The $20 Billion Bonanza:

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

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Presented at the 2013 ACEEE National Conference on Energy Efficiency as a Resource

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, CHP, and transportation issues
- SWEEP is funded by charitable foundations and government entities

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 for implementing Best Practice programs during 2010-2020
- 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 (UCT perspective)
- Residential programs have an average cost of saved energy of 3.6 cents per kWh (UCT perspective)

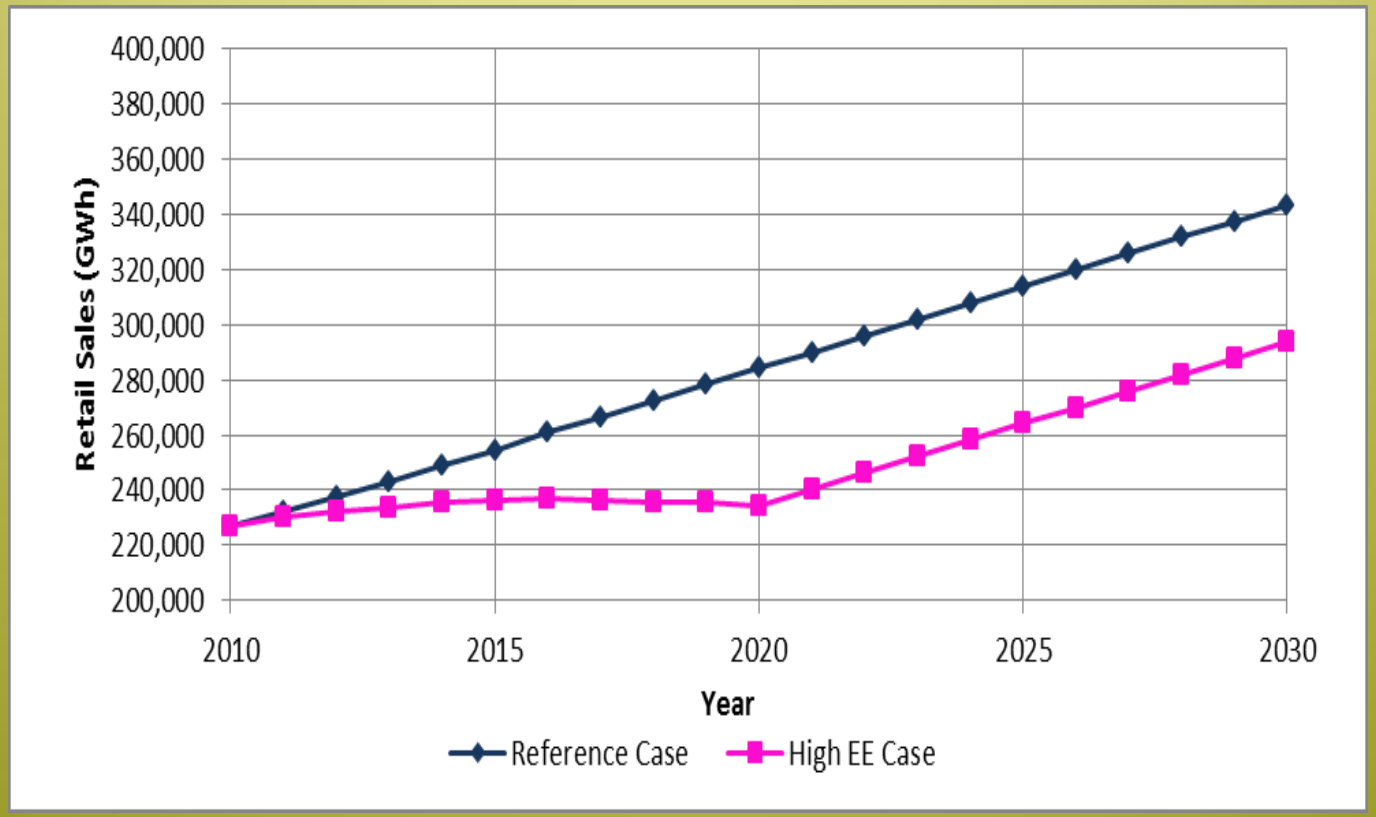
Electricity Savings in the High Efficiency Scenario (GWh)

