The $20 Billion Bonanza:

Best Practice Utility Energy Efficiency Programs and Their Benefits in the Southwest

Howard Geller

Colorado Presentation

Southwest Energy Efficiency Project

- Public interest organization founded in 2001
- SWEEP's primary focus is expanding and improving utility energy efficiency programs in AZ, CO, NV, NM, UT, and WY
- We also work on state legislation, building codes, state/local programs, industrial energy efficiency, and transportation issues
- SWEEP is funded by charitable foundations and government entities

Summary: Implementing Best Practice utility energy efficiency programs in Colorado would:

- Cut electricity use in 2020 by 22%
- Save households & businesses $4.8 billion
- Avoid 7.5 large (400 MW) power plants
- Support 7,000 new jobs in the state
- Cut air pollution and improve public health
- Reduce CO_2 emissions equivalent to taking 1.1 million passenger vehicles off the road
- Reduce water use 2.5 billion gallons per year by 2020

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Questions Addressed in the Study

- What comprises a comprehensive set of Best Practice utility energy efficiency programs?
- What are the costs and benefits of implementing Best Practice utility energy efficiency programs in each state and the region?
- Is it possible to achieve 20% electricity savings by 2020 in each state, from programs 2010-2020?
- What policies are needed to realize the benefits offered by Best Practice energy efficiency programs?

Study Methodology

- Program characteristics taken from leading programs nationwide
- Programs ramped up through 2020 in each state
- High Efficiency Scenario compared to a Reference Scenario without energy efficiency programs
- Study projects energy savings, peak demand reduction, and cost to utilities, households and businesses from implementing Best Practice programs
- Analyzes avoided investment in new power plants, pollution controls, fuel purchases, and O&M costs
- Analyzes avoided pollutant emissions, water savings, and impact on jobs and personal income

Best Practice Utility Programs

Residential	Commercial and Industrial
New Construction and Code Support	New Construction and Code Support
Low-income Weatherization	Small Business Direct Install
Single Family Home Retrofit	Prescriptive Rebates
Multi-family Retrofit	Custom Rebates, Process Efficiency and Self-Direct
Retail Products	Lighting Redesign
Lighting	Retrocommissioning
Refrigerator/Freezer Recycling	Computer Efficiency & Plug Loads
Cooling	Combined Heat & Power
Water Heating	
Home Energy Reports and Information Feedback	

Program Portfolio Is Highly Cost Effective

- Investing in energy efficiency and helping consumers save energy continues to be the lowest cost utility resource, by far
- Commercial and industrial programs have an average cost of saved energy of 2.2 cents per kWh
- Residential programs have an average cost of saved energy of 3.6 cents per kWh

Electricity Savings in the High Efficiency Scenario (GWh)

State	Electricity Savings in 2010	Electricity Savings in 2015	Electricity Savings in 2020	Savings in 2020 as % of Sales in 2020
Arizona	695	6,059	16,713	21%
Colorado	**285**	**4,373**	**11,495**	**22%**
Nevada	304	2,722	7,040	22%
New Mexico	87	1,863	5,110	24%
Utah	194	2,455	6,234	20%
Wyoming	17	1,143	3,238	15%
Region	1,582	18,615	49,828	21%

Utility Program Costs in the High Efficiency Scenario (Million dollars)

State	Cost in 2010	Cost in 2015	Cost in 2020	Net Present Value Through 2020
Arizona	54	377	623	2,767
Colorado	**43**	**257**	**404**	**1,918**
Nevada	29	152	248	1,137
New Mexico	15	121	191	877
Utah	40	138	214	1,052
Wyoming	4	71	101	480
Region	185	1,116	1,780	8,230

