

Golden Sustainability Initiative 2013 Progress Report & Work Plan



The mission of the Community Sustainability Advisory Board is to assist the City of Golden in achieving its ten-year sustainability goals as adopted in Resolution 1793. In order to facilitate achievement of these goals, the Board will lead, encourage, enable, and empower the citizens, visitors, and people who work in Golden, to live in a sustainable manner.

Community Sustainability Advisory Board
April 11, 2013

Letter from the Board

In 2007, City Council created the Community Sustainability Advisory Board with the purpose of assisting the City in achieving its ten-year sustainability goals in seven different focus areas: green building, education, economic health, energy alternative transportation, waste diversion, and water conservation. The Board continued work on numerous initiatives in 2012, both building upon previous efforts and starting up new ones. However, because 2012 marked the half-way point towards the City's sustainability goals, the majority of the Board's effort was focused on an evaluation of each of the goals, including adequacy of the metrics, availability of relevant information, progress towards the goals, and overall appropriateness of the goals.

This Progress Report & Work Plan provides insight into the Board's actions for the coming year. First, we present a score card on page 5 that summarizes our progress in each focus area. Then, starting on page 6, we provide more details on where we are with respect to each goal and where we plan to go next. For each goal, we identify the metrics by which we evaluate success, provide a measure of how we are progressing towards the established goal, and identify a suite of activities we propose to undertake in the coming year. In addition, on page 17, we present a set of recommendations to City Council, including conclusions drawn regarding the appropriateness of each goal.

Over the past year, we have realized several significant achievements across the focus areas. Highlights include:

- Completion of the refurbishment of the new public works building at 1445 10th Avenue in accordance with the requirements for LEED Silver certification and planning for the addition of a roof-top solar energy system that will allow the City to attain LEED Gold certification and become a net zero energy building.¹
- Review and identification of suitable locations for installing roof-top solar energy systems on City buildings with a total generation capacity of 450 kW.
- Active pursuit of potential site locations for a 500 kW community solar garden.
- Adoption of the 2012 International Building Code that establishes new standards that will maximize the energy efficiency of new buildings and major building renovations in Golden.
- Adoption of a flexible permitting process for meeting new fire-related building standards while allowing for optimal design and installation of roof-top solar energy systems.
- Hosting the Economic Health Summit to initiate discussions with existing groups dedicated to promoting Golden's economic development in order to develop a common vision of "sustainable economic health" for our community.
- Support of local community gardens through startup funding for the Mitchell Elementary School and East Street gardens.
- Support of the first annual Golden Solar Home Tour through City sponsorship of the Golden Earth Days Council effort.

In the context of developing a sustainable community, Golden continues to lead on many fronts. The Council, City staff, and other Boards are to be commended for the commitments being made in this arena. Significant progress is being made, but significant challenges remain, particularly in the focus area of energy efficiency and renewable energy development. As we move into the second half of this

¹ LEED is the Leadership in Energy Design Standard published by the U.S. Green Building Council and adopted by the City of Golden for municipal buildings through Resolution No. 1937.

initiative, the Board is optimistic that Golden will continue to make significant progress towards its vision.

In closing, the Board would like to acknowledge the considerable efforts of key staff who have done most of the “heavy lifting” to make our ideas and thoughts reality. We thank Denise Hish, Administrative Assistant; Steve Glueck, Community & Economic Development Director; Anne Beierle, Deputy Public Works Director; and most of all, Theresa Worsham, Golden’s Sustainability Manager.

Community Sustainability Board Members



*From left, Mark Campanelli, Karen Smith, Chuck Baroch, Whitney Painter, Kurt Bendl Phillip Saeig.
Missing: Jeff Oxenford*

Member	Position
Chuck Baroch	Community-At-Large
Kurt Bendl	Public Research Facility Representative
Mark Campanelli	Education Professional
Jeff Oxenford	Community-At-Large
Whitney Painter	Small Business Owner Representative
Phillip Saeig, Vice Chair	Sustainability Industry Professional
Karen Smith, Chair	Community-At-Large

Approach

The Board defines Sustainability as living or acting in a manner that balances improving our quality of life, a healthy vibrant community, and mindful stewardship of the natural resources and environment while protecting the ability of future generations to do the same. With this in mind, the Board recognizes that sustainability efforts are not an end goal, but endeavors to continually strive toward improvement.

