
The Wirth Chair in Environmental and Community Development Policy



UNIVERSITY OF COLORADO AT DENVER & HEALTH SCIENCES CENTER

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**Adapting to a Higher Energy Cost and
Carbon Constrained World:
Increasing Energy Efficiency in the Intermountain West**

By Ethan Bellamy

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**The Wirth Chair in Environmental and Community Development Policy
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Campus Box 133 | P.O. Box 173364
Denver, CO 80217**

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Ethan Bellamy, Research Assistant

The Wirth Chair in Environmental Policy and Community Development Policy
Graduate School of Public Affairs: University of Colorado at Denver

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It is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country.

Justice Louis D. Brandeis

Dissent in New State Ice Co. v. Liebmann, 285 U.S. 262, 311 (1932).

Among the "whereas" clauses of the resolution are suppositions that because states, including Arizona, California, Connecticut, Florida, Kansas, Massachusetts, New York, Rhode Island, Washington, Wisconsin, and Vermont pioneered the first appliance and equipment standards in the 1970s and 1980s, and these state standards precipitated Federal laws enacted in 1975, 1978, 1987, 1988, and 1992 which adopted all of the prior state standards nationally; 'now therefore be it RESOLVED that' NARUC encourages state utility regulators and other policy makers to support state legislation or regulatory action to establish state level energy efficiency standards.

The Board of Directors, National Association of Regulatory Utility Commissioners (NARUC) upon adopting a resolution in support of state energy efficiency standards, March 2004.¹

¹ Murphy, Mike. "State vs. federal: a case for regulation; Government Affairs; in heating ventilation air conditioning industry." *Heating/Piping/Air Conditioning Engineering*. No. 6. Vol. 76. Pg. SS12.

Introduction

This conference, which focuses on energy efficiency policy in the Intermountain West, is part of the Wirth Chair's broader goal to actively participate in the formation of a policy agenda that reduces greenhouse gas emissions and increases energy efficiency. The following three case studies provide an overview of the energy environments in Nevada, Utah, and Vermont, with a focus on the role of utility policy in promoting or impeding energy efficiency. Each case study focuses on the states' electricity markets and policy innovations related to energy efficiency that have been put in place. Vermont is generally regarded as the nation's leader in state level energy efficiency policy, while Nevada and Utah are two states that exemplify the challenges of achieving energy efficiency in the West, which generally tends to be a lagging region in this arena. The intent of these case studies is to provide a primer for discussion in advance of the conference. Generally, the conference seeks to understand how different states approach the promotion of energy efficiency. Which policies have been successful? What drove those policies? Who were the stakeholders and how have they interacted in the area of energy efficiency? Our hope is that we can draw lessons from our case studies that support policy recommendations for accelerating the adoption of energy efficiency programs in the region.

FOCUS: Nevada

Stakeholders

The Nevada Public Utilities Commission (puc.state.nv.us) regulates the state's electricity markets. Most of the state's customers get their electricity from the state's two investor-owned utilities, Nevada Power Company (www.nevadapower.com) and Sierra Pacific Power Company (www.sierrapacific.com). Nevada Power Company is the electric utility for most of southern Nevada, while Sierra Pacific serves northern Nevada and the Lake Tahoe area of California. Both Nevada Power and Sierra Pacific are subsidiaries of Sierra Pacific Resources (NYSE/SRP). In 2003, Nevada Power could provide 4,808 megawatts (MW) at peak load², while Sierra Pacific could provide 1,657 MW.³ Southwest Gas Corporation, an investor-owned natural gas provider, has 1.5 million customers in Arizona, Nevada and portions of California and provides natural gas service to about 102,000 homes and businesses in northern Nevada.⁴

Sierra Pacific and Nevada Power are two of the 157 organizations that voluntarily comprise the Western Electricity Coordinating Council (WECC), the largest of the 10 regional councils of the North American Electric Reliability Council (NERC).⁵ Nevada's interconnection is crucial to the state's electricity consumers, as about half of the state's power is produced by seven facilities run by Sierra Pacific and Nevada Power, with the remainder coming from other power production in the state or from throughout the west.⁶

Stakeholders in energy efficiency in Nevada are many. They include the aforementioned utilities and state regulatory agency, energy auditing firms, consulting firms, the Nevada Bureau of Land Management, the U.S. Navy, The Intermountain Rural Electric Association, the Nevada Attorney General's Bureau of Consumer Protection, Western Resource Advocates, BP Solar, and the Southwestern Energy Efficiency Project (SWEEP), source for much of the data on energy efficiency policy contained herein.

² Nevada Power. "Company Facts." <http://www.nevadapower.com/company/facts/>. Accessed Sept. 11, 2004.

³ Sierra Pacific. "Company Facts." <http://www.sierrapacific.com/company/facts/>. Accessed Sept. 11, 2004.

⁴ Southwest Gas Corp., <http://www.swgas.com/news/nv/2003/nr0023.html>

⁵ Western Electric Coordinating Council, <http://www.wecc.biz/about.html>. Accessed Sept. 11, 2004.

⁶ Nevada Power, "Where Does Your Power Come From?" http://www.nevadapower.com/energy_issues/where/. Accessed Sept. 11, 2004.