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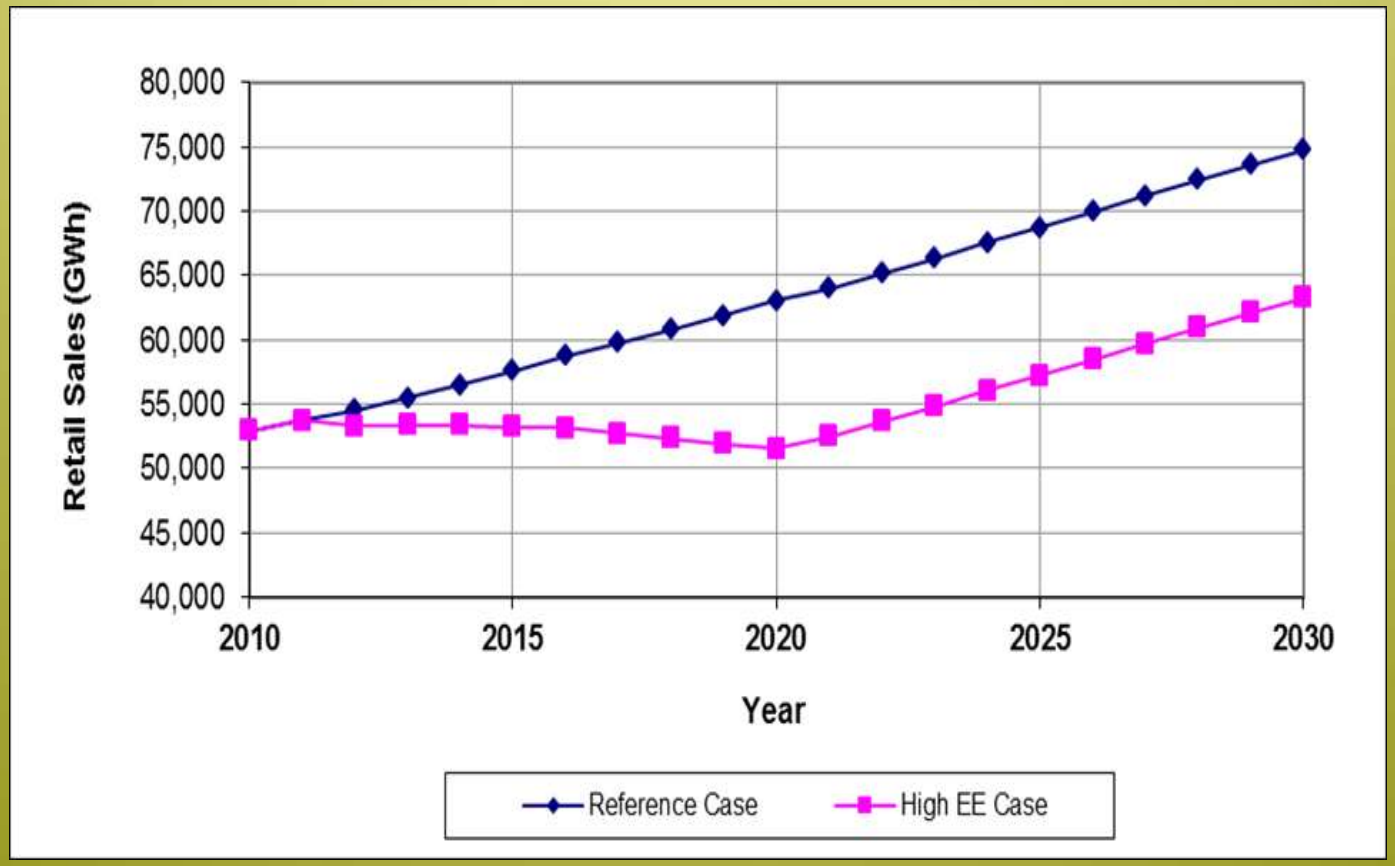
