

Utility Regulator's Perspective On Carbon Policy

NREL Energy Analysis Forum 2007

Presentation of
Ron Binz, Chairman
Colorado Public Utilities Commission

November 27, 2007

Outline of this presentation

- Introduction to the Colorado PUC
- State of the state's electricity resources
 - Demand
 - Supply
 - Infrastructure
- Colorado's regulatory response
- Challenges facing state regulators nationally with GHG reductions

Caveat

- I am one of three equal commissioners
- My positions are my own
- I am confused by many things and have not made up my mind on much at all
- I don't even agree with some of the things I say
- **Good advice:**
Don't believe everything you think

The Colorado PUC

The PUC's mission is to ensure that the public utility industry provides safe, reliable, and efficient service to customers at reasonable rates.

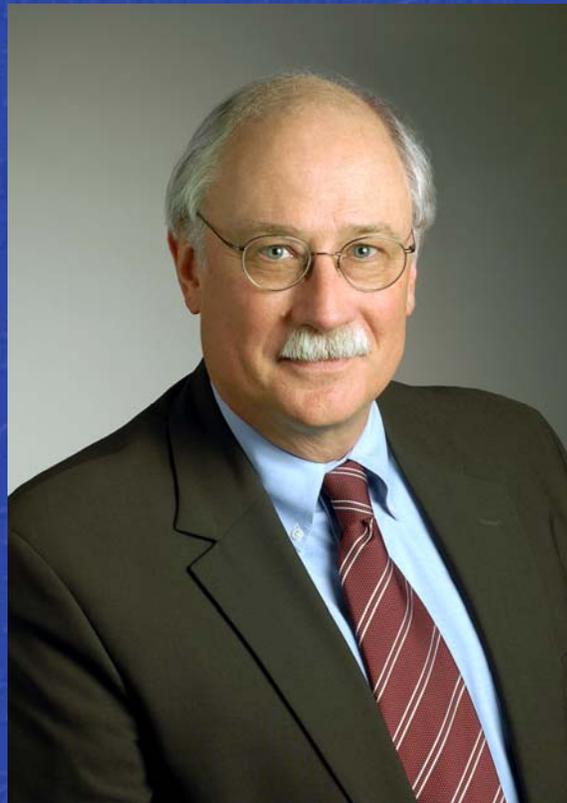
Note: No mention of environmental considerations in the mission statement

- Independent agency, created in the constitution
- Three Commissioners, appointed by the Governor
- Four year terms
- Partly judicial, partly legislative
- Ninety-member staff is an agency within the Department of Regulatory Agencies

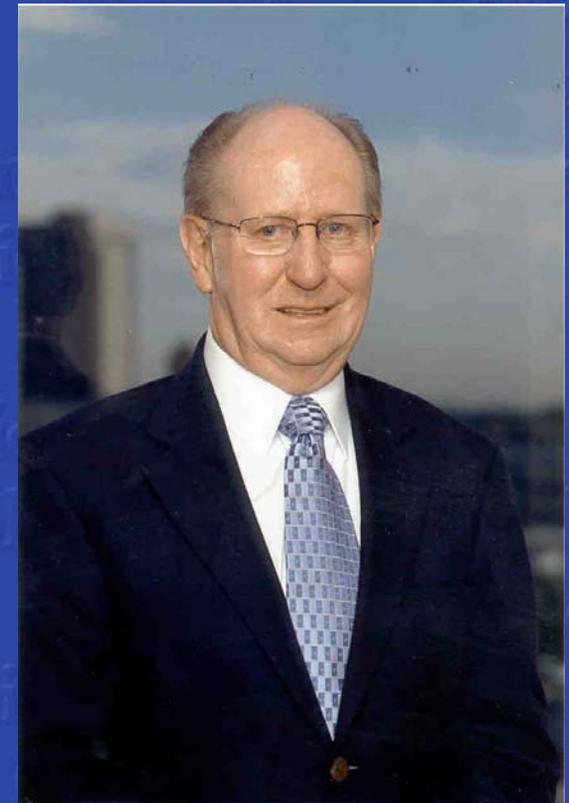
Colorado Commissioners



Polly Page



Ron Binz



Carl Miller

What do we regulate?

