DOE TAP Webcast 17: State Policies to Encourage Green Building Principles

December 17, 2008

Colorado Governor's Energy Office
Angie Fyfe, Greening Government Program Manager

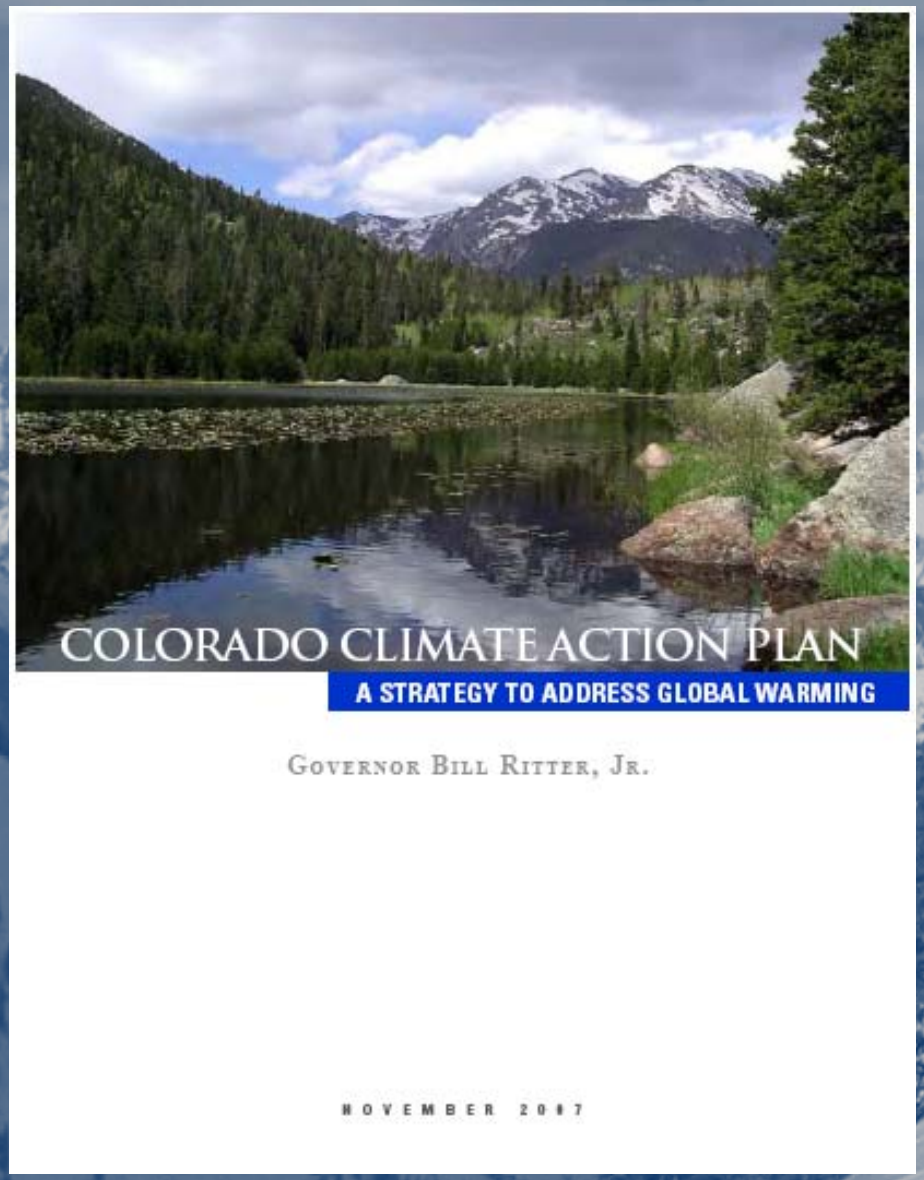
Governor's Energy Office Responsibilities

- Work with communities, utilities, public and private organizations to promote renewable energy and energy efficiency
- High performance residential and commercial buildings
- Make state government more efficient
- Promote technology transfer and economic development
- Wind for schools and improve energy efficiency in schools
- Low-income residential energy assistance (weatherization)
- Energy codes
- With State Land Board – develop renewable energy
- Collaborate with Higher Education on renewable energy curricula

The Colorado Governor's Energy Office
Major Program Areas

- Greening of State Government
- Residential Sector
  - New
  - Existing
- Commercial Sector (K-12 schools, government)
  - New
  - Performance Contracting
- Utilities
  - Partnerships
  - Intervention
- Weatherization
- Bioenergy
- Colorado Carbon Fund

20% Reduction in Greenhouse gas emissions from 2005 baseline by 2020.

