the City and Golden residents. Circulator system would offer timely service to local destinations, while also serving as a linkage to other primary RTD transit hubs, including new light rail terminals.
- A tourist trolley could provide swift, easy transport to the many tourist-related arts, cultural, shopping, recreational and educational facilities in Golden. Potentially this could be integrated with or simply be an extension of an expanded version of the well-run Coors tourist shuttle operations.
- Fast, effective bus and/or shuttle services should be developed to provide linkages to primary RTD commuting hubs such as Ward Road, 38th & Youngfield, Boulder, and the future light rail line terminals at the Jeffco center and Ward Rd.
- A Denver-Golden Express

- Improved Dial-A-Ride, shared-ride and expansion of efforts to provide awareness for existing Ride Arrangers and other services (such as school, church, sporting event and club ride sharing or carpooling).
- Private or shared shuttle service to destinations outside of Golden on scheduled days.
- Central inter-modal transit hub near Parfet Park (or other location) that would draw emphasis to downtown area. This would serve as the main multi-modal transit hub for Golden, where people could walk, bicycle, or hop the bus.

Examples:

- Boulder-Denver Express Bus
- 16th St Mall shuttle in Denver
- Skip, Hop, Jump etc in Boulder
- San Francisco, CA funding for public transit

Range of alternatives:

Ambitious: Full-time commuter coordinator specialist to educate and assist commuters to find alternative transit options for daily commuting, both into and out of the city.

Ambitious: Develop a free, in-town shuttle service connecting major population, work, tourist, recreation, culture and study areas in Golden.

Ambitious: Create parking garages designed to handle commuter-level traffic and potentially traffic for those looking to travel into the mountains for ski/leisure activities via mass transit based in Golden.

Ambitious: Build a commuter commons mass transit terminal with upscale amenities for people waiting for transfers or beginning their public transit day.

Moderate: Create a panel or task force to oversee RTD operations in the Golden, tasked with encouraging improvement in regional public transit from Golden.

Low-Level: Develop "Alternative Transit for Dummies" lectures and literature to communicate and educate about the many possible and future alternative transit options into, out of, and around town.

D. Demand Reduction

Alongside a shift to various improved and alternative travel options for Golden's residents and commuters, it is important to consider opportunities to combine and reduce the number of overall trips our residents, employees and students must take on a daily basis in order to maximize our ability to slow and ultimately reduce costly vehicle travel.

Rationale / Benefits:

Along with reducing trip length, simply eliminating trips is the most direct way to achieve our transit reduction goal. The benefits to quality of life are significant (reduced in-car time, reduced smog and unhealthy emissions). As important, vehicle traffic is expensive not only for our residents, but also for the City as staff maintains an ever-expanding inventory of expensive roadways. Reducing congestion and usage can reduce the maintenance burden on the city, as well as the need to spend so much public land capital for transit.

Implementation Strategies:

- Develop a re-configured Washington Street downtown experience. A bicycle-friendly, walking-friendly, retail and café/restaurant-friendly option with bike lanes, walking lanes and space for outdoor retail/food establishments can provide significant benefits to Goldenites while improving alternative transit options.
- Promote use of smaller (Road worthy electric) carts with preferential parking and plug ins downtown
- Establish a City fleet of electric carts to be used by City personnel to get back and forth between downtown and new complex.
- City-wide Wireless Broadband Internet to feed telecommuting and home-based businesses and residents.

- Encourage increased development of the Farmer's Market and other weekly services such as grocery delivery, reducing residential trips.
- Re-consider needs of high school and university students to drive to school and provide improved alternatives and negative incentives to reduce traffic problems associated with these learning institutions.
- Continue the increase in urban density to reduce the need for people to drive to get together for events and socialization.
- Localization and Improved quality of services: continued improvement of the excellent parks and recreation opportunities available as well as continued localization of quality services, retail, health care, food & entertainment.
- Promote winter and adverse-weather children's activity centers and business.
- Encourage mixed-use development for people to live, work, and shop in one area.
- Provide incentives (pay) people, particularly City employees, not to drive

Examples:

- Santa Monica, CA has Transportation Management Plan that includes parking cash out program
- Los Angeles has parking, transit, car pool, bike, pedestrian and other incentives for commuters
- Portland, OR shared vehicle program

Range of alternatives:

Ambitious: Re-landscape driving lanes along Washington (continuing to allow limited traffic) for pedestrian, cyclist, and general tourist retail shopping, food and entertainment purposes.

Ambitious: Complete competitive broad-spectrum wireless Internet throughout Golden with free hotspots in areas such as local parks and along business corridors and downtown.

Moderate: Encourage an improved business mix, as well as provide consulting to improve quality in local businesses and destinations to reduce the need to shop, recreate or go outside the town.

Low-level: Awareness campaign for residents to understand the many existing opportunities in Golden as opposed to other cities and areas.

E. Education & Cultural Awareness

In discussing the many future and existing options for improving people transit in Golden, we know that factual and cultural education will be essential to any program designed to reduce the number and length of trips of Golden citizens in our cars. Many public transit options exist, but without a background in using busses, bicycles, and other shared-ride services, the simplest system is likely to seem daunting to a new user.

Working through options to improve transportation has led us to identify several areas of alternative transit educational need: Awareness, culture & best practices, efficiency, & convenience.

Rationale / Benefits*:*

It took 100 years to become a car culture. It will take more than a bike lane and a bus to change this culture. We must educate on the opportunities of alternative transportation. Most importantly, we must help our citizens to be convinced that alternative transit provides many significant benefits in terms of sustainability for our town, improved quality of life, economic viability, and more.

Implementation Strategies:

- Create a "Transportation for Dummies" series to provide electronic materials available for all Golden citizens.
- On-site education must also be explored. Trail signage, useful and well-organized maps, and road striping are examples.
- Address cultural and comfort-level barriers as significant hurdles to individual adoption alternative transit systems. (Limited access on Washington)
- For "Safe Routes to Schools" develop significant education including consultation with parents and in conjunction with school systems.
- Golden has wonderful, regular means of communicating with most residents on a weekly and monthly basis that should be fully utilized including: the Informer, the City website, the Golden

Transcript, the local Library, and events such as the weekly Farmer's Market, holiday parades, and auto shows.

- Do not re-invent the wheel. DO partner with the many groups that have created sophisticated programs, useful literature, and effective communication tools on alternative transit.

Examples:

- See attached Best Practices for cities mentioned in A-D in Addendum

Range of alternatives:

Ambitious: Full-time transit education manager to drive alternative transit strategies throughout the City government structure as well as coordinate with surrounding cities.

Moderate: create a monthly newsletter focused on alternative transit education and dissemination of news and updates to the Golden transit program.

Moderate: Take education to the streets with improved signage along trails, reminders and offers to try alternatives at various entrance points and mass transit hubs.

Low-level: Develop ambassador program of volunteers to assist people in becoming more comfortable with the many alternatives Golden already offers as well as the many new offerings that will hopefully come online in the near future.

TIMEFRAME FOR RECOMMENDATIONS

	Recommendations	2007	2008	2009-2017
A	Integrated Pedestrian transit	x	x	
B	Bicycle transit network	x	x	x
C	Timely, efficient public transit network	x	x	x
D	Demand Reduction	x	x	
E	Education & Cultural Awareness	x	x	

All of the initiatives would require some ongoing attention. The main thrust for A, D & E will be concurrent with B & C in '07 and '08. Yet as the latter are suggested to have staff associated with them they will likely carry the other three with them in future years.

ADDENDUM: DETAILED RECOMMENDATIONS

A. Integrated Pedestrian Transit

Proposals:

a) For new construction, require by code that pedestrian sidewalks are at least 5 ft wide. If they are shared Bicycle/Pedestrian they should be 12 ft wide. Similarly, embark on a program to upgrade the sidewalk inventory of Golden over time to go beyond the current 2 - 3 foot wide residential pedestrian sidewalks - to a 5 ft standard for pedestrian only sidewalks (12 foot when a shared Pedestrian/ Bicycle sidewalk).

b) Remove obstructions: Publicize, and vigorously enforce requirements that homeowners keep their sidewalks clear of untrimmed vegetation and other obstructions. Similarly, enforce existing requirement that residential and business property owners must clear snow from their sidewalks within 24 hours, ensure motorized vehicles are not parked on sidewalks nor do businesses put advertising (sandwich or other) signs on the sidewalk which impede or divert pedestrian traffic.

c) Increase pedestrian comfort level and safety, particularly in school and shopping zones, by adding marked crosswalks, flashing lights, traffic calming features, and other safety measures as appropriate. Survey the City and interview citizens to identify future needs.

d) Install more City Water Fountains so walkers can get their cooling needs met.

e) Improve management of current and no-longer-used crosswalks. Do not allow unused crosswalks to continue in a half-existent state, which creates confusion for both pedestrians and car commuters.

f) Establish, fund, and maintain a public promotional program to encourage walking, such as "*Think Hike/Bike/Ride before Drive*" to break the built-in habit which people have to get in their car to go a block, a few blocks.... and more.

g) Create more consistent and universally applied mileage marker and transit time signage. Improve primary and "shortest route" identification and signage. Create a system similar to Light Rail route maps with colored lines representing various routes.

h) Ensure the Bike Master Plan's excellent work on identifying missing connectors is expanded to include pedestrian-related connector issues to avoid the "sidewalk to nowhere" phenomenon that often exists and create usable transportation options from our trails, roads and sidewalks for pedestrians of all stripes. The plans must then be fully implemented to create a viable, operational alternative transit network.

i) User feedback website. By providing a maintenance and suggestions tipline via the Web (similar to the successful Potholes program) we can allow residents to help build and maintain an effective, convenient and eminently usable pedestrian system.

j) Provide incentives to reduce the number of vehicles in a household. Similar to programs to have homes install low-flow toilets and receive rebates, perhaps the City could find ways to incentivize and reward the reduction of vehicle ownership in favor of alternatives such as walking (and biking). Perhaps rebates could include discounts at local bike shops or discounts on athletic shoes and other items that improve the experience of pedestrians.

Cost:

Many of the above proposals have minimal costs to the City. Others, such as items A and C have significant costs and should be implemented as capital funds become available. State, Federal, or Foundation grants might be available to support some of these proposals.-

Result:

With friendlier infrastructure and a little encouragement, many folks will consider walking for their in-town travel.

This will reduce:

1) City Auto Congestion
2) Vehicle Miles Driven
3) Carbon Emissions for Global Warming
4) Air Pollution
5) Parking congestion

At the same time increasing:

1) Citizens health and fitness
2) Citizens social interaction with other citizens which they pass on their hikes
3) Financial independence.

B. Bicycle Transit Network

Proposals

a) **Most Important:** Appoint or hire a Bicycle/Pedestrian Coordinator (at least 50% time) on staff for Golden.

This staff person (in either the Planning or Public Works Departments) is essential to the success of all other proposals, and should be selected with a requirement that they are understanding and supportive of the use of bicycles and pedestrian travel as practical transportation. All bicycle friendly cities (Denver, Boulder. Ft Collins, Longmont...) have this as a starting point to provide ownership to assure that bicycle relevant issues are addressed in City Council and Staff.

b) Aggressively pursue the Bicycle Friendly rating from the League of American Bicyclists.

Use the feedback which that method provides to continue to upgrade bicycle planning for Golden. This provides a link to ongoing reviews and upgrading of the understandings regarding transportation by bicycle. It also taps outside expertise to learn of the work needed to be done by a City to foster a proper environment for more bicycle usage by citizens for general transportation.

c) Develop a “Safe Routes To Schools” program for children to ride their bikes to school.

This should involve a careful study of all schools (Pre-school, Elementary Schools, Middle Schools, High Schools, Colleges, Universities) whether public or private. Safe (and reasonably direct) bicycle paths/ routes should be determined or constructed to reach each of these from the neighborhoods which feed the schools. This is a national program which Golden Should Adopt.

d) Paint bike lanes on roads which are determined as bike routes.

All bike lanes must have smooth surfaces, avoiding rough gutters and storm drain grates, and be wide enough for children and inexperienced adults to feel safe while riding. Painted lines and signs must delineate the safe continuation of the bike route through traffic intersections and other difficult areas.

e) Establish a Citizen Board to assist in guiding the future of the City's bicycle initiatives.

The Bicycle Travel Board (like the other Golden Citizen Boards - Gura, HPB, Recreation,...) is needed to advise and suggest continuing evolution of the City's bicycle friendliness.

f) Update Golden's street surface-repair standards and procedures to recognize bicycle needs.

Other cities have successfully modified methods for asphalt cuts and patching to improve bicycle safety.

g) Provide City personnel with, and Encourage (with incentives) businesses to provide facilities for employees to

i) Safely and conveniently park/store their bike,

ii) Clean up and change after riding to work.

h) Establish a voluntary bicycle registration program in Golden.

Such programs are relatively low cost and help reduce theft and facilitate recovery.

i) Improve the availability of bicycle routing information.

Easily understood local and regional bike maps should be made freely available at visitor's centers, bus stops, and other public facilities. Interactive Internet bicycle routing tools are being developed by others and should be examined by the Bicycle Board.

j) Create aggressive on-and off-street bike route maintenance.

Sand and gravel on bike paths are severe safety problems. Snow removal on bike routes should be given priority.

k) Work with bordering industries & communities to establish bike route connections.

Bicycle miles traveled could be substantially increased by cooperating with Coors, NREL, Lakewood, Wheat Ridge, Arvada, Jefferson County, Boulder, etc...) to develop high quality, continuous, connections on bicycle paths between all of the areas in Jefferson County.

l) Work with RTD to improve intermodal travel:

Local bicycle use can be increased by installing covered, locked, safe bike storage at bus, shuttle, and commuter train terminals. Bus, shuttles, and trains, also need improvement to their facilities for transporting their passenger's bicycles. Intermodal commuting is practical only when bikers are assured there will be room for their bike on the bus, shuttle, or light rail.

m) Establish walking and biking, and shared motor vehicle use as the first choices for local trips:

Begin a campaign with the slogan *"Think Hike/Bike/Ride before Drive"* to break the built in habit which people have to get in their car to go a block, a few blocks.... and more. The City should consider sponsoring other bicycle promotional projects (Bike-to-Work Day, bicycle festivals, tourist-oriented City bike tours, etc).

n) Consider programs which make bicycles more widely and conveniently available to residents and visitors.

The Bicycle Board should determine feasibility in Golden of various programs that other cities have implemented for making loaned or inexpensively rented bicycles conveniently available to residents and visitors. Such programs may include one-way recreational or employee commuting, long-term loans to students and low-income families, and other innovative methods of increasing bicycle use.

Cost

Many of the above proposals have no specific cost if the City does implement item A. Item A requires annual staff expense for a professional allocation of 0.5 loaded staff years of salary (est. $30,000). If at a later time, item N was to be implemented, it should be considered as a grant possibility, and the costs could be carried outside of the City budget. Item C could be developed jointly between the Parent Teachers Association in the schools and the Bicycle Board and Staff person, without extra expense. Item H could be partially supported by fees. Items D, F, J, K have significant costs, offset in the long run by lower street maintenance costs as motor vehicle use declines.

Results

With a "Bicycle Coordinator" on City Staff, and with a citizen board for cycling considerations, the City will be able to go forward and constantly upgrade and address the cycling friendliness and safety.

With friendlier infrastructure and a little encouragement, many folks will consider using the bicycle for their in-town travel. This will reduce:

1. City Auto Congestion
2. Vehicle Miles Driven
3. Carbon Emissions for Global Warming
4. Air Pollution
5. Parking congestion

At the same time increasing

1. Citizens health and fitness
2. Citizens social interaction with other citizens which they pass on their hikes.
3. Business for the sales and repair departments at the cities 3 bicycle shops.
4. Financial and transit independence
5. Tourist opportunities.

Anecdotal examples

1. Joe or Joan Exerciser drive their Gas Guzzler to the Health Club to go and use the Exercise bike.
Alternative behavior Joe/Joan rides their bike around Golden on the trails and possibly up Lookout Mountain.

2. Jane Housewife drives their Gas Guzzler to the School bus stop with Johnny Jr and leaving the engine running, waits for the School bus to arrive. Johnny rides to school in the bus. Jane drives back to the house in the Gas Guzzler. The process repeats in the afternoon - in reverse.
Alternative behavior Jane and her husband John buy Johnny Jr. a strong safe bike and helmet. They carefully teach Johnny Jr. the safety aspects and self- discipline aspects of self sufficiency in transportation. They ride with Johnny Jr. from Home to his school (on the City provided safe route) on a day before the first week of school and show where to park and lock up the bicycle. Johnny loses 10 lbs of fat over the year and develops many positive behavioral traits which he will use the rest of his life.

C. Timely, Efficient Public Transit

Proposals:

On a long-term basis, the health of any public circulator system will be enhanced greatly by the promotion of new development in concentrated in village centers.

Public transit opportunities in Golden:

1. A local circulator bus that offers transport to Mines students, Visitors to Golden and Golden residents. Circulator system would offer timely service to local destinations, while also serving as a linkage to other transit modes. A Downtown Tourist Trolley could provide swift, easy transport to and among the many tourist-related arts, cultural, shopping, recreational and educational facilities in Golden. The same platform could be used to begin tying the CSM campus commuters into the center of Golden as well. Furthermore the trolley could become an effective promotional tool for the many retail and other businesses looking to communicate with visitors to our city.

2. A complementary bus/shuttle system should serve the Golden valley, providing commuting opportunities for pedestrians and bicyclists to get across and through town quickly and conveniently. This same system should also address the needs of CSM students, both on campus and located around the City as well as to the west of 6th Avenue.
3. Fast, effective bus and/or shuttle services must provide linkages to primary RTD commuting hubs such as Ward Road, 38th& Youngfield, and the future light rail line terminals at the Jeffco center and Ward. This is critical in creating viable commuting alternatives for the significant portion of residents that work outside the City limits, as well as the many thousands who commute into Golden from neighboring towns.
4. Improved Dial-A-Ride and shared-ride services for elderly and physically challenged, as well as expansion of efforts to provide awareness for existing Ride Arrangers services offered in Golden and throughout Greater Denver. Other services include ride-share programs for both work and school.
5. Bus service provided to destinations outside of Golden on scheduled days and times. This is likely to best serve Golden's retired population, who may have a more flexible schedule, and are eager to get out and about. It can also be tailored to serve youth who need to potentially get to jobs outside the City and others who may begin choosing to reduce the number of vehicles they own. Further, such transit options can often be supported in partnership with local businesses and destinations working to appeal to the city's ridership.

Hubs for multi-modal transit:

1. Allow local artists to design fun, and attractive public transit facilities, of which Golden currently has none. Golden can make public and multimodal transit a focus and source of pride within our community. Such promotion and focus helps create an appealing and top-of-mind alternative from individual car travel.
2. Golden's transit hubs may be anything from full-blown transit stations (i.e. Market Street Station in Denver) to simply kiosks or shelters that would provide information on public transit, as well as a clean, safe and comfortable place to wait for the bus.
3. Integrate into a transit hub, a parking plan for resident and visitors to access transit systems to mountain and area leisure activities.
4. Central inter-modal transit hub near Parfet Park (or other location) that would draw emphasis to downtown area. This would serve as the main multi-modal transit hub for Golden, where people would arrive and depart via walking, biking, local shuttle, or bus, and transfer conveniently among those modes. This hub would be linked to a series of smaller hubs, as well as the termination of the Fastracks West Line.
5. Transit stops/hubs should be well maintained: cleaned regularly, planted with flowers, and shrubs. Allow opportunities for community members to "adopt" a stop or even just volunteer a small portion of time. Hubs should provide conveniences such as what motorists are offered every few blocks in the sense of service stations, convenience stores. Further, hubs can provide amenities generally not possible for motorists, such as waiting lounges, high-speed Internet access, and of course other needs should be filled including safe bike storage, possible locker rooms and showers, and bathrooms.
6. The motivation behind installing public transit hubs would be to integrate public transit with other sustainable transit modes, whose use would be a convincing alternative to single occupancy automobile.

What Could Golden Do Now Regarding Public Transit?

1. Better inform Golden Residents about the public transit opportunities already available in Golden. Create a published and electronic booklet with all the routes and schedules of buses already catering to Golden (i.e. 16, 16Ltd., 17, BS and more), which residents could easily obtain. The booklet might also include information on RTD rates, how to obtain passes, and information regarding how to put a bike on the front of the bus. Again, education will be key to understanding existing services and any expanded services Golden may implement.
2. Install plentiful, secure bike racks at RTD bus shelters (i.e. Tenth and Washington, Ford and 13th).
3. Enlist community support in a program in which volunteers can guide people new to the bus, when taking public transit for the first time. Volunteers could walk people through their first ride, assist them in acquiring a pass and give them the proposed route and schedule booklet. This would assist Golden residents in becoming familiar with the RTD system. The culture and customs of public transit

may be new to many, and a friendly volunteer may be exactly what a resident needs to get over the hurdles and begin to adopt public transit for portions of their travel needs.

4. Ask the community. There is opportunity for some type of survey that would find out how community members feel about public transit, and how open they may or may not be with regards to RTD service and the possibility of a local circulator system.
5. Find ways to tie current and future public transit in with the City's extensive plans for bicycle and pedestrian routes for resident travel across and through the city.
6. Incentivize alternative transit usage: low-cost RTD passes, parking incentives, retail coupons, tax incentives. Funding may come from decreases in road maintenance and parking real estate, as well as increased ridership efficiencies and concentration of residents and businesses in a dense, mixed-use community.
7. There is significant demand for a well-designed, well-routed public transit system. **Representation at the various public transit tables is a must to ensure Golden's connectivity interests are served, as well as to promote a viable public transit system that gets used and is useful to the City and residents**.

D. Demand Reduction

Proposals:

- Develop a re-configured Washington Street downtown experience that goes well beyond the current system of providing commuting car traffic a simple and convenient transit route through Golden. Washington Street can be so much more than just a car corridor, and providing appealing alternative transit options and destinations creates an opportunity for Golden residents as well as tourists to enjoy downtown through means other than car travel. A bicycle-friendly, walking-friendly, retail and café/restaurant-friendly option with bike lanes, walking lanes and open space for outdoor retail and food establishments can provide significant benefits to Golden while improving alternative transit options.
- City-wide high-speed Internet to feed telecommuting and home-based businesses and residents.
- Encourage increased development of the Farmer's Market and other weekly services such as grocery delivery that reduce the need for or length of individual residential trips. For example, examine whether better exposure of milk delivery services could provide fewer grocery store trips weekly. Similarly, weekly pickups of recycling discards and yard waste could reduce the need to trek to local dumps as well as the recycling center.
- Improved business mix to provide greater local availability of necessities. For example, this could include expansion of the farmer's market, or the simple addition of a shoe store. Perhaps another bike shop would help ;-)
- In conjunction with our recommendations for other mass and alternative transit efforts, we consider bringing services and products closer to the user an important way the City, GURA, and merchants can help to reduce both overall trips and mileage.
- Re-consider the needs of high school and university students to drive to school by providing improved alternatives as well as negative incentives for driving could help reduce the existing and predicted future vehicle congestion and parking problems within Golden.
- Improved parks and recreation opportunities as well as continued localization of quality services can ensure that a majority of households can have convenient options without the necessity of driving long distances. For example, being able to walk and ride to sufficiently-featured parks reduces the need to drive to alternative, fully-feature parks or recreation centers (e.g. APEX).
- In the same way the Splash provides a fantastic local summer activity, Golden should further promote winter and bad-weather children's activity centers or businesses.
- Encourage new mixed-use development in which people can live, work, and shop in one area, improving the use of alternative transportation and reducing trip needs. This also effectively lessens development of Golden's limited remaining land resources and ensures steady ridership, timely travel times and the conveniences that come with greater population density.

E. Education & Cultural Awareness

Proposals:

Working through options to improve transportation has led us to identify many areas of educational need.

- Awareness

- Cultural & comfort-level
- Efficiency, Ease & convenience

First and foremost, we recommend the creation of something along the lines of a "Transportation for Dummies" series that would provide electronic materials available for all Golden citizens. TforD would encapsulate the many opportunities to improve transit on an individual basis, and help make us more comfortable with the various options for better citywide transit.

To entice people to give current and future options a chance to succeed, we must give them the educational tools to take advantage of the myriad of opportunities we hope to present.

Educating our citizens goes beyond a "book" of how-to advice. It also entails the same level of on-site education that goes into making our roadways so effective. Trail signage, useful and well-organized maps, and road striping are examples of going beyond simple book-learning and creating a useful, informational system that would promote usage by our citizens.

Cultural and comfort-level barriers are significant hurdles to individual adoption alternative transit systems. Currently, we are used to the car being able to provide us nearly infinite flexibility in our planning as well as the ability to maximize our time and the number of events we can pack into a day.

Without seeking to help people over the lack of knowledge and comfort hurdles of getting started with other options such as bicycle transport, walking, and public transport, we will likely miss the chance to get them started on a path towards improved city-wide transit. This is also true if we don't work to change perception and attitude about other modes of travel. For example, thinking of bicycles only as recreational may keep us from considering it as daily transportation.

In essence, we must consider ways to educate our citizens to the same extent we educate our children about everything from language to eating to arts and physical sciences and the environment around us. Alternative transit has been neglected, and we need to increase the volume of educational materials and points of contact our citizens have with better transit options.

Specific educational needs identified:

Many public transit options currently exist. But without a background in using busses, on-street bicycle transportation, and other public shared-ride services, the simplest system is likely to seem daunting to a new user. It is the same with cars, of course, but 16 years of preparation helps our children feel comfortable with this complex and useful system.

For example, DRCOG has created many ride-sharing programs for parents currently driving children to school. Yet a quick survey of twenty parents in the Golden area found that not a single parent was aware of this option. There are close to a dozen options that affect the individual and family that should be explored and explained.

Of course, we have also identified safe routes to schools as a viable alternative to pursue for many children. Significant education centered on consultation with parents and in conjunction with the school system must be a priority to make these routes the primary option of choice for parents.

<u>New Options:</u>

As we improve transit options for residents, we must make them fully aware of these advances to increase usage. For example, a new commuter bus could be a boon to many people, but if people don't know what it is, or what the route can be used for, it will fail for lack of awareness. If the City finishes an important bike and pedestrian connector to complete an important route, we need to let everyone know about it, especially those using worse transit alternatives in lieu of a completed bike and pedestrian arterial.

Are cars the only way to go? Obviously not, but many residents have little experience outside of cars. For example, with public transit it is true that one may need to schedule plans a bit more. But public transit can quickly become a wonderful routine that replaces driving in stressful traffic on a daily basis, or worrying about car/insurance/ gas/license/parking/repair costs. In fact, a short stroll to a bus stop in a nice neighborhood or park, followed by an enjoyable read or time to get some work done could become quite addictive if we let it. Even reducing one car in a family could see concrete benefits in cost savings, increased garage space, and other perks.

But we have to share and expand that awareness and experience for individuals to allow them a fair opportunity to choose alternatives.

Publications

Our small City has wonderful, regular means of communicating with most residents on a weekly and monthly basis. The Golden Transcript could be pitched ideas (similar to the map showing crimes in the area) to post updates to the citywide transit system as new components come online for resident usage.

The City's monthly Informer is a great publication that reaches all households and could also be a great tool for increasing usage of key alternative transit options. The cityofgolden.net website is also a great option for making educational materials and tools available to most City residents, and can be broadcast to many others, such as CSM students. Putting materials in the library is another complementary resource to improve access and coverage to the most citizens. Finally, Golden understands the need to communicate with citizens and has gone so far as to provide a local cable television channel which could be effectively utilized, and has at times even sent out postcards for important events and reminders. The full breadth of methods to communicate with our citizens will be critical in pushing any transportation efforts.

Implementation

In many ways, we have identified the Bicycle/Pedestrian coordinator position for the City as a means of accomplishing the increased mindshare and workloads we believe are necessary to implement a transit strategy with any hope of success. Similarly, the coordinator will also be charged with managing the educational process with various stakeholders who will be critical to implementation of any education tools identified.

It is important not to re-invent the wheel. Many organizations have created sophisticated programs, useful and easy-to-understand literature, and effective communication tools that we should take advantage of. For example, Safe Routes to Schools is a nation-wide effort and we can borrow many ideas on how to spread the word for this program.

Partnering with a group such as the League of American Bicyclists to take advantage of their educational courses for individuals allows us to forward our educational programs without the time and expense of creating them.

Pedestrian-specific education

- Route signage, maps
- Transit times – we should better promote mileage markers and transit times between points so people may start considering how long (or short!) a foot trip may take
- Safety – awareness and knowledge are key to improved comfort levels walking, and allowing the city's children to walk the neighborhoods to their destinations.

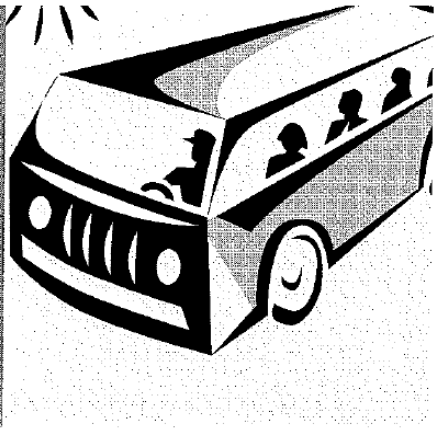
Bicycle-specific education

- Trail striping on-street (possibly color-code with various routes)
- Street signs, safety signs, and direction signs to help direct traffic
- Safe routes to schools education with parents (as routes are identified and upgraded)
- Educating City road and maintenance staff on important considerations for cyclists: snow removal of key bicycle arterials, dirt / debris management in bike lanes, important considerations in road standards such as creating ride-able gutters and smooth bicycle lanes, storm drain placement and orientation, correct directional asphalt cuts and more.
- Voluntary bicycle registration program: key education point of contact with bicycle owners as well as opportunity to reduce theft
- Well-designed, easy-to-read published and electronic bike routes and maps for local and regional paths, broadly distributed at the library, online, in cycle shops and at major employers, bus stops, the Community Center and other public facilities.
- Cultural educational campaign: Remember "if it's yellow, let it mellow?" Of course! It has been a great way to reduce water usage during critical shortages. In the same way, we need to cause cultural shifts in thinking. Something on the order of a "*Think Hike, Bike & Ride before Drive*" campaign might be the centerpiece for creating top-of-mind thinking of alternatives for many trips.
- Other promotional opportunities in the vein of "Bike to Work Day." Tourist bicycle tours of the city, cyclist festivals, and incentives for switching to bikes could help increase awareness of the many bicycle-oriented transit options in the city.
- Bicycle safety: a key to creating increased transit-oriented riders is to help them feel safe on bicycles. Much of the work must be done in creating best-use trail options, but education on everything from helmet usage to bicycle handling and maintenance, and riding in traffic safely and sharing the road is necessary for a broad segment of City residents.

- Educational programs in schools. Similar to teaching kids how to manage money or use library resources, we must consider youth initiatives. Whether they be seminars or ongoing yearly education, we need to raise children who understand how to best make decisions about their transit options on a daily basis.
- Benefits to choosing to ride such as: Health and fitness. Helping people understand that improved health and fitness are a great dual-purpose benefit of bicycle transportation may help provide the impetus for greater use. Other automatic benefits of riding include: reducing road and parking congestion and vehicle miles driven, reduced carbon emissions and localized air pollution, all the while increasing health, social interaction, financial independence, mobility for those who cannot drive, and improved local retail and tourist opportunities.
- Explain the best practices of convenient, efficient, and comfortable bicycle transportation. For example, how to maintain a bicycle area in the home so the choice of using a bicycle is as easy as picking up the car keys. How does a worker handle clothing when they have to ride to work (and possibly get sweaty)? What does the transportation-minded bicyclist wear? What accessories aide in an enjoyable daily bicycling experience?

Hop and Skip onto Public Transit

- Get people out of cars and aboard buses
- Reduce traffic congestion
- Reduce CO_2 and criteria air pollutant emissions



Go Boulder Shuttle Service—Boulder, CO

The City of Boulder hosts a very successful public transit system due to a combination of creativity and determination to get residents aboard buses. The system allows employees, students and visitors to shop, run errands, conveniently go to school, lunch, or meetings. Two components of its transit system are the HOP and SKIP shuttles—fleets of colorfully designed buses that provide high-frequency, inexpensive, and direct service by friendly drivers. Based on HOP's and SKIP's success, Boulder has plans to inaugurate its JUMP, LEAP, and BOUND services in 2000.

HOP. The HOP is a circulator shuttle that began in 1994 as a federal-funded ISTEA demonstration project. The fuel-efficient diesel HOP runs year-round, Mondays through Saturdays. A poll shows that 50% of HOP riders have cut down on drive-alone car travel, reducing over 4,000 tons of CO_2 each year.

SKIP. The HOP's success led to the start up of the SKIP shuttle. The SKIP fleet is made up of 15 buses and runs along Broadway—Boulder's main artery—7 days a week. SKIP was so successful that ridership more than doubled in the first year of operation. SKIP also boosts the local economy. Revenue in local shops and restaurants are estimated to have increased by $10 million annually.

Results

HOP

- 3,500 – 4,000 riders daily
- 50% of HOP riders have reduced car travel
- 4,000 tons of CO_2 reduced annually

SKIP

- 45% of SKIP riders drive less
- 3.1 million VMT cut annually
- 19,000 tons of CO_2 reduced annually
- $10 million in business and restaurant revenue generated annually

Factors contributing to HOP's and SKIP's success

- **Neighborhood ECO Pass**—This annual pass gives residents unlimited bus privileges on any HOP or SKIP bus, as well as access to the regional transit system that travels to the airport and local ski areas. The pass is offered at a low price, with potential savings of hundreds of dollars. One parent said that he loves the program because his children use the bus to get to their after-school engagements, thus eliminating a lot of his driving.
- **Business ECO Pass**—A business ECO pass is offered to local business employees at a discounted rate. The pass also includes a "Guaranteed Ride Home" providing passholders a free taxi ride home if they have an unplanned emergency. Approximately 700 Boulder County businesses are offering this pass to 20,000 area employees.

Key Contact

Tracy Winfree
Go Boulder Transportation Department
City of Boulder, CO
303.441.4164

Resources

Visit the Go Boulder website at *www.go.boulder.co.us*

Share Vehicles

- Reduce dependence on automobiles
- Reduce parking problems
- Save money

CarSharing Portland—Portland, OR

Results in the First Year

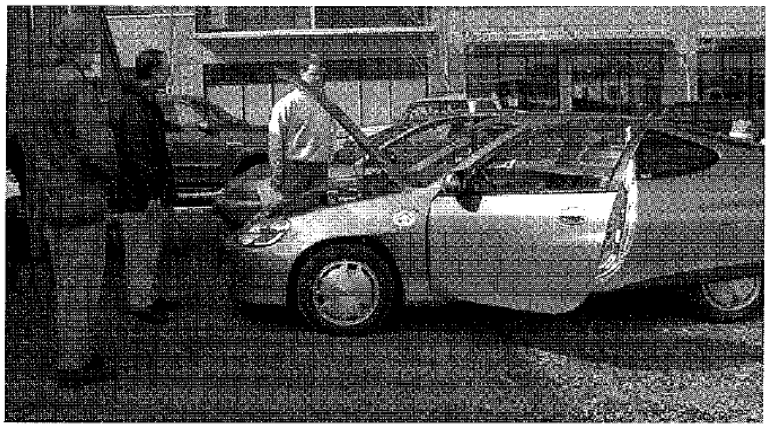
- CSP members estimated they saved an average of $154 per month in transportation costs
- 26% of CSP members sold their personal vehicle and 53% of members avoided a vehicle purchase as a result of joining CSP
- 75% of CSP members became more aware of their transportation costs
- CSP members increased transit ridership, bicycle use, and walking

Lessons Learned

- The biggest barrier to membership appeared to be the $500 security deposit. In January 2000, CSP lowered the deposit to $250 with support from Tri-Met, the local transit agency for transit pass holders
- Leasing off-street parking spaces was more work than anticipated, particularly in densely populated neighborhoods where parking is already at a premium

CarSharing Portland (CSP), the first commercial car sharing organization in the United States, completed its second year of operation at the end of February 2000. At that time it had 220 active members sharing 13 vehicles located at 12 sites in the City of Portland, OR. CarSharing Portland offers drivers, who do not own a vehicle or who seek an alternative to owning a second vehicle, access to a car for their short term travel needs. Carsharers decrease unnecessary automobile travel and have convenient access to a car without the hassles of ownership.

CarSharing Portland provides short-term, hourly use of vehicles that are located in parking sites close to the member's household or place of work. Members are charged only for the time and mileage of each trip. Gasoline, maintenance, and insurance are included in the rates.



Key Contact

David Brook
President, CarSharing Portland, Inc.
503.872.9882
www.carsharing-pdx.com

Resources & Similar Projects

Mobility Car Sharing Switzerland and StattAuto in Germany influenced formation of CarSharing Portland.
www.mobility.ch

Seattle, WA Flexcar service
www.flexcar.com

Visit the Car Sharing network at
www.carsharing.net

Promote Bicycling

- Reduce traffic congestion
- Reduce CO_2 emissions and other air pollutants
- Create healthy means of transportation

Promoting Bicycling in the City's Transportation Strategic Plan—Seattle, WA

Bicycling is a critical component of Seattle's transportation system It provides environmental and traffic-related benefits as it is non-polluting and helps reduce traffic congestion Seattle has approximately 28 miles of bike trails, 14 miles of striped bike lanes, and about 90 miles of signed routes Despite this extensive biking infrastructure, neighborhood groups and committed bicycling organizations still strongly advocated for more improvements. Their requests, along with City Planners' recommendations, were formulated into the City's Transportation Strategic Plan in October 1998

A Comprehensive Bike Plan. The Plan was written to ensure that safe access and parking facilities would be provided for cyclists throughout the City, as well as to encourage more people to cycle. Highlights of the Plan include:

- completing and expanding the City's urban trails system to connect urban trails with regional trails
- incorporating pedestrian, bicycle, and transit improvements into capital improvement and major maintenance projects
- reviewing Code requirements in buildings to ensure adequate, safe, and convenient parking
- patching potholes, modifying traffic islands, and replacing drain gates to make streets more passable for bikers
- ensuring new federal transportation law gives fair funding treatment to bicycles by working with state and federal transportation agencies on TEA-21 funding program
- working with public transit agencies to ensure safe, convenient bike access to transit stations, as well as adequate biking facilities at the stations

Results*

Adding bicycle lanes to both sides of a street that linked to Seattle's downtown:

- Avoided 14,500 miles traveled by single occupant vehicle (SOV) commuters
- Reduced 7 tons CO_2 and 200 lbs. CO

*These results are based on a survey of morning commute into downtown Seattle before and after the bike lanes were installed

Key Contact

Peter Lagerwey
Bicycling and Pedestrian Coordinator
City of Seattle, WA
206.684.5108

Resources & Similar Projects

Copies of Seattle's plan are available from the Strategic Planning Office, 206.684.8080

Austin, TX Bicycle and Pedestrian Program
This plan provides excellent regulatory language for bicycle programs.
www.ci.austin.tx.us/bicycle

San Francisco, CA Bicycle Plan
www.igc.org/sfbc/sfbikeplan

Estimating the Effect of Bicycle Facilities on VMT and Emissions, Stuart Goldsmith, Seattle Engineering Dept., 1995

Get People Out of Cars

- Reduce traffic congestion
- Improve air quality
- Discourage single-occupancy driving

Comprehensive Commuter Trip Reduction Program

—Los Angeles, CA

Annual Results

- Carpool program: 500,000 trips and 3,836 tons CO_2 reduced
- Vanpool program: 233,000 trips and 7,696 tons CO_2 reduced
- Transit incentives: 418,500 trips and 6,050 tons CO_2 reduced
- Telecommute program in 1998-99: 7,800 trips and 194 tons CO_2 reduced

Sixty-six percent of U.S. oil consumption is used for transportation, accounting for about one-third of U.S. carbon dioxide emissions. Getting people out of cars or into high-occupancy vehicles is thus a good way to achieve significant reductions in greenhouse gas emissions. In addition to being a major source of GHGs, motor vehicles also contribute to air pollution. About a third of all vehicle trips arise from commuting, which cause traffic congestion, smog, and frustration for all.

In order to alleviate traffic congestion, the City of Los Angeles devised a commuter trip reduction program aimed at discouraging solo personal vehicle use and encouraging transit, car- and vanpooling. The commuter program is offered to 38,000 City employees with a budget of about $1.6 million a year. The program operates in over 40 City departments, including 110 vanpools, 1,000 carpools and the City Telecommuting Program.

Innovative Financing: The Rideshare Trust Fund. The City of Los Angeles and its employee bargaining units agreed to a unique arrangement regarding commuter benefits and employee parking. Basically, it rewards the "good guys" (those who rideshare) and penalizes the "bad guys" (solo drivers). Parking fees from solo drivers are used to support rideshare programs. Parking permit fees go to the interest-earning Rideshare Trust Fund. Unlike typical "use-it-or-lose-it" budgets, unspent funds in one fiscal year carry over into the following fiscal year. The Commuter Services Office (CSO) then applies these monies to its entire program; the initiative is thus relatively insulated from the effects of year-to-year tax revenue shortfalls in the General Fund. Trust Fund expenditures are primarily directed toward subsidizing vanpools and employee transit passes. They also cover producing carpool matchlists, purchase and installation of bicycle lockers, and office expenses.

Highlights of LA's Program

Parking policies in Civic Center

- free permits for carpool vehicles
- preferential parking for car- and vanpools
- 17-year wait list for seniority parking permits for solo drivers

Transit, car- and vanpool incentives

- $15 cash back to transit users
- subsidized vanpool vehicle
- rideshare matching service
- guaranteed ride home

Bicycle, pedestrian incentives

- bike and clothes lockers, showers at some city facilities

Work time adjustments

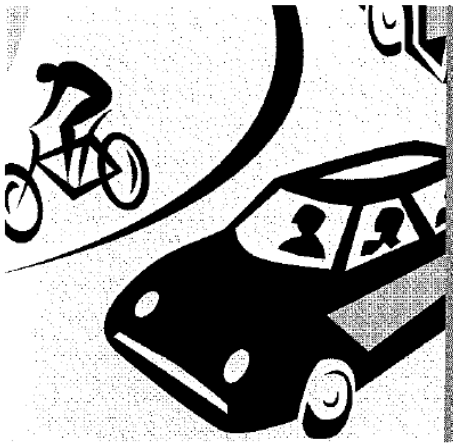
- flex time in most departments
- compressed work week
- telecommuting—work at home up to one day a week

Key Contact

Jeanne A. Rogers
Manager, AQMD Compliance Section
City of Los Angeles, CA
213.485.6994

Resources

Commuting in the Greenhouse: Automobile Trip Reduction Programs for Municipal Employees, ICLEI—Cities for Climate Protection Policy and Practice Manual



Pay People Not to Drive

- Trade parking for cash
- Encourage commuting using alternative modes
- Increase employee satisfaction

Parking Cash Out—Santa Monica, CA

Results

- 26 out of Santa Monica's 105 employers with 50 or more employees had implemented cash-out programs by February 1999
- Vehicle Miles Traveled (VMT) reduction of 544,000 miles per year
- CO_2 emissions reduction of 196 tons per year

Lessons Learned

- Employees must be monitored to make sure that they are not parking on surrounding neighborhood streets after "cashing-out"
- Some negotiations with property managers who are unwilling to reduce the number of spaces being leased can be problematic

The City of Santa Monica enacted a Transportation Management Plan (TMP) Ordinance in 1991 to reduce traffic congestion and comply with federal and regional mandates to improve air quality. Under the TMP Ordinance, employers with 50 or more employees are required to file either an Employee Trip Reduction Plan or a Mobile Source Emission Reduction Credit Plan. Regardless of what type of plan they submit, employers who lease parking and offer it free to their employees must prepare a parking cash out plan as well.

Using Incentives. Parking cash out programs offer employees the option of receiving the equivalent monetary value of a parking space in place of the actual parking space. For example, if an employer currently pays $50 per month to lease each employee parking space, with a cash out program he/she would also offer $50 to employees who agree to give up their parking spaces. The average value of a cashed out parking space is $70 per month. Anyone eligible for free parking is offered a financial incentive to give up their parking privileges and instead commute by carpool, transit, or any other alternative to driving alone.

How it Works. Affected employers are sent a comprehensive packet of information that includes the text of the law, detailed information on parking cash out, and sample materials for presenting parking cash out to employees. City staff administer the parking cash out program for about 15 hours a month. Santa Monica finances expenditures for its TMP Ordinance through employer fees. As part of the ordinance, these fees cover implementation of parking cash out.

Key Contact

Karen Pickett
Transportation Management Coordinator
City of Santa Monica, CA
310.458.8295

Resources

Local Government Guide to Parking Cash Out, ICLEI—Cities for Climate Protection, Berkeley, CA, 1998.

Parking Cash Out Incentive: Eight Case Studies, California Air Resources Board, 1998, at *http://arbis.arb.ca.gov/research/resnotes/notes/98-3.htm*

Finance Public Transit

- Guarantee funding for transit
- Mitigate downtown traffic congestion
- Reduce air pollution and CO_2 emissions

Transit Impact Development Fee—San Francisco, CA

Funding mechanisms have tilted the playing field toward private automobiles and away from public transit for at least fifty years The result is that road and highway improvements have attained routine, almost automatic status, often with minimal public discussions and debate, while improvements for bus and rail lines, bicycles, and pedestrians have gone begging

Leveling the Playing Field... between automobiles and alternative transit is crucial because strategies to lure drivers out of their vehicles will only work if sufficient resources are dedicated to transit systems and bicycle and pedestrian amenities to make them genuine alternatives. To compete effectively in the transportation marketplace, alternative transit modes need comprehensive route coverage, frequent service, and attractive and comfortable equipment. Local governments can help level the playing field by establishing new policies and priorities for transportation expenditures and projects in their communities

Changing the Price Signal. Impact fees are commonly applied to developers for parks and schools, but transportation impact fees are rare San Francisco adopted a development fee for all new downtown office construction to provide funding for transit services that such new employment centers would require

San Francisco's Transit Impact Development Fee (TIDF) was implemented in 1981 to help mitigate the additional traffic and public transit demand created by workers in newly constructed downtown office buildings The TIDF moneys have funded increases in transit services to meet peak demand generated by new downtown businesses. The fee of $5 per square foot is assessed on new office construction and conversions to commercial office space within a designated downtown district Funds are paid directly to the Municipal Transit District, which operates San Francisco's light rail, cable car, and bus services.

Results

- Over the nineteen years the program has been in existence, $85 million in fees have been collected, contributing to 1 5% of the Municipal Transit District's annual operating costs

Lesson Learned

Although the TIDF has raised significant funds, a slowdown in new office construction in the late 1980s reduced the anticipated revenues To account for such unforeseen circumstances, the impact fee could be applied to all downtown commercial development benefiting from transit, and not only to new offices

Key Contact

Steve Nickerson
TIDF Coordinator, San Francisco Municipal Railway
City of San Francisco, CA
415.923.2108

Resources

Impact Fees: Issues and Case Studies, International City/County Management Association (ICMA), MIS Report, vol. 23, no. 12, December 1991

Water

Members: *Diane DeLillio, Shannon McKibben, Randy Kuehn, Peg MacMorris, Susan Buhr, Bethany Thomas*
City of Golden Staff member: *Dan Hartman*

BACKGROUND AND PROCESS

The water working group started with two proposed goals:

- Reducing Golden's per capita water use by 15% in 10 years
- Maintaining the highest water quality standards for Golden's water supply

After learning about the state of Golden water supply, operating practices and quality, the group researched water practices in other municipalities. The group brainstormed a list of sixty-four goals and action items, which was reduced to four goal areas and thirteen recommendations. The conservation goal timeline was shortened, the water quality goal was applied to the water reaching end users, and goals were added to address system efficiency and ecosystem health of Golden waterways.

Each group member took primary responsibility for a goal area, after which the drafts were discussed and edited by the group. The group expressed agreement regarding the goals and action items in the document. Dan Hartman, the director of Public Works, reviewed the final recommendations and stated that there is nothing in the report that the water utility does not support.2 See the addendum for a more complete discussion of each goal area.

The Current State of Water in Golden

- Water conservation: The City of Golden enjoys a secure position with respect to water rights and availability. Though Golden per capita water usage is already low, improvements can be made in the name of efficiency, security and ecosystem health without negative impacts on quality of life.
- Drinking water quality: Since 2001, Golden has achieved the highest level of voluntary compliance within the *Partnership for Clean Water* program, meeting the most stringent water clarity and safety standards. However, the quality of water reaching the end user can be improved through continued improvements to the distribution system, testing, and education.
- Efficiency: Inefficiencies exist in the City of Golden water distribution system due to aging pipelines and current design characteristics. Capital investment resulting in increased efficiency will result in savings due to decreased chemical and energy use and increased water conservation.
- Ecosystem health: The health of the riparian zone (land associated with the streams and the stream itself) results in economic benefit to Golden from the many visitors, kayakers and tubers who use the waterways. Healthy waterways contribute to quality of life and municipal pride. Currently, we have incomplete baseline assessment data for the health of the waterways, which must be extended in order to develop basin-wide action plans.

Goal 1: Reduce the City of Golden's per capita use of water by 15% within 5 years.

Recommendation A: Encourage water-conserving landscape practices through efficient irrigation, water-smart gardening practices and xeriscaping.

Rationale and benefits**:**

A study of Colorado's Front Range3 showed that Xeriscape landscapes used 18% to 63% less water than Kentucky bluegrass landscapes. If 25% of Golden's population switched to xeriscape lawns, we would reduce the GPCD about 2.8 to 9.7 gallons per person per day averaged over the year. However, to be effective, the ability to install xeriscape landscapes would need to be available to all Golden business and homeowners, including those who are in homeowner associations with restrictive covenants. Even in

2 Private communication, Dan Hartman and Susan Buhr, 6/20/2007
3 http://www.xeriscape.org/x252pgflyersmall.pdf)

traditional landscapes, efficient irrigation and watering practices greatly reduce the need for supplemental water. Should we put in Golden's current GPCD?

In addition to increased security, the benefits of reducing per capita use of water include:

- Cost savings of electricity and chemicals at the treatment plant.
- Deferred cost of capital investments for treatment plant expansion.
- Greater stream flow preserved for a healthy riparian environment, the Clear Creek White Water Park, and the Clear Creek Trail.
- Reduced emissions from the power plant due to decreased energy usage.

Examples**:**
City of Fort Collins (HOA covenants), City of Denver, City of Boulder, City of Aurora, City of Albuquerque, City of Tuscon, Salt Lake City

Alternatives**:**
Minimum level: Disallow HOA restrictions on xeriscaping, extend the free sprinkler audit program (including telling residents how they can pay for the audit if the free audit slots are full), partner with organizations to provide xeriscaping and water husbandry education, provide more frequent and informative water billing.
More ambitious:
Provide Golden-specific water education, implement stepped meter rates, provide incentives for water-efficient irrigation systems.

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Recommendation B: Reduce indoor water use through incentives and education.

Rationale and benefits**:**
Residential daily indoor per capita water use could be reduced4 by installing low water use fixtures (showers, washers, toilets) and by repairing leaks. Doing so could reduce per capita use per single family home by up to 24 gallons per day. The benefits of this recommendation are the same as those above.

Examples**:**
City of Denver, Fort Collins, Aurora, Tuscon, Albuquerque, Salt Lake City

Implementation
Moderate implementation: City of Golden provides education and information about home leakage audits and efficient appliances, establishes building code upgrades on new construction and remodels, provides more informative water bills more frequently.
Ambitious implementation: The City of Golden takes the actions listed above, and provides incentives for installation of low flow appliances, provides the in-home audits, establishes stepped meter rates for water usage over a baseline amount.

Recommendation C: With our municipal partners, clarify and seek legal extensions to our ability to use graywater and rainwater catchment.

Rationale and benefits:
Graywater is the water collected from indoor use such as from showers, clothes washers, and sinks that is then available for outdoor landscape use or for appropriate reuse inside (such as to flush toilets). Catchment is the use of containers such as rain barrels to capture for use outdoors. Our rights to use graywater in Colorado need clarification, and catchment is not permitted, though both of these practices are permissible in other southwestern states. The benefits of working with other Colorado municipalities to clarify and seek legislative extension of these practices include all of the benefits listed under Recommendation 1, plus would increase our water security in case of emergency. This recommendation

4 An AWWA study (http://www.drinktap.org/consumerdnn/Home/WaterInformation/Conservation/WaterUseStatistics/tabid/85/Default.aspx

must be enacted with our Front Range neighbors and Colorado partners in order to build consensus on what practices will benefit all.

Examples: Arizona and New Mexico5 See references in the addendum.

Implementation**:** Clarify and communicate the level of permitting and testing required to implement graywater systems presently. Develop a coalition of municipal partners in Colorado to seek legislative extension of graywater and catchment practices.

Goal 2: Maintain better than regulatory water quality from water treatment plant to end-user.

Recommendation A: Continue and extend the City programs to eliminate dead-end lines and decrease residence time in the system.

Rationale and benefits**:**
The City of Golden maintains better than regulatory water quality leaving the treatment plant. In order to safeguard and maintain this quality to the end user, the City has a budget to replace aging lines and make system improvements, of which a portion should be devoted to eliminating dead-end lines by 2017. The City should also continue to implement strategies that decrease residence times in City water storage tanks. Benefits include decreased water usage to flush dead-end lines and increased water quality to the end user, and increased consumer confidence.

Implementation
Minimum implementation: Maintain City water system fund for this activity.
More ambitious: Expand the City dead-end line program and implement mixing strategies for water storage tanks.

Recommendation B: **Implement increased water quality testing throughout the distribution system, and use the most feasible, advanced and available technologies to control disinfection byproduct formation, such as trihalomethane compounds.**

Rationale and benefits**:**
The City of Golden should increase the level of systemic water quality testing, and should respond to issues by investment in technological solutions, rather than short-term "fixes" such as flushing the affected areas. Benefits include better tasting and higher quality drinking water to the end user, decreased water usage to flush problem areas, and increased consumer confidence.

Implementation**:**
Budget for increased water quality testing and for investment in new technology.

Recommendation C: Provide education and encourage the use of devices that prevent backflow and cross contamination within buildings.

Rationale and benefits:
Presently, commercial buildings are required to use backflow devices that protect the water supply from contamination. Implementation of backflow devices, and educating water users will decrease the risk of contamination for water users. Benefits include increased water quality in the home.

Implementation
Minimum implementation: Educate homeowners about backflow devices and careful in-home practices.
More ambitious: Provide incentives for implementation.

5 (http://www.oasisdesign.net/graywater/law

Goal 3: Increase the efficiency of the water delivery system.

Recommendation A: Set up a system to quantify, locate and resolve problems resulting in "unaccounted" water; or that water lost within the distribution system.

Rationale and benefits:
Presently the City of Golden water distribution system results in an approximately 9% loss of treated water through leaks and inefficiencies, with the associated energy and chemical costs accrued to the city6. This represents treated water that leaves the treatment plant but is not reported as household and business metered use and does not generate revenue. Locating and quantifying these inefficiencies (leaks, dead end lines) will help to justify and prioritize improvements in City infrastructure and distribution systems. Benefits of addressing these problems include better water security and increased in-stream flow, decreased City energy costs due to pumping, and decreased chemical costs.

