

CITY OF GLENWOOD SPRINGS

ENERGY & CLIMATE ACTION PLAN

Prepared by the
Glenwood Springs
Energy Efficiency Ad Hoc Committee

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SECTION I – EXECUTIVE SUMMARY

This Climate Action Plan for the City of Glenwood Springs is the result of nearly two years of work by the Glenwood Springs Energy Efficiency Ad Hoc Committee. City Council asked the committee to develop the plan and gave the committee a free rein in deciding what points to include.

Knowing that other cities have already adopted climate action plans, committee members combed through hundreds of recommendations to assemble a rough draft. They held many lively discussions about points borrowed from other plans, suggestions contributed by community residents and ideas of their own.

While the work could have continued to develop a document that might be more complete or better organized, the committee members felt it was important to deliver the plan to City Council for discussion and adoption. Now is the time for the Glenwood Springs community to begin work on reducing emissions. Committee members see this plan as a living document — one that should be revisited and revised on a yearly basis. Some recommendations and targets will be achieved, others will require a redoubling of efforts, and some may become irrelevant or obsolete.

The report begins with a summary of the greenhouse gas inventory the Energy Committee conducted in 2007 (Section III), followed by suggested targets for reducing greenhouse gas emissions and solid waste (Section IV).

Thankfully, the City of Glenwood Springs is not starting at zero in its effort to reduce its overall carbon footprint. From the wisdom of the city's founders to create a gravity-flow water system to today's wastewater plant operators, who are capturing methane from the treatment process, the city already benefits from many actions and policies that reduce its greenhouse gas emissions. The plan includes a list of 52 existing measures in place today (Section V).

Glenwood Springs must take more strident actions in order to meet the emissions reduction targets set in this plan and seen in the Colorado Climate Action Plan issued in 2007 by Gov. Ritter. The health of our economy and our environment depends on our community taking the deliberate steps spelled out in this plan. We can follow the examples set by other communities that are many steps ahead of us, and we can set an example for those who have yet to take on this mission.

The Climate Action Plan is divided into five sections: General Climate and Energy, Transportation, Energy Efficiency, Renewable Energy and Waste Management. Together, the plan offers 172 recommendations for improving the sustainability of city government and the community as a whole.

From this list, the Energy Committee chose 10 Best Bets. They are not the cheapest, the easiest, the fastest or the largest recommendations. They are, in the view of the committee members, the **most important** measures the city should adopt and pursue.

Top 10 Best Bets

1. Implement a Glenwood Springs' Electric Department program to provide rebates to offset part of installation costs of photovoltaic or solar hot water systems for residents or businesses. Set incentives at levels comparable to or greater than those offered to surrounding communities by Holy Cross Energy. Renewable Energy, 1.1
2. Purchase additional clean electricity from solar, geothermal, wind, hydroelectric or biomass sources. Offer electric utility customers a renewable energy purchase choice with a voluntary rate premium. Renewable Energy, 1.2
3. Appoint a staff person and commit significant resources to coordinate energy issues for the city government and the community. General Climate and Energy, 1.1
4. As part of audit project, conduct an investment-grade energy audit of community center facilities, particularly the pool and ice rink. This audit should consider alternative energy retrofit options, including geothermal, solar, and waste heat utilization from one facility to another. Analysis should also examine options in which the ice rink is fully enclosed and operated year-round. Energy Efficiency, 2.2
5. Study the feasibility of tapping geothermal energy for heating and cooling systems and for power generation. Study the potential of creating a geothermal energy district to heat and cool clusters of commercial and/or residential buildings. Renewable Energy, 3.1
6. Continue to improve Ride Glenwood public transportation by providing more frequent service, longer hours of service, and more neighborhoods served. Ensure quick transfers between Ride Glenwood and RFTA regional buses. Transportation, 6.1
7. Reduce vehicle miles traveled (VMT) using transportation demand management (TDM) practices. Ideas include incentives to reduce the volume of single-occupancy vehicles. Transportation, 7
8. Create a permanent City Energy and Climate Commission to carry out this Climate Action Plan and keep it updated over time. General Climate and Energy, 1.2
9. Develop and implement an outdoor lighting conservation program with education and incentives to reduce consumption of electricity using limited hours, motion sensors, efficient lighting upgrades, and other measures. Energy Efficiency, 6.5
10. Revise policies related to Spring Cleanup to promote separate waste streams, allowing for the composting of organic wastes and recycling of metals, while maintaining the convenience of the service. Waste Management 1.2

SECTION II - INTRODUCTION

This climate action plan was developed by the City of Glenwood Springs to help address issues of global and local climate change, rising energy costs and to stimulate measures that enhance community sustainability. By adopting this climate action plan, City Council is directing the city government to lead by example, and encouraging residents of Glenwood Springs to work towards a more sustainable future.

Background

On Dec. 21, 2006, Glenwood Springs City Council endorsed the Mayor's Climate Change Protection agreement. It created the Energy Efficiency Ad Hoc Committee (i.e., "energy committee") on April 5, 2007. The first goal of the committee was to develop a greenhouse gas inventory for all city government operations. This project was presented to the City Council on Dec. 6, 2007. Key results are summarized in Section III, and the entire report can be reviewed online at www.ci.glenwood-springs.co.us.