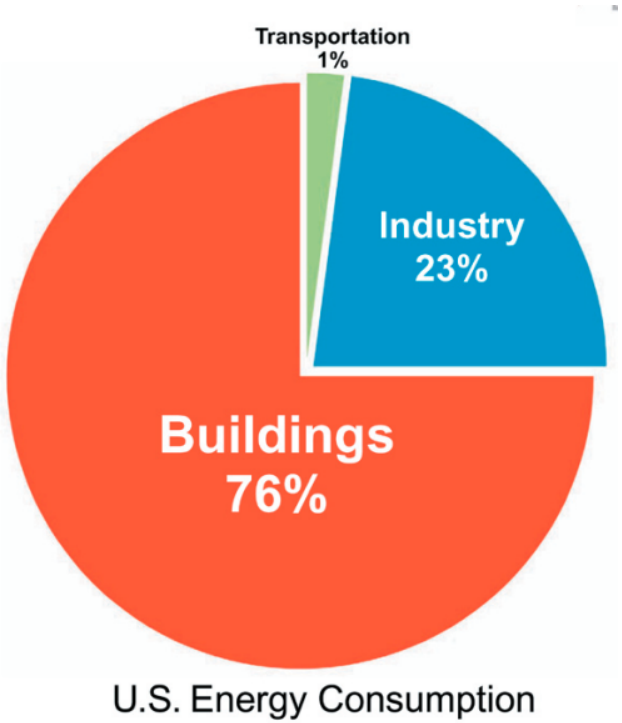


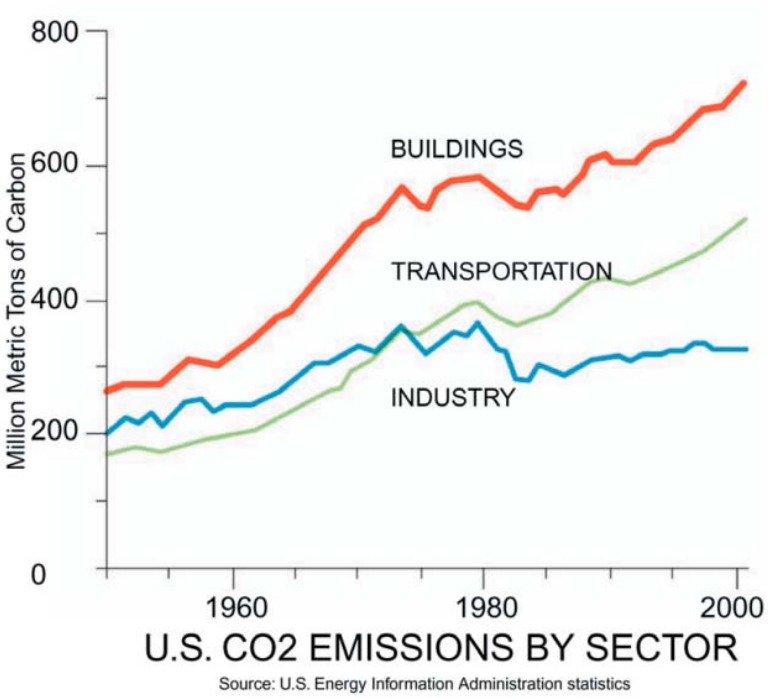
Climate Action Plan to Drive Green Building Policy in All Sectors

- **What's the goal?**

As Modeled		MMTCO2
2005	48,353 GWh	44.53
2020 Business as Usual	69,008 GWh	63.56
20% below 2005		35.63
Savings needed by 2020		27.94
50% of 2020 Goal		13.97

Why Buildings?





