

# Energy Efficiency: Still a Large and Attractive Energy Resource

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# Southwest Energy Efficiency Project (SWEEP)

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- ❑ 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](http://www.swenergy.org)

# Definition of Energy Efficiency

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- ❑ 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

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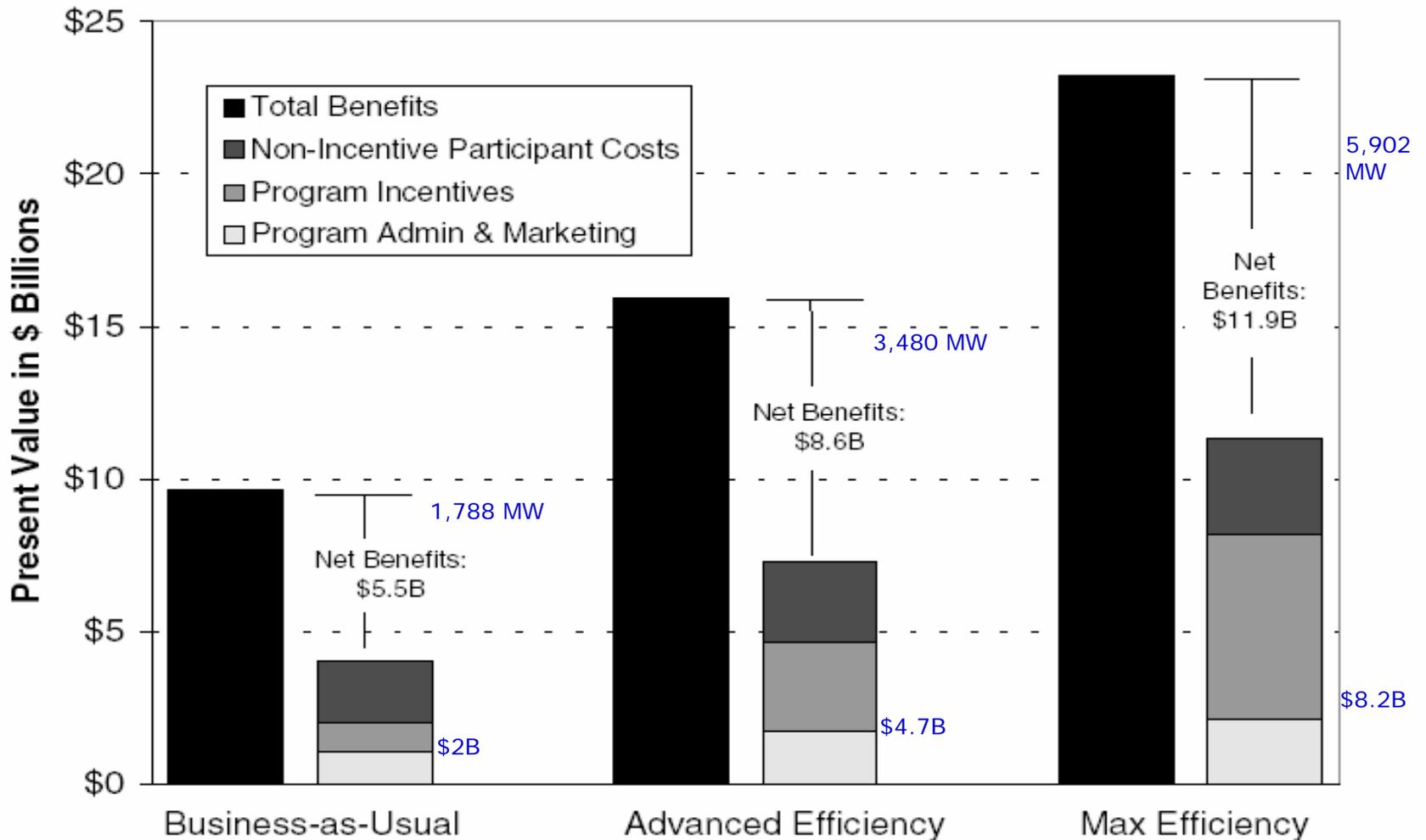
- ❑ Penetration of many well-established energy efficiency measures is still relatively low
- ❑ New energy savings technologies and practices continue to be developed
- ❑ Cost and performance of existing energy efficiency measures continue to improve
- ❑ Capital stock turnover always presents opportunities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

# Examples of Economic/Achievable Energy Efficiency Potential

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- ❑ 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

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## □ 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

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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
<b>Total</b>	<b>8.8</b>	<b>37.1</b>	<b>28.2</b>	<b>4.2</b>

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

# Policies for Achieving Higher Efficiency

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- ❑ 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

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- ❑ Energy bill savings for consumers and businesses
- ❑ Net economic benefits for society as a whole
- ❑ Reduced power plant pollutant emissions including CO<sub>2</sub> 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

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- ❑ 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

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- ❑ 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

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- ❑ 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?

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- ❑ 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

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- ❑ 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*

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Resources available online at:

[www.swenergy.org](http://www.swenergy.org)

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