CSAB 2012 SCORE CARD

The Golden Sustainability Initiative has many goals and each of them are important with ongoing progress should continue. However, in 2013, some require greater focus and will have a higher priority for the Board.

FOCUS AREA	STATUS	2013 PRIORITY	ACTIONS
Green Buildings	100% Complete	Low	Golden building owners and the development community have come together to achieve this goal 5 years into the 10-year term. Updated building codes and the new Green Menus offer budget-friendly sustainable building solutions and will continue to ensure that all new construction and major remodels meet our green building goals.
Education & Communication	50%	Medium to High	Communication of the community goals is critical to the overall Sustainability Initiative. The Board will lead, encourage, enable, and empower the public to live and work in a sustainable manner.
Economic Health	25%	Medium	After a successful Economic Health Summit in 2012, the Board will work with other city groups to increase green jobs and encourage business sustainability.
Energy	10%	High	In 2013, the Board will focus a lot of attention toward this goal. The goals to reduce energy consumption and increase renewable energy have proven difficult to achieve. 2013 brings long awaited projects including community solar, municipal solar and a pilot program for citywide energy efficiency.
Solid Waste	80%	Low	Creation of the Pay As You Throw program in 2009 yielded significant cost savings for homeowners. Next steps include consideration of a PAYT ordinance to expand recycling access citywide.
Alternative Transportation	90%	Medium	While the City is funding annual upgrades to biking and pedestrian routes, a significant movement forward in reducing vehicle miles traveled (VMT) is expect in 2013, when RTD's West Light Rail Line and Golden's Call & Ride bus become available.
Water	80%	Low	3 out of 4 goal targets are achieved annually. Water conservation should remain a priority, with a new target set by Council.

2013 Work Plan

Throughout the document, the Board has identified "Next Steps" for each goal area, which are proposed to City Council as the Board's near term work plan. Other administrative projects also include:

- Review and update Strategic Plan, with an emphasis on developing new projects to be funded by the Board to further the City's sustainability goals.
- Develop an improved understanding of climate adaptation needs and opportunities and consider the application of new approaches and methods to assist the community, particularly in the context of green buildings and water use.

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GREEN BUILDING GOALS



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

- 1) Ensure that within ten years 90% of all new buildings constructed in Golden each year are built to green building standards.
- 2) Ensure that within ten 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.

Notable Achievements

- ✓ Keeping up with the latest energy efficiency building codes. Adoption of the 2009 and 2012 International Building Codes
- ✓ Creation and adoption of the Green Menu, a list of sustainable best practices for developers and homeowners to choose from as prerequisites for building permits.

What is a Green Building Standard?

All construction projects that equate to 25% or more of a building are required to achieve 25 points within the City's commercial or residential "Green Menu". Since adoption, all building projects triggered by this process have resulted in 100% compliance.

2012 – By the Numbers

Electrical Technologies 16145 Table Mountain Parkway

- 11,400 ft² office & light industrial facility
- Insulated concrete form construction for a tighter building envelope
- 30kW solar photovoltaic system
- Geothermal heat
- 20% more trees than required
- Electric vehicle plug-ins
- Double bike racks, employee showers



Gunslinger Custom Paint 830 Pine Ridge Road

- 32,000 ft² painting & collision facility
- Certified at the Bronze level for the State's Environmental Leadership Program
- Lighting retrofit in main facility.
- 20% more trees on site
- 5,000 ft² of porous pavement
- Insulated Wall Panel construction

GREEN BUILDING GOALS CONTINUED

- ✓ LEED for city buildings. Adoption of the U.S. Green Building Council's LEED standard for municipal buildings and the City's first LEED project: the Public Works Administrative Building.
- ✓ Annual amendments to the Land Use Code (See Table 1).