Implementation**:**
Public Works develops a systemic protocol to assess leakage in the system. Prioritize replacement of dead end lines and infrastructure improvements based upon inefficiencies. Maintain and expand City operations for improving infrastructure.

Recommendation B: Administer and promote an active City and citizen leak detection program.

Rationale and benefits:
The City responds to leaks as they are identified by staff and citizens. In home water audits would help citizens identify leaks in their homes and businesses. However, a significant fraction of leakage is likely to stem from the service lines that connect City lines and buildings. These service lines are the responsibility of the building owner. Home audits should include hydrophone assessment of the service line, but in the event that excessive leakage is found, some mechanism to help defray the cost of repair should be established. Benefits: Decreased water losses, decreased energy and chemical costs to treat lost water, decreased metered water usage.

Implementation**:**
Ramp up the City leak detection program, make in-home water audits available. Implement mechanisms to help residents defray the costs of service line repair, then include service line assessment in the audits..

Recommendation C: Maintain high efficiency and energy conserving water system pumps.

Rationale and benefits**:**
Water pumping represents a large fraction of municipal energy use. In order to keep our pumps efficient, the City should ensure that pumps work up to specifications, and conduct maintenance and replacement as needed. Benefits include decreased energy costs to the City.

Implementation**:**
Establish efficiency guidelines for water system pumps, conduct annual output efficiency tests, and budget for an exemplary pump maintenance and replacement schedule.

Goal 4: Improve the health of the ecosystem associated with the Golden waterways.

Recommendation A: Develop and implement overall action plans for management of the Golden drainage basins.

Rationale and benefits**:**

6 Private communication, Dan Hartman 5/07

High ecosystem health and water quality within the stream is beneficial to Golden residents and visitors, such as kayakers, tubers, and tourists, and increases the value of the investment Golden has already made in the waterways (Clear Creek path and art walk, bike trails and parks). We propose that existing environmental data sets be compiled and made more comprehensive throughout the Golden drainage basins. Making our understanding comprehensive would require extending our existing data sets over the breadth of the basins (such as fisheries habitat, presence of endangered species, water quality), and adding other important parameters (population analysis, bio-indicators). This data should be used to draft and implement environmental action plans throughout the Golden drainage areas. While consultants can be retained to assist with this effort, this represents an opportunity to develop partnerships with universities, K-12, citizen and non-profit groups, and service organizations. Action plans should include such items as habitat improvement projects, native species planting projects, weed abatement and the like. These items should be prioritized, and staff should be allocated to implement them. Where feasible, residents should be included in improvement projects. Benefits include increased quality of in-stream flow, increased quality of life for residents and visitors, potential educational benefits for students and citizens involved in monitoring and improvements, economic benefits from tourism, and the inherent value of healthy ecosystems.

Examples:
City of Boulder, Jamestown, Colorado River Basin, many Community Watershed Assessment groups.

Implementation
Moderate implementation: City staff compiles the existing data sets and gathers more comprehensive data. City staff develops and implements action plans.
More ambitious: City staff compiles the existing data sets. Consultants are retained and/or educational partnerships are formed to gather data and to form action plans (with City input and advice). Actions are prioritized and an implementation budget allocated.

Recommendation B: Improve storm water runoff quality.

Rationale and benefits**:**
Because many of our storm water drainages are intermittent, data on stream flow is difficult to gather. However, a robust plan for Golden storm water quantity management exists. We propose to develop an action plan for storm water quality that includes gathering baseline data on the current status, and implementation of a non-point source pollution education program (decrease animal waste impacts, fertilizer runoff, dumping, etc). With our municipal partners we will seek the ability to use City median plantings to filter the first-flush storm water that contains the most pollutants. Benefits include better in-stream water quality.

Examples**:** City of Boulder

Moderate implementation: Gather baseline data on storm water quality; implement an education program to decrease water quality impact behaviors.
Ambitious implementation: In addition to the above, work with our municipal partners to make using bio-filtration in City operations feasible. In other words, to allow the City of Golden to use City median plantings to clean first-flush storm water.

The following supporting recommendations underpin all of the goal areas above.

Supporting Recommendation A: Maintain awareness of scientific knowledge on Front Range climate projections and the changes predicted for water supply timing and quantity.

Rationale and benefits**:**
Scientists anticipate changes in water quantity and the timing of supply cycles. Increased drought is projected for the southwestern states, and earlier onset of snowmelt is expected. We propose that the City of Golden maintain partnerships with research organizations that study Front Range climate systems, and

remain abreast of the implications for our water planning. Benefits include better planning for drought, water rights and increased water security.

Examples**:**
City of Aspen, City of Boulder, City of Denver, Colorado River Basin partners

Moderate implementation: Maintain relationships with research organizations that study Front Range water and climate. Implement the most credible projections in our water planning.
Ambitious implementation: Where critical knowledge gaps exist, provide support for studies that would aid our planning.

Supporting Recommendation B: Develop educational opportunities at all levels-K12, college, public.

Rationale and benefits**:**
Education is key to promoting conservation and environmental behaviors. At the K12 level, develop partnerships with education organizations such as *Riverwatch*, local *Project Wet*, and the Golden-based leadership of the Colorado Environmental Education Alliance (CAEE). At the college and post-collegiate level, develop partnerships with faculty to promote beneficial research projects. For the general public, develop programs such as signage, water festivals, and creek clean up events. Benefits include increased authentic educational opportunities for Golden citizens, implementation of City objectives with the help of residents and partners, and increased citizen civic participation.

Examples**:**
City of Boulder, City of Denver, City of Aurora

Moderate implementation: Develop partnerships with educational organizations to provide education in Golden. Establish partnerships with research organizations to develop student study opportunities.
Ambitious implementation: In addition to the above, develop education programming that is specific to Golden.

Supporting Recommendation C: **Determine responsibilities for recommendations. If responsibility for implementing recommendations is outside the scope of City water and environmental staff, we recommend hiring a Sustainability director who will implement these recommendations as part of his or her duties.**
Rationale, benefits and examples**:**
As discussed in other chapters of this document.

TIME FRAME FOR RECOMMENDATIONS

Recommendations	**2007**	**2008**	**2009-2017**	**Notes**
Water 1.A	x	x	x	Implement HOA first, audit/education next, add data to existing bill, implement radio meters when WiFi is available.
Water 1.B	x	x	x	Education, then audits/incentives/education/building code, then billing changes
Water 1.C	x	x	x	Begin talking with municipalities, build relationships with legislators, pursue legislative changes.
Water 2.A	x			Earmark a portion of City funds for dead end lines elimination by 2017.

Water 2.B	x	x	x	Implement robust water testing program, invest in long-term solutions to problems
Water 2.C	x	x		Include contamination content in education, include in audit program, provide incentives/revolving fund.
Water 3.A	x	x		Develop well-supported estimate of "unaccounted losses", use knowledge in City planning, repeat annually
Water 3.B	x	x		Develop ways to financially support homeowners in service line maintenance. Once established, add to home audit protocol.
Water 3.C	x	x		Establish pump output guidelines, establish output efficiency tests annually, use to schedule pump maintenance and replacement protocols.
Water 4.A	x	x	x	Compile and add to existing data, develop action plans, seek partners to implement
Water 4.B	x	x	x	Implement stormwater quality testing, provide education, seek ways to clean first-flush stormwater
Water Support.A	x	x	x	Increase awareness of scientific forecasts for COG water supplies, where gaps exist, help to fund studies with partners.
Water Support.B	x	x	x	Education implemented through all areas for the long term.
Water Support.C	x	x		Define roles and responsibilities, hire Sustainability Director

CONCLUSION

The City of Golden has made steady advances resulting in better water over the last twenty years. Innovation, forward thinking, and good water stewardship has made the City of Golden a leader and an example to other cities. The City of Golden Sustainability effort provides us with an opportunity to make even greater gains for increased quality of life, security, satisfaction and contributions to our neighbors.

ADDENDUM

Our Vision:

In the City of Golden water is conserved and protected as the precious resource it is. Responsible water behavior is practiced by Golden residents, City operations, businesses, and institutions. The City of Golden uses the most current and credible scientific knowledge in our water planning, including mid- to long-range forecasts of drought duration and extent.. Residents and visitors to Golden enjoy increased quality of life derived from water security, quality and health of our waterways. As we succeed in our aims, we provide leadership and models to other municipalities in the Front Range and elsewhere.

Background for Goals and Action Items:

1. Water security and conservation:
   The City of Golden enjoys a secure position with respect to water rights and availability. We currently hold water rights sufficient to enable us to sustain a drought on the order of the 2002 drought for three years without

catastrophic restrictions or decreased quality of life7. This is true for a population of up to 26K residents, while the projected build out population of Golden is about 23K residents, and the current population is 18K8. However, City of Golden water security could be impacted in the future by legislative threats to our water rights, as has happened in the past (2002 State Engineer Ruling9), by severe and prolonged drought as is forecast for the southwestern states10, or by the impacts of increased drought on the well-being of the region.

Western cities typically exhibit higher usage rates than the national average due to greater demand for water. The City of Golden already exhibits responsible water use behavior. In 2006, the City of Golden gallons per capita per day usage average was 160 gpcd11, a low rate for a Western city. Though Golden usage is already exemplary within the Front Range and Denver Metro area, we anticipate that improvement can be made in the name of efficiency, security and ecosystem health without negative impacts on quality of life.

2. Drinking water quality:
   Golden participates in the *Partnership for Clean Water*, a voluntary cooperative effort between the U.S. Environmental Protection Agency, AWWA and other drinking water organizations, with more than 200 participating surface water utilities throughout the United States. Since 2001, Golden has achieved the highest level of voluntary compliance, with the most stringent water clarity and safety standards. Golden was the first plant of its size to achieve this distinction, and is being nominated for an award in recognition of this achievement, along with other exemplary utilities.12 To achieve greater water quality leaving the plant would require a major capital investment with diminishing returns. However, opportunity exists to improve safeguards to the quality of water reaching the end user through a variety of City and end user actions. Going beyond water safety to aesthetic values in water taste, the City of Golden maintains staff and citizen expertise in water tasting protocols13, and placed well in a blind taste test of municipal water from cities including Paris, Seattle and New York14

3. Efficiency of the water systems:
   Inefficiencies exist in the City of Golden water distribution system due to aging pipelines and current design characteristics. A capital improvement program exists in which pipes are replaced on a schedule determined by age, existing design inefficiencies, leak detection and construction opportunities. In addition, efficiency opportunities related to pumping technology and treatment chemicals arise within the industry as advances are made. Capital investment to increase efficiency results in savings due to decreased chemical and energy use and increased water conservation.

4. Ecosystem health:
   The health of the riparian zone (land associated with the streams and the stream itself) in the City of Golden water ways has improved dramatically in the last twenty years. However, our waterways health is influenced by trails (i.e., sediment), non-point source pollution (i.e., storm sewers), and inflow from groundwater (when contaminated). Specifically, trails are used along Clear Creek, Kinney Run, Tucker Gulch, Crestman Gulch and the Apex trail tributary to Lena Gulch, posing trampling and other usage issues that counter the economic and quality of life benefits they provide. Roads and other urbanization within all the Golden drainages pose

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7 Dan Hartman, Public Works Director

8 Dan Hartman, Public Works Director

9 In September of 2002, Colorado Water Court Division 1 judge Hays found that Golden's 3.4 cfs direct flow priority 5 water right had been subordinated, under certain conditions, to a Priority 9 water right call.

10 Seager, et. al., Science 316 (5828), 1093c. [DOI: 10.1126/science.316.5828.1093c], Intergovernmental Panel on Climate Change 4th Assessment reports

11 City of Golden data

12 From Dean Vlachos, CO Departmant of Public Health and Environment:

> *"Please allow me the opportunity to introduce myself. My name is Dean Vlachos and I have recently joined CDPHE to lead the Colorado Drinking Water Excellence Program. Sharon Williams and I would like to nominate the Golden Water Treatment Facility for a Bronze Environmental Achievement Award. This award is granted by the CDPHE Environmental Leadership Program to recognize efforts to improve the environment of Colorado. Specifically, we are nominating Golden (as well as four other Colorado public water systems) for excellence in water quality resulting from achieving Phase III (Director's Award) in the Partnership for Safe Water program."* dean.vlachos@state.co.us
> http://www.cdphe.state.co.us/wq/drinkingwater/index.html

13 From Dan Hartman, personal communication: *"The citizen/staff taste testing panel was through Drexel University, and the University of Leone France. The theory behind it was that human taste was more sensitive than instruments. We still have two people on staff that went through the program."*

14 Jonathan S. Paul, New York Magazine, http://www.nymag.com/news/articles/reasonstoloveny/2006/25606

risks to the waterways through non-point source pollution run off. Underground tanks and chemical plumes pose threats to in-stream water quality through ground water pollution, though progress has been made in cleaning up some sources15. First flush stormwater enters the waterways carrying contaminants from runoff.

High in-stream water quality benefits the economic base of Golden. In 1999, the City of Golden demonstrated a $2M benefit to the economic base of Golden in order to secure water rights for the kayak course. Since then, the course has been expanded and use is up, raising the economic benefit of the course to approximately $3M16 These estimates do not include the added benefits due to summer tubers and to tourists who enjoy the creek paths.

An incomplete body of knowledge about the ecosystem health in Golden water ways exists but must be extended to be most useful. Important aspects in which we possess some knowledge include quality of stream bed habitat, presence of rare or endangered species (e.g. Ute Ladies Tresses orchid), water quality and stream flow. Many educational projects exist in which citizen and student scientists assess and improve ecosystem health in water ways (such as Riverwatch).

ADDITIONAL INFORMATION RELATED TO WATER GOALS:

Goal 1: Reduce the City of Golden's per capita use of water by 15% within 5 years.

Golden's per capita water use has decreased from about 220 gallons of water per person per day (gallons per capita per day - GPCD) in 2000 to about 160 GPCD in 2006; -- with a spike to about 190 GPCD in 2005. Golden is progressing in its efforts to conserve water; however, without a consistent conservation program, it appears easy to revert to our non-conservation habits. Additionally, even though Golden's per capita use is lower than some of our southwestern neighbors (Albuquerque – 193 GPCD in 2003 (http://www.cabq.gov/progress/pdf/per-capita-water.pdf), and Tucson – 177 GPCD in 2002 (http://www.ci.tucson.az.us/water/docs/wp-app-b.pdf), it is higher than the national average of 134.62 GPCD17. The goal of reducing Golden's per capita use from 160 GPCD in 2006 to 136 in 2011, which is a reduction of 24 gallons per person per day, is attainable by implementing established water saving measures both within the home / business and in the landscape. Achieving this goal would place Golden at approximately the national GPCD level without decreasing our quality of life, representing a laudable achievement for a Western city.

Action Items:

Water saving methods have been established and proven by other cities and agencies, and information is readily available from the Environmental Protection Agency (EPA), the American Water Works Association (AWWA), and our neighbor Denver Water. Our proposed specific action items for Golden focus on those items that have shown the most water savings and could be implemented in Golden. The action items are broken down into three major categories: 1) reduce outdoor water use, 2) reduce indoor water use, and 3) establish legal uses of graywater and catchment to supplement outdoor water needs. Please note that these items would apply to businesses and government institutions (i.e., School of Mines, correctional facilities, Jeffco offices) as well as homeowners.

Action 1: Reduce outdoor water use.

This action item can be accomplished by installing more Xeriscape landscapes and by promoting more water-smart landscape practices. Golden currently uses 4.5 million gallons per day for irrigation during the summer months (three month average). And a study of Colorado's Front Range (http://www.xeriscape.org/x252pgflyersmall.pdf) showed that Xeriscape landscapes that were used 18% to 63% less water than Kentucky bluegrass landscapes. If 25% of Golden's population switched to Xeriscape lawns, we could have the potential to reduce water usage by about 202,500 to 708,750 gallons per day, which is about 18,225,000 to 63,787,500 gallons each summer. However, to be effective, this ability to install Xeriscape landscapes would need to be available to all Golden business and homeowners, including homeowner associations. This would require that homeowners associations allow homeowners to install

15 From Dan Hartman, personal communication: *"The state does have a list of all tanks. We do know about a number of plumes, but I think with the recent partial cleaning of the old dry cleaners plum at 13th and Jackson for the Hesteds redevelopment, and parking structure there are no known plumes. The Dry cleaners plume is not completely cleaned, still some left to the east of Jackson to Coors."*

16 Dan Hartman, personal communication: *"We were required to show beneficial use during the Kayak case. The number that was determined then (1999) was $2,000,000 annual benefit to the economy. We have expanded the course, and use is up since then, so current value may be closer to $3,000,000."*

17 American Water Works Association, personal communication to Diane Delillio, May 2, 2007

low water use landscaping. There has been an ordinance signed into effect in 2005 that would limit a HOA ability to restrict xeriscape landscaping in the state of Colorado. This ordinance should be investigated and communicated to HOA boards.18

A full list of actions that were discussed in the group include disallowing homeowners association covenants that limit homeowner rights to practice conservation behaviors, xeriscape education for homeowners and landscapers, sprinkler repair / tuning education, drip system education, watering measurements awareness and tools, information sheets, prominent information web page (possibly with a link to Denver Water information pages), cooperation / coordination with local landscape supply vendors, publicity events, audits, use more non-potable water, graywater use education, incorporate water conservation into children's school programs, Q&A help line person, usage based water rates, and enable water users to track and compare their water usage.

Potential costs could include implementing educational programs, amending Golden's requirements for homeowners associations, implementing more responsive metering and billing operations, staff time to provide information, and decreased water revenue due to conservation.

Action 2: Reduce indoor water use.

An AWWA study (http://www.drinktap.org/consumerdnn/Home/WaterInformation/Conservation/WaterUseStatistics/tabid/85/Default.aspx) noted that the daily indoor per capita water use could be reduced by installing low water use appliances and by repairing leaks. That study showed, in part, some of the following values for usage per capita gallons per day.

Item	Without water efficient fixtures – gallons used	With water efficient fixtures – gallons used
Showers	11.6	8.8
Clothes Washer	15.0	10.0
Toilets	18.5	8.2
Leaks	9.9	4.0
Total Usage	*55*	*31*
Savings of 24 gallons per day		

By addressing these four items, the per capita use per single family home could be reduced by up to 24 gallons per day. As a note, this type of reduction equals the over all goal of reducing the GPCD of 24 gallons for each person. As an example, a family of four could have the potential to save up to 96 gallons of water per day and up to 35,040 gallons per year.

Specific actions could include in home audits for leaks / minor repairs / shower head replacement, new building requirements for low flow toilets, rebates for water efficient appliances, information sheets on types /ratings of various water efficient items, prominent information web page, public education meetings, incorporate water conservation into children's school programs, Q&A help line person, usage based water rates, and enable water users to track and compare their water usage.

Potential costs could be variable from: a) adding a regular information section in the Golden Informer, to b) offering rebates / monetary incentives for certain water saving appliances, to c) offering assistance to programs such as classroom education and lower income / fixed income households.

Action 3: With our municipal partners clarify and seek legal extensions to our abilities to use graywater and rainwater catchment.

Graywater is the water collected from indoor use such as from showers, clothes washers, and sinks that is then used for outdoor use such as watering plants. Graywater does not include that water which exits toilets, which is known as black water. The collection of graywater for reuse can vary from placing a

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http://www.cohoalaw.com/from-capitol-hilllegislation-s-b-100-what-you-need-to-know-about-colorados-newest-law-affecting-common-interest-communities.html See this site for a link to the full text of the bill. See also http://www.businessasap.com/hoa_services/sb_100.htm "Invalidates any new or existing covenant or condition, including the requirement for an architect's stamp or change fee, that prohibits or discourages a unit owner from employing xeriscape or that requires landscaping to consist exclusively or primarily of turf grass."

bucket in the shower to installing tank systems to collect indoor used water. Graywater use is legal in Arizona and New Mexico (http://www.oasisdesign.net/greywater/law).19

Catchment of rain water is not legal under Colorado water law, but a small catchment system could provide water for irrigation of vegetable crops or an emergency drinking water source if need be. Any legislative action on this would have to be undertaken with a coalition of our municipal partners. Many drier states and countries do allow some level of rain catchment. This may not be an action we wish to take on at this time, but could be retained for the future.

The working group needs to identify Colorado and Golden requirements regarding graywater use and the various collection systems. Potential modifications to regulations and/or systems may be discussed and implemented state-wide through legislative advances with our municipal partners. Once an acceptable program is agreed upon, a public education program would begin.

Follow Up:

Follow up for the this goal of reducing per capita use of water would include tracking the actions taken by Golden, public participation at meetings, web site hits, Q&A inquiries, number of audits, response to publicity events, and per capita water usage. Specific actions would be modified based on the public's response and the changes in per capita usage.

Goal 2: Maintain better than regulatory water quality from water treatment plant to end-user. No additional information included herein.

Goal 3: Increase the efficiency of the water delivery system.

Costs:

Staff time to accurately quantify the distribution losses, staff time for programs, maintain and strengthen capital reinvestment program.

Follow Up:

Track system improvements and water savings.

Goal 4: Improve the health of the ecosystem associated with the Golden water ways.

No additional information is included herein.

Costs:

Staff time to gather existing data sources, possibly consultant time to extend data sets, staff time to develop community partnerships and oversee community events. Direct costs associated with community events. Legal costs (with municipal partners) and construction costs associated with allowing first-flush stormwater to be biofiltered within medians.

Follow Up:

Gather data and identify standard baseline assessment parameters. Identify educational models. Determine value of healthy ecosystems to Golden economic base and to resident municipal pride.

CONCLUSION

The City of Golden has made steady advances resulting in better water over the last twenty years. Innovation, forward thinking, and good water stewardship has made the City of Golden a leader and an example to other cities. The City of Golden Sustainability effort provides us with an opportunity to make even greater gains for increased quality of life, security, satisfaction and contributions to our neighbors..

DEFINITION OF TERMS20:

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20 Albuquerque Official City Website (http://www.cabq.gov/progress/goal5.html)

Per Capita Gallons per Day (PCGD)

This indicator measures the per capita water usage, the total amount of water pumped from the ground divided by our population. All of the residential, commercial, institutional and industrial water use as well as the unaccounted for water use (UAW) is included in the total amount pumped. Therefore, per capita water use includes the water we use at home, at work and play, plus the process water used by industries, water used in schools and other public facilities, and leakage in the delivery system. So, per capita usage is a good overall measure of how we are doing on conserving water. Additionally, single-family residential daily per capita water consumption is used to compare water consumption from selected western cities. Western Resource Advocates recommend not using the system-wide data for comparing cities, due to a relatively high comparison error.

Unaccounted Water

UAW is made up of meter losses (as meters age they turn more slowly), leaks from the system, well wash water and other system maintenance, water theft, and water use at locations that are too slow to make the meter turn (i.e. small leaks, swamp cooler bleed-off).

DATA SOURCES FROM OTHER CITIES:

City of Albuquerque Public Works Department, Water Resources Division; “Smart Water, A Comparative Study of Urban Water Use Across the Southwest”, Western Resource Advocates, 2003

WHAT CAN WE TELL FROM THE DATA?

- In 1995, the City set a goal to reduce per capita water use from 250 gpcd to 175 gpcd, a reduction of 30% fromthe baseline of 250 gpcd. Albuquerque Progress Report 5.07
- Since 1995, when the program was initiated, per capita water use has declined from 251 gpcd to 193 gpcd in 2003, a 23% reduction from the baseline. On a per account basis the reduction is 28%. The City's residents are indeed "reducing their use."
- The range and average 2001 single-family residential daily per capita water consumption for selected western cities is 107 to 230 gpcd and 150, respectively; Albuquerque single-family per capita water consumption is 135 gpcd."

The reference for the above is:
Albuquerque Official City Website (http://www.cabq.gov/progress/goal5.html)

Salt Lake City:
Please see http://www.slcgov.com/utilities/conservation/pdf/2004%20Conservation_Master%20Plan.pdf pages 1-7 (especially the top of page 7).

Tucson:

1. "Demand management has been one of the core components of Tucson Water’s water-resource planning efforts since the early 1970s. The focus of demand management over the last 30 years has shifted from an initial strategy based on resource-management to one with a conservation-driven focus. A range of programs has been developed over the years to accomplish this.

Tucson Water Plan: 2000 - 2050
APPENDIX B
DEMAND MANAGEMENT PROGRAM DEVELOPMENT
http://www.ci.tucson.az.us/water/docs/wp-app-b.pdf

Attachment A
Golden Resolution 1740

RESOLUTION NO. 1740

A RESOLUTION OF THE GOLDEN CITY COUNCIL TO ADOPT THE "CITIES FOR CLIMATE PROTECTION CAMPAIGN" AS A TOOL TO INCREASE RESOURCE EFFICIENCY AND THE USE OF RENEWABLE ENERGY IN CITY OF GOLDEN OPERATIONS

WHEREAS, the City of Golden has expressed an interest in developing a "Golden Sustainability Initiative" and has tasked City staff to assist Council in developing such an initiative; and

WHEREAS, local government actions taken to reduce greenhouse gas emissions and increase energy efficiency provide multiple local benefits by decreasing air pollution, creating jobs, reducing energy expenditures, and saving money for the local government, its businesses, and its residents; and

WHEREAS, Cities for Climate Protection® Campaign sponsored by ICLEI – Local Governments for Sustainability has developed a proven method for developing such an initiative; and

WHEREAS, the Cities for Climate Protection® Campaign sponsored by ICLEI – Local Governments for Sustainability has invited the City of Golden to join ICLEI and become a partner in the Cities for Climate Protection Campaign;

THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GOLDEN, COLORADO:

Section 1. That the City of Golden, Colorado will join ICLEI as a Full Member and participate in the Cities for Climate Protection Campaign and, as a participant, pledges to take a leadership role in promoting public awareness about the causes and impacts of climate change.

Section 2. That the City of Golden will undertake the Cities for Climate Protection Campaign's five milestones to reduce both greenhouse gas and air pollution emissions throughout the community, and specifically:

a. Conduct a greenhouse gas emissions inventory and forecast to determine the source and quantity of greenhouse gas emissions in the jurisdiction;
b. Establish a greenhouse gas emissions reduction target;
c. Develop an action plan with both existing and future actions which when implemented will meet the local greenhouse gas reduction target;
d. Implement the action plan; and monitor and report progress.

Section 3. That the City of Golden requests technical and financial assistance from ICLEI's Cities for Climate Protection Campaign as it progresses through the milestones.

Adopted this 14th day of December, 2006.

C Baroch

Charles J. Baroch
Mayor

ATTEST:

Susan M. Brooks, MMC
City Clerk

Approved as to form:

James A. Windholz
City Attorney

I, Susan M. Brooks, City Clerk of the City of Golden, Colorado, do hereby certify that the foregoing is a true copy of a certain Resolution adopted by the City Council of the City of Golden, Colorado at a rescheduled regular meeting thereof held on the 14th day of December, A.D., 2006.

(SEAL)

ATTEST:

Susan M. Brooks, City Clerk of the City of Golden, Colorado

REQUEST FOR PROPOSAL COVER SHEET

Publish Date: **Date June 27, 2007** **RFP Number:** **GURA 07-001**

Return all Proposals to:

Mailing Address:
Golden Urban Renewal Authority
922 Washington Avenue
Suite 10
Golden, CO 80401

Golden Urban Renewal Authority
922 Washington Avenue
Suite 10
Golden, CO 80401

Purchasing Agent: **Mark Heller**

Energy Performance Contracting Services

Per the attached specifications, terms and conditions

F.E.I.N.: _____ **Payment Terms:**
Delivery Date: _____ **(Minimum of Net 30)** _____

Authorized Signature: _____
Typed/Printed Name: _____
Title: _____

Company Name: _____
Address: _____
City: _____ **State:** _____ **Zip:** _____
Phone Number: _____ **Fax Number:** _____

Contact for Clarifications: _____
Title: _____
Phone Number: _____ **Fax Number:** _____
E-mail Address: _____

IMPORTANT: The following information must be on the outside of the Bid Return Envelope:

Response to GURA RFP 07-001

REQUEST FOR PROPOSALS
For Energy Performance Contracting Services
for
City of Golden, Colorado

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Attachment A: Special Contract Terms and Conditions

Attachment B: Proposed Project Schedule

Attachment C: ESCo Response

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Attachment E: Technical Facility and Operational Profile

Attachment F: Model Technical Investment Grade Energy Audit and Project Proposal Contract

Attachment G: Model Energy Performance Contract

Attachment H: Financing Bid Package

Attachment I: Rebuild Colorado Standards for Success

Attachment J: City of Golden 10 Year Capital Improvement Plan

INSTRUCTIONS AND ADMINISTRATIVE INFORMATION

Schedule of Activities		Deadline (Mountain Time)
1.	RFP Issued	June 27, 2007
2.	Site Visit	July 16, 2007
3.	Prospective bidder's written inquiries	July 30, 2007
4.	Responses to Inquiries	August 8, 2007
5.	Proposal Submission	August 15, 2007
6.	Interviews	August 29- September 5, 2007
7.	Announcement of Award	September 12, 2007

Inquiries. Prospective offerors may make email inquiries concerning this RFP to obtain clarification of requirements. No inquiries will be accepted after the date and time indicated in the Schedule of Activities. Email inquiries must be sent to ALL of the following:

Mark Heller: mark@gura.com
Peter Rusin: peter@gura.com
John Canfield: jfcanfield@tridentenergy.com
Chris Naber: cnaber@cityofgolden.net
Keith Isenberger: kisenberger@cityofgolden.net

Submission of Proposal Packet. Submit one original and ten (10) paper copies of the proposal. Submit 10 CDs or DVDs of the complete proposal. Any differences between the original and the copies will be resolved in favor of the original copy. Submit only one paper copy of the Sample Technical Investment Grade Energy Audit and 10 CDs or DVDs copies of same (hard copy under separate cover; or an electronic file if all contents are in one file). Under no circumstances may proposals be submitted by fax. Any such transmission will not be accepted for consideration. Proposals must be submitted by 3pm on the deadline day, "sealed" to:

Golden Urban Renewal Authority
922 Washington Avenue, Suite 100
Golden, CO 80401

All material should be clearly labeled and submitted in flat bound binding to facilitate copying and filing. Omit extensive artwork, unusual printing, or other materials not essential to the utility or clarity of the proposal. The person legally authorized to bind the offeror to the proposal must sign the Submittal Coversheet. The Submittal Coversheet is to be included with the proposal copy that is marked

ORIGINAL. If an offeror is owned or controlled by a parent company, provide the name, main office address and parent company's tax identification number.

It is the responsibility of the offeror to ensure that the proposal is received on or before the proposal opening date and time. (See the delivery address on the proposal cover sheet.) Late proposals will not be accepted. Proposals must be submitted in a sealed package. The outer envelope of the package must include the following information:

Confidential/Proprietary Information: Any restrictions of the use or inspection of material contained within the proposal shall be clearly stated in the proposal itself. Written requests for confidentiality shall be submitted, by the offeror with the proposal. The offeror must state specifically what elements of the proposal are to be considered confidential/proprietary.

Confidentiality/proprietary information must be readily identified, marked and separated/packaged from the rest of the proposal. Co-mingling of confidential/proprietary and other information is NOT acceptable. Neither a proposal, in its entirety, nor proposal price information will be considered confidential and proprietary. Any information that will be included in any resulting contract cannot be considered confidential.

A written determination will be made as to the apparent validity of any written request for confidentiality. In the event of no concurrence with the offeror's request for confidentiality, the written determination will be sent to the offeror. Ref. Section 24-72-201 *et. seq*., C.R.S., as amended, Public (open) Records Act.

Process

RFP Phase

Site Visit. A site meeting and tour of the facilities will be held prior to the proposal due date. The site visit is optional for all ESCos who will later submit a proposal. No follow-up tours, additional access to buildings, or alternative dates for tours will be allowed unless offered to all respondents.

DATE: July 16, 2007
TIME: 9am – Noon
LOCATION: Golden Urban Renewal Authority
922 Washington Avenue
Suite 100
Golden, CO 80401

Review of Written Proposals. Proposals must be prepared as described in **Attachment C: ESCo Response**. Proposers within the competitive range will be invited to participate in the interviews.

Interviews. Interviews will provide an opportunity for clarification of the written proposal. ESCo representatives at the interview should include individuals who will be *key* points of contact and have *major* responsibility for contract negotiation, engineering and design, construction management and follow-up monitoring. Each interview may be tape-recorded. Scores from the written proposal will be modified based on clarifications and the top-ranking ESCo will be considered for award.

Final Selection. Final reference checks will be conducted with the apparent awardee (top-ranked ESCo) prior to making the final selection. An award will be made to the selected ESCo.

Technical Investment Grade Energy Audit and Project Proposal Phase

Technical Investment Grade Energy Audit and Project Proposal Contract. A Technical Investment Grade Energy Audit and Project Proposal Contract will be negotiated as presented in **Attachment F: Model Technical Investment Grade Energy Audit and Project Proposal Contract** (also see **Attachment A: Special Contract Terms and Conditions)**.

Construction/Implementation/Commissioning and Financing Phase

Energy Performance Contract. Following successful completion and acceptance of the Technical Energy Audit and Project Development Contract, an Energy Performance Contract will be negotiated to implement the projects, as given in **Attachment G: Model Energy Performance Contract** (also see **Attachment A: Special Contract Terms and Conditions)**. Any or all performance contract agreements may be denied.

Financing Agreement. The ESCo will solicit bids from a minimum of three financing companies, prior to negotiation of the energy performance contract, using the bid documents in **Attachment H: Financing Bid Package**. City may also solicit such bids independently from the ESCo. City will make the final selection.

OVERVIEW

The City of Golden (hereinafter referred to as **City**) seeks proposals from Energy Services Companies (ESCos) to conduct a technical investment grade energy audit of the City's facilities and operations and to implement some or all of the recommendations of an Energy Performance Contract. **The City will accept proposals for a technical investment grade audit on a contract basis alone or as part of a financed Performance Contract implementation process.** The selected ESCo will recommend facility and operational improvements to reduce green house gas emissions, reduce energy use, increase use of renewable energy, and reduce related costs in facilities such that annual cost savings are applied to annual payments for improvements for a period not to exceed 8 years.

The contracting process has three phases:

- Technical Investment Grade Energy Audit and Project Proposal Phase: A contract for the Technical Investment Grade Energy Audit will be developed with the selected ESCo. This investment grade audit will identify and evaluate energy and cost-saving measures, green house gas emission reductions strategies, renewable energy opportunities, and define the proposed project scope, cost, savings and cash-flow over the proposed financing term. A project proposal will present aggregated measures that can be financed through guaranteed savings.
- Construction/Implementation/Commissioning and Financing Phase: An Energy Performance Contract may be negotiated following the audit. This phase establishes the project scope and costs, and provides for construction, commissioning, and follow-up services to be provided during the financing term. A separate financing agreement will be developed.
- Post-Construction Guarantee/Monitoring Phase: After construction, the ESCo will offer a variety of services to ensure savings are met, such as savings and performance guarantees, staff training, follow-up monitoring, and contract maintenance services.

STATEMENT OF WORK

ESCo Services

ESCo must have the demonstrated capability in engineering and management to provide a broad range of services. Services may include but are not limited to the following:

Technical Energy Audit and Project Proposal Phase

- Technical investment grade energy audit to define the City government's energy and O&M baselines and evaluate costs and savings of a variety of energy and water-saving measures, including proposed measures previously identified by the City.
- project proposal including financial analysis using standards and projections mutually agreed upon between the City and the ESCo
- benchmarking using Energy Star tools or similar mutually-agreed upon methods
- monitoring and verification plan in compliance with the most recent IPMVP version
- Basic energy audit to define the community's energy baselines and evaluate costs and savings of a variety of energy and water-saving measures.

Construction/Implementation/Commissioning and Financing Phase

- engineering design
- experience in municipal use of renewable energy and broader issues regarding sustainability
- equipment procurement and purchasing
- construction management practices that minimize interruption of daily operations of municipal facilities.
- hazardous waste disposal in the continental United States or recycling
- ability to arrange financing
- ability to secure grant funding on behalf of the City
- commissioning
- post-installation monitoring and verification

Guarantee/Monitoring Phase

- continuing operations and maintenance for all improvements
- staff training on routine maintenance and operation of systems
- training of occupants
- guarantee of performance and cost savings for the entire term of the contract
- monitoring and verification for measurement and reporting of the performance and savings
- provide for independent review of monitoring & verification (guaranteed savings pay for independent ESCo)
- analysis and application for Energy Star Label, LEED-EB (Leadership in Energy and Environmental Design for Existing Buildings, by the US Green Building Council) or other equivalent designation
- monitoring and reporting of emissions reductions
- maintaining long-term, high-efficiency performance of buildings
- equipment repair and replacement services

ESCo must have the technical capability to address a broad range of systems including, but not limited to:

- Mechanical Systems. Heating, ventilating and air conditioning (HVAC) systems, energy management and control systems, domestic hot water systems, distribution systems, etc. that do not compromise the comfort of customers or employees.
- Plants. Distribution systems, cogeneration systems, etc.
- Lighting systems. Indoor and outdoor lighting systems, lighting controls, daylighting strategies.

- Building envelope systems. Windows, insulation, weatherization, etc. (It is recognized that window replacements are rarely cost-effective, but could be considered as part of a comprehensive plan.)
- Specialty Systems: laundry equipment, kitchen equipment, pool systems, renewable energy systems.
- Water and Sewage Systems. automatic controls, low-flow faucet aerators, low-flow toilets, cooling tower modifications, pool covers, and irrigation system controls or modifications.
- Renewable Energy Systems. Assessments of available and developing renewable resources and the application of such to the full range of municipal facilities, operations, and services.
- Calculate reduction of green house gas emissions projected through implementation of energy saving and emission reducing measures.

Facility and Operations Needs and Wishes:
These are detailed in Attachment F.

Standardized Process

- Rebuild Colorado Support: City has requested the support of Rebuild Colorado in this project. The Rebuild Colorado program of the Governor's Energy Office will work with City in all phases of the performance contracting process, providing the following assistance in: developing a performance contracting project, developing and negotiating the audit contract, reviewing the technical audit report regarding cost and energy savings estimates, reviewing and advising on the monitoring and verification plan, developing the performance contract and providing negotiating assistance, and providing on-going support.
- Standardized documents: Procurement and contracting documents and processes have been developed for use by Colorado state and local governments, as developed by the Governor's Energy Office, the Department of Personnel and Administration's State Buildings and Real Estate Programs, the Office of Attorney General, and other state department specialists.

Buildings, Facilities and Approach

Facilities owned, managed or operated by City and the Golden Urban Renewal Authority ("GURA") at any time during the term of the performance contract will be considered for this work. Specific facilities now operated by City and GURA are listed in **Attachment E: Technical Facility and Operational Profile**. Additional facilities not yet identified that are under the jurisdiction of the City at any time during the term of the performance contract can be included in the scope of work in a contract amendment.

Measures not previously identified by the City may be included for consideration in a performance contract.

Work may be conducted in phases where the detailed scope of work can be developed at any time during the term of the performance contract.

The performance contract can be amended at any time during the initial performance contract term to address other buildings or new projects.

City reserves the right to reduce the scope of work, to conduct the work in phases, segment work in facilities based on technological improvements or cease negotiation and execution of a performance contract prior to its implementation and submit payment for services rendered for a technical investment grade audit.

City maintains levels of service to the public and for its employees that are among the highest in the Denver Metro area. ESCo recommendations must balance potential energy use and emission reduction strategies with the City's desire to maintain its high levels of service.

ATTACHMENT A: SPECIAL CONTRACT TERMS AND CONDITIONS

Contract Documents. The **Model Technical Energy Audit & Project Proposal Contract (M)** and the **Model Energy Performance Contract (Attachment G)** will be used.

Payment for Audit. As given in the **Model Technical Energy Audit & Project Proposal Contract (Attachment F)**:

> City shall have no payment obligations under this contract provided that ESCo and City execute an Energy Performance Contract within ninety (90) days, or such longer period as the parties may mutually agree, after submission and acceptance by Principal Representative of the final Technical Investment Grade Energy Audit report and Project Development Proposal by ESCo to City.
>
> Should the ESCo determine any time during the Technical Energy Audit that savings cannot be attained to meet City's terms as set forth in the RFP, the Technical Energy Audit will be terminated by written notice of the ESCo to the City. In this event this Contract shall be cancelled and City shall have no obligation to pay, in whole or in part, the amount specified in this section.
>
> City shall have no payment obligations under this Contract in the event that ESCo's final Technical Energy Audit report does not contain a package of energy and water saving measures which, if implemented, will provide the City with cash savings to meet the following terms: Sufficient to fund City's payments of all costs and fees associated with the Energy Performance Contract, including 1) the fee associated with the Technical Energy Audit, 2) any annual fees for monitoring and maintenance to the ESCo, 3) all monthly payments on a lease purchase agreement to finance the measures. Analysis will be based on proposed financing terms over a desired eight (8) year period, with a maximum financing period as specified under "Contract Term" below, and with a fixed rate of interest actually available to City.
>
> If an energy performance contract is not developed after the audit has been accepted, City agrees to pay the cost of the audit as stated in the submitted proposal or as negotiated in the subsequent Technical Investment Grade Audit and Project Development Contract.

Funding sources to support annual payment:

The following payment sources will be considered in the audit:

- Annual energy cost savings
- Additional annual cost savings resulting from the ESCo's ***improvements*** to measures previously identified by the City and budgeted for implementation. The proposed savings and measures must be presented along with a financial and operational comparison against the City's previously identified measures.
- Annual water and other utility cost savings
- Material/commodity savings, only in years when savings are achieved, including avoided costs such as lamp and ballast replacements, scheduled replacement of parts, etc.

The following payment sources will ***not*** be considered in the audit:

- Energy savings resulting in increased operational costs
- Savings associated with energy saving measures previously identified by the City and budgeted for implementation.
- Savings achieved through reductions in the City's labor force or standard of care and convenience, including specifically increasing the amount of re-circulated air in offices.
- Savings achieved through reductions in the City's hours of operation.
- Savings achieved through reductions in the City's levels of service.

During negotiations, City may consider savings to include the following:

- Maintenance and operation cost savings: Savings will be limited to those that can be thoroughly documented and approved. Such savings must only be attributed to the cash flow in years when savings will actually occur.
- Maintenance cost savings such as terminated service contracts on equipment.

Equity cash outlay:

- At option of City, an equity cash outlay may be used to supplement savings

Contract Term. The contract term is up to eight (8) years provided the cost-weighted average lifetime of the equipment exceeds the contract term. This maximum term is established for Colorado Political Subdivisions per CRS 29-12.5-101(3)(h). The ASHRAE Book of Standards will be used in determining the cost-weighted average useful life of the equipment.

Annual Savings Exceed Annual Costs. Annual savings shall equal or exceed annual payments each and every year while the performance guarantee is in effect. This means that excess savings in other years and interim savings during the construction period will not be allocated to meet shortfalls in any year. Annual payments include debt service, ESCo fees, maintenance services, monitoring services, and other services. This is required for Colorado Political Subdivisions per CRS 29-12.5-101(3)(b).

Calculation of Guaranteed Cost Savings. The Calculation of cost savings shall exclude savings attributed to the reduction of labor force or energy saving measures previously identified by the City and considered for future implementation. These measures are detailed in Attachment E. New cost and energy saving improvements recommended by the ESCo to measures previously identified by the City shall be included in savings calculations. Market projections, energy indexes or other factors used to calculate savings will be verified and pre-approved by the City prior to use in any calculation of savings.

Annual Guaranteed Cost Savings. An annual contractual guarantee will be provided for the first three years of the contract, however, the guarantee shall be made available as a continued option for each subsequent year of the contract term. The City can cancel the guarantee at any time after the required period. The guarantee must provide for the sum of identified cost savings to equal or exceed the amount of the annual payment, where annual payment equals lease plus monitoring & verification fee plus required service, each and every year while the guarantee is in effect. This is required for Colorado Political Subdivisions per CRS 12-5-101(3)(a-c).

Interim Savings During Construction Period. Savings accrued during the construction period will not be allocated to the annual savings of any year. See "Annual Savings Exceed Annual Costs" above.

Excess Savings (beyond the guaranteed amount). Excess savings will be retained by City and will not be allocated to shortfalls in savings in other years. See "Annual Savings Exceed Annual Costs" above.

Use of Stated Cost Markups. The individual cost markups disclosed in the proposal will be used in both the Technical Energy Audit and the Energy Performance Contract, provided the size and scope of the project remain similar. Cost markups presented in the proposal can be negotiated downward.

Open Book Pricing. Open book pricing will be required, such that the ESCo will fully disclose all costs, including all costs of subcontractors and vendors. ESCo will maintain cost accounting records on authorized work performed under actual costs for labor and material, or other basis requiring accounting records. ESCo will provide access to records and preserve them for a period of three (3) years after final payment. Costs will be evaluated through price analysis to compare costs with reasonable criteria such as established catalog and market prices or historical prices. Stated cost markups will be clearly applied.

Contingency. Any unused contingency cost will not be retained by the ESCo and will be applied to the project.

Equipment Compatibility or Standardization. All equipment installed that is comparable to similar equipment at the facilities, shall offer compatibility with existing systems, and/or be of the same manufacturer for standardization of equipment agency-wide, unless excepted by City.

Annual Appropriations. Annual payment is subject to annual appropriations. This is required of all Colorado state and local governments.

Inflation and Escalation Rates. Any inflation rates will be pre-approved by City.

Energy Escalation Rates. Where the annual lease-purchase payments are set-up to escalate each year in anticipation of annually escalating energy cost savings, a calculator will be used to determine the maximum value as developed by the US Department of Energy for energy saving performance contracts in its Federal Energy Management Program. The City, rather than the ESCo, must pre-approve any energy escalation rates utilized in the determination of any lease-purchase payments before such rates are finalized. The tool is on-line at:
http://www.eere.energy.gov/femp/techassist/softwaretools/softwaretools.html (EERC).

Monitoring and Verification Plan. A monitoring and verification plan will be developed per guidelines in the energy performance contract. Note that where Rebuild Colorado is providing services this will be rigorously reviewed.

Independent Review of Monitoring & Verification. The energy performance contract must provide for a portion of the guaranteed savings for the City to contract with an independent monitoring & verification specialist to provide an independent review of the ESCo's monitoring & verification plans and reporting. This is estimated to be 10 percent of the ESCos monitoring & verification costs.

Electronic Submittal of RFP Response. The selected ESCo must provide an electronic copy of the RFP response, in Word format, in a single file.

ATTACHMENT B: PROPOSED PROJECT SCHEDULE

The following schedule is the proposed schedule, and may change during the project.

ACTIVITY	DATE
RFP Phase	
Issue RFP	June 27, 2007
Site Visit (to be arranged)	July 16, 2007
Written inquiries accepted by prospective ESCos	July 30, 2007
Proposals Due	August 15, 2007
Proposal Review and Selection of Finalists	August 29, 2007
ESCo Interviews	September 5, 2007
ESCo Selection and Award	September 12, 2007
Technical Energy Audit Phase	
Contract Negotiation	September 26, 2007
Board approval and signatures to execute contract	October 11, 2007
Audit, Final Report and Presentation	December 6, 2007
Energy Performance Contract Phase	
Negotiation and Documentation	December 20, 2007
Board approval and signatures to execute contract	January 17, 2008
Installation	To be negotiated
Commissioning/Monitoring Phase	
Commissioning	To be negotiated
Monitoring	To be negotiated
Staff Training	To be negotiated
Other	To be negotiated
Proposed Contract Term	To be negotiated

ATTACHMENT C: ESCo RESPONSE

- ***An electronic copy of this RFP section is available for easier preparation.***
- ***Please number and re-state each subheading or question, followed by your response.***
- ***Number all pages.***

1. FIRM'S GENERAL APPROACH TO PERFORMANCE CONTRACTING

Describe performance contracting from your firm's perspective, describing your phases and your firm's ability to support each of the phases. Generally, this description will include references to auditing, financing, construction, commissioning, monitoring & verification, maintenance support, staff/occupant training, guarantee, etc. (1-5 pages; brevity is desired)

2. QUALIFICATIONS OF THE FIRM OR TEAM

a. Background Information on the Firm

1) **Structure and Evolution of Firm.** Type of firm (corporation, partnership, sole proprietorship, joint venture); Name of parent company if applicable (include the name, main office address and parent company's tax identification number). Name of division or branch office if applicable; Name of current firm and number of years operating under this firm name; Former firm names if applicable and corresponding years in operation. Structure of team if this is a joint venture.
2) **Years in Energy Business**. State the number of years your firm has been involved in the energy-efficiency related business.
3) **Years in Performance Contracting**. State the number of years your firm has offered performance contracting services.
4) **Number of Performance Contracting Projects.** State the number of performance contracting projects completed by your firm. Separately list those under and up to $1 million and those over $1 million.
5) **Number of Municipal Performance Contracting Projects.** State the number of municipal performance contracting projects completed by your firm. Separately list those $1 million and over $1 million.

b. Financial Qualifications & Stability of Firm

1) **Financial Soundness.** Describe the financial soundness and stability of the firm.
2) **Profitability.** Has your firm or parent company been profitable each year for the past three years?
3) **Financial Report.** Submit the most recent annual summary (1-3 pages) of the annual Statements of Financial Conditions, including balance sheet, income statement and statement of cash flows, dated within the past twelve (12) months, along with name, address, and the telephone number of firm(s) that prepared the Financial Statements.
4) **Bonds.** What is your current bonding capacity? What is your current bonding rate? What is your firm's bond rating? Is your firm currently bondable for: 100% of a payment bond for construction of this project, 100% of a performance bond for construction of this project? Include a letter from a licensed surety as evidence of ability to bond for each of these categories.

c. <u>NAESCO Accreditations and other Pre-Qualifiers</u>.
State if your firm is accredited by industry organizations, such as the National Association of Energy Service Companies (NAESCO), or pre-qualified for work through the U.S. Department of Energy for federal facilities or the U.S. Department of Defense. Describe the relevance or importance of any accreditations or pre-qualifications with regard to this project.

d. <u>Compliance with Requirements</u>
Affirm your ability to meet requirements: ***"Yes, this firm or team responding to this proposal understands the requirements specified in Attachment A: Special Contract Terms and Conditions, Attachment F: Model Technical Energy Audit and Project Proposal Contract, and Attachment G: Model Energy Performance Contract and can abide by them."***

3. PROJECT HISTORY

a. <u>Project List</u>.
List all energy performance contracts that your firm or personnel have managed within the last five years. Include list as shown below. Truncate the list at one page.

1) PERFORMANCE CONTRACTING PROJECTS

Project Name	City, State	Total Project $	Year completed

All projects listed should be those conducted only by your firm. If you deem it relevant to list projects under contract to a different firm, clearly identify the name of firm responsible for the project and indicate why you're including it as a reference for your company and for this project.

2) OTHER PROJECTS (only if deemed relevant to this project)
If desired, also list related projects deemed relevant to this work, particularly those managed in the state.

Project Name	Project Type	City, State	Total Project $	Year constructed

b. <u>Case Studies – Project Performance</u>.
Provide detailed information on ***performance contract-based projects*** you want to showcase that have similarities to work related to this proposal. Similarities could include type/use of building, size of individual buildings, size of total expected project, technical scope of projects, geographic

region (work in this state or similar type of metro/rural region). Include the following information on each project, as a minimum *(no preferred format)*:

Project Owner:

Name. Name of state department, university, school district, office building, etc.

Location. city/state

Contact Information. Names and contact information of owner(s)' representatives who can serve as references.

Project Information:

Type of Project: performance contract; other

Project Size. Number of buildings, total square footage, total contract amount and the total project capital cost.

Financing: Type of financing used and grants/rebates, etc. Describe your involvement in securing funds.

Project Implementation Dates: Date of audit beginning and acceptance, and construction start and acceptance.

List of Improvements. Type of retrofits and operational improvements related to energy, water and other cost savings.

Project Performance: State amounts of projected annual savings, guaranteed annual savings, and actual annual savings.

Project Personnel. State the name(s) of individuals involved in the project and their role. Note if these personnel are assigned to City's project.

Comments. Comment on any special features, services, conditions, creative approaches, special needs of City, etc. that may be of interest.

All projects listed should be those conducted only by your firm. If you deem it relevant to list projects under contract to a different firm, clearly identify the name of firm responsible for the project and indicate why you're including it as a reference for your company and for this project.

c. <u>Relevant Experience - Overview of Strengths</u>

Briefly summarize your project histories to define your firm's strengths and the relevance of past work to this project (experience similar to this project in terms of size, scope, facility type; experience with types of retrofits applicable to this project; etc.).

4. PERFORMANCE CONTRACTING CAPABILITY & TECHNICAL APPROACH

a. <u>General Scope of Services</u>

Following is a minimum scope of services acceptable to compete for an energy performance contract. Add a brief comment for each item (25 words or less preferred) to demonstrate your capability for each.

Expertise in energy systems in buildings (include local project name and date for each):

1) Lighting (indoor & outdoor)
2) Heating
3) Ventilation and indoor air quality
4) Cooling

5) Controls systems
6) Water-using systems (indoor plumbing; outdoor irrigation)
7) Other (central plants, distributed generation, kitchens, laboratories, laundry, pools, renewables, fuel switching, daylighting, as deemed potentially applicable for this project).

Experience and capability in:
8) Energy auditing (identify potential energy-saving measures, determine savings projection based on standard energy engineering principles; estimate project costs; present package of measures with cash flow)
9) System design engineering (mechanical, electrical)
10) Municipal use of renewable energy
11) Procurement, bidding
12) Construction
13) Commissioning of projects and retro-commissioning of existing buildings
14) Project management
15) Measurement and verification of savings
16) Asbestos identification and abatement as applicable

Ability to provide:
17) Performance guarantee for every year of the financing term
18) Insurance per contract requirements
19) Equipment warranties
20) Financing partner with ability to provide a municipal, tax-exempt lease purchase
21) Hazardous material handling
22) Performance monitoring
23) Sustainability training
24) Maintenance training
25) Long-term maintenance services on energy systems
26) Application for an Energy Star Label and LEED certification.
27) Calculation and reporting of emissions reductions

b. <u>Performance Contracting Technical Approach</u>

1) **Performance Guarantee.** How is a performance guarantee provided (self-guarantee or third party) and describe the value of this approach?
2) **Insurance.** How is insurance provided (self-guarantee or third party) and describe the value of this approach?
3) **Warrantees.** Who provides warrantee service (ESCo or manufacturer)? How is this provided? Describe the value of this approach.
4) **Standards of Comfort**. Describe standards of comfort that are generally used for light levels, space temperatures, ventilation rates, etc. in the intended facilities. Describe any flexibility.
5) **Calculation Methodology**. Describe in detail the methodology your firm normally uses to compute baseline of energy and water use as well as performance and estimates of future energy or costs savings. Also include O&M costs associated with your recommendations
6) **Project Schedule**. Comment on your ability to meet the schedule and the reasonableness of the schedule. Include an estimate of how much time will be required of City staff, including a schedule.

7) **Pay Back Period.** Describe your rational for the optimal length of time for "pay back" on the various systems recommendations, including the durability of the systems and the likely rapidly increasing rate of obsolescence.

c. <u>Sample Technical Audit</u>.