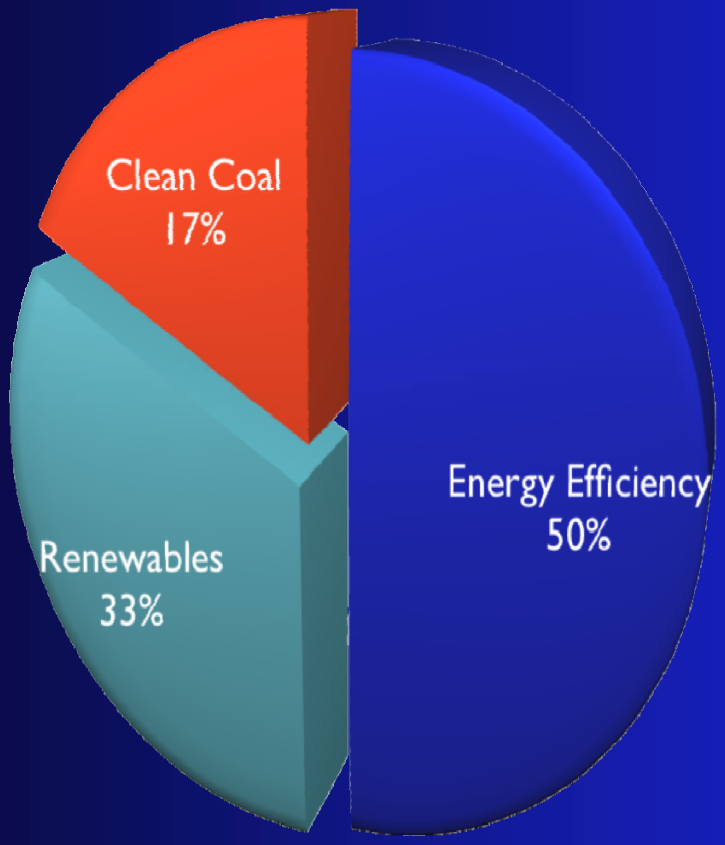
76% of all power plant generated electricity is used just to operate buildings.

Buildings Account For Half Of All Greenhouse Gas Emissions.

Governor's Energy Office

Climate Action Plan

- 20% reduction in CO2 emissions from the utility sector by 2020



Legislation and Executive Orders

HB 07-1087 Wind for Schools

HB 07-1309 Provides EPC funding and technical assistance for public schools

SB 08-051 High Performance Design

SB 08-078 Energy efficiency standards in historic properties – state historical fund grants