With the city's approximate energy use and greenhouse gas emissions established as a baseline, the energy committee then tackled its most important goal: to develop this multi-year climate action plan for the city. Committee members reviewed existing plans from neighboring towns and cities and from other states, and solicited suggestions from community members in preparing the initial draft.

The draft plan has been reviewed by city staff and by local climate and energy experts. Their comments were incorporated into the draft document to City Council, or presented as accompanying memos. Following input from City Council, the subsequent draft was released for public comment. Council made final changes, and adopted the final plan on (DATE).

SECTION III – EMISSIONS INVENTORY

The Glenwood Springs Energy Efficiency Ad Hoc Committee conducted a greenhouse gas emissions inventory for city government buildings and operations. The original charge from the Glenwood Springs City Council asked for the city government's output of atmospheric carbon dioxide - or carbon footprint - for 1990. That year is considered a baseline in the Kyoto Protocol and the U.S. Mayors Climate Protection Agreement. In addition, the City Council asked for current figures on greenhouse gas emissions.

By going through the city's 1992 budget document, which contained total 1990 actual spending, committee members were able to obtain dollar amounts paid for electricity, natural gas, gasoline and diesel fuels by department. From that, the committee estimated a carbon emissions footprint for city government in 1990.

Obtaining information for more recent years was more time-consuming, but yielded a more exact number. Committee members reviewed the city's electricity, natural gas, gasoline and diesel fuels energy bills for the years 2001 through 2006. The most extensive study, including the scores of accounts for city street lights, was done for the calendar year 2006.

The results are as follows:

	1990	2006
City population	6,561	8,743
City government budget	\$12.7 million	\$36.2 million
City government energy spending	\$253,246	\$919,271
Total tons of CO₂	3,204 tons	7,337 tons
Tons of city government CO ₂ per capita	0.49	0.84
Tons of city government CO ₂ per \$1 million city budget	252	203
Dollars spent on energy per \$1 million city budget	\$19,940	\$25,394

SECTION IV – REDUCTION TARGETS

City Government

- Reduce greenhouse gas emissions from all city facilities operations to 20 percent below 2006 levels by 2012.

The City has already signed the U.S. Mayor’s Climate Protection Agreement, in which we committed to reducing GHG emissions to 7 percent below 1990 levels by 2012. This translates into about a 45 percent reduction from 2006 levels, based on the rough estimate of 1990 emissions and the 2006 emissions total reported in the committee’s GHG Inventory of October 2007.

- Reduce energy use, per gross square foot, for the city’s total existing building portfolio to 25 percent below 2006 levels by 2012.

This target is similar to the State of Colorado’s Greening Government goal and is in line with our preliminary building audit report, which suggested 5 to 10 percent savings in our four newest buildings could easily be achieved with the first phase of basic energy efficiency measures. In addition, energy efficiency reductions of this magnitude and higher have been achieved by many local governments and corporations, using aggressive energy efficiency programs.

- Reduce vehicle petroleum consumption by 25 percent (by volume) by 2012.

This target matches the State of Colorado’s Greening Government goal for state government. This performance-based target allows staff to use a full range of reduction programs, including replacement of existing vehicles with hybrids, electric vehicles, or higher mpg gasoline/diesel vehicles, and various trip reduction plans.

City Electric Department

- Reduce per capita electric consumption in the city electric department service area to 20 percent below 2006 levels by 2012.

Electricity consumption is a major contributor to the community's GHG emissions. Per capita consumption will have to be reduced if we intend to meet the community's GHG emission reduction target. Per capita use rose dramatically in the last several years — a trend that is unsustainable with respect to our Energy & Climate Action Plan goals. This goal is similar to the State of Colorado's Greening Government energy reduction goal.

- Purchase or install local generation to provide at least 30 percent of the city's electric supply from clean energy sources by 2012.

The state of Colorado set a target of 20 percent by 2012 and Carbondale's target is 30 percent by 2015, but Glenwood Springs should be able to do better because we own our electric utility. Aspen has already achieved a 75 percent renewable portfolio and will reach 82 percent with its Castle Creek hydro plant recommissioning. Xcel Energy is aiming for higher than 20 percent by 2012.

Further wind purchases from MEAN or others should allow Glenwood Springs to top the 20 percent threshold. To reach 30 percent, the city will need to offer solar incentives to electric department service area residents (and claim these renewable credits) and develop city-owned solar, micro-hydro, geothermal or other alternative energy power projects.

South Canyon Landfill

- Divert 50 percent of municipal solid waste from the landfill by 2012.
- Divert at least 50 percent of construction and demolition debris by 2012, through deconstruction rather than demolition, by 2012.

Glenwood Springs community

Reduce greenhouse gas emissions to 30 percent below 2006 levels by 2020, and to 80 percent below 2006 levels by 2050.

This community-wide goal is probably the most important target to be adopted by Council, and will require concerted effort by many local organizations and determined leadership from the city. As a practical matter, a community-wide baseline emissions inventory must first be undertaken. To attain this target, the city government will need to provide incentives, collaboration and education. These targets are similar to the state-wide targets established in the Colorado Climate Action Plan of 2007 and are in line with the Kyoto Protocol targets.

Further discussion on targets

The Climate Action Plan should be considered a living document and the targets can and should be revisited as we move forward. There are many nuances as to the exact nature of GHG targets, but there are two procedural issues that should be addressed initially.