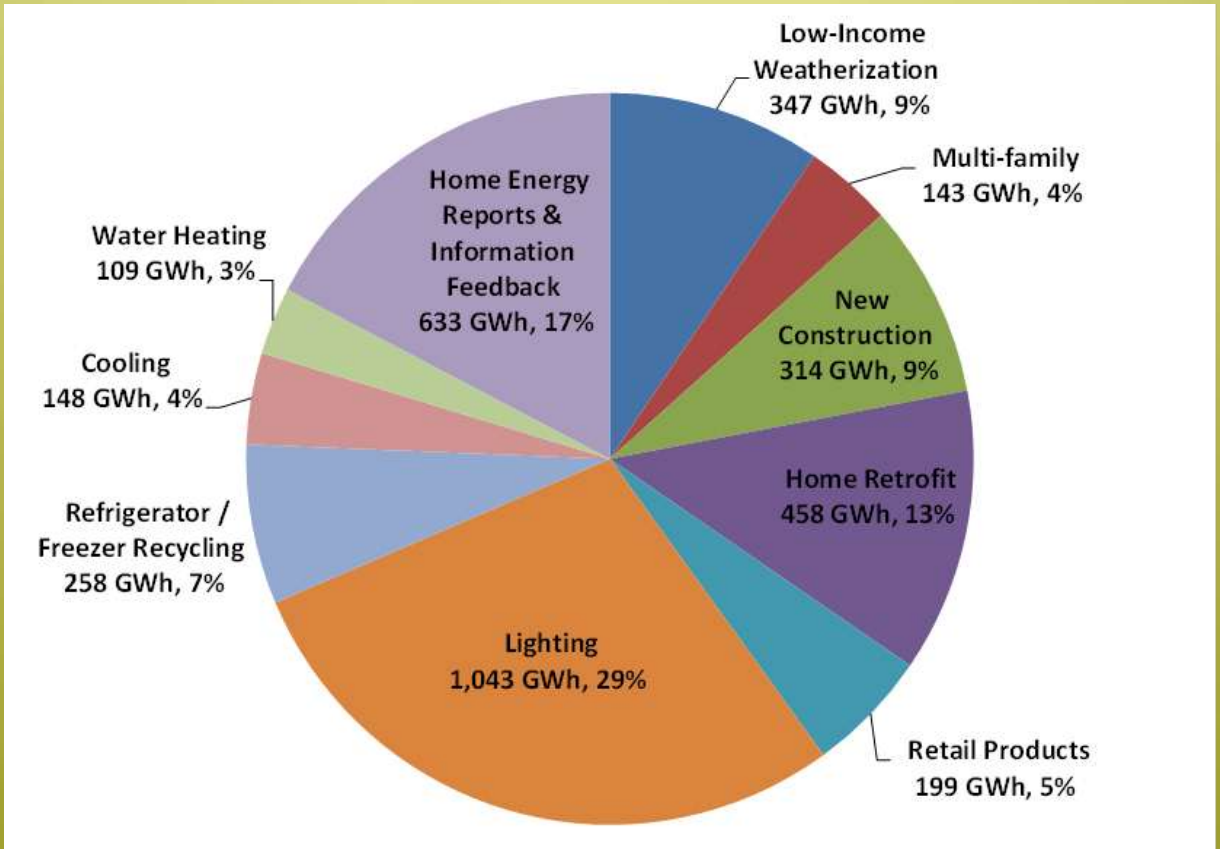
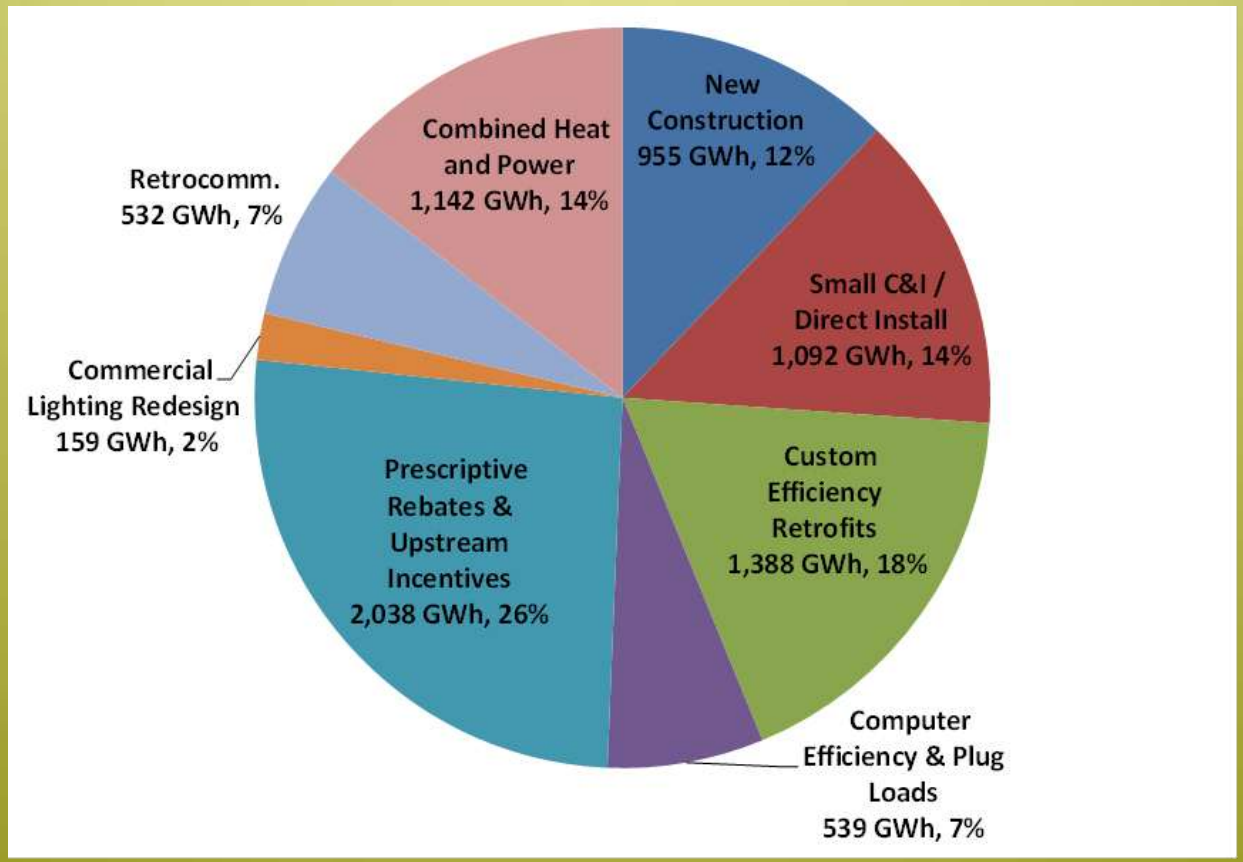
Electricity Sales in Colorado by Scenario



