

City of Golden Sustainability Strategic Plan
November 4, 2010

Executive Summary

The purpose of this Strategic Plan is to investigate, identify, and develop a process of programs, investments, and initiatives that could facilitate the City's achievement of its ten-year sustainability goals. The strategic plan will help assess the effectiveness and degree of difficulty of various approaches, providing prioritizations in the plan. The plan will be used as the basis for CSAB's advice, suggestions, and assistance to the City in achieving its sustainability goals.

What is Sustainability?

In Golden, and indeed across the U.S. and other nations, we are faced with impacts as a result of population growth, resource consumption, and energy needs. Golden is also affected by regional impacts such as the economy, the structuring of local tax revenues, and competing needs for resources by adjacent communities.

Balancing these factors, the Community Sustainability Advisory Board has adopted the definition of 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.

CSAB Mission Statement

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.

The Community Sustainability Advisory Board is made up of seven Golden residents who bring a broad perspective of sustainability expertise: Tom Atkins (chair), Karen Smith (vice chair), Susan Buhr, Hillary Mizia, Scott Morrissey, Gunter Ritter, and Chuck Baroch. CSAB meets twice each month and invites members of the public to attend and provide comments. For more information on Golden's sustainability programs and meeting dates and times, please visit www.cityofgolden.net/sustainability.

Introduction

Under the leadership of the Golden City Council, with support from the Community Sustainability Advisory Board and participation by citizens, the City has made a long-term commitment to sustainability and environmental stewardship. With the ten-year goals, Golden recognizes both the operational challenges and opportunities that it will face in upcoming years. Nevertheless, Golden is committed to creating a set of governmental and community policies, metrics, and benchmarks that will assure that the community, businesses and residents are able to take proactive steps to meet ongoing challenges as well as capitalize on new opportunities. The City of Golden recognizes that it will obtain significant economic, social, and environmental benefits through successful integration of sustainability into our operations, investments, and day-to-day living.

In 2006, the Golden Sustainability Initiative began with over 200 residents who attended the first sustainability open house on a cold and snowy night. After four months of work, recommendations by seven community working groups were adopted by City Council in 2007. The adoption of fifteen goals over seven topic areas forms the basis for this Strategic Plan.

Among the initiatives featured in the Plan are:

- Encouraging energy efficient buildings
- Improving economic health
- Providing thorough and relevant sustainability education and communication
- Reducing energy consumption
- Increasing our commitment to renewable energy
- Reducing our solid waste
- Finding alternative methods of transportation
- Conserving water and improving water quality

Detailed goals can be found in each section of this Plan and in Resolution No. 1793, adopted by City Council on August 23, 2007 and included in Appendix A.

Intent

The purpose of this Strategic Plan is to identify programs, investments, and initiatives that will make measurable progress toward the ten-year sustainability goals. CSAB recognizes that the path to becoming a sustainable city is a long-term commitment which has no finite end. In striving to become more sustainable, these strategies will provide direction in the city's consideration for new ideas and emerging technologies.

As Golden implements the initial policy initiatives, CSAB is committed to continually reviewing its policy goals in light of new technologies, scientific advances and changing local, regional, and national objectives. As a necessary part of fulfilling its mission and evaluating progress, CSAB intends to include the following:

- Review the Sustainability Strategic Plan on an annual basis and update as necessary
- Review goals and metrics in 5 years (2012), or sooner, if warranted.
- Trend performance through successive calendar years and provide an annual Sustainability Report

In future versions of the Sustainability Strategic Plan, CSAB will look for opportunities to revise or expand sustainable policies to address Golden's current needs and abilities. Consideration of all proposed initiatives and programs will include a rigorous cost-benefit analysis and CSAB will recommend that Council adopt policies and programs that offer the greatest benefit to Golden residents and businesses.

GREEN BUILDINGS

Goals

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

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

Metrics: Annual report listing total number of new buildings triggering compliance with green standards. For buildings exempt from the City's building permit process (including public schools and university buildings), data collected from each entity will be used.

Baseline: Zero percent (0%) of new buildings meeting the green building standard.

Goal 2: Ensure that within ten years 50% of all remodels in Golden each year are built to green building standards.

Metrics: Annual report listing total number of remodels and those triggering compliance with green standards. For buildings exempt from the City's building permit process (including public schools and university buildings), data collected from each entity will be used.

Baseline: Zero percent (0%) of remodels meeting the green building standard.

Goal 3: Revise Golden's land use code to reflect the best practices in sustainability once every five years.

Metrics: Number of amendments to Title 18 of the Municipal Code pertaining to sustainability best practices, measured annually.

Baseline: One (1) sustainability-related code amendment in 2007.