First, we must define “GHG emissions” with respect to measuring progress towards the targets. There are many different man-made gas emissions that can be evaluated, and some jurisdictions look at six or more greenhouse gases. For simplicity at the beginning of our program, *we recommend that only carbon dioxide emissions be evaluated.*

Second, there are several ways to define GHG emissions that attempt to normalize emissions targets to account for trends in population or economic activity. Here, *we recommend that total, unadjusted GHG emissions be used*, without adjustment for population or economic growth, both for the sake of simplicity and to follow this enlightened approach used by many other jurisdictions.

SECTION V - EXISTING ACTIVITIES

Climate and Energy Policies and Actions

1. City Council approved the signing of the U.S. Mayors’ Climate Protection Agreement and appointed the Glenwood Springs Energy Efficiency Ad Hoc Committee
2. The Glenwood Springs Energy Efficiency Ad Hoc Committee:
 - a. Conducted a greenhouse gas inventory of municipal buildings and operations (see Section III).
 - b. Arranged for an expert to conduct a preliminary energy audit of municipal buildings.
 - c. Drafted this climate action plan for the community.

Transportation

1. Ride Glenwood Springs is currently a free bus service.
2. Ride Glenwood Springs uses bio-diesel fuel most of the year.
3. The Police Department has converted most of its fleet to flex-fuel vehicles and is pursuing fuel sources.
4. RFTA buses provide “bikes on buses” for valley-wide riders.
5. RFTA offers discounted bus passes for city employees.
6. The city developed and sponsors a transportation demand management program, TRY – Transportation, Responsibility and You.
7. The city formed the Commuter Club to encourage carpooling, vanpooling, transit, biking and walking.
8. The city offers flexible work schedules so employees can minimize commute time.
9. The city offers two employee van pools from Rifle to Glenwood Springs.
10. The city is replacing most of its general vehicles, including carpooling vehicles, with hybrid cars.
11. The city supports The Traveler van to provide transportation to seniors and disabled riders.
12. The city supports the Safe Routes to Schools program.
13. The Bicycle and Pedestrian Program integrates bicycles and walking into the transportation system by working with all city departments and other governmental agencies to create complete and

accessible sidewalk networks, more bicycle lanes, bicycle parking racks, wide curb lanes and other facilities.

14. The city continues to implement its RiverTrail master to develop a city-wide bike and pedestrian trail system.
15. City employees use bicycles for work errands when possible, and a city-owned bicycle is available for their use. Showers are available for employees at city buildings.
16. Police use bicycles during special events.
17. The city cooperates in the Communities in Motion program. It markets and promotes educational programs to increase awareness of the range of transportation options available for residents and visitors. The city sponsors Bus Rider and Carpool Appreciation Day, Bike to Work Day, Trails Day and related events.

Energy Efficiency

1. The city's water system is, for the most part, gravity fed, which reduces the need for pump stations for water delivery. This gravity-fed design dates back to the founding of the city in the 1880s.
2. The city adopted International Energy Conservation Code (IECC) of 2006.
3. The city Finance Department is including monthly usage figures for electricity and natural gas for all its meters to allow easier calculation of the city government carbon emissions.
4. The city's purchasing agent and Fleet Maintenance Department have begun purchasing energy efficient hybrid and flex-fuel vehicles.
5. The city encourages and practices moving data and documents in digital format to avoid using paper.
6. City-owned traffic signals use LED bulbs, with signal synchronization.
7. The pool at the Community Center is being treated with a liquid pool cover to minimize heat loss and evaporation.
8. The purchasing agent is replacing old light bulbs with energy efficient bulbs in municipal facilities.
9. In its new municipal buildings, the city installed zone programmable thermostats, ozone friendly and energy efficient refrigerants, and computer-controlled HVAC systems that enable chilled water systems to operate in economy mode when buildings are unoccupied. The new buildings also use automatic light-dimming switches in common areas, bathrooms and closets, so lights automatically turn off.
10. The city continues its working relationships with the Colorado Municipal League, National League of Cities, the Governor's Energy Office, the Community Office for Resource Efficiency (CORE), the Cool Communities committee, and other coalitions to leverage efforts to raise efficiency standards.
The city's new wastewater treatment plant is being engineered with an energy monitoring control system.
11. The Electric Department page on the city's website offers information on energy conservation.

Renewable Energy

1. The city purchases X percent of its supply as wind power and X percent as hydroelectricity through its electricity wholesaler.
2. Bus shelters in Glenwood Springs are lighted with power generated by solar energy.
3. The existing wastewater treatment facility uses an anaerobic digester to capture methane gas, which is used to run a boiler and heat the building.

4. City Council appointed a Geothermal Task Force to investigate geothermal energy opportunities.
5. The city has enacted a net metering policy that allows continuous credit for electricity generated from grid-tied renewable sources.
6. New speed indicator signs along Midland Avenue are solar-powered.