A Lagging State Plays Catch-Up

Dick Burdette, Governor Kenny Guinn's (R-NV) energy advisor, describes Nevada as a laggard in energy efficiency and conservation relative to other states, though he aims to change that.⁷ Energy efficiency became important in Nevada in early 2001, when the western U.S. was struggling with erratic wholesale power markets during the California Energy Crisis, according to representatives of Nevada Power. In the 2001 session of the Nevada legislature, Governor Kenny C. Guinn (R)⁸ and the legislature chose to re-regulate the state's energy markets, countering legislation that was crafted in 1999 that initially would have allowed total retail competition at the end of 2001. The re-regulation was driven by the Governor, his energy advisor Carl Linvill (now one of three on the Nevada PUC, including Chairman Donald L. Soderberg, and Adriana Escobar Chanos⁹). Nevada Power says that the crisis and the about face in regulation confused customers. Consequently, Nevada Power began offering energy efficiency programs in order to assist its customers in conservation and efficiency. Nevada Power has invested \$11 million in energy efficiency and conservation programs.

There is evidence to show the impact of efficiency standards and building codes on natural gas use in Nevada. While Southwest Gas added 58,000 customers in 2002 and 67,000 in 2003, the population did not correspond with an increase in demand. Average residential gas demand per year has dropped in Southern Nevada from 682 therms (with 2,233 heating degree days) in 1987 to 496 in 2004 (2,039 heating degree days). "One thing we're seeing on the residential side," said Roger Buehrer, a Southwest spokesperson, to the Platts Gas Market Report, "is that homes are more energy-efficient, and weather is warmer."¹⁰

In a cost-benefit analysis of a high efficiency scenario conducted in 2002, the Southwestern Energy Efficiency Project (SWEEP) estimated that the gradual increase of efficiency of homes and business in Nevada could, by 2020, reduce demand by 14,150 GWh/yr, or 31% over the base case scenario. Environmental benefits would come from the reduction of emissions and water use – a 30% reduction in CO₂, a 3% reduction in SO₂, a 7% reduction in NO_x, a 15% reduction in Mercury, and water savings of 8.5 billion gallons/year vs. the base case. In evidence that supports this assessment, the DOE states that Nevada residents could save more than \$222 million by the year 2020 if higher efficiency standards were adopted for a range of appliances. This would save enough electricity to equal the output of a 794 MW power plant, or enough to power 6,551 homes.¹¹

Policy Proposals and Initiatives

To achieve this high efficiency scenario, SWEEP founder and director Howard Geller advocates ten specific policy initiatives: (1) systems benefit charges; (2) financial incentives for energy efficiency to utilities; (3) reforming utility rates to encourage efficiency; (4) targeting efficiency improvements in overloaded areas; (5) upgrading to energy efficient building codes; (6) adopting minimum efficiency standards not yet covered by national standards; (7) encouraging expanded participation in voluntary programs for businesses; (8) the adoption of best practices in public sector energy management; (9)

⁷ Personal Communication. Sept. 15, 2004.

⁸ Guinn cites management and focus on the State of Nevada's Energy Office – with one of the tenets being energy efficiency – as one of his 11 major accomplishments since taking office in 1998. See Governor Kenny C. Guinn, "Accomplishments," <http://gov.state.nv.us/Accomplishments.htm>, accessed Sept. 11, 2004.

⁹ Public Utilities Commission of Nevada, <http://www.puc.state.nv.us/general/commissioners.htm>. Accessed Sept. 11, 2004.

¹⁰ White, Frank. "Home efficiency, warm trend temper gas demand from Southwest population boom." Platts Inside F.E.R.C.'s Gas Market Report. March 26, 2004

¹¹ "Nevada Energy Efficiency Resources" *U.S. Department of Energy*. http://www.eere.energy.gov/state_energy/efficiency.cfm?state=NV. Accessed Sept. 13, 2004.

increased energy efficiency training and technical assistance programs; and (10) merging energy efficiency initiatives with air pollution control strategies.¹²

Western Resource Advocates, a non-profit environmental law and policy organization focused on the American West, in conjunction with Synapse Energy Economics, Inc. and the Tellus Institute, in June released a study "A Balanced Energy Plan for the Interior West" covering the electric system in Arizona, New Mexico, Nevada, Utah, Colorado, Wyoming and Montana from 2002 to 2020. The report, one of several in the Hewlett Foundation Energy Series, argues that energy efficiency and renewables offer the most cost effective path toward energy in the Intermountain West. The plan calls for the addition of 15,000 megawatts of renewable capacity by 2020. Nevada is a key state in the plan, and would see 3,500 of the 15,000 MW of the renewables development, according to John Nielsen, the energy program coordinator for Western Resource Advocates.¹³

Responding to a reporter's query about efficacy of the Western Resources Study, Burdette said, "It doesn't surprise me at all that in the entire West you could save \$2 billion through renewable energy and conservation and the like." In contrast, Stan Lewandowski, general manager of 118,000-member Intermountain Rural Electric Association, said that, "when you get aggressive with (renewables) it starts becoming a problem... When you go beyond a certain point you start monkeying around with reliability."¹⁴ Similarly, Southwest Natural Gas has advocated for a national energy policy that addresses what it calls the "misplaced use" of natural gas for power generation driven by environmental concerns. A company spokesman said that coal-fired generation was a better means of power generation.¹⁵

In June 2004, the Western Governor's Association, in a resolution cosponsored by New Mexico Governor Bill Richardson (D) (former Energy secretary under Bill Clinton) and California Governor Arnold Schwarzenegger (R), called for Western states to develop 30,000 megawatts of renewable energy by 2015, in addition to a 20 percent increase in energy efficiency by 2020. Nevada Governor Kenny Guinn (R) described both of these goals as "a long haul."¹⁶

The Department of Energy's State Energy Program launched a special project in Nevada in 2003, designed to advance the adoption and implementation of the state's energy code primarily through code¹⁷ support to the enforcement, design, and building industry. The \$82,000 grant is specifically targeted at promoting "best practice" residential construction in Northern Nevada. The DOE estimates that code adherence has the potential to save between 38% to 54% of total energy consumed for new commercial buildings and 29% for new residential construction. This analysis is consistent with Burdette's

¹² Policies and Legislation. *Southwest Energy Efficiency Project*. <http://www.swenergy.org/policies/index.html>. Accessed Sept. 10, 2004.

