



A R I Z O N A

The New Mother Lode: The Potential for More Efficient Electricity Use in the Southwest examines the potential for and benefits from increasing the efficiency of electricity use in the southwest states of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming. The study models two scenarios, a “business as usual” Base Scenario and a High Efficiency Scenario that gradually increases the efficiency of electricity use in homes and workplaces during 2003-2020.

Following are Arizona-specific data and results:

Electricity Consumption and Expenditures in 2000

Electricity Consumption (GWh/yr)	61,000
Total Expenditures (billion \$)	4.43

Electricity Generation in 1999

	Coal-fired	Natural gas-fired	Hydro power	Nuclear/other	All sources
GWh	38,300	5,100	10,100	30,400	84,000
% of Generation	46	6	12	36	100

Average Growth Rates of Electricity Use in the Base and High Efficiency Scenario, 2003-2020 (%/yr)

	Residential	Commercial	Industrial	All
Base Scenario	2.6	3.9	1.9	3.0
High Efficiency Scenario	0.6	1.3	-0.03	0.7

Electricity Demand Reductions in the High Efficiency Scenario, by Sector

	2010				2020			
	Res	Com	Ind	All	Res	Com	Ind	All
GWh/yr	4,800	6,950	2,940	14,690	11,550	18,860	6,180	36,580
Percent	16.1	20.1	19.1	18.4	29.9	37.2	33.3	33.9

Avoided New Capacity in the High Efficiency Scenario (MW)

	Coal	Natural Gas	Renewables	Total
2010	1,310	1,030	30	2,370
2020	3,730	2,060	340	6,130

Costs and Benefits in the High Efficiency Scenario (Cumulative Present Value, Billion 2000\$)

	Electric Sector & Natural Gas Price Benefits	Energy Efficiency Costs	Net Benefits	Benefit-Cost Ratio
Commercial	6.7	1.0	5.7	6.5
Residential	4.4	1.5	2.9	2.9
Industrial	2.6	0.7	1.9	3.8
Total	13.8	3.3	10.5	4.2

Emissions Reduction Estimates in the High Efficiency Scenario

	2010		2020	
	Reduction	% Change	Reduction	% Change
Carbon (MMTCE)	3.3	20	7.6	36
SO ₂ (million tons)	0.002	4	0.007	11
NO _x (million tons)	0.01	6	0.01	11
Mercury (tons)	0.05	6	0.11	12

(Note: MMTCE – million metric tons of carbon equivalent. This is the standard unit of accounting for carbon dioxide; other units are U.S. short tons.)

Water Savings in the High Efficiency Scenario (billion gallons per year)

	Coal plants	NG plants	Res-eff CWs	Total
2010	6.55	1.16	1.28	8.99
2020	17.93	0.59	3.89	22.41

(Note: The sources of water savings are coal-fired power plants, natural gas-fired power plants, and resource-efficient clothes washers..)

Macroeconomic Impacts

	Net Change in Jobs	Change in Wage and Salary Compensation (million \$)
2010	8,100	180
2020	24,100	550

(Note: Dollar figures are in millions of 2000 dollars while employment reflects the actual job total.)