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%**

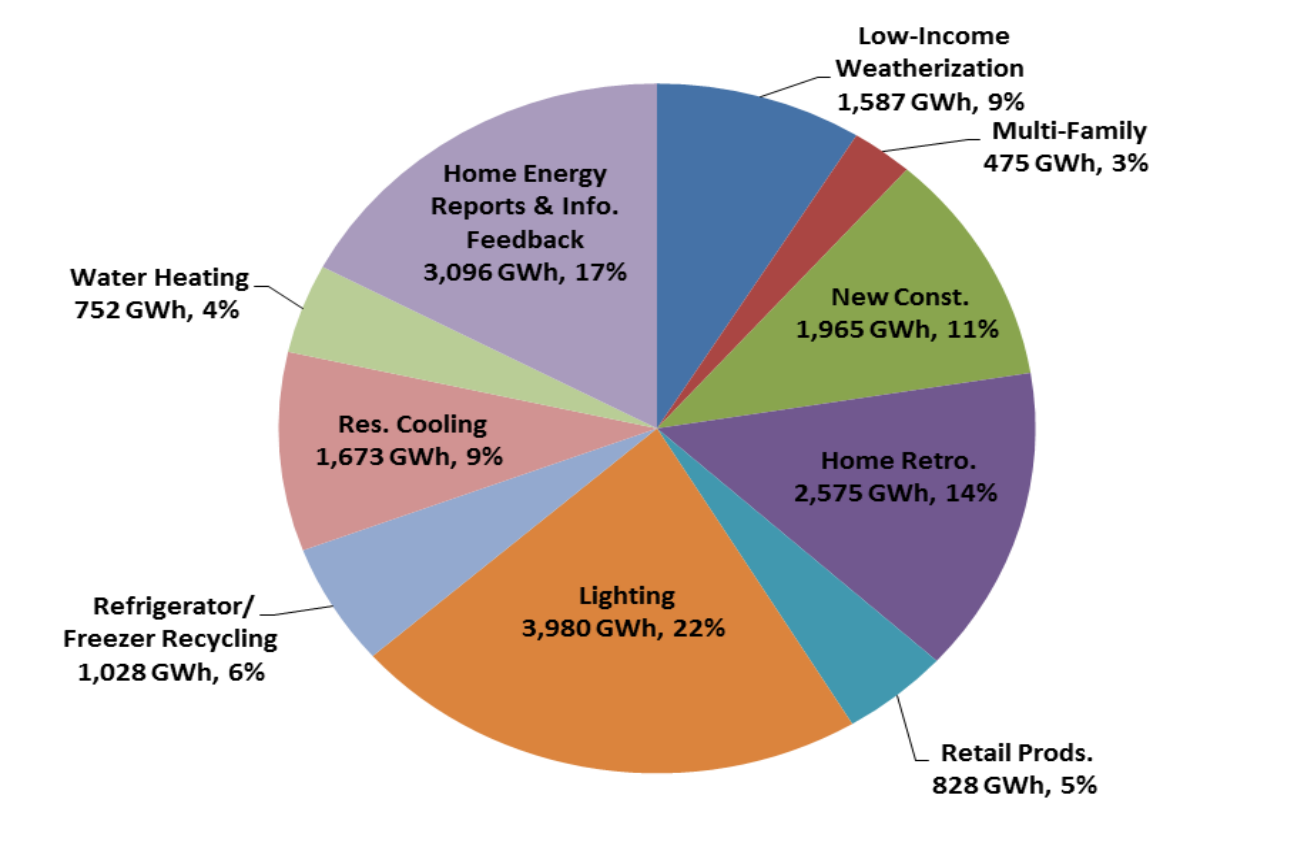
Utility Program Costs in the High Efficiency Scenario (Million dollars)