Waste Management

1. The city operates a staffed recycling drop-off center, presently open for four hours on two days a week and six hours on Saturday. It accepts office paper, cardboard, newspapers and magazines, commingled glass and metals, certain plastics and paperboard, and non-automotive batteries.
2. The Public Works Department supports a leaf and Christmas tree composting program.
3. Funds have been earmarked within the city's fleet service fund for replacement of old vehicles. Under-used and old city vehicles, as well as unclaimed impounded vehicles, are disposed of at the annual surplus sale, or picked up by a salvage company for recycling.
4. Obsolete city computers are sent to the Garfield County e-waste facility, or are sent to the Pitkin County landfill for recycling. Decommissioned computers are rebuilt and redistributed as single-user computers, such as at information kiosks or work stations with simple program demands.
5. Bio-solids from the wastewater treatment plant are applied to local agricultural lands, providing a secondary benefit reducing the use of chemical fertilizers.
6. Recycle bins for paper, cans and plastic are located throughout city buildings; the materials are collected for recycling.
7. The recycling page on city's website explains recycling services available, materials accepted at the drop-off facility and hours of operation.

Other Measures (Landscaping, Housing, Purchasing, Water and Wastewater)

1. The Parks and Recreation Commission and City Council are working with a local gardening group to locate a community garden.
2. The city continues to qualify for designation as a Tree City USA, maintaining the designation for more than 20 years.
3. In cooperation with Garfield County Housing Authority, the city has instituted an affordable housing program to entice/encourage city employees to live in Glenwood Springs.
4. The city offers local bidders a 5 percent variable above the lowest bid for construction services or procurement of goods and supplies, in order to promote local businesses.
5. Most city park irrigation systems have rain sensors, and raw water is used in some areas for landscape irrigation.
6. At the wastewater treatment plant, effluent is used to water the lawns and run the chlorinators.

SECTION VI – CLIMATE ACTION PLAN

GENERAL CLIMATE AND ENERGY

1. City Policy and Activities
 1. Appoint a staff person and commit significant resources to coordinate energy issues for the city government and the community.
 2. Create a permanent City Energy and Climate Commission to carry out this Climate Action Plan and keep it updated over time.
 3. Join and participate in a national and/or state voluntary emissions reporting program.
 4. Recognize businesses that adopt practices to reduce their carbon footprint.
 5. Promote and support green business development within the city.
 6. Review and update all policies and ordinances that affect energy use so they are consistent with the goals set forth in this climate action plan.
 7. Work with other groups to promote overall climate and energy improvements. (Community Office for Resource Efficiency - CORE, Clean Energy Economy for the Region - CLEER, the Governor's Energy Office, Colorado Municipal League, National League of Cities, Cities for Climate Protection Campaign, etc.) Consider joining the U.S. Green Building Council or ICLEI for resources and networking.
2. Smart Growth
 1. Urge Garfield County to adopt an energy efficiency plan. In the intervening time, urge Garfield County to apply the city's climate action plan measures to all developments adjacent to the city.
 2. Develop and support policies and programs that assist developers of commercial, residential and public projects to meet the energy efficiency and renewable energy measures in this plan.
 3. Provide education and training opportunities for developers seeking to build green. Provide links to websites that offer up-to-date information on green building and energy efficiency.
 4. Develop incentives for development proposals that employ compact land use, are located near public transit stops, and allow residents to be less reliant on the car. Promote high-density and in-fill development through zoning policies such as transit-oriented development.
3. Educational Programs
 1. Create a challenge for the community, modeled after the 10 Percent Challenge in Burlington, Vt., to raise public awareness about global climate change and to encourage households and businesses to reduce their carbon footprints. Set targets for footprint reductions. Involve students, community groups, workplaces, and neighborhoods to maintain and enhance Glenwood Springs as a clean, green, healthy city.
 2. Encourage schools to educate children and teens on energy efficiency and climate change issues and actions.
 3. Support a "Local First" program, such as the local farmer's markets, for food and other products. Encourage residents and businesses to buy locally grown and produced food and other products whenever possible.
4. Purchasing
 1. City fleet: consider retread tires, recycled antifreeze, parts washers and brake cleaners.

2. Cleaning products: Use cleaning products with low environmental impacts, such as non-acid or neutral pH window and bowl cleaners or quaternary disinfectants.
5. Open Space, Trees and Landscaping
 1. Evaluate municipal code and city guidelines that address landscaping and irrigation to maximize water conservation and increase irrigation efficiency.
 2. Promote the planting of trees and shrubs to increase shading and to absorb CO₂.
 3. Preserve open space inside and outside the city.
 4. Maintain healthy urban forests and street trees. Specifically, plant more trees in Two Rivers Park and along bike paths and along new streets.
 5. Design and implement a municipal water conservation program for city facilities and parks. Use xeriscape landscaping and remove bluegrass lawn from city property wherever possible.
 6. Consider expanding the city's raw water irrigation system.
 7. Establish xeriscape demonstration projects and xeriscape landscaping requirements.
 8. Encourage community gardens.

TRANSPORTATION

1. Transportation Policies and Activities

Work with other groups to leverage efforts to raise fuel efficiency standards and to cooperate in measures that positively affect the efficiency of Glenwood's transportation system.
2. City Employee Measures
 1. Establish a policy to encourage telecommuting by city employees, where appropriate.
 2. Encourage the practice of walking or biking to errands meetings.
 3. Provide loaner bikes with locks for staff to use.
 4. Use teleconferencing in place of travel when feasible.
 5. Maximize trip efficiency.
 6. Increase use of police officer bicycle patrols.
 7. Reduce or eliminate vehicle idling.
 8. Provide each department with a monthly list of its fuel consumption and publicize the information to encourage departments to reduce vehicle usage and fuel consumption.
 9. Provide free or reduced cost regional bus passes for city employees, and work with RFTA to enhance employee bus service.
3. Purchasing
 1. Purchase hybrid, flex fuel, biodiesel or other clean-burning vehicles for all uses in which these vehicles are available and proven to meet functional requirements. For uses where such vehicles are not available, purchase those with the highest fuel mileage and lowest carbon emissions that are economically feasible and fulfill the job requirements.
 2. Purchase low emission, fuel-efficient vehicles.
 3. Investigate cooperative purchasing efforts with other public agencies.
 4. Consider green preference points in awarding contracts.