Strategies

To better develop strategies, buildings have been divided into four general building types, recognizes that there are many more building types than the four general areas defined.

- New and Remodeled Residential – New construction, remodels (requiring a building permit), 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.

Strategies by Building Type:

Strategy	Methodology	Projects
New and Remodeled Residential		
Review existing code, fees, HOA restrictions and Zoning	Maintain state of the art standard, prevent law and rule conflicts hampering sustainable practice.	Develop review schedule and enforce. Develop liaison with partner community for solution exchange.
Adopt Green Building Standards for New/Remodel Residential Construction	Maintain state of the art standard sustainable practice.	Identify candidate standards and involve stakeholders in selection process. Develop stakeholder discussion forum, on-line or with meeting series.
Adopt Incentive Strategies to exceed New/Remodel Construction Green Standards	Reduce barriers with financial incentives (fee and tax reductions), privilege incentives (exceptions), PR incentives (plague on the wall)	Fee waivers; develop super "Sustainable Building Walk".
Existing Residential		
Existing Buildings, "Point-of-Sale Green Audit"	Promote best sustainable practice and market competition.	Research applicable audit parameters, research results of similar efforts in different communities, involve stakeholders. Develop audit guidelines and manual for on-line self-audit. Make audit manual available on community website. Provide for comparison option.
Adopt Upgrade Strategies for Existing Residential Homes	Reduce barriers for owners to facilitate upgrade, engineering-, management,- and financial barriers	Develop template designs for common building types, including contract documents, identify financial incentives.

New and Remodeled Commercial/Non-Residential		
Strategy	Methodology	Projects
Review existing code, fees, HOA restrictions and Zoning	Maintain state of the art standard, prevent law and rule conflicts hampering sustainable practice.	Develop review schedule and enforce. Develop liaison with partner community for solution exchange.
Adopt Green Building Standards for New/Remodel Commercial (Non-Residential) Buildings	Maintain state of the art standard sustainable practice.	Identify candidate standards and involve stakeholders in selection process. Develop stakeholder discussion forum, on-line or with meeting series.
Adopt Incentive Strategies to exceed New/Remodel Construction Green Standards	Reduce barriers with financial incentives (fee and tax reductions), privilege incentives (exceptions), PR incentives (plaque on the wall)	Fee waivers; develop super "Sustainable Building Walk".
Existing Commercial/Non-Residential		
Existing Buildings, "Point-of-Sale Green Audit"	Promote best sustainable practice and market competition.	Research applicable audit parameters, research results of similar efforts in different communities, involve stakeholders. Develop audit guidelines and manual for on-line self-audit. Make audit manual available on community website. Provide for comparison option.
Adopt Incentive Strategies to exceed New/Remodel Construction Green Standards	Reduce barriers with financial incentives (fee and tax reductions), privilege incentives (exceptions), PR incentives (plaque on the wall)	Fee waivers; develop "Sustainable Building Walk".

Past Initiatives and Accomplishments

- Adoption of the 2009 International Building Codes, including the International Energy Conservation Code, which is estimated to be 15% more energy efficient than the previous version.
- Joint efforts with the Planning Commission, on integrating sustainability best practices into new construction and remodels for multi-family and commercial buildings and support for amendments to the Site Development Standards of the zoning section of the Municipal Code.
- Adoption of the U.S. Green Building Council's LEED Silver standard for new municipal building projects.
- Contracted with an energy service provider, McKinstry to make energy efficiency improvements and guarantee savings for municipal buildings. The City received \$500,000 from the Department

of Local Affairs to offset costs for this project, which included a new solar thermal system at the Golden Community Center.

ECONOMIC HEALTH

Goals

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:

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.

Intent: This goal refers to businesses improving the sustainability of their offerings and their processes and practices (e.g., retail businesses increasing their offerings of sustainable products, manufacturing businesses improving the sustainability of their processes).

Metric: Number of outreach efforts to provide information, resources, and assistance to encourage sustainability.

Baseline: Thirty-nine (39) outreach efforts in 2007 to provide information, resources, and assistance to encourage sustainability.

Goal #2: Create/Attract new jobs and businesses in the sustainability sectors.

Intent: "Sustainability sectors" refers to any and all businesses that not only contribute to the sustainable growth of Golden as a small town community, but also promote awareness and contribute to sustainable goods and services, such as jobs in the renewable energy sector, environmental engineering, sustainability and environmental consulting, composting, organic gardening, goods made from recycled materials, outdoor education, eco building supplies manufacturing and sales, etc. City Council, staff, and Sustainability Advisory Board should interpret this goal to mean a 20% increase in the number of sustainability sector jobs in the greater Golden area, meaning the Golden city limits and the unincorporated Jefferson County commercial areas immediately adjacent to the city.