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**

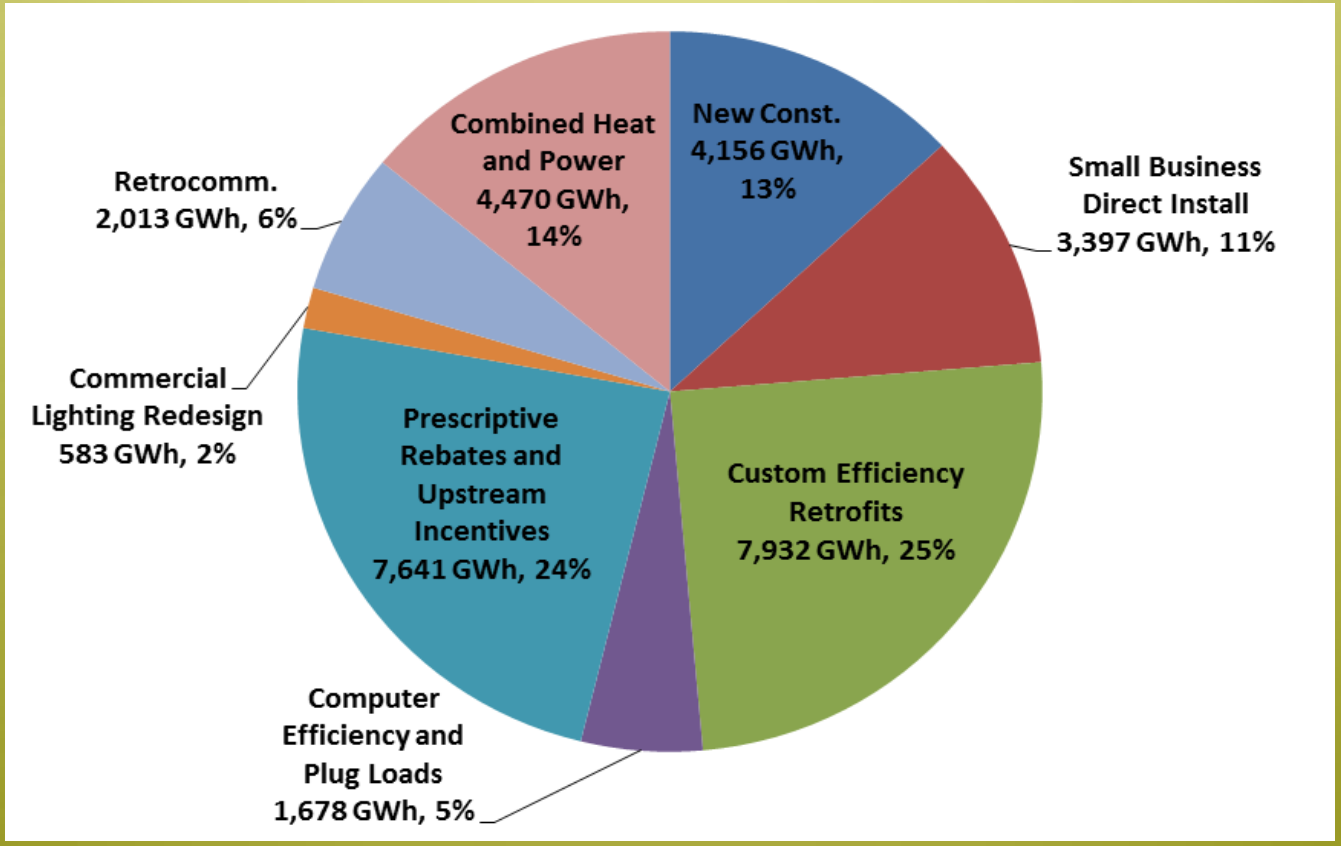
Electricity Sales in the Region by Scenario