¹³ "The New Mother Lode: The Potential for More Efficient Electricity Use in the Southwest." A report in the Hewlett Foundation Energy Series. *Southwest Energy Efficiency Project*. Nov. 20, 2002. www.swenergy.org. Coauthors of the study include Howard Geller, Larry Kinney and Mark Ruzzin, SWEEP; Neal Elliott, Toru Kubo, Steve Nadel, and Anna Shipley, American Council for an Energy-Efficient Economy; Robert Mowris, Robert Mowris and Associates; Patti Case, Etc Group, Inc.; Steve Bernow, Rachel Cleetus, Alison Bailie, Steve Bernow, Bill Dougherty, and Ben Runkle, Tellus Institute; Marshall Goldberg, MRG & Associates. The study was funded by The Energy Foundation and the Hewlett Foundation, with supplemental funding from the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy and the U.S. Environmental Protection Agency, Office of Air and Radiation.

¹⁴ Edwards, John G. "Study cites savings from green power use." *Las Vegas Review-Journal*. May 26, 2004

¹⁵ Strangmeier, Suzanna. "Gas Supplier Cites Overuse of Gas For Power." *Natural Gas Week*. August 2, 2004.

¹⁶ Reese, April. "Western Governors Pledge to Boost Production." *Renewable Energy*. Vol. 10. No. 9. June 24, 2004.

¹⁷ Specifically, the grant seeks to foster voluntarily compliance with the ASHRAE 90.1-1999 Commercial Energy Code and/or 2003 International Energy Conservation Code.

assessment that building codes are a crucial component in energy savings, particularly in Southern Nevada during the summer time peak demand when air conditioning use is at its highest.¹⁸

Local and State Initiatives in Nevada

Because of the growth in Nevada, the efficiency of new construction is likely to be key to minimizing new energy demand. Nevada contains the fastest growing metropolitan areas in the United States. Clark County, home of Las Vegas and 60% of Nevada residents,¹⁹ adds approximately 7,000 new citizens each month.²⁰ Nevada's residential energy efficiency task force states, "the purest form of market transformation is through the implementation of building codes." This year, Las Vegas was the site of DOE's "New American Home" in 2004, an annual showcase project sponsored by the National Association of Home Builders', the National Council of the Housing Industry, and Builder Magazine. The 5,000-square foot home, built near Las Vegas in the Sahara Lake community, uses new technology to achieve a Home Energy Rating Score (HERS) of 90, which is above the score of 86 necessary to receive the DOE's "Energy Star" rating.²¹ Insulated concrete and high efficiency windows help to reduce the energy required for heating and cooling the house by more than 50% compared to a similarly sized home of traditional construction in the area. Energy savings can amount to \$1500 per year for a 2,900-square foot home.²²

Nevada has two statewide plans for energy conservation, one for state government and one for the state at large. The State of Nevada Energy Conservation Plan for State Government is designed to reduce peak load consumption by state facilities, "in recognition of the fact that the availability, reliability, and affordability of energy is essential to the health, safety and welfare of the people as well as the economy of the State." Significant to the plan is its focus on conservation as a means to prevent energy emergencies. Similarly, the Nevada Statewide Energy Conservation Plan states that "conservation measures can assist in reducing costs and offsetting rising energy prices" and that the plan is intended to minimize the likelihood of energy supply disruption."²³

The Nevada State Office of Energy (NSOE) has three work groups related to energy efficiency (residential, commercial, and public sector), while five work groups operate in renewable energy (rural outreach, biomass, geothermal, solar, and wind). The residential task force in 2001 was charged with using the state's existing energy trust fund for education, the distribution of grants, and for the creation of incentives for the use of renewable energy and energy conservation. The NSOE helps promote market-based initiatives that are supported by FannieMae, HUD/FHA, Sierra Pacific, Nevada Power, DOE, EPA, and Energy Rated Homes of Nevada. NSOE has also supported DOE's "Building America" and "Re-Build America Program."²⁴

¹⁸ Personal Communication. Sept. 15, 2004.

¹⁹ In 1995, 1,040,688, or 60% of residents in Nevada, lived in Clark County. See <http://www.uscitiesonline.com/nvclarkcounty.htm#information>, Accessed Sept. 11, 2004.

²⁰ U.S. Department of Energy, Energy Efficiency and Renewable Energy, State Energy Program, http://www.eere.energy.gov/state_energy_program/projects_by_topic_detail.cfm/sp_id=541, Accessed Sept. 11, 2004.

²¹ The EPA's "Energy Star Homes Program" is a voluntary program promoted by the private sector. Homes are required to be 30% more efficient than those built under the 1993 Model Energy Code. Similarly, the Build America program requires 50% more efficiency than the 1993 code.

²² "The Key to Energy Efficiency in Residential Housing." *Renewable Energy and Energy Conservation Task Force*. Dec. 20, 2001. Pg. 29.

²³ "State of Nevada Energy Conservation Plan." *Nevada Division of Emergency Management*. Last Revised April 13, 2001. Pg. 2. <http://dem.state.nv.us/energyconservationplanforstategovt.htm>. Accessed Sept. 11, 2004.