Submit a sample technical audit conducted by your firm for a similar project (as directed in the Proposal Submittal Information).

1) Briefly describe this sample audit. It should be representative of the type of facility and the type of audit that will be conducted.
2) Verify that this audit includes detailed energy and economic calculations.
3) Verify that it was conducted by a current member of the team proposed for this project.

d. <u>Financing Company</u>

ESCo will be required to solicit bids for financing on behalf of City. (Since City will sign a separate agreement with the financing company, City will review bids, select desired firm, and develop the financing agreement. City may also solicit bids independently from the ESCo) To solicit bids, ESCo will use the RFP and supplemental information provided in **Appendix H (Financing Bid Package)**.

1) Identify three financing companies that you recommend as qualified to provide municipal tax-exempt financing for this project.
2) Provide letters of qualifications and references from each firm.

e. <u>Site-Specific Approach</u>

1) Types of Services. Summarize the scope of services (auditing, design, construction, monitoring, operations, maintenance, training, financing, etc.) identified for this project.
2) Potential Projects. Based on your preliminary assessment of the information provided, describe any equipment modifications, installations or replacements at the facility that your firm would consider installing as a part of this project. Address energy, water and operation and maintenance opportunities. Also describe any special features, renewable technologies, or advanced technologies that might be applicable. Describe any special features or services associated with your proposed improvements that would add value to City. Describe your approach to achieve compatibility (such as open systems) and/or standardization of equipment in the facilities to be addressed.

5. MANAGEMENT AND STAFFING FOR THIS PROJECT

This section applies to <u>this</u> project, with an emphasis on local capability/service.

a. <u>Management</u>

1) **Coordination.** Describe your firm's approach to managing this project. Include an organizational chart showing clear lines of communication and responsibility. Describe the transition and responsible parties from the sales to auditing phase, auditing to construction phase, construction to follow-up monitoring phase, etc.
2) **Construction Management.** Describe how your firm would work with current building management and maintenance personnel in order to coordinate construction and avoid conflicts with the building's operation and use. Describe your flexibility and/or any limitations regarding possible City activities such as: management of additional energy and water projects, monitoring

of installation and performance of ESCo projects, integration of other identified capital needs with ESCo projects which may or may not contain energy and water saving opportunities.

3) **In-house Capability vs. Subcontractors.** Generally describe the types of services (both professional and construction services) that you offer in-house and the services you offer through subcontractors, and describe the strategy behind in-house vs. subcontractor use. (Detailed information on pricing of subcontractors is requested in the Cost Section below.)
4) **City Involvement.** Describe how you engage the City in decision-making regarding project scope, equipment specifications, ongoing operational and maintenance strategies, etc., and how you incorporate City's needs.
5) **Local Staffing and Support.** Describe extent of local staffing and support for the geographic region. Include basic job descriptions and capabilities of the local staff. Describe the relevance or importance of local presence with regard to this project.
6) **Long-term Servicing.** Describe long-term servicing of equipment and systems. State the location of your nearest servicing office.

b. <u>Personnel Information</u>.

1) **Qualifications and Experience of Staff Assigned to this Project.** Identify the individual who will have primary responsibility for each task and phase of the project. List name, title, intended role and responsibilities for the duration of the contract, educational background, specific qualifications related to role and responsibilities, past relevant experience, number of years of relevant experience, supervisory responsibilities if relevant, list of projects individual was associated with during the last five years including type of project and project cost and resume. Tasks and phases to address include technical analysis, engineering design, construction management, construction, training and post-contract monitoring. Indicate the percent of time each person is available to work on this project. Indicate their office location (city/state).
2) **Added Qualifications and Experience.** Describe any added expertise and capability of staff available through the parent company, other subcontracts, etc. to provide back-up strengths in technical analysis, engineering design, architectural design (if applicable), construction management, construction, training and post-contract monitoring, etc.

c. <u>Self-Performed Work or Subcontractors</u>.

1) State whether work is completed by the ESCo or by a subcontractors for each category of measure (auditing, design, procurement/supply of equipment from vendors and manufacturers, engineering, construction management services, lighting, HVAC, controls, monitoring & verification, etc.),
2) Describe in detail how subcontractors are selected. Also comment on your ability to competitively select subcontractors.
3) Identify any subcontractors already selected.

6. COST AND PRICING

a. <u>Markup Costs and Fees</u>

Clearly indicate (mark by page) if elements of this section are requested to be treated as proprietary (the responsible Purchasing official will make the final decision if this is to be treated as proprietary).

Markup costs are disclosed to provide a typical project costing approach for a project of similar scope and size. This disclosure will provide the open book pricing structure to be used by the ESCo for this project. The markups will be used in the Technical Energy Audit Contract and Energy Performance Contract. (A substantial change in the scope and size of the project may necessitate renegotiation of the markups.)
Note that all subcontractors and partners will be subject to full disclosure for open book pricing.

1) Markups. Provide maximum allowable markups for each category you use in your pricing structure:

- Markups are calculated as a percentage added to the base cost (do not use margins).
- Categories may include but are not limited to: overhead, profit, guarantee, warrantee, markups on materials, equipment, supplies, shipping, rentals, labor, subcontractors, self-performed work, engineering, design, construction management, construction trades, contingency, commissioning, training, legal services, administrative work, and/or any other markup category to be used by the ESCo on this project.
- Clearly describe how self-performed work will be charged (billed hourly, billed as a markup of equipment and labor costs, etc.). If billed hourly, what markups will be applied to the hourly rate (overhead, standard markups indicated below, etc.).
- Organize categories by listing similar categories together under a more general heading (as shown in the table below).
- **Categories not included will not be allowed to be used in the project.**
- Do not provide a range; provide only the maximum allowable markup based on your understanding of the potential scope of work.
- If the proposal is from a joint ESCo partnership, provide this information on each participating company.
    - *Values for the categories in the following tables must be provided or proposal may be deemed unacceptable.*

MARK-UPS		
CATEGORY OF ***MARK-UP***	MARK-UP ***APPLICATION***	***% MARK-UP***
Overhead		
Profit		
Labor - Internal		
Equipment Purchased		
Materials Purchased		
Subcontract Labor		
Subcontract Material		

2) Fees: Identify fees that you typically use in your pricing structure:

- Categories may include but are not limited to: bonds, permits, maintenance agreements, annual monitoring & verification fees, etc.
- Describe how fees are determined
- Describe how fees are charged to the project and when they are applied
- If fees are based on a percentage of project cost, include them in the markups table instead.

- If markups are applied to fees, identify in the table.

FEES			
CATEGORY OF FEE	***HOW DETERMINED AND USED***	***MARKUP ON FEE (IF ANY)***	***YEARS APPLIED (One-time, Annual, etc.)***
Investment Grade Audit and Project Development	$ _____ per Square Foot		One time
Engineering/Design	(Example) ___% of _____		
Project Management			
Commissioning			
Training			
Monitoring and Verification			
Contingency			
Permits			
Performance Bond			
Other			

3) Audit Cost.
- **a) Total Cost.** State the total cost of the technical energy audit. Ensure that your cost is based on the approach and requirements included in **Attachment F: Model Technical Energy Audit and Project Proposal Contract**. For the purpose of this evaluation, assume that designated facilities and operations listed in Attachment E: Technical Facility and Operational Profile will be audited. Audits of other city facilities and operations may be conducted at the expense of the ESCO. Measures for these additional buildings not previously identified and proposed for installation may be considered in a performance contract.
- **b) Unit Cost.** State the cost per square foot of the audit. This cost will be evaluated on the basis of reasonableness, so an unrealistically high or low cost will be devalued in the evaluation process.
- **c) Meet Full Scope of Work of Audit Contract.** State your capability to complete the full scope of work as presented in **Attachment F: Model Technical Energy Audit and Project Proposal Contract**, within your proposed cost.

4) Contingency:
- **a)** How will contingency be applied to cover changes in work scope and subcontractor change orders?
- **b)** What is your typical level of contingency budget for lighting, electrical, mechanical, controls projects, and other projects? (Note that all unused contingency funds will revert to City or be applied to additional work scope through a State approved change order.)

5) Cost competition: Describe your process to solicit bids on equipment/labor or to secure the best cost.

b. <u>Application of Markups and Fees (Hypothetical Example)</u>

Provide a sample of your pricing model using a two-measure performance contracting project. Show the complete detail of what will be provided to the City in the actual project using the markups and fees you will commit to in the actual project, as identified above, for all categories, fees and services

that will be seen in the actual project (including the audit cost).

Include a sample project proforma and clearly indicate all fees required for monitoring & verification, project management and all services that may be included in the actual project. All markups and fees (including the audit cost) used in this example must be representative of what will be used in the actual project.

Additional markups, fees, or service category costs not shown in this example will NOT be allowed in the final contract.

Incomplete information will be considered an incomplete response and cause the response to be rejected.

1) Provide an example lighting measure that relates to this project in size and scope. Provide all pricing documentation as you will provide it for open book pricing in the final contract. Clearly differentiate the subcontracted portion of the project and break out labor, materials and other categories as you will for open book pricing.

2) Provide same information for an example boiler measure (or other heating/cooling equipment if a boiler replacement is not relevant for this project)

3) Show the two measures above in a complete two-measure performance contracting project. Provide a proforma to clearly indicate all costs and fees represented as they will be applied in the final contract. Use the format and structure you will use in the final contract.

c. <u>Best Value</u>.

Briefly describe how your approach to performance contracting delivers best value for the investment. This is an opportunity to point out how your company may be able to deliver a more cost-effective overall project due to corporate structure, relationships with vendors, depth of experience and expertise, local relationships and experience, experience in similar types of facilities, knowledge of particular retrofits, etc. Also describe any utility rebates or other financial incentives or grants can potentially provide and/or facilitate.

ATTACHMENT D: EVALUATION

WRITTEN PROPOSALS
The Evaluation Team will identify scoring weights for each section, with the "Cost and Pricing" section equaling a minimum of 30% of the total score of the written response to this RFP. The weights of criteria will be determined by the Evaluation Team.

The Evaluation Team recognizes it is premature to place a major emphasis on projected financial benefits prior to the completion of the Technical Energy Audit, because the Audit will define the potential scope and cost benefit. Therefore, the most emphasis will be on qualifications and less emphasis will be placed on the cost information.

INTERVIEWS
ESCos in the competitive range will be invited for an oral interview. The proposal scores will be modified based on clarifications to responses provided in the interview.

SELECTION
The Evaluation Team will identify the apparent awardee and then contact references to complete the evaluation.

With quality references, the apparent awardee will be notified of selection; otherwise, the same process will be used with the second-ranked ESCo.

ATTACHMENT E: TECHNICAL FACILITY AND OPERATIONAL PROFILE

The information in this technical facility profile is provided to inform the ESCo about the condition of the facilities. The information was prepared with diligence. The ESCo is responsible for verifying the accuracy, as necessary.

Astor House

822 12th St.

Total Square Footage: 1200 sf
Total Lot Square Footage: 7000 sf
Contents: museum artifacts
Occupancy: B - Office
Construction:
Roof:

Units	Brand	Model	Install	Qty	N-Gas	Electrical	Heating	Cooling	Motor
HVAC									
Roof Top Unit #1	Trane	CGA120B100FA	2003	1		208/23/60/1			1HP
Boilers	Weil-Mclain		2003	2	X				
Chillers									
Pump Motor	Armstrong	DQ56B17D79MP	2003	1		115/208/230/60			3/4HP
Hot Water Motor	Bellagossett	AQA56A17D58FP	2003	2		115/208/230/60			1/2HP
Domestic Hot Water	American	FG6140S403-NO	2005	1	X		40,000BTU		
Boiler Pumps	Taco	0011-F4	2003	2		11560/1.6amp			1/2HP
Kitchen Applieances									
Micro Wave Oven	GE	SE925T001	1993	1		120/60			
Refrigerator	Fridgidaire	FRU7G43W6				115/60/5 amp			
Upright Freezer	GE	FUF20DPARWH				115/60/5 amp			
Lighting	**Brand**	**Model**	**Installed**	**Qty**	**Lamp**	**Wattage**	**Voltage**	**Bulb Number**	
Basement				4	Incad	60w			
Office Area	Lithonia	Fluorescents		5/2ea	Fluor	40w		T1240	
3rd Floor									
Spotlights				3		50w		Spot-50w	
Ceiling Light				2	Incad	60w		60w	
Gift Shop				3	Incad	60w		60w	
Plumbing Fixtures									
Toilets				2					
Urinals				0					
Sinks				3					
Showers				0					

Plumbing Fixtures									
Toilets				4					
Urinals				1					
Sinks				3					
Showers				0					

Building	Planned Projects Planned Budgeted Items	Projects Currently Under Investigation by City	Projects for Audit
Astor House	AHU Replacement (2007)		Automatic Building Lighting
	Chiller Replacement (2012)		Timers & Sensors
	Boiler Replacement (2012		

Astor House	Jan. 07	Feb. 07	Mar. 07	April. 07
Electrical Use	2727	2596	1896	1855
Electrical Cost	$230.23	$227.97	$168.96	$162.62
Gas Use	584	265	208	178
Gas Cost	$487.10	$238.25	$197.57	$156.37

Astor House	Jan. 06	Feb. 06	Mar. 06	April. 06	May. 06	June. 06	July. 06	August. 06	Sept. 06	Oct. 06	Nov. 06	Dec. 06	Total
Electrical Use	2538	2051	1885	1984	2043	3947	4183	4568	3502	3091	2377	2405	34574
Electrical Cost	$ 233.49	$ 186.10	$ 172.52	$ 146.62	$ 170.99	$ 325.54	$ 340.42	$ 380.66	$ 287.93	$ 247.77	$ 188.88	$ 191.13	$ 2,872.05
Gas Use	322	381	283	155	82	27	21	16	81	129	218	317	2032
Gas Cost	$ 398.69	$ 416.23	$ 274.31	$ 181.38	$ 81.89	$ 40.13	$ 35.14	$ 31.79	$ 86.14	$ 105.54	$ 167.23	$ 279.29	$ 2,097.76

Astor House	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Electrical Use				1569	1521	3057	4271	3296	3492	2255	1450	2643	23554
Electrical Cost				$132.45	$127.20	$254.88	$354.65	$271.27	$291.20	$184.56	$135.63	$256.38	$2,008.22
Gas Use				220	134	69	12	29	34	97	178	463	1236
Gas Cost				$185.37	$122.95	$71.51	$25.65	$41.96	$48.06	$120.03	$223.98	$522.81	$1,362.32

Astor Public Restroom

810 13th St.

Total Square Footage: 600 sf **Total Lot Square Footage:** 1200 sf

Contents: 1 women's, 1 men's restroom **Occupancy:** B - Office

Construction:

Roof:

Units	Brand	Model	Install	Qty	Nat Gas	Electrical	Heating	Cooling	Motor
Heating System									
Restroom	Modine	RS-60G47		2	X		60,000BTU		
Chase	?								
Exhaust Fans-				1					
Hair/Hand Dryers	Excel	76W		2		110/120			2 amps
Lighting	**Brand**	**Model**	**Install**	**Qty**	**Lamp**	**Wattage**	**Voltage**	**Bulb Type**	
Restrooms	Lithonia	C107661		6	Fluor	40w	120	40wT12	
Chase									
Exterior				1					
					Halogen	75w	120	75w Halogen Flood	
Plumbing Fixtures									
Toilets	Bradley			3					
Urinals	Bradley			1					
Sinks	Bradley			2					

Golden City Hall/Police Dept.

911 10th St.

Total Square Footage: 25500

Total Lot Square Footage: 59,170

Contents:

Occupancy: B - Office

Construction:

Roof:

Units	Brand	Model	Install	Qty	N-Gas	Electrical	Heating	Cooling	Motor
HVAC									
Roof Top Unit #1	McQuay	RPS036CLW	1996	1	X				20HP
Roof Top Unit #2	McQuay	RPS036CLW	1996	1	X				15HP
Exhaust Fans-	Greenheck	GB-100-4	1996	9		120V 60Hz			
Police-Small Refrigerators	GE	GMR06AAPAWW		2					
City Hall Convection Oven	GE	JE1590WH02	2007	1		120v 60Hz			
Kitchen Appliances									
Micro Wave Ovens	GE	JE1540WW002	1998	4		120v 60Hz			
Refrigerator	GE	TBX25PAYDRWN	1998	2		120v 60Hz			
Dish Washers	GE	GSDU100J00BB	2006	1		120v 60Hz			
	GE	GSD5900G03WW	2006	1		120v 60Hz			
Boiler Gas Burner	Webster	JB2G-10-L-FM	1996	1	X	460/60/3	2100MBH		1HP
Domestic Hot Water	A.O. Smith	BTP140-199	1996	1	X	460/60/3	199,000BTU/Hr		1/2HP
Hot Water Boiler System	Bryan	CL210-W-FDG	1996	1	X	460/60/3	1,680,000 BTU/Hr		
Heating System Pumps	Aurora	344A-BF	1996	2		460/60/3			3HP

Lighting	Brand	Model	Install	Qty	Lamp	Wattage	Voltage	Bulb Number
City Hall/PD Ceilings	Columbia	P424-3	1996	163/3ea	Fluor	32w	277	32T8
Outside Walls	Ruud Lighting	MACU515	1996	7	HPS	150w	277	150wHPS
Outside PD/South	Ruud Lighting	MFS515	1196	2	HPS	150w	277	150wHPS
Flag Pole Light on Roof	KIM Lighting	AFL2	1996	1	MH	175w	277	175wMH
Street Pole Light	Stenner	Type CC	1996	1	HPS	100w	277	100HPS
Sally Port Lights	Columbia	CS8-232	1996	12/2ea	Fluor	32w	277	32-18
Council Chambers	Prescolite	CFR626	1996	32/2ea	C Fluor	26w	277	26w Quad Tube
City Hall/PD Lobby	Prescolite	CFR626	1996	43/2ea	C Fluor	26w	277	26w Quad Tube
PD Evidence Room	Columbia	WC4-232	1996	15/2ea	Fluor	32w	277	32T8
Restrooms	Columbia	CS8-232	1996	12/2ea	Fluor	32w	277	32T8

Plumbing Fixtures				
Toilets				12
Urinals				2
Sinks				16
Showers				4

	Planned Projects **Planned Budgeted Projects**	**Projects Currently Under Investigation by the City**	**Projects for Audit**
City Hall & Police Department			
	HVAC Roof Top Units (2010 & 2014)		Daylight Harvesting
	Domestic Hot Water (2012)		Automatic Building Lighting
			Timers & Sensors
			Window Coverings/Energy Efficient

City Hall	Jan. 07	Feb. 07	Mar. 07	April. 07
Electric Use	48640	43200	46560	50560
Electric Cost	$3,047.81	$3,114.61	$3,437.22	$3,450.30
Gas Use	4037	3199	1959	1830
Gas Cost	$3,259.74	$2,622.27	$1,685.88	$1,417.35

City Hall	Jan. 06	Feb. 06	Mar. 06	April. 06	May. 06	June. 06	July. 06	August. 06	Sept. 06	Oct. 06	Nov. 06	Dec. 06	Total
Gas Use	2527	3139	2416	1714	1160	719	541	279	1033	1218	1966	2930	
Gas Cost	$ 3,002.34	$ 3,329.29	$ 2,179.86	$ 1,401.96	$ 881.10	$ 517.31	$ 388.70	$ 211.71	$ 836.26	$ 827.95	$ 1,340.62	$ 2,408.51	$ 17,325.61
Electric Use	49120	43520	44960	48960	51360	71200	70420	72640	60960	51680	42080	51200	
Electric Cost	$ 3,601.24	$ 3,261.15	$ 3,470.73	$ 3,860.66	$ 3,651.46	$ 4,789.46	$ 4,571.82	$ 4,603.87	$ 4,072.27	$ 3,441.26	$ 2,995.56	$ 3,135.72	$ 45,455.20
Billed Demand	$ 1,307.28	$ 1,307.28	$ 1,432.98	$ 1,634.10	$ 1,646.67	$ 2,262.28	$ 2,099.00	$ 4,603.87	$ 2,007.50	$ 1,685.23	$ 1,546.11	$ 1,407.84	

City Hall	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Electric Use	44480	48640	44160	49440	42720	63200	72000	63520	67360	53280	44640	49920	643360
Electric Cost	$2,836.88	$3,180.13	$2,943.20	$3,256.66	$3,096.41	$4,269.95	$4,701.41	$4,451.64	$4,386.08	$3,661.02	$3,579.09	$3,845.09	$44,207.56
Gas Use	3933	2323	2613	1830	1585	1127	527	621	776	1295	1866	3821	22317
Gas Cost	$3,249.08	$1,815.96	$1,995.67	$1,412.82	$1,285.97	$922.35	$445.83	$568.82	$748.28	$1,406.86	$2,195.06	$4,212.81	$20,259.51

Clear Creek RV Park

1401 10th St.

Total Square Footage: 4000
Total Lot Square Footage: 12400
Contents: office
Occupancy: B - Office
Construction: mobile home
Roof: asphalt shingle

Units	Brand	Model	Install	Qty	N-Gas	Electrical	Heating	Cooling	Motor
HVAC									
Office Furnace	Evcon	7975C856		1	X	120/60/1	61,000BTU		1/6 HP
Bath House Furnace	Lennex	G2003/UE-100-2		1	X	120/60/1			
Domestic Hot Water									
Bath House	Rheem/Raud	G91-200	2004	1	X	120/60/1	199,900 BTU	87 gal	
Office	Satellite	SCI40NHMDT7F		1	X		32,000BTU	40 gal	
Exhaust Fans-									
Bath House	Dayton	3C425A		1		115/60/1			1/3 HP
Office Swamp Cooler	Arvin Air	UD440A		1		115/60/1			1/2 HP
Kitchen Appliances									
Micro Wave Ovens	Magic Chef	MCD990W	2002	1		120/60			
Ovens	GE	5GBS03PPA3AD		1	X				
Cook Tops	GE	" "		1	X				
Refrigerator									
Dish Washers	GE	GSD500P-25AW							
Ice Storage Cooler									
Campsite Electrical				32		50 -30-20 Amp Service			
Washing Machines									
	Speed Queen	SWT121WA		3		120/			
	Maytag	MAT12CSWW	2006	1					
Clothes Dryers	Speed Queen	SDE107WA		2		120/240/60			
	Maytag	MDE21PDDYYW	2006	2					

Lighting	Brand	Model	Installed	Quaty	Lamp	Wattage	Voltage	Bulb Number	
Office---Incandescrnt			2006	23	Fluor	13W	120/60/200MA	61Y6	
Maint. Office			2005	1/4 Tube		32W		32T8	
Bath House----Incondescent				7					
Fluorescent	Linthonia	392314		6/2ea	Fluor	60W			
Plumbing Fixtures									
Toilets				7					
Urinals				1					
Sinks				10					
Showers				8					

Building	Planned Projects Planned Budgeted Items	Projects Currently Under Investigation by City	Projects for Audit
Clear Creek RV Park	Underground Water System		Daylight Harvesting
	Furnace Replacement Bath House(2007)		Automatic Building Lighting
	Domestic Hot Water Replace		Peak Demand/Electric
	Office (2009)		
	Bath House (2013)		
	Office Furnace Replacement (2008)		
	Office Furnace Replacement (2008)		

1401 10th St	**Jan. 07**	**Feb. 07**	**Mar. 07**	**April. 07**
Elec Use	2628	1839	1059	1505
Elec Cost	$222.20	$164.15	$98.44	$133.77
1400 10th St Trailer	**Jan. 07**	**Feb. 07**	**Mar. 07**	**April. 07**
Elec Use	4304	3594	2561	2537
Elec Cost	$302.54	$287.32	$236.23	$231.12
1400 10th Campground	**Jan. 07**	**Feb. 07**	**Mar. 07**	**April. 07**
Elec Use	10520	5200	4760	6200
Elec Cost	$712.97	$446.02	$415.89	$514.65
1400 10th st Office and	**Jan. 07**	**Feb. 07**	**Mar. 07**	**April. 07**
Elec Use	18520	9360	9080	11440
Elec Cost	$1,170.07	$767.81	$743.34	$865.89
Gas Use	503	373	15	197
Gas Cost	$422.59	$327.49	$33.63	$171.19

1401 10th St	Jan. 06	Feb. 06	Mar. 06	April. 06	May. 06	June. 06	July. 06	August. 06	Sept. 06	Oct. 06	Nov. 06	Dec. 06	Total
Elec Use	2077	994	948	831	1482	1971	2697	3049	2936	1795	987	2131	21898
Elec Cost	$ 192.88	$ 94.37	$ 90.80	$ 80.70	$ 127.36	$ 166.55	$ 218.96	$ 257.33	$ 242.67	$ 147.28	$ 83.21	$ 170.28	$ 1,872.39
1400 10th St Trailer	**Jan. 06**	**Feb. 06**	**Mar. 06**	**April. 06**	**May. 06**	**June. 06**	**July. 06**	**August. 06**	**Sept. 06**	**Oct. 06**	**Nov. 06**	**Dec. 06**	**Total**
Elec Use	2621	1777	1640	1623	1863	1961	1913	2181	2015	2227	2584	4010	26415
Elec Cost	$ 235.88	$ 167.83	$ 149.41	$ 162.21	$ 174.04	$ 189.73	$ 182.09	$ 185.66	$ 176.79	$ 178.57	$ 214.23	$ 272.53	$ 2,288.97
1400 10th Campground	**Jan. 06**	**Feb. 06**	**Mar. 06**	**April. 06**	**May. 06**	**June. 06**	**July. 06**	**August. 06**	**Sept. 06**	**Oct. 06**	**Nov. 06**	**Dec. 06**	**Total**
Elec Use	9840	9760	7520	4600	4400	5760	6320	6800	5760	6120	6080	9400	82360
Elec Cost	$ 770.92	$ 747.06	$ 680.92	$ 409.98	$ 386.80	$ 583.73	$ 591.37	$ 601.32	$ 513.50	$ 507.67	$ 458.05	$ 656.39	$ 6,907.71
1400 10th st Office and Bat	**Jan. 06**	**Feb. 06**	**Mar. 06**	**April. 06**	**May. 06**	**June. 06**	**July. 06**	**August. 06**	**Sept. 06**	**Oct. 06**	**Nov. 06**	**Dec. 06**	**Total**
Elec Use			14280	8320	7640	9480	9080	10440	7320	8040	7640	13560	95800
Elec Cost			$ 1,183.74	$ 769.53	$ 625.30	$ 806.12	$ 814.55	$ 955.39	$ 723.17	$ 678.31	$ 614.22	$ 880.89	$ 8,051.22
Gas Use			266	205	141	bill july	172	82	72	bill nov	161	424	1523
Gas Cost			$ 259.55	$ 186.11	$ 125.43		$ 159.45	$ 76.94	$ 77.74		$ 123.49	$ 371.90	$ 1,380.61

1401 10th St	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Elec Use	601	1048	1550	868	1590	1960	3056	2949	1329	1420	1143	2317	19831
Elec Cost	$54.85	$92.07	$132.85	$75.97	$132.64	$166.30	$256.08	$243.15	$115.83	$119.59	$107.80	$225.77	$1,722.90
1400 10th St Trailer	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use	3171	3381	2776	2302	1811	2270	2280	2251	2129	2102	2107	2943	29523
Elec Cost	$411.62	$425.34	$219.39	$198.80	$150.16	$196.70	$202.81	$197.35	$182.67	$176.95	$196.10	$277.91	$2,835.80
1400 10th Campground	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use	3160	4720	1240	4840	3880	4360	7160	5400	4640	5400	6880	9480	61160
Elec Cost	$266.04	$366.99	$191.65	$363.04	$328.56	$435.63	$655.21	$564.51	$440.61	$506.29	$641.91	$800.36	$5,560.80
1400 10th st Office and Bath	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use	10000	11720	12840	8400	5840	7520	10400	8240	6880	7480	9400	15920	114640
Elec Cost	$798.91	$837.77	$877.21	$832.02	$482.29	$680.74	$966.26	$936.60	$615.88	$614.81	$856.85	$1,318.12	$9,817.46
Gas Use	385	303	325	230	216	bill july	217	82			90		1848
Gas Cost	$333.02	$251.33	$262.12	$191.33	$189.01		$207.24	$88.33			$122.05		$1,644.43

Golden Community Center

1470 10th St.

Total Square Footage: 71,483

Total Lot Square Footage: 197,109

Contents: 2 pools, 1 spa
Lap pool: 3,444 ft^2 surface
Leisure pool: 2,304 ft^2 surface
Spa: 128 ft^2 surface

Occupancy: A - Assembly
B - Office

Construction: Type IIA (2A) or VA (5A)

Roof: Class A, Metal Seam

Units	Brand	Model	Install	Qty	N- Gas	Electrical	Heating	Cooling	Motor
HVAC									
Roof Top Unit #1	York	D2SC480G800	1994	1	X	460 3 160	800MBH	400.7MBH	20 HP
Roof Top Unit #2	York	DISC360G560	1994	1	X	460 3 160	560MBH	322MBH	15 HP
Roof Top Unit #3	York	DISC360G560	1994	1	X	460 3 160	560MBH	324.6MBH	15HP
Roof Top Unit #4	York	D2SC480G800	1994	1	X	460 3 160	800MBH	410.7MBH	20HP
Roof Top Unit #5	GovernAir	SLA9026-E	1994	1	X	460 3 4.5			35HP
Roof Top Unit #6	Trane	YFH151C4HB	2007	1	X	460 3	222.66MBh	167.96MBh	5HP
Roof Top Unit #7	Trane	YCH330A4	2007	1	X	460 3	306.44 MBH	306.44MBH	10HP
Ceiling Space Heaters			1994						
Exhaust Fans-			1994						
Leisure Pool Boiler	Teledyne-Laars	AP101IN09CIA	1994	1	X		252,500BTU/h		
Lap Pool Boiler	Teledyne-Laars	Ap101IN09CIA	1994	1	X		252,500BTU/h		
Spa Boiler	Teledyne-Laars	ESC-2 Series	1994	1	X		329,000BTU/h		
Domestic Hot Water Boiler	Ray Pak	0133-4001	2003	1	X				
Domestic Hot Water Heater	Rheem/Rudd	G75-125	2004	1	X	120V .3a	1245,000BTU/h		
Aquatics									
Lap Pool Pump Motor	Centrury	7-353632-01HA	2001	1		440V 19A			15HP
Leisure Pool Pump Motor	Centrury	7-353632-01HA	2000	1		440V 19A			15HP
Activities Pump Motor	Aurora		1999	1		460V 20A			15HP
Spa Circulation Motor	Centrury	7-165440-05	2001	1		460V 4.3A			3HP
Spa Jet Motors	Centrury	7-165440-05	1998 1993	2		460V 4.3A			3HP
Vortex Motors	Dura Glass	P56P21-A100	1994	2		460V 5.8A			3HP
Chemical Feeder Motors	Pulsar	CH8X2PA105	2000-2002			230V 7.6A			1HP
Heat Circulation Pump Motor	Centrury		1994	1		460V 7.5A			5HP
Slide Pump Motor	Aurora		1994	1		460V 19A			15HP

Fitness Equipment									
Treadmills-	Life Fitness		2007	6		120V 20A			
	Cybex		2007	2		5V 19A			
	Star Trac		2007	2		120V 20A			
Ellypticals-	Life Fitness		2007	5		None			
	Precor		2007	4		None			
	Cybex		2007	2		None			
	TRUE		2007	2					
Bicycles-	Life Fitness		2007	8		None			
	Cybex		2007	4		None			
Stair Climbers	Star Trac		2007	2		None			
	Nautilus		2007	1		120-55w Input			
Arm Ergometert	Sci Fit		2007	1		120 V 60W Input Output- 12VDC 500 mh			
Hair Dryers			1994	6					
Kitchen Appliances									
Micro Wave Ovens	Whirlpool		1994	2		120V 1.52KW			
Ovens	Whirlpool	RM77CPXBQ-0	1994	2		240V 7.8A			
Cook Tops	Whirlpool	RC8430XAB0	1994	2		240V 60HZAC			
Refrigerator	Frididaire	FRT17G4BW9	2007	1		115V 4.50A			
Refrigerator	Gibson	RM18FWX	1994	1		115V 60HZ			
Ice Makers	Manitowoc	C320	1994	1		115V 11.2A			
Exhaust Fans	Whirlpool	RH5336XLQ	1994	2		115V 4.5 A			
Sound Systems									
Lighting	**Brand**	**Model**	**Installed**	**Quaty**	**Lamp**	**Wattage**	**Voltage**	**Bulb Number**	
Aquatics									
Leisrue Pool Area	Sterner	Series 715	1994	16	MH	175	277	MH 175/U/M	
	Sterner	Series 575	1994	9	MH	1000	177	175VVM57E	
Lap Pool	Sterner	Series 865	1994	17	MH	400	277	MH400/U	
Office	Lithonia	M240	1994		Fluor	32W	277	3278	
Gymnasium	Sterner		1994	16	MH	1000	277	MH1000/U/BT37	
	Sterner		1994	16	HPS	600W	277	LU600/HO/T/MOG	
Fitness Room	Pendant/Spl	11P1026-8F40/HPB-PT01AC							
			2007	20/4EA	Fluor	40w	2778F40/HPB	8f40/HPB	
FAD Room	Lithonia	2PF73340	1994	15/3Ea	Fluor	32w	277	3245	
Banquet Rooms	SPI	SFT4831	1994	38/3Ea	Fluor	36w	277	PL-L36W/835/4P	
	Prudential	PSS-162-48	1994	96/2Ea	Fluor	32w	277	32T8	
Kitchen	Lithonia	2SP340	1994	11/3Ea	Fluor	32w	277	32T8	
Class Rooms	Lithonia	2PM3340	1994	38/3Ea	Fluor	32w	277	32T8	

Hallways									
Gym Hall	Lithonia	RB2RSSEPBL	1994	18/2Ea	Fluor	32w	277	32T8	
West Hall/Child Care	Lithonia	2PM3 3U31-9	1994	43/3Ea	Fluor	31w	277	31wT8-U	
8th Street Hall	SPI	SFT/SMTWS0813	1994	8/2Ea	C-Fluor	26w--9w	277	PL-C26W/835/2P	
Skylight	Elliptipar	M102070D-E-02-B-00	1994	6	HPS				
Locker Rooms	Prudential	PSS-162	1994	68/2Ea	Fluor	32w	277	32T8	
Family Locker	M&H	STR22-3	2007	4/3Ea	Fluor	17w	277	T8 17w	
	M&H	MLHA8-24	2007	1/2Ea	Fluor	42w	277	F17T8	
Aerobics Room/Dance	Prudential	PSS-162	1994	32/2Ea	Fluor	32w	277	32T8	
Lobby	Lithonia	AF2/18QT7AR	1994	24/2Ea	C-Fluor	18w	277	18w/827/2P	
	Stenner	Fixture Type S	1994	7	MH	50w	277	M1HC50/U/M/4K	
	Prescolite	CFRG18EB	2007	20/2Ea	C-Fluor	18w	277	PL-C18w/827/2P	
Kids Play Area/Party Room	SPI	11P1026-8F40/HPB-FT	2007	12/4Ea	Fluor	40w	277	8f40/HPB	
Front Porch/Seniors	SPI	LSX42K1	1994	9/2Ea	C-Fluor	13w	277	PL-13W 2pin	
	Lithonia	TEGRP75	1994	55	Fluor	50w	277	EXN 12v50w38	
Over Pool Table	SPI	LS242H	1994	2/2Ea		26W	277	26/35 2 pin	
Administration Area	Lithonia	2PT1 340	1994	23/3Ea	Fluor	32w	277	32T8	
Track Lighting/Hall & Front	Lithonia		1994						
Exterior Lighting									
Bollard	Devine	ربيع الاول-10	1994	2	MH	70W	277	MHC70/U/M/4K	
Outside Boiler & Weight Rm	Devine	C4-10	1994	3	HPS	50W	277	50w/MOG	
10th Street	Type E-1	UCS-STR-42CF	1994	4	C-Fluor	42W	277	t/ef42bx/840/A-4pin	
8th Street	Sharperlight	682-HID	1994	4	HPS	70w	277	MHC70/U/M/4K	
Entrances	Sharperlight		1994	10/2Ea	C-Fluor	13w	277	PL-S 13W/35	
10th Street/Outside	M & H	Type E2	1994	1	C-Fluor	42w	277	F142X(1)42wTBX	
	KIM	A-3AFL10 Flood	1994	2	MH	70w	277		
Plumbing Fixtures									
Toilets				21					
Urinals				6					
Sinks				25					
Showers				17					

	Planned Projects Planned Budgeted Projects	Projects Currently Under Investigation by the City	Projects for Audit
Community Center			
	Gym Lighting To Flourescents	Automatic Lighting in Building	Exterior Lighting
	Daylight Harvesting	Timers & Sensors	
	Gymnasium	Pool Lighting Replacement	
	Kids Play Area	Pool Daylight Harvesting	
	Fitness	Pool Window Louvors/Light Direct	
	Computerized HVAC Controls		
	Roof Top HVAC Units(2008)		
	Pool Motor Replacements (2011)	Capacitors on Large Air Handling	
	Window Replacement Program (		
	Pool Boiler Replacements (2010)		
	Domestic Hot Water Boilers(2014)		
	Domestic Hot Water Heater(2015)		

Community Center	Jan. 07	Feb. 07	Mar. 07	April. 07
Electric Use	173327	158036	176244	171966
Electric Cost	$10,422.66	$10,625.97	$11,925.00	$11,673.26
Gas Use				
Gas Cost				

Community Center	Jan. 06	Feb. 06	Mar. 06	April. 06	May. 06	June. 06	July. 06	August. 06	Sept. 06	Oct. 06	Nov. 06	Dec. 06	Total
Gas Use	1,231	1,262	1,275	855	638	464	442	72	63	878	1,108	1,402	9690
Gas Cost	$12,278.85	$9,813.21	$9,183.09	$5,947.53	$4,673.11	$3,026.86	$3,021.29	$1,081.69	$1,551.45	$3,845.99	$8,298.19	$9,805.50	$ 72,526.76
Electric Use	163901	140517	115159	143682	163113	184231	221009	428484	140939	105693	144680	114762	2066170
Electric Cost	$ 12,160.76	$ 10,289.64	$ 11,113.26	$ 10,593.89	$ 12,517.16	$ 12,281.59	$ 14,168.45	$ 14,092.23	$ 10,374.00	$ 7,921.28	$ 8,168.04	$ 9,907.26	$ 133,587.56
Billed Demand	$ 3,984.69	$ 4,047.54	$ 4,223.52	$ 4,148.10	$ 5,329.68	$ 5,780.44	$ 6,421.25	$ 6,737.50	$ 5,445.00	$ 4,308.01	$ 3,381.33	$ 4,701.18	
Secondary Gen	$ 497.03	$ 429.64	$ 471.86	$ 438.80	$ 494.77	$ 535.59	$ 661.51	$ 622.53	$ 430.90	$ 329.40	$ 441.68	$ 471.21	
Demand	317	322	33	330	424	457	467	490	396	315	269	342 / 374	

Community Center	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Electric Use	173622	144374	142728	1671977	151997	191872	214543	212785	194657	192181	148108	147183	3586027
Electric Cost	$ 10,339.90	$ 10,218.76	$ 9,554.05	$ 10,929.09	$ 10,290.36	$ 12,497.92	$ 13,537.98	$ 14,185.25	$ 13,283.70	$ 12,225.08	$ 10,433.29	$ 11,955.91	$ 139,451.29
Gas Use	1238	1151	1198	1001	843	600	436	501	611	941	1035	1395	10950
Gas Cost	$8,328.03	$7,655.30	$7,942.96	$7,498.15	$6,184.55	$4,152.98	$3,462.75	$3,851.11	$5,875.53	$10,570.35	$12,888.14	$13,996.25	$92,406.10

Golden Community Center

1470 10th St.

Total Square Footage: 71,483

Total Lot Square Footage: 197,109

Contents: 2 pools, 1 spa
Lap pool: 3,444 ft^2 surface
Leisure pool: 2,304 ft^2 surface
Spa: 128 ft^2 surface

Occupancy: A - Assembly
B - Office

Construction: Type IIA (2A) or VA (5A)

Roof: Class A, Metal Seam

Units	Brand	Model	Install	Qty	N- Gas	Electrical	Heating	Cooling	Motor
HVAC									
Roof Top Unit #1	York	D2SC480G800	1994	1	X	460 3 160	800MBH	400.7MBH	20 HP
Roof Top Unit #2	York	DISC360G560	1994	1	X	460 3 160	560MBH	322MBH	15 HP
Roof Top Unit #3	York	DISC360G560	1994	1	X	460 3 160	560MBH	324.6MBH	15HP
Roof Top Unit #4	York	D2SC480G800	1994	1	X	460 3 160	800MBH	410.7MBH	20HP
Roof Top Unit #5	GovernAir	SLA9026-E	1994	1	X	460 3 4.5			35HP
Roof Top Unit #6	Trane	YFH151C4HB	2007	1	X	460 3	222.66MBh	167.96MBh	5HP
Roof Top Unit #7	Trane	YCH330A4	2007	1	X	460 3	306.44 MBH	306.44MBH	10HP
Ceiling Space Heaters			1994						
Exhaust Fans-			1994						
Leisure Pool Boiler	Teledyne-Laars	AP101IN09CIA	1994	1	X		252,500BTU/h		
Lap Pool Boiler	Teledyne-Laars	Ap101IN09CIA	1994	1	X		252,500BTU/h		
Spa Boiler	Teledyne-Laars	ESC-2 Series	1994	1	X		329,000BTU/h		
Domestic Hot Water Boiler	Ray Pak	0133-4001	2003	1	X				
Domestic Hot Water Heater	Rheem/Rudd	G75-125	2004	1	X	120V .3a	1245,000BTU/h		
Aquatics									
Lap Pool Pump Motor	Centrury	7-353632-01HA	2001	1		440V 19A			15HP
Leisure Pool Pump Motor	Centrury	7-353632-01HA	2000	1		440V 19A			15HP
Activities Pump Motor	Aurora		1999	1		460V 20A			15HP
Spa Circulation Motor	Centrury	7-165440-05	2001	1		460V 4.3A			3HP
Spa Jet Motors	Centrury	7-165440-05	1998 1993	2		460V 4.3A			3HP
Vortex Motors	Dura Glass	P56P21-A100	1994	2		460V 5.8A			3HP
Chemical Feeder Motors	Pulsar	CH8X2PA105	2000-2002			230V 7.6A			1HP
Heat Circulation Pump Motor	Centrury		1994	1		460V 7.5A			5HP
Slide Pump Motor	Aurora		1994	1		460V 19A			15HP

Fitness Equipment									
Treadmills-	Life Fitness		2007	6		120V 20A			
	Cybex		2007	2		5V 19A			
	Star Trac		2007	2		120V 20A			
Ellypticals-	Life Fitness		2007	5		None			
	Precor		2007	4		None			
	Cybex		2007	2		None			
	TRUE		2007	2					
Bicycles-	Life Fitness		2007	8		None			
	Cybex		2007	4		None			
Stair Climbers	Star Trac		2007	2		None			
	Nautilus		2007	1		120-55w Input			
Arm Ergometert	Sci Fit		2007	1		120 V 60W Input Output- 12VDC 500 mh			
Hair Dryers			1994	6					
Kitchen Appliances									
Micro Wave Ovens	Whirlpool		1994	2		120V 1.52KW			
Ovens	Whirlpool	RM77CPXBQ-0	1994	2		240V 7.8A			
Cook Tops	Whirlpool	RC8430XAB0	1994	2		240V 60HZAC			
Refrigerator	Frididaire	FRT17G4BW9	2007	1		115V 4.50A			
Refrigerator	Gibson	RM18FWX	1994	1		115V 60HZ			
Ice Makers	Manitowoc	C320	1994	1		115V 11.2A			
Exhaust Fans	Whirlpool	RH5336XLQ	1994	2		115V 4.5 A			
Sound Systems									
Lighting	**Brand**	**Model**	**Installed**	**Quaty**	**Lamp**	**Wattage**	**Voltage**	**Bulb Number**	
Aquatics									
Leisrue Pool Area	Sterner	Series 715	1994	16	MH	175	277	MH 175/U/M	
	Sterner	Series 575	1994	9	MH	1000	177	175VVM57E	
Lap Pool	Sterner	Series 865	1994	17	MH	400	277	MH400/U	
Office	Lithonia	M240	1994		Fluor	32W	277	3278	
Gymnasium	Sterner		1994	16	MH	1000	277	MH1000/U/BT37	
	Sterner		1994	16	HPS	600W	277	LU600/HO/T/MOG	
Fitness Room	Pendant/Spl	11P1026-8F40/HPB-PT01AC							
			2007	20/4EA	Fluor	40w	2778F40/HPB	8f40/HPB	
FAD Room	Lithonia	2PF73340	1994	15/3Ea	Fluor	32w	277	3245	
Banquet Rooms	SPI	SFT4831	1994	38/3Ea	Fluor	36w	277	PL-L36W/835/4P	
	Prudential	PSS-162-48	1994	96/2Ea	Fluor	32w	277	32T8	
Kitchen	Lithonia	2SP340	1994	11/3Ea	Fluor	32w	277	32T8	
Class Rooms	Lithonia	2PM3340	1994	38/3Ea	Fluor	32w	277	32T8	

Hallways									
Gym Hall	Lithonia	RB2RSSEPBL	1994	18/2Ea	Fluor	32w	277	32T8	
West Hall/Child Care	Lithonia	2PM3 3U31-9	1994	43/3Ea	Fluor	31w	277	31wT8-U	
8th Street Hall	SPI	SFT/SMTWS0813	1994	8/2Ea	C-Fluor	26w--9w	277	PL-C26W/835/2P	
Skylight	Elliptipar	M102070D-E-02-B-00	1994	6	HPS				
Locker Rooms	Prudential	PSS-162	1994	68/2Ea	Fluor	32w	277	32T8	
Family Locker	M&H	STR22-3	2007	4/3Ea	Fluor	17w	277	T8 17w	
	M&H	MLHA8-24	2007	1/2Ea	Fluor	42w	277	F17T8	
Aerobics Room/Dance	Prudential	PSS-162	1994	32/2Ea	Fluor	32w	277	32T8	
Lobby	Lithonia	AF2/18QT7AR	1994	24/2Ea	C-Fluor	18w	277	18w/827/2P	
	Stenner	Fixture Type S	1994	7	MH	50w	277	M1HC50/U/M/4K	
	Prescolite	CFRG18EB	2007	20/2Ea	C-Fluor	18w	277	PL-C18w/827/2P	
Kids Play Area/Party Room	SPI	11P1026-8F40/HPB-FT	2007	12/4Ea	Fluor	40w	277	8f40/HPB	
Front Porch/Seniors	SPI	LSX42K1	1994	9/2Ea	C-Fluor	13w	277	PL-13W 2pin	
	Lithonia	TEGRP75	1994	55	Fluor	50w	277	EXN 12v50w38	
Over Pool Table	SPI	LS242H	1994	2/2Ea		26W	277	26/35 2 pin	
Administration Area	Lithonia	2PT1 340	1994	23/3Ea	Fluor	32w	277	32T8	
Track Lighting/Hall & Front	Lithonia		1994						
Exterior Lighting									
Bollard	Devine	ربيع الاول-10	1994	2	MH	70W	277	MHC70/U/M/4K	
Outside Boiler & Weight Rm	Devine	C4-10	1994	3	HPS	50W	277	50w/MOG	
10th Street	Type E-1	UCS-STR-42CF	1994	4	C-Fluor	42W	277	t/ef42bx/840/A-4pin	
8th Street	Sharperlight	682-HID	1994	4	HPS	70w	277	MHC70/U/M/4K	
Entrances	Sharperlight		1994	10/2Ea	C-Fluor	13w	277	PL-S 13W/35	
10th Street/Outside	M & H	Type E2	1994	1	C-Fluor	42w	277	F142X(1)42wTBX	
	KIM	A-3AFL10 Flood	1994	2	MH	70w	277		
Plumbing Fixtures									
Toilets				21					
Urinals				6					
Sinks				25					
Showers				17					

	Planned Projects Planned Budgeted Projects	Projects Currently Under Investigation by the City	Projects for Audit
Community Center			
	Gym Lighting To Flourescents	Automatic Lighting in Building	Exterior Lighting
	Daylight Harvesting	Timers & Sensors	
	Gymnasium	Pool Lighting Replacement	
	Kids Play Area	Pool Daylight Harvesting	
	Fitness	Pool Window Louvors/Light Direct	
	Computerized HVAC Controls		
	Roof Top HVAC Units(2008)		
	Pool Motor Replacements (2011)	Capacitors on Large Air Handling	
	Window Replacement Program (		
	Pool Boiler Replacements (2010)		
	Domestic Hot Water Boilers(2014)		
	Domestic Hot Water Heater(2015)		

Community Center	Jan. 07	Feb. 07	Mar. 07	April. 07
Electric Use	173327	158036	176244	171966
Electric Cost	$10,422.66	$10,625.97	$11,925.00	$11,673.26
Gas Use				
Gas Cost				

Community Center	Jan. 06	Feb. 06	Mar. 06	April. 06	May. 06	June. 06	July. 06	August. 06	Sept. 06	Oct. 06	Nov. 06	Dec. 06	Total
Gas Use	1,231	1,262	1,275	855	638	464	442	72	63	878	1,108	1,402	9690
Gas Cost	$12,278.85	$9,813.21	$9,183.09	$5,947.53	$4,673.11	$3,026.86	$3,021.29	$1,081.69	$1,551.45	$3,845.99	$8,298.19	$9,805.50	$ 72,526.76
Electric Use	163901	140517	115159	143682	163113	184231	221009	428484	140939	105693	144680	114762	2066170
Electric Cost	$ 12,160.76	$ 10,289.64	$ 11,113.26	$ 10,593.89	$ 12,517.16	$ 12,281.59	$ 14,168.45	$ 14,092.23	$ 10,374.00	$ 7,921.28	$ 8,168.04	$ 9,907.26	$ 133,587.56
Billed Demand	$ 3,984.69	$ 4,047.54	$ 4,223.52	$ 4,148.10	$ 5,329.68	$ 5,780.44	$ 6,421.25	$ 6,737.50	$ 5,445.00	$ 4,308.01	$ 3,381.33	$ 4,701.18	
Secondary Gen	$ 497.03	$ 429.64	$ 471.86	$ 438.80	$ 494.77	$ 535.59	$ 661.51	$ 622.53	$ 430.90	$ 329.40	$ 441.68	$ 471.21	
Demand	317	322	33	330	424	457	467	490	396	315	269	342 / 374	

Community Center	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Electric Use	173622	144374	142728	1671977	151997	191872	214543	212785	194657	192181	148108	147183	3586027
Electric Cost	$ 10,339.90	$ 10,218.76	$ 9,554.05	$ 10,929.09	$ 10,290.36	$ 12,497.92	$ 13,537.98	$ 14,185.25	$ 13,283.70	$ 12,225.08	$ 10,433.29	$ 11,955.91	$ 139,451.29
Gas Use	1238	1151	1198	1001	843	600	436	501	611	941	1035	1395	10950
Gas Cost	$8,328.03	$7,655.30	$7,942.96	$7,498.15	$6,184.55	$4,152.98	$3,462.75	$3,851.11	$5,875.53	$10,570.35	$12,888.14	$13,996.25	$92,406.10

Fire Station #4

1470 10th St.