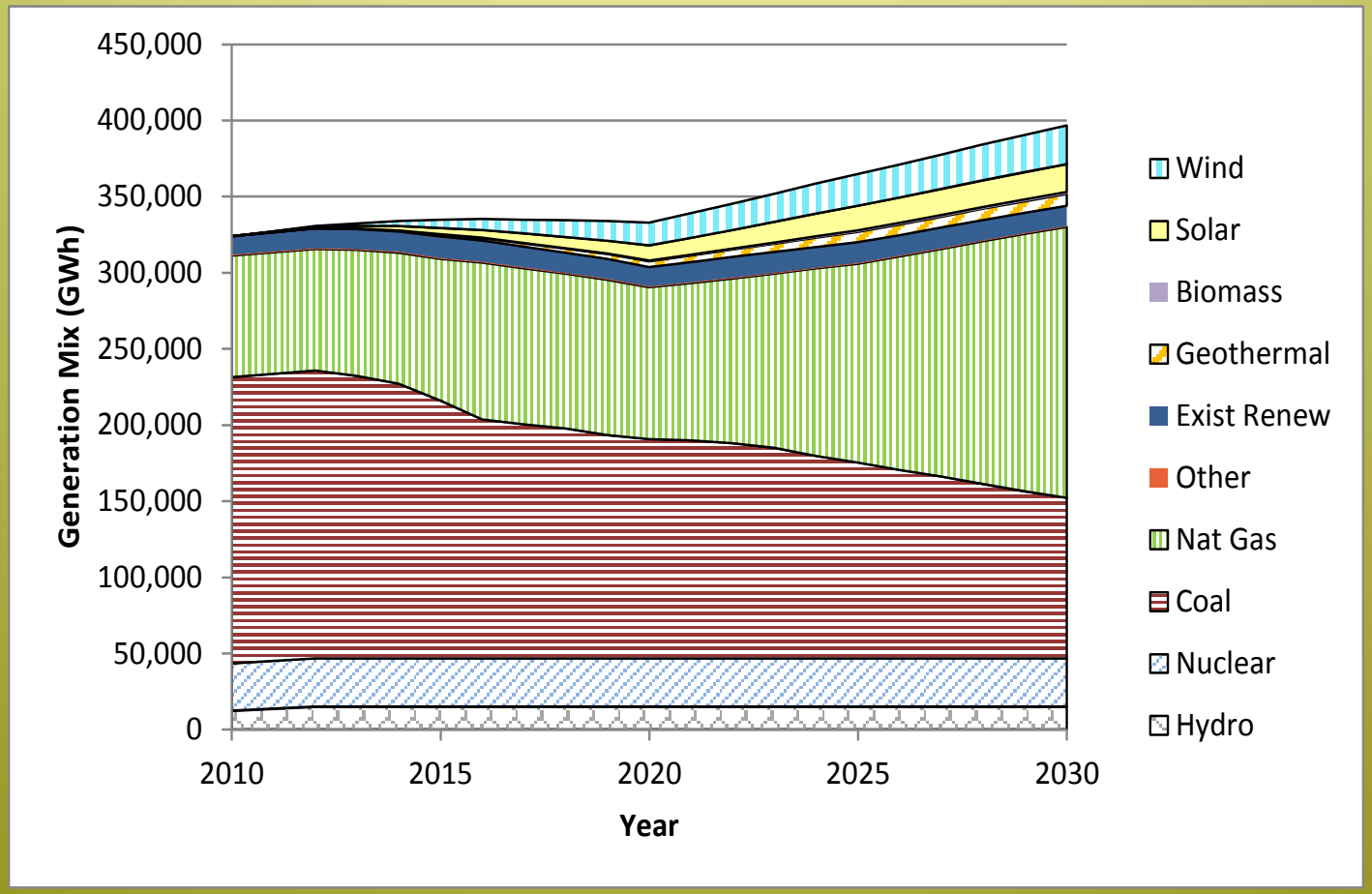
Residential Electricity Savings in 2020 in the Region by Program (GWh/yr)