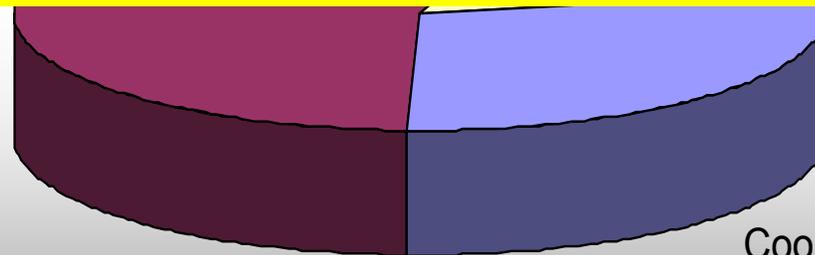
- Investor-owned electric utilities **60%**
 - Investor-owned natural gas utilities **15%**
 - Intrastate natural gas pipelines **1%**
-
- Some telecommunications carriers & services **10%**
 - Passenger transportation **10%**
 - Railroad crossings
 - Investor-owned water utilities
 - Pipeline safety
 - Colorado Relay for the hearing impaired
- } **4%**

Types of Colorado Electric Utilities

Colorado Energy Sales (kWh) by Type of Utility

Note: Colorado does not directly regulate
45% of the state's retail electric sales.

55%

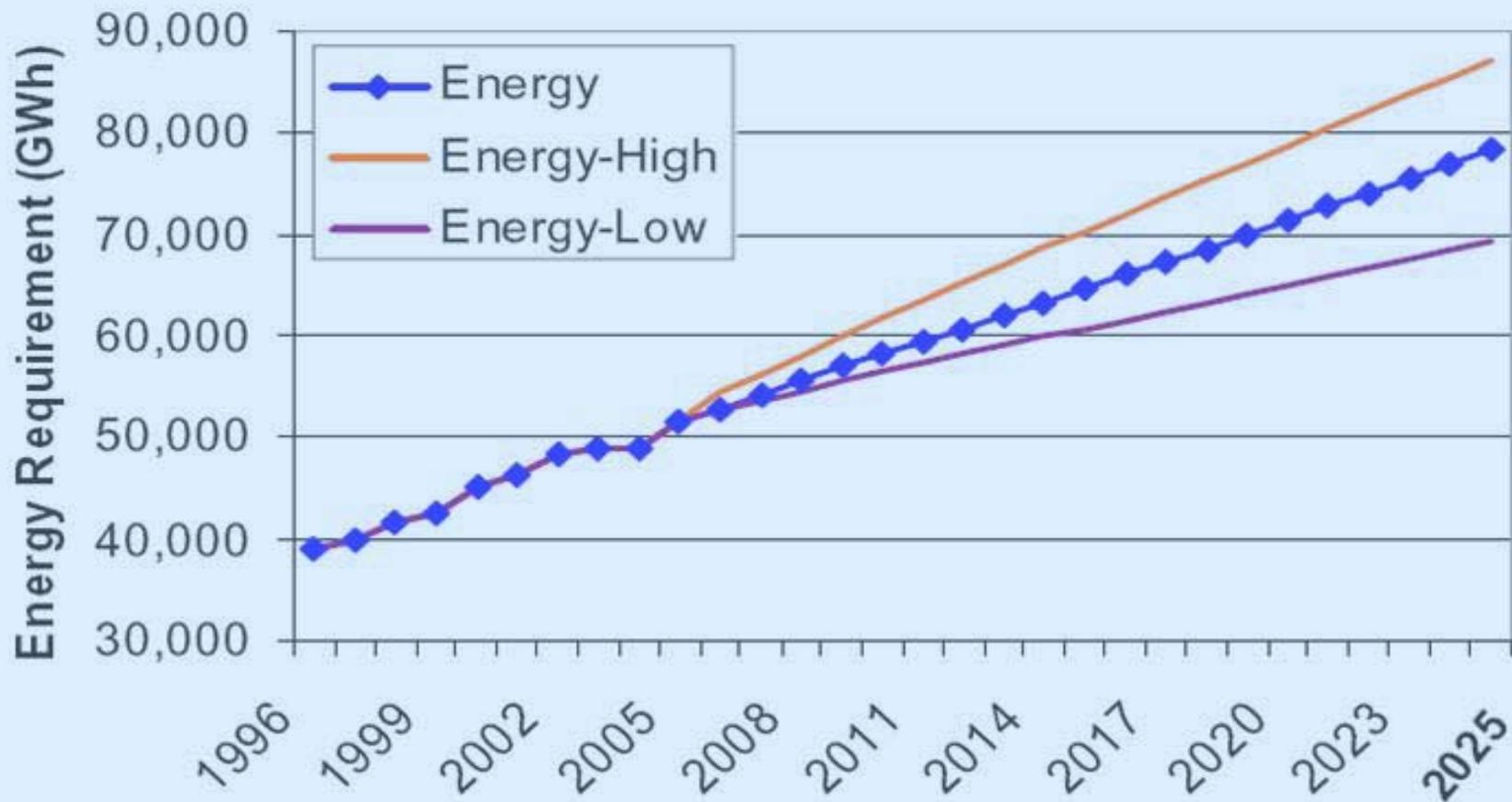


Cooperative
28%

Our Energy Objectives

- Working with Governor Ritter and the Legislature to develop an integrated state energy policy
- Meeting Colorado's projected energy demand
- Shaping consumers' energy demand
- Developing Colorado's renewable resources
- Integrating environmental concerns
- Enabling economic development
- Keeping prices reasonable and equitable