2009	Ordinance 1845: Dark Sky lighting regulations Ordinance 1847: Allowing renewable energy systems Ordinance 1855: Energy-efficient building codes
2010	Ordinance 1867: Commercial Green Menu Ordinance 1868: Residential Pay-As-You-Throw Ordinance 1874: Incentives for infill development Ordinance 1882: Allowing Accessory Dwelling Units Resolution 2059: Adopted Complete Streets policy
2011	Ordinance 1896: Allowing urban chickens
2012	Ordinance 1913: Residential Green Menu Ordinance 1914: Allowing Community Solar Gardens
2013	Ordinance 1931: Energy-efficient Building codes

Table 1 – Green building legislation

Next Steps

Although we have met 100% of the goals in this focus area, there are still important efforts that the City and community can do to promote green building design and construction:

1. Promote existing businesses in Golden that use green building strategies.
2. Develop new approach for providing the community with targeted expert advice on improving home energy efficiency and installing renewable energy systems (i.e., to replace previous efforts to launch a Home Energy Advisor program).
3. Identify green building approaches and methods that can be used to plan for and respond to challenges presented by climate change and climate adaptation.
4. Identify city projects that include green infrastructure: bioswales, landscaping, recycled asphalt or concrete.
5. Attain LEED Gold certification for the new public works building.
6. Research incentive strategies to exceed the Green Building standards.

2012 – By the Numbers

Golden Storage
732 Hog Back Drive

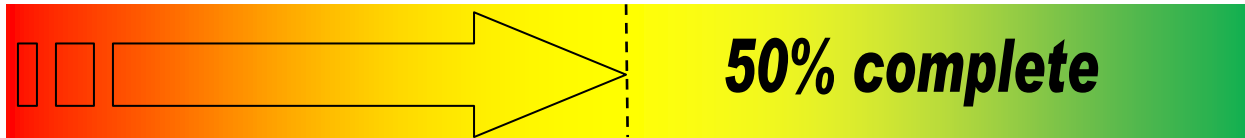
- Installed 100 new LED lights to replace old high energy use lamps
- 37% electricity savings and 50% monthly bill savings
- Energy savings equates to 10 homes each year.



City of Golden Public Works
1445 10th Street

- 6,000 ft² repurposed building
- 50% recycling of construction waste
- 20% reduced lighting power through the use of LEDs
- 60% restoration of open space that includes a public fruit orchard and demonstration areas for xeriscape plants
- 100% of electricity is offset by wind and solar energy credits.

EDUCATION & COMMUNICATION GOALS



To 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:

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

Notable Achievements

- ✓ K-12 education projects, including annual elementary school Earth Day art shows featuring recycled art, recycling facility tours and a reusable bag fundraising project.
- ✓ Ongoing CSM student collaboration projects through the EPICS classes, including VMT modeling, cost-benefit analysis for LED streetlights, industrial ecology studies, and small wind turbine feasibility studies for 10 Golden business owners.
- ✓ Financial support of the Golden Tour of Solar Homes, Colorado Environmental Film Festival, Golden Earth Days Council, and the Renewable Energy Demonstration Center.

Next Steps:

- Prioritize outreach in the form of website content, a Farmers Market presence, and a workshop series to communicate the message of what community members can do to be part of the sustainability solution.
- Effectively engage the Golden community in climate adaptation or climate disruption issues.
- Develop new website solely dedicated to promoting sustainability in our community, providing information about specific Golden programs and links to reliable online consumer-oriented resources specific to sustainability.
- Publicize availability of the Golden homeowner's Energy Efficiency Guide (currently available online).

ECONOMIC HEALTH GOALS



To 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:

- 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.
- 2) Create/Attract new jobs and businesses in the sustainability sectors.

Notable Achievements

- ✓ Held an Economic Health Summit in November 2012 to collaborate with community economic groups and identify cross-benefit projects and relationships. Key conclusions include:
 - Pooling messages – how can we promote programs with similar goals?
 - Work on group synergy for better communication and collaboration
 - Define economic health through the Golden Vision 2030 process.

Next Steps

- Further pursue a common vision for “sustainable economic health” in Golden by partnering with other existing groups dedicated to economic growth and health.
- Support Shop Local efforts by continuing the Reusable Bag program to promote local business and reduce plastic bag waste.
- Implement the LED grant program to help businesses take advantage of expiring lighting rebates from Xcel Energy.
- Work with GURA to promote its energy efficiency grants for downtown buildings.
- Reward businesses for increasing their use of alternative transportation both for operations and for employee use.

