



Governor's
Energy Office

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

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Colorado Governor's Energy Office

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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

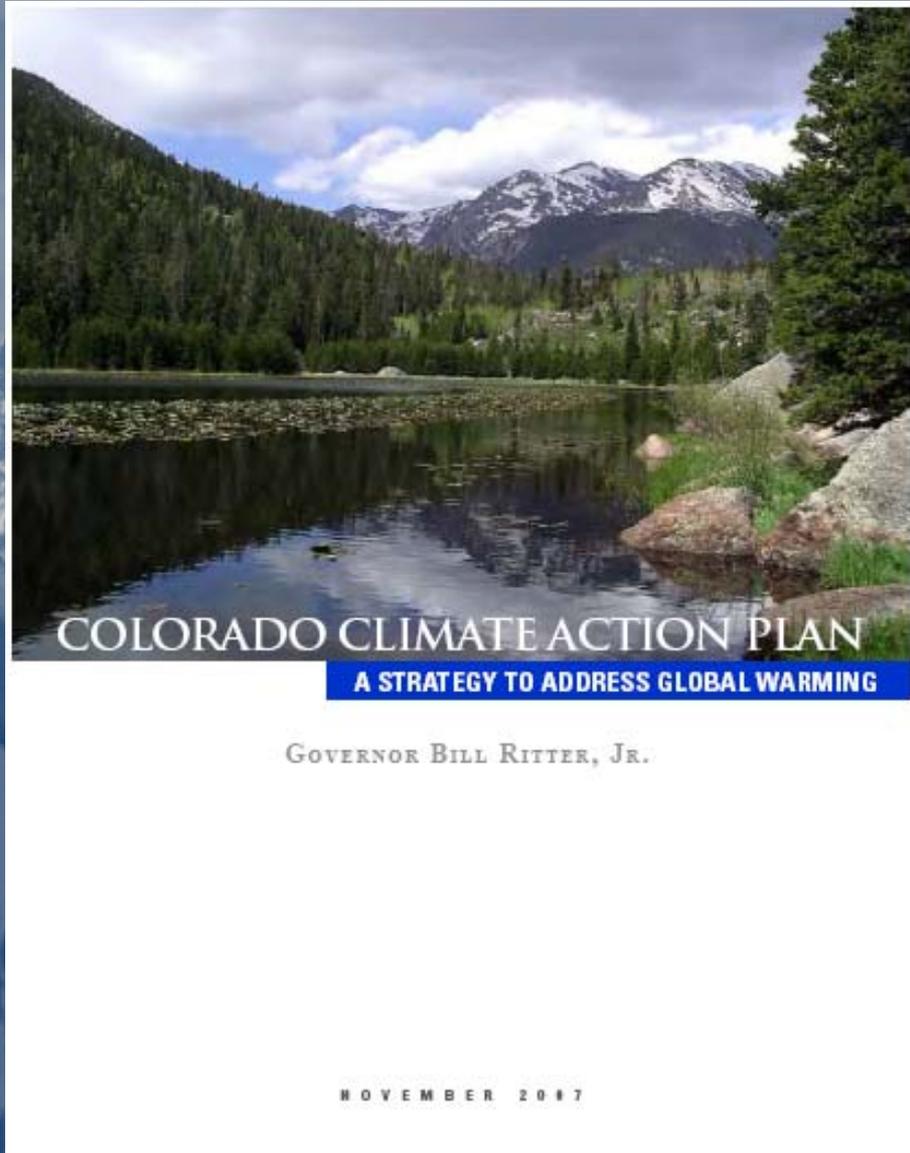
The Colorado Governor's Energy Office

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.

