Boulder County Consortium of Cities
Energy Strategy Task Force
Sustainable Energy Plan

January 2008

Local Impacts of Climate Change

Earlier snowmelt

Longer droughts

Increased flood risk

More intense forest fires

Large-scale beetle kill

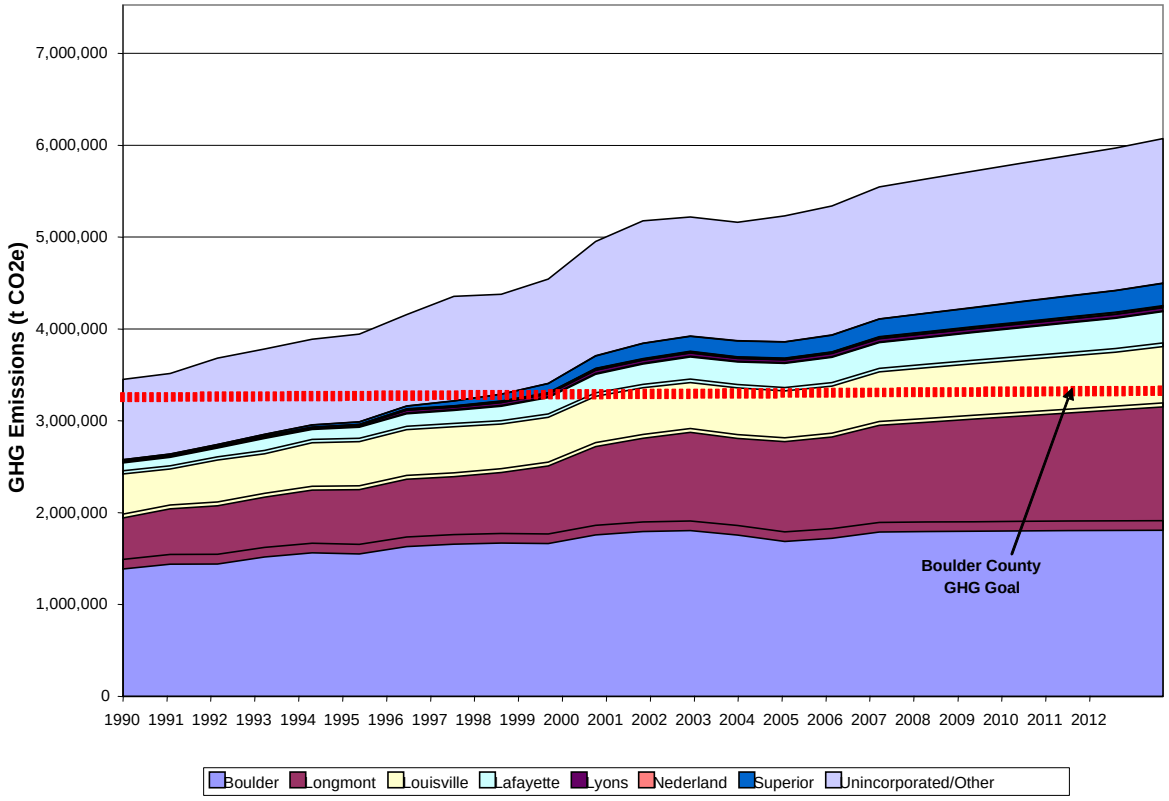
Loss of alpine meadows

Loss of native species

Visual impact

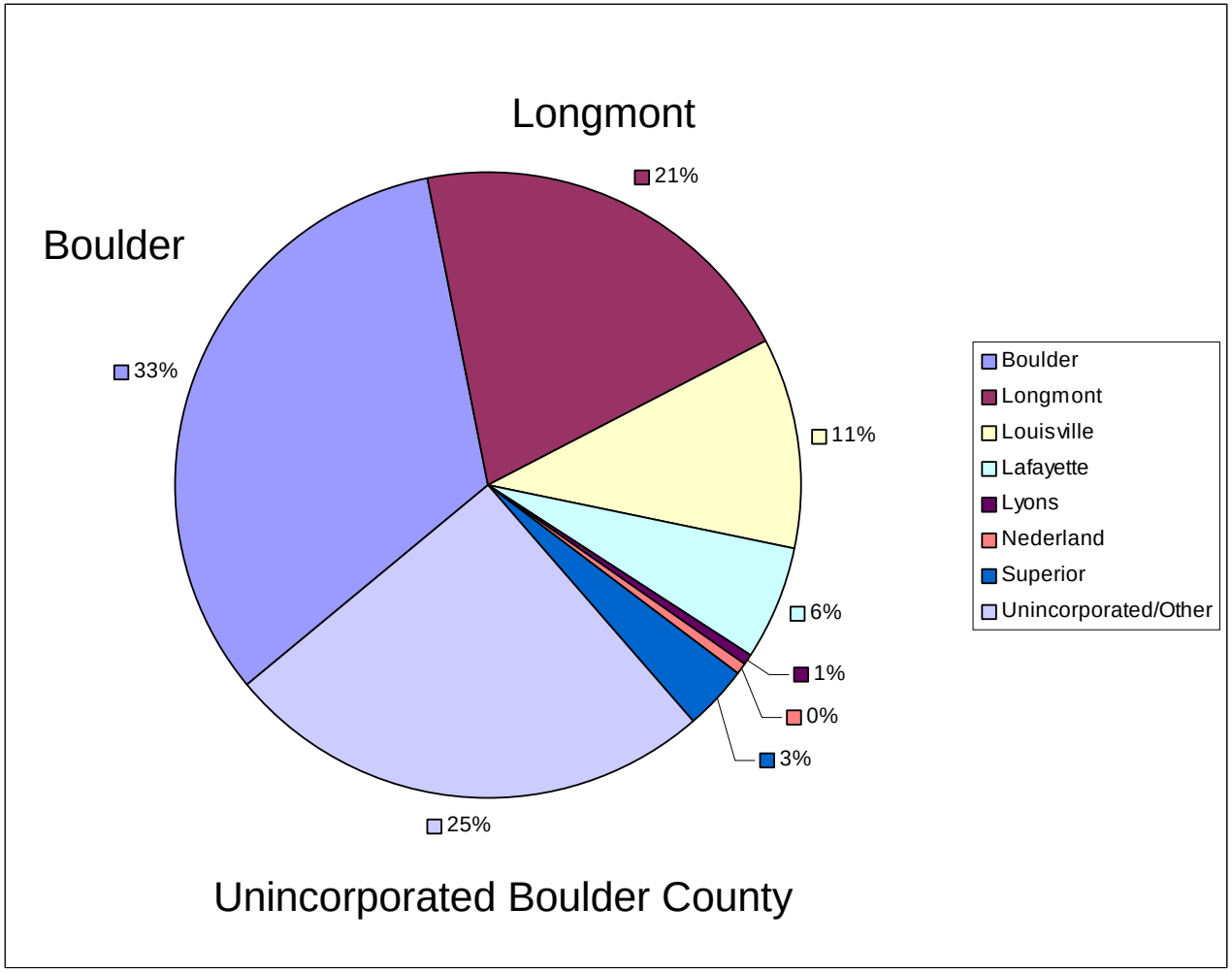
Economic impact on tourism, ski industries

