

Energy Efficiency: Still a Large and Attractive Energy Resource

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Southwest Energy Efficiency Project (SWEEP)

- ❑ Public interest initiative promoting greater energy efficiency in AZ, CO, NV, NM, UT, and WY
- ❑ Founded in 2001, based in Boulder, CO
- ❑ Board of Directors includes utility, state government, national laboratory, and private sector representatives
- ❑ Majority of funding provided by the Energy and Hewlett Foundations, U.S. Department of Energy, and U.S. Environmental Protection Agency

www.swenergy.org

Definition of Energy Efficiency

- ❑ Energy efficiency reduces the energy used by specific end-use devices and systems such as air conditioning, heating, refrigeration, or lighting
- ❑ Substitution of more advanced equipment, processes, or operational strategies to produce the same or an improved level of end-use service with less energy use
- ❑ Opportunities in electricity and natural gas
- ❑ Distributed, small scale, economical and reliable resource that also provides significant environmental benefits

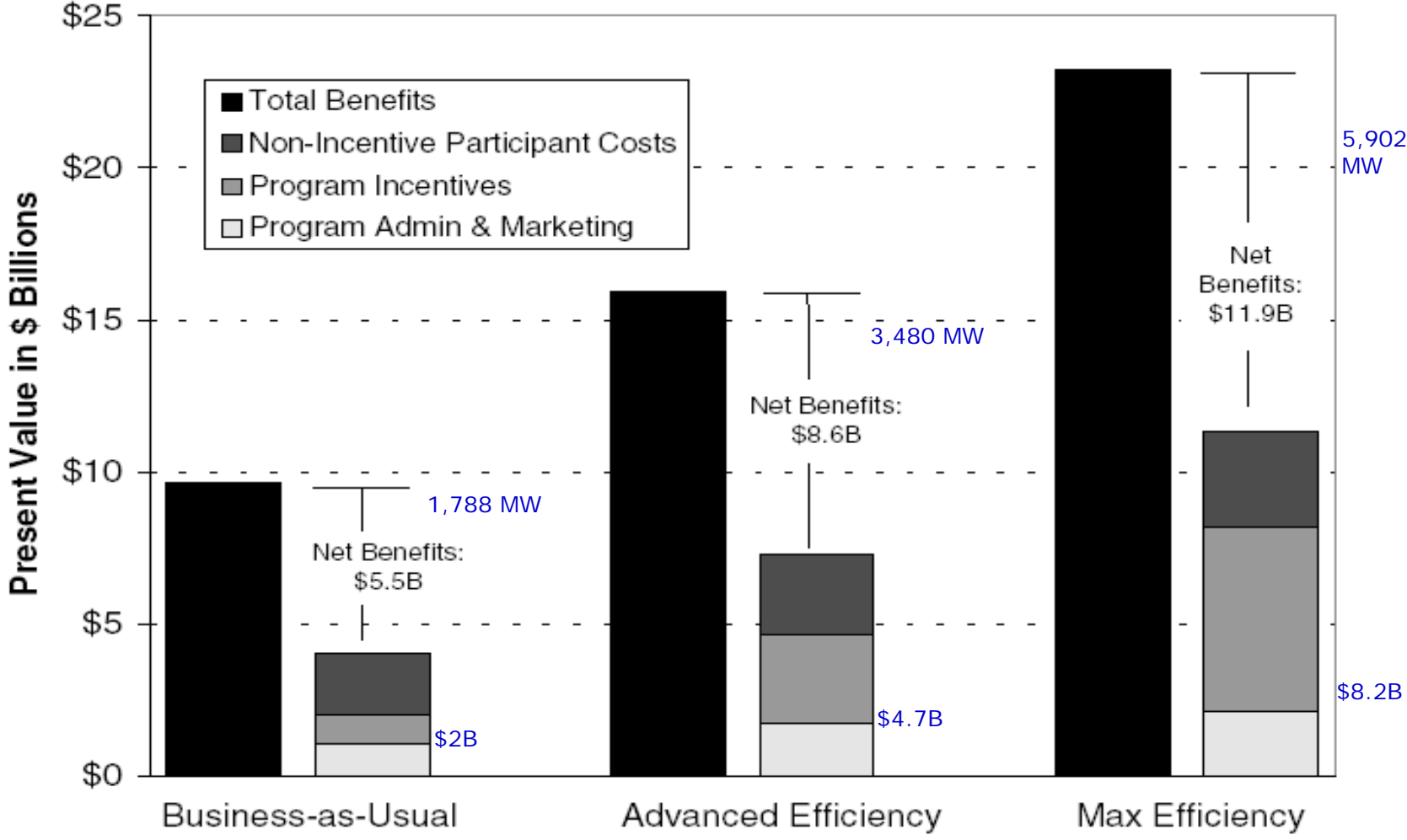
There is Still Very Large Potential for Greater Energy Efficiency

- ❑ Penetration of many well-established energy efficiency measures is still relatively low
- ❑ New energy savings technologies and practices continue to be developed
- ❑ Cost and performance of existing energy efficiency measures continue to improve
- ❑ Capital stock turnover always presents opportunities to upgrade energy performance

Examples of Economic/Achievable Energy Efficiency Potential

- ❑ New York: 27% electricity savings potential over 20 years (2003 study)
- ❑ Vermont: 31% electricity savings potential over 10 years (2003 study)
- ❑ Southwest states: 33% electricity savings potential over 17 years (2002 study)
- ❑ California: 11% achievable electricity savings potential in 10 years from expanded utility programs only (2002 study)
- ❑ Utah: 20% achievable gas savings potential in 10 years (2004 study)

California 10-Year Savings Potential



From *California's Secret Surplus: The Potential for Energy Efficiency*; Rufo and Coito; September 2002

The New Mother Lode: The Potential for More Efficient Electricity Use in Southwest

□ Base Scenario

Projects growth of electricity use assuming that current policies and trends are maintained, with demand growing 2.6% per year on average in SW between 2003 and 2020.

