

# **THE NEW MOTHER LODE**

*The Potential for More Efficient Electricity Use  
in the Southwest*

A report in the Hewlett Foundation Energy Series

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This study is available on the SWEEP ([www.swenergy.org](http://www.swenergy.org)) and Energy Foundation ([www.ef.org](http://www.ef.org)) websites.

## **PREFACE**

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This study was prepared by a team of researchers commissioned by the Southwest Energy Efficiency Project (SWEET). Howard Geller, director of SWEET, conceived the study and supervised the project. He also wrote the Executive Summary, Chapters 1 and 5, and edited the entire study. Chapter 2 along with Appendices A, B, and C were prepared by Neal Elliott, Toru Kubo, Steve Nadel, and Anna Shipley of the American Council for an Energy-Efficient Economy, along with Robert Mowris of Robert Mowris and Associates, Patti Case of the Etc Group, Inc., and Steve Bernow and Rachel Cleetus of the Tellus Institute. Chapter 3 and Appendix D were prepared by Alison Bailie, Steve Bernow, Bill Dougherty, and Ben Runkle of the Tellus Institute. Chapter 4 was prepared by Marshall Goldberg of MRG & Associates. Larry Kinney and Mark Ruzzin of SWEET assisted with portions of Chapter 5, the appendices, editing, and formatting.

A number of individuals provided valuable information and/or reviewed a draft of the study. We thank Jeff Bumgarner, Jeff Burks, Mark Case, Ed Lewis, Arnold Lopez, John Nielsen, Jeff Schlegel, Chris Schroeder, Harold Trujillo, and Heidi VanGenderen for their assistance in this regard.

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## HIGHLIGHTS

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*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.

Major regional benefits of pursuing the High Efficiency Scenario include:

- Reducing average electricity demand growth from 2.6 percent per year in the Base Scenario to 0.7 percent per year in the High Efficiency Scenario;
- Reducing total electricity consumption 18 percent (41,400 GWh/yr) by 2010 and 33 percent (99,000 GWh/yr) by 2020;
- Eliminating the need to construct thirty-four 500 megawatt power plants or their equivalent by 2020;
- Saving consumers and businesses \$28 billion net between 2003-2020, or about \$4,800 per current household in the region;
- Increasing regional employment by 58,400 jobs (about 0.45 percent) and regional personal income by \$1.34 billion per year by 2020;
- Saving 25 billion gallons of water per year by 2010 and nearly 62 billion gallons per year by 2020; and
- Reducing carbon dioxide emissions, the main gas contributing to human-induced global warming, by 13 percent in 2010 and 26 percent in 2020, relative to the emissions of the Base Scenario.

These significant benefits can be achieved with a total investment of nearly \$9 billion in efficiency measures during 2003-2020 (2000 \$). The total economic benefit during this period is estimated to be about \$37 billion, meaning the benefit-cost ratio is about 4.2. The efficiency measures on average would have a cost of \$0.02 per kWh saved.

The High Efficiency Scenario is based on the accelerated adoption of cost-effective energy efficiency measures, including more efficient appliances and air conditioning systems, more efficient lamps and other lighting devices, more efficient design and construction of new homes and commercial buildings, efficiency improvements in motor systems, and greater efficiency in other devices and processes used by industry. These measures are all commercially available but underutilized today. Accelerated adoption of these measures cannot eliminate all the electricity demand growth anticipated by 2020 in the Base Scenario, but it can eliminate most of it.

The High Efficiency Scenario indicates slightly different savings levels among the six states. The savings potential in 2010 equals 17 percent in Colorado and Utah, 18 percent in Arizona and Nevada, and 19 percent in New Mexico and Wyoming. The savings potential in 2020 equals 31 percent in Colorado, Nevada, and Utah, 34 percent in Arizona, and 36 percent in New Mexico and Wyoming.

The study acknowledges that the High Efficiency future will not happen on its own. While some utility, state, and local energy efficiency programs are advancing energy efficiency in the region, these programs are relatively limited in scope and budget. The study recommends new and expanded initiatives to achieve the High Efficiency future and its benefits, including:

- Adopting Systems Benefit Charges or Energy Efficiency Performance Standards to expand utility-based energy efficiency programs;
- Providing utilities with financial incentives to implement effective energy efficiency programs;
- Reforming utility rates to encourage greater energy efficiency;
- Upgrading to state-of-the-art building codes and promoting the construction of highly efficient new buildings that exceed these codes;
- Adopting minimum efficiency standards on products not yet covered by national standards;
- Providing sales tax waivers or income tax credits for innovative energy-efficient technologies;
- Expanding participation in industrial voluntary commitment programs;
- Adopting “best practices” in public sector energy management;
- Expanding energy efficiency training and technical assistance programs; and
- Incorporating energy efficiency initiatives in pollution control strategies.

Implementing a combination of these policies could result in achieving the full savings potential identified in this study, 18 percent savings by 2010 and 33 percent saving by 2020 for the region as a whole. The time has come for the southwest to “mine” this most attractive energy resource—greater energy efficiency.