²⁴ *Renewable Energy and Energy Conservation Task Force*.

Beyond building codes, the state has a number of other energy efficiency programs. In 2002, Nevada's energy efficiency stakeholders agreed on a comprehensive efficiency plan that includes a variety of programs to encourage energy conservation. For example, the Air Conditioning Load Management program allows for a minimum \$15 per month incentive for customers who allow Nevada Power to automatically switch off their air conditioners for a few minutes each hour, during hot summer weather. Also, a pilot program for 6,000 customers promotes efficient air conditioning units, along with time-of-use rates that could lead to an energy reduction rebate. Other programs include incentives to replace inefficient "second" refrigerators and freezers, promotion of "Energy Star" appliances, incentive programs for small commercial customers for air conditioning, and lighting efficiency and building performance measures.²⁵

Other programs include efficient mortgage programs, tax incentives (federal level), utility demand-side management programs, a weatherization assistance program, EPA's Energy Star Homes Program, and Energy Guarantee programs (such as "Greenfiber Engineered for Life" and "MASCO Environments for Living"). FannieMae Energy Loans are fixed rate residential loans providing up to \$20,000 for 10 years. FannieMae "Home Performance Power" provides 15- and 30-year fixed rate loans on new construction up to \$300K. FannieMae "Energy Efficient Mortgages" provided fixed and adjustable mortgages on new and existing homes. Utility demand side programs are provided by Sierra Pacific, Nevada Power, and Southwest Gas and are intended to reduce peak power demand and reduce the need for new generation and transmission infrastructure in the state.

The state's Weatherization Assistance Program (WAP) uses a combination of federal funds and proceeds from the state's Universal Energy Charge²⁶ (\$2 million in 2001 derived from of a charge of \$0.00039 kWh used) to provide energy efficient upgrades for low income housing. Seventy percent of the eligible homes are located in Clark County. Education programs include course offerings related to energy efficiency and renewable energy in the state's university system, along with an industry assessment program for current technologies implementation and evaluation conducted by the University of Nevada-Las Vegas and the University of Nevada-Reno in partnership with the state's utilities. Outreach consists of a variety of websites, including Nevada Builders of Excellence (www.NevadaEnergyStarHomes.com) and contractor and mortgage broker training.

Nevada's "Sure Bet Program" (www.nevadasurebet.com) is administered by energy management consulting firm KEMA, Inc. in Oakland, CA., encouraged commercial customers via cash incentives to effect facilities improvements for a maximum of \$40,000 per customer and \$15,000 per location. As of April 19, 2004, all the funds allocated to the program (generated by ratepayers) had been spent or earmarked for projects. Nevada Sure Bet subsidizes projects such as high efficiency lighting upgrades and premium efficiency motor retrofits.

Sierra Pacific Power has an agricultural rebate program to help farmers conserve energy. Agricultural Irrigation Efficiency rebates of a maximum of \$5,000 per electric meter location and \$10,000 per customer help the company's irrigation customers move to Low pressure sprinkler packages (offering \$.50/nozzle or \$1.50/regulator), impact sprinkler packages (\$2.00/sprinkler), replacement gaskets (25% of all related costs), and replacement pumps (\$5/horsepower for premium motor replacement). Sierra Pacific states that its customers can achieve a payback on energy efficiency investments in about three years with certain improvements.²⁷

Nevada Power uses GoodWatts interactive demand-side management (DSM), offered by Invensys Climate Controls. GoodWatts connects with homes through a broadband connection, with the cable is

²⁵ "Nevada Power to spend \$9.2 million on energy efficiency programs." *Nevada Power*. <http://www.nevadapower.com/news/releases/1034146800.html>, Accessed Sept. 11, 2004.

²⁶ State of Nevada Assembly Bill 661 (2001), Section 26. See http://www.leg.state.nv.us/71st/bills/AB/AB661_EN.html.

²⁷ *Sierra Pacific*. <http://www.sierrapacific.com/takecontrol/business/programs/#irrigation>

linked to a modem and then to a wireless gateway device. The gateway communicates with a special thermostat that allows utilities to monitor energy usage in individual homes in real time. This intelligence, in turn, allows utilities to better manage high demand situations.²⁸

In June 2004, Nevada Governor Guinn's Energy Advisor Dick Burdette outlined new policies that would require the states' utilities to justify building new plants, particularly in regard to water use and air quality. During a teleconference of the Nevada Renewable Energy & Energy Conservation Task Force, Burdette said, "I don't mind exporting the power (out of Nevada), but the state needs to have some benefits from that facility. If there's no need in Nevada for the power, there's no need to damage our environment." His comments were related to a fear that Nevada and Arizona would become power suppliers to California, which has more strict environmental regulations. Burdette also advocated promoting time-of-use rates for residential customers. This rewards customers for using less power during peak demand.²⁹ Burdette is preparing a report that recommends the state contract for a study to find the easiest way to achieve energy efficiency measures. The study is scheduled for release before the 2005 Legislative session.³⁰

Conclusions

Nevada's structural changes have consisted largely of the institutionalization of energy policy through the founding of the NSOE, the appointment of an Energy Advisor to the Governor, and a number of smaller scale or pilot programs that have yet to garner critical mass as in some other states. While the current advisor, Dick Burdette, considers Nevada to be a policy laggard, he believes that the downward sloping dependence on fossil fuels will make the state's energy needs a topic that is increasingly difficult to ignore.³¹ Coupled with a population boom, Nevada may be more open to policy innovation in the energy arena.