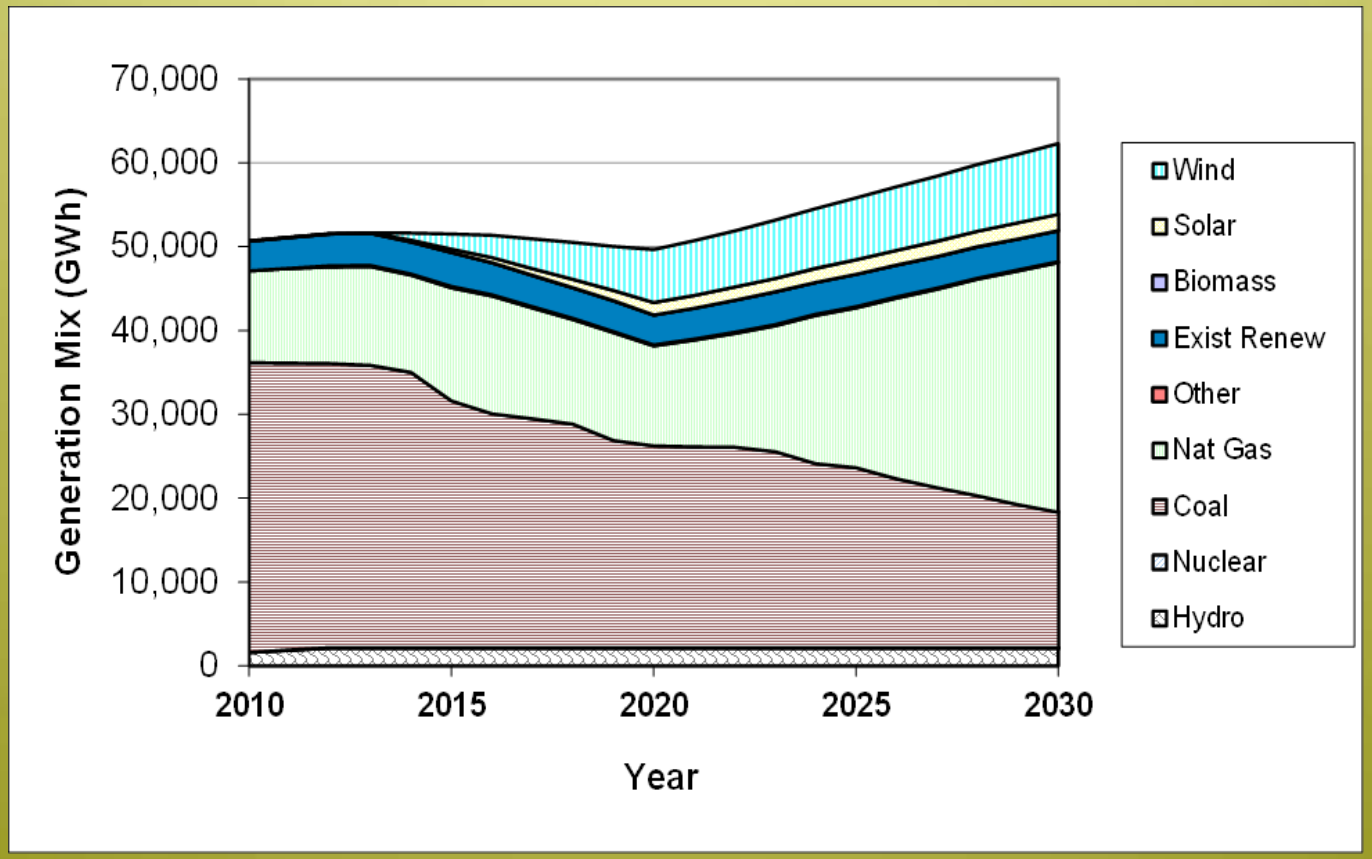
Residential Electricity Savings in 2020 in Colorado by Program (GWh/yr)