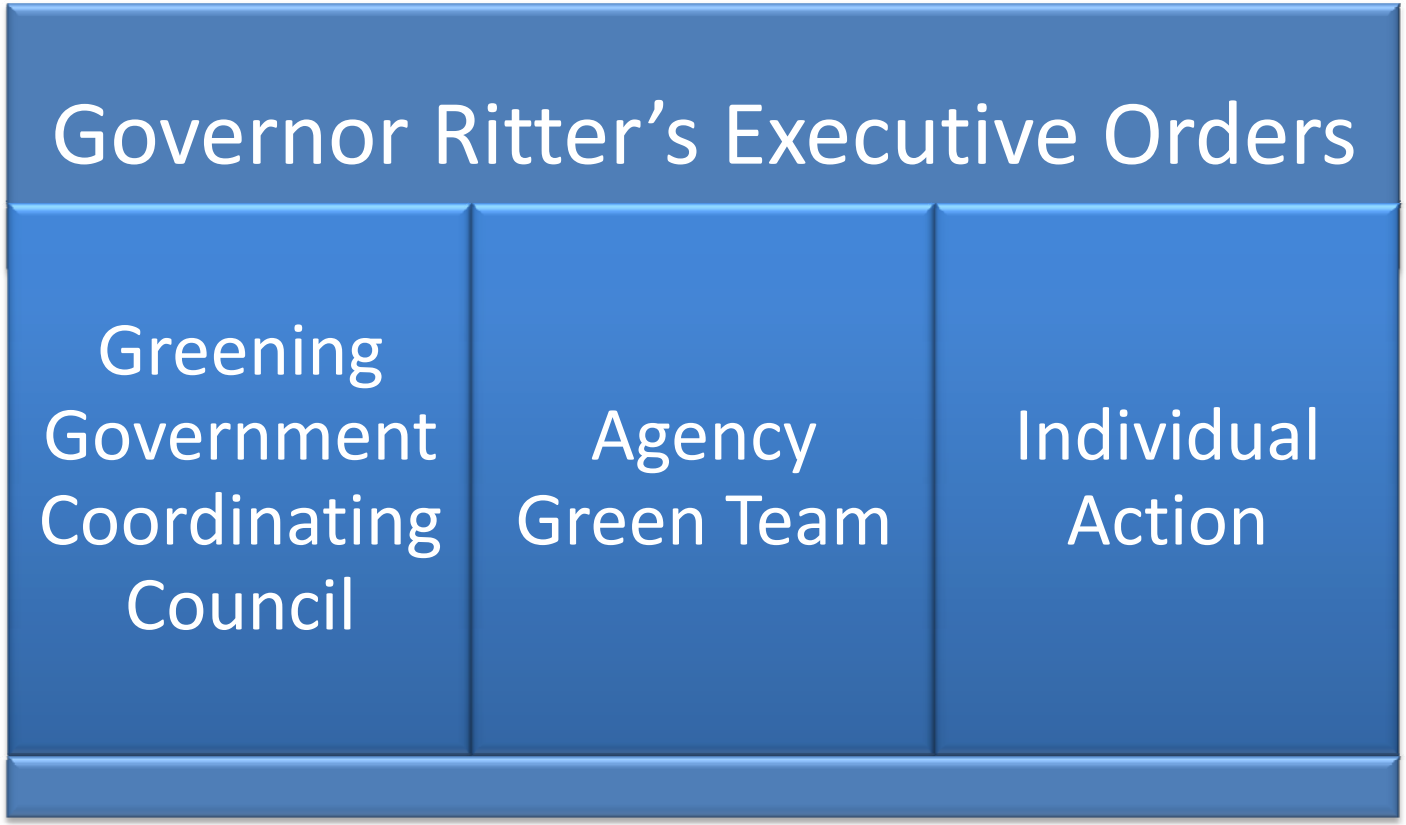
SB 08-147 EE standards in publicly-assisted housing projects

HB 08-1335 “BEST” Building Excellent Schools Today

Greening Government Executive Orders, 2007

Greening Government

State employees will take a position of *leadership* in the new energy economy through energy conservation and efficiency, thereby reducing the environmental impact of state operations.



Greening State Government

Lead by Example Program

From baseline fiscal year 2005-06, the State will by 2012 reduce consumption by:

Energy 20%	Paper 20%
Water 10%	Petroleum 25%
Waste 75% (2020 goal)	