2012 – By the Numbers



Infinite Harvest
4688 Highway 93
Is developing a hydroponic vegetable farming system using shipping containers, solar, wind, and LED lighting to help grow veggies in almost any climate.
www.infinite-harvest.com

Williams Form Engineering
215 Rooney Road
Manufactures anchoring systems using recycled plastics and is the largest customer of the only plastics recycler on the Front Range.
www.williamsform.com

ENERGY EFFICIENCY & RENEWABLE ENERGY GOALS

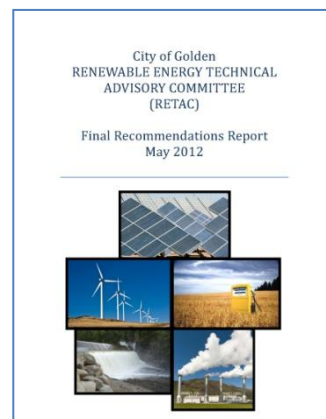


To increase our community's energy efficiency and our use of renewable sources of energy. Specifically:

- 1) 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).
- 2) Reduce overall community energy usage in Golden by 20% and increase to 20% the proportion of its energy use derived from renewable energy sources within ten years (20 x 20 in 10).

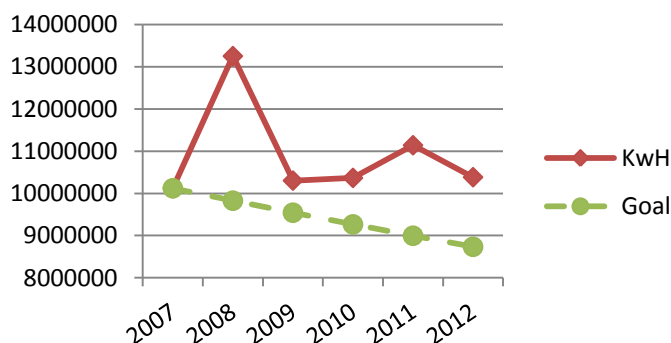
Notable Achievements

- ✓ Effective use of state and national experts in renewables to make recommendations to Golden for the best renewable energy strategy – aka the Renewable Energy Technical Advisory Committee (RETAC) report.
- ✓ 2007 Greenhouse Gas Emission Inventory indicated energy use by sector and provided direction for community programs.
- ✓ Traffic signals retrofitted to LED.
- ✓ 90 panels of solar thermal installed on the Community Center roof to supplement pool heating.

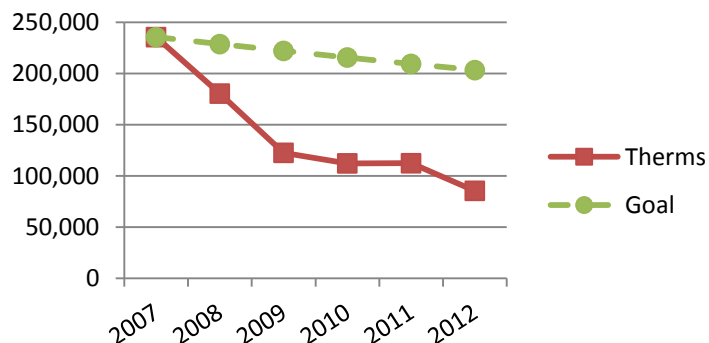


2012 – By the Numbers

Municipal Electrical Use



Municipal Natural Gas Use



Source: Xcel Energy

ENERGY GOALS, CONTINUED

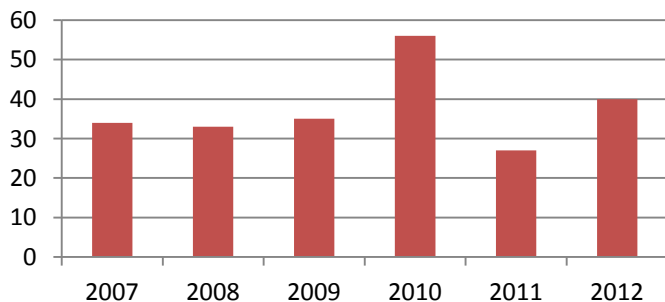
- ✓ Occupant sensors installed in all city facilities to conserve energy.