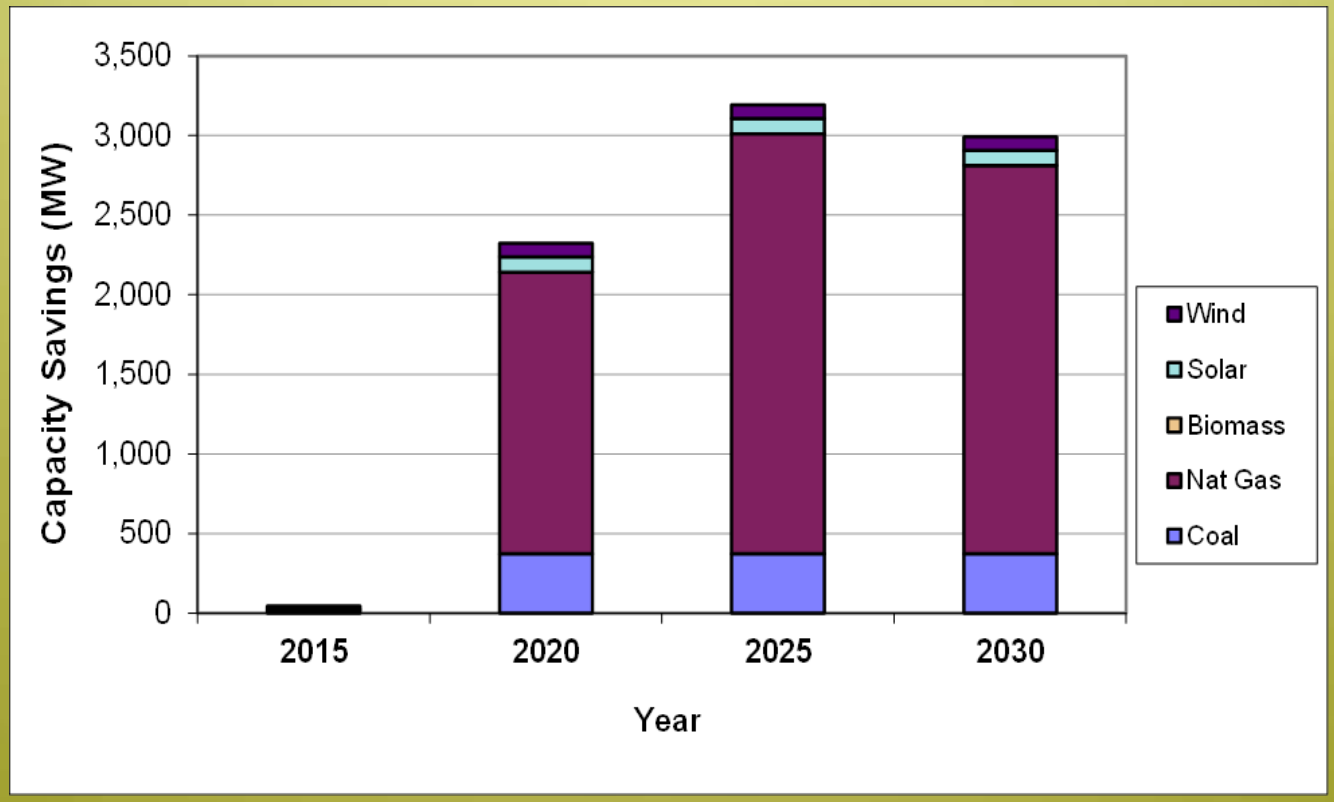
Business Electricity Savings in 2020 in Colorado by Program (GWh/yr)