Projected Colorado Electric Energy Growth 2007-2025

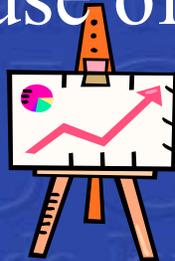


Take-aways

- Colorado's demand for electric energy services is projected to grow 60% in the next seventeen years.
- Think of this curve as demand for energy services denominated in kilowatt-hours (i.e., energy efficiency gains is not reflected).
- This projection does not include transportation applications for electricity (e.g., light rail and plug-in hybrids).

What's behind the growth?

- Growth in population
- Growth in per-capita use of electricity



1970

Since 1970, Colorado population has grown at 2.1% per year

1990

2007

2025

2.2 million

It's projected to grow 0.9% per year until 2030

5.6 million



70

COLORADO

25

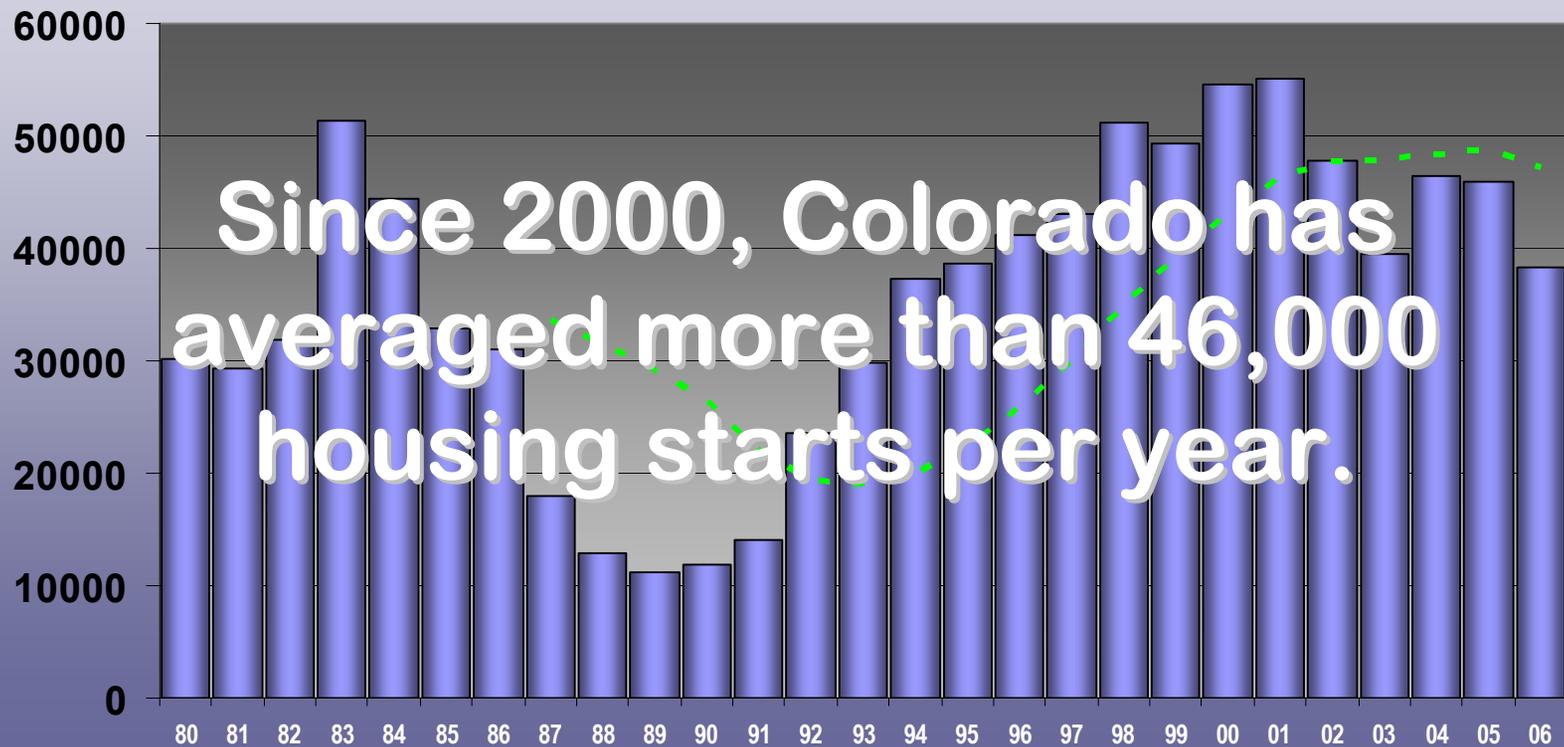
CO Utilities Commission
Colorado Public Utilities