Metric: Percent growth in employment in sustainability sectors.

Baseline: Jobs identified through the Colorado State Demographer's office and classified as sustainability-related jobs meeting the above definition. Additional work to define the number of jobs in 2007 is required.

Strategies

Several of the economic health strategies defined in this section also support the energy efficiency/renewable energy and alternative transportation goals due to the interrelated nature of these objectives.

Strategy #1: Create an effective leadership and awards program that encourages energy efficiency, use of renewable energy, and overall sustainable business practices.

Methodology: Partner with the Colorado Department of Public Health and Environment's Environmental Leadership Program to bring Golden-based businesses to the forefront of the sustainability movement in Colorado.

Projects: Create an Economic Leadership program by working with businesses interested in participating and working with CDPHE to understand the challenges and work to design an appropriate program for Golden.

Strategy #2: Increase participation in Xcel's WindSource program.

Methodology: Talk with local businesses about WindSource and encourage them to sign up, work with Xcel to provide information to the appropriate decision makers.

Projects: Hold informational sessions about WindSource at businesses.

Strategy #3: Encourage energy efficiency.

Methodology: Inform local businesses about Xcel's existing Demand-Side Management programs.

Projects: Create a business-to-business local resource guide with energy auditors, manufacturers and retailers of energy efficient equipment, etc. and make this available to all businesses within Golden. Tie this directly to the awards/leadership program.

Strategy #4: Reward businesses for increasing their use of alternative transportation both for business transactions and within the employee base.

Methodology: Inform businesses of the Circulator Bus and how it can work in their favor. Tie this to the awards/leadership program.

Projects: Promote a program, such as the existing Best Workplaces for Commuters, DRCOG Ride Arrangers program, or Fort Collins' Drive Less Challenge, to all businesses.

Strategy #5: Develop a local living economy.

Methodology: Get involved with the Business Alliance for Local Living Economies (BALLE) and meet with the three Colorado-based BALLE programs currently in action (Be Local in Fort Collins, Mile High Business Alliance in Denver, and Local First in Durango and La Plata County).

Projects: A local living economy resource guide/coupon book. Invite local living experts to Golden for consultation and discussion. Broaden partnership opportunities with the Shop Local group.

Strategy #6: Create a friendly environment to on-site renewable energy projects.

Methodology: Reduce or waive permitting costs to such projects. Publicize businesses that are undertaking on-site renewable energy.

Projects: Pilot projects involving renewable energy on-site.

Strategy #7: Recruit new businesses/start-ups to Golden that fill a specific community need.

Methodology: Identify gaps within locally provided services, potential partnerships with existing businesses to create synergy and industrial ecology, and large waste streams that could be turned into material for new businesses.

Projects: Analyze local waste streams to determine if specific materials could have local use.

Strategy #8: Partner with Economic Development Commission and the Golden Urban Renewal Authority for joint promotions.

Methodology: To avoid duplicative efforts, the Board will meet periodically to develop programs that fulfill the needs of each Board.

Projects: Promotion of the Shop Local program, downtown recycling, renewable energy cooperatives for businesses and pilot renewable energy projects. Consider adoption of additional

metrics to measure business retention.

Past Initiatives and Accomplishments

- Partnership with the Shop Local committee for joint projects highlighting reasons to support local businesses and joint marketing efforts.
- Promotion of downtown business through the City's First Friday events.
- As part of efforts within the private marketplace, several sustainability-related business have located in Golden:
 - Proterra – a fuel cell bus manufacturer located in the Coors Technology Center.
 - Solar photovoltaic and solar thermal providers – Nine companies operate within the city limits and provide solar expertise to building owners within Golden and adjacent communities.

EDUCATION

Goals

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:

Goal 1: Create effective, ongoing two-way communication that informs, educates and inspires community involvement in city-wide sustainability efforts.

Metrics: Performance Indicator: Percent change in level of knowledge of community efforts and city actions taken through community surveys.

Baseline: A level of knowledge of community efforts and city actions to be determined through future community surveys.

Goal 2: Support the Community Working Groups in crafting community action plans that effectively foster sustainable behavior.

Metrics: Performance Indicator: Percent of Community Working Group recommendations that have been adopted.

Baseline: Eight (8) Community Working Group recommendations were implemented in 2007.

Note: This goal area is considered a mechanism for achieving the other sustainability initiative areas.