Generation Mix in Colorado in the High Efficiency Scenario



Avoided Capacity in Colorado in the High Efficiency Scenario



Enables closing or avoiding 4.5 large (400 MW) power plants or their equivalent!

Additional Coal Plant Retirements in the High Efficiency Scenario

State	Plant	Unit	Year Built	Capacity (MW)
AZ	Apache Station	2 & 3	1979	408
AZ	Cholla	3	1980	312
AZ	H. Wilson Sundt	4	1967	173
CO	**Martin Drake**	**5, 6 & 7**	**1962-74**	**257**
CO	**Nucla**	**1 - 4**	**1959-91**	**114**
NM	San Juan	3 & 4	1979-82	1,110
NV	North Valmy	1	1981	277
NV	Reid Gardner	1 - 3	1965-76	342
UT	Bonanza	1	1986	500
UT	Carbon	1 & 2	1954-57	189
WY	Dave Johnston	1 & 2	1959-61	228
WY	Naughton	1 & 2	1963-68	381
--	Other	--	--	116

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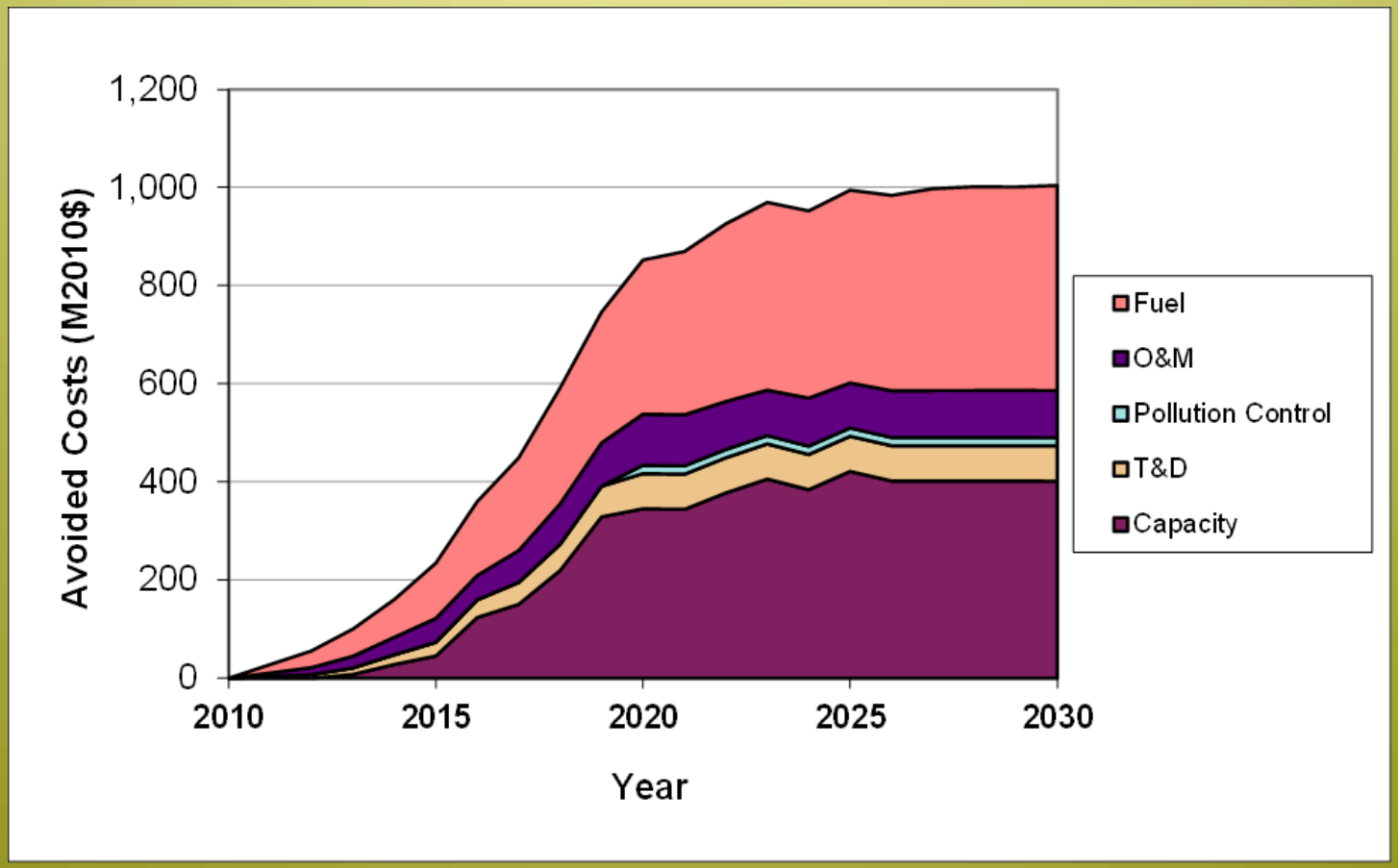
Avoided Costs in Colorado in the High Efficiency Scenario