4. City Fleet
 1. Increase use of clean-burning fuels for all vehicles in the City fleet, such as compressed natural gas or bio-diesel. Implement equipment and fuel storage conversions for dispensing fuels.
 2. Retrofit all diesel and bio-diesel work vehicles with emission-reduction devices, such as diesel particulate filters or diesel oxidation catalysts.
 3. Prohibit all vehicles from idling for more than 5 minutes. Exceptions apply only in situations where safety would be compromised, such as for law enforcement, fire or ambulance.

5. Transit
 1. Continue to improve public transportation by providing more frequent service, longer hours of service, and more neighborhoods served. Ensure quick transfers between Ride Glenwood and RFTA regional buses.
 2. Improve bus stops to include shelters, bike access, bike racks. Maintain passenger access in all seasons.
 3. Design roadways to allow for bus slip lanes.
 4. Support programs that increase the use of transit and reflect the true cost of driving a private vehicle.
 5. Support passenger and commuter rail service in the valley and statewide.

6. Transportation Demand Management

Reduce vehicle miles traveled (VMT) using transportation demand management (TDM) practices. Ideas include incentives to reduce the volume of single-occupancy vehicles, such as:

 1. Employer-paid van pools
 2. Car sharing
 3. A car-pooling coordination board and/or website, with Commuter Pool and School Pool options.
 4. HOV lanes
 5. User fee or tax on vehicles per household
 6. Expansion of bus service
 7. Reduction or elimination of the upgrading of roads, bridges and parking lots. Close off some streets to vehicles, making the city pedestrian-friendly.
 8. Prioritize zero emission transportation, including walking, bicycling, and electric vehicles (EV), such as scooters, motorcycles, three-wheeled vehicles, golf carts, cars and trucks that operate on electricity.
 9. Establish safe transportation routes for all forms of zero emission transportation.
 10. Offer free or very inexpensive bicycle and/or EV rental systems.
 11. Place more bike racks throughout the city.
 12. Expand parking availability for emissions-free vehicles, make it free, and provide recharging parking spaces for plug-in vehicles.
 13. Continue the design and construction of a comprehensive pedestrian and bicycle trail system throughout the city.
 14. Improve sidewalk conditions and ensure they meet ADA standards.
 15. Encourage businesses to offer Free Wheels, a bike loaner program.

16. Encourage participation in the Commuter Club, a cooperative with Communities in Motion. Members are entered in prize drawings, local businesses discounts, e-mail alerts and carpool matching.
17. Conduct ongoing publicity campaigns to promote sustainable transportation, including the promotion of biking, walking as main transportation modes.

7. Community Actions

1. Encourage local availability of cleaner-burning fuels.
2. Prohibit vehicles from idling for more than 5 minutes.
3. Offer an Air Aware-Gas Cap Exchange Program – exchange leaking, missing or otherwise faulty gas caps for new ones for passenger cars, trucks and recreational vehicles. Encourage local businesses to participate in program by offering free or lower-priced replacement caps.
4. Encourage school district officials to restrict school enrollments to neighborhoods surrounding the facility.
5. Encourage school district officials to use clean-burning school buses and to initiate a no-idling policy for school buses.
6. Promote community purchases of compact, hybrid and other efficient vehicles.
7. Encourage businesses to provide safe bike parking and pedestrian access, particularly in parking lots.

ENERGY EFFICIENCY

1. Energy Efficiency Policies, Ordinances and Code Changes

1. Require all new construction to be at least 25 percent more efficient than the IECC 2006 by 2015.
2. Require all homes to have a Home Energy Rating System (HERS) evaluation prior to any real estate sales transaction. Subsidize the cost of the evaluations for homes considered to be part of the city's affordable housing stock. Work with the Glenwood Springs Association of Realtors to include HERS ratings in the MLS books.
3. Adopt an ordinance that encourages smaller and more energy efficient new home designs by requiring additional building fees for large homes or homes that will use excessive amounts of energy.
4. Support changes to state water law to allow gray-water reuse systems.
5. Implement into the Development Code the requirement to demonstrate energy efficient site planning, landscaping and structure design. Projects should reduce the demand for heating, cooling, water use and lighting, and facilitate the use of non-carbon-emitting energy resources.
6. Emphasize enforcement of building codes to ensure energy efficiency and resource efficiency practices.

2. Municipal Buildings

1. Complete the municipal building energy audit project by November 2008. Implement all cost-effective efficiency measures (i.e., those with paybacks of less than 10 years) by December 2009.