FOCUS: Utah

Stakeholders

The Utah Division of Public Utilities (www.publicutilities.utah.gov) regulates electricity in the state under the auspices of the Public Service Commission of Utah (www.psc.state.ut.us). PacifiCorp (www.pacificorp.com) provides power to 1.5 million customers in Oregon, Washington, Wyoming and California and Utah (as Utah Power in Utah and Idaho) and has 8,300 megawatts of generation capacity. Utah Power has about 673,000 Utah customers.³²

In April 2004, Utah Power customers (approximately 75% of the state) felt a rate increase of 7.7% on average after Utah Power's rate case adjustment was approved by the Utah Public Service Commission in order to fund infrastructure investments along the Wasatch Front ("front" or "range"). This area, which includes Salt Lake County, is experiencing a population boom, with an increase of more than 43,000 residents per year.³³ As part of the case, part of the rate increase is spread among customers during high demand summer months. Residential customers using more energy see rates above the 7.7% average rate. At the time of the increase, the Commission said that Utah Power continues to forecast the need for additional generation in the state to accommodate Utah's population growth. Power demands are also

²⁸ "Invensys launches demand-side energy management offering." *Utility Automation & Engineering T&D*. No. 4. Vol. 9. Pg. 15. July 1, 2004.

²⁹ "Nevada gov wants justification for new power plants." *The Associated Press*. June 25, 2004.

³⁰ "Study pushes energy efficiency, renewables, and combined heat and power in Interior West." *Foster Electric Report*. No. 361. Pg. 11. June 16, 2004.

³¹ Personal Communication. September 16, 2004.

³² Wallace, Brice. "Accord lets Utah Power hike rates." *Deseret Morning News*. Jan. 31, 2004.

³³ Glenn, Michael. "Utah's First Five-Star Home." *Home Energy Magazine Online*. January/February 2000.

increasing due to the construction of larger homes, and customers switching from evaporative cooling systems to central air condition.³⁴

Utah Associated Municipal Power Systems (www.uamps.com) supplies power to 38 member municipal utilities in Utah, and seven members in Arizona, Idaho, Nevada, and California. The Intermountain Power Agency (<http://www.ipautah.com/>) Intermountain Power Agency (IPA) owns the Intermountain Power Project (IPP, Delta, Utah) located in the great basin of western Utah, which generates 13 million megawatt hours of energy per year from its two coal-fired plants, which is delivered to 36 project participants in Utah and Southern California. Forty five percent of all power generated goes to the Los Angeles Department of Water and Power. This summer, Los Angeles Mayor James Hahn ordered the Los Angeles Department of Water & Power to withdraw its investment in a new 950MW coal-fired unit planned by IPP in favor of renewable energy.

A number of groups advocate for energy efficiency in Utah. The Utah Energy Conservation Coalition (www.utahenergy.org), formed in 1990, does business as Energy Rated Homes of Utah. It is a statewide nonprofit created "to provide opportunities for the citizens of Utah to receive energy education, take advantage of special mortgage programs, and to encourage energy conservation in all areas of the housing industry." According to SWEEP, the Coalition works with residential homebuilders, developers, vendors, and finance organizations in the state to increase the use of Home Energy Ratings and Energy Star Homes performance level. In 2002, the Utah Engineering Experiment Station's Wetlands and Riparian Center and the Pollution Prevention Association sponsored an Energy Efficiency and Pollution Prevention Conference in Salt Lake City, which brought together attendees to discuss energy use, environmental planning, and pollution prevention. The conference was sponsored by David Garman, Assistant Secretary of Energy for Energy Efficiency and Renewable Energy, who gave the keynote address.³⁵

The Utah Clean Energy Alliance (www.utahcleanenergy.org, formed in 2001 as Utahans for an Energy Efficient Economy) advocates and lobbies for energy efficiency and clean renewable energy technologies across the State. The group participates in Utah Public Service Commission proceedings, including such activities as PacifiCorp's Integrated Resource Plan and the state's demand side management tariff.

The American Gas Association (AGA) and the Natural Resources Defense Council (NRDC) issued a joint statement in August that urged Utah state regulators to change incentive structures to reward natural gas utilities for promotion of energy efficiency. Both organizations made comments to that effect at the National Association of Regulatory Utility Commissioners' (NARUC) summer committee meeting in Salt Lake City, Utah. The groups asked the state commissioners to "consider rate reform proposals that break the link between utilities' financial health and their energy sales, ending an unintended penalty on utilities that encourage consumers to use energy more efficiently." James DeGraffenreidt, chairman of the AGA government relations committee, told reporters that traditional state rate-making tariffs discourage natural gas utilities from promoting energy efficiency because their profits often suffer when consumers reduce their energy use. DeGraffenreidt cited Northwest Natural's (a utility in the Pacific Northwest) conservation tariff, which has allowed customers to reduce heating bills by 20% to 25% with high efficiency gas furnaces, as a way to incentivize conservation. Without the tariff, the Company would lose cost recovery for fixed costs. The end result is that replacing the fixed-cost recovery with the conservation tariff makes the utility indifferent to the customer's gas usage.³⁶

Given that there are 18 coal-fired power plants on the Colorado Plateau (Arizona, New Mexico, Colorado and Utah), the question of energy production is very relevant to tribes in the areas. Regional advocacy groups related to Native Americans include the Black Mesa Water Coalition and the Navajo grassroots

³⁴ Brice, 2004.