Next Steps

- Continue to review recommendations of the Renewable Energy Technical Advisory Committee and identification of priority projects.
- Evaluate opportunities to encourage greater energy efficiency and installation of renewable energy systems by commercial and industrial energy users in Golden.
- Conduct outreach with the largest commercial energy consumers in Golden to take advantage of current energy rebate programs.
- Assemble a solar photovoltaic package for Council consideration to make progress toward the municipal energy goals and take advantage of the remaining Xcel Energy solar incentives.
- As part of a 4-year effort, finalize a community solar garden proposal through City Council and submit to Xcel Energy in June 2013. The ideal community solar garden will be 500kW, sited on 3-5 acres, and provide wide access to the public for long and short term solar investment.

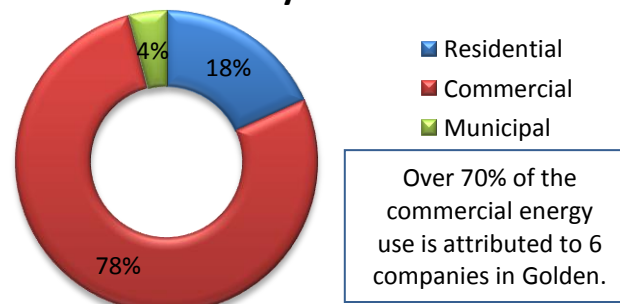
2012 – By the Numbers

Solar Permits, total



Source: City of Golden Building Department

Electricity consumption in Golden by Sector



Source: 2007 City of Golden GHG Inventory Report

SOLID WASTE & RECYCLING GOALS



To reduce our solid waste stream contribution through the expanded use of recycling programs, waste diversion programs, and other tools. Specifically:

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

Notable Achievements

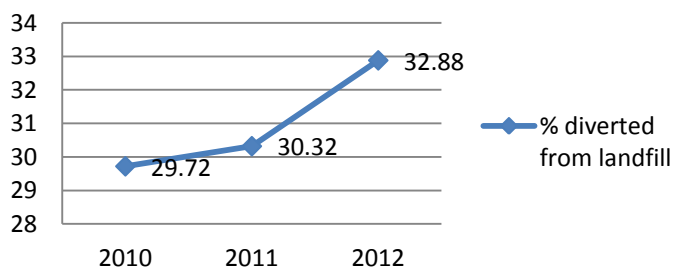
- ✓ More than 3,400 households participate in the single hauler PAYT program.
- ✓ Regular pharmaceutical roundup events to divert drugs from the local landfill and prevent groundwater contamination.

Next Steps:

- Advance efforts to implement zero-waste event requirements for public events held in Golden, building upon preliminary guidance provided to event sponsors last year. Define what zero-waste means to Golden.
- Provide recommendations to City Council for the adoption of a city-wide pay-as-you-throw ordinance in order to affect solid waste generation by sectors of the community not currently impacted by the Waste Management pay-as-you-throw service.
- Support the development and implementation of recycling services for downtown businesses.

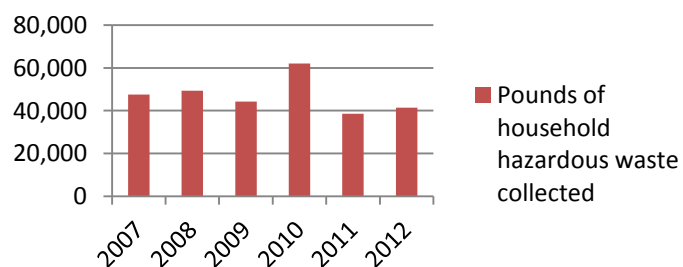
2012 – By the Numbers

PAYT Program Diversion Rate



Source: EDS Waste Solutions

Pounds of household hazardous waste collected



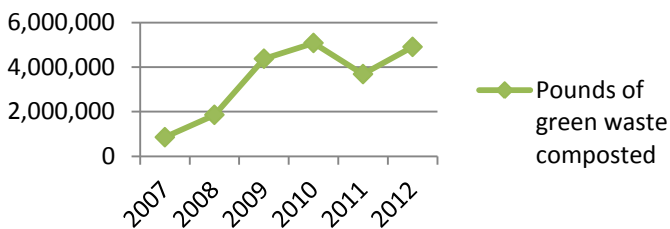
Source: Rooney Road Household Hazardous Waste Report, 2007-12

- Find assistance for elderly users who need yard waste collection (getting materials to the curb). Tap schools and scouts for help.
- Research partnerships to bring back a satellite compost operation. Rooney Road closure of A-1 Organics.
- Promote a second Reusable bag program as a fundraiser for schools and promotion of local retailers.