PUC

Public Utilities
Colorado PUC

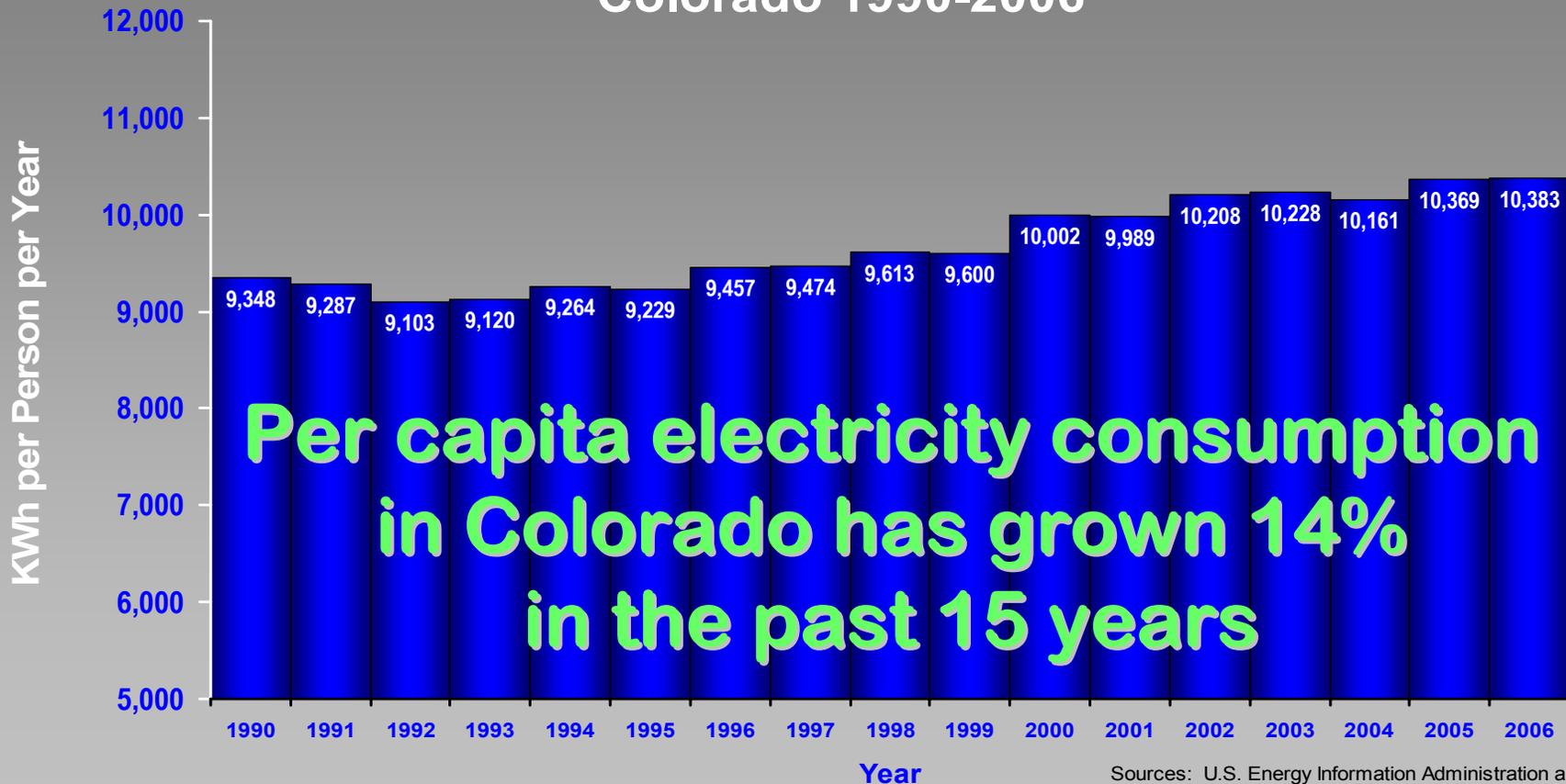
Building permits have grown...