Strategies and Methodologies

Strategy #1: Communication infrastructure – Develop mechanisms and resources for communication

- Use city-wide communication avenues regularly (ex. Informer, newsletters)
- Develop electronic means of communicating with sustainability-attentive people in Golden (ex. listserves, website)
- Identify short to mid-term education events on basis of existing opportunities and needs and establish a schedule for developing education/communication events that focuses on the sustainability goals roughly one at a time over a two-year period. The intent is to promote a specific issue by making it the focus of a series of closely connected events.
- Piggyback on existing well-attended venues to increase attendance (e.g. farmer's markets, art festivals, and other Chamber events.)
- Develop long-term strategy for two-way influence: education events that actively shape the Sustainability Initiative. The program should be informed by input from participants.
- Develop means for visitors to Golden to engage in sustainable behavior (e.g. signage)

Strategy #2: Public – Provide on-going opportunities for people in Golden to participate in sustainability-oriented community events and initiatives

- Provide a suite of workshops and events in which Golden residents and visitors participate
- Promote sustainability as an element of public events in Golden
- Develop sustainability-oriented communities to inform and support sustainable behaviors

Strategy #3: K-12 and Informal Education – Develop mutually beneficial relationships with local schools and with environmental education providers

- City staff and CSAB members regularly communicate with local educators
- Local students are engaged in sustainability initiatives
- Local education providers are engaged in community workshops and events
- Develop sustainability science fair projects to integrate sustainability into local curriculums
- Sponsor a sustainability art contest (e.g. using renewable or recyclable materials.)

Strategy #4: Higher Education – Engage higher education students in city sustainability initiatives

- Local undergraduate and graduate students are engaged in sustainability initiatives, as a means of learning and as participants
- CSAB and CSM Sustainability Board are aware of and support one another's initiatives

Strategy #5: Commercial sector – Develop sustainability-oriented partnerships and communication avenues with commercial sector entities.

- Use sustainability communication mechanisms to support the commercial sector in Golden
- Develop communication partnerships between CSAB and community commercial organizations

Strategy #6: Evaluation – Use sound evaluation practices to improve the CSAB education program and to measure outcomes.

- Establish and implement an evaluation plan
- Review findings regularly and incorporate into CSAB programming

Past Initiatives and Accomplishments

- Regular inclusion of sustainability information in the Informer, Golden Transcript and electronic newsletters and news items.
- A new look. CSAB created a logo that represents the many interests of sustainability and provides resources through the sustainability section of the Golden Informer.
- City-wide educational / promotional campaign were implemented for reducing solid waste, energy reduction (promote CFL use), alternative transportation and water consumption.
- Engage School of Mines EPIC students in wind turbine study; engage CU Boulder and CU Denver graduate students in sustainability planning and research
- CSAB has supported Shop Local campaigns through communication and coordinated efforts (ex. Community gardeners are encouraged to shop at Meyer's Hardware)
- CSAB holds joint meetings with the Economic Development Commission and Planning Commission in order to identify mutually beneficial activities such as local business development through sustainability-related projects and green building codes.
- In 2009, the City hosted a series of free sustainability workshops to provide resources and encouragement to Golden residents. Topics included learn to compost, compost with worms, improving the energy efficiency of your home, and sew your own reusable bag.
- CSAB identified support of a community garden citizen group as one of its priorities, and provided support to the group that subsequently emerged. That group established the Golden

Community Garden, which uses a vacant city parcel and provides rental plots, education, and community interaction to Golden residents.

- Annual Sustainability Awards: Individuals and businesses in Golden are honored through the annual sustainability award.
- Energy efficiency tools can be borrowed from the City's library of products such as a Kill-A-Watt meter which measures the electric consumption of any appliance in your home or a digital infrared thermometer to identify sources of leaks around windows, doors, or vents.

ENERGY EFFICIENCY & RENEWABLE ENERGY

Goal

Increase our community's energy efficiency and our use of renewable sources of energy. Specifically:
This goal has two components: reducing energy consumption and increasing the use of renewable energy sources (e.g., solar photovoltaic and thermal systems, wind, hydropower, geothermal, and biomass).

Goal #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 x 10).

Metrics: For municipal energy consumption: annual consumption of electricity (MWh), natural gas (therms), and gallons of transportation fuel (both gasoline and diesel). For municipal use of renewable energy: the ratio of energy derived from renewable versus non-renewable sources.

Baseline: Electricity: 10,121Megawatt Hours
 Natural gas: 235,416 Therms
 Percent electricity from renewable energy: 0%
 Transportation fuel: 80,088 gal

Goal #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 x 10).

Metrics: For community energy consumption: annual consumption of electricity (MWh), natural gas (therms), and vehicle fuel efficiency (average miles per gallon for privately-owned vehicles). For community use of renewable energy: energy derived from sum total of all private solar installations captured by the City's building permit system, other renewable energy projects, Xcel WindSource subscriptions, and Excel Energy RPS standard achievements.