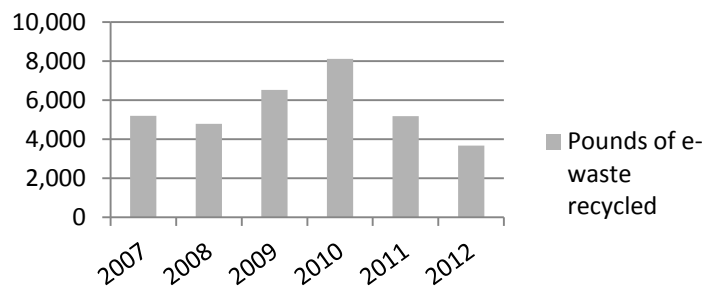
*What is e-waste?
Discarded electrical or
electronic devices,
including scrap such as
discarded computers,
phones, & entertainment
devices.*

2012 – By the Numbers

Pounds of green waste composted



Pounds of e-waste recycled



Source: Rooney Road Household Hazardous Waste Report, 2007-12

ALTERNATIVE TRANSPORTATION GOALS

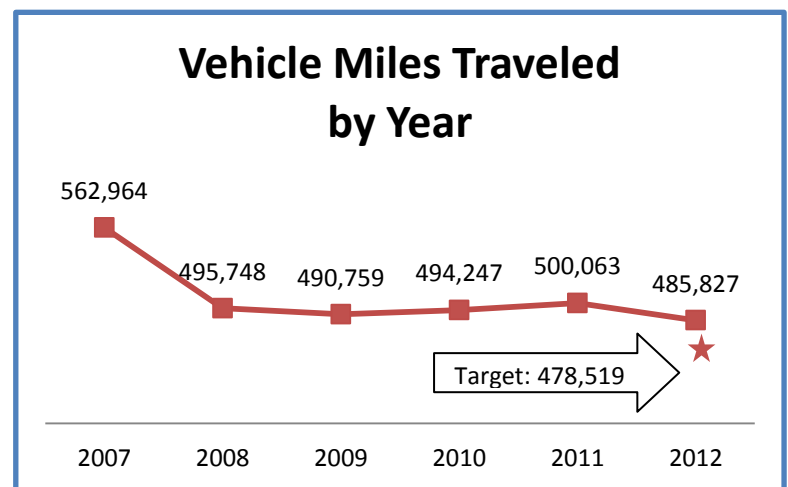


To increase the ability of Golden residents and visitors to travel to and through Golden using alternative transportation. Specifically:

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

Notable Achievements

- ✓ Adoption of the Complete Streets design for street reconstruction projects.
- ✓ Implementation of Walkability and Bike Task Force recommendations through capital planning efforts.
- ✓ Support for the Community Call & Ride Bus.
- ✓ Bike Corrals. Constructed through the 2011-2012 USA Pro Cycling Challenge events in Golden, new bike rack systems with a capacity to store more than 300 bikes are now available for large city events.
- ✓ Bike Storage at the W Rail Line. Racks are available at the platform, bike storage containers are inside the parking garage, and all of the community circulator buses and the light rail trains allow bikes.
- ✓ Participation and promotion of DRCOG's annual Bike To Work Day.



Source: CSM EPICS Program model

Next Steps

- Recalculate VMT after the new W Light Rail line is operational. Include ridership using new Community Call and Ride bus.
- Assist in the promotion and implementation of the new Community Call and Ride bus system.
- Analyze increasing alternative transportation amenities along South Golden Road through Pleasant View to better promote shopping in Golden.
- Encourage Complete Streets projects through the South Golden Road corridor.