□ High Efficiency Scenario

Projects growth of electricity use assuming widespread adoption of cost-effective, commercially-available energy efficiency measures. Demand grows 0.4% per year between 2003 and 2020.

The High Efficiency Scenario

Costs and benefits (billion \$, cumulative during 2003-2020)

Sector	Energy Efficiency Costs	Overall Benefits	Net Benefits	Benefit-Cost Ratio
Commercial	3.0	17.7	14.7	5.8
Residential	3.2	9.3	6.1	2.9
Industrial	2.6	10.0	7.4	3.9
Total	8.8	37.1	28.2	4.2

Savings can be achieved at an average cost of \$0.02 per kWh.

Policies for Achieving Higher Efficiency

- ❑ Consider energy efficiency as a resource and use “Total Resource Cost” test to evaluate cost effectiveness
- ❑ Adopt an Energy Efficiency Standard
- ❑ Adopt mechanisms to fund utility (or non-utility) efficiency programs
- ❑ Provide utilities with financial incentives to implement effective programs
- ❑ Upgrade building codes, support code implementation, and adopt product standards
- ❑ Adopt “best practices” in public sector energy management

Potential Benefits from Energy Efficiency Improvements Today

- ❑ Energy bill savings for consumers and businesses
- ❑ Net economic benefits for society as a whole
- ❑ Reduced power plant pollutant emissions including CO₂ emissions
- ❑ Reduced water consumption
- ❑ Opportunity to avoid most costly and controversial new power plants or trans. lines
- ❑ Increased reliability of the electricity grid
- ❑ Reduced natural gas consumption and downward pressure on gas prices
- ❑ Net increase in employment

Examples of Leading Utility Energy Efficiency Programs

- ❑ National Grid, MA, 2001: \$64M on energy efficiency and DSM, 37 MW peak load reduction, \$0.024/lifetime kWh, 187 GWh/yr (1.0%) annual electricity savings
- ❑ Connecticut, 2002: \$87M utility DSM budget, 99 MW peak load reduction, 246 GWh/yr (0.9%) electricity savings
- ❑ Efficiency Vermont, 2003: \$13M effort, 54 GWh/yr (0.95%) of savings, \$0.026/kWh average cost of electricity savings
- ❑ Xcel Energy, Minn., 2002: \$38M DSM budget, 121 MW peak load reduction, 267 GWh/yr (0.9%) electricity savings

Utility Energy Efficiency Efforts in the Southwest Region

- ❑ PacificCorp, Utah: Spent \$10 million on DSM in 2003, planning to spend \$17 million in 2004 (~1.7% of revenues), saved 97 GWh/yr in 2003.
- ❑ Nevada Power/Sierra Pacific Power: Restarted DSM in 2003 at \$11.2M per yr (~0.5% of revenues). Energy savings = 40 GWh/yr; peak load reduction = 23 MW per year, just in first year.
- ❑ Xcel, CO: Committed to 124 MW peak demand reduction through DSM during 2001-05; 170 GWh/yr savings by 2005; \$61M over 5 years.
- ❑ Ft. Collins, CO: Municipal utility set goals to reduce electricity use per capita 10% and peak demand per capita 15% by 2012, now launching programs.

Challenges to Developing Energy Efficiency Resources

- ❑ Efficiency measures are small scale and highly diffuse; need to influence millions of purchase and operating decisions
- ❑ Need to design and operate programs that “make a difference” in the marketplace
- ❑ Need to carefully monitor and evaluate program impacts
- ❑ Need to combine policies and programs into effective market transformation strategies

What Should State Regulators Do?

- ❑ View energy efficiency as a strategic resource equivalent to supply-side resource options
- ❑ Support implementation of all cost-effective energy efficiency programs using a Total Resource Cost perspective
- ❑ Adopt energy savings goals and appropriate program funding mechanisms and evaluation procedures
- ❑ Provide utilities with financial incentives to operate effective programs, if utilities are responsible for program implementation

Conclusions

- ❑ The energy efficiency resource is still very large and is still worth pursuing vigorously
- ❑ Energy efficiency should be a significant part of state/utility resource portfolios especially in high growth regions such as the Southwest
- ❑ Regulators should support implementation of cost-effective energy efficiency programs, give utilities financial incentives to operate effective programs, and carefully evaluate program results
- ❑ Leading utilities and states are spending ~2% of revenues on energy efficiency programs and reducing electricity use ~1% per year

SWEEP:

Dedicated to More Efficient Energy Use in the Southwest

Resources available online at:

www.swenergy.org

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