Total Square Footage: 71,483

Total Lot Square Footage: 197,109

Contents: 2 pools, 1 spa,
Lap Pool: 3,444 sf surface
Leisure Pool: 2,304 sf surface
Spa: 128 sf surface

Occupancy: A - Assembly
B - Office

Construction: Type IIA (2A) or VA (5A)

Roof: Class A, Metal Seam

Units	Brand	Model	Install	Qty	N-Gas	Electrical	Heating	Cooling	Motor
HVAC									
Roof Top Unit #1	Trane	YCC036F1HOBK	2005	1	X	208/230/60			
Truck Gay Ceiling Heater	Co-Ray-Vac		1983	1	X				
Domestic Hot Water	State	AX1202RT1H	1983	1		240v			
Exhaust Fans-	Centri Master	PU200E	1983	1					
Kitchen Appliances									
Micro Wave Ovens	Magic Chef	MCD990SC	2005	1		120/60			
Cook Tops	Wolf	YB1256B		1	X	120/60/4.3amp			
Refrigerator	GE								
Dish Washers	Fridgidair	FDB751SCSO		1		120/60/1.1amp			
Truck Bay Refrigerator	Hotpoint	CSF22ECB				120/60/4.9amp			
Lighting	**Brand**	**Model**	**Installed**	**Qty**	**Lamp**	**Wattage**	**Voltage**	**Bulb Number**	
Interior			1983	78/2ea	Fluor	40w		T1240	
Restrooms			1983	7	Incand	60w		60w	
Exterior			1983	4	HPS	400		ED18400HPS	
Plumbing Fixtures									
Toilets				3					
Urinals				2					
Sinks				3					
Showers				3					

Fire Station #4	Jan. 07	Feb. 07	Mar. 07	April. 07
Electric Use	6993	7320	5363	5382
Electric Cost	$574.05	$626.06	$461.15	$454.96
Gas Use	730	488	269	186
Gas Cost	$610.30	$415.59	$248.82	$162.90

Fire Station #4	Jan. 06	Feb. 06	Mar. 06	April. 06	May. 06	June. 06	July. 06	August. 06	Sept. 06	Oct. 06	Nov. 06	Dec. 06	Total
Gas Use	220	425	336	122	78	20	20	20	25	36	193	389	1884
Gas Cost	$ 272.09	$ 478.92	$ 330.62	$ 121.88	$ 25.39	$ 34.49	$ 34.49	$ 34.53	$ 41.23	$ 45.58	$ 147.57	$ 333.56	$ 1,900.35
Electric Use	8969	7321	7242	5373	3873	3529	3073	3618	2769	2599	3643	6739	58748
Electric Cost	$ 814.06	$ 643.54	$ 639.20	$ 477.31	$ 320.90	$ 290.33	$ 282.31	$ 304.08	$ 229.35	$ 209.75	$ 285.13	$ 520.89	$ 5,016.85

Fire Station #4	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Electric Use	8780	6869	8086	6074	5017	3784		7088	3681	3371	4608	8497	65855
Electric Cost	$698.58	$564.92	$663.78	$491.59	$403.62	$312.21		$587.20	$306.51	$273.44	$403.72	$806.35	$5,511.92
Gas Use	587	301	260	280	98	51	19	21	22	57	107	552	2355
Gas Cost	$501.01	$251.34	$213.11	$228.89	$93.45	$57.00	$31.28	$34.39	$36.52	$76.61	$139.26	$625.98	$2,288.84

Fossil Trace Golf Course

3050 Illinois St.

Total Square Footage:

Total Lot Square Footage:

Contents: Golf course clubhouse, banquet facilities and kitchen

Occupancy: B - Office

Construction:

Roof:

Units	Brand	Model	Install	Qty	Nat Gas	Electrical	Heating	Cooling	Motor
HVAC									
Roof Top Unit #1/Ground Unit	Trane		2002	1	X	200/208/60hz			
Exhaust Fan						200/60/3			7.5HP
Evaporative Fan						200/60/3			30 HP
Burner Motor						115/60/1			1/4 HP
Roof Top Unit #2/Roof Unit	Trane		2002	1	X	208/60hz/3	640,000 BTU		
Oddysey Split #2	Trane	HTA1560B300DA	2002	1		208/230/60HZ			
Exhaust Fans	Captive Air	NCA18FA	2002	1		208/60/3			1.5HP
	Captive Air	NCA24FA	2002	1		208/60/3			1.5HP
	Captive Air	CMRE-13	2002	1		115/60			0.5HP
Hair/Hand Dryers	Bobrick	B700	2002	2		208/240v			2 Amp
Kitchen Appliances									
Micro Wave Ovens	Panosonic	NE-1056	2002	1		120v/60/1			
Refrigerator	Delfield	VRR-G	2002	1		115/60/1			1/4 HP
Dish Washers	Insinger	Commander 18-5H	2002	1		208/60/3			2 HP
Ice Makers	Hoshizaki	KM-500MAH	2002	1		115/120/60/1			0.85 FLA
	Hoshizaki	KM-1600SRH	2002	1		208/230/60/1			4 Amp
Tea Brewer	BunnOmatic	TU3Q	2002	1		120/15Amp			
Coffee Griner	BunnOmatic	LPG2E	2002	1		120/15Amp			
Coffee Brewer	BunnOmatic	DUAL SH	2002	1		120/208/30A			
Garbage Disposer	Salvajor	100-SA-175S-3	2004	1		208/60z/1			1 HP
Serving Counter	Delfield	KH-4	2002	1		120/208/60z/1			1/2 HP

Serving Counter	Delfield	KH-4	2002	1		120/208/60z/1			1/2 HP
Food Slicer	Univex	9512	2002	1		120/60z/1			
Range 36" Oven	Emperial	IR-6	2002	1	X		28,000BTU		
					X		203,000BTRU		
Steamer/Kettle Combination	Groen	HY6SG-36NATTDC	2002	1	X		200,000BTU		
Cook/Hold Cabinet	Alto Shaam	1000-TH-1/STD	2002	1		208-240/60/1	6000W/5200W 28.8/21.6 AMPS		
Cabinet/Mobile Heated	Alto Shaam	1000-UP/STD	2002	1		125/60-50/1	2000W, 16.0 Amp		
Freezer, Reach-in	Delfield	UFR1-S	2002	1		115/60/1			1/2 HP
Fryer, Multiple Deep Fat	Emperial	IFSCB-250	2002	1	X	120/60/1	280,000 BTU		
Griddle Counter Unit	Emperial	ITG-36	2002	1	X		90,000 BTU		
Broiler, Salamander	Emperial	ISB-36	2002	1	X		35,000 BTU		
Hot Plate/Counter Unit	Emperial	IHPA-4-24	2002	1	X		112,000 BTU		
Charbroiler/Counter Unit	Emperial	IRB-36	2002	1	X		90,000BTU		
Refrigerated Counter	Delfield	F2978	2002	1		115/60/1			1/2 HP
Toaster, Electric Conveyor	Hatco	TQ-700	2002	1		208/60z/1			
Walk-in Cooler/Freezer	American Panel	Custom	2002	1					
Beer Cooler	American Panel	Custom	2002	1					
Domestic Hot Water	State	SDV10026	2002	1	X		260,000BTU		
Cart Storage Exhaust Fan	Baldor	EM3751-T8	2002	1		208/60/3			2 HP
Cart Storage Supply Fan	Baldor	EM3211-T8	2002	1		208/60/3			3 HP
Cart Storage Supply Fan Heater	Markel	3HF60	2002	1		208/60/3			
Cart Storage Unit Heaters		UHEC-102AACA	2002	5		208/40 amp			63 Amp
Charging Systems		21110	2002			120v/9amp	DC Output 48v 13amp		
Ball Washer			2002						
PA System			2002						
GPS System			2007						
Lighting	**Brand**	**Model**	**Install**	**Qty**	**Lamp**	**Wattage**	**Voltage**	**Lamp #**	
Main Hall Track Lighting	Juno Lighting	T293	2002	17		75w	120	75wpar30	
Pro Shop Track Lighting	Cooper Lights	L941MB	2002	31		50w	120		
Ceiling Can Lights/Office,Kitch,St	Cooper Lights	H226	2002	32/2ea	C-Fluor	26w	277	26wQuad	
Restaurant Ceiling	Cooper Lights	2GR8332	2002	14/3ea	Fluor	32w	277	32T8	
Kitchen	Cooper Lights	W340	2002	6/3ea	Fluor	32w	277	32T8	
Stair Well	Metalux	BA232	2002	2/2ea	Fluor	32w	277	32T8	
Banquet Rooms	Metalux	SSL225-120EB52	2002	40/2ea	Fluor	32w	277	32	
Bar Lights	Tech Lighting		2002	4		50w	120	12U50w	
Banquet Chandelier	Heiloom Lighting	5916	2002	2/6ea	Incad	100w	120	100w	
Wall Sconce		5921	2002	6	Incad		120		

Dining Hall Chandelier	Corbett	5917	2002	8/6ea	Incad	100w	120	1010WAM	
Cart Storage	Cooper Lights	SS232	2002	42/2ea	Fluor	32w	277	32T8	
Outside Bollard Lights	Lithonia	KBA8	2002	8	MH	70w	277		
Outside Ground	Allscape	SL50	2002	3	MH	50w	120/277	MR16	
Outside Ground Lights	Allscape	SL33	2002	4	MH	50w	277	ED17-50w	
Plumbing Fixtures									
Toilets				6					
Urinals				2					
Sinks				4					
Showers				0					

Building	Planned Projects Planned Budgeted Items	Projects Currently Under Investigation by City	Projects for Audit
Fossil Trace Clubhouse	HVAC Rooftop Unit Replace (2013 & 2015)		Daylight Harvesing
	Domestic Hot Water Heater (2013)		Exterior Lighting
			Golf Cart Charging System
			Kitchen Equipment

Club House	**Jan. 07**	**Feb. 07**	**Mar. 07**	**April. 07**
Electric Use	78560	62720	62400	53920
Electric Cost	$5,480.14	$4,666.45	$4,303.16	$3,781.87
Gas Use	est- rebill	3012	705	1148
Gas Cost	feb	$2,475.14	$620.33	$903.27

Club House	**Jan. 06**	**Feb. 06**	**Mar. 06**	**April. 06**	**May. 06**	**June. 06**	**July. 06**	**August. 06**	**Sept. 06**	**Oct. 06**	**Nov. 06**	**Dec. 06**	**Total**
Gas Use	***	***	***	***	***	2415		909	1050	1335	1648	1786	9143***
Gas Cost						$ 1,772.29		$ 642.63	$ 830.77	$ 920.45	$ 1,126.92	$ 1,475.67	$ 6,768.73
Electrical Use	63200	50880	4800	54880	51840	58560	66880	66720	65920	55040	56800	72640	668160
Electric Cost	$ 4,343.76	$ 3,760.83	$ 3,549.32	$ 4,021.86	$ 3,750.02	$ 4,056.75	$ 4,736.96	$ 4,628.62	$ 4,593.19	$ 3,607.39	$ 4,393.75	estimates	$ 45,442.45
Billed Demand	$ 1,407.84	$ 1,483.26	$ 1,382.70	$ 1,546.11	$ 1,784.94	$ 1,967.42	$ 2,351.25	$ 4,628.62	$ 4,593.19	$ 1,742.36	$ 1,671.81	estimates	
Secondary Gen	$ 207.02	$ 171.53	$ 163.24	$ 183.05	$ 174.30	$ 193.65	$ 192.61	$ 217.15	$ 214.85	$ 183.52	$ 188.58	estimates	
Demand	112	118	110	123	142	147	171	163	171	134	133	estimates	
Course Pumps	**Jan. 06**	**Feb. 06**	**Mar. 06**	**April. 06**	**May. 06**	**June. 06**	**July. 06**	**August. 06**	**Sept. 06**	**Oct. 06**	**Nov. 06**	**Dec. 06**	**Total**
Electric Use	5680	2080	1840	12800	17120	20800	40000	29600	27680	18720	6000	estimates	182320
Electric Cost	$ 2,353.08	$ 1,601.28	$ 743.51	$ 3,659.37	$ 2,690.36	$ 2,762.28	$ 3,595.08	$ 3,232.09	$ 3,086.18	$ 2,688.78	$ 2,198.24	estimates	$ 31,146.85
Billed Demand	$ 1,948.35	$ 1,407.84	$ 603.36	$ 1,986.06	$ 1,948.35	$ 1,932.22	$ 2,090.00	$ 2,117.50	$ 2,062.50	$ 1,950.40	$ 1,860.36	estimates	
Secondary Gen	$ 41.36	$ 35.16	$ 30.30	$ 127.52	$ 74.31	$ 84.90	$ 110.25	$ 140.20	$ 104.72	$ 78.91	$ 42.28	estimates	
Demand	155	96	48	153	155	144	152	154	150	150	148	estimates	
Maintenance Barn	**Jan. 06**	**Feb. 06**	**Mar. 06**	**April. 06**	**May. 06**	**June. 06**	**July. 06**	**August. 06**	**Sept. 06**	**Oct. 06**	**Nov. 06**	**Dec. 06**	**Total**
Electrical Use	3760	3840	4080	4560	4400	5120	5760	5840	5680	4160	3520	4960	55680
Electrical Cost	327.18	335.37	360.6	381.62	381.23	451.22	485.2	483.31	437.94	363.99	461.17	329.18	$ 4,798.01
Gas Use	385	506	345	219	262	31	8	9	44	169	233	285	2496
Gas Cost	471.95	546.54	329.82	199.31	216.66	43.38	26.29	27	56.27	132.27	177.31	253.22	$ 2,480.02
2892 Illinois St FT	**Jan. 06**	**Feb. 06**	**Mar. 06**	**April. 06**	**May. 06**	**June. 06**	**July. 06**	**August. 06**	**Sept. 06**	**Oct. 06**	**Nov. 06**	**Dec. 06**	**Total**
Elec Use	21	25	26	24	387	2191	2619	bill oct	bill oct	8206	0	40	13539
Elec Cost	$ 9.96	$ 10.26	$ 10.40	$ 10.25	$ 39.34	$ 184.24	$ 212.55			$ 676.61	$ 39.66	$ 11.19	$ 1,204.46
Johnson Rd Restoom	**Jan. 06**	**Feb. 06**	**Mar. 06**	**April. 06**	**May. 06**	**June. 06**	**July. 06**	**August. 06**	**Sept. 06**	**Oct. 06**	**Nov. 06**	**Dec. 06**	**Total**
Elec Use	3058	2857	2028	1068	41	42	43	49	62	487	1804	2633	14172
Elec Cost	$ 279.76	$ 256.07	$ 184.99	$ 101.39	$ 11.41	$ 11.52	$ 2.07	$ 12.15	$ 13.10	$ 45.88	$ 145.30	$ 208.49	$ 1,272.13
2010 Illinois Restoom	**Jan. 06**	**Feb. 06**	**Mar. 06**	**April. 06**	**May. 06**	**June. 06**	**July. 06**	**August. 06**	**Sept. 06**	**Oct. 06**	**Nov. 06**	**Dec. 06**	**Total**
Elec Use	3645	3125	3090	1632	785	376	41	53	60	670	2893	3563	19933
Elec Cost	$ 330.78	$ 279.33	$ 277.61	$ 150.65	$ 70.71	$ 38.37	$ 1.91	$ 12.46	$ 12.93	$ 60.07	$ 228.12	$ 279.26	$ 1,742.20

*** Indicates billing problems with Xcel

estimates for dec.

Club House	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Electric Use	42720	53280	56800	54240	46400	64320	65120	56640	65760	52320	43200	67360	668160
Electric Cost	$2,922.93	$3,963.46	$4,364.44	$3,528.75	$3,264.66	$4,236.96	$4,554.60	$4,533.54	$4,231.29	$3,518.36	$3,409.71	$5,768.55	$48,297.25
Gas Use	3822	1137	bill apr	2292	1383	1034	919	944	906	1251	1351	2273	17312
Gas Cost	$3,165.36	$899.94		$1,774.79	$131.30	$846.70	$765.15	$849.65	$870.39	$1,357.21	$1,586.96	$2,525.24	$14,772.69
Course Pumps	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Electric Use	4160	1280	bill apr	5440	13040	21680	33520	20160	27680	16080	13200	4320	160560
Electric Cost	$792.71	$139.45		$371.31	$3,641.64	$2,829.85	$3,320.89	$2,886.84	$3,116.64	$2,647.19	$2,635.11	$969.98	$23,351.61
Maintenance Barn	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Electrical Use	4400	4240	3600	3840	3920	5200	5760	4480	6160		0	7680	49280
Electrical Cost	$332.13	$310.52	$274.77	$303.53	$330.34	$420.42	$477.07	$416.66	$504.03		$202.36	$536.00	$4,107.83
Gas Use	546	386		648	204	54	9	11	16		149	541	2564
Gas Cost	$465.63	$315.75		$524.01	$178.18	$59.39	$23.18	$25.68	$30.99		$189.44	$609.63	$2,421.88
2892 Illinois St FT	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use						2818	2794	2046	2919		29	25	10631
Elec Cost						$253.73	$234.82	$169.93	$244.74		$10.61	$10.44	$924.27
Johnson Rd Restoom	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use	3367	2341	2705	1907	1480	1361	41	48	46		1463	3428	18187
Elec Cost	$275.35	$195.96	$226.66	$158.70	$123.96	$117.91	$11.52	$7.97	$11.81		$135.90	$330.13	$1,595.87
2010 Illinois Restoom	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use	4115	2819	3665	2970	231	124	46	46	43		3085	3926	21070
Elec Cost	$334.00	$234.78	$304.65	$243.34	$25.20	$18.07	$11.92	$7.79	$11.58		$279.45	$376.92	$1,847.70

Golden Cemetery

755 Ulysses

Total Square Footage: 3,500
Total Lot Square Footage: 2,400,000
Contents: garage, office
Occupancy: B - Office
Construction:
Roof: metal seam

Units	Brand	Model	Install	Qty	N-Gas	Electrical	Heating	Cooling	Motor
HVAC									
Office		Electric Bse B		2					
Shops	Detroit Radiant	ReVeray OTH		3	X		Radiant		3- 18' long
Shop Hot Water Heater	Bradford White	M120465513		1		120/60	19 Gallons		
Refrigerator	GE	TBX18OF		1		115/60			
Microwave	Panasonic	MN-S547BA		1		120/60			
Lighting	**Brand**	**Model**	**Install**	**Qty**	**Lamp**	**Wattage**	**Voltage**	**Bulb Number**	
Shop, Office/Ceiling	Lithonia			12		60W		F96T12/CW/EW	
Plumbing Fixtures									
Toilets				2					
Urinals				2					
Sinks				0					
Showers				0					

755 Ulysses Bldg	Jan. 07	Feb. 07	Mar. 07	April. 07
Elec Use	1612	1357	832	867
Elec Cost	$139.68	$123.53	$79.31	$80.96
755 Ulysses Shop	**Jan. 07**	**Feb. 07**	**Mar. 07**	**April. 07**
Elec Use	710	647	598	540
Elec Cost	$66.41	$63.72	$59.57	$53.87
Gas Use	536	394	211	197
Gas Cost	$450.64	$341.14	$200.07	$170.85

755 Ulysses Bldg	Jan. 06	Feb. 06	Mar. 06	April. 06	May. 06	June. 06	July. 06	August. 06	Sept. 06	Oct. 06	Nov. 06	Dec. 06	Total
Elec Use	1727	1853	1492	1019	453	486	502	506	447	564	1080	1291	11420
Elec Cost	$ 161.73	$ 168.91	$ 138.22	$ 97.11	$ 44.57	$ 47.20	$ 39.56	$ 49.48	$ 43.86	$ 51.90	$ 90.27	$ 106.37	$ 1,039.18
755 Ulysses Shop	**Jan. 06**	**Feb. 06**	**Mar. 06**	**April. 06**	**May. 06**	**June. 06**	**July. 06**	**August. 06**	**Sept. 06**	**Oct. 06**	**Nov. 06**	**Dec. 06**	**Total**
Elec Use	828	788	745	756	895	843	832	765	501	594	696	751	8994
Elec Cost	$ 81.75	$ 76.48	$ 73.08	$ 74.15	$ 80.15	$ 75.90	$ 66.54	$ 70.66	$ 48.17	$ 54.23	$ 61.07	$ 65.27	$ 827.45
Gas Use	356	405	no gas	455	83	0	0	0	2	54	229	335	1919
Gas Cost	$ 436.77	$ 445.13	no gas	$ 436.28	$ 82.87	$ 20.84	$ 20.85	$ 20.85	$ 22.49	$ 56.31	$ 174.63	$ 294.02	$ 2,011.04

755 Ulysses Bldg	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Elec Use	1669	1213	1264	878	591	477	552	504	437	520	773	2057	10935
Elec Cost	$139.98	$105.47	$109.60	$76.76	$53.66	$46.56	$52.94	$44.93	$43.50	$48.94	$75.35	$201.35	$999.04
755 Ulysses Shop	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use	821	671	769	663	766	797	800	800	696		732	910	8425
Elec Cost	$72.39	$61.43	$69.40	$59.66	$67.51	$72.39	$73.07	$68.93	$64.51		$71.80	$93.58	$774.67
Gas Use	461	314	266	178	122	10	0	0	1		142	522	2016
Gas Cost	$394.73	$259.18	$217.23	$211.40	$112.69	$23.92	$15.84	$15.85	$16.80		$181.07	$588.79	$2,037.50

Lions Park

1300 10th St.

Total Square Footage: 950 sf **Total Lot Square Footage:**

Contents: 1 women's, 1 men's restroom **Occupancy:** B - Office

Construction: brick frame

Roof: asphalt

Units	Brand	Model	Install	Qty	Nat Gas	Electrical	Heating	Cooling	Motor
Heating System									
Restrooms		Electric Ceiling		10					
Chase	Marley	HT500		1		120/208/240			
Hand/Hair Dryers	World Dryer	A		3		115/20amp			
Exhaust Fan				1					
Lighting	**Brand**	**Model**	**Instal**	**Qty**	**Lamp**	**Wattage**	**Voltage**	**Bulb Number**	
Chase	Lithonia			3	Fluor	32		32T8	
Restroom Lighting				5	Fluor	40		40T12	
Exterior Lighting	Lithonia	JP64		2	HPS70	70w	120/60		
Exterior Lighting	Lithonia	VG03		1	C-Fluor	13w	120/60		
East Shelter				3	Fluor Swirl	60w			
West Shelter				2	Fluro Swirl	60w			
Ballfield	Musco		1982	40	MH	1500			
Tennis Courts	Musco		1982	8	MH	1500			
Plumbing Fixtures									
Toilets				7					
Urinals				1					
Sinks				3					

Lyons Park	Jan. 07	Feb. 07	Mar. 07	April. 07
Elec Use	2686	2524	1571	1558
Elec Cost	$226.89	$221.91	$141.59	$138.04

Lions Park	Jan. 06	Feb. 06	Mar. 06	April. 06	May. 06	June. 06	July. 06	August. 06	Sept. 06	Oct. 06	Nov. 06	Dec. 06	Total
Elec Use	1858	2556	4263	1117	832	667	638	711	613	1672	2928	1964	19819
Elec Cost	$ 173.39	$ 229.95	$ 379.84	$ 105.67	$ 75.06	$ 61.77	$ 50.70	$ 66.12	$ 57.12	$ 137.74	$ 230.78	$ 157.57	$ 1,725.71
1206 Ulysses Bldg	**Jan. 06**	**Feb. 06**	**Mar. 06**	**April. 06**	**May. 06**	**June. 06**	**July. 06**	**August. 06**	**Sept. 06**	**Oct. 06**	**Nov. 06**	**Dec. 06**	**Total**
Elec Use	3360	2960	4120	3360	3640	3920	4440	3560	3680	2360	not in	5120	40520
Elec Cost	$ 242.80	$ 231.58	$ 1,160.60	$ 1,142.28	$ 1,119.11	$ 1,153.32	$ 1,412.24	$ 1,194.94	$ 1,193.33	$ 1,173.12		$ 1,873.73	$ 11,897.05

Lyons Park	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Elec Use	1802	2048	1352	845	792	431	398	409	348	363	641	2661	12090
Elec Cost	$150.58	$172.16	$116.74	$74.23	$69.54	$42.86	$40.49	$37.24	$36.30	$36.59	$64.01	$258.08	$1,098.82
1206 Ulysses Bldg	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use	375	322	bill apr	1120	805	878	941	754	786	803	446	353	7583
Elec Cost	$37.12	$33.08		$103.78	$70.59	$78.56	$84.59	$65.20	$71.82	$71.25	$46.63	$41.26	$703.88

Parfet Park

10th Street and Washington Avenue

Total Square Footage: 1,200 sf
Total Lot Square Footage: 100,000 sf
Contents: 1 women's, 1 men's restroom
Occupancy: B - Office
Construction: brick
Roof: tile

Units	Brand	Model	Install	Qty	Nat Gas	Electrical	Heating	Cooling	Motor
Heating System									
Restroom		Electric Ceiling		6					
Chase	Marley	HT500		3		120/208/240			
Exhaust Fans-				1					
Hair/Hand Dryers	Bradley			2		115/60			2amp
Lighting	**Brand**	**Model**	**Install**	**Qty**	**Lamp**	**Wattage**	**Voltage**	**Bulb Number**	
Restroom Lights	Lithonia			4/	Fluor	40w	120/60	T1240w	
Exterior Lights	Rab	VAN4F26		1/2ea	C-Fluor	13w	120/60	F13TT/27K	
Chase	Lithonia			2/2ea	Fluor	40w	120/60	T1240w	
Plumbing Fixtures									
Toilets	Bradley			6					
Urinals	Bradley			1					
Sinks	Bradley			2					

Parfet Park	Jan. 07	Feb. 07	Mar. 07	April. 07
Elec Use	6299	3321	2170	1955
Elec Cost	$520.28	$289.05	$192.07	$170.97

Parfet Park	Jan. 06	Feb. 06	Mar. 06	April. 06	May. 06	June. 06	July. 06	August. 06	Sept. 06	Oct. 06	Nov. 06	Dec. 06	Total
Elec Use	3934	bill in apr	bill in apr	6945	292	761	775	752	1095	1423	2413	5117	23507
Elec Cost	$ 358.08	bill in apr	bill in apr	$ 961.92	$ 31.42	$ 69.27	$ 61.88	$ 69.60	$ 95.62	$ 118.44	$ 191.62	$ 397.48	$ 2,355.33

Parfet Park	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Elec Use	3648	2747	2870	2204	1526	620	581	705	856	2158	3590	7257	28762
Elec Cost	$300.39	$230.08	$240.07	$182.35	$127.58	$58.12	$55.28	$61.24	$77.48	$177.55	$321.29	$689.87	$2,521.30

Pioneer Museum

923 10th St.

Total Square Footage: 7,500 sf
Total Lot Square Footage: 20,500
Contents: archive artifacts
Occupancy: B - Office
Construction: brick
Roof: asphalt, flat

Units	Brand	Model	Install	Qty	Nat Gas	Electrical	Heating	Cooling	Motor
HVAC									
Roof Top Unit #1	Heil	NPGAC47F1HD	1993	1	X	208/230/60/3			
Roof Top Unit #2	Heil	NPGAC47F1HD	1993	1	X	208/230/60/3			
Roof Top Unit #3	Heil	NPGAC60G1HD	1993	1	X	208/230/60/3			
Roof Top Unit #4	Heil	NPGAC60G1HD	1993	1	X	208/230/60/3			
Exhaust Fans-			1969	1					
Domestic Hot Water Heater	Reliance	61010MSK	2003	1		1650W	120	10 Gallon	
Kitchen Appliances									
Micro Wave Ovens	Sharp	R-3A36	1994	1		120/60			
Stove	GE		2006	1					
Refrigerator	Kenmore	78207890	1998	1		120/60			
Dish Washers	GE	GSD900D-03	1993	1		120/60			
Steam Humidifier	Nortac	NHMC	2003	1		208/47.2amps/3 phase			
Lighting	**Brand**	**Model**	**Install**	**Qty**	**Lamp**	**Wattage**	**Voltage**	**Bulb Number**	
Ceiling Westside	Lithonia		1993	22/4ea	Fluor	40w	277	T1240	
Library-Office-Restrooms	Lithonia	6B240	1993	30/2ea	Fluor	40w	277	T1240	
Gallery Trach Lights	Edison Price	M1N1MA38	2005	39	Floodlamp	250	120		

Plumbing Fixtures									
Toilets				4					
Urinals				1					
Sinks				3					
Showers				0					

Building	Planned Projects Planned Budgeted Items	Projects Currently Under Investigation by City	Projects for Audit
Pioneer Museum			Automatic Building Lighting
	HVAC System (2007)		Timers & Sensors
			More Efficient Lighting

Pioneer Museum	Jan. 07	Feb. 07	Mar. 07	April. 07
Elec Use	6360	3200	2880	3280
Elec Cost	$528.62	$317.06	$276.61	$299.81
Gas Use	693	525	300	204
Gas Cost	$574.05	$451.53	$275.67	$175.98

Pioneer Museum	Jan. 06	Feb. 06	Mar. 06	April. 06	May. 06	June. 06	July. 06	August. 06	Sept. 06	Oct. 06	Nov. 06	Dec. 06	Total
Elec Use	6840	0	2880	3640	3560	5720	6040	6160	4720	3960	3120	5160	51800
Elec Cost	$ 677.30	$ 171.34	$ 295.69	$ 315.46	$ 369.35	$ 540.15	$ 538.30	$ 542.56	$ 466.22	$ 398.49	$ 284.70	$ 375.72	$ 4,975.28
Gas Use	328	519	285	147	44	0	0	0	0	0	203	295	1821
Gas Cost	$ 404.31	$ 564.47	$ 276.08	$ 140.16	$ 53.60	$ 20.84	$ 20.85	$ 20.85	$ 20.85	$ 20.85	$ 157.18	$ 261.39	$ 1,961.43

Pioneer Museum	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Elec Use	6440	6480	4720	3200	2240	3840	5680	5440	4520		3640	4640	50840
Elec Cost	$ 493.56	$ 508.12	$ 419.75	$ 360.81	$ 230.31	$ 447.29	$ 356.34	$ 551.00	$ 466.38		$ 450.94	$ 523.66	4808.16
Gas Use	673	436	456	316	181	0	0	0	0		219	541	2822
Gas Cost	$ 568.97	$ 351.52	$ 361.42	$ 256.81	$ 159.79	$ 15.84	$ 15.84	$ 15.85	$ 15.85		$ 272.91	$ 604.92	$ 2,639.72

Public Works Building

1445 10th St.

Total Square Footage:

Total Lot Square Footage:

Contents: offices, water treatment plant

Occupancy: B - Office

Construction:

Roof:

Units	Brand	Model	Install	Qty	N-Gas	Electrical	Heating	Cooling	Motor
HVAC									
Roof Top Unit #1	Trane	TCC030F100BE		1		208/230/60			1/3HP
Roof Top Unit #2	Trane	TCC030F100BE		1		208/230/6			1/5HP
Roof Top Unit #3	Trane	TCD060A300BA		1		208/230/60			1/2HP
Roof Top Unit #4	Goodwin	CLT36-1D		1		208/203/60			1/4 HP
Roof Top Unit #5	Goodwin	CK36-1A		1		208/230/60			1/6 HP
		38TKB060500		1		208/230/60			1/12HP
Electric Ceiling Heater/Entry	Fostoria	8502502		1					
Hot Water Boiler	Lochinvar	PBM1000	1987	1	X		880,000BTU		
Exhaust Fans-	Carnes	VUBK24SIC6UA20SPCI		1		208/60			
	Carnes			2		208/60			
Microwave	GE	JE1460WF02	2004	1		120/60			
Refrigerator	GE	GTS18HBMDRWW		1		110/60			
Dishwasher	Hotpoint	HDA3230205WW		1		120/60			5.2 amps
Airdryer for Stats	Hanhinson	HPR10		1		115/60/1			
Boiler Pump Motors	Armstrong	40H56BHH170795P		2		115/208/230/60/1Phase			3/4HP
Hot Water Heater	Rheem	41VRP50N		1	X		40,000BTU		
Lighting	**Brand**	**Model**		**Qty**	**Lamp**	**Wattage**	**Voltage**	**Bulb Number**	
1st Floor Ceiling	Lithonia	A-525.231		35/3ea	Fluor	40w	118/60	40T12	
2nd Floor	Lithonia	A-525.231		34/3ea	Fluor	40w	118/60	40T12	
	Lithonia			8/2ea	Fluor	40w	118/60	40T12	

Plumbing Fixtures									
Toilets				5					
Urinals				1					
Sinks				6					
Showers									

Building	Planned Projects Planned Budgeted Items	Projects Currently Under Investigation by City	Projects for Audit
Public Works Building			
	Boiler Replacement (2008)		Automatic Building Lighting
	Domestic Hot Water (2008)		Timers & Sensors
	Condensing Unit Replacement(2011)		More efficient Heating Sytem
	AC Unit Replacement (2011 & 2013)		Sitting on Water Tank
			More Efficient Window Coverings

Water Vaults

3001 S Golden Rd	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Elec Use	52	38	bill apr	1182	452	250	204	250	466	45	44	51	3034
Elec Cost	$11.91	$9.55		$117.18	$45.92	$30.38	$26.63	$26.49	$49.36	$12.50	$12.84	$13.84	$356.60
1501 Johnson Rd	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Elec Use	69	52	52	40	43	42	38	43	39	41	41	93	593
Elec Cost	$13.40	$10.76	$11.99	$10.89	$11.11	$12.29	$12.13	$8.42	$12.08	$12.17	$12.56	$18.10	$145.90
501 Washington Ave- now	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Elec Use	821	679	636	193	177	85	68	51	54	75	110	550	3499
Elec Cost	$72.39	$62.10	$58.61	$22.27	$20.94	$14.92	$13.69	$8.20	$12.47	$13.97	$17.70	$59.77	$377.03

Other

W 20th St & Lkout mt ster	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Elec Use	571	881	1403	781	177	176	183	165	160	164	166	197	5024
Elec Cost	$52.47	$78.48	$120.90	$69.09	$20.94	$22.27	$23.02	$17.45	$21.05	$20.97	$22.54	$26.61	$495.79
Bonvue Dr & Lookout Mtn Pum	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Elec Use	3790	3736	3385	3501	3441	1551	0				0	0	19404
Elec Cost	$207.95	$213.64	$214.45	$199.79	$222.16	$159.47	$114.86				$25.75	$25.75	$1,383.82

1410 9th st / Old WTP	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Elec Use	2168	2237	1532	1696	1598	1436	1378	bill sept	2849		1550	2466	18910
Elec Cost	$ 178.91	$ 188.64	$ 131.37	$ 141.92	$ 133.30	$ 124.00	$ 119.98		$ 243.12		$ 142.96	$ 239.76	$ 1,643.96
Gas Use	522	334	354	269	159	14	5		12		240	510	2419
Gas Cost	$ 445.85	$ 275.34	$ 284.11	$ 220.96	$ 142.30	$ 27.13	$ 19.91		$ 42.85		$ 297.57	$ 571.16	$ 2,327.18

Pumps

411 Defrance Bldg Pump	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Elec Use	10400	6480	8640	8320	8160	17200	24000	20000	20000	15360	9200	11600	159360
Elec Cost	$1,288.48	$918.12	$1,217.31	$1,209.10	$1,195.96	$1,523.90	$1,772.88	$2,467.30	$1,627.66	$1,881.73	$1,259.18	$1,637.35	$17,998.97
S Resivor on 19th	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use	0	0	0	0	0	0	0	0	0	0	0	0	0
Elec Cost	$ 6.94	$ 6.93	$ 6.93	$ 6.93	$ 6.93	$ 7.94	$ 8.20	$ 4.07	$ 8.09	$ 8.09	$ 8.09	$ 8.09	$ 87.23
17755 Rimrock Dr	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use	82	58	73	62	66	63	57	58	58	56	56	74	763
Elec Cost	$ 13.45	$ 10.57	$ 12.85	$ 11.85	$ 12.16	$ 13.15	$ 12.84	$ 8.78	$ 12.80	$ 12.48	$ 12.98	$ 15.04	$ 148.95
4695 Hwy 93	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use	15209	7713	8863	7525	7641	15679	19620	17775	19052	12809	7871	11642	151399
Elec Cost	$2,056.24	$1,319.45	$1,358.77	$1,225.63	$1,147.26	$1,704.31	$1,882.90	$1,819.52	$1,863.21	$1,607.05	$1,486.28	$1,854.07	$19,324.69
1701 22nd Bldg Pump	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use	32000	32400	31200	33600	39200	82000	115200	68800	92400	49200	32800	8400	617200
Elec Cost	$2,557.32	$2,634.53	$2,592.25	$2,623.50	$4,160.97	$5,769.82	$8,392.99	$6,116.04	$7,422.12	$4,506.84	$4,223.12	$4,627.83	$55,627.33
Water Tower No. Table Hwy 93	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use	0	0	0	0	0	0	0	0	0	0	0	0	0
Elec Cost	$6.74	$5.61	$6.73	$6.73	$6.73	$7.81	$7.97	$3.83	$7.85	$7.85	$7.85	$7.85	$83.55
12456 Hwy 40	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use	6208	7584				6214		6510		bill nov	4757	6981	38254
Elec Cost		$665.99				$498.14		$516.24			$560.71	$644.59	$2,885.67
2175 Lookout Mtn Rd	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use					4000	0		720	9640	3440	2920	5200	25920
Elec Cost					$216.35	$156.05		$182.70	$569.97	$275.57	$256.55	$415.11	$2,072.30
11630 hwy 40	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use											2965	8295	11260
Elec Cost											$306.41	$821.79	$1,128.20

Water Tower-no table mtn-off is the same as Water Tower No. Table Hwy 93- so I updated the name- per conversation w. Will Stambaugh

Water Treatment Plant

Water Treatment Plant	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Elec Use	181930	159373	bill apr	314715	161898	234245	307623	315371	274096	214228	189824	199727	2553030
Elec Cost	$11,411.53	$11,142.72		$21,968.93	$10,881.46	$15,695.12	$18,967.17	$19,287.70	$16,461.54	$13,765.07	$12,603.60	$15,604.27	$167,789.11
Gas Use	5173	3681	3575	3118	1785	352	153	108	95	383	2176	5308	25907
Gas Cost	$4,298.19	$2,907.95	$2,730.91	$2,385.55	$1,425.24	$300.22	$139.68	$110.15	$104.71	$422.08	$2,484.65	$5,990.63	$23,299.96

Welch Ditch/Irrigation

1445-A 10th Sed Basin	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Elec Use													
Elec Cost													
Gas Use								0	0		1758	3498	5256
Gas Cost								$10.25	$15.85		$2,063.11	$3,859.03	$5,948.24

Water Treatment Plant

		Pump				Motor	
Unit	Type	Brand	Model	Installed	Electrical	Brand	Model
Raw Water Pumps							
#1 40HP	One VFD can	Fairbanks Morse	K3X2-071295-2	rewound 9/24/04	460 3 Phase	General Electric	5KS364DPS7415
#2 40 HP	run any pump.	Fairbanks Morse	K3X2-071295-0		460 3 Phase	General Electric	5KS364DPS7415
#3 40 HP	Other 2 direct drive	Fairbanks Morse	K3X2-071295-1		460 3 Phase	General Electric	5KS364DPS7415
High service Pumps							
#1 125 HP		US Motors	AA77	7/23/2001	460 3 Phase	Ingersoll Dresser	12M90A-6
#2 125 HP		US Motors	9982A	2001-2002?	460 3 Phase	Ingersoll Dresser	12M90A-7
#3 125 HP		US Motors	AA88	2001-2002?	460 3 Phase	Ingersoll Dresser	12M90A-8
#4 125 HP		US Motors	AA79A	2001-2002?	460 3 Phase	Ingersoll Dresser	14M
#5 250 HP	VFD	US Motors	R489A	rebuilt 9/24/04	460 3 Phase	Ingersoll Dresser	14M
#6 250 HP	VFD	General Electric	5K447DT6633	rewound 9/1/04	460 3 Phase	Johnston Pumps	96JA2901
Backwash Pump							
140 HP		ABS	AFP3001		460 3 Phase	ABS	M1040/6-55.60
Backwash Basin Sludge pumps							
#1 5 HP		Aurora	9704690		230 3 Phase	General Electric	5KS1010DBL3046
#2 5 HP		Aurora	Unknown		230 3 Phase	General Electric	5KS1010DBL3046
Backwash Basin Decant Pumps							
#1 15 HP		Aurora	9104689		230 3 Phase	General Electric	5KS284QNL6022
#2 15 HP		Aurora	9708748		230 3 Phase	US Electric	G42239A/A06A11101195
Sed Basin Sludge Pumps							
#1 7.5 HP		Aurora	97-04690	rebuilt 2/18/05	230 3 Phase	General Electric	5KS1010DBL3046
#2 7.5 HP		Aurora	97-03736-1	rebuilt 3/3/04	230 3 Phase	General Electric	Unknown
Thickener Sludge Pumps							
A 5 HP	One VFD can	Moyno	IE012G1-CDO		460 3 Phase	Baldor	CVDM56151
B 5 HP	run either pump	Nemo/Netzsch	NM053S4		460 3 Phase	Marathon	8VC184TTDR6026ENL
Flash Mixers							
#1 10 HP		N/A		2004	230 3 Phase	Reliance Electric	6890591 L001HH
#2 10 HP		N/A		2005	230 3 Phase	Reliance Electric	6890591 L001HH
Air Scour Blower			Blower				
#1 75 HP		Gardner Denver	911399 815-1-0-4-0-0-AAD		460 3 Phase	General Electric	5KS365BL115B
Floc Basin Mixers	18 motors total						
#1-18 1.5 HP	VFD for Sets of three	N/A		Replace as needed	230 3 Phase	Reliance Electric	P14X3254R-NW

Water Treatment Plant

System Pumps							
Welch Ditch							
50 HP	Variable Speed Induct	Baldor	324 HPZ				
50 HP	Variable Speed Induct	Baldor	324 HPZ				
100 HP	Induction	Baldor	404 HPZ				
100 HP	Induction	Baldor	404 HPZ				
411 Defrance							
75 HP	Induction	U.S	364 TS	2000	460 / 3 PH		
75 HP	Induction	U.S	364 TS	2000	460 / 3 PH		
4695 Hwy 93							
75 HP	Induction	U.S	364 TS	1998			
75 HP	Induction	U.S	364 TS	1998			
40 HP	Induction	Baldor	286 TS				
40 HP	Induction	Baldor	286 TS				
125 HP	Induction	U.S	R 323				
1701 22nd							
125 HP	Induction	U.S	R 323	1997	480 / 3 PH		
125 HP	Induction	U.S	R 323	1997			
125 HP	Induction	U.S	R 323	1997			
2175 Lookout Mtn. Rd							
7.5 HP	Variable Speed Induct	Baldor	184 T ODP	2005	480 / 3 PH		
7.5 HP	Variable Speed Induct	Baldor	184 T ODP	2005	480 / 3 PH		
40 HP	Variable Speed Induct	Baldor	344A ODP	2005	480 / 3 PH		

Splash Water Park

3151 Illinois St.

Total Square Footage:

Total Lot Square Footage:

Contents:

Occupancy:

Construction:

Roof:

Units	Brand	Model	Install	Qty	Nat Gas	Electrical	Heating	Cooling	Motor
HVAC									
Bath House									
Electric Duct Heaters	Indeeco		May-02			X			
Electric Unit Heaters	Berko	HUHAA Series	May-02	1		X	208/240		
Radiant Ceiling Panels	Berko		May-02	10		X	208/240		
Concessions									
Wall Heater	Berko	FRC(Model C)	May-02	2		X	3/240 2000/1500W		
Fee Concession Bldg	Carrier	38TRA048340	May-02	1		X	208/230		1/5 HP
Swamp Cooler	Essich Air	M56/660	May-02	1		X	115V		3/4 HP
Exhaust Fans-									
Bath House									
Fans	Greenheck	BSQ Belt Drive	May-02						
Concessions									
SP Fan	Greenheck		May-02						
Pump House	Greenheck		May-02			X			
Domestic Hot Water									
Bath House	State	1100400Neasme	May-02	1	X		390,000BTU		
Splash Pad Showers	State	SB620LIFE	May-02	1		X	240V 6,000 BTU		
Fee/Concession Bldg	Rheem	UIVRP410N	May-06	1	X		40,000 BTU		

Kitchen Appliances									
Micro Wave Ovens	Panasonic	NE1056	May-02	1	120V/60HZ/1PH				
Refrigerated Counter	Delfield	4427N-6	May-02	1					1/5 HP
Refrigerated Counter	Delfield	4448N	May-02	1					1/5 HP
Freezer	Delfield	VFR2-S	May-02	1					3/4 HP
Refrigerator	Delfield	VRR2-S	May-02	1					1/2 HP
Ice Makers	Hoshizaki	KM-630MAH	May-02	1	208-230V/60/1				
Under Counter Refrigerator	Delfield	406-CA	May-02	1					1/5 HP
1 Litre Blender	Waring		May-02	1		120V/50HZ			
Shaved Ice Machine	Gold Medal	1027	May-02	1					1/3 HP
Warming Drawer	Hatco	HDW-2N	May-02	1	900W/7.5 amps				
Hot Dog Grill	Star	45SABB	May-02	1		120v			
Food Warmer	Wells	SW-10T			120V/1PH/825W				
Pool Boilers									
Leisure Pool	RBI	MK74792	May-07	2	X		1,970,000BTU		
Lap Pool	Teledyne Laars	AP1825I	May-02	1	X		825,000BTU		
Pool Pumps									
Leisure Pool									
Circulation	Baldor	JMM4110T	May-02	1		230/460	98/49AMP/3P		40 HP
	Bell/Gosset	M74792	May-05	2		115/230	7.0/3.5AMP		3/4 HP
Lap Pool									
Circulation	US Electric	B562A	May-02	1		208/230/460	97.6/48.8 Amp		30 HP
Recirculation Pump	Bell/Gosset	COF56A17070	May-02	1					3/4HP
Splash Pads	US Electric	AF45A	May-02	1		208/230/460			7.5HP
Water Features	US Electric	B562A	May-02	1		208/230/460			30HP
Tube Slide	Aurora	13EA Turbine	May-02	1					40HP
Body Slilde	Aurora	12RL Turbine	May-02	1					15HP
Sump Pumps									
Bath House	Weil	2-1413				460v/3ph			1 1/2 HP
Mechanical	Aurora	Hydromatic	May-02	1					
Eye Wash Pump	Taco	006-B4				115V	.52 Amp		1/4 HP

Lighting	Brand	Model	Install	Qty	Lamp	Wattage	Voltage	Bulb Number
Metalux	Cooper	2EP3GAX340	May-02	10	Four		120	F32T8/35K
Flag Pole	ALL	SLO3-S)	May-02	2	MH			
Metalux	Cooper	SNL225	May-02	29	Flour		120	F32T8/735
Metalux	Cooper	SS232	May-02	24	Flour		120	FO32T8
Flood Light	ALL	Fl-04	May-02	4	MH	70	120	70WMH
Portfolio	Cooper	C622E-628/L3	May-02	10	C-Flour	18	120	18WQuad
Metalux	Cooper	VT2-232DR	May-02	20	Flour		120	F32T8/35K
Metalux	Cooper	2RD1-2BX40RP	May-02	8	Flour		120	F32T8/35K
Metalux	Cooper	2M-432A-125	May-02	13	Flour		120	F32T8/35K
Cambria	Cooper	206BK	May-02	11		35	12	12VMR11
Shaper Lighting	Cooper	682-11	May-02	26	MH	70	120	70WMH
Shaper Lighting	Cooper	687-WP	May-02	4	MH	70	120	70WMH
Column Lights		EC-12TWO-RC-	May-02	7	Incad	60	120	60W
Shaper Lighting	Cooper	662CF2/26	May-02	4	C-Flour	26	120	F26DTT
Street Lighting	GE Lighting	RRTS25SA67.0	May-02	6	HPS	250		250HPS
Restroom Fixtures								
Showers				18				
Toilets				16				
Urinals				3				
Sinks				15				

Splash Bldgs	Jan. 06	Feb. 06	Mar. 06	April. 06	May. 06	June. 06	July. 06	August. 06	Sept. 06	Oct. 06	Nov. 06	Dec. 06	Total
Gas Use	97	***	***	***	48	285	341	284	176	71	65	106	1473
Gas Cost	$ 130.40				$ 394.19	$ 227.47	$ 253.22	$ 215.00	$ 165.43	$ 68.93	$ 64.44	$ 107.27	$ 1,626.35
Electric Use	10640	10880	8880	8240	6640	8720	8480	9520	10240	7760	9760	estimates	99760
Electric Cost	$ 794.67	$ 808.13	$ 739.55	$ 672.90	$ 553.66	$ 861.33	$ 671.24	$ 708.09	$ 722.54	$ 573.85	$ 613.69	estimates	$ 7,719.65
Billed Demand	276.54	301.68	314.25	276.54	276.54	307.83	343.75	344.75	343.75	286.06	263.97	estimates	
Secondary Gen	55.64	56.33	50.57	48.73	44.12	49.42	50.11	52.42	54.49	47.35	53.11	estimates	
Demand	22	24	25	22	22	23	25	25	25	22	21	estimates	
Splash Pool	**Jan. 06**	**Feb. 06**	**Mar. 06**	**April. 06**	**May. 06**	**June. 06**	**July. 06**	**August. 06**	**Sept. 06**	**Oct. 06**	**Nov. 06**	**Dec. 06**	**Total**
Gas Use	no gas	no gas	no gas	no gas	3646	9994	9922	8125	8748	4362	no gas	estimates	44797
Gas Cost					$ 2,731.55	$ 6,928.00	$ 6,761.00	$ 5,578.51	$ 6,814.11	$ 2,940.00		estimates	$ 31,753.17
Electric Use	11680	3840	3360	3840	15200	47360	48960	48480	42080	14880	4160	estimates	243840
Electric Cost	$ 643.40	$ 288.06	$ 249.90	$ 297.43	$ 1,881.65	$ 3,188.33	$ 3,236.71	$ 3,231.49	$ 2,953.75	$ 936.00	$ 303.93	estimates	$ 17,210.65
Billed Demand	$ 75.42	$ 75.42	$ 75.42	$ 100.50	$ 1,244.43	$ 1,498.98	$ 1,498.75	$ 1,498.75	$ 1,512.50	$ 416.08	$ 138.27	estimates	
Secondary Gen	$ 58.64	$ 36.06	$ 34.68	$ 36.06	$ 68.78	$ 161.40	$ 166.00	$ 164.62	$ 146.19	$ 67.85	$ 36.98	estimates	
Demand	6	6	6	8	99	112	109	109	110	32	11	estimates	

Splash Bldgs	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Electric Use	11200	11360	8480	7600	7280	9760	10160	8800	8560	5680	7040	11200	107120
Electric Cost	$687.25	$719.57	$591.76	$535.52	$599.70	$725.41	$736.41	$747.28	$625.22	$459.30	$607.92	$884.22	$7,919.56
Gas Use	161	102	bill apr	183	85	310	346	255	131	22	32	168	1795
Gas Cost	$148.49	$95.15		$170.84	$84.40	$264.96	$297.96	$241.07	$139.42	$39.43	$53.05	$201.03	$1,735.80
Splash Pool	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Electric Use	4320	4160	3680	3680	24960	51040	51040	44480	36480	3680	0	0	227520
Electric Cost	$237.05	$268.13	$251.22	$271.76	$2,384.43	$3,245.01	$3,235.12	$3,058.04	$2,776.52	$283.38	$161.61	$161.61	$16,333.88
Gas Use				0		7891	19712	8719	6349	0	0	0	42671
Gas Cost				$31.67		$6,449.85	$15,862.64	$7,721.07	$6,005.07	$15.85	$15.85	$15.85	$36,117.85

Tony Grampsas Gymnasium

4471 Salvia St.

Total Square Footage:

Contents:

Construction:

Roof:

Total Lot Square Footage:

Occupancy:

Units	Brand	Model	Install	Qty	N-Gas	Electrical	Heating	Cooling	Motor
HVAC									
Roof Top Unit #1	Trane	YCH210C3HBEA	2006	1	X	208/230360/3	350,000BTU		
Roof Top Unit #2	Trane	YCH210C3HBEA	2006	1	X	208/230/60/3	350,000BTU		
Office Unit	Fujitsu	AOU9C1	2006	1		115/60/1		9400BTU	Fan 0.6amp
Exhaust Fans-	Loren Cook	100C3B		1		115/60/1			1/4 HP
Domestic Hot Water Heater	A.O. Smith	DEL20102	1992	1		220/240	20 Gallon		
Lighting	**Brand**	**Model**	**Install**	**Qty**	**Lamp**	**Wattage**	**Bulb Number**		
Storage	Lithonia		1992	4/2ea	Fluor	40w	T1240		
Office/Hall	Lithonia		1992	7/4ea	Fluor	40w	T1240		
Gym			1992	15	MH	400w	MP400-C-BU		
Restrooms	Lithonia		1992	4/2ea	Fluor	40w	T1240		
Exterior		Wallpach	1992	6	MH	250	MH250/U		
Park Lighting									
Parking Lot				6					
Ball Fields				40					
Picnic Shelters				8					
Restrooms				4					
Scoreboards				3					
Exhaust Fans				3					
North Panel Light				1					

Plumbing Fixtures									
Toilets				5					
Urinals				1					
Sinks				4					
Showers				0					

Building	Planned Projects Planned Budgeted Items	Projects Currently Under Investigation by City	Projects for Audit
Tony Grampsas Gymnasium	HVAC Rooftop Units (2017)		Exterior Lighting
			Interior Lighting

Tony Grampsas				
4471 Salvia St	**Jan. 07**	**Feb. 07**	**Mar. 07**	**April. 07**
Elec Use	11440	9120	8240	8160
Elec Cost	$841.22	$817.56	$844.62	$814.13
Gas Use	1561	187	497	357
Gas Cost	$1,267.07	$174.35	$443.28	$293.13

4471 Salvia St	**Jan. 06**	**Feb. 06**	**Mar. 06**	**April. 06**	**May. 06**	**June. 06**	**July. 06**	**August. 06**	**Sept. 06**	**Oct. 06**	**Nov. 06**	**Dec. 06**	**Total**
Elec Use	6400	5560	6560	8800	10960	13240	12040	9440	6360	4960	4640	7720	96680
Elec Cost	$ 524.29	$ 448.54	$ 764.05	$ 803.46	$ 904.21	$ 1,072.69	$ 1,088.24	$ 967.80	$ 882.97	$ 651.60	$ 627.27	$ 643.90	$ 9,379.02
Gas Use	887	1079	888	275	175	12	2	1	64	273	583	680	4919
Gas Cost	$ 1,067.03	$ 1,157.85	$ 821.08	$ 242.68	$ 151.30	$ 29.17	$ 22.20	$ 21.54	$ 72.05	$ 197.69	$ 419.72	$ 578.40	$ 4,780.71

4471 Salvia St	**Jan. 05**	**Feb. 05**	**Mar. 05**	**April. 05**	**May. 05**	**June. 05**	**July. 05**	**Aug. 05**	**Sept. 05**	**Oct. 05**	**Nov. 05**	**Dec. 05**	**Total**
Elec Use	5680	6080	5200	4320	4240	2600	2480	2720	3360	3240	3920	8120	51960
Elec Cost	$442.69	$507.22	$423.46	$385.03	$314.54	$194.70	$297.90	$286.35	$310.85	$297.13	$434.20	$734.08	$4,628.15
Gas Use	1064	881	728	586	626	303	99	155	204	239	489	1166	6540
Gas Cost	$892.34	$699.34	$567.12	$462.64	$513.03	$260.32	$96.50	$153.92	$208.69	$272.24	$587.04	$1,295.24	$6,008.42

Ulysses Ball Fields

1205 Ulysses

Total Square Footage:
Contents:
Construction:
Roof:

Total Lot Square Footage:
Occupancy: B - Office

Units	Brand	Model	Install	Qty	Nat Gas	Electrical	Heating	Cooling	Motor
Heating System									
Restrooms		Electric		1					
Concessions		Electric		1					
Tower									
Garage									
Chase		Electric		1					
Exhaust Fans-				1					
Hair/Hand Dryers				2					
Lighting	**Brand**	**Model**	**Install**	**Qty**	**Lamp**	**Wattage**	**Voltage**	**Bulb Number**	
Concessions				15					
White Cover				1					
Clear Cover				1					
Clear Cover									
Exterior Building Lights									
Chase Lighting									
Restroom									
Parking Lot				8	HPS	400			
Path Lighting									
Old Fixture				17	HPS	100			
New Fixture				5	HPS	100			

Scoreboards				4					
Batting Cage									
Exterior Lights				6					
Pitching Machines									
Office									
Plumbing Fixtures									
Toilets				5					
Urinals				1					
Sinks				2					

Building	Planned Projects Planned Budgeted Items	Projects Currently Under Investigation by City	Projects for Audit
Public Works Building			
	Boiler Replacement (2008)		Automatic Building Lighting
	Domestic Hot Water (2008)		Timers & Sensors
	Condensing Unit Replacement(2011)		More efficient Heating Sytem
	AC Unit Replacement (2011 & 2013)		Sitting on Water Tank
			More Efficient Window Coverings

1206 Ulysses Bldg	Jan. 07	Feb. 07	Mar. 07	April. 07
Elec Use	est- rebill	1320	3000	4520
Elec Cost	feb	$2,021.76	$1,183.28	$1,244.02

1206 Ulysses Bldg	Jan. 06	Feb. 06	Mar. 06	April. 06	May. 06	June. 06	July. 06	August. 06	Sept. 06	Oct. 06	Nov. 06	Dec. 06	Total
Elec Use	3360	2960	4120	3360	3640	3920	4440	3560	3680	2360	not in	5120	40520
Elec Cost	$ 242.80	$ 231.58	$ 1,160.60	$ 1,142.28	$ 1,119.11	$ 1,153.32	$ 1,412.24	$ 1,194.94	$ 1,193.33	$ 1,173.12		$ 1,873.73	$ 11,897.05

1206 Ulysses Bldg	Jan. 05	Feb. 05	Mar. 05	April. 05	May. 05	June. 05	July. 05	Aug. 05	Sept. 05	Oct. 05	Nov. 05	Dec. 05	Total
Elec Use	375	322	bill apr	1120	805	878	941	754	786	803	446	353	7583
Elec Cost	$37.12	$33.08		$103.78	$70.59	$78.56	$84.59	$65.20	$71.82	$71.25	$46.63	$41.26	$703.88

Energy and Water Cost & Consumption Information*

City of Golden

January 2006 - December 2006

Building Name	Area (sf)	Electricity Cost ($/yr)	Natural Gas Cost ($/yr)	Total Energy Cost ($/yr)	Total Energy Cost per SF ($/sf/yr)
City Hall	20,937	$38,593	$14,323	$52,916	$2.53
Community Center	71,483	$133,588	$72,527	$206,114	$2.88
Fossil Trace Golf Club	18,358	$45,442	$6,769	$52,211	$2.84
Fire Station #4	5,257	$5,017	$1,900	$6,917	$1.32
Splash Pool	N/A	$17,211	$31,753	$48,964	N/A
Water Treatment Plant	16,590	$175,344	$25,441	$200,785	$12.10
Fossil Trace Pumps	N/A	$28,610	$0	$28,610	N/A
Total/Average	132,625	$443,805	$152,713	$596,518	$4.50

January 2006 - December 2006

Building Name	Electricity (kBtu/SF/yr)	Electricity ($/SF/yr)	Nat. Gas (kBtu/SF/yr)	Nat. Gas ($/SF/yr)	Total (kBtu/SF/yr)	Total ($/SF/yr)
City Hall	92.2	$ 1.84	93.8	$ 0.68	186.0	$ 2.53
Community Center	98.6	$ 1.87	13.6	$ 1.01	112.2	$ 2.88
Fossil Trace Golf Club	132.2	$ 2.48	49.8	$ 0.37	182.0	$ 2.84
Fire Station #4	38.1	$ 0.95	35.8	$ 0.36	74.0	$ 1.32
Splash Pool	N/A	N/A	N/A	N/A	N/A	N/A
Water Treatment Plant	562.3	$ 10.57	166.5	$ 1.53	728.8	$ 12.10
Fossil Trace Pumps	N/A	N/A	N/A	N/A	N/A	N/A
Average	168.8	$ 3.35	78.0	$ 1.15	246.8	$ 4.50

Annual Energy Usage **January 2006 - December 2006**

Building Name	Area (sf)	Electricity use (kWh)	Natural Gas use (Therms)
City Hall	20,937	565,460	19,642
Community Center	71,483	2,066,170	9,690
Fossil Trace Golf Club	18,358	711,360	9,143
Fire Station #4	5,257	58,748	1,884
Splash Pool	N/A	243,840	44,797
Water Treatment Plant	16,590	2,734,134	27,620
Fossil Trace Pumps	N/A	182,320	N/A
Total	132,625	6,562,032	112,776

January 2006 - December 2006

Building Name	Blended electricity cost ($/kWh)	Average natural gas cost ($/Therm)
City Hall	$0.068	$0.729
Community Center	$0.065	$7.485
Fossil Trace Golf Club	$0.064	$0.740
Fire Station #4	$0.085	$1.009
Splash Pool	$0.071	$0.709
Water Treatment Plant	$0.064	$0.921
Fossil Trace Pumps	$0.157	N/A
Total Average	$0.068	$1.354

***Note: The water treatment plant is connected to the public works building, which does not give a clear break out of the $/SF/yr. Also during the community center's pool and locker room remodel 3 boilers and 6 pool pumps were shut down in August and September of 2006 resulting in the misrepresentation of its $/SF/yr numbers.**

Past Energy Improvement Efforts

While the City has not commissioned an energy audit or implemented a coordinated City-wide effort to increase efficiency and/or saver energy, every department has instituted programs and policies on an ad hoc basis, many of which have resulted in substantial improvements. These measures are described below.