2. As part of audit project, conduct an investment-grade energy audit of community center facilities, particularly the pool and ice rink. This audit should consider alternative energy retrofit options, including geothermal, solar, and waste heat utilization from one facility to another. Analysis should also examine options in which the ice rink is fully enclosed and operated year-round.
 3. Design all new municipal buildings to be carbon neutral, or require that all new municipal buildings achieve the LEED Platinum rating or equivalent. Consider the certification costs associated with LEED and investigate building standards other than LEED, such as “Green Globes” being tested at Western State College.
 4. Incorporate “LEED for Existing Buildings” principles, or equivalent, into city operations and maintenance.
 5. Create employee Green Teams. Create and support policies, similar to the Clean Air Consortium Checklist, that address areas such as lighting and computer use, thermostat settings, flex policies, telecommuting, waste management, and purchasing.
 6. Purchase ENERGY STAR equipment and appliances, where available, for city facilities. Require vendors and service providers to include this option in specifications and RFP’s.
 7. Install reflective roofing or green roofs on municipal buildings, where recommended by energy auditors.
3. Energy Management and Electric Utility
1. Improve the existing annual municipal energy and carbon inventory system with automated data collection and monthly updating, to provide more timely and effective energy management decisions.
 2. Expand on the municipal energy and carbon inventory system to track aggregated energy and carbon footprints for the entire community of Glenwood Springs.
 3. Partner with SourceGas to encourage natural gas demand side management programs within the city.
 4. Direct the city Electric Department to provide hourly electric demand profiles to larger customers, upon request, to encourage better energy management.
4. Water and Wastewater Treatment
1. Conduct a comprehensive energy and environmental audit of entire municipal water system by June 2009. Determine the carbon emissions and energy consumption associated with water delivery, water treatment and wastewater treatment. Use this information in marketing to support water conservation efforts. Implement all cost-effective efficiency measures by December 2009.
 2. Require all new municipal water and wastewater projects, including the new wastewater treatment plant, to be high-level LEED certifiable.
 3. Incorporate an energy monitoring and control system into the design of the new wastewater treatment plant.
 4. Adopt ordinances that prohibit water wasting and require water-efficient design in new construction.
 5. Design and implement a community water conservation program that offers incentives and educates the community on water efficiency practices.

5. Homes and Businesses

1. Implement a pilot energy efficiency assessment of existing residential and commercial buildings in the City, in order to establish a baseline inventory, identify potential efficiency technologies, strategies, and costs.
2. Provide rebates and/or zero interest loans for energy efficiency projects for existing residential and commercial buildings, including lighting and appliance upgrades, insulation and weatherization measures, and HVAC improvements. Loans could be managed by a cooperating entity, such as a local bank.
3. Provide incentives for new projects that achieve certification with Energy Star, LEED-Platinum or equivalent.
4. Develop and market the Insulate Colorado program (sponsored by Governor's Energy Office), which provides rebates to homeowners for insulation and air sealing services.
5. Provide free or reduced cost residential energy audits for existing homes. The city could pay contractors or train city staff to conduct the audits.
6. Implement or participate in a low-income weatherization program for existing homes.
7. Develop residential and commercial Green Building Programs to promote best practices in the community. Conduct meetings with contractors and builders to encourage their input on regulatory issues and to provide green building education.

6. Outdoor Lighting

1. Conduct a streetlight and traffic signal energy audit and analysis by June 2009. Implement cost-effective efficiency measures by December 2009. The analysis should consider the energy savings that could be achieved by reducing streetlight density and hours of operation.
2. Encourage the Colorado Department of Transportation to upgrade streetlight and signal lighting to energy efficient fixtures within the city.
3. Reduce the city's holiday lighting to 30 days per year, reduced holiday lighting in quantity or hours of operation; and convert all city holiday lighting to LED bulbs in time for the 2008 holiday season.
4. Proactively enforce the city's exterior lighting code and lighting portions of the sign code on public and private property throughout the city. Consider improvements to these codes that would emphasize energy efficiency and place a value on dark skies.
5. Develop and implement an outdoor lighting conservation program with education and incentives to reduce consumption of electricity using limited hours, motion sensors, efficient lighting upgrades, and other measures.

7. Community Outreach & Education

1. Distribute free energy and water conservation kits to citizens as a way of spreading the word of the City's efficiency efforts. The kits could contain a compact fluorescent light bulb and water efficient showerhead.
2. Launch an energy efficiency challenge campaign for community residents and businesses.
3. Promote neighborhood ECOTEAMS to encourage energy efficiency upgrades and recycling rate improvements, etc.
4. Encourage the new library and other public projects within the city to be designed to be carbon neutral.

5. Promote the city's energy efficiency efforts by providing information about city efforts and achievements on the city's website and through other venues. Make city and community energy use data widely visible.
6. Offer energy saving tips and resources, including nuts and bolts details, through brochures, free energy efficiency starter kits, workshops, booths at events, on websites, presentations to classes and groups, and cable TV shows.
7. Improve the city Electric Department web pages to offer more information on energy efficiency opportunities and demand side management (DSM) programs.
8. Publicize CORE rebates, utility rebates, tax deductions, and other incentives for energy efficiency home or business upgrades.
9. Promote local energy efficiency training and education opportunities, such as E-Star home energy rating seminars.