Benefit-Cost Comparison in Colorado in the High Efficiency Scenario

	Net Present Value 2010-2030 (Million $)
Utility Avoided Costs	
Capacity	2,570
Fuel	2,718
Other	1,423
Total	6,710
Customer Benefits	
Utility Bill Savings	8,857
Public Health Benefits	51
Total	8,908
Energy Efficiency Costs	
Program Costs	1,918
Participant Costs	2,186
Total	4,104
Net Economic Benefits	4,804
Benefit-Cost Ratio	2.17

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Avoided Pollutant Emissions and Water Savings in the High Efficiency Scenario

Category	Units	2015 Reduction Amount	%	2020 Reduction Amount	%
CO_2 Emissions	1000 metric tons	2,759	7.0	5,450	15.4
NO_x Emissions	Metric tons	1,560	8.6	700	8.8
SO_2 Emissions	Metric tons	843	5.6	827	9.4
Water Savings	Million gallons	1,618	6.6	2,500	11.7

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Macroeconomic Impacts in Colorado in the High Efficiency Scenario

Year	Change in Jobs		Change in Wages (Million $)		Change in GSP (Million $)	
	Amount	%	Amount	%	Amount	%
2015	2,380	0.1	98	0.4	54	--
2020	6,960	0.3	334	1.3	277	--