STREETS DIVISION

- Public Works Streets Division recycles all used concrete and asphalt.
- Streets uses recycled asphalt in alleys.
- Stormwater Maintenance has been retrofitting inlets with additional manholes to reduce the amount of time the vacuum truck spends cleaning individual inlets.
- Streets Division's rubberized crack seal material is made from pulverized recycled tires.
- Four signalized intersections were replaced with traffic circles there by eliminating energy required to operate the signals and also reduced the amount of time vehicles spend idling at a traffic light.
- Leaves from fall street sweeping are composted and diverted from taking up space in a landfill.
- Re-faces faded traffic signs with new sheeting rather than purchasing new signs.
- Has an agreement with a nearby property owner to dispose of spoils materials (dirt, sand sweepings, etc.) rather than taking it to the landfill.
- Stormwater Div. has installed "Drains to Clear Creek" identification markers with ID numbers to all City inlets.
- Uses volunteers for all of our "Adopt-A-Programs", including channel maintenance.
- Stresses the practice of conserving energy at work just as you would at your home. "Close the doors and turn out the lights". "Don't let vehicle idle longer than necessary".
- Utilizes maps to conserve fuel when working in our 6 major areas to make sure we have inspected all streets while in that particular area.
- The street sweepers (3) use "non-potable water" for all of there operations. The Stormwater Div. uses non-potable water in the Vac-Con when cleaning inlets.
- Three of the six snowplows use an alternative de-icing agent (Ice-Slicer) that completely melts and requires no sweeping. It works faster and lasts longer than traditional salt and is less corrosive.
- Participates in the Regional Air Quality Council Program whose goal is to reduce particulate emissions through salt/sand application reductions and better sweeping practices after snow/ice events.
- Streets does a tremendous amount of sweeping that is a proven practice to remove pollutants from the storm sewer system before being discharged to Clear Creek – they can provide additional statistics
- The Stormwater/Drainage Maintenance performs thousands of inspections annually to ensure the long-term operability of drainage and stormwater quality structures – Dave Ackley can provide additional stats
- The Street Division oversees the Adopt-a-Street and Adopt-a-Spot programs to re-divert litter back to the landfill and keeps it out of waterways
- The Street Division follows procedural manuals for street sweeping, snow removal and storm drainage which all have environmental components to protect resources and minimize pollution

UTILITIES DIVISION

- Constructed the Raw Water Pump Station to deliver untreated water to the Golf Course and Lions Park for irrigation purposes. Saves the chemicals, time and energy of treating the water for irrigation.
- Utilizes cured in place pipe for sewer repair when possible. Allows sewer pipes to be repaired without having to use heavy equipment to dig up and re bury the pipe.
- Utilities purchases recycled concrete to use as fill
- The north water line was replaced to conserve hundreds of thousands of gallons of water that was lost each year to the leaking pipe. (9/21/99 thru 9/25/99 total water loss was 370,000 gallons)
- Manual read water meters have been replaced with touch read meters that reduce the amount of driving required to read the meters. One employee can read several times the number of meters in the same work period. This system also reduces injuries due to opening pits, back problems, spider bites, dog problems, etc.
- The Inflow and Infiltration efforts have reduced the amount of water entering the sanitary sewer system due to storm events thus preventing the use of energy by Coors to treat wastewater delivered by Golden
- Improvements to the Rimrock Water Tank allowed the city to maintain water levels (cycle tank) as well as prevent the city from wasting water at the tank due to flushing operations utilized to prevent stale water.
- Purchase crew cab vehicle for Water Resource personnel. One vehicle instead of two to offsite facilities when more than two employees are needed.
- Utilize solar power to power telemetry units at remote stations. Guanella groundwater monitoring, 6260 Tank, 6400 Tank, etc.
- Aggressive replacement of old water and sewer mains saves in treatment costs at both ends. We don't treat as much potable water and we don't pay to treat as much wastewater. Utilities follows a preventive maintenance program to ensure the operability of the sanitary sewer system. This maintenance program results in fewer backups, minimizing the potential for sewerage to enter, or pollute, waterways.
- Utilities staff obtain Wastewater Technician Certification from AWWA which includes training to detect infiltration from cracked pipe as well as recognize improper or illegal sanitary sewer connections to storm sewer pipes

ENVIRONMENTAL SERVICES

- The City has developed a water conservation plan
- City has provided irrigation audits to citizens to promote water conservation
- The City has Xeriscape demonstration gardens that are examples to the public of low water use gardens.
- The city promotes water conservation and education through seminars, informational brochures and the city website.
- The city encourages environmental landscaping which reduces the use of gas powered landscaping equipment
- The Environmental Laboratory phased out the use of the Atomic Absorption Spectrophotometer that only allowed the analysis of one sample for one analyte at a time. This instrument required a lot of time and power to analyze samples. This instrument was replaced with an ICP instrument that can rapidly analyze for multiple metals in a sample in a much shorter amount of time.

- A proactive construction site erosion and sediment control program that catches problems early, before pollutants have a significant impact on the storm sewer system and subsequent waterways. This also minimizes the impact that restoration and reclamation efforts may have.
- Requires native species in reclamation seed mixes and organic soil amendments for revegetation projects to promote healthy ecosystems and minimize the use of non-native species that can out compete natives.
- Holds developers accountable for weed management and establishment of vegetation following reclamation of disturbed areas associated with construction
- Implements a permanent water quality program to minimize impact of new development and redevelopment, including the promotion of sustainable practices such as (stormwater infiltration) diverting hard surface parking areas to drain through vegetated areas to help remove pollutants and minimize runoff
- A founding member of the Colorado Stormwater Council – a non-profit organization representing stormwater permit holders to address regulatory concerns as well as new technologies and public education
- The Environmental Services Division acts as a city-wide resource for all environmental concerns, questions or issues (internal and community-wide). Holds regular employee training on pollution prevention techniques and reporting environmental concerns
- Maintains web information and a phone listing under Environmental Questions and Recycling Information for the public
- The City was chosen as a DRCOG Stormwater Case Study used to inform other municipalities on how to implement a stormwater program to meet upcoming stormwater requirements
- The City is a founding member of Upper Clear Creek Watershed Association – a 208 Management Agency, and has been an active voting member since 1993.
- The City is an active participant on the Rooney Road Recycling Center Board of Directors. The Center is managed and supported by Golden in conjunction with eight other entities. The Center offers, or has offered, household recycling, tree limb disposal, electronic waste recycling, household chemical disposal, disposal for small quantity generators, and HazMart (where citizens can pick up new or barely used products, to avoid purchasing more product than they may need).
- Produces and distributes educational brochures
- Produces and distributes, in conjunction with the WTP, an annual Consumer Confidence Report/Water Quality Report
- Engaged Boy Scouts and elementary school students in storm drain marking programs
- Hosts and/or participates in various public education events including Earth Day, kayak course races, Splash Dog Run/Walk, classroom presentations, creek side presentations, annual Earth Day Art Show, school water quality monitoring projects, high school mentoring, facility tours, Xeriscape seminar and garden tour, Composting seminar
- Was recognized by APWA for a Community Leadership Project partnership with the Denver Zoo to promote stormwater quality
- Promotes stormwater pollution prevention practices to businesses within the community
- Developed a database to track incidences of illegal dumping so that trends can be revealed to target public education efforts and repeat offenders can be adequately addressed
- Implemented use of a computer database to reduce the amount of paper generated by different programs in environmental services.
- Monitoring water quality at Fossil Trace Golf Club.

WATER TREATMENT PLANT

- Sludge generated by the water treatment plant is taken to a local facility to be composted.
- The water plant changed the sludge centrifuge process to a belt press. The belt press requires a much smaller motor and thus much less energy to operate.
- The following plans and programs guide pollution prevention measures in the operation of the WTP: the Plant has a Risk Management Plan for Chlorine; is a certified Level 3 participant in the Partnership for Safe Drinking Water (certification involved an extensive evaluation and development of SOPs, including chemical and materials handling); secondary containment exists for liquid chemicals and indoor storage is provided for storage of all other chemicals; spill response kits are kept at strategic locations on site.
- In Sept. 2003, The WTP changed disinfectant from 100% chlorine to sodium hypochlorite which greatly reduced the possibility of any dangerous spills/leaks which could endanger Golden Citizens and/or the environment.
- All of the water used for washing filters, sampling, and other plant operations is recycled and reused. It is not discharged as waste.
- High Efficiency fluorescent lights were installed in the new cover for the sedimentation basin. Existing fluorescent lighting fixtures are being replaced with high efficiency fixtures as the old fixtures fail.

BUILDING DIVISION

- The city has adopted the 2006 International Energy Conservation Code that promotes the use of conservation measures
- The 2006 building code allows expanded use of engineered wood products that helps reduces pressures on old growth timber forests.

MISCELLANEOUS PUBLIC WORKS

- Changed City traffic signal and pedestrian crossing bulbs to LED (Light Emitting Diode) fixtures that use 90% less energy than the previous incandescent bulbs.
- Reclaimed an old landfill site by encapsulating flash and other hazardous debris and converting it into holes 11 thru 15 at the golf course, thus safeguarding a groundwater aquifer recharge area.
- We re-used some of the old steel railing from the Clear Creek Trail at Ford Street at four locations on the golf course project that are adjacent to steep drop-offs.
- The new flashing speed sign installed on 19th Street at Golden Ford is solar-powered.
- The old Jefferson County landfill on Rooney Road is being turned into synthetic turf athletic fields, proving recreation without requiring irrigated turf.
- A storm manhole at 20th & Jackson was converted to a drop manhole, which traps sediment before it can be discharged into receiving waters.
- Under our revised Street and Drainage Specifications, providing stormwater quality improvements is required as a condition of granting the full detention exemption.
- The Geographical Information System (GIS) helps maximize fuel efficiency by helping to create an efficient driving route before leaving the office.
- GIS minimizes the need to drive out and look at different utility assets by providing pertinent information in the office.
- The city has installed solar powered stormwater monitoring equipment, telemetry for the water distribution system and a speed limit sign on 19th.

- Construction of Fossil Trace Golf Course resulted in creating more wetlands which provided habitat for wildlife and helps to remove pollutants from stormwater runoff.
- The use of cell phones in the last 15 years has helped to reduce the number of trips from the field to the office to make a phone call. It allows for the additional combination of trips.
- The City participated in a recycling program that is a collaboration between the city, Coors Brewing and Ball Corporation.
- All the systems, including the storm sewer, have been mapped and GPS'd. This enables staff to trace illicit discharges, improper connections and illegal dumping quickly and effectively.
- Pollution prevention, spill prevention, materials handling and proper disposal procedures are implemented by every City department to minimize pollution of receiving waters.
- All Public Works staff receive regular training to detect threats to water quality including illicit connections and illegal dumping to the storm sewer system and how to respond and report to such occurrences
- Engineering incorporates water quality into the design and construction of all capital projects
- Cartegraph/work management to auto-generate inspections, correspondence to maintain proactive maintenance schedules

FLEET DIVISION

- Preventative maintenance program for the city fleet of vehicles helps prevent leaks and keeps vehicles operating as efficient as possible
- The Fleet Maintenance Division has the following practices in place to minimize pollution: no outdoor storage areas exist for fleet maintenance; fuel tanks are covered with secondary containment and tertiary containment; less toxic chemical alternatives are used whenever possible; parts, fluids, etc. are recycled when possible, otherwise they are properly disposed.
- The automatic gates at the Cemetery and the Cliffs were all converted to solar power.
- The Cities used motor oil is recycled into burner fuel.
- The Cities used tires are recycled for use in asphalt and other rubber products. (When availability allows).
- We recycle our anti-freeze in house.
- For emissions we use ultra low sulfur diesel and "no sulfur ash" motor oils in all of our equipment.

GOLDEN CEMETERY

- Installed solar powered automatic gates at the cemetery entrances. Previously paid and employee to open and close gates. It was also done by the Golden Police for a while.
- Installed permanent gas and diesel tanks. Was previously hauled from City Shops in five gallon containers.
- Replaced a ¾ ton pickup truck with a small utility vehicle.
- Replaced a tractor with a small utility vehicle.
- Purchased an electric card to transport families, visitors and etc. around the grounds.
- Conserve energy by turning thermostats down at the end of work day.
- Installed energy saving light bulbs throughout offices and shops.
- Installed Computer programmed automatic sprinkler system which waters at night. Previously used up to 80 hoses per day running 8 hours each. Saves millions of gallons annually. System is automatically shut down upon ¼ inch of rainfall.
- Grounds are watered an average of only 20-25 minutes every other night instead of nightly.
- Non burial areas are not watered unless absolutely necessary to prevent the grass from dying.

- Employees are instructed to conserve energy such as shutting off vehicles and lights when not in use.
- Combine trips for supplies and materials to conserve energy and staff time. Trips out of the grounds are limited.
- Completed audit of Cemetery irrigation system in 2006.
- Installing of automatic energy saving thermostats at shop & Office.
- Adding of insulation in shop and office
- Installing of energy saving glass in windows of shop & Office
- Installing of more energy efficient heating system in the office. Currently electric.
- Installing of more efficient lighting fixtures.
- Investigating the use of alternative fuels.
- Investigating & proceeding to convert from City treated water to non-potable water.
- Converting of the present irrigation sprinkler heads to more efficient, energy conscious heads.
- Implementing the recommendations received in the audit of the cemetery irrigation.

FACILITIES MAINTENANCE

- Changed all incandescent light bulbs at the Clear Creek RV Park to the energy efficient Greenlite Swirl Fluorescent
- HVAC System at the Fossil Trace Clubhouse is computerized allowing for monitoring and adjustments at the central Facilities Maintenance Shops, thus avoiding useless trips and the waste of fuel.
- New construction at the Community Center has utilized energy efficient fluorescent lighting. All new lighting is connected to an automated lighting control panel.
- All City Buildings have gone to “Green” chemicals for custodial services.
- Restrooms throughout all City buildings are currently using recycled paper products.
- The Community Center was constructed in a manner to utilize the southern exposure in the pool area. It is also situated to accommodate solar energy if a decision were made to go that route.
- 50% of the exit lights in the Community Center have been changed over to LED lighted signs.
- Currently using delivery services provided by vendors to conserve on fuel and staff time.
- Researched the use of capacitors on large HVAC motors as an energy saving device.
- Securing estimates to place all City HVAC systems on our computer system to enable monitoring and adjustments from Central Facilities.
- Securing estimates to place all of the Community Center lighting on the lighting control panel. This will allow lighting to be turned on and off at designated hours avoiding lights being left on.
- Securing estimates on placing Community Center lighting on sensors to monitor use of the rooms so lights will go off when rooms are not in use.
- Securing estimates on placing Community Center lighting on sensors measuring the amount of light so lights will dim automatically when full lighting power is not needed.
- Have secured preliminary pricing and looking at going to bid on changing the Metal Halide and High Pressure Sodium light fixtures to the more efficient fluorescent lighting.
- New “Shops” will have a computerized HVAC systems allowing for more efficient use and monitoring.
- New “Shops” will be utilizing energy efficient lighting and controls.
- Continue to change out exit lights to LED throughout the City.
- Install Capacitors on all HVAC and pool motors over 15 HP.

FORESTRY DIVISION

- The planting and care of public trees in the City of Golden.
  1. Trees store carbon and release oxygen
  2. Save on energy costs by providing shade for buildings, parking lots and shade valuable air conditioning units.
  3. Save heating costs when protecting buildings from winds.
  4. Filter pollution particles from the City's air.
  5. Save on storm water treatments costs by intercepting rainfall.
- Planting of approximately 150 new plantings per year.
- Encourage City residents to plant trees through the annual tree sale. Approximately 40 additional trees are planted on private property each year through this sale.
- Drip irrigation systems have been installed for watering public trees. Water is being applied into the ground and not the air.
- The City has entered into a collaborative agreement with an independent and non-profit organization to undertake a study of Gulden's community forest with the intention of optimizing the benefits of our trees.

FOSSIL TRACE GOLF CLUB

- Highly efficient state of the art irrigation systems Allows operator to dial in exactly how much water is needed and adjusts sprinkler heads individually according to the "Evapo-Transpiration" rates.
- The "Greens" are built to USGA specs and are designed to maximize water use. This is accomplished by a method that is called a "Perched Water Table".
- There are designated wetlands on the course that are recognized by the State of Colorado. These environmentally friendly areas are very conducive to wildlife habitat and through testing staff have proven that the water is cleaner exiting the golf course that when it entered. This is documented on the City of Golden website by Hope Yu. (Environmental Services)
- Chemicals/fertilizers used on the golf course are used sparingly and soils are tested regularly to ensure safe application practices.
- Utilization of electric golf carts in the rental fleet.
- Staff is trying to incorporate more electric utility vehicles into the fleet and phase out some of the gas powered. Staff is strongly considering other "alternative fuel" powered equipment when it is time for their replacement and as it becomes available.
- Changing incandescent to energy saving fluorescent bulbs.
- Investigating charging electric carts off hours to get better pricing and avoid peak usage.

PARKS DIVISION

- Engaged contemporary cultural practices in the management of turf grass, native vegetation, and pond vegetation control. Cultural applications related to turf grass management include soil testing of park sites and flowerbeds, formulating inorganic fertilizers based on soil test results, mowing height to promote deep root zones, irrigation application to promote deep root zones, core aeration to promote the deterioration of thatch and promote deep root zones. Grass clippings have not been collected, returning ½ to 1 lb. of nitrogen per 1000 sq. feet a year reducing the need for fertilizers. Applications of broadleaf herbicides have been minimal, addressing only the most significant populations of weeds, many times in response to requests by others. Turf fertilization rates have been reduced from 3lb. nitrogen/1000 sq. ft. to 2lb nitrogen/1000 sq. ft. partially in response to

budget limitations and improved product performance. Application of insecticides and fungicides has been unnecessary. Native vegetation stands have been successfully established using mowing techniques that discourage broadleaf invaders. Lions Pond vegetation has been controlled by proper circulation of pond water, aeration fountains, and stocking of grass carp (weed eating fish).

- Irrigation practices and scheduling have been implemented to promote a deep root system and discourage fungal activity. Currently irrigation systems are programmed to provide 1" of water/week. This is ½ the current industry standard of 2"/week. After significant rainfall irrigation systems are shut down until area turf shows signs of stress, sending the roots deep in search of water. Rain sensors have been installed to interrupt normal irrigation if ¼" of rain has fallen. All 'old' manual irrigation systems have been replaced with contemporary designs that are 75-90% efficient. Raw water was used in 2006 to irrigate Lions Park, Lions Ball Fields, and the Community Center. The program will be expanded to Ulysses Park in 2007 and the Golden Cemetery at a date to be determined.
- Began using compact fluorescent light bulbs in 2004. By the end of 2006 compact fluorescent light bulbs had been installed in all fixtures able to receive them within our areas of responsibility. The new bulbs use 12 watts of electricity instead of 60 watts, reducing the power requirements by 4/5ths while maintaining the same level of lighting.
- The 21 year old field lighting fixtures on all four fields at Ulysses Park were replaced in 2006. The original intent was to minimize 'light trespassing' off site. The manufacture stated that we would use less electricity at the site as the new fixture count would be less than the existing count, as well as dramatic improvements to keep the light on the fields, not off the site. In fact the electrical savings were dramatic. In many cases the demand rate was reduced by 2/3 and the kilowatts used dropped by 20% or more thanks to the new hardware. The department has received a matching grant from Jefferson County to retrofit the ballfield and tennis court lights at Lions Ball Fields for 2007.
- The power plants used in light equipment such as string trimmers, edgers, and small lawn mowers have been identified as a significant source of air pollution. Technology has been driven by California state standards to provide a cleaner, quieter operating power plant. In 2006 the Parks Division sought out and purchased string trimmers, backpack blowers, and an edger that meet Tier Two requirements specified by California standards. As older equipment is replaced the Division will strive to purchase proficient equipment that meets the highest standards available.
- For 2007 the Parks Division desires to revise procedures pertaining to the mowing of right of way and native vegetation sites. Our intent is to reduce the area being mowed, raise the height of cut, and select some areas not to be mowed at all. If the community is receptive to this change in management a more natural and viable native vegetation program will be the result, the reduced mowing will save significant labor and fuel expense.
- In 2005 the Parks Division began using a 'golf cart' style utility vehicle for activities on 10th Street. In 2006 an all weather 4x4 utility vehicle shared with recreation was used for the same nearby activities. The vehicle was also used for snow removal and deicing the trails along Clear Creek. Golden has an excellent trail system. Many of the park sites north of 10th street can be reached by using the small utility vehicles on the trail system. The same can be said for the south side of town. A preliminary plan has been proposed to identify 'satellite' bases so that much of the maintenance activity can be accomplished using the small utility vehicles via the trails, minimizing the need for full size trucks. The initial purchase of the small vehicles would be much less than trucks. They may use less fuel and should cost less to insure. Connecting the 6th Avenue Trail to Clear Creek Trail would provide trail access to a significant percentage of the park system.

- Initiated in 1987, Golden Community Pride Days original goal was to provide an opportunity for the community to dispose of 'eyesore' junk visible from alleys, drainages, and other open properties needing cleanup. Over the years the program has evolved offering a combination of material recycle opportunities and collection of debris consisting of remodeling trash, old furniture, and yard trash. In 2006 1500 cubic yards of debris went to the landfill. Reviewing the budget indicates that 48% was spent on recycling efforts and 52% on landfill dumping. Consideration should be given to increase the percentage of expense on recycling efforts and reduce the landfill related expenses.
- Currently the city is providing a year-round opportunity for the recycling of glass, plastic, aluminum, and paper products. The current location at the Splash is consistently overwhelmed with materials dropped off by the community. A private opportunity at the Transcript offices has just been removed, and the load has increased at a small drop off container at Parfet Park. Consideration should be given to expand the Splash site to provide up to twice the storage space for recycled materials. There may be a demand for at least two more sites within the city limits as well.
- The Parks Division has been monitoring electricity usage at 23 sites since 2000. This data has been instrumental in determining the status of area lighting, sports field use, and facility use in restrooms and other buildings. We would like to consider paying for wind energy sources through Xcel Energy at some of these sites. It will cost more $ and reflect the divisions commitment to using sustainable energy sources.
- It would be nice to see three on site wind turbines providing power to the new Maintenance Facility. It would definitely be in view of the public.

CITY HALL (COURTS, FINANCE, CITY CLERK)

- Paper and toner cartridge reycling.
- Double side printing of Financial reports.
- Electronic sending of council packets.
- The courts reuse file folders until they are worn out.
- The courts use a confidential destruction company that recycles the paper versus burning the records that are past the retention date.
- In 2006 courts eliminated one page on police summons not being used. 2002 Electronic Time Keeping system rather than paper timesheets. Less manpower for data entry, collection of paper timesheets plus less paper. Purchase of multi-function copier rather than copier and printer. Less electricity and less environmental impact at disposal time?

GURA

- Obtained a technical service grant from DOE/NREL to assist GURA and the City in developing a variety of programs to increase resource efficiency and the use of renewable energy.
- Retained an engineer specializing in resource efficiency to consult with construction projects funded by GURA. This has included the Jackson Court and Gateway Station projects.
- Purchased wind power for its office in 2004 and finalized an annual windpower contract with Community Energy in 2006.
- Installed LED holiday lights at its office in 2005. GURA researched, organized, and partially funded the new LED lights for last year's downtown display.

- The Work Plans for the past two years have contained a $5,000 line item to support energy efficiency programs. This year's line item is $35,000.
- Hired a local seamstress student to reupholster its 30 year old office chairs rather than buying new chairs.
- The GURA office is in an historic building with high efficiency fluorescent lighting, ceiling fans, and window glazing. This "adaptive re-use" is essential to maintain the historic integrity and vitality of downtown. GURA recycles its paper and plastic, and prints double-sided meeting packets. GURA is exploring other upgrades in cooperation with the building owner.

IT

- IT started using Action PC to get rid of used computer equipment. Action PC is a company that buys used PC equipment and resells it whenever possible. When it is not possible to sell, they dispose of the equipment in an environmentally friendly manner. Since Action PC comes onsite to COG for pickup this also saves the city a considerable amount of labor that would otherwise be spent on transporting the equipment to recycling. Often times, the city actually makes money depending on the resell value of the equipment.
- We now use flat panel monitors which can use 1/3rd as much power and do not generate as much heat (double savings because you don't have to air condition it), eliminate a cathode ray tube (presumably harder to dispose of), but flat panels cost more. I don't know if the energy savings ever overcome the additional price, nor do I know if we should advertise we're moving to flat panels, as if everyone else isn't either. Please tell me what you think of that idea.
- We buy all energy star compliant equipment which basically says our equipment adheres to government standards for energy savings. This is akin to saying that the city uses unleaded fuel at this point though and the standards don't really mean anything. I am not sure we want to go down this road either.

PLANNING

1. In 2003, the City amended the Municipal code to include requirements for more effective soil preparation for landscaping. The code change was part of a larger effort of several metro area communities that agreed to adopt stricter water conservation policies. The amendments included:

- To preserve the limited amount of topsoil from a project which would be salvaged and re-used in amending the project area's soil.

2. In 2005, the City amended the Municipal Code to include

- Appropriate placement to emphasize passive solar gain for buildings
- Irrigation systems are encouraged to use automatic controllers, rain sensors and subsurface drip systems
- Landscaping materials are required to be predominantly low-water, native species.
- The use of mulch is required to retain as much soil moisture as possible.
- Sub-surface drip irrigations are required where possible.

3. From the Golden Comprehensive Plan, the following environmental goals have been adopted and in place since 2003:

   Section 2.6 Public Investment Goal A: Provide public services in a high-quality and cost-effective manner

- Create and implement long range plans and emergency strategies both of which support maintenance and upgrades for staff and equipment.

Section 2.6 Public Investment Goal D: Maintain a commitment to continual reinvestment in the City.

- The capital improvements plan should reflect a continuing maintenance and upgrade of infrastructure and facilities.
- Promote state-of-the-art community telecommunications.
- Prioritize capital improvement projects based on community needs.
- Review and if necessary revise codes, and provide and encourage incentives for high-speed, high-capacity data and communications systems.

Section 2.6 Public Investment Goal E: Anticipate future growth patterns and plan the infrastructure and services to respond to these needs.

- Ensure that new development pays its proportional fair share of the costs of new infrastructure and services.
- Self-imposed standards for water quality are met.

Section 2.7 Environment Goal A: Environmental impacts of growth and development will be mitigated to the extent possible

- Manage growth and development so as to minimize adverse environmental impacts.
- Major new development will require an assessment and disclosure of the environmental impacts.
- Encourage developers to use low-water plantings.
- Encourage energy efficient building techniques in all types of construction.

Section 2.7 Environment Goal B: Control the creation and adverse effects of pollution

- Address environmental issues related to negative impacts both locally and in a broad context. These include: water quality, air quality, heat, noise, odor, visual elements, electromagnetic, and radiation.
- Monitor air and water quality, noise, and soils in designated areas.
- Control environmental impacts not covered by county, state or federal regulations, or when such standards are deemed to be inadequate.
- Coordination and cooperation with Jefferson County, regional, state, and Federal agencies.
- Increase public education concerning the cause and control of pollution and what residents can do to help minimize pollution.

Section 2.7 Environment Goal C: Conservation of natural resources will be a part of all City projects

- Implement conservation programs including energy, water, habitat areas, and urban forests. Encourage the use of natural, low-water plantings whenever feasible. Encourage recycling by City departments and City residents Encourage reduced use of natural resources.
- Make available pertinent educational materials concerning conservation to the citizens of Golden, primarily through the Web, workshops, and the Golden Informer. Continue to sell natural, low-water plantings. Encourage partnerships to facilitate alternative energy source development.
- Implement a recycling program for City departments.

- Ensure that City projects address energy and water conservation, habitat areas, and urban forests.

Section 2.7 Environment Goal D: Achieve energy efficiency and water conservation in new construction

- Encourage builders to use "green" building design.
- Develop a "resource efficiency review or audit" for new construction.

Section 2.7 Environment Goal E: Adopt and environmental policy and implement and environmental management system

- City agencies and departments will conduct operations in an efficient and environmentally protective manner.
- Investigate the benefits and costs of implementing an environmental management system for the City.

Section 2.7 Environment, Specific targets of the Environmental goals:

- Environmental impacts of major developments are mitigated in accordance with contemporary standards.
- The City government leads by example by participating in projects that reflect a commitment to the environment.
- Federal, state and county criteria and requirements are met.
- Alternative and renewable energy sources are used in City facilities.
- Energy and water consumption in City facilities decreases.
- Per residence water use in Golden decreases.
- New construction meets established energy efficiency criteria.
- Underground more existing overhead utilities.
- If approved and implemented the City environmental management system will meet generally accepted standards, such as ISO14001.

POLICE DEPT

- Support Services is using a more fuel efficient vehicle instead of the Dodge Durango
- Operations has been instructed not to idle vehicles on calls and in the parking lot, except in extreme cases, to reduce the consumption of fuel

FIRE DEPARTMENT

- Station bays are kept at 62 degrees F
- GFD uses high efficiency fluorescent tubes and ballasts and a significant number of FBLs in place of incandescents
- Downsizing two staff vehicles for fuel efficiency
- Apparatus are comprehensively serviced on a regular basis to ensure reliability and longevity
- GFD uses low sulfur fuel and mileage enhancing multi-viscosity lubricants
- Golden Fire apparatus are washed on the Fleet wash stand using environmentally safe cleaners and detergents
- GFD uses fan forced exhaust discharges at three stations to maintain clean air on the floor and prevent soot contamination on interior walls and ceilings. It is not feasible to install such a system at station 2.

- GFD uses programmable thermostats in Station 1 for staff offices and the multi-use training room.
- Replaced 1983 Reznor HVAC swamp cooler system on Station 4 with a high efficiency Trane unit to support ambulance and shift crews.

Future Plans

The City regularly updates a ten year capital improvement plan (CIP). See Attachment J.

The City will raze and rebuild its central fire station this year, which will trigger a re-evaluation of the use of the other three fire stations. The City will also move its shops facilities to a new site, which will trigger an evaluation of the future use of the old shops site.

In preparation for this RFP, each City department reviewed its sustainability needs, policies, and projections. The first chart below shows energy savings ideas related to facilities and equipment in two categories. The first column shows ideas for which the City has allocated funds either in annual departmental operating budgets or within the City's general Capital Improvement Plan (CIP). The CIP is attached as an appendix for your careful review. The second column represents ideas for which the City has not allocated funding and which have not been fully investigated.

The second chart below shows energy savings ideas related to behavioral and policy changes. The ideas may or may not have budget implications, and none of them have been instituted or evaluated for cost.

The City welcomes evaluations and recommendations for all of these ideas with the understanding that cost savings and payment sources will be allocated according to the language in Attachment A, subheading "Funding sources to support annual payment"

Facilities and Equipment Energy Efficiency Ideas		**Budgeted**	**Not Budgeted**
1	Convert the gate systems at the new facilities switched over to solar power.		x
2	Install a light reading sensor that will turn off the lights in our new shop when the natural lighting is sufficient to perform operations safely.	x	
3	Upgraded cooling systems for City Hall and PD Server rooms		x
4	Server virtualization		x
5	Install solar heater or pre-heater for community pools		x
6	Solar water heaters for domestic use in city buildings		x

7	On demand or point of use water heaters in city facilities, i.e. public works building and laboratory.		x
8	PV on city buildings or in city parks		x
9	Solar panels as primary power source for street lights, signals and signs		x
10	Motion sensors i.e. bathrooms, conference rooms, large office areas.	x	
11	Retro fit Exit signs with LED bulbs.	x	
12	Address public works 1st floor heating issue and remove space heaters and mats.	x	
13	Change lights to T8 models or other energy efficient retrofit such as LEDs.	x	
14	Replace windows with triple pane or add films that retain/reflect heat.	x	x
15	Energy efficiency improvements in computer hardware.		x
16	Install “green” roofing systems.		x
17	Utilize geothermal heating or cooling.		x
18	Test and fix or improve door and window seals.	x	x
19	Identify and fix heating and cooling system conflicts. i.e. upstairs in public works, which thermostats control which rooms etc.	x	
20	Replace dishwasher in Lab with a unit that has an onboard water heater and turn down the water heater for the PW building or replace with on-demand unit.		x
21	Figure out how to get the safety light bars on city vehicles to operate without the vehicle running continuously.		x
22	Replace fluorescent lights when they die, and not on a set schedule if this is not already the case.	x	x
23	Survey trees surrounding city facilities for strategic areas and opportunities to plant additional trees that shade city buildings in the summer time.	x	
24	Ways to utilize sources of waste heat like furnace exhaust, heat from pumps or motors.		x
25	Install waterless urinals in men’s rooms in city facilities.		x
26	Hydroelectric generator at the back of the water treatment plant ponds to run pumps or supplement power used by the City.		x
27	LED Task lighting at individual workstations		x

28	LED Lights for Olde Golden Christmas and holiday lighting	x	x
29	Solar powered water feature pumps for traffic circles at South Golden and Johnson and South Golden and Ulysses.		x
30	Hydroelectric generators on Guanella, Upper and Lower Urad reservoir outlets		x
31	Replace the high service pumps and motors with newer efficient ones.	x	x
32	Replace the old floc mixer motors with newer motors as they burn out.	x	x
33	Upgrade the emergency generator from a 500 KW to 1MW to get off the peak demand billing. This doesn't save energy but will reduce cost.		x
34	Install separate electrical meters for outlying buildings to reduce the peak demand charge at WTP.		x
35	Research capacitors for big motors to reduce the peak demand charge.		x
36	Put heavy water users on the raw water irrigation system.	x	
37	Review our street light inventory to determine if any existing street lights can be removed.		x
38	Retrofit street lights with LEDs.	x	x
39	Fire Staff vehicles not used for response can be replaced with higher mileage vehicles. Some vehicles still may require 4WD to access areas in inclement weather	x	x
40	Improve Community Center pool lighting	x	x
41	Investigate window louvers at the community center pool for direct lighting		
42	Seek cost savings in purchasing gas and electricity from alternate suppliers	x	x
43	Install centralized computer controls for all HVAC units citywide.	x	
44	Wireless telemetry		x
45	Research alternate fuels and hybrid / electric technology for City use.	x	x
46	Consider skylights or light pipes to brighten office areas that do not require dimming for presentations		x

Policy and Behavioral Energy Efficiency Ideas

1	Implement a mandatory “no drive” day. I.e. During the course of the week you must pick one day to leave your City vehicle parked.- education campaign
2	No return policy. (This will be a big factor in the new facilities). Staff should be able to leave the shops in the morning equipped with everything they will need for the day.
3	Perform driver/operator education classes for operation of vehicles. Proper operation has proven to show a huge reduction in fuel consumption.
4	Continue analyzing replacement vehicles, down sizing where possible
5	Implement an energy star or similar energy efficient purchasing policy for equipment used in the city, such as pumps, computers, printers, HVAC units, etc.
6	Policy or standards for shutting off energy consuming equipment when not in use.
7	Incentives to employees for behavioral changes resulting in conservation of energy such as carpooling in city vehicles efforts to combine trips etc.
8	Walk to meetings at City Hall or the Community Center.
9	Close all doors behind you to conserve heat. This includes garage doors.
10	Use Meyers Hardware for items they carry first rather than driving to Home Depot.
11	Work our “areas” during maintenance activities rather than randomly all over town.
12	Car/truck/van pool when possible.
13	When possible cycle the high service pump off when the backwash pump is on.
14	Cycle the distribution pump stations to run only one pump except during high demand times.
15	At the end of the work day, require that employees fully shut down their computers and turn off the office lights, don’t just “log off”
16	Turn out lights when not needed or not in use.
17	Institute a no idle policy including warming up engines in cold weather. Don’t let vehicles idle in the summer just to keep the A/C running.
18	Implement a 4-10’s work week.
19	Run equipment at half throttle

20	Assign trucks to employees that need them. Provide super efficient vehicles for staff that needs a vehicle, but does not need a truck.
21	Stop taking vehicles home for on-call duties.
22	Energy efficiency purchasing flexibility policy
23	2 sided printing/copying as default
24	Go paperless
25	Revise forms to use less paper
26	Replace a few vehicles with hybrid vehicles for PR reasons and to reduce fuel used.
27	Reduce overall water consumption by promoting conservation
28	Policy to reduce future lighting and landscape demands
29	Reduce current lighting and landscape demands - pertains to older developments that the city now takes care of
30	Fire apparatus on scene that do not require warning lights can be shut down
31	Fire staff vehicles on scene should not be left idling with accessories operating unless warning lights, mobile radios or warming facilities are required.
32	When attending meeting as a group, utilize as few vehicles as possible or walk, unless fire staff is on call for response
33	Support inspection scheduling to include new construction by area-per-day or specific hours.
34	Utilize fire staff or support vehicles to respond to Ambulance Transport requests for riders, rather than apparatus (i.e.; BR-1 or Fire-1)
35	Expand practice of initial size-up by First-In Officer to modify or down grade response level as required for the call.
36	Utilize appropriate vehicles for meetings out of the city, with regard to the weather and road conditions.
37	Explore alternative work schedules that do not compromise daily operations or customer service

ATTACHMENT F: Model Technical Investment Grade Energy Audit & Project Proposal Contract

OVERVIEW:
This Contract for Technical Investment Grade Energy Audit & Project Development is the first of two contracts with the selected ESCo. The ESCo will complete an investment grade technical energy audit that will include an analysis of each proposed project with projected energy and cost savings and itemized project cost. The ESCo will also propose terms for the performance contract and present a proposal that includes recommended projects, financing term and projected annual cash-flow analysis. The results of the audit will form the basis for a subsequent Energy Performance Contract.

The complete attachment remains under a separate electronic file for easier use.

ATTACHMENT G: Model Energy Performance Contract

OVERVIEW:
This Energy Performance Contract is for design, construction, guarantee, and follow-up monitoring of energy-saving projects. An energy audit was previously completed that identified the costs and savings of each project. The audit provides the basis to develop and negotiate this Energy Performance Contract.

The complete attachment remains under a separate electronic file for easier use.

ATTACHMENT H: Financing Bid Package

The complete attachment remains under a separate electronic file for easier use.

OVERVIEW
The ESCo is expected to conduct a competitive bid process to select a financing firm to satisfaction of City.

Table of Contents

Model Request for Proposal for Financing

Financing Proposal Letter

Signature Sheet

Overview of Facility Improvement Projects

Attachment I: Rebuild Colorado's Standards for Success

Standards for Success
for Energy Performance Contracting
Rebuild Colorado's Services to Ensure Success

To ensure successful Performance Contracting programs in Colorado, the Governor's Office of Energy Management & Conservation's *Rebuild Colorado* program "Standards for Success" and associated free services to provide on-going guidance and support throughout the entire Performance Contracting process.

STEP 1 INTRODUCTORY STAGE

Make sure that performance contracting is right for you.

Rebuild Colorado will: *Conduct a telephone screening to determine if you have a potential project; Meet with you on-site visit to present an overview and discuss performance contracting; Prepare an energy engineering study to demonstrate the feasibility of a performance contract in your facilities (identify opportunities, capital cost and energy saving in several buildings).*

Get the "Go" Decision

Rebuild Colorado will: *Give a presentation to the Board or decision-making group.*

STEP 2 RFP STAGE

Set the stage for your project

Rebuild Colorado will: *Meet with your legal, procurement, financial and facilities staff to train your evaluation committee; Help establish a broad scope as well as specific requirements for your project to communicate your needs and wishes through the RFP.*

Competitively select your energy service company (ESCo)

Rebuild Colorado will: *Provide a Colorado state-approved model RFP; Customize the RFP to meet your project needs; Notify ESCos to help advertise your RFP; Provide an ESCo distribution list.*

Ensure legislative requirements and industry standards are met

Rebuild Colorado will: *Provide the state-approved model RFP that includes references to legislation, standards for Measurement & Verification and other recommended requirements.*

Select the ESCo that's right for you.

Rebuild Colorado will: *Train your team in evaluating proposals and in what to expect; Provide an evaluation system and scoring sheets; Serve as an advisor throughout the selection process. Rebuild Colorado will remain neutral and unbiased on ESCo selection and will not be a scoring member of the evaluation committee, but will answer questions and provide clarifications on ESCo proposals and sit at your side during your ESCo interviews.*

STEP 3 AUDIT STAGE

Before getting started, ensure you and your ESCo are "on the same page"

Rebuild Colorado will: *Meet with you and your ESCo to review the selected ESCo's proposal and begin to develop the project so there is clear agreement on intent, ESCo's proposed services, etc.*

Use the Rebuild Colorado Audit Contract to ensure an investment grade audit

Rebuild Colorado will: *Provide a Colorado state-approved Audit Contract; Assist in developing and negotiating contract terms; Ensure that terms and expectations set forth in the ESCo's proposal are incorporated in the contract.*

Get ongoing independent reviews during the audit process

Rebuild Colorado will: *Provide an independent review of audit agreement*
Ensure that the process set forth in the Audit Contract is followed accurately and that the technical, financial, and legal terms are fulfilled; Review all energy and cost calculations for reasonableness.

Develop a quality monitoring and verification plan to establish how savings will be determined

Rebuild Colorado will: *Review and help develop the monitoring and verification plan; Advise on your final acceptance of the Technical Audit.*

STEP 4 PERFORMANCE CONTRACTING STAGE

Use the Rebuild Colorado Energy Performance Contract.

Rebuild Colorado will: *Provide a Colorado state-approved model Energy Performance Contract.*

Get trained on the energy performance contract prior to signing.

Rebuild Colorado will: *Meet with your legal and facilities team to review the general conditions of the contract.*

Develop a contract that will stand the test of time

Rebuild Colorado will: *Ensure the Performance Contract meets all terms set forth in the Audit and meets all technical, financial, and legal requirements of the state or local government; Assist you in negotiating a contract that meets your needs; Ensure thorough documentation to clearly address future "what-if" questions; Include a third-party independent ESCo to be supported through savings to review annual monitoring and verification reports to.*

Develop a final measurement & verification plan

Rebuild Colorado will: *Provide Rebuild Colorado's Monitoring and Verification Guidelines that were co-developed with Colorado ESCos; Assist in developing a mutually acceptable final savings Monitoring and Verification plan and ensure it is incorporated into the Performance Contract.*

STEP 5 MONITORING & VERIFICATION STAGE

Get independent reviews of annual energy savings reports

Rebuild Colorado will: *Advise on how to get your own expertise for annual independent review of energy savings reports (for small projects under $500,000 total, Rebuild Colorado will provide the service directly for the first year).*

Get ongoing trouble-shooting expertise

Rebuild Colorado will: *Provide general technical and performance contracting expertise on an on-call basis when questions arise (Rebuild Colorado will not provide dispute resolution but can help assess if you have grounds for a dispute). .*

*Rebuild Colorado offers **free** services on an as-needed, as-available basis to state and local governments.*
We share the same goal of seeing successful, comprehensive energy and water efficiency improvements in your facilities. Follow these standards to help ensure success!

Standards for Success

For Energy Performance Contracting

Rebuild Colorado's Guidelines for ESCos

Rebuild Colorado is committed to working with the local industry to ensure high quality projects in Colorado and worked in partnership with Colorado ESCos to develop the following industry guidelines for Colorado projects.

Contract Documents. *Rebuild Colorado's* RFP, the Technical Energy Audit & Project Proposal Contract and the Energy Performance Contract will be used.

Contract Term. The maximum contract term is 25 years provided the cost-weighted average lifetime of the equipment exceeds the contract term. This maximum term is established for Colorado Political Subdivisions per CRS 29-12.5-101(3)(h). The *ASHRAE Book of Standards* will be used in determining the cost-weighted average useful life of the equipment.

Annual Savings Exceed Annual Costs. Annual savings shall exceed annual payments each and <u>every</u> year while the performance guarantee is in effect. This means that excess savings in other years and interim savings during the construction period will NOT be allocated to meet shortfalls in any year. Annual payments include debt service, ESCo fees, maintenance services, monitoring services, and other services. This is required for Colorado Political Subdivisions per CRS 29-12.5-101(3)(b).

Annual Guaranteed Cost Savings. An annual contractual guarantee will be provided for the first three years of the contract, however, the guarantee shall be made available as a continued option for each subsequent year of the contract term. The City can cancel the guarantee at any time after the required period. The guarantee must provide for the sum of identified cost savings to equal or exceed the amount of the annual payment, where annual payment equals lease plus monitoring & verification fee plus required service, each and every year while the guarantee is in effect. This is required for Colorado Political Subdivisions per CRS 12-5-101(3)(a-c).

Interim Savings during Construction Period. Savings accrued during the construction period will not be allocated to the annual savings of any year. See "Annual Savings Exceed Annual Costs" above.

Excess Savings (beyond the guaranteed amount). Excess savings will be retained by City and will not be allocated to shortfalls in savings in other years. See "Annual Savings Exceed Annual Costs" above.

Use of Stated Cost Markups. The individual cost markups disclosed in the proposal will be used in both the Technical Energy Audit and the Energy Performance Contract, provided the size and scope of the project remain similar. Cost markups presented in the proposal can be negotiated downward.

Open Book Pricing. Open book pricing is required, such that the ESCo will fully disclose all costs, including all costs of subcontractors and vendors. ESCo will maintain cost accounting records on authorized work performed under actual costs for labor and material, or other basis requiring accounting records. ESCo will provide access to records and preserve them for a period of three (3) years after final payment. Stated cost markups will be clearly applied.

Contingency. Any unused contingency cost will NOT be retained by the ESCo and will be applied to the project.

Equipment Compatibility or Standardization. All equipment installed that is comparable to similar equipment at the facilities, shall offer compatibility with existing systems, and/or be of the same manufacturer for standardization of equipment agency-wide, unless excepted by City.

Annual Appropriations. Annual payment is subject to annual appropriations. This is required of all Colorado state and local governments.

Inflation and Escalation Rates. Any inflation rates will be pre-approved by City.

Energy Escalation Rates. Where the annual lease-purchase payments are set-up to escalate each year in anticipation of annually escalating energy cost savings, a calculator will be used to determine the maximum value as developed by the US Department of Energy for energy saving performance contracts in its Federal Energy Management Program. The tool is on-line at: http://www.eere.energy.gov/femp/techassist/softwaretools/softwaretools.html (EERC).

Monitoring and Verification Plan. A monitoring and verification plan will be developed per guidelines in the RFP and the model energy performance contract.

Independent Review of Monitoring & Verification. The energy performance contract must provide for a portion of the guaranteed savings for City to contract with an independent monitoring & verification specialist to provide an independent review of the ESCo's monitoring & verification plans and reporting. This is estimated to be 10 percent of the ESCos monitoring & verification costs.

_____ (name of ESCo) agrees to abide by the above "Standards for Success" and to apply all legislated requirements and support the City in adopting all other standards.

_____

ESCo Signature

Attachment J: City of Golden 10 Year Capital Improvement Plan

CITY OF GOLDEN
CAPITAL PROGRAMS FUND
TEN YEAR CAPITAL IMPROVEMENT PLAN
2007-2016

09/28/06

Projected
Interest rate:
4%
2006 - 2015

DESCRIPTION	ACTUAL 2004	ACTUAL 2005	AMENDED BUDGET 2006	PROJECTED ACTUAL 2006	PROPOSED BUDGET 2007	PLANNED BUDGET 2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL 2007 TO 2016
REVENUES:															
Highway Users Tax	409,380	448,286	434,081	424,000	408,500	412,600	447,234	451,706	456,223	460,786	465,394	470,048	474,748	479,495	4,526,734
Interest	3,812	7,116	956	8,600	8,900	9,500	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	82,400
Special Improvement District Assessment	51,783	52,606	51,000	51,000	-	-	-	-	-	-	-	-	-	-	-
Transfer from General Fund	288,000	-	140,000	226,400	3,199	195,900	193,766	221,294	250,777	282,214	315,606	349,952	386,252	424,505	2,623,465
TOTAL REVENUES	**752,974**	**508,008**	**626,037**	**710,000**	**420,599**	**618,000**	**649,000**	**681,000**	**715,000**	**751,000**	**789,000**	**828,000**	**869,000**	**912,000**	**7,232,599**
EXPENDITURES:															
Street Improvements	540,503	465,166	551,000	645,000	589,000	618,000	649,000	681,000	715,000	751,000	789,000	828,000	869,000	912,000	7,401,000
Traffic Signals	-	-	-	65,000	-	-	-	-	-	-	-	-	-	-	-
Trees	10,541	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Building Improvements - Municipal Facilities	49,720	132,599	125,000	-	-	-	-	-	-	-	-	-	-	-	-
Information Technology Upgrades	105,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL EXPENDITURES	**705,763**	**597,765**	**676,000**	**710,000**	**589,000**	**618,000**	**649,000**	**681,000**	**715,000**	**751,000**	**789,000**	**828,000**	**869,000**	**912,000**	**7,401,000**
(Use)/Accumulation of Surplus Funds	**47,211**	**(89,757)**	**(49,963)**	**-**	**(168,401)**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
ENDING FUND BALANCE	**258,158**	**168,401**	**118,438**	**168,401**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

CITY OF GOLDEN 09/28/06

SALES AND USE TAX CAPITAL IMPROVEMENTS FUND

TEN YEAR CAPITAL IMPROVEMENT PLAN

2007-2016

Projected Interest rate: 4% 2006 - 2015

Projected Sales Tax Growth: 1.5% 2006 - 2015

Projected Use Tax Growth: 1.5% 2006 - 2015

DESCRIPTION	ACTUAL 2004	ACTUAL 2005	AMENDED BUDGET 2006	PROJECTED ACTUAL 2006	PROPOSED BUDGET 2007	PLANNED BUDGET 2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL 2007 TO 2016
REVENUES:															
Sales Tax	3,265,171	3,346,049	3,441,700	3,413,370	3,464,571	3,533,862	3,622,209	3,712,764	3,805,583	3,900,722	3,998,240	4,098,196	4,200,651	4,305,668	38,642,466
Use Tax	709,797	741,017	750,000	725,000	735,875	750,595	769,360	788,590	808,310	828,520	849,230	870,460	892,220	914,525	8,207,685
Building Use Tax	162,628	191,526	153,000	170,000	161,600	163,215	164,850	166,500	168,160	169,840	171,540	173,260	174,990	176,740	1,690,695
SUT Audit Revenue	71,279	499,643	90,000	200,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	1,500,000
Grants / Misc (a)	34,910	12,769	-	75,000		150,000	150,000	150,000	-	-	-	-	-	-	450,000
Interest	61,644	191,573	10,000	175,000	92,500	22,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	194,500
Golf Course revenue transfer	620,000	719,800	785,200	785,200	853,700	880,500	908,200	936,600	965,900	985,218	1,004,922	1,025,021	1,045,521	1,066,432	9,672,014
Open Space revenue transfer	185,000	273,600	273,700	273,700	273,500	273,500	273,500	273,900	273,900	273,700	273,600	273,500	273,700	273,800	2,736,600
Utility revenue transfer	-	600,000	-	900,000	-	300,000	300,000	350,000	400,000	400,000	350,000	-	-	-	2,100,000
Sale of Fire Equipment/Trade In	-	25,000	-	-	-	35,000	-	30,000	-	30,000	-	30,000	-	-	125,000
Church Ditch Reimbursement	-	25,000	-	-	-	-	-	-	-	-	-	-	-	-	-
School Land Dedication Revenue Transfer	-	-	-	-	300,000	-	-	-	-	-	-	-	-	-	300,000
Park Land Dedication Revenue Transfer	-	-	-	79,000	-	-	-	-	-	-	-	-	-	-	-
Bond/COP's Proceeds	-	-	13,000,000	-	-										-
Wasterwater Interfund Loan - Land Acqusition	-	-	3,365,000	2,435,000	-										-
Land Sale Proceeds	-	-	1,500,000	-	3,000,000	800,000									3,800,000
TOTAL REVENUES	**5,110,428**	**6,625,977**	**23,368,600**	**9,231,270**	**9,031,746**	**7,058,672**	**6,348,119**	**6,568,354**	**6,581,853**	**6,748,000**	**6,807,532**	**6,630,437**	**6,747,082**	**6,897,165**	**69,418,960**
EXPENDITURES:															
Debt Service	2,313,135	2,409,826	5,574,523	2,968,825	6,047,722	3,498,297	3,498,377	3,501,757	3,502,137	3,503,812	3,499,162	3,499,412	3,503,672	3,504,774	37,559,125
Recreation Campus Construction	41,936	311,068	5,790,000	4,350,000	2,250,000	-	-	-	-	-	-	-	-	-	2,250,000
Infrastructure Improvements/Replacements	1,239,599	2,159,150	2,213,000	1,978,000	1,913,000	1,758,000	1,626,000	2,123,000	1,410,000	1,410,000	2,100,000	2,010,000	900,000	900,000	16,150,000
Municipal Facilities	441,782	937,917	9,415,000	3,576,400	835,000	663,500	197,600	132,780	86,400	129,000	308,600	200,000	143,200	128,150	2,824,230
Community Improvements	47,486	53,278	150,000	100,000	50,000	200,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	1,050,000
Parks & Recreation Improvements	110,091	154,784	170,215	600,000	100,000	600,000	700,000	300,000	300,000	600,000	100,000	100,000	100,000	100,000	3,000,000
Capital Equipment	58,005	651,186	250,000	232,150	155,000	835,000	100,000	200,000	1,100,000	700,000	505,000	200,000	1,100,000	1,100,000	5,995,000
TOTAL EXPENDITURES	**4,252,034**	**6,677,209**	**23,562,738**	**13,805,375**	**11,350,722**	**7,554,797**	**6,221,977**	**6,357,537**	**6,498,537**	**6,442,812**	**6,612,762**	**6,109,412**	**5,846,872**	**5,832,924**	**68,828,355**
(Use)/Accumulation of Surplus Funds	**858,394**	**(51,232)**	**(194,138)**	**(4,574,105)**	**(2,318,976)**	**(496,125)**	**126,142**	**210,817**	**83,316**	**305,188**	**194,770**	**521,025**	**900,210**	**1,064,240**	
ENDING FUND BALANCE	**7,466,407**	**7,415,175**	**7,221,037**	**2,841,071**	**522,094**	**25,969**	**152,111**	**362,927**	**446,243**	**751,431**	**946,201**	**1,467,226**	**2,367,436**	**3,431,676**	**3,431,676**

(a) For 2006, approved Joint Venture Grants of $75,000 for Grampsas gymnasium improvements.
In 2008 the City anticipates a reimbursement from the 911 Authority Board for the VIPER 911 telecom upgrade.