**Colorado Housing Permits
1980 to 2006**



Meanwhile, use per customer continues to grow.

Per-Capita Annual Electric Energy Consumption
Colorado 1990-2006



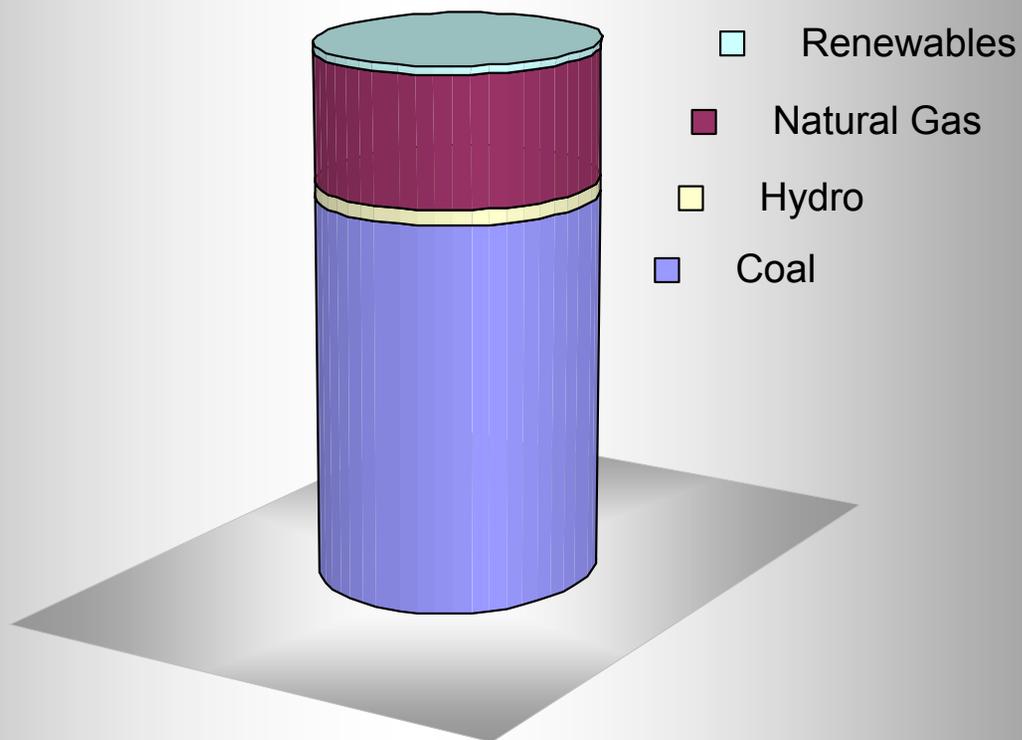
Per capita electricity consumption
in Colorado has grown 14%
in the past 15 years

Sources: U.S. Energy Information Administration and the
United States Census Bureau

How are we meeting
Colorado's electric demand today?