Boulder Greenhouse Gas (GHG) Emissions Profile, 1990-2012

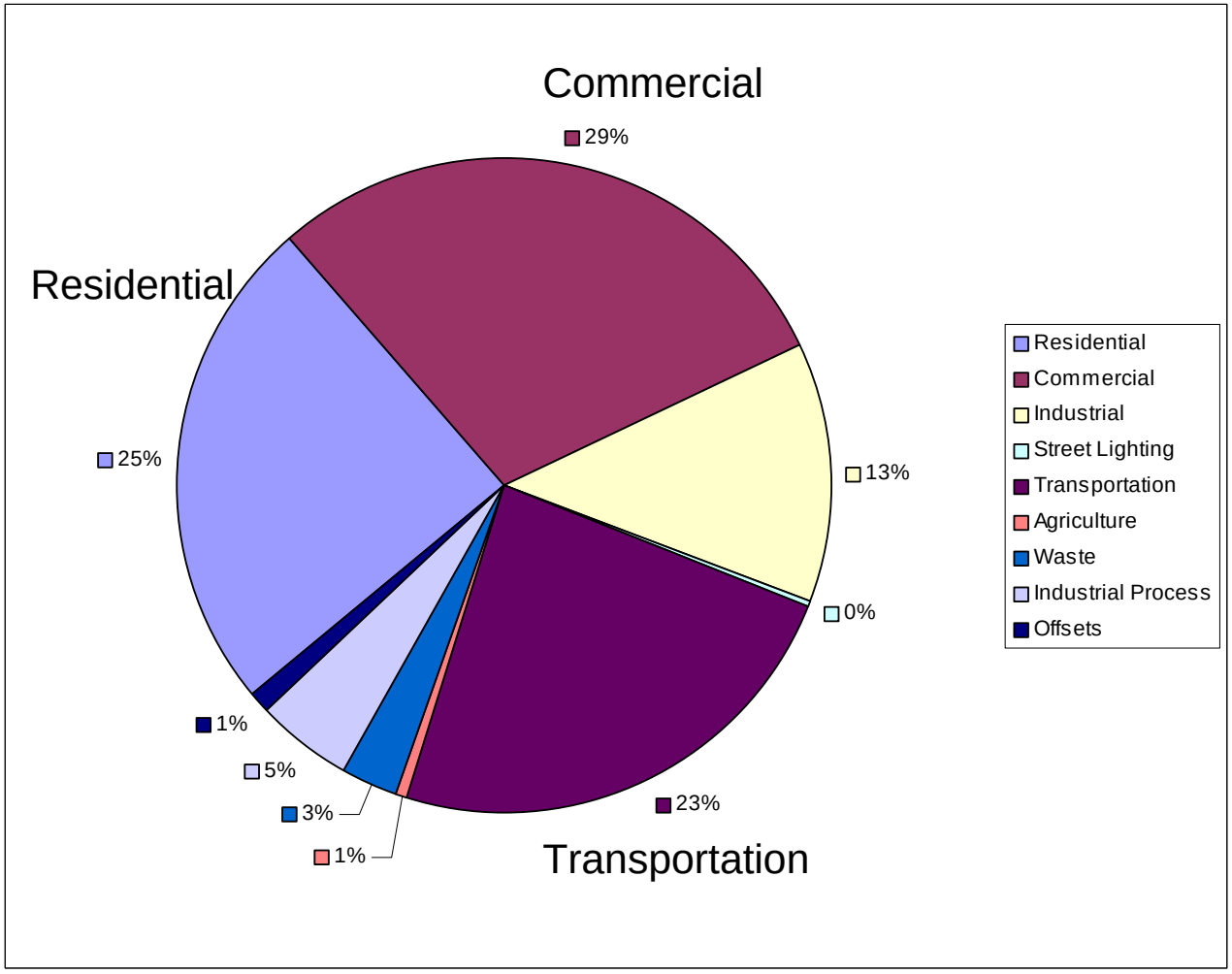


2012 trajectory is expected to be 85% above the Kyoto Protocol Target (7% below 1990 levels by 2012)

Boulder County's Emissions by Municipality



Boulder County's Emissions by Sector



Energy Strategy Task Force (ESTF)

Formed by the Consortium of Cities in April 2006

Purpose:

- Provide a countywide clearinghouse for information and education on energy issues
- Provide a framework for local and regional action on energy sustainability

Goal:

- Create collaborative approaches among the communities of Boulder County and Broomfield, including businesses, non-profit organizations, and residents to address critical energy concerns and strategies

SEP
DEVELOPMENT PROCESS

Plan Development

- Four presentations to ESTF
- Two presentations to Consortium of Cities
- One presentation on policy initiatives

Proposed Plan Review Process

- Review and comment by each council and board in the county
- Finalize and release (spring 2008)

SEP
PLAN OVERVIEW

- Impacts and solutions
- ESTF
- GHG Inventory
- Recommended Strategies
  - Key Strategies
  - ClimateSmart at Home
  - ClimateSmart at Work
  - ClimateSmart on the Road
  - ClimateSmart Power
  - Revenue Generation

SEP
PLAN OVERVIEW

35 recommended strategies

30 quantified – 5 planning, education, and revenue generating

20 “Key Strategies”

Recommended for “first tier” adoption

Reduce our impact on global climate change

Result in significant cost savings

SEP
PLAN OVERVIEW

Emissions reductions

- ✓ 1.3 million metric tons of carbon dioxide equivalent (mmtce) in 2012; 3.6 mmtce in 2020
- ✓ 2012: Achieves 46% of Kyoto Target*
- ✓ 2020: Exceeds Kyoto Target by 11% in 2020

Annual cost savings $445 million dollars (in 2020)

Nine year payback for all 20 “first tier” actions

5 years for all “first tier” actions except vehicle-to-grid

2020 reductions exceeds Governor Ritter’s goal by 2x

*The Kyoto Protocol, ratified by all developed countries except the U.S. and Japan, calls for a 7% reduction below 1990 levels by the year 2012.