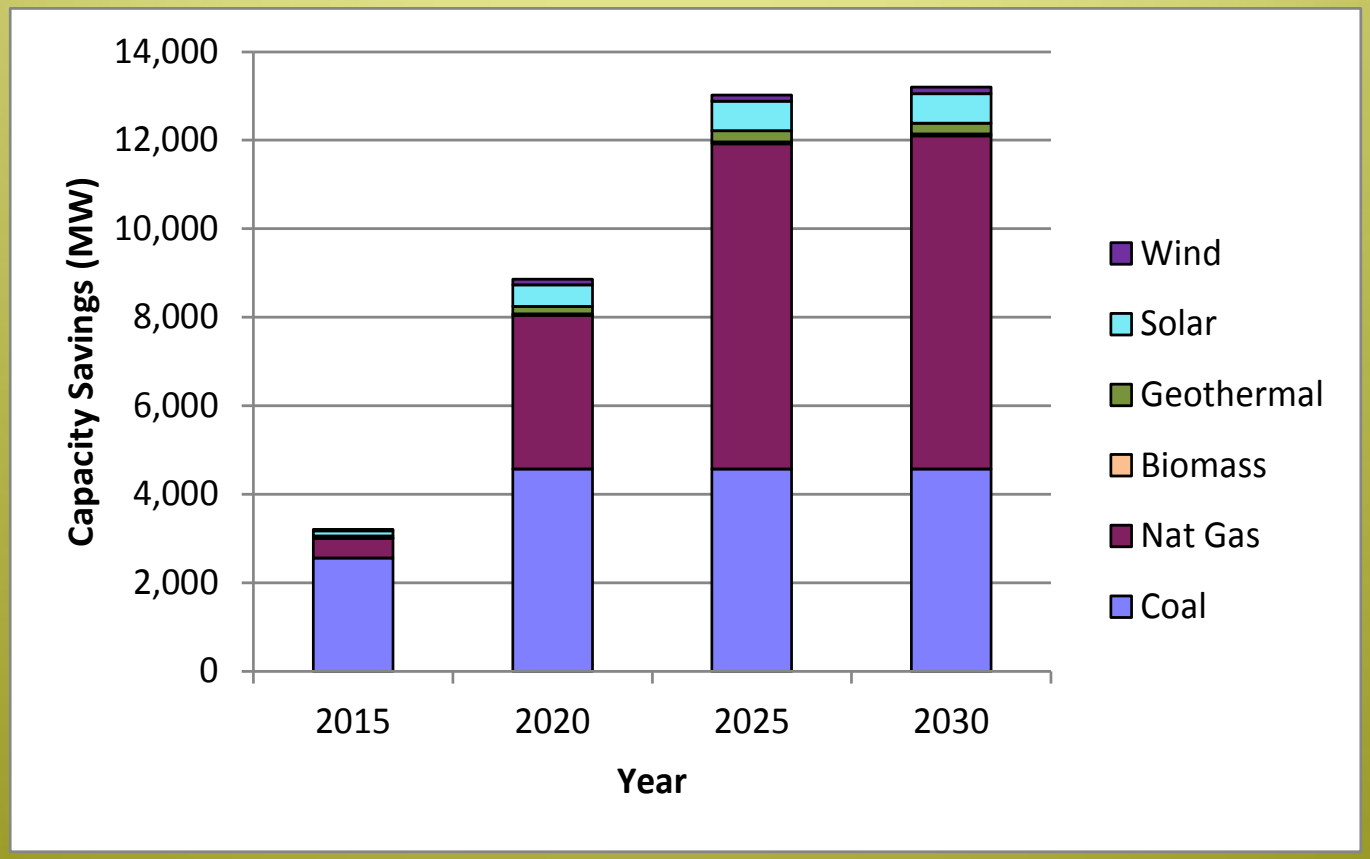
Business Electricity Savings in 2020 in the Region by Program (GWh/yr)



