

SECTION I: Executive Summary

There is increasing scientific evidence that carbon dioxide (CO₂) and other greenhouse gases released into the atmosphere will have a profound effect on the Earth's climate, increasing the risk to municipal governments from increased extreme weather events, changing rainfall and crop productivity patterns, and migration of infectious diseases. It is a well-researched fact that the combustion of fossil fuels releases greenhouse gases (GHG), namely carbon dioxide (CO₂), into the atmosphere, causing global surface temperatures to increase. For Colorado, global warming will likely mean diminished snow pack, increased drought, more insect outbreaks in forests, an earlier and longer wildfire season, reduced habitat for native species, and less economic growth in certain industries, such as farming and skiing.

In May 2002, the Boulder City Council passed Resolution 906, also known as the Kyoto Resolution, setting the goal of reducing community greenhouse gas emissions to seven percent below 1990 levels by 2012. As a result of this resolution, staff in the Office of Environmental Affairs was directed to develop an action plan to serve as a roadmap to Boulder's Kyoto goal. The overarching vision of the Plan is to develop a sustainable energy future for Boulder and Boulder County. The Climate Action Plan provides a framework to compare and analyze alternative strategies and policies, in order to facilitate Council's review and the decision-making process. The Plan includes baseline data and emissions reduction strategies for all sectors—commercial, industrial, residential, transportation, and solid waste. It also addresses city operations, water conservation and urban forestry.

The Boulder emissions inventory was completed by Econergy International in 2004. City staff updates the inventory on an annual basis using electricity and natural gas consumption data from Xcel Energy, vehicle miles traveled, and solid waste sent to the landfill. The following table summarizes Boulder's 2004 GHG emissions.

Energy sources	Percent	Sector sources	Percent
Electricity	51	Commercial	30
Transportation	28	Transportation	28
Natural gas	17	Residential	17
Solid waste	4	Industrial	15
	100	CU	5
		Solid waste	4
		Street lighting	1
			100

The city's primary role will be to act as a facilitator, educator, and to promote market transformation for energy efficiency and renewable energy products and services. The plan outlines three primary strategies for reducing emissions: Increase energy efficiency; Switch to renewable energy and vehicle fuels; and Reduce vehicle miles traveled. Each section outlines overarching strategies and potential actions the city could take to reduce emissions. The plan concludes with an implementation plan that outlines specific actions to be implemented from

2007 through 2012 and quantifies the projected impacts, including estimated GHG reductions, public and private sector costs, private sector savings and the net cost per mtCO₂e reduced.

The annual total budget required to achieve these reductions ranges from \$860,265 in 2007 to \$1.07 million in 2012. The plan assumes that funds for marketing, outreach, and subsidies for critical services, such as energy audits, will comprise the majority of the budget. Significant funding for renewable energy purchases may be required in 2012 to cover an emissions reduction shortfall, thereby doubling the amount of funds needed in 2012, as compared to the average annual budgets for years 2007 to 2011¹.

Achieving the Kyoto Protocol Goal requires not only a substantial financial commitment, but also the dedication of staff resources and political will. While the city recognizes that Boulder's actions are far too small to impact global greenhouse gas emissions trends and the progression of global warming, Boulder seeks to encourage other communities around the country and world to implement strong greenhouse gas emissions reduction programs, beginning with Boulder County and its member cities.

¹ On August 29th, 2006, Boulder City Council selected a revenue structure that does not include a large renewable energy purchase in 2012 which was originally proposed as a part of the Climate Action Plan. As a result, the budget for 2012 in the Climate Action Plan has been revised and does not reflect the purchase of a large amount of renewable energy.

TRANSPORTATION: 40,000 mtCO₂e by 2012

Although the transportation sector contributes about one third of Boulder's emissions, currently little budget and emissions reductions are projected for this sector as major transportation initiatives are beyond the scope of the Office of Environmental Affairs and the GHG Program. Similarly, there is currently very limited local infrastructure for renewable fuels, such as ethanol and biodiesel, and only a small percentage of total vehicles that can operate on these fuels. Additionally, the 2005-06 budgets did not include staff or funding for transportation work, which resulted in very little work being completed in this sector.