OBJECTIVES

Overarching Objectives of this work

- Prioritize competing strategies
- Estimate local government and private sector costs implement
- Estimate carbon reduction potential

Prioritize competing mitigation program strategies

- Average Marginal Abatement Cost (MAC) methodology
  - Calculate Annualized Investment Cost

    AIC = (CAPEX * D) / (1 + (1 + D) ^ (-N))

    where CAPEX = total installed costs
    D = discount rate
    N = number of years
  - Calculate Average Abatement Cost

    AAC = (AIC + COC) / CO2

    where COC = change in operating costs
    CO2 = annual avg CO2 abatement

SEP ANALYSIS

Results

Appendix B. Table of Emission Reduction Strategies and Impacts

ClimateSmart Homes									
*Residential Projects	GHG Reductions (tCO2e)			Cumulative Cost to Implement		Annual Cost Savings in 2020 (Million $)	Simple Pay Back (Years)	Cost-Effective-ness ($/tCO2e)	Key Assumptions
	2012	2020	Total 2008- 2020	Government (Million $)	Private Sector (Million $)				
High Efficiency Lighting Discounts – Early Action	2,000	0	11,000	0.1	0.045	0.17**	0.9	-91	Program ends 2010 - 10,000 CFLs distributed each year 2008-2010; five year bulb life.
Neighborhood Energy Sweeps – Early Action	340	0	1,700	0.03	0	0.037**	0.8	-87	Program life 2008 to 2012; 900 kits with 8 CFLs each distributed each year; 98 in-depth visits conducted with 30 CFLs distributed per visit; average bulb life 5 yrs
Residential Energy Audit Program (REAP) -- Early Action	3,325	3,325	302,575	2.2	27.3	4.4	6.2	-48	700 homes audited each year thru 2020; 4.74 metric tCO2 reduction/home annually; $3,000 average homeowner/resident investment; $450 average annual savings/home.
Residential Building Codes for New and Existing Buildings	111,000	290,600	1,883,900	0.5	476.72	39.7	8.9	-17	Codes, costs, and cost savings based on county Greenhouse Gas Mitigation Report (http://www.co.boulder.co.us/sustain/energy/GHG.htm); 35% market penetration for existing stock by 2012; 90% market penetration by 2020.
Net Zero Energy Homes	11,540	24,290	172,180	0.455	71	4.7	15.1	25	Program starts in 2008; 50% market penetration of new construction by 2012, representing 1.5% of residential sector; 100% / 3% by 2020

KEY STRATEGIES

Criteria

- Emissions reductions potential
- Cost effectiveness
- Equitable distribution across the main GHG sectors
- Social equity – distribution of cost and benefits
- Persistence

Strategies include

- Voluntary and support actions – public education/awareness
- Statewide action
- Local regulatory programs

SEP
KEY STRATEGIES

ClimateSmart at Home (Residential)

- Offer high efficiency light bulb discounts
- Conduct neighborhood energy awareness sweeps
- Develop residential green building codes and ordinances for new and existing buildings
- Implement the Residential Energy Audit Program (REAP)

ClimateSmart at Work (Commercial and Industrial)

- Implement Partners for A Clean Environment (PACE) Energy Performance Project
- Develop commercial green building codes and ordinances for new and existing buildings
- Promote industrial combined heat and power technologies
- Participate in the Western States Climate Initiative

ClimateSmart at Work (Local Government)

- Require the automatic shut-off of idling vehicles
- Install LED traffic signals
- Ensure new and existing public buildings are leaders in energy efficiency

SEP
KEY STRATEGIES

ClimateSmart on the Road (Transportation)

- Promote sustainable biofuels
- Promote vehicle-to-grid power generation
- Adopt statewide Clean Car Standard
- Adopt statewide Clean Car Incentives

ClimateSmart Power

- Increase utility demand and renewable power incentives
- Maximize the use of rebate incentives
- Offer “climate offsets credits” and use revenue to support community renewable energy

Revenue Streams

- Create energy budgets and rate structures
- Develop a sustainable energy financing district
- Create a revolving loan fund

SEP
Review PROCESS

Present for review and support to each council/commission and the Consortium of Cities

Incorporate final comments

Develop implementation schedule and assign lead agency

Release to public by spring 2008

(in time for 2009 budget process)

THANK YOU

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ClimateSmart

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