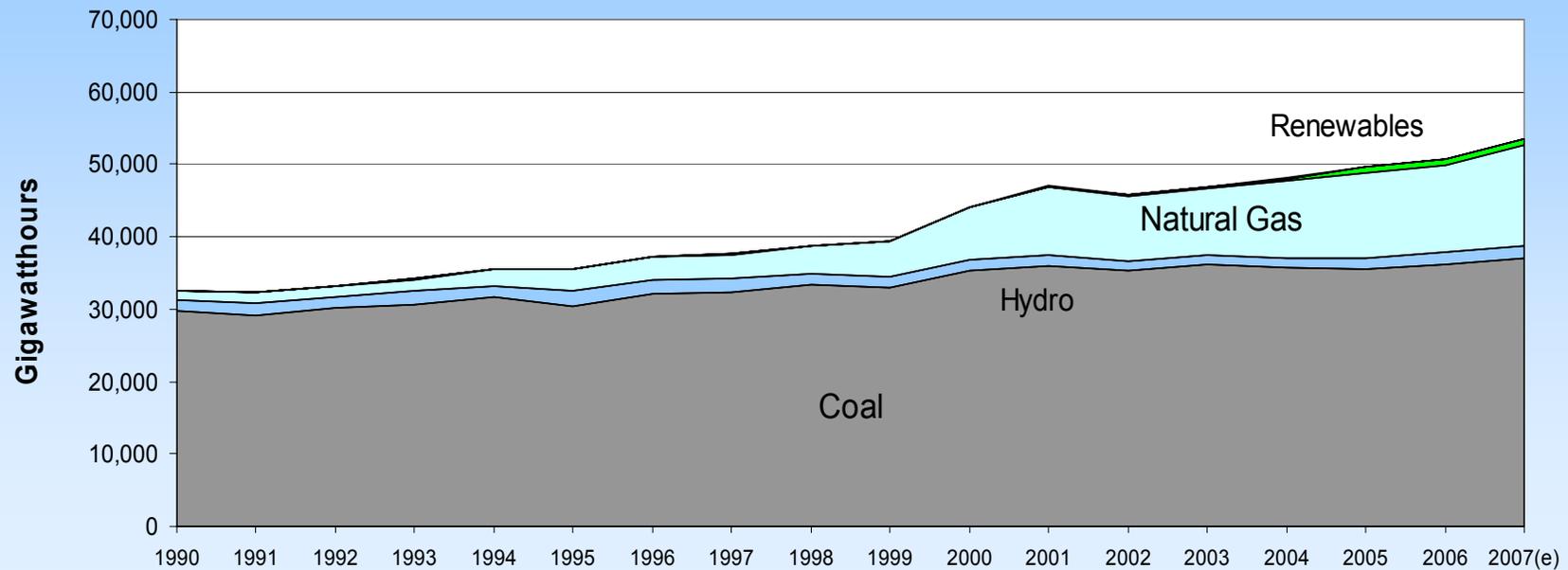
Colorado Electric Generation by Fuel

Colorado Electric Generation by Fuel Type -- 2005



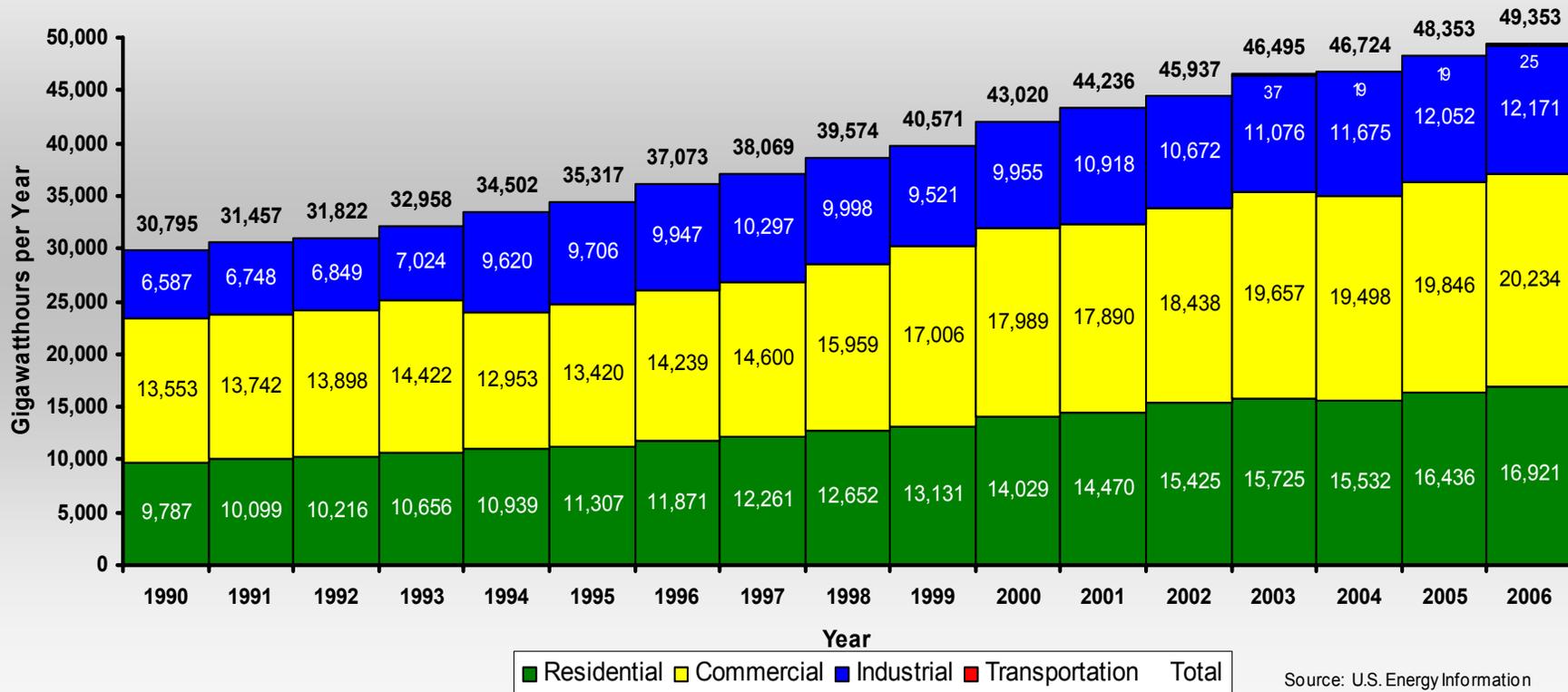
Generation Fuels in Colorado

**Colorado Electric Generation
by Fuel Source 1990-2007**



Who uses electricity in Colorado?