Baseline: Electricity: 259,081Megawatt Hours
 Natural gas: 16,145,250Therms
 Percent electricity from renewable energy: 0.1%
 Fuel efficiency: 25 mpg

Strategies and Methodologies

City of Golden:

Strategy #1. Continue with energy efficiency and renewable energy investments for city-owned facilities.

- Follow-up with additional recommendations from the performance contract with McKinstry Inc.

Strategy #2. Seek partnerships with local organizations adjacent to city-owned reservoirs to determine feasibility of large-scale renewables.

Strategy #3. Comply with adopted standard of LEED Silver for large renovations and strive for high energy performance in new construction.

Community:

Strategy #1. Increase Energy Reduction through Sector-Specific Initiatives

- Analyze energy consumption by sector (e.g., residential, non-municipal governmental, commercial, industrial) to determine relative contributions to energy use.

- Establish priorities for sustainability initiatives to target sectors responsible for greatest energy consumption.
- By the end of 2011, develop and implement 2-3 new initiatives related to energy conservation targeting the top 3 priority sectors.

Potential projects include:

- Promote use of home energy meters to help consumers monitor electricity use and encourage behavioral change.
- Promote Xcel Energy's demand-side management (DSM) program to help industrial businesses maximize their energy efficiency.

Strategy #2. Increase Distributed Generation of Renewable Energy

- Use the results from Task 1 to develop strategies to increase distributed generation among top 3 priority sectors.
- Determine which technologies to emphasize (e.g., which of solar PV, solar thermal, geothermal heat pump, and wind technologies are most viable at the distributed generation scale).
- By end of 2011, develop and implement 2 new initiatives related to distributed generation targeting the top 3 priority sectors.

Potential projects include:

- Develop program to educate homeowners and small businesses on the basics of installing renewable energy, including incentives, financing options, and applicable laws (e.g., HOA provision of HB1270).
- Investigate the potential for a public/private partnership to develop a Community Solar Garden in Golden.

Strategy #3. Increase Renewable Energy Subscriptions

- Develop campaign to increase the number of households and businesses subscribing to Xcel's WindSource program by 10% by the end of 2011, with 3% increases in enrollment in each of the subsequent years.

Strategy #4. Evaluate Community-Scale Renewable Energy Opportunities

- In 2011, conduct a study assessing the potential for developing a large scale renewable energy project on City property, on County property, or on land that could be purchased by the City and/or County.
- Seek support from the DOE Office of Energy Efficiency and Renewable Energy Technical Assistance Program.

Strategy #5. Increase Use of Alternative Fuel or High Fuel Efficiency Vehicles

- Support local fueling stations for electric vehicles and alternative fuel vehicles.
- Research priority parking program for alternative or high efficiency vehicles.
- Evaluate potential programs providing incentives to consumers to purchase alternative fuel or high fuel efficiency vehicles (e.g., priority parking spots around town).
- Evaluate infrastructure requirements to support broader use of alternative fuels vehicles (e.g., electric outlets in parking lots, alternative fuel retailers).
- Develop education program regarding the cost and benefits of alternative fuel or high fuel efficiency vehicles.

Past Initiatives and Accomplishments

For City buildings:

- Projects implemented as part of the Performance Contract by McKinstry Inc include lighting upgrades, a Community Center pool lighting retrofit, exterior light upgrades, solar pool heating and pool systems optimization, replacement of rooftop air handlers, heating and building comfort optimization and improvements, replacement of inlet guide vanes with variable frequency drives, controls upgrade centralization, installation of vending misers, and domestic hot water system optimization.
- Creation of a comprehensive database of energy consumption, including electricity, natural gas, and diesel use and overall annual carbon measurements. The database is used to analyze departmental energy use and to measure impacts of individual energy reduction efforts.

For Community-wide programs:

- *Increase Energy Reduction through Sector-Specific Initiatives: Home Energy Audits.* The City of Golden provided \$60 rebates to 50 homeowners who obtained an energy audit through Xcel Energy program. Homeowners were able to use the audits to make informed decisions about the best energy efficiency projects for their homes. The City of Golden is using data collected from the audits to plan for future programs.
- *Increase Energy Reduction through Sector-Specific Initiatives: Free Energy Efficiency Kits.* In 2009, Golden partnered with Xcel Energy to provide free energy efficiency kits to 400 residents. Volunteers canvassed the Golden Hills and Golden Heights neighborhoods to deliver kits that contained six compact fluorescent light bulbs, two sink aerators, and a low-flow showerhead.
- *Increase Energy Reduction through Sector-Specific Initiatives: University of Colorado Denver (UCD) Greenhouse Gas (GHG) Emissions Inventory Study.* The City of Golden partnered with the UCD's Center for Sustainable Infrastructure Systems and the Colorado Municipal League, through a Wal-Mart donation, to prepare a GHG emissions inventory for the City of Golden for the baseline year of 2007. As part of this study, the UCD researchers quantified energy use and renewable energy generation by three key sectors (residential, commercial, and industrial) and identified specific actions that can be implemented to simultaneously reduce GHG emissions and assist the City's efforts to meet its community goals related to energy efficiency and renewable energy. This report will be instrumental in establishing sector-specific initiatives for energy reduction (and for increased use of renewable energy).
- *Increasing Distributed Generation of Renewable Energy: Small Wind Pilot Project.* In early 2010, 450 Colorado School of Mines students were paired with ten Golden business owners to recommend and design a commercial wind renewable energy system.
- *Increasing Distributed Generation of Renewable Energy: Solar Permit Fee Waivers.* In 2009 and 2010, CSAB provided funding to offset the cost of building permit fees for homeowners who installed solar photovoltaic or solar thermal systems. Through this effort, over 40 homeowners took advantage of more than \$30,000 in fee waivers.

SOLID WASTE & RECYCLING

Goal

Reduce our waste stream contributions by 25% in ten years.

Metrics

Reduce our solid waste stream contributions through expanded use of recycling plans, waste diversion programs and other tools. Measure volume/tons of garbage, recycle and green waste materials (Editors note: Having one waste hauler will make it simpler to measure the volume of waste today. Earlier data on volume/tonnage may be harder to quantify accurately)

Baseline

The baseline that has been established from which to measure progress is about 29.7 million tons in 2007. This includes all types of waste that has been going to the land fill. It may not include the waste, such as aluminum and glass that was recycled by Coors, Foss etc.

Strategies:

Strategy #1: Monitor the new Pay-As-You-Throw trash program

Closely monitor the new trash program and evaluate whether it is meeting all of the objectives considered in developing and launching the program. Specific elements to monitor include cost to residents, overall quality of service, subscription preferences, final disposition of recyclable materials, and more.

Methodology: Analyze annual reports from waste hauler to measure volume by neighborhood area and implement recycling incentive program as described in the waste hauler contract to increase participation in recycling services.

Strategy #2: Develop a comprehensive recycling program for downtown merchants and other commercial/industrial businesses

Evaluate cost-effective methods for providing recycling service to downtown merchants to meet an already identified need. In addition, the City should evaluate potential programs to promote recycling by other commercial/industrial businesses in Golden.

Methodology: Address lack of space concerns through a block-by-block approach to facilitate ease of participation and allow intra-block cooperation for collection service.

Strategy #3: Evaluate next steps for Pay-As-You-Throw program.

The Board will research a city-wide PAYT ordinance to address multi-family complexes of 8 or more units and commercial buildings.

Methodology: Research cost-benefits of a city-wide PAYT ordinance to allow large multi-family residential areas and commercial areas to have access to recycling service and survey residents for additional needs of expanded service.

Strategy #4: Promote Zero Waste events in Golden

Establish Zero Waste standards for all events held in Golden.

Methodology: Work with event organizers to eliminate or reduce the use of disposables and have comprehensive waste stations (recycle, compost, trash) at all events.

Strategy #5: Endorse a shopping bag reuse program.

This program will target consumers and retailers to use cloth or plastic bags for use, primarily to transport products from the stores to home.

Methodology: Create a fundraiser bag program to benefit R-1 schools, with costs offset by retailer sponsorships. Partner with Shop Local group, Golden public schools, and Golden retail outlets to sell bags and create awareness for waste reduction.

Strategy #6: Create a compost program.

The city/waste hauler will set up a program to collect material for composting (grass clippings, organic wastes) and transport it to a local commercial compost operation.

Methodology: Provide resources for residents to compost at home. Research cost and benefits for a local drop-off site, possibly in partnership with A-1 Organics or a local commercial compost operator. Evaluate opportunities to use end-product compost locally.

Strategy #7: Park Recycling Pilot Program

To determine the viability of adding recycling collection service to all city parks, the Board will fund a pilot program to add recycling service to one or more of the City parks.

Methodology: Implement recycling program for a trial period and evaluate the results to potentially expand recycling service to other city parks. Partner with local youth groups to implement the pilot program.

Past Initiatives and Accomplishments

- Expand access to recycling service. In 2010, the City entered into a contract with EDS Waste Solutions for waste and recycling service, in part, to provide curbside service to all residential households in the program. In addition, optional services to collect compost at the curb and a twice-annual collection of yard waste are included.
- Adopt a Pay-As-You-Throw (PAYT) program. In September 2010, the City implemented the PAYT to allow residents more control over their waste collection costs and to help the city achieve the solid waste goals of 25% by 2017.
- Encourage downtown recycling. As part of a Golden Urban Renewal Authority initiative in 2010, GURA placed containers to collect waste and recycle material Washington Avenue as part of a streetscape project.