RENEWABLE ENERGY

1. Renewable Energy Policy and Activities
 1. Implement a Glenwood Springs' Electric Department program to provide rebates to offset part of installation costs of photovoltaic or solar hot water systems for residents or businesses. Set incentives at levels comparable to or greater than those offered to surrounding communities by Holy Cross Energy.
 2. Purchase additional clean electricity from solar, geothermal, wind, hydroelectric or biomass sources. Offer electric utility customers a renewable energy purchase choice with a voluntary rate premium.
 3. In negotiating the city's next wholesale electric purchased power agreement, maintain maximum flexibility to increase the city's clean energy portfolio through that provider and from other sources.
 4. Reduce or eliminate building fees for renewable energy projects and for projects that incorporate renewable energy.
 5. Revise the city code to allow clean-burning wood stoves in new or existing buildings.
 6. Protect solar access for all property owners and assist in working out conflicts between solar access, trees and structures.
 7. Establish a capital program to set aside funds for energy conservation and renewable energy.
2. Solar Energy
 1. Install solar panels or devices on municipal facilities, including the water and wastewater treatment plants. Partner with the Governor's Energy Office, CORE/CLEER and private sector to leverage city funding.
 2. Provide system evaluations and rebates to revive decommissioned solar domestic hot water systems.
3. Geothermal Energy
 1. Study the feasibility of tapping geothermal energy for heating and cooling systems and for power generation. Study the potential of creating a geothermal energy district to heat and cool clusters of commercial and/or residential buildings.

2. If feasible, install a geothermal heating system for the pool and pool enclosure space at the Community Center. Publicize energy cost savings.
4. Biomass Energy
 1. Study the feasibility of capturing methane from the wastewater treatment plant for onsite generation of electricity and heat.
 2. Study the feasibility of generating fuel stock, electricity or heat at the landfill.
5. Hydroelectric Energy
 1. Study the feasibility of developing hydropower energy using the city's water and wastewater systems.
6. Community Actions
 1. Institute or support an educational program that provides information and technical assistance to the public regarding renewable energy alternatives.

1. WASTE MANAGEMENT

1. Solid Waste and Recycling Policies and Activities
 1. Set a city-wide goal of becoming a zero-waste community. This can be achieved through a combination of aggressive waste reduction measures (reduce, re-use, repair) and highly accessible recycling and composting programs to handle wastes that can't be avoided. Improving waste collection and waste diversion programs will extend the life of the South Canyon Landfill, which is an economic benefit to the city.
 2. Revise policies related to city-wide Spring Cleanup, while ensuring the convenience of the service for residents. Require curbside separation of waste streams, allowing for composting and recycling. Consider alternatives such as "free dump day" coupons or limited, scheduled pickups for residents.
 3. Revive or participate in the regional solid waste coalition to maximize efficiencies for handling recycled materials and solid waste.
 4. Ban plastic shopping bags and require retailers to provide durable, reusable bags as options for customers who don't bring their own.
 5. Ban Styrofoam containers for take-away food products.
 6. Support amendments to state law in order to end the current requirements for hard copy documents conveyed from one agency to another, and to allow digital files.
 7. Require new residential and commercial construction to be designed with enough space in trash enclosure areas to accommodate waste separation and recycling.
 8. Require special events to be zero-waste, by composting food scraps, separating recyclable materials and using washable, re-usable tableware, serving containers and linens.
 9. Amend the construction and demolition permitting system to encourage diversion of construction wastes from landfill disposal.
 10. Ban the disposal of any materials that can be recycled or composted. Implement penalties for non-compliance with recycling programs.
 11. Explore more energy-efficient means of sorting, consolidating and shipping recyclable materials to market, such as rail. Avoid shipping materials to Pitkin County for sorting/consolidation.

12. Explore a biomass or methane recovery project at South Canyon Landfill.
2. Waste Reduction and Purchasing
 1. Convert city government functions to a 100 percent digital work system to promote a paperless environment.
 2. Educate on the pre-recycling concepts of reduce, reuse, repair. Explain best practices for reducing the use of paper, packaging and other “throw-away” items and materials. Emphasize economic and energy conservation values of reusing durable items rather than purchasing single-use throw-aways, such as plastic water bottles.
 3. Good ideas: Recycle laser cartridges. Buy recycled-content playground and park equipment. Use biodegradable or trash can liners, or no liners.
 4. Reduce consumption of janitorial paper products by using rags and reusable cleaning devices.
 5. Consider joining EPA’s WasteWi\$e program. Purchase high-percentage recycled content paper (preferably post-consumer), and encourage city-wide adoption of this guideline. Incorporate contract language with outside vendors to encourage use of recycled content paper.
3. Recycling
 1. Extend hours for city’s recycling drop-off facility. Continue to staff the facility during all open hours. Consider the option of using volunteers to assist.
 2. Expand types of plastics and other materials accepted at the in-town drop-off and South Canyon recycling centers.
 3. Conduct a campaign to increase recycling. Provide information on recycling opportunities and details on the city website and via brochures, booths at events, presentations to classes and groups, cable TV shows and other creative means.
 4. Offer information on recycling options in neighboring communities.
 5. Report on where recycled materials end up.
 6. Report on types and volumes of waste collected each year. Compare volume of recycled materials to trash going to the landfill, and track our progress year to year.
 7. Promote increased recycling in all city facilities and by all city employees to divert as many recyclable materials as possible, including paper, cardboard, cans and bottles, containers and engine oil. Publicize achievements on the city’s website, so residents can see the commitment of city employees to “greening government.”
 8. Educate residents and visitors on benefits of recycling: energy and land conservation achieved by reusing materials rather than consuming more virgin materials; extending life of landfill and deferring the costs to taxpayers of landfill cell closure and opening a new cell.
4. Composting Organic Wastes
 1. Make it easier for residents to compost yard wastes, and divert organic wastes from landfill burial. Develop year-round composting at an in-town location; haul collected waste to South Canyon for composting.
 2. Make it easier for residents, grocery stores, restaurants and schools to compost food scraps. Explore bear-proof food composting methods.
 3. Build a strong market for finished compost and mulch created by leaf, tree and yard waste collection programs by offering it to city residents at a reduced cost or for free.
 4. Continue collecting Christmas trees at an in-town location. Run them through a chipper on-site and offer chips to residents for mulch, rather than hauling to South Canyon.