**Colorado Annual Electric Energy Use
by Sector 1990-2006**



Meet an average Colorado residential electric customer

- Electric use: **686 kWh/mo (8.2 MWh/year)**
- Electric bill: **\$62.23/mo (\$746/year)**
- CO₂ emissions from electricity: **1301 lbs/mo**
or **7.1 Metric Tons per year**

What are our choices for meeting the growing demand in Colorado?

- **Increased efficiency**
 - Retrofits
 - New construction
- **More renewable energy**
- **More traditional energy**

Colorado Regulatory Response

-- Resource Planning --

Prior Rule

- ~~• Least Cost Planning~~
- ~~• Fuel Neutrality~~
- ~~• Utility models new portfolio~~
- ~~• Utility selects bid resources~~

New Rule

- Resource Planning
- Clean Energy Preference
- Independent Evaluator
- Optional Post-bid Review
- New DSM emphasis

Colorado and Energy Efficiency

**Two 75-watt (equivalent)
Compact Fluorescent Lights will
reduce CO₂ emissions by One Metric Ton
over their lifetime.**

(in addition to lowering electric bills)

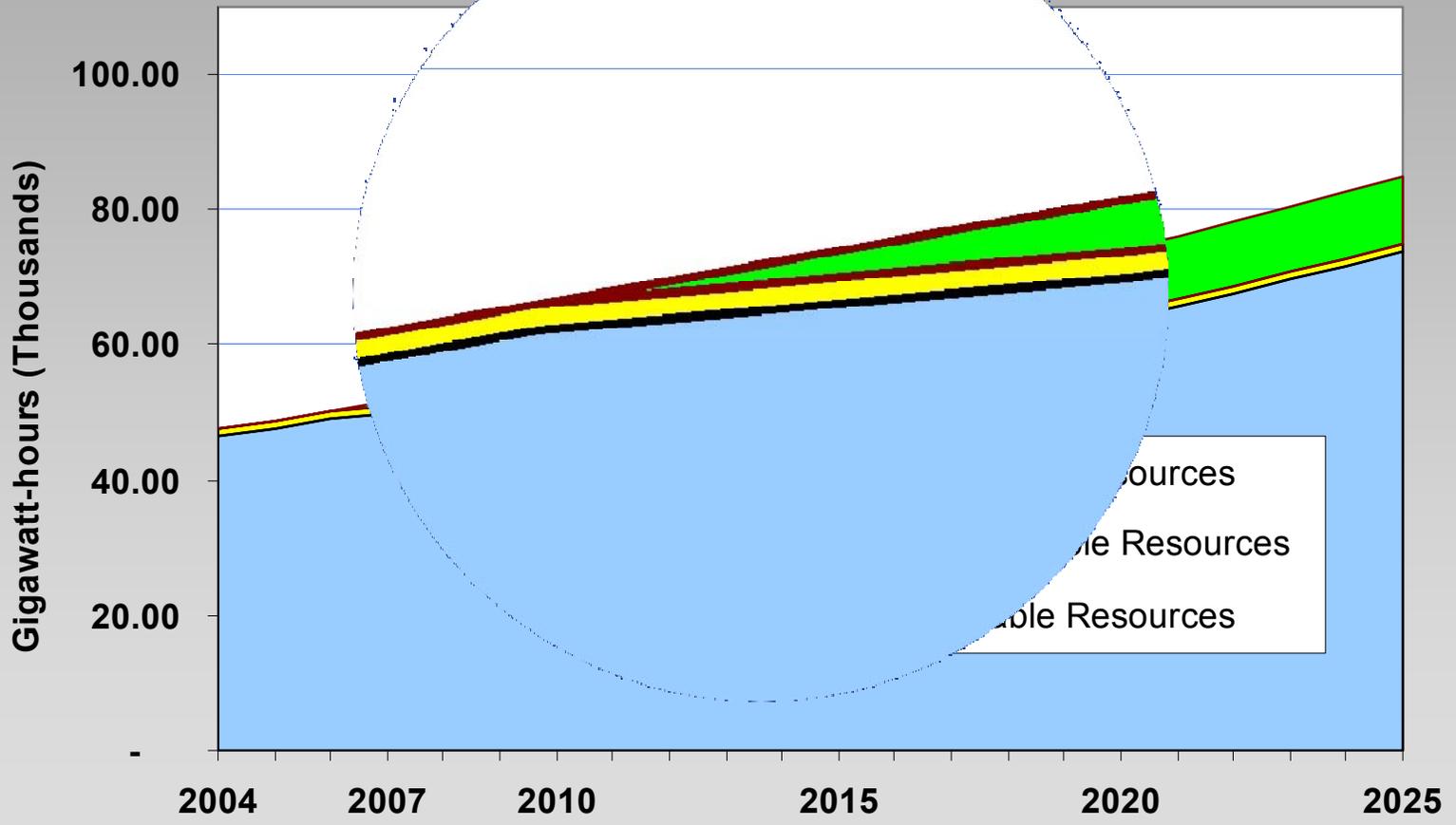


HB 1281 – Colorado's New Renewable Energy Standard

- IOUs -- 20% renewables by 2020
- REAs, Munis -- 10% renewables by 2020
- For IOUs, 4% of renewables must be solar, half on-site
- 1.25x for in-state resources
- 3.0x for REAs use of solar
- Maximum rate impact 2% for IOUs, 1% for Munis and REAs

Back to the wedge...

Renewable Resources... Required by HB 1281



Challenges facing state regulators

Internal

- Residual doubts about the science
- Parochialism at sector, regional, national level
- Traditional emphasis on least cost

External

- Paucity of legislative direction
- Economics of electric generation
- Continued load growth
- Price inelasticity of consumer demand
- Restructured electric markets
- Utility and fuel supplier opposition

Resolution on Federal Climate Legislation and Cap-and-Trade Design Principles

WHEREAS, The National Association of Regulatory Utility Commissioners (NARUC) formed a Task Force on Climate Policy in March 2007 in order to educate NARUC members concerning climate policy issues and to develop policy proposals for consideration by the NARUC membership; *and*

WHEREAS, The NARUC Board of Directors adopted a resolution sponsored by the Task Force on Climate Policy at the 2007 NARUC Summer Meetings held in New York, New York, on July 18, 2007, that enunciated ten policy principles that NARUC believes should inform federal climate policy; *and*

WHEREAS, The relative merits of a market mechanism proposed for inclusion in any federal climate change legislation, including, but not limited to, a cap-and-trade mechanism, a carbon tax, and a load-side cap, should be carefully evaluated in determining how to achieve the desired emissions reductions consistent with the ten principles previously adopted by NARUC; *and*