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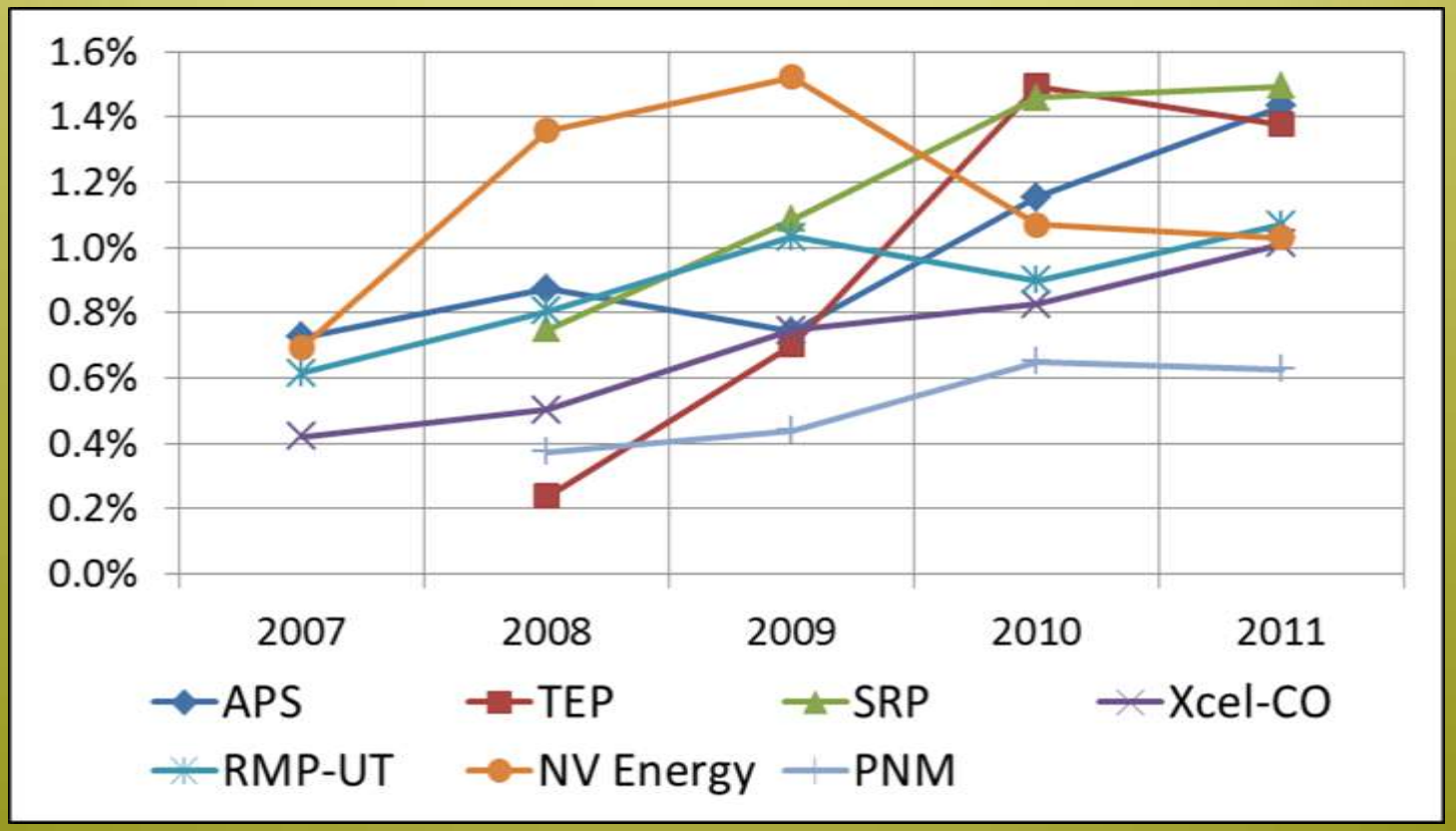
How Are Major Utilities in the Region Doing?

First Year Energy Savings as a Fraction of Retail Electricity Sales



Xcel Energy is moving up!

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How Much Energy Savings Would There Be in 2020 if Current Utility Efforts Continue?

	AZ	CO	NV	NM	UT	WY	Region
Energy Savings in 2020	15%	10%	9%	7%	9%	2%	10.5%

For Colorado, implementing Best Practice programs would more than double the energy savings (and benefits!) compared a continuation of current efforts

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Policy Recommendations for Colorado

- **Adopt higher goals** - strengthen energy savings goals for investor-owned utilities
- **Reward performance** – continue performance-based incentives so that utility shareholders earn a profit when they help their customers save energy
- **Maximize participation and savings** – fully fund all cost-effective efficiency programs
- **Involve all utilities** – adopt energy savings goals or requirements for all utilities in the state, with Tri-State G&T helping its members implement well-funded, effective programs


ENERGY EFFICIENCY IN COLORADO:
THE ROAD TO ENORMOUS BENEFITS
HOUSEHOLDS & BUSINESSES
Save $4.8 Billion Net
ELECTRICITY SAVED
Enough to Power 1.3 Million Homes
WATER SAVED
2.5 Billion Gallons per year by 2020
POWER PLANTS
7.5 Plants Closed or Avoided
JOBS CREATED
7,000 in CO
CO2 NOT EMITTED
Same As 1.1 Million Cars Off the Road
FEWER AIR EMISSIONS
Improved Public Health

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For more information or full report:

www.20BillionBonanza.com

Other resources available online at:

www.swenergy.org

Howard Geller, Executive Director

303-447-0078 x1

hgeller@swenergy.org