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WATER CONSERVATION GOALS



To ensure that Golden sustains a clean, stable water supply into the future. Specifically:

- 1) Reduce Golden's per capita water use by 15% in 5 years. (target: 157 gal/day)
- 2) Maintain better than regulatory water quality from water treatment plant to end-user.
- 3) Increase the efficiency of the water delivery system.
- 4) Improve the health of the ecosystem associated with the Golden waterways.

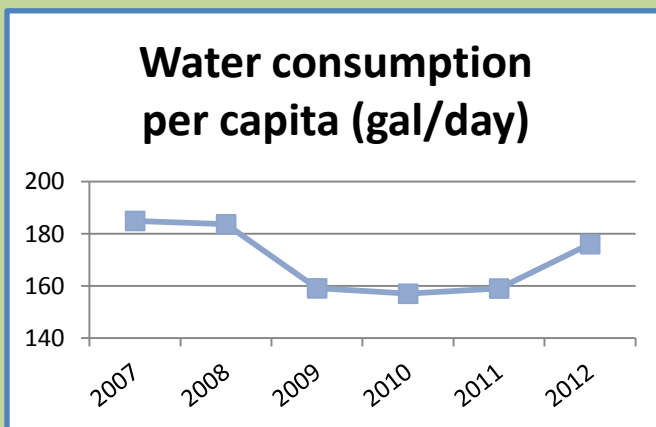
Notable Achievements

- ✓ Pilot program for advanced meter infrastructure (AMI) – replacing old water meters with new technology which will increase household access to water consumption data.
- ✓ Completed the Golden Ecosystem Health Plan, prioritizing waterways and drainage areas for conservation and revegetation.
- ✓ Annual waterwise programs for the public, including the *Greener Golden* event; Garden-In-A-Box discounts, free irrigation audits, and periodic water conservation seminars.
- ✓ Proactive water infrastructure leak detection and repair, including significant projects such as X, Y, and Z.

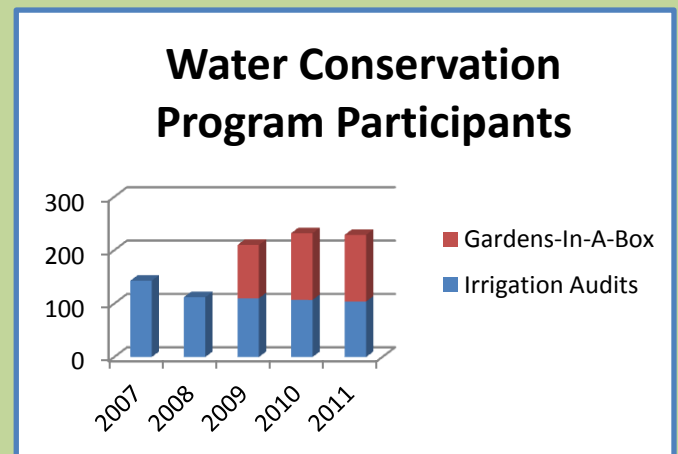
Next Steps

- Prioritize and provide funding assistance to projects within Ecosystem Health

2012 – By the Numbers



Source: City of Golden Water Department



Source: Center for ReSource Conservation Annual Reports

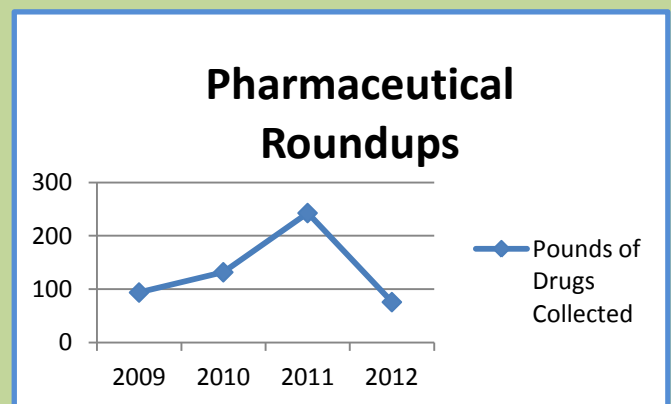
Compliance Plan.

- Address climate adaptation related to water use and identify approaches and methods that can be used to plan for and respond to challenges presented by climate change.
- Support for AMI infrastructure funding and provide community education and outreach in advance of implementation.
- Evaluate the data in context with industry calculations for weather normalization, realizing that the success of the water conservation goal varies from year to year given the variable amount of annual precipitation.
- Strengthen efforts to educate residents about ways to reduce outdoor water use.
- Evaluate a water loss program for residential and commercial consumers.