WHEREAS, Congress has continued to debate various policy proposals for addressing the environmental and economic consequences of alternative climate change policies since the 2007 NARUC Summer Meetings; *and*

WHEREAS, Since the 2007 NARUC Summer Meetings, the Task Force on Climate Policy has also continued to examine various policy proposals relating to climate change issues; *and*

WHEREAS, The momentum for enactment of federal legislation regulating the emission of greenhouse gases (GHG) appears to have further increased, making the enactment of such legislation within the foreseeable future likely; *and*

WHEREAS, The existence of uncertainty about the nature and extent to which GHG emissions will be subject to future federal regulation makes it difficult for State regulators, regulated utilities, and others to appropriately plan for needed investments in electric transmission and generation infrastructure; *and*

WHEREAS, Despite a diversity of opinion within NARUC's membership regarding the need for national limitations on the emission of GHGs for the purpose of addressing concerns over warming of the Earth's climate, NARUC's members are in general agreement that the enactment of federal legislation limiting such emissions would be appropriate in order to remove existing uncertainties that are hampering the making of transmission and generation investment decisions; *and*

WHEREAS, NARUC's members are also in general agreement that appropriate federal climate change legislation should be enacted in order to enhance the likelihood that appropriate technologies will be developed and other solutions implemented so as to achieve desired reductions in GHG emissions in the most economical manner possible; *now, therefore, be it*

RESOLVED, That the National Association of Regulatory Utility Commissioners, convened in its November 2007 Annual Convention in Anaheim, California, supports the enactment of federal legislation intended to reduce GHG emissions so long as such legislation relies, to the extent practicable, on an appropriate market mechanism or mechanisms as part of an economy-wide approach to GHG regulation; provides for an appropriate transition period prior to the implementation of full regulation of GHG emissions; creates sufficient certainty to ensure the financing of needed energy infrastructure consistent with the achievement of the environmental objectives intended to be

Thank you for inviting me.

I look forward to your questions.