5. Educate residents and businesses on how to handle wastes that can be composted.
5. Recycling Scrap Metal, Electronic Wastes, Building Materials and Other Materials.
 1. Establish a workable system to collect used appliances and other scrap metal for recycling through a drop-off facility, while providing some pick-up services for residents who can't transport large items.
 2. Develop a program to collect Freon from appliances headed to the scrap yard.
 3. Cooperate with Garfield County on collections of e-waste for recycling. Include information on city's website about hours and locations of collections and materials accepted. Add an in-town location as part of the rotation of collection sites.
 4. Evaluate a system for responsible disposal of compact and full-size fluorescent light bulbs.
 5. Decrease use of hazardous solvents and encourage oil recycling in vehicle maintenance shops.
 6. Recycle asphalt and concrete from street, building and landscaping projects.
 7. Require on-site sorting of construction debris for construction, demolition and remodeling projects to maximize recycling, minimize trash. Promote de-construction and reuse or recycling of materials as opposed to demolition and disposal.
 8. Learn best practices and work with other communities to deal with hard to recycle materials, such as tires, batteries, motor oil, antifreeze, electronics, light bulbs, appliances, worn-out furniture and clothing — so everything residents want to get rid of has a place to go.
6. Trash Hauling
 1. Amend the Municipal Code to allow the city to regulate trash hauler services as part of the annual business license process.
 2. The city should be divided into service territories to avoid multiple haulers serving the same neighborhoods or routes. The city could enact this change by convening a meeting of trash hauling companies, where parties would agree on a fair division of neighborhoods.
 3. Require trash haulers to bill customers based on volume or "pay as you throw" rates, with inverted block rates to encourage recycling.
 4. Require haulers to incorporate business and residential curbside recycling for a flat monthly fee. Materials accepted should be expanded to include cardboard and paperboard.
 5. Require haulers to drive up steep streets and then pick up on the downhill run to save fuel.
7. Community Actions
 1. Encourage businesses and government agencies to reduce, reuse, repair and recycle as part of their daily routine.
 2. Encourage take-out food to be provided in washable, reusable containers, or in containers that can be recycled.
 3. Encourage a "green business" ethic that promotes creative solutions to recycling in business and commercial settings.

SECTION VII – ACROYNMS AND ORGANIZATIONS

ADA	Americans with Disabilities Act
ADG	Anaerobic digester gas
AFV	Alternative fuel vehicle
ATV	All terrain vehicle
BTU	British thermal unit
CF	Compact fluorescent light bulb
CCF	100 cubic feet (measurement of natural gas usage)
CFC	Chlorofluorocarbons
CH4	Methane
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent (methane is converted to CO2e)
CNG	Compressed natural gas
DSM	Demand-side management
EkWh	Equivalent kWh (nat.gas + elec)
EV	Electric vehicle
F	Degrees Fahrenheit
FTE	Full time employee
GHG	Greenhouse gases
HOV	High occupancy vehicle
HVAC	Heating, ventilation and air conditioning
kWh	Kilowatt hour
LED	Light emitting diode
LPG	Liquid propane gas
MSW	Municipal solid waste
NG	Natural gas
P2	Pollution prevention
PV	Photovoltaic
RFP	Request for proposal
SO2	Sulfur dioxide
SOV	Single occupancy vehicle
TAFS	Transportation Alternatives Feasibility Study
TDM	Transportation Demand Management
TRY	Transportation, Responsibility and You
ULEV	Ultra low emission vehicles
VMT	Vehicle miles traveled
W	Watt
WWTP	Wastewater treatment plant
ZEV	Zero emission vehicles
ALAPCO	Association of Local Air Pollution Control Officials
APTA	American Public Transportation Association
CML	Colorado Municipal League
CCP	Cities for Climate Protection

CORE	Community Office for Resource Efficiency
DOE	U.S. Department of Energy
GEO	Governor's Energy Office
HBA	Home Builder's Association
IAC	Industrial Assessment Center
IDAP	Integrated Design Assistance Program
IECC	International Energy Conservation Code
ICLEI	International Council for Local Environmental Initiatives
ISO	International Organization for Standardization
LEED	Leadership in Energy Efficiency and Design
NAECA	National Appliance Energy Conservation Act
NCS	Natural Capitalism Solutions
NLC	National League of Cities
RFTA	Roaring Fork Transportation Authority
STAPPA	State and Territorial Air Pollution Program Administrators

SECTION VIII – ACKNOWLEDGEMENTS

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