CITY OF GOLDEN
SALES AND USE TAX CAPITAL IMPROVEMENTS FUND
TEN YEAR CAPITAL IMPROVEMENT PLAN DETAILED EXPENDITURES
2007-2016

09/28/06

DESCRIPTION	ACTUAL 2004	ACTUAL 2005	AMENDED BUDGET 2006	PROJECTED ACTUAL 2006	PROPOSED BUDGET 2007	PLANNED BUDGET 2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL 2007 TO 2016
EXPENDITURES:															
Debt Service:															
Debt Service - Community Cntr (2001 Refunding	985,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Debt Service - Recreation Campus	1,322,451	2,409,826	2,410,201	2,410,201	2,408,276	2,409,051	2,408,731	2,412,511	2,411,741	2,410,616	2,409,166	2,408,416	2,410,801	2,411,378	24,100,687
Debt Service - Municipal Facilities	-	-	-	477,424	1,093,246	1,089,246	1,089,646	1,089,246	1,090,396	1,093,196	1,089,996	1,090,996	1,092,871	1,093,396	10,912,238
Interfund Loan Principal - Land Acquisition	-	-	3,164,322	-	2,465,000	-	-	-	-	-	-	-	-	-	2,465,000
Interfund Loan Interest - Land Acquisition	-	-	-	81,200	81,200	-	-	-	-	-	-	-	-	-	81,200
Professional Services	5,684	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Recreation Campus Construction:															
Construction & Infrastructure	4,585	304,660	3,790,000	4,100,000	-	-	-	-	-	-	-	-	-	-	-
Golf Course Maturation & Maintenance	37,351	6,408	-	250,000	250,000	-	-	-	-	-	-	-	-	-	250,000
Open Space Purchases	-	-	2,000,000	-	2,000,000	-	-	-	-	-	-	-	-	-	2,000,000
Infrastructure Impr./Replacements:															
Curbs, Gutters and Sidewalks	571,354	534,537	550,000	550,000	550,000	570,000	600,000	600,000	600,000	600,000	700,000	700,000	700,000	700,000	6,320,000
Neighborhood Impact Mitigation	16,299	-	500,000	500,000	-	-	-	500,000	500,000	700,000	800,000	-	-	-	2,500,000
Traffic Calming	99,939	259,265	-	-	-	-	100,000	-	200,000	-	200,000	200,000	200,000	200,000	1,100,000
Highway 93 Property	461,551	461,551	462,000	462,000	462,000	462,000	-	-	-	-	-	-	-	-	924,000
Washington Avenue Bridge	60,324	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Relocate Highway 93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6th & Indiana Interchange	-	57,834	26,000	26,000	26,000	26,000	26,000	23,000	-	-	-	-	-	-	101,000
44th & McIntyre	-	-	275,000	275,000	275,000	-	-	-	-	-	-	-	-	-	275,000
Mesa Drive - Ford to Hwy 93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
City Gateways	30,131	1,933	50,000	65,000	-	-	-	-	-	-	-	-	-	-	-
Colfax Corridor Improvements	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Downtown Improvements	-	1,763	-	-	-	-	-	-	-	-	400,000	-	-	-	400,000
Jackson/So Golden Road Corridor	-	-	300,000	50,000	300,000	200,000	-	500,000	-	-	-	-	-	-	1,000,000
Golden Heights	-	-	-	-	300,000	-	-	500,000	-	-	-	-	-	-	800,000
N. Washington Streetscape/ 58 Interchange	-	7,155	50,000	50,000	-	500,000	900,000	-	110,000	110,000	-	110,000	-	-	1,730,000
Pedestrian Bridge & Impr (Hwy 6 & 19th St)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West Corridor Pedestrian Bridge & Improvements	-	-	-	-	-	-	-	-	-	-	-	1,000,000	-	-	1,000,000
Peery ROW Property	-	550,188	-	-	-	-	-	-	-	-	-	-	-	-	-
Church ditch improvements	-	284,924	-	-	-	-	-	-	-	-	-	-	-	-	-
Municipal Facilities:															
Facility Improvements/Professional Services	426,899	276,741	6,000,000	46,400	-	-	-	-	-	-	-	-	-	-	-
Facility Improvements/Land Purchase	-	600,000	3,365,000	3,355,000	-	-	-	-	-	-	-	-	-	-	-
Trailer at Old PW Shops	-	-	-	-	-	100,000	-	-	-	-	-	-	-	-	100,000
Firehouse Design/Construction	-	-	-	-	550,000	400,000	-	-	-	-	-	-	-	-	950,000
City Hall Front Lobby Remodel	-	-	-	-	60,000	-	-	-	-	-	-	-	-	-	60,000
Museums	14,883	61,176	50,000	50,000	30,000	40,000	10,000	20,000	20,000	-	200,000	20,000	20,000	20,000	380,000
Museum Expansion	-	-	-	-	100,000	-	-	-	-	-	-	-	-	-	100,000
Building Improvements - Municipal Facilities	-	-	-	125,000	95,000	123,500	187,600	112,780	66,400	129,000	108,600	180,000	123,200	108,150	1,234,230
Community Improvements:															
Art Program - City Share	47,486	53,278	50,000	-	-	150,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	550,000
Historic Preservation		-	100,000	100,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	500,000
Parks/Recreation Improvements:															
Illinois Park	-	-	-	200,000	-	-	-	-	-	-	-	-	-	-	-
Illinois Park Trail	-	-	-	200,000	-	-	-	-	-	-	-	-	-	-	-
Park Lighting Improvements	-	-	-	175,000	-	200,000	-	200,000	200,000	-	-	-	-	-	600,000
Regional Trail Connection (US 6 Bike Path)	10,091	29,784	45,215	-	-	300,000	600,000	-	-	-	-	-	-	-	900,000
Transfer to Community Center Fund/Capital	100,000	125,000	125,000	25,000	100,000	100,000	100,000	100,000	100,000	600,000	100,000	100,000	100,000	100,000	1,500,000
Capital Equipment:															
Council Chambers Audio Visual Upgrade	1,637	-	-	-	-	105,000	-	-	-	-	-	-	-	-	105,000
Finance Software	-	10	-	-	-	330,000	-	-	-	-	-	-	-	-	330,000
IT Document Imaging	-	44,468	-	36,500	-	-	-	-	-	-	-	-	-	-	-
IT Data Center	-	-	-	-	-	-	-	100,000	200,000	-	-	-	-	-	300,000
IT Voice Over IP	-	-	-	-	70,000	-	-	-	-	-	-	-	-	-	70,000
Police Dept Closed Circuit TV & Alarm Panel	-	-	-	-	85,000	-	-	-	-	-	-	-	-	-	85,000
X26 Tasers - Police Dept	-	8,089	-	-	-	-	-	-	-	-	-	-	-	-	-
Public Safety Communication Equipment/Radio	-	139,629	150,000	150,000	-	300,000	100,000	-	100,000	200,000	100,000	100,000	100,000	100,000	1,100,000
Police Dept CAD/RMS	-	-	-	-	-	-	-	-	400,000	400,000	-	-	-	-	800,000
Fire Trucks	-	404,640	-	-	-	-	-	-	400,000	-	405,000	-	1,000,000	1,000,000	2,805,000
Fire Equipment	56,368	54,350	100,000	45,650	-	100,000	-	100,000	-	100,000	-	100,000	-	-	400,000
TOTAL EXPENDITURES	**4,252,034**	**6,677,209**	**23,562,738**	**13,805,375**	**11,350,722**	**7,554,797**	**6,221,977**	**6,357,537**	**6,498,537**	**6,442,812**	**6,612,762**	**6,109,412**	**5,846,872**	**5,832,924**	**68,828,355**

CITY OF GOLDEN 09/28/06

WATER FUND CAPITAL PROGRAMS
TEN YEAR CAPITAL IMPROVEMENT PLAN
2007-2016

Projected Interest rate: 4%
2006 - 2015

DESCRIPTION	ACTUAL 2004	ACTUAL 2005	AMENDED BUDGET 2006	PROJECTED ACTUAL 2006	PROPOSED BUDGET 2007	PLANNED BUDGET 2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL 2007 TO 2016
REVENUES:															
Water Development Fees	1,208,641	782,401	1,262,810	1,262,810	1,325,932	1,411,050	1,481,625	1,576,392	1,655,212	1,737,972	1,824,871	1,916,114	2,011,920	2,112,516	17,053,604
Fees in lieu of water rights	38,487	105,489	25,000	100,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	250,000
Sales of Water Rights	-	-	-	-	1,500,000	-	-	-	-	-	-	-	-	-	1,500,000
Beaver Brook Land Sale	2,373,681	7,661,363	-	-	-	-	-	-	-	-	-	-	-	-	-
External Borrowing (a)	-	-	3,500,000	5,680,663	-	-	-	-	-	-	-	-	-	-	-
Interest	3,579	22,230	-	20,000	76,838	48,805	22,460	61,945	105,240	140,810	181,990	263,020	367,035	482,815	1,750,958
Miscellaneous Revenue	-	220,143	-	-	-	-	-	-	-	-	-	-	-	-	-
Guanella Mining Royalties	21,078	127,469	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	-	-	-	-	300,000
Guanella Storage Leases	47,250	76,259	85,000	82,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000	850,000
Leased Water Rights	6,613	-	-	112,300	-	-	-	-	-	-	-	-	-	-	-
Raw Water Irrigation Revenue	-	225,000	25,000	25,000	25,000	-	-	-	-	-	-	-	-	-	25,000
School Land Dedication Trust Transfer (e)	-	-	50,000	50,000	-	-	-	-	-	-	-	-	-	-	-
6260 Pump Station Reimbursements	-	-	-	228,300	171,750	-	-	-	-	-	-	-	-	-	171,750
Transfer from Golf Course - Raw Water Irrigation	-	317,700	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer from Water Operations	-	500,000	750,000	750,000	850,000	1,000,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	11,450,000
TOTAL REVENUES	**3,699,329**	**10,038,054**	**5,747,810**	**8,361,073**	**4,109,520**	**2,619,855**	**2,864,085**	**2,998,337**	**3,120,452**	**3,238,782**	**3,316,861**	**3,489,134**	**3,688,955**	**3,905,331**	**33,351,312**
EXPENDITURES:															
Interfund Loan Payment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Debt Service	3,204,678	4,925,579	916,673	916,673	1,091,188	1,084,588	1,072,038	1,083,738	1,059,613	1,059,413	1,048,413	812,538	812,538	812,538	9,936,605
City Shops Facilities Transfer	-	-	-	-	-	300,000	300,000	300,000	300,000	300,000	300,000	-	-	-	1,800,000
Vidler Tunnel Acquisition	142,000	142,800	143,000	1,099,744	-	-	-	-	-	-	-	-	-	-	-
Utility Line Replacement	468,625	513,610	550,000	550,000	575,000	600,000	625,000	650,000	675,000	700,000	725,000	750,000	750,000	775,000	6,825,000
Beaver Brook Closing Costs	124,611	396,241	-	-	-	-	-	-	-	-	-	-	-	-	-
Guanella Reservoir	1,878,527	228,557	-	2,066,250	-	-	-	-	-	-	-	-	-	-	-
Vidler Tunnel Improvements	11,957	93,889	75,000	75,000	75,000	-	-	-	-	-	-	-	-	-	75,000
Security	37,863	18,352	50,000	50,000	-	-	-	-	-	-	-	-	-	-	-
Storage/Collection	105,633	133,808	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Quality / Plant Improvements(b)	291,422	765,841	350,000	107,000	600,000	500,000	200,000	150,000	600,000	600,000	-	-	-	-	2,650,000
Pump Station Improvements (c)	-	60,649	-	860,000	-	-	-	50,000	50,000	50,000	50,000	50,000	50,000	50,000	350,000
Storage Tank Improvements (d)	230,521	378,892	1,500,000	1,500,000	660,000	660,000	-	-	-	-	-	-	-	-	1,320,000
Distribution Improvements	-	19,734	-	-	-	-	-	-	-	-	-	-	-	-	-
Raw Water Irrigation Project	-	937,950	300,000	229,808	-	-	-	-	-	-	-	-	-	-	-
Sludge Handling	-	-	-	-	-	200,000	200,000	200,000	-	-	-	-	-	-	600,000
Thornton Water Litigation Payment	-	465,000	-	-	-	-	-	-	-	-	-	-	-	-	-
Northglenn Berthoud Pass Pipeline/Hoop Creek Maint.	-	127,054	-	243,000	-	-	-	-	-	-	-	-	-	-	-
TOTAL EXPENDITURES	**6,495,836**	**9,207,956**	**3,884,673**	**7,697,475**	**3,001,188**	**3,344,588**	**2,397,038**	**2,433,738**	**2,684,613**	**2,709,413**	**2,123,413**	**1,612,538**	**1,612,538**	**1,637,538**	**23,556,605**
(Use)/Accumulation of Surplus Funds	**(2,796,507)**	**830,098**	**1,863,137**	**663,598**	**1,108,332**	**(724,733)**	**467,047**	**564,599**	**435,839**	**529,369**	**1,193,448**	**1,876,596**	**2,076,417**	**2,267,793**	
ENDING CAPITAL RESERVES	**(923,273)**	**(93,175)**	**1,769,962**	**570,423**	**1,678,755**	**954,022**	**1,421,069**	**1,985,668**	**2,421,507**	**2,950,876**	**4,144,324**	**6,020,920**	**8,097,337**	**10,365,130**	**10,365,130**

(a) 2006 revenues include the issuance of Series 2006 Water Revenue Bonds.
(b) Water Quality includes: Drain for sed basin, Rimrock Tank-post chlorine, back wash trough replacmt, clear well access, SCADA software, plate settlers for sed basin, filters 7&8, bank filter, upgrade filters 106, UV disinfection, upgrade solids handling.
(c) Pumping includes; 6260 Pump Station, 6400 pump station, Bonvue pump station and tank, S. 6000 zone transmission line, stand by power, N. 6000 zone transmission line.
(d) Tank Maintenance includes: 6200 storage tank painting, 6200 #2 storage tank, North Reservoir repair, 6400 storage tank painting and 6000 zone South Reservoir.
(e) Related to Raw Water Irrigation Project

CITY OF GOLDEN
DRAINAGE UTILITY FUND CAPITAL PROGRAMS
TEN YEAR CAPITAL IMPROVEMENT PLAN
2007-2016

09/28/06

Projected
Interest rate:
4%
2006 - 2015

DESCRIPTION	ACTUAL 2004	ACTUAL 2005	AMENDED BUDGET 2006	PROJECTED ACTUAL 2006	PROPOSED BUDGET 2007	PLANNED BUDGET 2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL 2006 TO 2015
REVENUES:															
Drainage Utility fees	759,635	774,806	772,095	782,550	790,380	798,280	806,270	814,330	822,470	830,700	839,000	847,390	855,870	864,430	8,269,120
External Borrowing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest	4,319	582	1,609	2,000	-	-	-	-	-	-	-	-	-	-	-
TOTAL REVENUES	**763,954**	**775,388**	**773,704**	**784,550**	**790,380**	**798,280**	**806,270**	**814,330**	**822,470**	**830,700**	**839,000**	**847,390**	**855,870**	**864,430**	**8,269,120**
EXPENDITURES:															
Debt Service	355,798	358,148	355,000	355,000	356,000	357,000	357,000	356,000	355,000	358,000	355,000	357,000	357,000	357,000	3,565,000
Ongoing Capital Replacement	14,278	-	10,000	35,000	50,000	35,000	60,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	635,000
Local Drainage Improvements	10,066	40,704	15,000	15,000	75,000	40,000	70,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	710,000
City Shops Facilities Transfer	-	-	-	-	-	-	-	50,000	100,000	100,000	50,000	-	-	-	300,000
Urban Drainage Projects: (a)															
Kinney Run Detention	337,312	93,784	120,000	120,000	-	-	-	-	-	-	-	-	-	-	120,000
Arapahoe Gulch	53,499	2,947	200,000	115,000	140,000	-	-	-	-	-	-	-	-	-	255,000
Lena Gulch	-	-	-	-	-	70,000	-	100,000	150,000	-	-	-	-	-	320,000
20th Street	-	319,341	-	50,000	-	-	-	-	-	-	-	-	-	-	50,000
Capital Equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operations	402,324	209,700	219,200	307,400	199,320	199,250	204,231	209,337	214,570	219,935	225,433	231,069	236,846	242,767	2,490,158
TOTAL	**1,173,277**	**1,024,624**	**919,200**	**997,400**	**820,320**	**701,250**	**691,231**	**860,337**	**964,570**	**822,935**	**775,433**	**733,069**	**738,846**	**744,767**	**8,445,158**
(Use)/Accumulation of Surplus Funds	**(409,323)**	**(249,236)**	**(145,496)**	**(212,850)**	**(29,940)**	**97,030**	**115,039**	**(46,007)**	**(142,100)**	**7,765**	**63,567**	**114,321**	**117,024**	**119,663**	
ENDING CAPITAL RESERVES	**274,868**	**25,632**	**(119,864)**	**(187,218)**	**(217,158)**	**(120,128)**	**(5,089)**	**(51,096)**	**(193,197)**	**(185,431)**	**(121,865)**	**(7,543)**	**109,481**	**229,144**	**229,144**

(a) Revenue and Expenditure projections do not reflect Urban Drainage participation. Amounts include City participation only.

CITY OF GOLDEN
WASTEWATER FUND CAPITAL PROGRAMS
TEN YEAR CAPITAL IMPROVEMENT PLAN
2007-2016

09/28/06

Projected
Interest rate:
4%
2006 - 2015

DESCRIPTION	ACTUAL 2004	ACTUAL 2005	AMENDED BUDGET 2006	PROJECTED ACTUAL 2006	PROPOSED BUDGET 2007	PLANNED BUDGET 2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL 2006 TO 2015
REVENUES:															
Wastewater Development Fees	382,589	244,238	208,448	208,448	221,850	236,100	247,875	263,720	276,910	290,750	305,290	320,550	336,580	353,410	2,853,035
Interest	22,079	19,080	46,015	46,015	59,500	66,085	72,870	83,735	89,580	95,070	101,720	109,640	118,950	129,785	926,935
Kinney Run Interceptor Payback	4,032	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer from Wastewater Operations	-	200,000	200,000	1,200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	2,000,000
TOTAL REVENUES	**408,700**	**463,318**	**454,463**	**1,454,463**	**481,350**	**502,185**	**520,745**	**547,455**	**566,490**	**585,820**	**607,010**	**630,190**	**655,530**	**683,195**	**5,779,970**
EXPENDITURES:															
Utility Line Replacement	440,717	259,893	466,000	466,000	482,000	500,000	500,000	525,000	525,000	550,000	550,000	575,000	575,000	575,000	5,357,000
City Shops Facilities Transfer	-	600,000	-	900,000	-	-	-	-	-	-	-	-	-	-	-
TOTAL EXPENDITURES	**440,717**	**859,893**	**466,000**	**1,366,000**	**482,000**	**500,000**	**500,000**	**525,000**	**525,000**	**550,000**	**550,000**	**575,000**	**575,000**	**575,000**	**5,357,000**
(Use)/Accumulation of Surplus Funds	**(32,017)**	**(396,575)**	**(11,537)**	**88,463**	**(650)**	**2,185**	**20,745**	**22,455**	**41,490**	**35,820**	**57,010**	**55,190**	**80,530**	**108,195**	
ENDING CAPITAL RESERVES	**1,543,995**	**1,147,420**	**1,135,883**	**1,235,883**	**1,235,233**	**1,237,418**	**1,258,163**	**1,280,618**	**1,322,108**	**1,357,928**	**1,414,938**	**1,470,128**	**1,550,658**	**1,658,853**	**1,658,853**

CITY OF GOLDEN 09/28/06

OPEN SPACE CAPITAL PROJECTS FUND
TEN YEAR CAPITAL IMPROVEMENT PLAN
2007-2016

Projected Interest rate: 4% *Projected Increase: 1%*

DESCRIPTION	ACTUAL 2004	ACTUAL 2005	AMENDED BUDGET 2006 (2006 - 2015)	PROJECTED ACTUAL 2006	PROPOSED BUDGET 2007	PLANNED BUDGET 2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL 2006 TO 2015
REVENUES:															
Jeffco Open Space	423,623	444,288	438,600	438,600	443,000	447,500	451,900	456,500	461,000	465,600	470,300	475,000	479,750	479,750	4,630,300
Johnson Road/Splash Trail Joint Venture	-	111,265	-	-	-	-	-	-	-	-	-	-	-	-	-
Parkland Dedication	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest & Misc Revenue	6,221	13,703	1,704	11,000	10,280	9,160	7,200	8,700	7,500	9,400	11,500	16,900	17,500	17,500	115,640
Jefferson County Legacy Grant - Bridges	40,912	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clear Creek Ped Bridge Grant (a)	-	-	-	-	300,000	-	-	-	-	-	-	-	-	-	300,000
TOTAL REVENUES	**470,756**	**569,256**	**440,304**	**449,600**	**753,280**	**456,660**	**459,100**	**465,200**	**468,500**	**475,000**	**481,800**	**491,900**	**497,250**	**497,250**	**5,045,940**
EXPENDITURES:															
Transfer to SUT Fund / Open Space Debt Service	185,000	273,600	273,700	273,700	273,500	273,500	273,500	273,900	273,900	273,700	273,600	273,500	273,700	273,800	2,736,600
Transfer to Gen Fnd/Prog Maint.-Trails & Open Space	50,000	50,000	50,000	50,000	50,000	70,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	920,000
Clear Creek Trail/Wash Ave. Bridge	70,548	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trail/Bridge Development General	20,292	-	25,000	-	25,000	25,000	25,000	25,000	25,000	50,000	50,000	50,000	50,000	50,000	375,000
Parks & Rec Master Plan Update	-	-	60,000	-	60,000	-	-	-	-	-	-	-	-	-	60,000
Clear Creek Ped Bridge/South Trail (a)	-	-	-	-	400,000	-	-	-	-	-	-	-	-	-	400,000
Norman D Park Trail	20,019	1,899	170,000	170,000	-	-	-	-	-	-	-	-	-	-	-
Johnson Road/Splash Trail	131,092	80,613	-	-	-	-	-	-	-	-	-	-	-	-	-
Rooney Road Sports Reserve Transfer	-	-	-	25,000	25,000	25,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	-	400,000
Illinois Park Design/Construction	7,684	-	-	-	-	-	-	-	-	-	-	-	-	-	-
South Illinois Park Construction	2,259	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tony Grampsas Handicap Accessibility	32,150	2,124	-	-	-	-	-	-	-	-	-	-	-	-	-
Lions Park Improvements	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Park Irrigation Replacement	2,731	108,826	-	60,070	-	60,000	-	70,000	-	-	75,000	-	-	-	205,000
Dog Park Improvements	1,500	6,103	-	5,000	-	-	-	-	-	-	-	-	-	-	-
Regional Trail Connection (C-470 Bike Path)	-	-	-	-	45,000	65,000	-	-	-	-	-	-	-	-	110,000
TOTAL EXPENDITURES	**523,274**	**523,165**	**578,700**	**583,770**	**878,500**	**518,500**	**448,500**	**518,900**	**448,900**	**473,700**	**548,600**	**473,500**	**473,700**	**423,800**	**5,206,600**
(Use)/Accumulation of Surplus Funds	**(52,518)**	**46,091**	**(138,396)**	**(134,170)**	**(125,220)**	**(61,840)**	**10,600**	**(53,700)**	**19,600**	**1,300**	**(66,800)**	**18,400**	**23,550**	**73,450**	
ENDING FUND BALANCE	**425,237**	**471,328**	**332,932**	**337,158**	**211,938**	**150,098**	**160,698**	**106,998**	**126,598**	**127,898**	**61,098**	**79,498**	**103,048**	**176,498**	**176,498**

(a) Grant funding anticipated from Jefferson County Open Space, State Energy Impact Fund, Colorado School of Mines and/or GOCO

CITY OF GOLDEN

CONSERVATION TRUST SPECIAL REVENUE FUND CAPITAL PROGRAMS (LOTTERY) 09/28/06

TEN YEAR CAPITAL IMPROVEMENT PLAN

2007-2016

Projected Interest rate:

4%

2006 - 2015

DESCRIPTION	ACTUAL 2004	ACTUAL 2005	AMENDED BUDGET 2006	PROJECTED ACTUAL 2006	PROPOSED BUDGET 2007	PLANNED BUDGET 2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL 2007 TO 2016
REVENUES:															
Colorado State Lottery	154,799	159,488	157,560	175,000	176,750	178,520	180,300	182,100	183,900	185,800	187,600	189,500	191,395	193,309	1,849,174
Interest	3,887	9,144	8,300	8,300	9,400	15,500	16,700	19,800	18,600	20,200	18,880	20,400	19,100	20,653	179,233
TOTAL REVENUES	**158,686**	**168,632**	**165,860**	**183,300**	**186,150**	**194,020**	**197,000**	**201,900**	**202,500**	**206,000**	**206,480**	**209,900**	**210,495**	**213,962**	**2,028,407**
EXPENDITURES:															
Clear Creek River Walk Accessories	4,433	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trail Head Signage/Historical Markers	5,906	-	10,000	2,500	7,500	-	-	-	-	-	-	-	-	-	7,500
Regional Ball Fields	16,676	-	-	-	-	-	-	-	-	-	-	-	-	-	-
White Water Course Repair and Maintenance	27,658	-	10,000	21,000	-	25,000	-	25,000	-	25,000	-	25,000	-	-	100,000
Treated Timber Replacement	-	67,387	6,000	13,614	10,000	-	-	-	-	-	-	-	-	-	10,000
Park Development/Improvements	21,604	14,903	175,000	30,000	110,000	110,000	110,000	110,000	110,000	110,000	110,000	110,000	110,000	110,000	1,100,000
Trees	-	25,047	20,000	20,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	500,000
Illinois Park Design/Construction	-	224,700	-	-	-	-	-	-	-	-	-	-	-	-	-
Splash Repairs, Replacements and Maintenance	-	-	-	-	122,000	47,500	-	-	-	-	-	-	-	-	169,500
TOTAL	**76,277**	**332,037**	**221,000**	**87,114**	**299,500**	**232,500**	**160,000**	**185,000**	**160,000**	**185,000**	**160,000**	**185,000**	**160,000**	**160,000**	**1,887,000**
(Use)/Accumulation of Surplus Funds	**82,409**	**(163,405)**	**(55,140)**	**96,186**	**(113,350)**	**(38,480)**	**37,000**	**16,900**	**42,500**	**21,000**	**46,480**	**24,900**	**50,495**	**53,962**	
ENDING FUND BALANCE	**341,722**	**178,317**	**123,177**	**274,503**	**161,153**	**122,673**	**159,673**	**176,573**	**219,073**	**240,073**	**286,553**	**311,453**	**361,948**	**415,910**	**415,910**

CITY OF GOLDEN
MUNICIPAL SHOPS PROJECT - GCLC
TEN YEAR CAPITAL IMPROVEMENT PLAN
2007-2016

09/28/06

Projected
Interest rate:
4%
2006 - 2015

DESCRIPTION	ACTUAL 2004	ACTUAL 2005	AMENDED BUDGET 2006	PROJECTED ACTUAL 2006	PROPOSED BUDGET 2007	PLANNED BUDGET 2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL 2006 TO 2015
REVENUES:															
External Borrowing				14,360,000											-
Interest				120,000	75,000	13,500									88,500
															-
TOTAL REVENUES	**-**	**-**	**-**	**14,480,000**	**75,000**	**13,500**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**88,500**
EXPENDITURES:															
Professional Services	-	-	-	640,000	-	-									-
Land Improvements	-	-	-	75,000	-	-									-
Construction	-	-	-	10,375,000	2,525,000	877,500									3,402,500
Issuance Costs	-	-	-	76,000	-	-									-
															-
															-
															-
															-
															-
															-
TOTAL	**-**	**-**	**-**	**11,166,000**	**2,525,000**	**877,500**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3,402,500**
(Use)/Accumulation of Surplus Funds	-	-	-	**3,314,000**	**(2,450,000)**	**(864,000)**	-	-	-	-	-	-	-	-	
ENDING FUND BALANCE	**-**	**-**	**-**	**3,314,000**	**864,000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

City of Golden
Past Energy Improvement Efforts
While the City has not commissioned an energy audit or implemented a coordinated City-wide effort to increase efficiency and/or saver energy, every department has instituted programs and policies on an ad hoc basis, many of which have resulted in substantial improvements. These measures are described below.

STREETS DIVISION

- Public Works Streets Division recycles all used concrete and asphalt.
- Streets uses recycled asphalt in alleys.
- Stormwater Maintenance has been retrofitting inlets with additional manholes to reduce the amount of time the vacuum truck spends cleaning individual inlets.
- Streets Division's rubberized crack seal material is made from pulverized recycled tires.
- Four signalized intersections were replaced with traffic circles there by eliminating energy required to operate the signals and also reduced the amount of time vehicles spend idling at a traffic light.
- Leaves from fall street sweeping are composted and diverted from taking up space in a landfill.
- Re-faces faded traffic signs with new sheeting rather than purchasing new signs.
- Has an agreement with a nearby property owner to dispose of spoils materials (dirt, sand sweepings, etc.) rather than taking it to the landfill.
- Stormwater Div. has installed "Drains to Clear Creek" identification markers with ID numbers to all City inlets.
- Uses volunteers for all of our "Adopt-A-Programs", including channel maintenance.
- Stresses the practice of conserving energy at work just as you would at your home. "Close the doors and turn out the lights". "Don't let vehicle idle longer than necessary".
- Utilizes maps to conserve fuel when working in our 6 major areas to make sure we have inspected all streets while in that particular area.
- The street sweepers (3) use "non-potable water" for all of there operations. The Stormwater Div. uses non-potable water in the Vac-Con when cleaning inlets.
- Three of the six snowplows use an alternative de-icing agent (Ice-Slicer) that completely melts and requires no sweeping. It works faster and lasts longer than traditional salt and is less corrosive.
- Participates in the Regional Air Quality Council Program whose goal is to reduce particulate emissions through salt/sand application reductions and better sweeping practices after snow/ice events.
- Streets does a tremendous amount of sweeping that is a proven practice to remove pollutants from the storm sewer system before being discharged to Clear Creek – they can provide additional statistics
- The Stormwater/Drainage Maintenance performs thousands of inspections annually to ensure the long-term operability of drainage and stormwater quality structures – Dave Ackley can provide additional stats

- The Street Division oversees the Adopt-a-Street and Adopt-a-Spot programs to re-divert litter back to the landfill and keeps it out of waterways
- The Street Division follows procedural manuals for street sweeping, snow removal and storm drainage which all have environmental components to protect resources and minimize pollution

UTILITIES DIVISION

- Constructed the Raw Water Pump Station to deliver untreated water to the Golf Course and Lions Park for irrigation purposes. Saves the chemicals, time and energy of treating the water for irrigation.
- Utilizes cured in place pipe for sewer repair when possible. Allows sewer pipes to be repaired without having to use heavy equipment to dig up and re bury the pipe.
- Utilities purchases recycled concrete to use as fill
- The north water line was replaced to conserve hundreds of thousands of gallons of water that was lost each year to the leaking pipe. (9/21/99 thru 9/25/99 total water loss was 370,000 gallons)
- Manual read water meters have been replaced with touch read meters that reduce the amount of driving required to read the meters. One employee can read several times the number of meters in the same work period. This system also reduces injuries due to opening pits, back problems, spider bites, dog problems, etc.
- The Inflow and Infiltration efforts have reduced the amount of water entering the sanitary sewer system due to storm events thus preventing the use of energy by Coors to treat wastewater delivered by Golden
- Improvements to the Rimrock Water Tank allowed the city to maintain water levels (cycle tank) as well as prevent the city from wasting water at the tank due to flushing operations utilized to prevent stale water.
- Purchase crew cab vehicle for Water Resource personnel. One vehicle instead of two to offsite facilities when more than two employees are needed.
- Utilize solar power to power telemetry units at remote stations. Guanella groundwater monitoring, 6260 Tank, 6400 Tank, etc.
- Aggressive replacement of old water and sewer mains saves in treatment costs at both ends. We don't treat as much potable water and we don't pay to treat as much wastewater. Utilities follows a preventive maintenance program to ensure the operability of the sanitary sewer system. This maintenance program results in fewer backups, minimizing the potential for sewerage to enter, or pollute, waterways.
- Utilities staff obtain Wastewater Technician Certification from AWWA which includes training to detect infiltration from cracked pipe as well as recognize improper or illegal sanitary sewer connections to storm sewer pipes

ENVIRONMENTAL SERVICES

- The City has developed a water conservation plan
- City has provided irrigation audits to citizens to promote water conservation

- The City has Xeriscape demonstration gardens that are examples to the public of low water use gardens.
- The city promotes water conservation and education through seminars, informational brochures and the city website.
- The city encourages environmental landscaping which reduces the use of gas powered landscaping equipment
- The Environmental Laboratory phased out the use of the Atomic Absorption Spectrophotometer that only allowed the analysis of one sample for one analyte at a time. This instrument required a lot of time and power to analyze samples. This instrument was replaced with an ICP instrument that can rapidly analyze for multiple metals in a sample in a much shorter amount of time.
- A proactive construction site erosion and sediment control program that catches problems early, before pollutants have a significant impact on the storm sewer system and subsequent waterways. This also minimizes the impact that restoration and reclamation efforts may have.
- Requires native species in reclamation seed mixes and organic soil amendments for revegetation projects to promote healthy ecosystems and minimize the use of non-native species that can out compete natives.
- Holds developers accountable for weed management and establishment of vegetation following reclamation of disturbed areas associated with construction
- Implements a permanent water quality program to minimize impact of new development and redevelopment, including the promotion of sustainable practices such as (stormwater infiltration) diverting hard surface parking areas to drain through vegetated areas to help remove pollutants and minimize runoff
- A founding member of the Colorado Stormwater Council – a non-profit organization representing stormwater permit holders to address regulatory concerns as well as new technologies and public education
- The Environmental Services Division acts as a city-wide resource for all environmental concerns, questions or issues (internal and community-wide). Holds regular employee training on pollution prevention techniques and reporting environmental concerns
- Maintains web information and a phone listing under Environmental Questions and Recycling Information for the public
- The City was chosen as a DRCOG Stormwater Case Study used to inform other municipalities on how to implement a stormwater program to meet upcoming stormwater requirements
- The City is a founding member of Upper Clear Creek Watershed Association – a 208 Management Agency, and has been an active voting member since 1993.
- The City is an active participant on the Rooney Road Recycling Center Board of Directors. The Center is managed and supported by Golden in conjunction with eight other entities. The Center offers, or has offered, household recycling, tree limb disposal, electronic waste recycling, household chemical disposal, disposal for small quantity generators, and HazMart (where citizens can pick up new or barely used products, to avoid purchasing more product than they may need).
- Produces and distributes educational brochures

- Produces and distributes, in conjunction with the WTP, an annual Consumer Confidence Report/Water Quality Report
- Engaged Boy Scouts and elementary school students in storm drain marking programs
- Hosts and/or participates in various public education events including Earth Day, kayak course races, Splash Dog Run/Walk, classroom presentations, creek side presentations, annual Earth Day Art Show, school water quality monitoring projects, high school mentoring, facility tours, Xeriscape seminar and garden tour, Composting seminar
- Was recognized by APWA for a Community Leadership Project partnership with the Denver Zoo to promote stormwater quality
- Promotes stormwater pollution prevention practices to businesses within the community
- Developed a database to track incidences of illegal dumping so that trends can be revealed to target public education efforts and repeat offenders can be adequately addressed
- Implemented use of a computer database to reduce the amount of paper generated by different programs in environmental services.
- Monitoring water quality at Fossil Trace Golf Club.

WATER TREATMENT PLANT

- Sludge generated by the water treatment plant is taken to a local facility to be composted.
- The water plant changed the sludge centrifuge process to a belt press. The belt press requires a much smaller motor and thus much less energy to operate.
- The following plans and programs guide pollution prevention measures in the operation of the WTP: the Plant has a Risk Management Plan for Chlorine; is a certified Level 3 participant in the Partnership for Safe Drinking Water (certification involved an extensive evaluation and development of SOPs, including chemical and materials handling); secondary containment exists for liquid chemicals and indoor storage is provided for storage of all other chemicals; spill response kits are kept at strategic locations on site.
- In Sept. 2003, The WTP changed disinfectant from 100% chlorine to sodium hypochlorite which greatly reduced the possibility of any dangerous spills/leaks which could endanger Golden Citizens and/or the environment.
- All of the water used for washing filters, sampling, and other plant operations is recycled and reused. It is not discharged as waste.
- High Efficiency fluorescent lights were installed in the new cover for the sedimentation basin. Existing fluorescent lighting fixtures are being replaced with high efficiency fixtures as the old fixtures fail.

BUILDING DIVISION

- The city has adopted the 2006 International Energy Conservation Code that promotes the use of conservation measures
- The 2006 building code allows expanded use of engineered wood products that helps reduces pressures on old growth timber forests.

MISCELLANEOUS PUBLIC WORKS

- Changed City traffic signal and pedestrian crossing bulbs to LED (Light Emitting Diode) fixtures that use 90% less energy than the previous incandescent bulbs.
- Reclaimed an old landfill site by encapsulating flash and other hazardous debris and converting it into holes 11 thru 15 at the golf course, thus safeguarding a groundwater aquifer recharge area.
- We re-used some of the old steel railing from the Clear Creek Trail at Ford Street at four locations on the golf course project that are adjacent to steep drop-offs.
- The new flashing speed sign installed on 19th Street at Golden Ford is solar-powered.
- The old Jefferson County landfill on Rooney Road is being turned into synthetic turf athletic fields, proving recreation without requiring irrigated turf.
- A storm manhole at 20th & Jackson was converted to a drop manhole, which traps sediment before it can be discharged into receiving waters.
- Under our revised Street and Drainage Specifications, providing stormwater quality improvements is required as a condition of granting the full detention exemption.
- The Geographical Information System (GIS) helps maximize fuel efficiency by helping to create an efficient driving route before leaving the office.
- GIS minimizes the need to drive out and look at different utility assets by providing pertinent information in the office.
- The city has installed solar powered stormwater monitoring equipment, telemetry for the water distribution system and a speed limit sign on 19th.
- Construction of Fossil Trace Golf Course resulted in creating more wetlands which provided habitat for wildlife and helps to remove pollutants from stormwater runoff.
- The use of cell phones in the last 15 years has helped to reduce the number of trips from the field to the office to make a phone call. It allows for the additional combination of trips.
- The City participated in a recycling program that is a collaboration between the city, Coors Brewing and Ball Corporation.
- All the systems, including the storm sewer, have been mapped and GPS'd. This enables staff to trace illicit discharges, improper connections and illegal dumping quickly and effectively.
- Pollution prevention, spill prevention, materials handling and proper disposal procedures are implemented by every City department to minimize pollution of receiving waters.
- All Public Works staff receive regular training to detect threats to water quality including illicit connections and illegal dumping to the storm sewer system and how to respond and report to such occurrences
- Engineering incorporates water quality into the design and construction of all capital projects
- Cartegraph/work management to auto-generate inspections, correspondence to maintain proactive maintenance schedules

FLEET DIVISION

- Preventative maintenance program for the city fleet of vehicles helps prevent leaks and keeps vehicles operating as efficient as possible
- The Fleet Maintenance Division has the following practices in place to minimize pollution: no outdoor storage areas exist for fleet maintenance; fuel tanks are covered with secondary containment and tertiary containment; less toxic chemical alternatives are used whenever possible; parts, fluids, etc. are recycled when possible, otherwise they are properly disposed.
- The automatic gates at the Cemetery and the Cliffs were all converted to solar power.
- The Cities used motor oil is recycled into burner fuel.
- The Cities used tires are recycled for use in asphalt and other rubber products. (When availability allows).
- We recycle our anti-freeze in house.
- For emissions we use ultra low sulfur diesel and "no sulfur ash" motor oils in all of our equipment.

GOLDEN CEMETERY

- Installed solar powered automatic gates at the cemetery entrances. Previously paid and employee to open and close gates. It was also done by the Golden Police for a while.
- Installed permanent gas and diesel tanks. Was previously hauled from City Shops in five gallon containers.
- Replaced a ¾ ton pickup truck with a small utility vehicle.
- Replaced a tractor with a small utility vehicle.
- Purchased an electric card to transport families, visitors and etc. around the grounds.
- Conserve energy by turning thermostats down at the end of work day.
- Installed energy saving light bulbs throughout offices and shops.
- Installed Computer programmed automatic sprinkler system which waters at night. Previously used up to 80 hoses per day running 8 hours each. Saves millions of gallons annually. System is automatically shut down upon ¼ inch of rainfall.
- Grounds are watered an average of only 20-25 minutes every other night instead of nightly.
- Non burial areas are not watered unless absolutely necessary to prevent the grass from dying.
- Employees are instructed to conserve energy such as shutting off vehicles and lights when not in use.
- Combine trips for supplies and materials to conserve energy and staff time. Trips out of the grounds are limited.
- Completed audit of Cemetery irrigation system in 2006.
- Installing of automatic energy saving thermostats at shop & Office.
- Adding of insulation in shop and office
- Installing of energy saving glass in windows of shop & Office

- Installing of more energy efficient heating system in the office. Currently electric.
- Installing of more efficient lighting fixtures.
- Investigating the use of alternative fuels.
- Investigating & proceeding to convert from City treated water to non-potable water.
- Converting of the present irrigation sprinkler heads to more efficient, energy conscious heads.
- Implementing the recommendations received in the audit of the cemetery irrigation.

FACILITIES MAINTENANCE

- Changed all incandescent light bulbs at the Clear Creek RV Park to the energy efficient Greenlite Swirl Fluorescent
- HVAC System at the Fossil Trace Clubhouse is computerized allowing for monitoring and adjustments at the central Facilities Maintenance Shops, thus avoiding useless trips and the waste of fuel.
- New construction at the Community Center has utilized energy efficient fluorescent lighting. All new lighting is connected to an automated lighting control panel.
- All City Buildings have gone to "Green" chemicals for custodial services.
- Restrooms throughout all City buildings are currently using recycled paper products.
- The Community Center was constructed in a manner to utilize the southern exposure in the pool area. It is also situated to accommodate solar energy if a decision were made to go that route.
- 50% of the exit lights in the Community Center have been changed over to LED lighted signs.
- Currently using delivery services provided by vendors to conserve on fuel and staff time.
- Researched the use of capacitors on large HVAC motors as an energy saving device.
- Securing estimates to place all City HVAC systems on our computer system to enable monitoring and adjustments from Central Facilities.
- Securing estimates to place all of the Community Center lighting on the lighting control panel. This will allow lighting to be turned on and off at designated hours avoiding lights being left on.
- Securing estimates on placing Community Center lighting on sensors to monitor use of the rooms so lights will go off when rooms are not in use.
- Securing estimates on placing Community Center lighting on sensors measuring the amount of light so lights will dim automatically when full lighting power is not needed.
- Have secured preliminary pricing and looking at going to bid on changing the Metal Halide and High Pressure Sodium light fixtures to the more efficient fluorescent lighting.
- New "Shops" will have a computerized HVAC systems allowing for more efficient use and monitoring.

- New “Shops” will be utilizing energy efficient lighting and controls.
- Continue to change out exit lights to LED throughout the City.
- Install Capacitors on all HVAC and pool motors over 15 HP.

FORESTRY DIVISION

- The planting and care of public trees in the City of Golden.
    1. Trees store carbon and release oxygen
    2. Save on energy costs by providing shade for buildings, parking lots and shade valuable air conditioning units.
    3. Save heating costs when protecting buildings from winds.
    4. Filter pollution particles from the City’s air.
    5. Save on storm water treatments costs by intercepting rainfall.
- Planting of approximately 150 new plantings per year.
- Encourage City residents to plant trees through the annual tree sale. Approximately 40 additional trees are planted on private property each year through this sale.
- Drip irrigation systems have been installed for watering public trees. Water is being applied into the ground and not the air.
- The City has entered into a collaborative agreement with an independent and non-profit organization to undertake a study of Gulden’s community forest with the intention of optimizing the benefits of our trees.

FOSSIL TRACE GOLF CLUB

- Highly efficient state of the art irrigation systems Allows operator to dial in exactly how much water is needed and adjusts sprinkler heads individually according to the “Evapo-Transpiration” rates.
- The “Greens” are built to USGA specs and are designed to maximize water use. This is accomplished by a method that is called a “Perched Water Table”.
- There are designated wetlands on the course that are recognized by the State of Colorado. These environmentally friendly areas are very conducive to wildlife habitat and through testing staff have proven that the water is cleaner exiting the golf course that when it entered. This is documented on the City of Golden website by Hope Yu. (Environmental Services)
- Chemicals/fertilizers used on the golf course are used sparingly and soils are tested regularly to ensure safe application practices.
- Utilization of electric golf carts in the rental fleet.
- Staff is trying to incorporate more electric utility vehicles into the fleet and phase out some of the gas powered. Staff is strongly considering other “alternative fuel” powered equipment when it is time for their replacement and as it becomes available.
- Changing incandescent to energy saving fluorescent bulbs.
- Investigating charging electric carts off hours to get better pricing and avoid peak usage.

PARKS DIVISION

- Engaged contemporary cultural practices in the management of turf grass, native vegetation, and pond vegetation control. Cultural applications related to turf grass management include soil testing of park sites and flowerbeds, formulating inorganic fertilizers based on soil test results, mowing height to promote deep root zones, irrigation application to promote deep root zones, core aeration to promote the deterioration of thatch and promote deep root zones. Grass clippings have not been collected, returning ½ to 1 lb. of nitrogen per 1000 sq. feet a year reducing the need for fertilizers. Applications of broadleaf herbicides have been minimal, addressing only the most significant populations of weeds, many times in response to requests by others. Turf fertilization rates have been reduced from 3lb. nitrogen/1000 sq. ft. to 2lb nitrogen/1000 sq. ft. partially in response to budget limitations and improved product performance. Application of insecticides and fungicides has been unnecessary. Native vegetation stands have been successfully established using mowing techniques that discourage broadleaf invaders. Lions Pond vegetation has been controlled by proper circulation of pond water, aeration fountains, and stocking of grass carp (weed eating fish).
- Irrigation practices and scheduling have been implemented to promote a deep root system and discourage fungal activity. Currently irrigation systems are programmed to provide 1" of water/week. This is ½ the current industry standard of 2"/week. After significant rainfall irrigation systems are shut down until area turf shows signs of stress, sending the roots deep in search of water. Rain sensors have been installed to interrupt normal irrigation if ¼" of rain has fallen. All 'old' manual irrigation systems have been replaced with contemporary designs that are 75-90% efficient. Raw water was used in 2006 to irrigate Lions Park, Lions Ball Fields, and the Community Center. The program will be expanded to Ulysses Park in 2007 and the Golden Cemetery at a date to be determined.
- Began using compact fluorescent light bulbs in 2004. By the end of 2006 compact fluorescent light bulbs had been installed in all fixtures able to receive them within our areas of responsibility. The new bulbs use 12 watts of electricity instead of 60 watts, reducing the power requirements by 4/5ths while maintaining the same level of lighting.
- The 21 year old field lighting fixtures on all four fields at Ulysses Park were replaced in 2006. The original intent was to minimize 'light trespassing' off site. The manufacture stated that we would use less electricity at the site as the new fixture count would be less than the existing count, as well as dramatic improvements to keep the light on the fields, not off the site. In fact the electrical savings were dramatic. In many cases the demand rate was reduced by 2/3 and the kilowatts used dropped by 20% or more thanks to the new hardware. The department has received a matching grant from Jefferson County to retrofit the ballfield and tennis court lights at Lions Ball Fields for 2007.
- The power plants used in light equipment such as string trimmers, edgers, and small lawn mowers have been identified as a significant source of air pollution. Technology has been driven by California state standards to provide a cleaner, quieter operating power plant. In 2006 the Parks Division sought out and purchased string trimmers, backpack blowers, and an edger that meet Tier Two requirements specified

by California standards. As older equipment is replaced the Division will strive to purchase proficient equipment that meets the highest standards available.

- For 2007 the Parks Division desires to revise procedures pertaining to the mowing of right of way and native vegetation sites. Our intent is to reduce the area being mowed, raise the height of cut, and select some areas not to be mowed at all. If the community is receptive to this change in management a more natural and viable native vegetation program will be the result, the reduced mowing will save significant labor and fuel expense.
- In 2005 the Parks Division began using a 'golf cart' style utility vehicle for activities on 10th Street. In 2006 an all weather 4x4 utility vehicle shared with recreation was used for the same nearby activities. The vehicle was also used for snow removal and deicing the trails along Clear Creek. Golden has an excellent trail system. Many of the park sites north of 10th street can be reached by using the small utility vehicles on the trail system. The same can be said for the south side of town. A preliminary plan has been proposed to identify 'satellite' bases so that much of the maintenance activity can be accomplished using the small utility vehicles via the trails, minimizing the need for full size trucks. The initial purchase of the small vehicles would be much less than trucks. They may use less fuel and should cost less to insure. Connecting the 6th Avenue Trail to Clear Creek Trail would provide trail access to a significant percentage of the park system.
- Initiated in 1987, Golden Community Pride Days original goal was to provide an opportunity for the community to dispose of 'eyesore' junk visible from alleys, drainages, and other open properties needing cleanup. Over the years the program has evolved offering a combination of material recycle opportunities and collection of debris consisting of remodeling trash, old furniture, and yard trash. In 2006 1500 cubic yards of debris went to the landfill. Reviewing the budget indicates that 48% was spent on recycling efforts and 52% on landfill dumping. Consideration should be given to increase the percentage of expense on recycling efforts and reduce the landfill related expenses.
- Currently the city is providing a year-round opportunity for the recycling of glass, plastic, aluminum, and paper products. The current location at the Splash is consistently overwhelmed with materials dropped off by the community. A private opportunity at the Transcript offices has just been removed, and the load has increased at a small drop off container at Parfet Park. Consideration should be given to expand the Splash site to provide up to twice the storage space for recycled materials. There may be a demand for at least two more sites within the city limits as well.
- The Parks Division has been monitoring electricity usage at 23 sites since 2000. This data has been instrumental in determining the status of area lighting, sports field use, and facility use in restrooms and other buildings. We would like to consider paying for wind energy sources through Xcel Energy at some of these sites. It will cost more $ and reflect the divisions commitment to using sustainable energy sources.
- It would be nice to see three on site wind turbines providing power to the new Maintenance Facility. It would definitely be in view of the public.

CITY HALL (COURTS, FINANCE, CITY CLERK)

- Paper and toner cartridge reycling.
- Double side printing of Financial reports.
- Electronic sending of council packets.
- The courts reuse file folders until they are worn out.
- The courts use a confidential destruction company that recycles the paper versus burning the records that are past the retention date.
- In 2006 courts eliminated one page on police summons not being used. 2002 Electronic Time Keeping system rather than paper timesheets. Less manpower for data entry, collection of paper timesheets plus less paper. Purchase of multi-function copier rather than copier and printer. Less electricity and less environmental impact at disposal time?

GURA

- Obtained a technical service grant from DOE/NREL to assist GURA and the City in developing a variety of programs to increase resource efficiency and the use of renewable energy.
- Retained an engineer specializing in resource efficiency to consult with construction projects funded by GURA. This has included the Jackson Court and Gateway Station projects.
- Purchased wind power for its office in 2004 and finalized an annual windpower contract with Community Energy in 2006.
- Installed LED holiday lights at its office in 2005. GURA researched, organized, and partially funded the new LED lights for last year's downtown display.
- The Work Plans for the past two years have contained a $5,000 line item to support energy efficiency programs. This year's line item is $35,000.
- Hired a local seamstress student to reupholster its 30 year old office chairs rather than buying new chairs.
- The GURA office is in an historic building with high efficiency fluorescent lighting, ceiling fans, and window glazing. This "adaptive re-use" is essential to maintain the historic integrity and vitality of downtown. GURA recycles its paper and plastic, and prints double-sided meeting packets. GURA is exploring other upgrades in cooperation with the building owner.

IT

- IT started using Action PC to get rid of used computer equipment. Action PC is a company that buys used PC equipment and resells it whenever possible. When it is not possible to sell, they dispose of the equipment in an environmentally friendly manner. Since Action PC comes onsite to COG for pickup this also saves the city a considerable amount of labor that would otherwise be spent on transporting the equipment to recycling. Often times, the city actually makes money depending on the resell value of the equipment.
- We now use flat panel monitors which can use 1/3rd as much power and do not generate as much heat (double savings because you don't have to air condition it), eliminate a cathode ray tube (presumably harder to dispose of), but flat panels

cost more. I don't know if the energy savings ever overcome the additional price, nor do I know if we should advertise we're moving to flat panels, as if everyone else isn't either. Please tell me what you think of that idea.

- We buy all energy star compliant equipment which basically says our equipment adheres to government standards for energy savings. This is akin to saying that the city uses unleaded fuel at this point though and the standards don't really mean anything. I am not sure we want to go down this road either.