³⁵ "Events." *Utah Coalition for New Energy Technologies*.
<http://www.newenergytechnologies.org/cnet/utah/events/default.htm>

³⁶ Udoff, David. "Greens, Industry Forge Alliance To Promote Energy Efficiency." *Natural Gas Week*. July 19, 2004.

coalition Dine' Bidziil. Norman Patrick Brown, of Dine' Bidziil, has said, "Since the Navajo people hold a vast majority of the West's resources, we should have a crucial role in how we contribute to the nation." Generally these advocacy groups support renewable and sustainable energy.³⁷

Policy Proposals and Initiatives

The State has a number of initiatives under way to boost energy efficiency, including cash incentives and demand alerts. In 1991 PacifiCorp launched the Energy FinAnswer program.³⁸ The program provides a cash incentive of \$0.12 per kWh of the projected annual savings plus \$50 per average monthly on-peak kW savings for energy efficiency retrofits and new construction. Through Energy FinAnswer, Utah Power offers engineering and consulting services, along with cash incentives, to promote energy efficiency. Incentives are \$0.12/kwh annual energy savings and \$50/KW average monthly on-peak demand savings, and are capped at 50 percent of the eligible energy efficiency measure cost. The supermarket chain Albertsons led the state in energy savings and cost savings with 9,772,904 kWh conserved per year and savings of \$361,597.³⁹

PowerForward, established in 2001 in response to the electricity crisis that year,⁴⁰ is a collaborative, state-wide effort among the State of Utah, the media, utilities, and businesses "aimed at increasing awareness of electricity issues and cultivating an ethic of energy conservation in Utah." PowerForward Alerts, including the Power Conservation Alert Level, are issued June 1 through September 15, each year, in response to high summer power demand. The Utah Energy Office designates the level of conservation – green, yellow, or red – needed based on weather predictions, regional power supplies and wholesale power prices. Even on green days, when the energy supply is adequate, PowerForward encourages consumers to practice "Conservation 24/7," in which, "Utah's affordably-priced electricity is too precious to waste." According to SWEEP, the inaugural PowerForward campaign in 2001 was considered a success, as the media made an estimated 4.4 million contacts. On the five declared "Yellow" PowerForward days, consumers reduced peak consumption by an average of 100 MW (3.5% of total state consumption), that in turn enabled utilities to avoid high cost purchases in the spot market for electricity.

PacifiCorp/Utah Power offers the Energy Exchange program via the Internet as a voluntary demand reduction program for customers who use an excess of 1 megawatt of power per year. PacifiCorp posts a price for each hour that a load reduction is needed, generally in peak hours. The customer may respond by pledging to reduce demand, and are paid by PacificCorp for each hour of reduced usages based on the measured load reduction.⁴¹

Michael Glenn, the director of the Utah Office of Energy Services, in 1999 became the first person in the state to live in a 5-Star energy rated home, a designation awarded the top rating by the Utah Energy Conservation Coalition through HERS (Home Energy Rating System).⁴² Glenn says that a lack of energy conservation in the region will drive the need for additional power plants and transmission lines that "will

³⁷ Norrell, Brenda. "New Mexico Energy Summit Attracts More Grassroots Navajos than Tribal Leaders." *Indian Country Today*; April 28, 2004

³⁸ "Phasing Out." *Con.web: Pacific Northwest Energy Conservation & Renewable Energy Newsletter*. March 30, 2002. <http://www.newsdata.com/enernet/conweb/conweb75.html>. Accessed Sept. 20, 2004.

³⁹ "Energy FinAnswer." *Utah Power*. <http://www.utahpower.net/Navigation/Navigation926.html>.

⁴⁰ "Electricity Conservation Effort Launched, Governor Urges Utahns to "PowerForward." <http://www.powerforward.utah.gov/PDF/PR%20Launch.pdf>. Accessed Sept. 20, 2004.

⁴¹ *Pacific Northwest National Laboratory (PNNL)*. <http://pnnl-utilityrestructuring.pnl.gov/energymanagement/states/utah.htm#public>

⁴² Glenn, 2000.

have environmental and monetary causes that tax the health and economic sustainability of our community."⁴³

According to SWEEP, a key component of Governor Mike Leavitt's Energy Policy for Utah presented in 2001 is the cultivation of "an ethic of conservation and energy efficiency." SWEEP states that over 1,000 Energy Star homes were built in Utah during 1998-2001.⁴⁴

In 1999, Governor Leavitt established the State Buildings Energy Efficiency Program (SBEEP) (www.sbeep.utah.gov), whose objective is to reduce energy consumption costs by \$20 million by 2010.⁴⁵ According to SWEEP, "eight new buildings are already achieving \$300,000 in annual energy bill savings." SBEEP saved taxpayers \$4.6 million last year, according to Mike Glenn.⁴⁶

According to DOE, Utah's Weatherization Program, managed by the Utah Division of Community Development and funded by DOE allocations, has had "spectacular" success in conserving energy and saving money. With low-income households typically spending 14% of total annual income on energy, reduced consumption of 25-30% through weatherization can have a significant impact. In 2000, 606 homes were weatherized in Utah through DOE funds, while an additional 865 homes were weatherized by leveraging funds from both the public and private sectors. In total, 45,000 homes in Utah have been weatherized. Nationally, weatherized homes saved an average of \$218/home and returned \$1.80 for every \$1 invested.⁴⁷

Utah's Local Government Energy Efficiency Program (<http://www.energy.utah.gov/rebuild.htm>) is a state-backed effort that helps local governments achieve energy efficiency in their infrastructure through technical assistance, grants and zero interest loans. The Utah Energy Office has partnered with The U.S. Department of Energy's Rebuild America on several projects including energy efficiency retrofits at the University of Utah. The state is also using Rebuild America and the Western Regional Biomass to Energy Program "to assist local governments with technical resources needs, federal grants, and publicity in wisely using energy, resources, and tax dollars."