COLORADO GREENING STATE GOVERNMENT

	Greening Government Executive Order Directives	Completed	Planned
D0011 07 2A	Establish Greening Government Manager	X	
D0011 07 2A	Implement department energy plans	X	X
D0011 07 2A	Council coordination	X	
D0011 07 2B	Appoint Council representative	X	
D0011 07 2B	Develop policies and procedures		X
D0011 07 2B	Prepare annual report card		X
D0011 07 2B	Develop educational material	X	X
D0011 07 2B	Educate employees	X	X
D0011 07 2B	Maintain environmental outcomes database		X
D0011 07 2B	Report measures to DPHE		X
	Greening Government Detailed Implementation		
D0012 07 2A	**Reduce State Energy Consumption**		
D0012 07 2A (1)	Maintain Department Energy Management Plan	X	X
D0012 07 2A (2)	Conduct performance contracting feasibility	X	X
D0012 07 2A (3)	Repeat feasibility studies		X
D0012 07 2A (4)	Performance Contract Contingency		
D0012 07 2A (5)	Designate Department Energy Manager	X	
D0012 07 2A (5)	Energy Manager Training	X	X
D0012 07 2B	**Resource Management, Environmentally Preferable Purchasing (EPP)**		
D0012 07 2B (1)	Develop zero waste strategies		X
D0012 07 2B (2)	Develop public health& environment strategies		X
D0012 07 2B (3)	Develop EPP		X
D0012 07 2B (3)(a)	Implement EPP		X
D0012 07 2B (3)(b)	Purchase Energy-Star®	X	X
D0012 07 2B (4)	Develop sustainability standards / leased space		X
D0012 07 2C	**Greening State Fleet**		
D0012 07 2C (1)(a)	Restrict purchase of 4WD SUV	X	X
D0012 07 2C (1)(b)	Priority replacements pre-1996	X	X
D0012 07 2C (1)(c)	Acquire hybrid, FFV, low-emission	X	X
DD012 07 2C (3)	State employee education	X	X
DD012 07 2C (3)	Dept of Agriculture to purchase FFV	X	X
DD012 07 2C (4)	Explore aggregate purchasing strategy		X
DD012 07 2C (5)	Use 20% bio-diesel in diesel vehicles		X
DD012 07 2C (6)	Track fuel type	X	X
DD012 07 2C (7)	Conduct transportation efficiency audit	X	
DD012 07 2C (7)	Provide report to the Governor	X	
DD012 07 2C (8)	Employee public transit travel preferences	X	X
D0012 07 2D	**Renewable Energy Sources**		
D0012 07 2D	Implement renewable outreach program	X	X
D0012 07 2D(1)	Provide technical support	X	X
D0012 07 2D(2)	Explore funding and feasibility	X	X

New Construction & Major Renovation

July 2007, new construction projects receiving 25% or more in funding from the state must meet a High Performance Design standard (LEED® Gold)

The Governor's Energy Office technical assistance for public entities: LEED® / Collaborative for High Performance Schools (CHPS) /2008 "BEST" statute (Building Excellent Schools Today)

New Energy Community Grants – collaboration with Colorado Department of Local Affairs $14MM grants

Energy Efficiency in Existing State Buildings

Tracking – EnergyCAP software ($160MM annual state utility budget) available through a state-negotiated price agreement to local government

Accountability – designated energy manager in each state executive agency

Re-commissioning opportunities

Plug loads –

- Colorado state government commitment to Google Climate Savers Initiative, executive order to purchase ENERGY STAR or better
- Data Center consolidation project
- Refrigerator replacement program

Energy Efficiency in Existing State Buildings Energy Performance Contracts (EPC)

- The Energy Services Coalition ranks Colorado second of 14 states reporting EPC investment per capita (state & local government)
- State buildings square footage ~63 million, 22% of which is under EPC
  $165 MM capital investment
- Tool to address energy-related deferred maintenance
- Pre-qualified 13 Energy Service Companies, model contracts, processes
- Feasibility studies available through GEO energy engineer
- $400 in capital improvements for every $1 invested by GEO
- Grant programs to encourage renewable energy in EPC

COLORADO STATE CAPITOL COMPLEX - Division of Central Services Performance Contract

Phase I
- Cost $9,058,949
- Payback 19 years
- Energy Savings of $631,009/yr escalating at 2.5 %/yr

Phase 2
- Cost $4,370,511
- Payback 19 years
- Energy Saving of $294,376/yr escalating at 2.5%/yr

- 16 Buildings located in the Denver metro area, and 1 Building in Grand Junction.
- 1.8 million square feet.
- Building age from 1890's to 1970's
- Existing HVAC Equipment dating back to the 1930's.

Energy Efficiency in Existing State Buildings

LEED EB: O&M

- Maintain energy savings and incorporates other sustainability initiatives.
- Colorado State Capitol is the only LEED certified Capitol in the U.S. and first USGBC EB: O&M project

Green Leases

- Separate metering
- Incentives for energy and water saving initiatives

Success from Team Efforts

- Governor with vision and commitment
- Good working relationships between Energy Office director, legislators, and budget staff
- Emphasize economic benefits of greening
- Strong green building community advocates
- Public support

Governor's Energy Office

Angie Fyfe, LEED AP
Greening Government Program Manager
1580 Logan Street, Suite 100
Denver, CO 80203
(303) 866-2059
Angie.fyfe@state.co,us
www.colorado.gov/energy