Generation Mix in the Region in the High Efficiency Scenario



Avoided Capacity in the Region in the High Efficiency Scenario

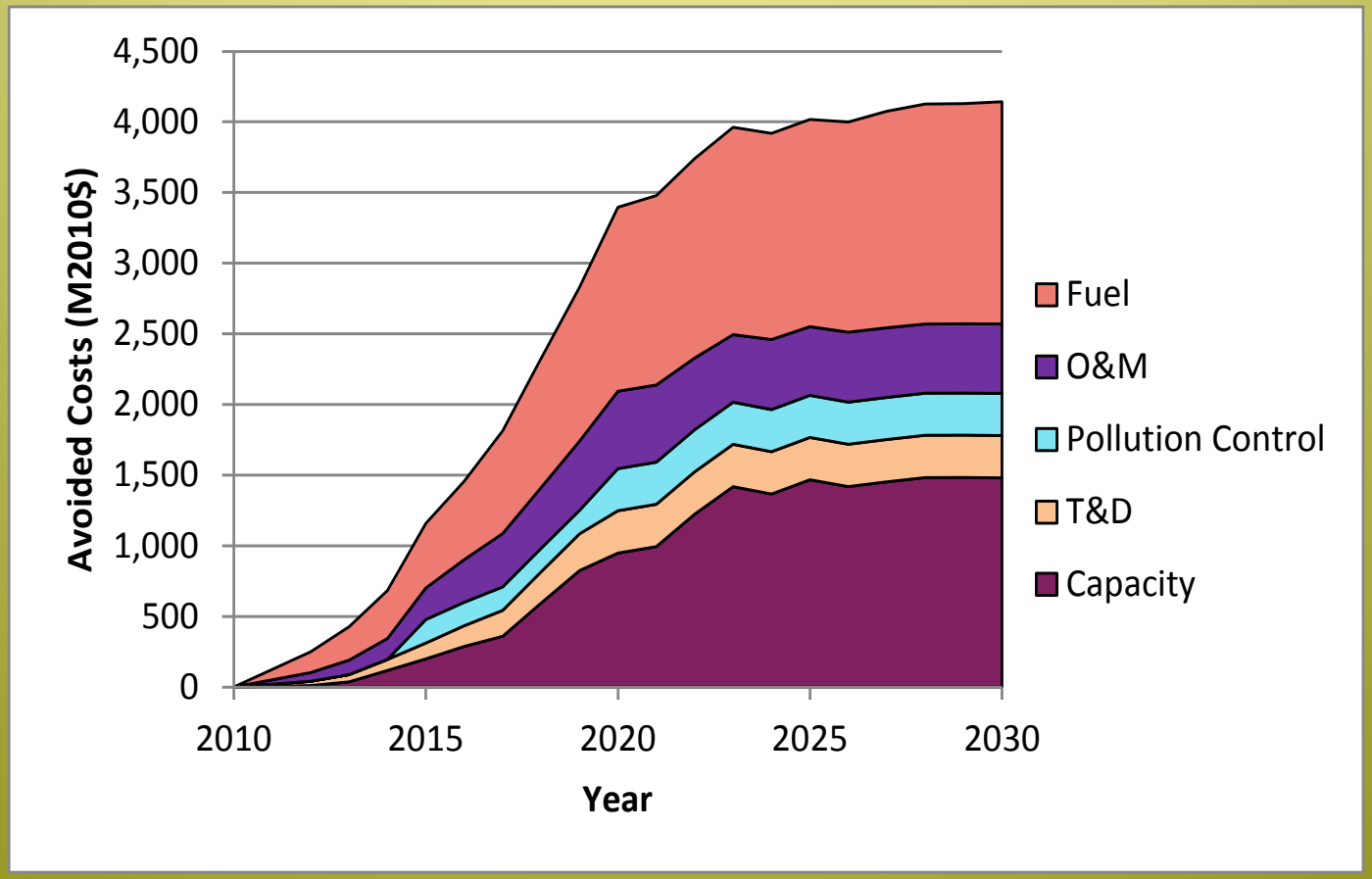


Enables closing or avoiding 32 large (400 MW) power plants, or their equivalent!

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

Avoided Costs in the Region in the High Efficiency Scenario



Benefit-Cost Comparison in the High Efficiency Scenario

	Net Present Value 2010-2030 (Million $)
Utility Avoided Costs	
Capacity	8,320
Fuel	10,566
Other	8,534
Total	27,421
Customer Benefits	
Utility Bill Savings	36,611
Public Health Benefits	544
Total	37,155
Energy Efficiency Costs	
Program Costs	8,230
Participant Costs	9,123
Total	17,354
Net Economic Benefits	19,801
Benefit-Cost Ratio	2.14

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	14,872	7.2	31,588	15.5
NO_x Emissions	Metric tons	7,938	12.3	5,459	12.0
SO_2 Emissions	Metric tons	8,103	6.6	16,274	17.0
Water Savings	Million gallons	9,515	6.4	18,512	12.9

Macroeconomic Impacts in the Region in the High Efficiency Scenario

Year	Change in Jobs		Change in Wages (Million $)		Change in GSP (Million $)	
	Amount	%	Amount	%	Amount	%
2015	10,120	0.1	317	0.4	(39)	--
2020	28,080	0.3	1,036	1.2	294	--

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%

Implementing Best Practice programs would get us twice the energy savings (and benefits) that continuing current efforts would!

Policy Recommendations for Realizing the $20 Billion Bonanza

- **Set Goals** - adopt energy savings goals or requirements at the state or utility level
- **Remove disincentives** – decouple utility fixed cost recovery and electricity sales
- **Reward performance** – establish 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** – implement robust programs at both small and large utilities, including munis and rural co-ops

Summary: Implementing Best Practice utility energy efficiency programs in the region would:

- Cut electricity use in 2020 by 21%
- Save households & businesses $20 billion
- Avoid 32 large (400 MW) power plants
- Support 28,000 new jobs in the region
- Cut air pollution and improve public health
- Reduce CO_2 emissions equivalent to taking 6.2 million passenger vehicles off the road
- Reduce water use 18.5 billion gallons per year by 2020

ENERGY EFFICIENCY IN
THE SOUTHWEST REGION:

THE ROAD TO ENORMOUS BENEFITS

SWEEP

The $20 Billion Bonanza:

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

For more information or full report:

www.20BillionBonanza.com

Other resources available online at:

www.swenergy.org

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