PLANNING

1. In 2003, the City amended the Municipal code to include requirements for more effective soil preparation for landscaping. The code change was part of a larger effort of several metro area communities that agreed to adopt stricter water conservation policies. The amendments included:

- To preserve the limited amount of topsoil from a project which would be salvaged and re-used in amending the project area's soil.

2. In 2005, the City amended the Municipal Code to include

- Appropriate placement to emphasize passive solar gain for buildings
- Irrigation systems are encouraged to use automatic controllers, rain sensors and subsurface drip systems
- Landscaping materials are required to be predominantly low-water, native species.
- The use of mulch is required to retain as much soil moisture as possible.
- Sub-surface drip irrigations are required where possible.

3. From the Golden Comprehensive Plan, the following environmental goals have been adopted and in place since 2003:

Section 2.6 Public Investment Goal A: Provide public services in a high-quality and cost-effective manner

- Create and implement long range plans and emergency strategies both of which support maintenance and upgrades for staff and equipment.

Section 2.6 Public Investment Goal D: Maintain a commitment to continual reinvestment in the City.

- The capital improvements plan should reflect a continuing maintenance and upgrade of infrastructure and facilities.
- Promote state-of-the-art community telecommunications.
- Prioritize capital improvement projects based on community needs.
- Review and if necessary revise codes, and provide and encourage incentives for high-speed, high-capacity data and communications systems.

Section 2.6 Public Investment Goal E: Anticipate future growth patterns and plan the infrastructure and services to respond to these needs.

- Ensure that new development pays its proportional fair share of the costs of new infrastructure and services.
- Self-imposed standards for water quality are met.

Section 2.7 Environment Goal A: Environmental impacts of growth and development will be mitigated to the extent possible

- Manage growth and development so as to minimize adverse environmental impacts.
- Major new development will require an assessment and disclosure of the environmental impacts.
- Encourage developers to use low-water plantings.
- Encourage energy efficient building techniques in all types of construction.

Section 2.7 Environment Goal B: Control the creation and adverse effects of pollution

- Address environmental issues related to negative impacts both locally and in a broad context. These include: water quality, air quality, heat, noise, odor, visual elements, electromagnetic, and radiation.
- Monitor air and water quality, noise, and soils in designated areas.
- Control environmental impacts not covered by county, state or federal regulations, or when such standards are deemed to be inadequate.
- Coordination and cooperation with Jefferson County, regional, state, and Federal agencies.
- Increase public education concerning the cause and control of pollution and what residents can do to help minimize pollution.

Section 2.7 Environment Goal C: Conservation of natural resources will be a part of all City projects

- Implement conservation programs including energy, water, habitat areas, and urban forests. Encourage the use of natural, low-water plantings whenever feasible. Encourage recycling by City departments and City residents Encourage reduced use of natural resources.
- Make available pertinent educational materials concerning conservation to the citizens of Golden, primarily through the Web, workshops, and the Golden Informer. Continue to sell natural, low-water plantings. Encourage partnerships to facilitate alternative energy source development.
- Implement a recycling program for City departments.
- Ensure that City projects address energy and water conservation, habitat areas, and urban forests.

Section 2.7 Environment Goal D: Achieve energy efficiency and water conservation in new construction

- Encourage builders to use “green” building design.
- Develop a “resource efficiency review or audit” for new construction.

Section 2.7 Environment Goal E: Adopt and environmental policy and implement and environmental management system

- City agencies and departments will conduct operations in an efficient and environmentally protective manner.

- Investigate the benefits and costs of implementing an environmental management system for the City.

Section 2.7 Environment, Specific targets of the Environmental goals:

- Environmental impacts of major developments are mitigated in accordance with contemporary standards.
- The City government leads by example by participating in projects that reflect a commitment to the environment.
- Federal, state and county criteria and requirements are met.
- Alternative and renewable energy sources are used in City facilities.
- Energy and water consumption in City facilities decreases.
- Per residence water use in Golden decreases.
- New construction meets established energy efficiency criteria.
- Underground more existing overhead utilities.
- If approved and implemented the City environmental management system will meet generally accepted standards, such as ISO14001.

POLICE DEPT

- Support Services is using a more fuel efficient vehicle instead of the Dodge Durango
- Operations has been instructed not to idle vehicles on calls and in the parking lot, except in extreme cases, to reduce the consumption of fuel

FIRE DEPARTMENT

- Station bays are kept at 62 degrees F
- GFD uses high efficiency fluorescent tubes and ballasts and a significant number of FBLs in place of incandescents
- Downsizing two staff vehicles for fuel efficiency
- Apparatus are comprehensively serviced on a regular basis to ensure reliability and longevity
- GFD uses low sulfur fuel and mileage enhancing multi-viscosity lubricants
- Golden Fire apparatus are washed on the Fleet wash stand using environmentally safe cleaners and detergents
- GFD uses fan forced exhaust discharges at three stations to maintain clean air on the floor and prevent soot contamination on interior walls and ceilings. It is not feasible to install such a system at station 2.
- GFD uses programmable thermostats in Station 1 for staff offices and the multi-use training room.
- Replaced 1983 Reznor HVAC swamp cooler system on Station 4 with a high efficiency Trane unit to support ambulance and shift crews.

City of Golden
Future Energy Savings Plans

The City will raze and rebuild its central fire station this year, which will trigger a re-evaluation of the use of the other three fire stations. The City will also move its shops facilities to a new site, which will trigger an evaluation of the future use of the old shops site.

In preparation for this RFP, each City department reviewed its sustainability needs, policies, and projections. The first chart below shows energy savings ideas related to facilities and equipment in two categories. The first column shows ideas for which the City has allocated funds either in annual departmental operating budgets or within the City's general Capital Improvement Plan (CIP). The CIP is attached as an appendix for your careful review. The second column represents ideas for which the City has not allocated funding and which have not been fully investigated.

The second chart below shows energy savings ideas related to behavioral and policy changes. The ideas may or may not have budget implications, and none of them have been instituted or evaluated for cost.

The City welcomes evaluations and recommendations for all of these ideas with the understanding that cost savings and payment sources will be allocated according to the language in Attachment A, subheading "Funding sources to support annual payment"

Facilities and Equipment Energy Efficiency Ideas		Budgeted	Not Budgeted
1	Convert the gate systems at the new facilities switched over to solar power.		x
2	Install a light reading sensor that will turn off the lights in our new shop when the natural lighting is sufficient to perform operations safely.	x	
3	Upgraded cooling systems for City Hall and PD Server rooms		x
4	Server virtualization		x
5	Install solar heater or pre-heater for community pools		x
6	Solar water heaters for domestic use in city buildings		x
7	On demand or point of use water heaters in city facilities, i.e. public works building and laboratory.		x
8	PV on city buildings or in city parks		x
9	Solar panels as primary power source for street lights, signals and signs		x
10	Motion sensors i.e. bathrooms, conference rooms, large office areas.	x	
11	Retro fit Exit signs with LED bulbs.	x	
12	Address public works 1st floor heating issue and remove space heaters and mats.	x	
13	Change lights to T8 models or other energy efficient retrofit such as LEDs.	x	
14	Replace windows with triple pane or add films that retain/reflect heat.	x	x
15	Energy efficiency improvements in computer hardware.		x
16	Install “green” roofing systems.		x
17	Utilize geothermal heating or cooling.		x
18	Test and fix or improve door and window seals.	x	x
19	Identify and fix heating and cooling system conflicts. i.e. upstairs in public works, which thermostats control which rooms etc.	x	
20	Replace dishwasher in Lab with a unit that has an onboard water heater and turn down the water heater for the PW building or replace with on-demand unit.		x

21	Figure out how to get the safety light bars on city vehicles to operate without the vehicle running continuously.		x
22	Replace fluorescent lights when they die, and not on a set schedule if this is not already the case.	x	x
23	Survey trees surrounding city facilities for strategic areas and opportunities to plant additional trees that shade city buildings in the summer time.	x	
24	Ways to utilize sources of waste heat like furnace exhaust, heat from pumps or motors.		x
25	Install waterless urinals in men's rooms in city facilities.		x
26	Hydroelectric generator at the back of the water treatment plant ponds to run pumps or supplement power used by the City.		x
27	LED Task lighting at individual workstations		x
28	LED Lights for Olde Golden Christmas and holiday lighting	x	x
29	Solar powered water feature pumps for traffic circles at South Golden and Johnson and South Golden and Ulysses.		x
30	Hydroelectric generators on Guanella, Upper and Lower Urad reservoir outlets		x
31	Replace the high service pumps and motors with newer efficient ones.	x	x
32	Replace the old floc mixer motors with newer motors as they burn out.	x	x
33	Upgrade the emergency generator from a 500 KW to 1MW to get off the peak demand billing. This doesn't save energy but will reduce cost.		x
34	Install separate electrical meters for outlying buildings to reduce the peak demand charge at WTP.		x
35	Research capacitors for big motors to reduce the peak demand charge.		x
36	Put heavy water users on the raw water irrigation system.	x	
37	Review our street light inventory to determine if any existing street lights can be removed.		x
38	Retrofit street lights with LEDs.	x	x
39	Fire Staff vehicles not used for response can be replaced with higher mileage vehicles. Some vehicles still may require 4WD to access areas in inclement	x	x

	weather		
40	Improve Community Center pool lighting	x	x
41	Investigate window louvers at the community center pool for direct lighting		
42	Seek cost savings in purchasing gas and electricity from alternate suppliers	x	x
43	Install centralized computer controls for all HVAC units citywide.	x	
44	Wireless telemetry		x
45	Research alternate fuels and hybrid / electric technology for City use.	x	x
46	Consider skylights or light pipes to brighten office areas that do not require dimming for presentations		x

Policy and Behavioral Energy Efficiency Ideas

1	Implement a mandatory “no drive” day. I.e. During the course of the week you must pick one day to leave your City vehicle parked.- education campaign
2	No return policy. (This will be a big factor in the new facilities). Staff should be able to leave the shops in the morning equipped with everything they will need for the day.
3	Perform driver/operator education classes for operation of vehicles. Proper operation has proven to show a huge reduction in fuel consumption.
4	Continue analyzing replacement vehicles, down sizing where possible
5	Implement an energy star or similar energy efficient purchasing policy for equipment used in the city, such as pumps, computers, printers, HVAC units, etc.
6	Policy or standards for shutting off energy consuming equipment when not in use.
7	Incentives to employees for behavioral changes resulting in conservation of energy such as carpooling in city vehicles efforts to combine trips etc.
8	Walk to meetings at City Hall or the Community Center.
9	Close all doors behind you to conserve heat. This includes garage doors.
10	Use Meyers Hardware for items they carry first rather than driving to Home Depot.
11	Work our “areas” during maintenance activities rather than randomly all over town.
12	Car/truck/van pool when possible.
13	When possible cycle the high service pump off when the backwash pump is on.
14	Cycle the distribution pump stations to run only one pump except during high demand times.
15	At the end of the work day, require that employees fully shut down their computers and turn off the office lights, don’t just “log off”
16	Turn out lights when not needed or not in use.

17	Institute a no idle policy including warming up engines in cold weather. Don't let vehicles idle in the summer just to keep the A/C running.
18	Implement a 4-10's work week.
19	Run equipment at half throttle
20	Assign trucks to employees that need them. Provide super efficient vehicles for staff that needs a vehicle, but does not need a truck.
21	Stop taking vehicles home for on-call duties.
22	Energy efficiency purchasing flexibility policy
23	2 sided printing/copying as default
24	Go paperless
25	Revise forms to use less paper
26	Replace a few vehicles with hybrid vehicles for PR reasons and to reduce fuel used.
27	Reduce overall water consumption by promoting conservation
28	Policy to reduce future lighting and landscape demands
29	Reduce current lighting and landscape demands - pertains to older developments that the city now takes care of
30	Fire apparatus on scene that do not require warning lights can be shut down
31	Fire staff vehicles on scene should not be left idling with accessories operating unless warning lights, mobile radios or warming facilities are required.
32	When attending meeting as a group, utilize as few vehicles as possible or walk, unless fire staff is on call for response
33	Support inspection scheduling to include new construction by area-per-day or specific hours.
34	Utilize fire staff or support vehicles to respond to Ambulance Transport requests for riders, rather than apparatus (i.e.; BR-1 or Fire-1)
35	Expand practice of initial size-up by First-In Officer to modify or down grade response level as required for the call.
36	Utilize appropriate vehicles for meetings out of the city, with regard to the weather and road conditions.
37	Explore alternative work schedules that do not compromise daily operations or customer service

Golden Urban Renewal Authority

July 2, 2007

GURA Commercial Energy Efficiency Pilot Program

What is the purpose of this program:
GURA is committed to helping local businesses thrive in Golden. One way to do this is by reducing overhead. GURA can help merchants reduce energy costs by assessing business needs through an energy audit and by providing implementation assistance. The overall goal is to reduce energy usage by at least 20%. In addition, the pilot program will help GURA evaluate the average performance of the downtown buildings and provide insight on what long-term services and programs it should offer in the commercial sector.

Program Overview:
The program will provide energy audits to the first 8 businesses within the GURA district that sign up between July 2nd, 2007 and July 19th, 2007. Applications will be available online at www.gura.com/eepilot beginning at 9 AM on July 2nd. Then on July 25th, 2007 GURA will contact the 8 businesses to set up an audit time for either July 30th or 31st. GURA will pay the cost of the audit up to $400. The cost of the audit will be determined prior to conducting the audit, according to the rates listed below. If a program participant declines to implement improvements at least to the cost of the audit, then the participant must reimburse GURA for the audit cost. After the energy audits have been conducted, GURA will help the businesses implement recommendations made by Active Energies. The implementation help will include certification for available federal tax credits, applying for Xcel rebates, and paying 50% of recommendation costs up to $2,000.

Prices*:
Retail: $65 per 1,000 sq ft **Office**: $90 per 1,000 sq ft **Restaurant**: $110 per 1,000 sq ft
*Due to economies of scale, large spaces (over ~4,000 sq ft) will be billed at a lower rate than smaller spaces. Therefore, a space of approximately 20,000 sq ft would be more along the lines of $400 than $1,300. Air duct leakage will also be available at an additional cost.

Why Should a Business Participate?
1. Reduce annual operating and maintenance costs
2. Improve productivity
3. Increase customer/client comfort
4. Marketing Benefits

Who is eligible for the audit?
Any building owner and business or merchant within the GURA district that has a current city sales tax license is eligible. A tenant is eligible for an energy audit. However, a tenant will have to obtain the consent of the building owner, by having the owner's release form signed.

What is included in the audit?
• All spaces will receive a full analysis of lighting, HVAC equipment, windows, insulation, plug-in loads, and air leakage (blower door test). Special emphasis will be placed on

reasonable and achievable measures.
• A detailed report, delivered 1 month after the audit, listing the possible improvements and the estimated initial cost, yearly energy savings, and payback of each recommendation.
• Active Energies will list recommendations in the most cost effective way, including no/low cost strategies, to reach the 20% reduction and beyond.
• Cost benefit analysis of a grid-tied photovoltaic system
• Active Energies will also include recommendations for waste reduction.

What to expect during the energy audit:

Working with GURA and Active Energies, we will select a date and time of the energy audit. On the scheduled audit day, a trained Energy Auditor will come to your business and conduct an exterior building overview and interior walk-through. Before the audit begins, Active Energies will have a short conversation with you to determine routines, temperature set points, and appliance usage, as those might be significant areas of improvement. Throughout the overview and walkthrough
the auditor will record important data to be used when creating your Detailed Audit Report. During your audit, you will be able to tour your business with Active Energies as they check everything from your insulation to your air leaks. Since we know your time is important, you may continue to operate your business and not tour with the Active Energies personnel, as a GURA representative will also be present at the inspection.
Following the walk through, the auditor will conduct a Blower Door Assembly Test to identify exterior leakage and potential pressure issues. It would be best to minimize opening doors to the exterior during this time, but it will not interfere with the test. Your business may run as usual during the audit.

GURA's Responsibilities Merchant's Responsibilities

Pay for the cost of the energy audit up to $400 and
provide assistance the day of the audit*
Allow access to energy bills for 3 years after the audit
and implementation have been completed
Assist in applying for available Xcel rebates. Provide previous energy bills 7 days before the audit.
Review the audit reports to find areas where bulk
buying can further reduce implementation costs
Sign the agreement form and remove any barriers to
equipment before the audit takes place
Pay 50% of the recommendation costs up to $2,000 If available, any past energy or load surveys and building plans or drawings would help
* If a business does not implement recommended measures at least the cost of the audit, they must reimburse GURA for the audit cost.

Important Dates:

July 2nd, 2007- Can begin at 9:00 AM to sign up for the energy audits at www.gura.com/eepilot
July 19th, 2007-All applications must be in by 6:00 PM
July 25th, 2007-Energy bills must be ready and audit agreement form must be signed for pick up by 5:00 PM. If you are a renter, the owner waiver form must also be signed at this time.
July 30th and 31st- Energy audits will be conducted on these days
Beginning of September- the audit reports come back and implementation can begin.

Attachment F
GURA Energy Efficiency Audit

ENERGY AUDIT PROGRAM
AUDIT REPORT

GURA Office Space
922 Washington Ave., Suite 100
Golden, CO 80401
Wednesday, May 30, 2007

PO Box 7627
Avon, CO 81620
Front Range Phone: (303) 330-4880
Mountain Phone: (970) 227-0272
Fax: (886) 403-3485
info@activeenergies.com
www.activeenergies.com

BUSINESS INFORMATION

Business Name: Golden Urban Renewal Authority
Building Address: 922 Washington Ave., Suite 100, Golden, CO 80401
Building Owner's Name: ?
Building Owner's Phone Number: ?
Business Owner's Name: Mark Heller
Business Owner's Phone Number: 303-279-4162
Own/Rent: ?
Business Type: Professional Office
Square Footage: 1,382

CONSTRUCTION INFORMATION

Crawlspace: Uninsulated concrete walls, uninsulated floor joists
Basement: N/A
Walls: Double brick with no insulation
Ceiling: N/A
Windows: Double pane, wood frame
Heating Equipment: Two 80AFUE gas furnaces
Cooling Equipment: Two 13SEER air conditioners
Water Heating: One 6 gallon electric tank-type water heater
Major Appliances: Refrigerator, 4 desktop computers, small kitchen appliances, 2 printers, scanner, 2 electric space heaters
Lighting: 36 – 54W strip fluorescent bulbs in office area (95 Lumens per Watt), 2 – 40W strip fluorescent bulbs in bathroom
Infiltration: 0.67ACH, 1.67 square foot equivalent opening

Please note: Construction information is observed, where possible, but may be assumed for inaccessible locations.

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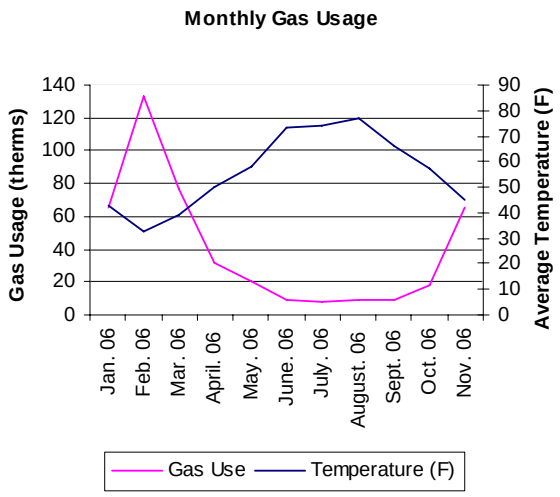
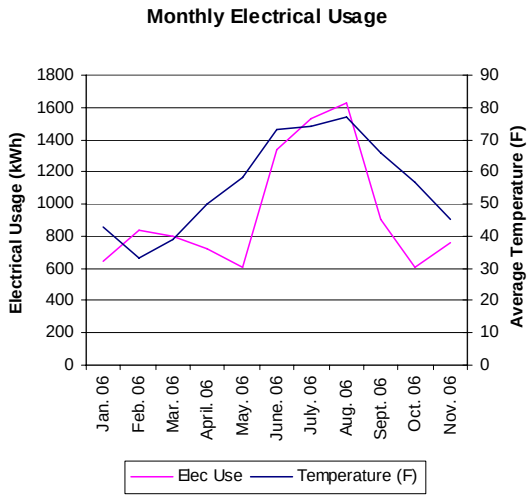
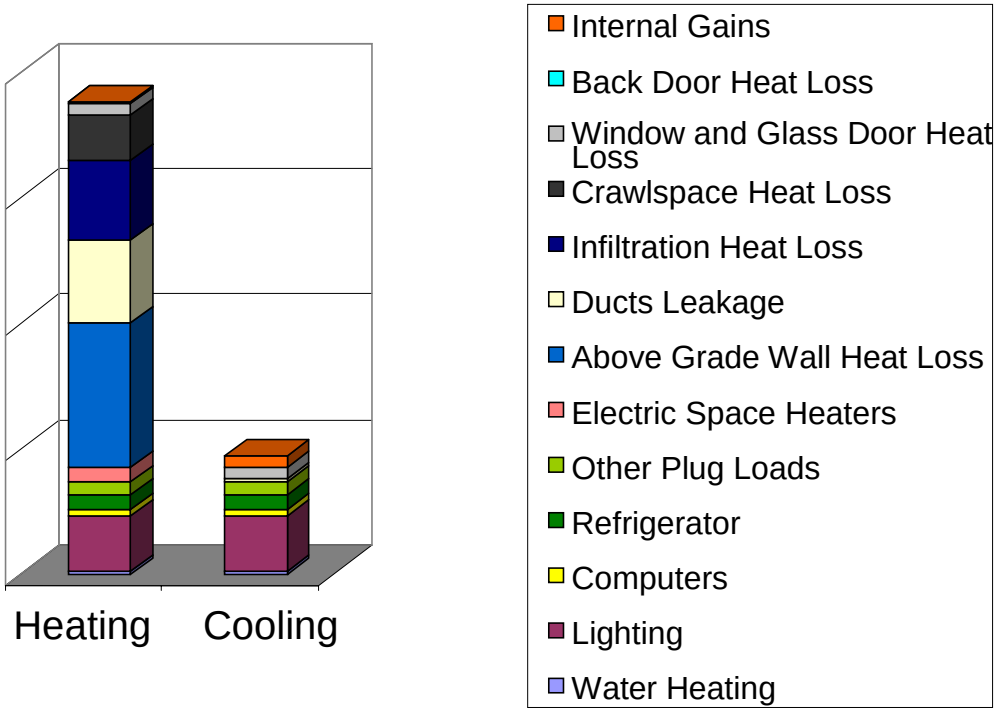
P.O. Box 7627, Avon, CO 81620 | P: 970.227.0272 / 303.330.4880 | F: 866.403.3485 | www.activeenergies.com

CURRENT ENERGY USAGE





Energy Bill Components by Season



Estimated Carbon Dioxide Emissions: 50,378 lbs/year
Yearly Electrical Usage: 11,175 kWh
Yearly Gas Usage: 550 therms

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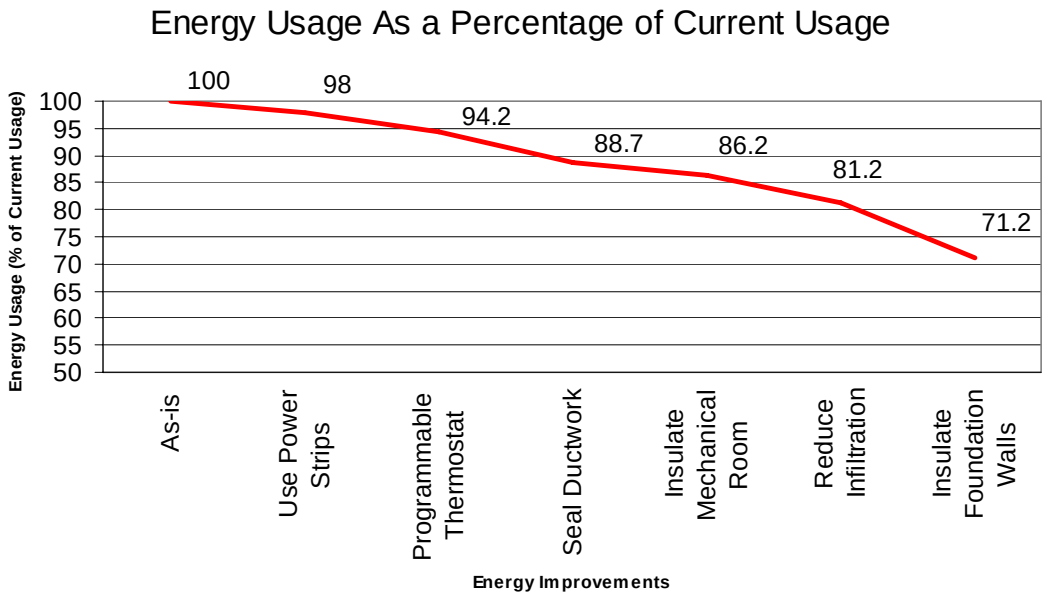
ENERGY IMPROVEMENTS

Initial costs of the various upgrades are based on market averages in Colorado. Please contact a contractor in your area for an exact cost. Payback times shown below are based on present energy costs and do not account for anticipated increases in energy rates. Please refer to GURA List of Qualified Contractors (Appendix A) to inquire about the following services.

Suggestion	*Initial Cost of Upgrade*	*Potential Yearly SAVINGS*	*Estimated Payback (years)*
Use Power Strips to Completely Shut Off Computer, Printers, Etc.	**$0**	**-$45**	**Instant**
Install Programmable Thermostat	**$40**	**-$80**	**6 months**
Seal Ductwork Joints*	**$200**	**-$115**	**1.9 years**
Insulate Mechanical Room Walls	**$150**	**-$55**	**2.9 years**
Reduce Infiltration by Caulking and Weatherstripping**	**$300**	**-$103**	**2.9 years**
Insulate the Walls of the Crawlspace	**$696**	**-$182**	**3.8 years**
Total Possible Yearly Savings		**$580**	

***Energy savings from ductwork sealing assume that 40% of current ductwork leakage will be eliminated.**
****Energy savings from reduced infiltration assume that 50% of current infiltration will be eliminated.**



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ENERGY IMPROVEMENT DETAILS

Use Power Strips to Completely Shut Off Computers, Printers, Etc.
Most appliances draw a small amount of electricity even when powered off. This can be caused by miniature transformers, clock displays or other standby power uses present in most new appliances. According to the Department of Energy, as much as 75% of the electricity used to power small appliances is consumed when the appliances are off. The most effective way to eliminate these "phantom loads" is to connect appliances such as computers, printers, microwaves, etc to a power strip of surge protector. When leaving the office for the night, simply switch off the entire power strip to prevent appliances from drawing energy throughout the night. Simply unplugging each appliance would provide the same result, but may be inconvenient.

Replace Thermostat with a Programmable Thermostat
Leaving the office at one temperature day and night is wasting energy. Heating to 68° during the day is appropriate, but that temperature should be set back 5-10°F at night, when no one is in the office. For each 8-hour period that you set back your thermostat, you could save 1% per 1°F of setback. Therefore, setting back your thermostat for 10°F during the night could save 10-20% of current heating costs. The programmable thermostat can easily be set to warm up before workers arrive in the office and begin cooling down as workers are about to leave on a typical day. Ensure that your thermostat has separate settings for weekdays and weekends, as the office will remain unoccupied on weekend days. HVAC equipment is designed to reach it's highest efficiency when operating continuously instead of when cycling and off to maintain a steady temperature.

Seal Ductwork Joints
Your building's ductwork is very leaky, which wastes air that was already conditioned, adding unneeded cost to both heating and cooling. This also leads to a comfort problem when conditioned air does not reach the building occupants. Leaky ducts can also introduce dirty crawlspace air into the office and create pressure differences that could backdraft dangerous flue gases. Since your ductwork is mostly exposed in the crawlspace, you have a good opportunity to seal the leaky ducts. Have an HVAC contractor add mastic to all accessible joints of ductwork. Mastic is more effective than duct tape, because duct tape is not nearly as durable. Another alternative would be use a product called AeroSeal, which is blown through the ductwork and seals from the inside. This alternative would be favorable if you are having trouble finding someone to perform the sealing work in the crawlspace.

Insulate the Mechanical Room Walls
There are two large ducts carry outside air straight into the mechanical closet. This air is necessary for combustion of the natural gas furnaces. However, introducing unconditioned outside air directly into an interior room is obviously an energy waste. Add insulation to all four walls of the mechanical closet. Insulation in this location will prevent cold air in the mechanical closet from cooling down the adjoining spaces. In addition, add weatherstripping to the doors of the mechanical closet, which effectively separate the outdoor air from the rest of your office.

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Reduce Infiltration

Address the following leakage areas with caulk or weatherstripping, as necessary to reduce leakage.

Floor outlets were extremely leaky. Utilize foam gaskets and caulk to minimize leakage.

The junction between the floor and wall was very leaky on all four walls. Peel back the carpet from the corner and use caulk or spray foam to seal the junction between the wall and floor, beneath the carpet.

The bottom of the front door requires weatherstripping.

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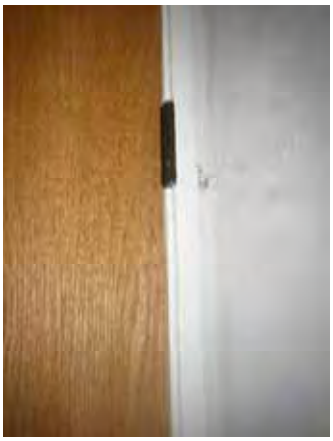

There were several weak areas between the mechanical closet and the office that caused leakage of outside air. The door to the mechanical closet was leaky on all sides. Weatherstripping and a door sweep should be used to achieve a tight fit. Since there is unconditioned outdoor air in the mechanical room, this door should be sealed as if it were a door to the exterior. Other major leakage sources between the mechanical closet and office were a hole in the wall behind the right-hand door and the junction between the brick and drywall in the left-hand corner. Use caulk or foam to seal these areas.

Sections of the brick wall with missing bricks or large areas with missing grout were leaky. There were also some holes with direct links to the outside. It would not be cost effective to add new grout to the entire wall, but address the most obvious areas with new grout.

Insulate the Crawlspace Foundation Walls

Currently, there is no insulation separating the crawlspace from outdoors and no insulation separating the office from the crawlspace. Therefore, we need to establish a thermal barrier between the office and outdoors. Add 4" of closed-cell foam insulation to the foundation walls of the crawlspace. Although insulating could be accomplished by draping batts along the foundation walls, foam will provide a greater insulating value, as well as important air sealing.

A Note About Lighting

According to Sylvania, the Pentron bulbs used in your overhead fixtures are some of the most efficient on the market, producing 95 lumens per watt of electricity used. They claim that the output of their bulb is much higher than the output of comparable bulbs and that fewer bulbs should be needed to light the same size area. There were quite a few bulbs lighting a relatively small space in your office. Consider removing one bulbs of each set over non-critical office

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areas to avoid "overlighting" the space. Although these bulbs are efficient, they are not efficient if too many of them are used to light a space. If employees are unhappy with the results, bulbs can always be replaced. If employees are satisfied with the working environment, you will save energy everyday.

SOLAR ANALYSIS

Roof access was not possible at the time of our visit. Please call 303-330-4880 for a full solar site analysis. Feasibility and cost of a system will be reviewed and provided to you at no additional cost.

THANK YOU

Thank you again for choosing Active Energies, Inc. Our goal is to save you money on your utility bills, while lessening impacts on our fragile environment. It is with our best intentions of saving energy that we have provided you with this list of suggestions for energy efficient improvements, specific to your business. With this in mind, please let us know if there is any way we can better serve you.

Best Regards,

Megan Gilman

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Appendix A

GURA LIST OF QUALIFIED CONTRACTORS

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Attachment G
Summary Matrix of Community Working Group Recommendations

	COMMUNITY WORKING GROUPS: SUMMARY OF RECOMMENDATIONS MATRIX						
#	BUILDING	ECONOMIC HEALTH	EDUCATION & COMMUNICATION	ENERGY EFFICIENCY & RENEWABLE ENERGY	SOLID WASTE & RECYCLING	TRANSPORTATION	WATER
A	Review current City building codes, fees, HOA restrictions and zoning regulations to identify code/regulations/fees that discourages/prohibits/precludes the use of sustainability practices and add/change/repeal regulations to promote sustainable practices where beneficial.	Direct staff to identify existing resources, partnerships, and relationships that are integral to a Sustainable Business Cluster.	City Manager should hire a staff member whose primary responsibility is to act as the city's Sustainability Director. Council should adopt an appropriate budget to properly staff this effort in 2008, with job description and search criteria defined in 2007.	The working group endorses the City' current energy use action plan. The City should create a Sustainability Director position on City staff, whose primary responsibility will be to implement the City's sustainability programs, which will include an energy efficiency role. The City should establish an oversight group of technical experts and citizens that can review the efforts that will be undertaken as part of the EPC, or other staff initiatives, with respect to sustainability, including a focus on energy efficiency and renewable energy. (This group could include the current citizens' energy working group, as well as others.)	The City should implement a SSR system to achieve a higher participation of recycling, and increase current level of recycled materials in the residential communities.	Creating a viable pedestrian transportation network will provide significant reductions in vehicle traffic. Golden must implement many additions, changes, and upgrades to create pedestrian transit options for residents, students, and employees within the City to meet this recommendation.	1A: Encourage water-conserving landscape practices through efficient irrigation, water-smart gardening practices and xeriscaping.
B	Effective January 2008, adopt the US Green Building Council's Leadership in Energy and Environmental Design (LEED) Silver standards for all new and remodeled commercial/non-residential buildings.	Undertake a feasibility study of creating a Golden Sustainable Business Incubator.	Council should appoint a permanent citizens group (the Golden Sustainability Group, or GSG) on sustainability. Ideally, all significant stakeholder groups within the community would be represented. This group would be responsible for coordinating education and communication efforts in tandem with strategic planning for all sustainability efforts.	The City should establish an incentive program that will encourage residents and businesses to invest in energy efficiency improvements and renewable energy technologies. These incentives would be in the forms of either fee reductions, fee waivers, tax reductions, grants, or other direct dollar savings for certain progressive activities	Golden should implement a PAYT program to achieve higher participation of recycling, and increase current level of recycled materials in the residential communities. With PAYT a resident's trash bill is tied to the amount of trash collected. The more you recycle, the less you pay, or conversely, the more you throw away the more you pay. The amount of trash that is disposed of is measured by the size of the trash container used by each resident.	Golden must have a complete, contiguous bicycle transit network accommodating residents, students and employees. Only a well-funded, serious and concerted effort will provide a cycling network that will be a preferred choice over car transit.	1B: Reduce indoor water use through incentives and education.

#	BUILDING	ECONOMIC HEALTH	EDUCATION & COMMUNICATION	ENERGY EFFICIENCY & RENEWABLE ENERGY	SOLID WASTE & RECYCLING	TRANSPORTATION	WATER
C	Effective January 2009, adopt the ANSI-approved National Green Building Standard (NGBS), a nationally recognized multi-tiered green building standard as the baseline for all new residential and remodel construction.	Direct staff to research energy audit services for businesses.	The GSG should engage a marketing firm to create several name concepts with corresponding logos and any slogans, taglines and other visual materials necessary.	The City should provide reasonable protections, through ordinances, to ensure that the citizens' investments in solar energy technologies and other passive solar or energy efficiency improvements that are dependent upon sunlight (e.g., solar tubes) are not threatened by external circumstances.	Golden should provide a publicly located and supported facility for free public drop off of organic matter including yard waste such as leaves, grass and branches and kitchen food waste. Once composted, this material could either be given back to the public or sold to help offset the costs of operating the composting facility.	Alternative transit methods developed with an eye to reducing vehicle miles traveled must provide similar levels of convenience and access to locations across Golden and to neighboring cities. Shuttles, busses, ride-sharing, taxis, and other public transit options should be added and/or coordinated together to provide an integrated, effective and convenient level of access for citizens to achieve a reduction in individual car travel. Golden's public transit system must connect the City's workers, residents and students with primary RTD terminals as well as intra-Golden destination points.	1C: With our municipal partners, clarify and seek legal extensions to our ability to use graywater and rainwater catchment.
D	Effective with the adoption of "Green Standards", implement a "Point-of-Sale Green Audit" to document the current level of compliance for existing buildings to the adopted green standards.	Request GURA and Edom to work with local business to design and install signs informing people about local businesses and other sites of interest.	Council should task the CSG with using the stakeholder/benefits-barriers method we have initiated to identify specific strategies for achieving specific program goals. These focused strategies would support all elements of the sustainability initiative and would reach all stakeholders.	Increase use of alternative fuels in transportation	Golden should select a single SW hauler who will provide exclusive SW service to all of Golden's residents.	Alongside a shift to various improved and alternative travel options for Golden's residents and commuters, it is important to consider opportunities to combine and reduce the number of overall trips our residents, employees and students must take on a daily basis in order to maximize our ability to slow and ultimately reduce costly vehicle travel.	2A: Continue and extend the City programs to eliminate dead-end lines and decrease residence time in the system.
E	Through education and appropriate incentives, encourage market-driven programs that exceed minimum green standards (such as the current energy code) for both residential and commercial building construction.	Encourage Private Wind Generators and Solar Panels. By ordinance, reduce or eliminate permit fees for these projects.	Council should evaluate the success of the sustainability program based on both qualitative and quantitative measures by conducting a statistically valid telephone survey specifically on sustainability (separate from the city's annual citizen's survey). An initial survey in late 2007 could be conducted to set a baseline by which to measure progress.	The City should require that some portion of the sales price of a home be used for energy efficiency improvements. Homes that meet a defined energy efficiency level would be exempt from this requirement. In addition, we recommend that the City create a revolving loan fund to fund energy efficiency improvements and rehabilitation of owner occupied homes.	Golden should provide recycling bins in downtown areas such as along Washington Street, the Clear Creek walkway, Parfet and Lions Parks.	In discussing the many future and existing options for improving people transit in Golden, we know that factual and cultural education will be essential to any program designed to reduce the number and length of trips of Golden citizens in our cars. Many public transit options exist, but without a background in using busses, bicycles, and other shared-ride services, the simplest system is likely to seem daunting to a new user.	2B: Implement increased water quality testing throughout the distribution system, and use the most feasible, advanced and available technologies to control disinfection byproduct formation, such as trihalomethane compounds.

#	BUILDING	ECONOMIC HEALTH	EDUCATION & COMMUNICATION	ENERGY EFFICIENCY & RENEWABLE ENERGY	SOLID WASTE & RECYCLING	TRANSPORTATION	WATER
F	Develop a variety of incentive programs, coupled with education programs that highlight the value of energy efficiency, durability and indoor air quality. All incentives should have a cost/benefit analysis associated with it.	Direct staff to research the costs of placing some wind generators or solar panels in downtown Golden and putting hot water or photovoltaic collectors on the Recreation Center.		The City should work with Xcel to implement a variable electricity rate – known as a step rate structure in the water industry – that charges residences and businesses an additional amount per kilowatt-hour for electricity usage beyond an established baseline level. Or, if this Public Utility Commission (PUC) related issue can not be managed at a municipal level, we propose an "inefficiency tax" that accomplishes the same thing.	Golden should mandate that the SW/R hauler, or a contracted vendor, provide residential curbside pickup for organic materials for an additional fee or as part of a total SW/R fee. The selected hauler would provide the appropriate bins for compost waste (kitchen scraps and yard waste).		2C: Provide education and encourage the use of devices that prevent backflow and cross contamination within buildings.
G	Adopt the US Green Building Council's Leadership in Energy and Environmental Design Rating for Existing Buildings (LEED-EB) Silver standard for all existing commercial/non-residential buildings. This standard differs from LEED-Silver standard for new buildings in that it addresses whole-building cleaning and maintenance issues including chemical use, ongoing indoor air quality, energy efficiency, water efficiency, recycling programs and facilities exterior maintenance programs, and systems upgrades to meet green building energy, water, Internal Air Quality(IAQ), and lighting performance standards.	Hire a Sustainable Development Officer or Director. A primary function of the staff would be to seek and support partnerships and other sources of support from businesses, other government entities, foundations, and local and national non-profit organizations to meet sustainability goals.		The City should develop an Energy Audit Program to provide reduced-cost energy audits to residents and local businesses. These audits would identify potential energy efficient improvements and cost/payback information so the home/business owner could evaluate various options.	Golden should require local businesses to stop offering plastic shopping bags to their customers. Instead, paper bags are to be made available and the use of reusable cloth bags is to be encouraged.		3A: Set up a system to quantify, locate and resolve problems resulting in "unaccounted" water; or that water lost within the distribution system.
H		Create and promote a certification program that would encourage businesses to participate, and then prominently display or advertise to their customers.		The City should adopt a dark skies initiative that maximizes the community-wide energy savings resulting from lighting changes	Golden should develop an event-recycling program that applies to all events held in the city. Currently, there is no recycling at Buffalo Bill Days, the Wild West Car show or other Chamber of Commerce sponsored events.		3B: Administer and promote an active City and citizen leak detection program.

#	BUILDING	ECONOMIC HEALTH	EDUCATION & COMMUNICATION	ENERGY EFFICIENCY & RENEWABLE ENERGY	SOLID WASTE & RECYCLING	TRANSPORTATION	WATER
I		Hold annual sustainability Expositions or Fairs starting in 2008.		The City should promote increased use of energy efficient lighting (such as compact fluorescent lights [CFLs] and light-emitting diode [LED] holiday lights). This initiative would involve some combination of education, publicity, and (optionally) incentives (see Recommendation B, City Sponsored Incentives). One aspect of promoting increased use of CFLs would include making it relatively easy for users to recycle the used bulbs at the end of their life cycle.			3C: Maintain high efficiency and energy conserving water system pumps.
J							4A: Develop and implement overall action plans for management of the Golden drainage basins.
K							4B: Improve storm water runoff quality.
L							SA: Maintain awareness of scientific knowledge on Front Range climate projections and the changes predicted for water supply timing and quantity.
M							SB: Develop educational opportunities at all levels-K12, college, public.
N							SC: Determine responsibilities for recommendations. If responsibility for implementing recommendations is outside the scope of City water and environmental staff, we recommend hiring a Sustainability director who will implement these recommendations as part of his or her duties.

Attachment H
Timeframe Matrix of Community Working Group Recommendations

Buildings

	Recommendations	2007	2008	2009-2017
A	Review existing code, fees, HOA restrictions and Zoning	x		
B	Adopt Green Building Standards for New/Remodel Commercial (Non-Residential) Buildings		x	
C	Adopt Green Building Standards for New/Remodel Residential Construction			x
D	Existing Buildings, "Point-of-Sale Green Audit"			x
E	Adopt Incentive Strategies to Exceed New/Remodel Construction Green Standards			x
F	Adopt Upgrade Strategies for Existing Residential Homes			x
G	Adopt Green Building Standards for Existing Commercial/Non-Residential Buildings		x	

Economic Health

	Recommendations	2007	2008	2009-2017
A	Sustainable Business Cluster		x	x
B	Sustainable Business Incubator		x	x
C	Energy Audits	x	x	x
D	Signs	x	x	x
E	Private Wind and Solar	x	x	x
F	Government Wind and Solar		x	x
G	Sustainable Development Staff		x	x
H	Sustainable Business Certification		x	x
I	Sustainable Business/Living Expo		?	x

Education and Communication

	Recommendations	2007	2008	2009-2017
A	Sustainability Director	x	x	x
B	Permanent Citizens Sustainability Group	x	x	x
C	"Branding the Effort"	x		
D	Education and Communications Strategies/Methods	x	x	x
E	Evaluating Success	x	x	x

Energy Efficiency and Renewable Energy

	Recommendations	2007	2008	2009-2017
A	The EE/RE Group Endorses the City Actions	x		
B	City-Sponsored Incentives for Sustainable Energy Investments		x	x
C	Solar Access Ordnance	x	x	x
D	Increase Use of Alternative Fuels in Transportation			x
E	Funding Energy Efficiency Improvements and Rehabilitation of Existing Homes			x
F	Xcel Varied Electricity Rates		x	x
G	Energy Audit and Implementation Program	x	x	x
H	Dark Skies Community Lighting Standards		x	
I	Promoting Use CFLs	x	x	x

Solid Waste and Recycling

	Recommendations	2007	2008	2009-2017

A	Single Stream Recycling (SSR)		x	
B	Pay As You Throw (PAYT)		x	x
C	Organic composting: public facility		x	
D	Single vendor SW franchising		x	
E	Downtown recycling bins	x		
F	Organic composting: curbside pickup			x
G	Plastic shopping bag ban			x
H	Event recycling			x

Transportation

	Recommendations	2007	2008	2009-2017
A	Integrated Pedestrian transit	x	x	
B	Bicycle transit network	x	x	x
C	Timely, efficient public transit network	x	x	x
D	Demand Reduction	x	x	
E	Education & Cultural Awareness	x	x	

Water

	Recommendations	2007	2008	2009-2017
1.A	Encourage water-conserving landscape practices	x	x	x
1.B	Reduce indoor water use through incentives and education	x	x	x
1.C	Clarify and seek legal extensions to our ability to use graywater and rainwater catchment	x	x	x
2.A	Continue and extend the City programs to eliminate dead-end lines and decrease residence time in the system	x		
2.B	Implement increased water quality treatment and testing	x	x	x
2.C	Provide education and encourage the use of devices that prevent backflow and cross contamination within buildings	x	x	
3.A	Set up a system to quantify, locate and resolve problems resulting in “unaccounted” water; or that water lost within the distribution system	x	x	
3.B	Administer and promote an active City and citizen leak detection program.	x	x	
3.C	Maintain high efficiency and energy conserving water system pumps	x	x	
4.A	Develop and implement overall action plans for management of the Golden drainage basins	x	x	x
4.B	Improve storm water runoff quality	x	x	x
S.A	Maintain awareness of scientific knowledge on Front Range climate projections and the changes predicted for water supply timing and quantity	x	x	x
S.B.	Develop educational opportunities at all levels-K12, college, public	x	x	x
S.C.	Determine responsibilities for recommendations, including a potential new position of Sustainability Director	x	x	

Press Coverage of the Golden Sustainability Initiative

MAYOR'S MESSAGE

City Sights in on Sustainability

By Mayor Chuck Baroch

During 2006, City Council took care of routine business and spent considerable time on the proposed completion of the beltway, proposed Lookout Mountain supertower and closure on the Guanella Reservoir settlement. During the year, various Councilors suggested that we begin addressing other subjects. About 10 ideas were suggested and in the fall this list was reduced to the following six:

- Affordable Housing,
- Transit-Oriented Development,
- Sustainability,
- Historic Preservation,
- Walkable Community, and
- Becoming an Inclusive City.

City Council is already addressing becoming an Inclusive City, information is being gathered on transit-oriented development, the Golden Urban Renewal Authority is conducting a study on affordable housing, and the Historic Preservation Board is holding community meetings to discuss possible ways to strengthen our historic preservation regulations.

In the coming weeks and months, expect to see the City Council and staff focusing in on developing a sustainability program. Sustainability as related to energy matters addresses both conservation and the use of alternate and renewable energy sources. Golden, being the home of the National Renewable Energy Laboratory and Colorado School of Mines, has access to sustainability experts and is ideally situated to set a leading example for other cities. Golden City Council will discuss this subject and develop a more detailed plan in coming weeks, and we will be seeking public input. I encourage you to contact your City Council representatives with your ideas. You can email all of us at citycouncil@cityofgolden.net or find more contact information on Page 2 of the Informer each month.

City Council will doubtless be reaching out to all of the local experts available to us, and some outside experts where applicable. Council will also solicit input from our citizens at a public forum to be held on Feb. 28 (see page 5). Watch for an invitation in your mailbox and online at www.cityofgolden.net. Various members of City Council have considerable access to best practices used in other cities through membership on the Metro Mayors Caucus' Energy Committee, Jefferson Economic Council's Energizing Tomorrow Task Force, Colorado Municipal League's Energy Committee, and the Colorado Energy Coalition.

I expect the sustainability plan will be approved by Council in March and the implementation will begin shortly thereafter. Citizens will be informed of Council's plan every step of the way.

C. Baroch

Help Define Golden's Community Sustainability and Energy Efficiency Goals

The City of Golden is inviting citizens to a forum to help define the City's sustainability initiative at **7 p.m. Wednesday, Feb. 28** in Council Chambers at City Hall, 911 10th St.

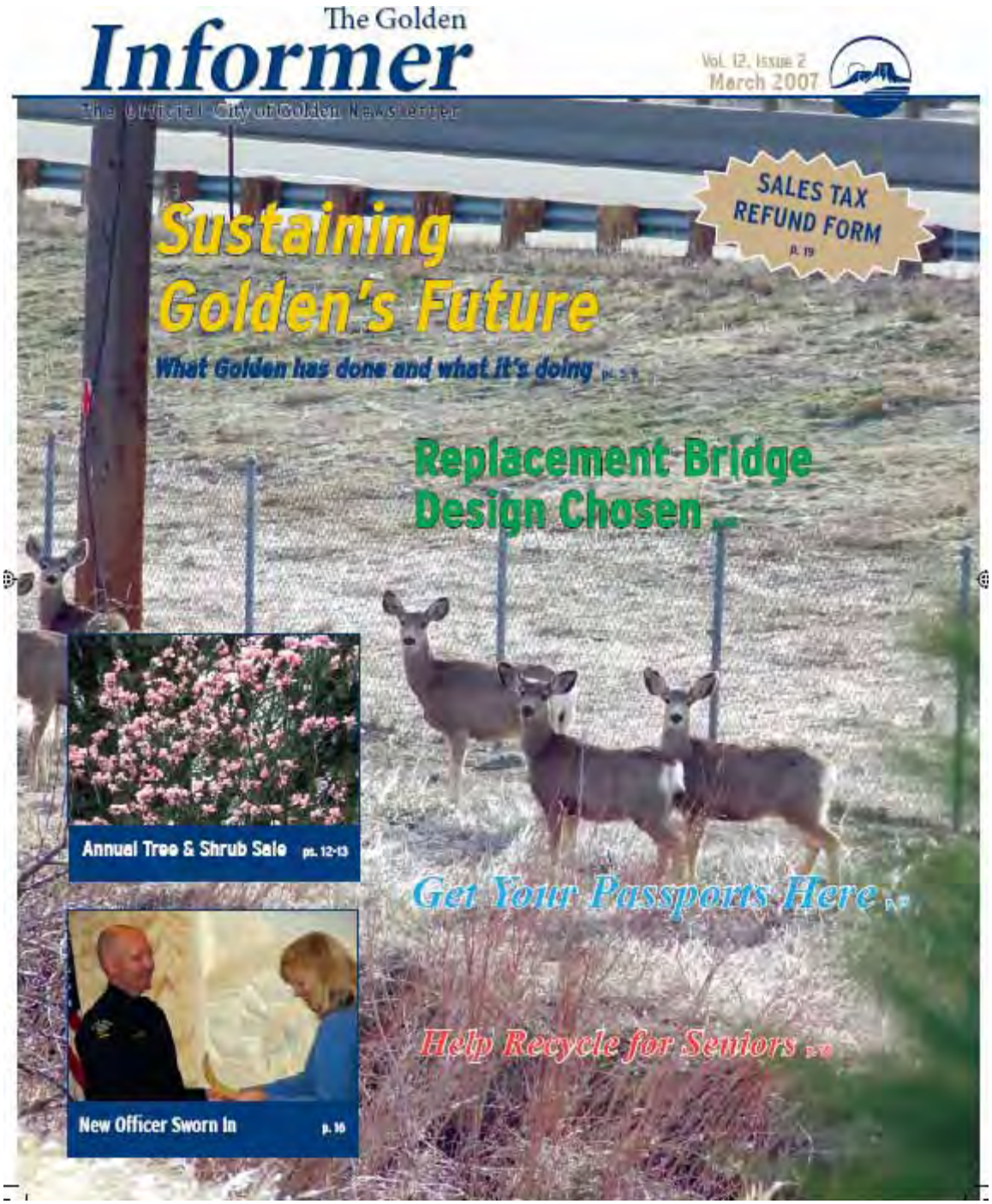
Golden City Council recognizes that it has an opportunity to reduce the use of non-renewable resources within the community of Golden, in order to:

- Save tax money;
- Maintain and improve the efficiency of municipal service delivery;
- Practice fiscal responsibility and predictability;
- Be a leader or "beacon" in municipal government;
- Create jobs in the fields of alternative energy development and provision; and
- Contribute to a nationwide effort to improve larger scale environmental conditions.

Golden is uniquely positioned to be a leader in sustainability because of its proximity to and relationships with the National Renewable Energy Laboratory, Colorado School of Mines, and many others.

Help the City define what our sustainability and energy-efficiency goals should be. Should the initiative focus solely on making the City government more efficient, or be more broad and also help the wider Golden community and its citizens reduce their energy costs? Should the City be focusing its efforts on just renewable energy, or should it be expanded to include other environmental issues, such as water, green building codes, waste reduction, improvements to recycling locations, etc.? The City needs your help. Please join us for an educational presentation, a kick-off celebration of the City's commitment to making this effort a success and to share your ideas.

For more information, call 303-384-8132.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p. 19
Sustaining Golden's Future
What Golden has done and what it's doing
Replacement Bridge Design Chosen
Annual Tree & Shrub Sale pp. 12-13
Get Your Passports Here
Help Recycle for Seniors
New Officer Sworn In p. 16

SUSTAINABILITY: What's Been Accomplished

At the City Council's direction, City staff has begun a rigorous sustainability effort. One of the first steps in such an effort is to identify where the organization is currently and what efforts have already been made in order to establish a baseline.

As the City of Golden as an organization embarks on this new sustainability initiative, here are just a small sampling of things that have already been accomplished:

Planning the City's Sustainable Future

In 2003, the City amended the Municipal Code to include requirements for more effective soil preparation for landscaping. The code change was part of a larger effort of several metro area communities that agreed to adopt stricter water conservation policies. Among the amendments was a requirement to preserve the limited amount of topsoil from a project, which would be salvaged and re-used in amending the project's soil.

In 2005, the City again amended the Municipal Code to include the following for all new development:

- Appropriate placement is encouraged to emphasize passive solar gain for buildings;
- Irrigation systems are encouraged to use automatic controllers, rain sensors and subsurface drip systems;
- Landscaping materials are required to be predominantly low-water, native species;
- The use of mulch is required to retain as much soil moisture as possible; and
- Sub-surface drip irrigations are required where possible.

Golden's Comprehensive Plan also sets a number of environmental goals that have been in place since 2003. Section 2.7 Goal A of the Plan says that environmental impacts of growth and development will be mitigated to the extent possible by:

- Managing growth and development so as to minimize adverse environmental impacts;
- Requiring all major new developments to conduct an assessment and disclosure of the environmental impacts;
- Encouraging developers to use low-water plantings; and
- Encouraging energy efficient building techniques in all types of construction.

Also in Section 2.7, Environment Goal C says conservation of natural resources will be a part of all City projects, such as:

- Implementing conservation programs, including energy, water, habitat areas and urban forests;
- Encouraging the use of natural, low-water plantings whenever feasible;
- Encouraging recycling by City departments and City residents;
- Encouraging reduced use of natural resources;
- Making available pertinent educational materials concerning conservation to the citizens of Golden, primarily through the Web, workshops and *The Golden Informer*;
- Continuing to sell natural, low-water plantings through the City's annual tree and shrub sale (see Pages 12-13);

- Encouraging partnerships to facilitate alternative energy source development;
- Ensuring that City projects address energy and water conservation, habitat areas and urban forests.