The State of Utah Industries of the Future Initiative (www.uiof.org) helps Utah industries to "improve their competitiveness and profitability by improving the energy efficiency, environmental performance and productivity of industrial facilities, processes and operations." Sponsored by the Utah Energy Office and DOE, the Future Initiative also helps industry to reduce impact on natural resources by lowering the risk of investment in energy and resource conserving technologies. The University of Utah Industrial Assessment Center is one of only 26 universities in the country to receive grants in excess of \$150,000 to conduct energy efficiency assessments of manufacturing plants.⁴⁸

Conclusion

As in Nevada, the energy crisis in 2001 produced strong incentives for policymakers and legislators in Utah to develop programs that would combat rising and unstable energy prices. Unique to Utah in these three cases, however, is the PowerForward program, which alerts the state's consumers about the state of the grid and asks them to conserve based on its vulnerability. Many have argued that given Utah's homogeneous demographic characteristics, and the presence of a strong religious hierarchy in the state, appeals to the populace for common action in the service of community as well as themselves may carry

⁴³ Anderton, 2004.

⁴⁴ "State Policies and Programs, Utah's Energy Policy." *Southwestern Energy Efficiency Project*. <http://www.swenergy.org/programs/utah/state.htm>

⁴⁵ State Building Energy Efficiency Program. *State of Utah Energy Office*. <http://www.sbeep.utah.gov/>.

⁴⁶ "Energy Efficiency for State Buildings Saves \$4.6 Million." *State of Utah Energy Office*. <http://www.energy.utah.gov/NewsReleases/2004/NewsRSBEEP.pdf>

⁴⁷ "Weatherization Creates Spectacular Savings in Utah." *Office of Weatherization and Intergovernmental Program Energy Efficiency and Renewable Energy*. U.S Department of Energy. <http://www.waptac.org/si.asp?id=447>

⁴⁸ <http://www.uiof.org/uiof/indexuiof.html>

more weight.⁴⁹ However, the success of the PowerForward program may be replicable elsewhere, particularly as energy prices rise.

FOCUS: *Vermont*

Stakeholders

The Vermont Department of Public Service (www.state.vt.us/psd) regulates electricity in Vermont, and is overseen by the Vermont Public Service Board (www.state.vt.us/psb).

Central Vermont Public Service (www.cvps.com), the largest of Vermont's 22 utilities, is an investor-owned utility traded on the NYSE under the symbol CV. CVPS serves 148,000 customers, and its service territory covers 4,450 square miles of Vermont's total land base of 9,609 square miles. The Company has three significant subsidiaries and affiliates: Catamount Energy develops wind energy; The Home Service Store (12% CVPS interest) provides home maintenance and repair across the country; and Eversant sells and rents electric water heaters through SmartEnergy Water Heating Services.⁵⁰

Green Mountain Power (www.gmpvt.com), an investor owned utility (NYSE symbol GMP), sells electricity to approximately one fourth of Vermont's electricity users in seven of the state's 14 counties. The Company also sells power wholesale throughout New England. Green Mountain Power owns portions of its total power capacity of 417 megawatts.

Vermont Gas Systems (www.vermontgas.com), which serves 34,000 customers in the state, offers WorkPlace technical assistance to commercial and industrial customers to reduce natural gas consumption in existing buildings. Gaz Métro of Montréal, Québec, Quebec's largest natural gas company, owns Northern New England Gas Corp., which owns Vermont Gas.⁵¹

Vermont Energy Investment Corporation (www.veic.com) provides analytic, planning, management and technical support for a wide range of energy efficiency and renewable energy programs. VEIC, based in Burlington, VT, was co-founded in 1986 by Executive Director Beth Sachs and Policy Director Blair Hamilton. VEIC's mission is to reduce the monetary and environmental costs of energy use, a mission it approaches through cooperation with utilities, regulatory agencies, energy advocacy programs focused on energy efficiency and renewable energy. VEIC projects include Efficiency Vermont, the Long Island Power Authority in New York; a collaborative project in New Jersey for energy efficiency between the Natural Resources Defense Council and New Jersey utilities; an analysis of the Cape Light Compact in Martha's Vineyard, the development of the Vermont Builds Greener (VBG) Scorecard, in partnership with Building for Social Responsibility (BSR); the DOE's Region 1 Weatherization Program; and energy efficiency standards and product labeling in China's "Green Lights" program.⁵²

VEIC was one of a number of organizations in a broad-based coalition that petitioned the DOE in June to strengthen energy efficiency standards for home refrigerators. In their filing, the petitioners wrote that a 30% increase in refrigerator efficiency standards would save consumers \$ 10.1 billion over 25 years, given that the appliances account for 14% of energy use in the home.⁵³ VEIC also joined 20 other

⁴⁹ Foltz, Richard. "Mormon Values and the Utah Environment." Columbia University, Department of International and Public Affairs. http://www-1.gsb.columbia.edu/research/sdi/mormonism_environment.doc. Accessed Sept. 20, 2004.

⁵⁰ *Central Vermont Public Service*. <http://www.cvps.com/documents/Q12004FactSheetFinal.pdf>

⁵¹ "Who we are." *Vermont Gas*. <http://www.vermontgas.com/whoweare.htm>. Accessed Sept. 10, 2004.