Golden's water treatment plant received the Director's Award from the Safe Water program for exceeding EPA and CDPHE standards.

2012 – By the Numbers



Source: Golden Police Department

MID TERM GOAL REVIEW & RECOMMENDATIONS

Based on its review of each of the sustainability goals, the Board makes the following recommendations:

1. Green Buildings: Retain current goals. Current goals have been met; no changes are needed. The green building goals set a standard for the development community to meet and should remain in place. Additionally, the prescriptive requirements of the goal commit the City to adopting up-to-date building codes and amending the zoning code to integrate innovative green building practices.
2. Education & Communication: Retain the first goal to create effective, ongoing two-way communication. Drop the 2nd goal about supporting the Community Working Groups; this goal is no longer relevant because the Working Groups are no longer seated. The Board will continue to refer back to the Working Group recommendations.
3. Economic Health: Retain goal to assist business sustainability and adopt different metrics to measure growth in the green employment sector.
4. Energy Efficiency and Renewable Energy Development: Retain current goals, but extend the timeline for the municipal energy goal.
 - Milestones needed
 - RETAC recommendations
5. Solid Waste & Recycling: Retain current goal. From the available data, the Board believes that the City has met the waste diversion goal, however, the City should continue with efforts targeting all sources of waste to meet the 25% goal in each area. In 2013, the Board will forward a recommendation to expand access to recycling services through a PAYT ordinance. Although it is not possible at this time to quantify the entire community's waste volume and diversion, the Board will continue to include metrics that demonstrate diversion as time and the budget allows. CSAB will pursue initiatives that make sense and continue with programs that the Board believes will further our progress toward this goal.
6. Alternative Transportation: Retain current goal.
 - VMT model needs to be rerun. Consider the difficulty of recognizing Golden's pedestrian and bike amenities within the VMT calculation. Propose and adopt a more simplified metric to measure local VMT.

7. Water

- Set new water efficiency goal: deadline has passed. Identify additional metrics that include weather normalized data since water conservation is directly affected by annual precipitation. Efficiency should be changed to “unaccounted water”. Consider other industry standards such as “non-revenue water” Consider adopting the Colorado standard for water loss. This may include an energy conservation benefit with line loss improvements: less treatment = less kW/gal. “watergy”.
- Retain goal subsets 2, 3, and 4. These objectives set an expectation for ongoing efforts with annual increases or targets.

Additional Recommendations

The Board thoroughly considered the emergence of the local food concept as a priority that could be added to the City’s goals. However, there was a consensus that the topic of local food did not warrant an entirely separate goal because of its impact in many sustainability realms: water, education, VMT, energy. The Board concluded that additional metrics should be added to the existing goals, such as x% of community food supply comes from local/regional sources or x square feet of local gardens per capita. In 2013, the Board will develop these additional metrics, time permitting.

We are aware that there are many in our community that would like to serve as a member of our Board. Although the Board composition will continue to evolve over time, the reality is there will continue to be more volunteers than seats on the Board. We recommend that Council encourage these community members to consider sitting on other boards in order to serve as proponents of sustainability across all of the City’s initiatives. As the breadth of the goals indicates, sustainability doesn’t fit into a single box and it has value in everything we do.

Although no action is needed at this time, the Board also recommends that Council begin to consider the potential value of making the Community Sustainability Advisory Board a permanent board. Although the City is making great progress towards its ten-year goals, as discussed in the “Mit Term Goal Review & Recommendations” section above, it appears that at least a couple of the goals may need to be allotted additional time. Thus, the Board could provide value to the City at least through the course of the extended timelines, should they be approved by Council. Moreover, sustainability is inherently intended to be an enduring condition and the existence of an advisory board will help ensure that Golden’s sustainability achievements are lasting and durable. The City’s and community’s needs in terms of sustainability programs and initiatives undoubtedly will evolve with time as conditions, needs, and realities change. We anticipate that there will always be members of our community eager to volunteer their time to work on these important issues. We encourage Council to continue to invest in this great initiative.