Primary Transportation Strategies

- Reduce vehicle miles traveled
- Improve fuel economy
- Use lower carbon fuels

The estimated annual operating budget for transportation efforts is currently ranges from \$70,875 in 2007 to \$106,278 in 2012 for an estimated reduction of 40,000 mtCO₂e. One fixed-term FTE is being proposed to identify additional opportunities in this sector. Staff's efforts will be focused on supporting the advance of renewable fuels into the Boulder market and regional or Transportation Division initiatives that will reduce emissions, as well as promoting low or no-carbon transportation options, such as walking, biking, and busing. Similar to other sectors, marketing and outreach are of paramount importance to establish the connection between transportation options, greenhouse gas emissions and global warming. Staff will continue to research new program ideas and will review program changes with Council during annual updates and the budget process.

Recommended Actions:

- Support Transportation Master Plan (TMP) initiatives.
- Work with Transportation staff to better incorporate GHG emissions reduction strategies into the TMP.
- Support Boulder County transportation initiatives, particularly those that build infrastructure for ethanol and biodiesel.
- Educate auto dealerships and vehicle owners about flexible fuel vehicles and ethanol.
- Promote biodiesel and highly fuel efficient cars, including hybrid-electric vehicles.
- Include information on website about how to receive rebates for hybrids.
- Explore carbon offset program whereby drivers can offset the GHG impact of driving through the purchase of renewable energy credits.

Progress Indicators:

- Volume of ethanol and biodiesel sold in Boulder.
- Number of hybrid vehicles registered in Boulder.

EDUCATIONAL CAMPAIGN: 30,000 mtCO₂e by 2012

Robust marketing, education and outreach are critical to maximizing voluntary emissions reductions from all sectors and will be a part of every program. The campaign's main objectives are to frame global warming as a serious problem and to connect residents and businesses with information, tools, and resources to help them take action. The annual budget for general marketing is estimated to be \$202,125 to \$219,116

Recommended Actions:

- Create and implement a communications plan to engage all sectors.
- Produce creative and informational educational materials for widespread distribution.
- Coordinate at least one major awareness-raising event a year.
- Collaborate with local social and environmental groups on their events and marketing efforts.

WASTE REDUCTION

Despite the city's waste reduction efforts, the total volume of trash being generated and sent to the landfill may be increasing each year. In keeping with the city's Zero Waste Resolution and Master Plan for Waste Reduction, aggressive waste prevention and increased producer responsibility initiatives must be employed to stem the overall growth of waste generation over time. The city has only recently begun collecting data on trash generation volumes and because the GHG inventory is based on the amount of total trash generated and not the percent or quantity of recycling, more data must be gathered and analyzed before reliable emissions reductions can be quantified for the solid waste sector. For the current implementation Plan, no emissions reductions or increases are projected for this sector. As data becomes available, this sector's contribution to the Goal will be refined.

WATER CONSERVATION

Conserving water saves energy and reduces emissions by reducing the volume of water that needs to be treated by water and wastewater treatment plants. Reducing hot water use saves energy by reducing the amount of cold water that needs to be heated and used or stored. Emissions reductions from water conservation will be captured in the electricity and natural gas records provided by Xcel Energy and entered into the inventory maintenance system. Because the impact is expected to be relatively small and the energy savings will be captured in the community's aggregate energy reports, no emissions reductions are specified for this sector.

URBAN FORESTRY

The city can increase emissions reduction benefits from urban trees by carefully maintaining the existing urban forest, both public and private. Key strategies are to plant additional trees to fill all available public planting spaces and bolster private tree planting efforts to increase total canopy cover. Increasing the urban forest canopy and lifespan of urban trees provides a significant positive impact.

The recommended actions below relate to the Urban Forestry and Planning and Development Services programs and will follow priorities identified in those programs as budget allows, unless an outside funding source is created.

Recommended Actions:

- Develop an Urban Forest Management Plan to better define policies and standards for long term care of the Boulder's urban forest, including preserving and protecting existing trees, increasing public awareness of the value of our community forest, and maximizing the social, economic and environmental benefits of the community forest for current residents and future generations.