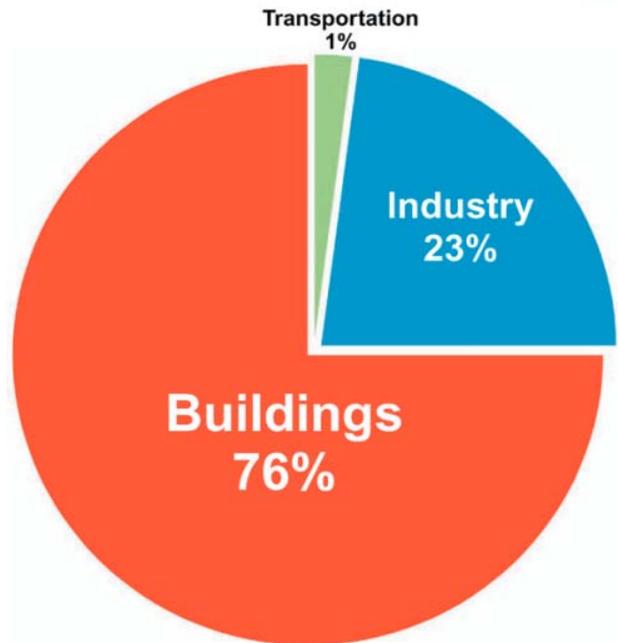


Climate Action Plan to Drive Green Building Policy in All Sectors

- **What's the goal?**

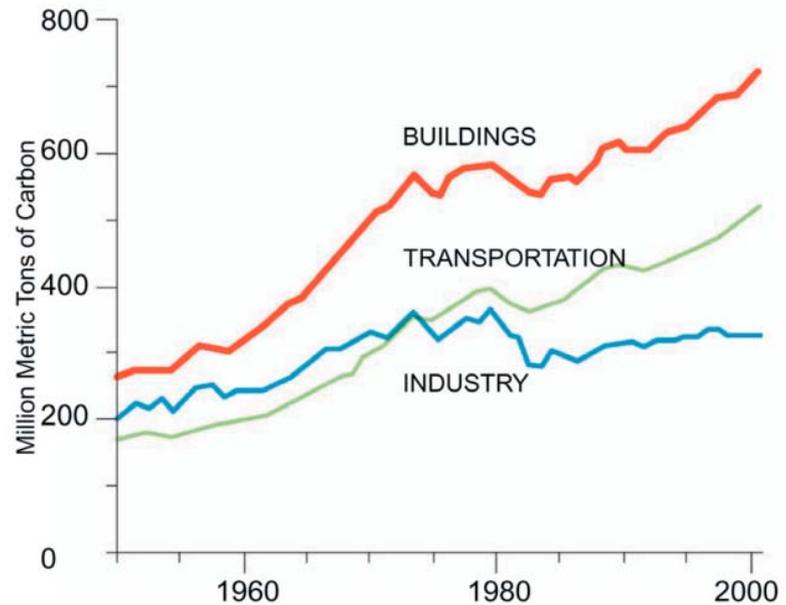
As Modeled		MMTCO2
2005	48,353 GWh	44.53
2020 Business as Usual	69,008 GWh	63.56
20% below 2005		35.63
Savings needed by 2020		27.94
50% of 2020 Goal		13.97

Why Buildings?



U.S. Energy Consumption

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



U.S. CO2 EMISSIONS BY SECTOR

Source: U.S. Energy Information Administration statistics

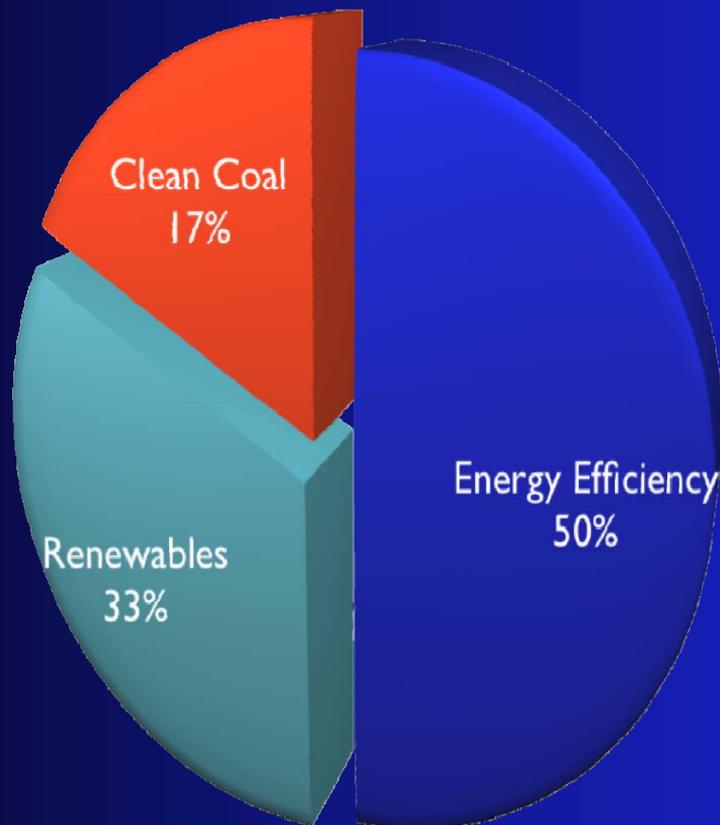
Buildings Account For Half Of All Greenhouse Gas Emissions.