ALTERNATIVE TRANSPORTATION

Goal

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

- Reduce the community's total Vehicle-miles Traveled by 15% in ten years

Although this goal specifies only a reduction of vehicle-miles traveled (VMT), it also calls for promotion of the use of alternative means of transportation. The goal is not broken down into City and community components, but we may want to monitor City VMT as a key component. The transportation goal also contributes directly to the energy reduction goals from fuel consumption.

Metrics

1. Annual vehicle-miles traveled within the City of Golden on trips either originating or terminating in Golden.
2. Total gallons of fuel consumed through municipal operations, annually.

Baseline

Using the EPICS model described below, we have estimated the community total VMT in 2007 to be 486,003, which incorporates the regional DRCOG data. Based on vehicle fuel efficiency provided by DRCOG, the average fuel efficiency in 2007 was 25 mpg. The total gallon of fuel consumed through municipal operations in 2007 was 80,088 gal.

Strategies

Strategy 1: Use the Excel metrics model developed in 2010 to monitor VMT annually and determine the need for additional VMT-reduction programs.

Strategy 2: Provide input to the Energy goals by ascertaining an average vehicle fuel efficiency that can be reasonably used to represent travel in Golden. Use the fuel efficiency values along with VMT to estimate total fuel consumed as input to the Energy goals.

Strategy 3: Support the use of alternative transportation

- Monitor the Golden Circulator Bus studies and support as needed. Encourage use of the circulator bus for local transportation needs beyond light rail.
- Encourage light rail use in Golden as soon as it is available
- Work with the Colorado School of Mines to encourage them to provide on-campus circulator bus facilities, especially from Mines Park to the main campus
- Support bike-to-work (and bike-to-shop) efforts as appropriate
 - Endorse and support an effort by the Golden Optimist Club which provides clean, used bikes to any resident who requests one. A component of the Optimists' program provides bikes to students of the Colorado School of Mines, thus reduces the need for using a car on campus.
 - Recommend additional bicycle facilities at RTD stops to encourage commuters to use the bus system
 - Evaluate and support efforts to provide a connected bike trail system that can function well for bike-to-work.

- Investigate Best Workplaces for Commuters (BWFC), a program initiated by DOT and EPA and run by National Center for Transit Research at the University of San Francisco. Determine whether we could enlist the participation of several top employers.
- Determine whether a City-wide education effort could influence residential drivers' behavior to increase their use of public transportation and bicycles. Coordinate timing with RTD's LRT startup and the possible Golden circulator bus.

Strategy 4: Support a “shop local” campaign to encourage residents to reduce travel for as many shopping needs as possible.

- Work with GURA and the Downtown Merchants Association to promote awareness of the sustainability benefits of supporting shops that provide services for local residents, as opposed to targeting only tourists.

Strategy 5: Evaluate additional future programs to encourage VMT reduction

- Individualized Travel Marketing Program.
- Travel offsets
- Pay-as-you-drive auto insurance
- Transit-oriented development policies

Past Initiatives and Accomplishments

- VMT baseline analysis by Colorado School of Mines students in the EPICS program
- Initial support for the Golden Circulator bus
- Collaboration with local efforts to support electric charging stations at the Jefferson County Light Rail Station
- Develop a metrics model to measure VMT that can be used to monitor VMT on an annual basis.
- Methodology:
 - Use the City's vehicle count data, which is measured annually at consistent sites, along with a descriptive model of the City's street network, to calculate VMT by extrapolation and interpolation.
 - Engage CSM EPICS class to develop a model for these calculations. An Excel-based model is currently in use.
 - Rough-check the model against the DRCOG estimates.
 - Exclude pass-through traffic in order to restrict the analysis to trips that start or terminate in Golden. This allows the inclusion of residents, visitors, and employees, while excluding traffic passing through Golden without stopping (e.g. travelers on freeways such as U.S. 6, S.H. 58, S.H. 93, etc.).

WATER

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

Goal 1: Reduce Golden's per capita water use by 15% in 5 years. (Applies to treated water as consumed by all uses within city limits.)

Metrics: Number of gallons, annually, for residential uses.

Baseline: 2007 Actual: 1,292,329,100 Gal consumed; 982,299,000 Gal treated.

Goal 2: Maintain better than regulatory water quality from water treatment plant to end-user. (Stricter than both state and federal standards)

Metrics: Compliance with Clean Water Act (CWA) regulations, A Partnership Through Clean Water Agreement, daily water sampling procedures, water monitoring station results, and amount of emerging contaminant education.