In 2006, the City adopted the International Energy Conservation Code that promotes the use of conservation measures. The 2006 building code allows expanded use of engineered wood products that help reduce pressure on old growth timber forests.

Protecting Our Environment

Golden's Environmental Services Division is responsible for having created a comprehensive water conservation plan. This plan is in addition to providing citizens with free irrigation audits to promote water conservation in the community (watch for information on this year's free audit program in coming issues of *The Informer*). The City also has Xeriscape demonstration gardens that are examples to the public of low water use gardens.

Golden has a proactive construction site erosion and sediment control program that catches problems early, before pollutants have a significant impact on the storm sewer system and subsequent waterways.

Golden requires native species in reclamation seed mixes and organic soil amendments for revegetation projects to promote healthy ecosystems and minimize the use of non-native species that can out-compete natives.

The Denver Regional Council of Governments chose Golden as a best practices Stormwater Case Study to inform other municipalities on how to implement a stormwater program to meet upcoming stormwater requirements.

Sludge generated by Golden's water treatment plant is taken to a local facility to be composted.

The City actively participates on the Board of Directors for the Rooney Road Recycling Center, which offers household recycling, tree limb disposal, electronic waste recycling, household chemical disposal and disposal for small quantity generators.

Near the recycling center, the old Jefferson County landfill on Rooney Road is being turned into synthetic turf athletic fields, providing recreation without requiring irrigated turf.

The City also collaborates with Coors Brewing Co. and Ball Corp. in a recycling program for citizens and employees.

Golden's Forestry Division is continuing to plant approximately 150 new trees each year, and encourages citizens to plant trees through its annual tree and shrub sale (see Pages 12-13). Approximately 40 more trees are planted on private property each year as a result of this sale. Trees have the following benefits:

- Trees store carbon and release oxygen;
- Save on energy costs by providing shade for buildings and parking lots;

RECYCLING LOCATION ALERT

The recycling dumpsters that were located in the Golden Transcript's parking lot have been removed. Citizens may take recyclables to the City's recycling location in the parking lot at The Splash water park, 3151 Illinois St. If the dumpsters are full, we ask that you not jeopardize the program by leaving items on the ground outside of the bins. Instead, contact Chris Naber at cnaber@cityofgolden.net or 303-384-8183 to notify him of the situation. Citizens are also encouraged to contact your trash provider, as all removal companies in the City are required to provide curbside recycling services.

- Reduce heating costs by protecting buildings from winds;
- Filter pollution particles from the City's air; and
- Save on stormwater treatment costs by intercepting rainfall.

The Forestry Division has also installed drip irrigation systems for watering public trees, saving water by applying it to the ground rather than into the air.

As a result of all the Forestry Division's efforts, Golden has entered into a collaborative agreement with an independent non-profit organization to undertake a study of Gulden's community forest with the intention of further optimizing the benefits of our trees.

Decreasing Our Impact and Usage

The City changed 347,745 traffic signal and pedestrian crossing bulbs to LED (Light emitting Diode) fixtures that use 90% less energy than the previous incandescent bulbs. The new flashing speed sign installed on 19th Street at Golden Ford is solar powered. Golden also replaced four signalized intersections on South Golden Road with traffic circles (or roundabouts), thereby eliminating energy required to operate the traffic signals and also significantly reducing the amount of time vehicles spend idling at traffic lights.

Golden's Streets Division recycles all used concrete and asphalt, and uses recycled asphalt in the City's alleyways. The Division also uses a rubberized material for sealing cracks in the roads that is made from pulverized recycled tires. Streets also composts the leaves collected annually from Fall street sweeping.

Golden participates in the Regional Air Quality Council's programs, including one that aims to reduce ground level ozone and another that aims to reduce particulate emissions through better (reduced) sand/salt applications after snow/ice storms. Half of Golden's snowplows use an alternative de-icing agent called Ice-Slicer that completely melts and requires no sweeping. It works faster and lasts longer than traditional salt, and is far less corrosive.

Golden's Utilities Division constructed a Raw Water

Pump Station to deliver untreated water to Fossil Trace Golf Course and Lions Park. The raw irrigation water saves chemicals, time and energy normally used when treating water.

There are designated wetlands on the golf course that are recognized by the State of Colorado. These environmentally friendly areas are very conducive to wildlife habitat and, the water is cleaner exiting the golf course that when it entered. The chemicals and fertilizers used on the golf course are used sparingly and soils are tested regularly to ensure safe application practices. The course also uses highly efficient, state-of-the-art irrigation systems.

The Golden Cemetery also has an efficient computer-programmed irrigation system that waters the grounds at night and automatically shuts off when the cemetery has had ¼-inch or more of rainfall. The cemetery had previously used up to 30 hoses running 8 hours each per day. The improved irrigation system saves millions of gallons of water annually!

The cemetery has installed solar-powered automatic gates at its entrances and energy saving glass windows in its shops and offices. The cemetery also installed permanent gas and diesel tanks on site, which save staff from making many trips back and forth to the City shops to haul it in five gallon containers.

All City facilities have been switched to "green" chemicals for custodial services and the restrooms use recycled paper products.

The City also now uses flat panel computer monitors, which can use one-third as much power and do not generate as much heat as traditional monitors.

The City's Fleet Maintenance Division has the following practices in place to minimize pollution:

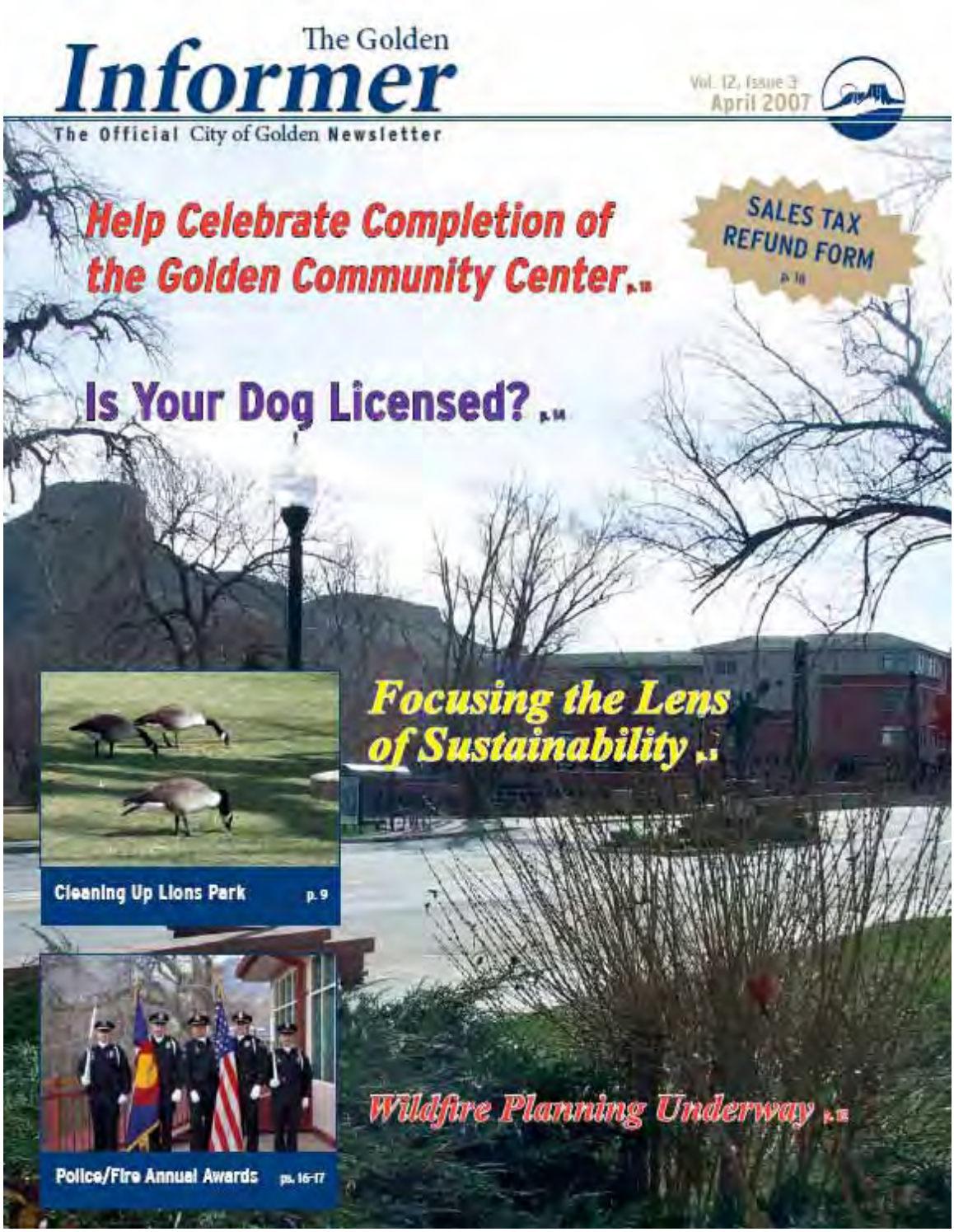
- No outdoor storage areas exist for fleet maintenance;
- Fuel tanks are covered with secondary containment and tertiary containment;
- Less toxic chemical alternatives are used whenever possible;
- Parts, fluids, etc., are recycled whenever possible, and are otherwise properly disposed of.

The City's used motor oil is recycled into burner fuel, anti-freeze is recycled in-house, and used tires are recycled for use in asphalt and other rubber products when availability allows. The fleet also uses ultra-low sulfur diesel and "no sulfur ash" motor oils in all of the City's equipment.

The Golden Fire Department has reduced the fleet by two staff vehicles to increase fuel efficiency.

And finally, the Golden Urban Renewal Authority retained an engineer specializing in resource efficiency to consult with construction projects funded by the Authority. GURA also purchased wind power for its office in 2004 and finalized an annual windpower contract with Community Energy in 2006.

The City encourages citizens to get involved with the community-wide sustainability efforts by logging on to www.CityOfGolden.net. You can also read more about what the City has already done to be sustainable online at www.CityOfGolden.net.


The Golden
Informer
The Official City of Golden Newsletter
Vol. 12, Issue 3
April 2007
Help Celebrate Completion of the Golden Community Center
SALES TAX REFUND FORM
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MAYOR'S MESSAGE

Citizens Sound Off on Sustainability

By Mayor Chuck Baroch

In the February *Informer*, I mentioned the six activities that Council selected to address in 2007. These include sustainability, affordable housing, transit-oriented development, a walkable community, revisiting historic preservation regulations, and becoming an inclusive city. The sustainability and affordable housing efforts were selected as the first to be addressed. Some work has started on affordable housing, however this article will focus on sustainability.

There are many different definitions of sustainability. The definition used by Golden in this effort is related to conservation of water, recycling usable wastes and reducing energy usage while maintaining our quality of life and economic vitality. The program is divided into two parts.

Part 1 addresses how the City can implement the sustainability issue for City properties. This program is headed by Mark Heller, Director of the Golden Urban Renewal Authority (GURA), and involves City employees and outside consultants. This group has met several times and is proposing to hire an energy service company (ESCO) to audit the energy demands of the City and recommend how to reduce energy needs, including fuels for the vehicles.

Part 2 was started with a meeting of about 200 citizens on Feb. 28. It will focus on what businesses, homes and individuals can do in the area of sustainability. Prior to the meeting, six areas of study were identified with specific goals. These included solid waste reduction and recycling, building energy improvements, water conservation, vehicle miles traveled, economic health of the community, and overall energy efficiency and renewable energy.

The lively and informative meeting was facilitated by Hillary Mizia and many suggestions were made that can be applicable to both parts of the program. Some of the suggestions will be easy to implement. Others will be much more difficult.

Many citizens volunteered to participate in a more detailed study of each of these six selected areas. These working groups will make recommendations to City Staff and Council on how some of the issues might be addressed. The outcome of these groups is still being developed. However, they might possibly define how we can develop buy-in from our citizens and businesses. The groups should also identify what their recommendations might cost the City.

The goal of both efforts is to complete their studies by late summer so that any costs associated with their recommendations can be considered for inclusion in the City budget for 2008 and later years. Sustainability will be a multiyear project and it is not intended to be implemented at a significant expense to other services provided by the City. We do recognize that some of the sustainability efforts will pay for themselves, thus not requiring any long-term investments by the City, businesses and individuals. City staff and City Council will need to prioritize the efforts and will determine what funds might be available in 2008 and subsequent years.

We are still interested in your input on how the City and citizens might implement the sustainability effort. We are also welcoming additional people to the working groups. Please email Mark Heller at mark@gura.com with your input and interest. Through *the Informer* and the City's web site, www.cityofgolden.net, we will keep you informed about the progress in this activity.

C J Baroch

HEADS UP: Important Upcoming Items

Citizens Form Working Groups on Sustainability

This regular column in the Golden Informer identifies some of the items of greater community interest that are likely to be scheduled for community discussion in coming weeks. For specific agendas and schedules, visit www.cityofgolden.net.

Golden City Council has made an aggressive sustainability initiative its top priority for 2007. As part of that endeavor, citizens are being asked to engage in a broader community-wide discussion to establish sustainability goals.

About 200 citizens showed up to a public meeting Feb. 28 to help guide community efforts for **Sustaining Golden's Future**. They were asked to review suggested goals under six areas of sustainability: renewable energy, economic development, green building, water, transportation, and recycling.

City Council and staff were available to answer questions and take comments. After citizens had time to review and comment on the goals, a community discussion was led by Hillary Mizia of Prizm Sustainability (See article on Page 5) about how to define sustainability, how each of the areas' goals were rated, and how to best move forward toward achieving the goals.

Hillary walked through the ratings the public gave to of each of the goal areas and asked for discussion of them. The overwhelming trend throughout the evening was that the public felt the goals outlined were not ambitious enough, mainly because the timeframes were too long (mostly 10 years) and the percentages were too low. The evening's dialogue is captured in notes available on the City's web site, www.CityOfGolden.net, under News Items.

Finally, citizens were asked to get involved in working groups to study each of the areas identified and make recommendations for consideration by City Council. These working groups convened for the first time in a meeting on March 21. During the meeting, the groups viewed a video of Salt Lake City's sustainability program, laid the ground rules for the working groups, and chose their team leaders.

If you would like to comment on Golden's sustainability initiative or sign up for a working group, email **Mark Heller at mark@gura.com**. Watch for more information and updates in coming issues of the Informer and online at www.CityOfGolden.net.

Focusing the Lens of SUSTAINABILITY

By Hillary Mizia,
PriZm Sustainability

Have you ever been in a meeting or a conversation where someone uses a word, and as the dialogue continues, you realize that your definition or understanding of that word is different from theirs? Sometimes when this happens, it can be hysterical, and sometimes it can be devastating. Regardless of the impact, it is always eye opening, and can change the focus of what needs to be said.

On Feb. 28, a group of Golden citizens, City Council and City staff gathered to discuss a topic that often leaves whole crowds grasping for their own definition: sustainability. As Golden moves forward in its exploration of sustainability, it is important that we all have a basic definition of this word. Sharing the same basic definition ensures we all start at the same place of understanding.

The word "sustainability" first came into use (for topics other than finances) through the 1987 United Nation's Brundtland Commission report, "Our Common Future." The report supplied this definition for the term sustainable development: "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Since that time, this definition has been used to describe an entire sustainability movement, paraphrased as such: "Meeting the needs of the present without compromising the needs of the future."

While this definition has very solid, well-documented roots, most people are unaware of it. In fact, when discussing sustainability, many people immediately think about the environment: solar power, carbon emissions, environmental stewardship, and one or all of the "three R's" (reduce, reuse, recycle). Still others use this word to discuss finances, or building a structure that will last 100 years. All of these things are related to sustainability, yet none of them are the single definition of it.

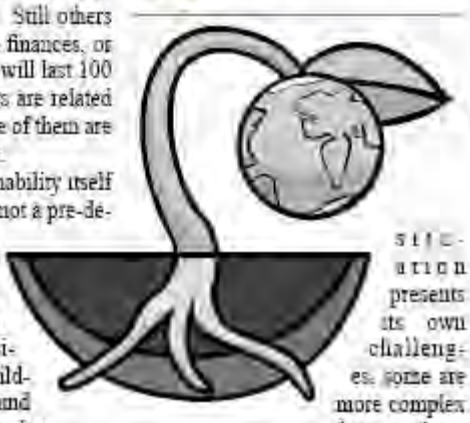
This is because sustainability itself is not a single goal. It's not a pre-determined set of actions to be taken, and it's not an end point. Sustainability is a lens through which we see our businesses, our lives, our buildings — the world around us. It's a way of thinking that shapes all decisions for every kind of bottom line you can think of: profit, people or planet.

Often times, acting in a sustainable way is the most simple, straightforward action. Choosing a step while wearing the sustainability lens directs you to the place of least impact for the planet and people, which has a direct correlation to the impact on your wallet. Because of its inherent simplicity, sustainability truly can reduce costs and increase quality of life.

Recently the international furniture store Ikea announced it would start charging shoppers for plastic bags. Money raised will be donated, and plastic bag use is expected to decrease as much as 90% by 2008. With less to purchase, Ikea does well financially and does environmental good.

That said, sustainability is dynamic by nature. This means that every situation presents its own challenges; some are more complex than others; thus the sustainable choice for each situation is different. For example, having to remodel an existing infrastructure can be vastly more complex than creating a new one . . . but not always.

Sustainability is meeting the needs of the present without compromising the needs of the future.



As Golden moves forward with sustainability in mind, it is critical that every citizen, every Council member, every staff person, begins to wear the lens of sustainability. Test it out with something small, like a new purchase you need to make, or the plan for your spring landscape. Think about giving equal weight to the people involved (from creating the product to the end user), the overall impact on the environment, and the complete cost (think about where it came from, if it will save money on your bills, longevity, disposal, etc.). Keep that lens with you always, and slowly we will start to see Golden in a new light.

City sustainability ideas drafted

Seven community groups compile recommendations

BY RENEE DAVIS
reneed@milehighnews.com

Sustainability seems to be on everyone's lips these days.

For Golden residents who make up seven study groups, it's on their lips, in their e-mail and definitely on their minds.

The working groups, which were formed as part of Golden's Sustainability Initiative in January, have released their initial recommendations for the community and city government.

The recommendations — including one that calls for a "pay as you throw" program that ties trash bills to the volume of trash generated — list ways to encourage better environmental practices.

The groups are targeting the following areas: education, energy, waste and recycling, transportation, economic health, green building and water.

The final recommendations will go to the city council during its fall budgeting process.

"I'm very impressed by these folks," said city spokesperson Sabrina D'Agosta.

City Councilor Jacob Smith said he was impressed with how the community came together and the breadth of support for the initiative.

The recommendations, which are initial drafts, show a wide range of ideas and goals. To preserve the grass-roots nature of the sustainability initiative, working groups were given minimal structure, D'Agosta said. The goals were only a starting point, Smith added.

A team of moderators drawn from each group will evaluate recommendations. Several drafts are expected, said Mark Heller, a city employee who works at the Golden Urban Renewal Authority. He is joining the moderators in evaluating the drafts.

The waste and recycling group, which made the "pay as you throw" recommendation, also suggested a community composting program, noting one quarter of household garbage is organic material that could be composted.

Another recommendation calls for giving developers in Golden a reduction in their use taxes and building permit fees if their buildings meet federal energy standards. The economic health working group came up with this recommendation as a way to make Golden a more environmentally conscious community.

The energy work group recommends the city limit homeowners associations' ability to restrict "solar access" and swamp coolers for homes.

The recommendations are wide ranging, Smith said. Some recommendations are obvious, basic ideas that will be easy to implement.

Other ideas are more "cutting edge," Smith said. Even if all the ideas can't be implemented readily, it is still worthwhile to generate those ideas, Smith said.

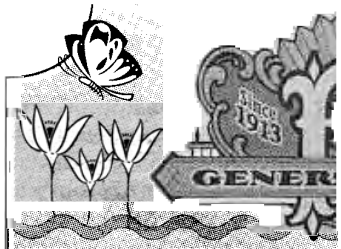
Although it's not too late for citizens to get involved, it would be difficult to radically change a group's direction because of the consensus-based decision process used, Heller said.

Residents also can comment on the recommendations when they are presented to council, Smith said. Beyond that, Smith anticipates opportunities for involvement during implementation stages.

Golden Community Editor Renee Davis can be reached at 303-279-5541, ext. 233.

COMMUNITY GROUPS

As part of the Golden Sustainability Initiative, seven community working groups were formed to address the following: building, economic health, education and communications, energy, solid waste reduction and recycling, transportation and water. For more information, visit http://ci.golden.co.us/Page.asp?NavID=697.



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Chardonnay .....
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Cab, Merlot, ... $
Chardonnay .....
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All Types .....

Meridian 750
All Types .....

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All Types .....

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Exc. Reserve .....

Beringer Founders Estate 750
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SPIRITS

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1.75.....
Crown Royal
1.75.....
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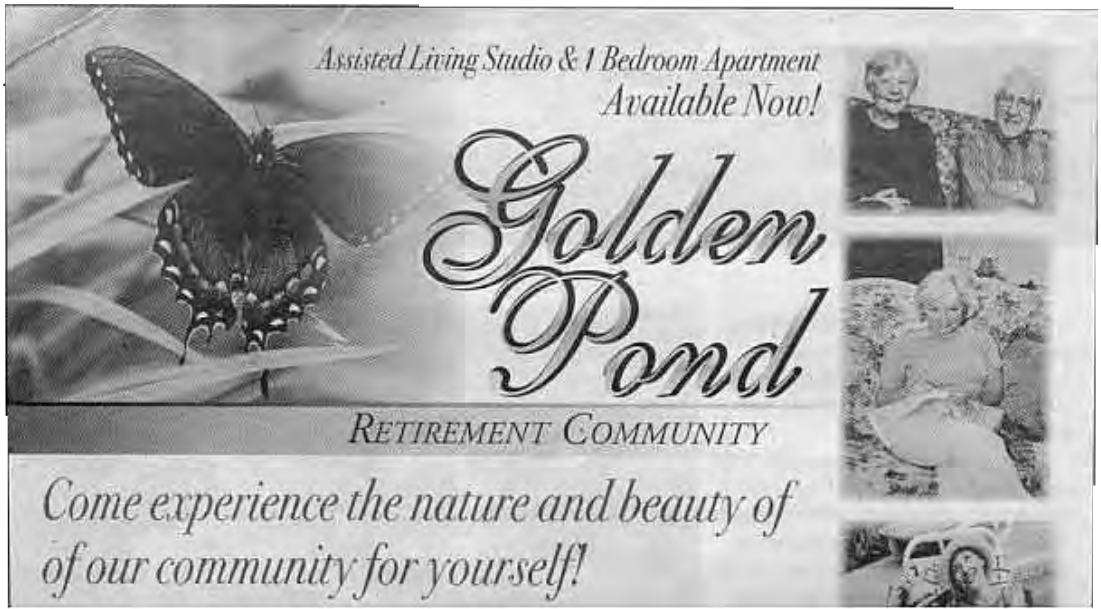

Sustainability Initiative in Progress

The multi-track efforts to improve Golden's use of energy and improve its overall sustainability are well underway.

The City staff committee is drafting a request for proposals that will attract "Energy Service Companies" to bid on conducting an audit of the City's facilities and operations. This audit will result in a series of energy saving recommendations that may be implemented at the City's discretion.

Concurrently, this staff committee is developing its own list of ideas for saving energy on the way the City operates municipal buildings and operations. If all works as planned, the City should be able to cut costs and improve efficiency.

Back in February, Council adopted a series of sustainability goals on topics such as energy efficiency, renewable energy, economic health, etc. Dozens of citizen volunteers have been working since February to add their thoughts to these goals. One Community Working Group was formed for each one of the topics. The seven groups have completed a first draft of their comments on City Council's preliminary sustainability goals and proposed some new ones. These Community Working Groups will continue refining their research through the summer, and will present their findings to Council later this year.

PHOTO BY SHAWN STEINGER

The City will send a team of six to Grand Junction to attend the three day Community Energy Futures Institute. The Sonoran Institute, www.sonoran.org, organized this conference to help communities such as Golden develop and implement sustainability plans. This was a competitive process, and the City is excited to be chosen among just eight communities who will attend to learn from experts and each other.

For regular updates and background information on these efforts, please visit www.cityofgolden.net/sustainability.

HEADS UP: Important Upcoming Items

Public Hearing on Golden Road Zoning

This regular column in the Golden Informer identifies some of the items of greater community interest that are likely to be scheduled for community discussion in coming weeks. For specific agendas and schedules, visit www.cityofgolden.net.

City Council is scheduled to hold a public hearing June 7 regarding a proposal to amend the zoning at 520 Golden Ridge Road to allow potential construction of multi-family dwellings on a parcel near the proposed light rail station at the Jefferson County Administration Building.

The proposal has been discussed in neighborhood meetings and in a Planning Commission public hearing. Interested parties are encouraged to review the case materials on the City's web site at www.cityofgolden.net and communicate with City Council.

First Fridays Begin in June

The downtown area merchants will begin holding evening activities on the first Friday of each month, starting June 1. Planned activities include entertainment and special features in a number of stores. For more information, visit www.2hourvacation.com or call the Golden Chamber of Commerce and Visitors Center at 303-279-3113.

Photo by CHRISTOPHER STARK

Edward Turkaly of Novan Solar Inc. installs solar panels June 8 in Genesee. The Golden Sustainability Initiative energy group is considering asking the city to provide incentives for renewable energy investments

CONTINUED FROM PAGE 1

overall energy use by 25 percent while increasing to 50 percent the portion of the energy provided by renewable sources.

The energy goal for the community was to reduce energy use by 15 percent while increasing the renewable-source energy to 15 percent. The sustainability initiative has seven panels, or working groups: education and communication, building, economic health, energy, solid waste reduction and recycling, transportation and water. All groups will submit their proposals to the city council during its fall budgeting process.

The panel's rough draft suggests several rates and baselines. The more aggressive approach would charge an additional 10 cents per kilowatt-hour used in excess of a monthly baseline of 300 kilowatt-hours for a residence. A less aggressive approach outline would charge an additional 2 cents for every kilowatt-hour used above a 1,500 kilowatt-hour monthly baseline.

"This is a stick, not a carrot approach," said Don Cameron, the moderator of the energy panel.

ENERGY PROPOSALS

Recommendations of the Golden Sustainability Initiative's energy panel:

- City sponsored incentive for sustainable energy investments
- Solar access ordinance
- Increase use of alternative fuels in transportation
- Funding energy efficiency improvements on existing homes
- Tiered energy rates
- Promotion of energy audit program
- Community lighting standards, such as dark skies initiative, and promoting use of compact fluorescent lights

While Xcel would collect the higher rates, it would not keep those proceeds. The money would be returned to the city. Money generated by the tax could offset other sustainability costs, Cameron said.

All of the energy panel's recommendations have different levels of "aggressiveness," Cameron said.

The group's recommendations include a solar access ordinance, which would prohibit growing shade trees or building structures that might block a neighbors' solar systems.

ENERGY

The *Golden Transcript* is running a series of stories on Golden's Sustainability Initiative.
For more information on the program, visit the city's Web site at http://ci.golden.co.us

The idea is to protect a private individual's investment in solar panels, Cameron said.

Solar panels are about a $9,000 investment for a typical home, said James Lowe, a project manager for Novan Solar, located in Golden.

Jim Smith of Wheat Ridge Solar said a Denver homeowner had recently asked him to remove solar panels that were no longer generating energy because a neighbor's new construction project had blocked the sun.

Smith was not aware of any such incidents in Golden, he said.

Golden Community Editor Renee Davis can be reached at 303-279-5541, ext. 233.

Sustainability panel proposes green business subsidies

Big question: Where would money come from?

BY RENEE DAVIS
reneed@milehighnews.com

Entrepreneurs looking to start a sustainability-based business in Golden might be in for a boost.

The Economic Health panel of the Golden Sustainability Initiative wants to start a business incubator that would offer financial aid to new businesses working on environmental engineering or manufacturing renewable energy generators, said panel moderator Don Parker.

Panel members hope providing aid will draw green businesses to Golden, making the city a Silicon Valley for renewable energy industries. Where the money would come from is the big question, however. Some propose the city reach into its pocket, and others would rather it come from private sources.

Panel member Vicki Wagner, a proponent for private funding, didn't reveal how private sources could be tapped. She stressed, however, that she's not in favor of mandating initiatives. She's not aware of any recommendations that would impose rules, but she admitted she had not read the panel's draft report.

The impetus for change should be positive rather than negative, Wagner believes. She also raised concerns about unknown effects of environmental actions. For example, she switched her lawn to artificial turf to cut down on watering. Then neighbors had concerns about how the lawn was affecting run-off. Wagner said some seemingly beneficial environmental actions could have negative results.

The disagreements are part of the process, said City Manger Mike Bestor, who represents the city on

See GREEN, page 3

Photo by CHRISTOPHER STARK

The small wind turbine in Chuck Courtad's yard at the corner of 15th and Jackson Streets is similar to those proposed by the Golden Sustainability Initiative economic health group.

Orthodontist installs turbine at Golden intersection

Chuck Courtad of Golden is all about bringing pretty smiles to people's faces.

After all, he's an orthodontist.

Drive by his backyard at 15th and Jackson streets, though, and residents will see another way in which he hopes to keep people grinning: a wind turbine.

Courtad was the first resident in Colorado to install a Skystream, the first device of its kind to come out of the U.S. Department of Energy's Wind Energy Program. He and economic health panel members of the Golden Sustainability Initiative hope other residents catch on to finding other alternative energy sources and reducing their energy bills.

"Why not have a dozen of those?" asked Don Parker, a member of the economic health panel.

The Skystream is a major improvement over older technologies because it is "plug-and-play," Courtad said. Older turbines required homeowners to install additional electrical systems to convert the turbines' electricity from DC to AC. With the Skystream, the inverter is built in, simplifying installation, Courtad said. The product was designed for residential customers, he added.

The Skystream begins producing power with winds as slow as 8 miles per hour, according Southwest Windpower's Web site. Power generation costs about 9 cents per kilowatt-hour, and installation runs about $12,000.

Courtad, who had the system up and running in November, said the idea is to create a hands-on demonstration of renewable energy generation. Courtad hopes the wind turbine will be used by The National Renewable Energy Laboratory for demonstrating wind and solar power in residential and small-business applications.

The turbine provides power to Courtad's dental office. The solar panels provide power to a nearby home. Taken together, they will provide a chance for people to see renewable energy at work, Courtad said.

— Renee Davis

GREEN FROM PAGE 2

the economic health panel. Creating a program to implement sustainability would take months of work. This stage is just brainstorming, he said.

"This is the start of the discussion," Bestor said. "It's a public brainstorming session. Let's have debate," Bestor said.

The sustainability initiative started in February as an effort by Golden citizens and city employees to help the city and community reduce their energy use and climate impact. All groups will submit their proposals to the city council in the fall.

To improve sustainability, 10-year goals were set for the city government as well as the wider Golden community in the areas of economic health, education and communication, building, energy, solid waste reduction and recycling, transportation and water.

In February, two goals were set for the economic health group. The first goal was to double the number of jobs in Golden in the energy efficiency and renewable energy sectors within 10 years. The second goal was to enable businesses located in Golden to lower their energy costs by reducing the average energy consumption by 15 percent within 10 years.

Golden has the potential of growing a business cluster for sustainable practices and renewable energy businesses, Parker said.

The sustainability initiative could "brand" the city as an environmentally conscious town, Parker said. This would help the local economy take advantage of the growing trends in ecological awareness. To do that, Golden needs to project an image as an environmentally friendly town. Solar panels and wind generators, front and center, would help people see Golden as green, Parker said. He pointed to the wind generators at Belmar shopping area. The generators create a positive image, without being obnoxious, Parker said. Projecting a green image will attract people who want to shop and live in such communities, he said.

A green image can attract business, too, Parker said.

Subsidies could help bring green businesses to Golden, Parker said. Parker was part of an effort that passed an ordinance prohibiting the city from giving subsidies to businesses looking to locate in Golden. Those who know him from that effort might be surprised to know he supports the idea of subsidies. The difference is attracting businesses that need encouragement to come to Golden, versus businesses such as big-box stores that would have located here anyway, he said.

ECONOMIC PANEL RECOMMENDATIONS

- Create a sustainability business incubator
- Audit energy use of businesses to identify chances to save energy and reduce energy bills.
- Encourage private wind turbines and solar panels.
- Certify local businesses as sustainable to attract shoppers interested in sustainability.
- Hire city sustainability director.

06-28-2007

OPINION

EDITORIAL

Sustainability initiative a good model

The federal government could learn from the Golden Sustainability Initiative, an effort by Golden city employees and residents to reduce overall energy use by 25 percent while increasing the portion of energy provided by renewable sources.

Already, seven panels have developed draft proposals to reach a single set of 10-year goals. A broad group of people are working on several fronts to achieve well-defined objectives — a single thorough energy policy, in other words.

Such a plan is long overdue at the federal level.

Congressional leaders are passing well-intentioned piecemeal measures that may be doing good, but could be doing much more as part of a national energy policy.

For example, Rep. Ed Perlmutter. D-Golden, recently voted for a bill that calls for eliminating tax incentives to oil companies and generating money for energy conservation, wind turbines, electric hybrid cars and clean coal technology.

This law will raise gas prices, as well as the prices of food and other necessities. Is this economic burden worth the cost?

Tellingly, the federal government is not directly increasing gasoline taxes. Roughly 14 percent of your gas dollar goes to the government. As much as 78 percent goes to taxes in other countries. The government could raise gas taxes as part of a comprehensive package of incentives, restrictions and taxes that would revolutionize the economy and reduce our environmental impact.

People want more than token measures and piecemeal approaches. A national survey by Stanford University found 73 percent of respondents said they support government mandated low-carbon standards — even if

Graduates, welcome to

BRIAN HOVEND

GUEST COLUM

As the strains of "Pomp and Circumstance" fade and college graduates make their way into workplaces and parents' basements across the country, I fear many are woefully unprepared for the self pity and sense of uselessness they may soon experience. I hope the story of my own post-graduation slump will provide some solace, or at the very least, entertainment, for the masses stuck in that special purgatory between college and industry.

Two summers ago, I was a newly minted college graduate with delusions of genius and absolutely no practical experience. I somehow weaseled my way into an internship at a highly respected daily paper with a staff of equally intimidating reporters, who were polite but had no real incentive to get to know a dozen different interns who would be gone in a few months. I snuck in and out of the newsroom that summer, half expecting a security guard to stop me at the door.

Less than a month after graduation, I underwent surgery to repair shredded ligaments in my knee, the result of a particularly unspectacular fall during the previous ski season. Marooned on the floor of my parents' living room for 10 days with my leg in a passive motion machine, I watched reruns of "What Not To Wear," read exquisitely sad novels and tried not to think about the future. While my friends were leaving for jobs in such exotic locales as Omaha and Kansas City, I was literally stuck. I'd been working since I was 15, and I didn't know what to do with myself.

I returned to the paper after a few weeks, where I listed municipal fireworks shows and limped through the dirt at the fairgrounds to interview junior barrel racers and corn dog salesmen. I covered anything they gave me, squirreling away the clips that could help me start a career I wasn't sure I wanted. But as came more competent, I st to really enjoy the work. Pe liked what I wrote, and so c stopped feeling like am im in the newsroom.

A few weeks later, howe internship ended, and my depleted savings meant I h move back in with my pare sent out scores of resumes porting jobs and stayed at most of the time, afraid to the house lest I run into so I knew in high school who inquire about my life.

I started applying for st retail jobs, which didn't pa The academic skills I'd tou smugly had gotten me nov I couldn't even get a job sh

LETTERS

State's smoke-free laws improve public health

In 1998 when three restaurants went voluntarily smoke-free in Jefferson County as part of the public health department's "Ahead of the Pack" Project, it made the news. People were concerned these businesses would lose customers and have to shut their doors. That didn't happen and people noticed. That helped mark the beginning of a change in sentiment about smoke-free policies. When Arvada passed a smoke-free law in 2005, which included parks, trails and outdoor patio areas of restaurants, some thought it was too stringent, but other Colorado communities noticed and followed in Arvada's footsteps. Now, prohibiting smoking in these outdoor areas is a growing trend in communities across the nation. When the Pueblo Heart Study results were released in 2006 showing that Pueblo's smoke-free law resulted in a 27 percent reduction in acute myocardial infarctions (heart attacks), people no

Prevention Partnership showed that air pollution in bars and restaurants has improved by nearly 70 percent since the Clean Indoor Air Act took effect, people noticed again.

We have passed an important milestone regarding public knowledge and sentiment about the harms of secondhand smoke: the greatest majority of us now know that secondhand smoke is a health threat and believe it is important to protect ourselves and others from exposure. Not only are nearly all of us protected from smoke exposure at our worksites, more and more of us are adopting smoke-free rules for our homes and autos. The most recent data from the Tobacco Attitudes and Behaviors Survey (TABS) show that 82 percent of Jefferson County households had smoke-free home rules in 2005 compared to 78 percent in 2001. That's an increase in protection from secondhand smoke in the home for more than 55,000 individuals in our County in just four years' time.

There is more work to do, but

ing. Our state's smoke-free l continues to help improve health in Colorado and peo noticing.

MARK B. JOHNSON, MD, MPH
Jefferson County Department Health and Environment

Lakeside provides fu for the whole family

For the past four years, kids have enjoyed their birt party at Lakeside Amusem for a fun evening with their ily. As teenagers, they really forward to our annual trek neighborhood location of ries not only of my past but cially that of my parents. T toric park not only has som best-remembered rides lik train that still makes its trip the lake, the carousel with tique horses, the Wild Chip and its quick 90-degree turn a metal track, The Whip (on kids and one for adults), an famous wooden roller coast

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This law will raise gas prices, as well as the prices of food and other necessities. Is this economic burden worth the cost?

Tellingly, the federal government is not directly increasing gasoline taxes. Roughly 14 percent of your gas dollar goes to the government. As much as 78 percent goes to taxes in other countries. The government could raise gas taxes as part of a comprehensive package of incentives, restrictions and taxes that would revolutionize the economy and reduce our environmental impact.

People want more than token measures and piecemeal approaches. A national survey by Stanford University found 73 percent of respondents said they support government mandated low-carbon standards — even if costs them more money.

Let's give them what they want — a real energy policy.

State's smoke-free laws improve public health

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There is more work to do to, but the efforts to raise awareness and implement protections are working. Our state's smoke-free l continues to help improve health in Colorado and peo noticing.

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GOLDEN TRANSCRIPT

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THURSDAY, JUNE 28, 2007 ■ 50 CENTS

len
RANSCRIPT

"WHERE THE WEST LIVES"

WWW.MILEHIGHNEWS.COM

re at recycling center

Photo by CHRISTOPHER STARK

ın who declined to give his name carries the contents of his van away from a fire Friday, June t the Rooney Road Recycling Center in Jefferson County. He said his van caught fire while he dumping items at the center. The blaze consumed a pile of limbs and branches, and was still ldering this week. See story, page 2.

Squeezing the last drop

Water panel urges conservation measures

BY RENEE DAVIS
reneed@milehighnews.com

Changing conventional showerheads, toilets and washing machines to water-efficient models could save each Golden resident 18.1 gallons a day, according to a rough draft proposal to conserve water.

The Golden Sustainability Initiative's water panel created the proposal. The group recommended a number of actions to get the public to use water-efficient fixtures and appliances. It suggests enacting new citywide building requirements that call for water-saving toilets. They also suggest rebates for showerhead replacement. Home audits would assess problems of

See WATER, page 4

SENIORS HELPING OTHERS

ʼe than 8.5 million
ʼr adults volunteer,
ıg others, selves

ENEE DAVIS
d@milehighnews.com

THE TWILIGHT YEARS

know the staff," she said.
Five years ago, her husband,

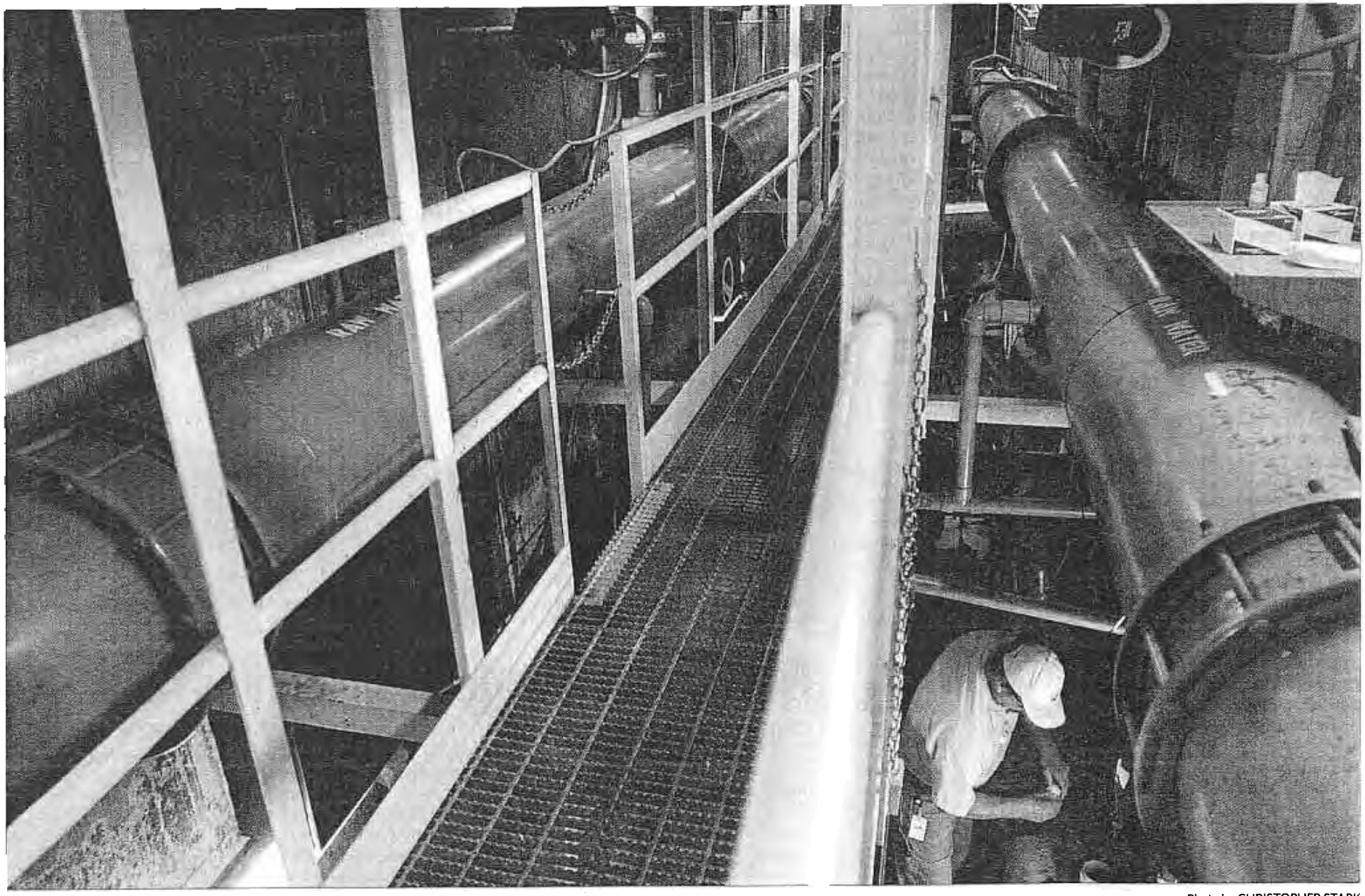

Photo by CHRISTOPHER STARK

Water Treatment Plant Operator Bob Pociask checks the clarity of water flowing through a filter Friday, June 22, at the Golden Water Treatment facility. The filters are washed every 48 hours to ensure they are properly working. The water treatment plant currently feeds 73 gallons, the equivalent of two full bathtubs, to nearby storage tanks every second.

WATER FROM PAGE 1

WATER

Photo by CHRISTOPHER STARK

Water Treatment Plant Operator Bob Pociask checks the clarity of water flowing through a filter Friday, June 22, at the Golden Water Treatment facility. The filters are washed every 48 hours to ensure they are properly working. The water treatment plant currently feeds 73 gallons, the equivalent of two full bathtubs, to nearby storage tanks every second.

WATER FROM PAGE 1

leaky faucets or pipes.

"We're looking for voluntary or incentive-based changes. We don't want to do anything onerous," said water panel moderator Susan Buhr.

The sustainability initiative started in February as an effort by Golden citizens and city employees to help the city and community reduce their energy use and climate impact. The initiative split into seven groups: education and communication, building, economic health, energy, solid waste reduction, transportation and water. Each group will submit its final draft to the city council in the fall.

To improve sustainability, 10-year goals were set for the Golden community. In February, four goals were established for the water group. The first is to reduce water use by 15 percent. The second goal is to maintain water quality above regulatory requirements. The third would increase the efficiency of the municipal water delivery system. And the fourth calls for improving the health of the ecosystem.

Another suggestion would have the city bill residents more frequently to help them get a better sense of how much water they are using. Right now, the city bills based on use, but the bills come quarterly. A user might not realize how much water they have used, said Public Works Director Dan Hartman.

More frequent billing might add another staff person for meter reading, Hartman said. A new meter

WATER

The *Golden Transcript* is running a series of stories on Golden's Sustainability Initiative.
For more information on the program, visit the city Web site at http://ci.golden.co.us

tering system might offset the costs associated with more frequent billing. Internet-based meters could provide homeowners with instant feedback on their water usage, said Hartman, who did not have costs for a new meter reading system. The most recent meter upgrade paid for itself after only eight years, he said.

If the city council decides to move forward with recommendations, "we would have to get serious about quantifying costs," Hartman said.

Leaks in the city's water delivery system account for as much as 9 percent of the water treated for drinking, Hartman said.

The benefits would be reduced costs in treating and pumping water that is not used by anybody. The group recommended creating a system to quantify the amount of water lost to leaks. If large leaks are determined to be a problem, the city may choose to "maintain and strengthen capital investment program," to repair the system, the draft says.

Leaks located in the service lines, which are usually before the meter, are the responsibility of homeowners, Hartman said. He said he was concerned about the "political baggage" of having the city mandate changes to these privately owned lines.

However, most costs associated with providing water are actually fixed costs, Hartman said. Costs from reservoirs and legal actions to secure rights do not lessen with decreased water use. As a result, if significantly less water is used, unit costs for water have to increase, Hartman said.

The water panel focused heavily on the city's water system because Golden residents already are doing a good job of conserving, Buhr said.

Hartman echoed Buhr. "Our citizens don't waste water," he said.

If Golden residents can meet the water-use goal, they will be below the national average for per-capita water use. This is an impressive goal for any city in the arid West, Buhr said.

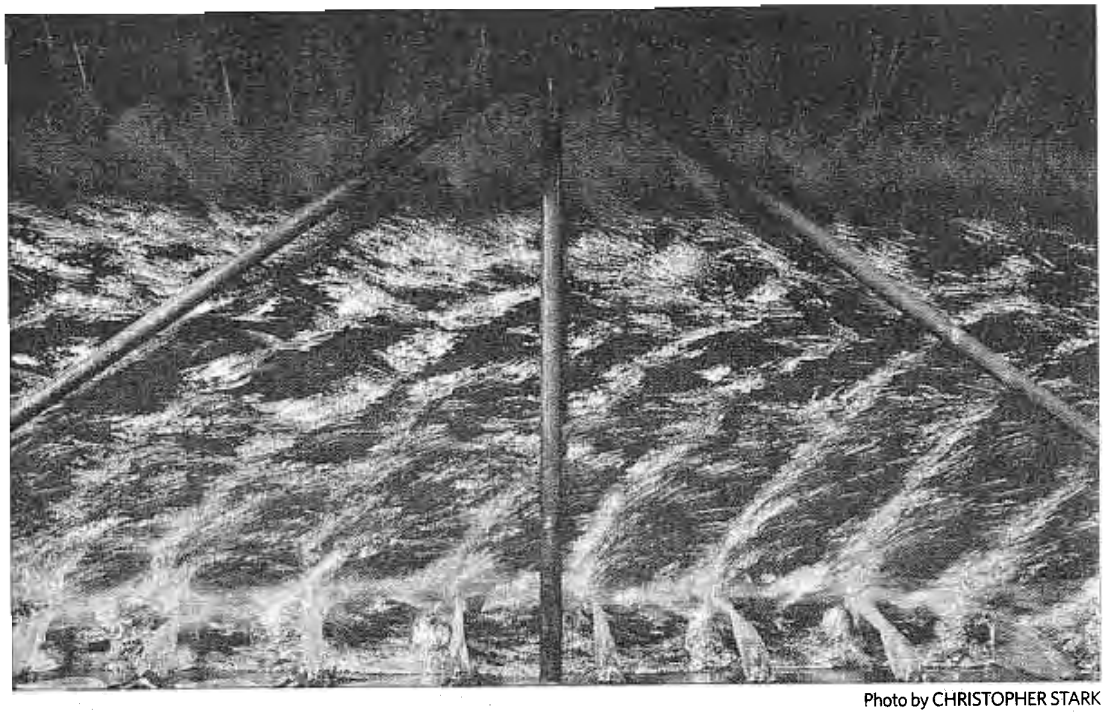

Photo by CHRISTOPHER STARK

Processed water flows through the final stage of the sedimentation basin Friday, June 22, at the Golden Water Treatment facility. The water is close to being drinkable but it still must undergo more processing to get it to an acceptable level before plant operators send it to the people of Golden.

WATER GROUP RECOMMENDATIONS

- Prohibit homeowner association covenants limiting conservation behaviors such as Xeriscaping.
- Mandate low-water-use fixtures in new buildings.
- Monitor city water system for leaks.

Photo by CHRISTOPHER STARK

Ryan Dulaney of Novan Solar Inc. installs solar panels Friday, June 8, in Genesee. The Golden Sustainability nitiative's energy panel discussed a proposal to keep new construction or trees from blocking solar access.

Big power users could pay more

Energy panel proposes tiered electricity rates

BY RENEE DAVIS
reneed@milehighnews.com

Those who use more energy could face bigger energy bills in the future. A recommendation by the Golden Sustainability Initiative's energy panel calls for tiered electricity rates.

Under the proposal, businesses and residences that use electricity above a given baseline would pay for that energy at a higher rate.

The sustainability initiative started in February as an effort by Golden citizens and city employees to help the city and community reduce their energy use and climate impact. To that end, 10-year goals were set for the city government as well as the wider Golden community. The goals set out in February were to reduce the city's

See ENERGY, page 5

HEADS UP: Important Upcoming Items

Council to Hear Sustainability Plans

This regular column in the Golden Informer identifies some of the items of greater community interest that are likely to be scheduled for community discussion in coming weeks. For specific agendas and schedules, visit www.cityofgolden.net.

The community's sustainability initiative is preparing to bring its proposals forward to City Council later this month.

The effort began in late February when the City Council invited citizens to evaluate goals suggested in six areas of sustainability: energy, economic development, building, water, transportation, and recycling. More than 200 citizens showed up to this initial meeting, and most commented that the suggested goals should be more aggressive. The community also asked that an additional goal area be created for education and communications efforts.

Working groups were formed in each of the seven goals areas to further evaluate the goals and develop proposals for City Council to consider. The groups met on a regular basis throughout the spring and summer and have been communicating in public Yahoo groups available at www.cityofgolden.net/sustainability. Their plans have been drafted and reviewed by a committee of the groups' moderators.

Each of the groups will present their proposals to City Council during study sessions scheduled the evenings of Thursday, July 19 and 26. The proposals include a broad range of ideas, ranging from public engagement campaigns to tiered consumption rates.

The public is invited to attend the meetings, or watch them broadcast on Channel 8 or online at www.cityofgolden.net/Channel8 and then send City Council any comments on the plans to citycouncil@cityofgolden.net or by calling your Councilor directly (see contact information on Page 2).

City Council is expected to review and discuss the proposals at its Aug. 2 study session and will determine what further action to take at that time.

Below is a copy of the Golden City Council's calendar. Council meetings and study sessions are scheduled to begin at **7 p.m. Thursdays** in Council Chambers at City Hall, 911 10th St., unless otherwise noted.

July 5
No Meeting

July 12
REGULAR MEETING

July 19
Study Session

July 26
REGULAR MEETING followed by a special Study Session on sustainability (see story left)

Council's upcoming agendas, packets and meeting minutes are available online under the City Council link at www.CityofGolden.net.

Public comment is welcomed and on the agenda at all regular meetings.

RECYCLE OUTDATED PHONE BOOKS

Citizens should be seeing the new Dex Community Yellow Page directories arriving throughout the month of July. The City of Golden reminds citizens to be responsible and recycle outdated phone books. Phone book recycling locations will be listed online at DexOnline.com/recycle.

Golden residents can use the City's recycling Center by taking State Highway 93 to westbound Golden Gate Canyon Road and taking the first right turn. Other public recycling facilities are located at the King Soopers on South Golden Road, the Masons Lodge and in the parking lot at Parfet Park.

GURA Pilots Small Business Energy Efficiency Program

The Golden Urban Renewal Authority is sponsoring a pilot energy audit and implementation program for businesses in the urban renewal district. GURA with invest $20,000 in the Small Business Energy Efficiency Program to help local businesses thrive by reducing overhead. GURA will help merchants reduce energy costs by assessing energy efficiency opportunities and providing implementation assistance.

In addition, the pilot program will help GURA evaluate the average performance of the downtown buildings and provide insight on what long-term services and programs should be offered in the commercial sector.

The program will provide energy audits to the first eight businesses within the GURA district that sign up. After the energy audits have been conducted, GURA will help the businesses implement the recommendations made by Active Energies, including connecting the merchant with a qualified contractor, applying for Xcel Energy rebates and paying 50% of the implementation costs up to $2,000 per business or building.

Any business or merchant within the GURA district with a current City sales tax license (if required) is eligible for an audit. Both a building owner and a tenant are eligible for an energy audit. However, if the applicant does not own the building, the building owner must authorize work as required by the lease.

Some benefits of an energy-efficient business are:

- Reduced annual operating and maintenance costs;
- Improved productivity;
- Tax benefits;
- Reduced risk;
- Increased customer/client comfort; and,
- Marketing benefits.

GURA's overall goal for the project is to reduce energy usage by at least 20%. Active Energies will list recommendations in the most cost-effective way to reach the 20% reduction and beyond. If a program participant does not implement measures at least to the cost of the audit, the business must reimburse GURA for audit cost. Audits will likely be in the range of a few hundred dollars.

To be involved in the pilot, applicants must submit an application with utility bill information by 4 p.m. July 19 online at www.gura.com/energyaudit. The eight businesses chosen for the pilot program will be contacted by July 25 to schedule audits for July 30 and 31.

More information about applicants' responsibilities, what is included in the audit and what to expect during the audit is available online at www.gura.com/energyaudit. If you have questions or concerns about the program or the application, contact Peter Rusin at peter@gura.com or 303-279-4162.