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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



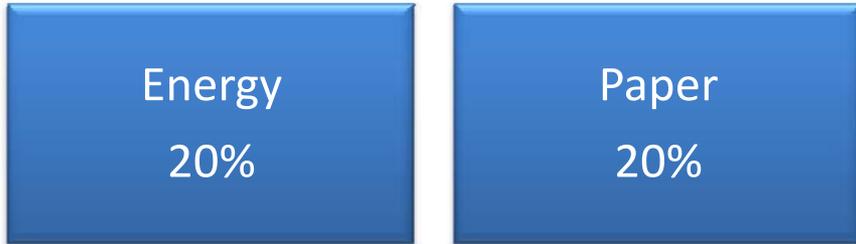
Greening Government Executive Orders, 2007

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.



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



Greening State Government

Lead by Example Program



	<u>Greening Government Order Directives</u>	<u>Completed</u>	<u>Planned</u>
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
	<u>Greening Government Detailed Implementation</u>		
	Reduce State Energy Consumption		
D0012 07 2A			
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
	Resource Management, Environmentally Preferable Purchasing (EPP)		
D0012 07 2B			
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
	Greening State Fleet		
D0012 07 2C			
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
	Renewable Energy Sources		
D0012 07 2D			
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

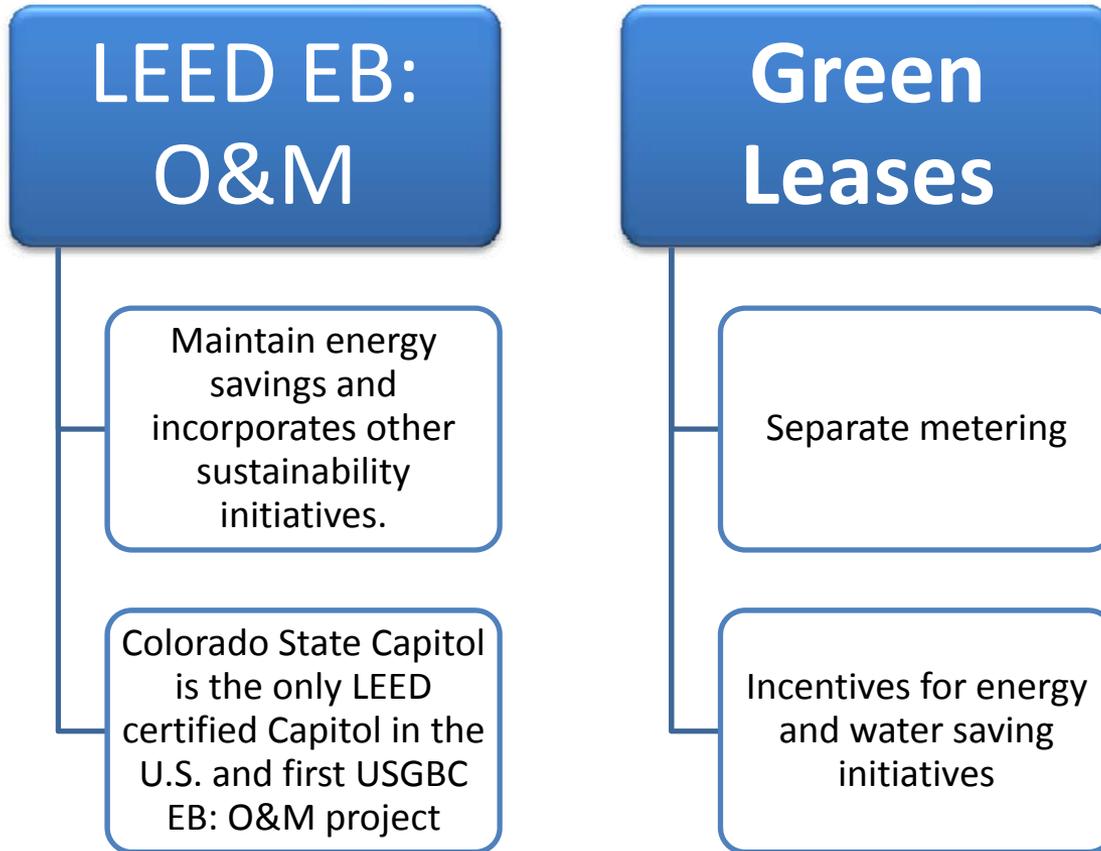
- Cost \$9,058,949
- Payback 19 years
- Energy Savings of \$631,009/yr escalating at 2.5 %/yr

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



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

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