Baseline: Water quality data that demonstrates compliance with the adopted metrics.

Goal 3: Increase the efficiency of the water delivery system. Includes water infrastructure (pipes, valves, pump stations) from reservoir to plant and to end user, which is a reflection of public and private water line losses.

Metrics: Number of projects targeting reductions in water loss, dollars of investment in water infrastructure maintenance (including asset management and capital investment), and projects to reduce private side service line losses.

Baseline: 2007: 76% efficient

Goal 4: Improve the health of the ecosystem associated with the Golden waterways. Health will be defined by more than one specific metric to cumulatively measure ecosystem indicators

Metrics: Number of projects shown to promote the health of the Golden waterway ecosystem, number of stream or ditch restoration projects, channel maintenance programs, and erosion control plans for in-city locations and adjacent to city reservoirs

Baseline: To be determined.

Strategies

Strategy #1: Educate residents about ways to reduce outdoor water use.

Methodology: Provide seasonal tips in water bills, provide information on City sustainability website, publicize rules to reduce irrigation evaporation (i.e. acceptable hours, watering days).

Projects: Develop seasonal water tips, develop City water conservation website

Strategy #2: Tie water pricing to consumption to send market signal to curb wasteful use.

Methodology: Work towards long-term billing improvements to allow eventual shift to inverted block rates

Projects: Investigate monthly meter-reading software, commission analysis of revenue implications of tiered rates, and identify areas of potential financial savings.

Strategy #3: Use City parcels to publicize the aesthetic value and environmental benefits of low-water landscapes.

Methodology: Evaluate potential areas of opportunity for turf replacement or demonstration xeric gardens.

Projects: Work with the Parks and Recreation Board to identify potential parcels, fund vegetation mapping.

Strategy #4: Provide increased and well-publicized opportunities for residents to report water waste

Methodology: Increase awareness and importance of reducing water waste. Reduce barriers to allow citizens to recognize and act on water waste.

Projects: Create and publicize a water waste hotline.

Strategy #5: Take steps to better understand to better understand the impact of state water laws on Golden, and advocate for Golden's participation in forthcoming pilot projects.

Methodology: Lobby state legislature in favor of additional pilot projects to support gray water and rainwater use in Golden.

Strategy #6: Provide incentives to reduce indoor water use.

Methodology: Provide rebates for high-use appliances; provide free/reduced cost faucet aerators and low-flow showerheads to residents

Projects: Develop rebate program, find discount opportunities or bulk purchases of efficient fixtures, and explore partnerships with nonprofits to provide resources to residents.

Strategy #7: Target high water use industries

Methodology: Develop voluntary car wash certification program, with additional industries to be certified in the future.

Projects: Develop a certification program to provide appropriate water conservation goals and recognize companies for their conservation efforts.

Strategy #8: Set rules to reduce water use within new developments

Methodology: Require soil amendments to reduce irrigation needs

Projects: Evaluate existing landscaping code requirements for effectiveness and make recommendations to Planning Commission. Assemble a water-wise informational packet for landscapers and developers.

Past Initiatives and Accomplishments

- Annual compliance with the City's Partnership For Safe Drinking Water agreement, to exceed Clean Water Act requirements.
- Annual partnership with the Center for ReSource Conservation to provide water conservation communication and consultant expertise
- Annual free irrigation audits to Golden residents through the Slow The Flow program
- Annual discount program for Golden residents to purchase xeric plants through the Garden In A Box program each spring.
- Earth Day promotion in 2009 to provide water conserving fixtures such as low-flow showerheads and sink aerators to over 400 Golden residents.

Appendix A – RESOLUTION NO. 1793

**A RESOLUTION OF THE GOLDEN CITY COUNCIL SETTING
CITY-WIDE SUSTAINABILITY GOALS FOR THE NEXT TEN
YEARS**

WHEREAS, the Golden City Council recognizes the current threat to our environment and resolved in early 2007 to place Golden in the forefront of global communities willing to do their part to help make a difference, and

WHEREAS, the City Council recognizes 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, and

WHEREAS, Golden defines *sustainability* as an attempt to meet the needs of the present without compromising the ability of future generations to meet their own needs, and

WHEREAS, Council wants to begin an aggressive ten-year program with clear goals, and

WHEREAS, since February of this year more than 60 citizens have devoted countless hours to refining Council's original proposed goals and suggesting programs for achieving them.

THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GOLDEN, COLORADO:

Section 1. Golden intends to meet the following Sustainability Goals:

- a. 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.
- b. 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.
- c. 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.
- d. 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).
- e. 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.
- f. 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.
- g. 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.
 - 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.

Adopted this 23rd day of August, 2007.