⁵² *Vermont Energy Investment Corporation*. <http://www.veic.org/ProjectProfiles.cfm>

⁵³ "Refrigerator Standard Could Save Billions." *Energy Optimization News*. Vol. 2. No. 2. June 2004.

organizations in a letter to lawmakers encouraging the funding of geothermal energy programs at the Bureau of Land Management (BLM) and energy efficiency programs.⁵⁴

Policy Proposals and Initiatives

In June 1999, Vermont's State Legislature (www.leg.state.vt.us) approved a bill that allowed the state's public service board to establish a systems benefit charge that would fund statewide energy efficiency programs via a non-utility entity. In September of that year, the regulators approved the creation of an "Energy Efficiency Utility" – manifested as Efficiency Vermont.⁵⁵

Efficiency Vermont (www.encyvermont.com) has administered energy efficiency programs for the state since March 2000, and is the only "efficiency utility" in the U.S. Four years ago, VEIC put together a competitive bid after the state's regulators opted to create a statewide organization responsible for energy conservation and efficiency. VEIC won the bid, and Efficiency Vermont began "producing" power by creating measurable demand reduction. Each year, Efficiency Vermont provides a detailed account of the energy savings it has created in order to satisfy its contract with the state. Integral to this structure is the binding contract that the "utility" must fulfill; it is written much like a traditional power contract with a traditional supplier.

Efficiency Vermont partners with individuals and businesses across the state to reduce electric use and costs, with the intent of minimizing environmental damage from energy use. According to the organization's preliminary annual report for 2003, one in four Vermont electric ratepayers has worked with Efficiency Vermont since its formation in 2000.⁵⁶ Efficiency Vermont is funded by a charge stated separately on consumers' bills, garnering a budget of \$13.1 million per year through a statewide charge equivalent to 2.5 mills/kWh. Efficiency Vermont offers financial incentives for small projects of up to \$1,000 for energy efficient lighting, motors, HVAC, and refrigeration and for gas efficiency projects such as high-efficiency furnace and boiler retrofits.

Blair Hamilton, who heads up Efficiency Vermont, attributes the creation of this utility to "good economics." First and foremost, it is simply 100% justifiable as just good, plain resource acquisition to meet short and medium term electric savings requirements." Second, he says, "In numerous assessments, with current technology, and achievable things you could do to build capacity. There is something like 30% of what [power] we use today that would be cheaper to meet with efficiency than it is with supply." "At our current spending levels, we're currently meeting 3% of our needs, and we're adding about 1%/year. At that rate, it would take us 30 years to run out of things to do. We could, in effect, triple the level of activity we have right now and still have lots of opportunity."⁵⁷

In addition to the cost-benefit analysis that supports the efficiency approach, Hamilton credits smart regulators – such as conference co-presenter Michael Dworkin – and what was at the time an impending deregulation of the retail electricity market, to fostering the development of the efficiency utility. While some of the state's utilities were skeptical, others said, "What a relief! We've been beat up on this for 20 years," according to Hamilton. Essentially, rather than impose regulatory restrictions on the utilities, the state allowed its efficiency demands to be transferred to another party. This allows the utilities to focus on their core business.⁵⁸

Hamilton believes that Efficiency Vermont's success – it has met or exceeded its contract the past four years – is attributable to a focus on "naturally occurring market events." For example, if a large industrial

⁵⁴ "Coalition Seeks Increased Funding for Geothermal Programs." *Renewable Energy Today*. Pg. 1. April 5, 2004.

⁵⁵ "Vermont." *Pacific Northwest National Laboratory/DOE*. <http://pnnl-utilityrestructuring.pnl.gov/energymanagement/states/vermont.htm#public>. Accessed Sept. 10, 2004.

⁵⁶ "A Vermont Tradition of Efficiency. Efficiency Vermont: Preliminary Report 2003." *Efficiency Vermont*. <http://www.encyvermont.com/Docs/2003ExecutiveSummary.pdf>. Accessed Sept. 10, 2004.

⁵⁷ Hamilton, Blair. Personal Communication. September 20, 2004.

⁵⁸ Hamilton, 2004.

consumers is going to replace motors, that is the ideal time to speak with vendors and purchasing agents about making efficiency-oriented decisions. Cash incentives pay for efficiency and conservation upgrades. Yet, even this innovative organization, needs some work. Hamilton said that a three-year contract period is not long enough, for example. And Efficiency Vermont's contract with the state doesn't provide a mechanism for measuring or rewarding the impact for consumer education – which is inherently difficult to measure. Says Hamilton: "The performance contract does not lend itself to longer term market transformation efforts, like education."

In May 2003, Efficiency Vermont was awarded Harvard's Innovations in American Government Award (www.excelgov.org) for its "pioneering approach to energy efficiency services." Gov. Douglas congratulated the Vermont Legislature, the Public Service Board, and the state's citizens on the award, saying: "We are proud that the nation can look to Vermont for solutions to America's energy challenges."⁵⁹

Burlington Electric Department is the municipally owned electric utility for the City of Burlington, Vermont, and serves 16,000 residential customers and 3,600 commercial customers.⁶⁰ Burlington Electric Department (www.burlingtonelectric.com) maintains three energy efficiency programs, Energy Advantage, Top Ten, Commercial Construction, and Gas Systems' WorkPlace. The Energy Advantage Program offers residential customers free energy audits and project consultation. The Top Ten Program and Commercial Construction Program do the same for commercial and industrial customers, with an up-front payment for an engineering study.⁶¹ In March 2004, the World Wildlife Fund (WWF) boasted that five U.S. power companies had committed to use clean energy sources and to cap their carbon dioxide emissions through the WWF's "PowerSwitch Challenge." The Burlington Electric Department joined Austin Energy of Texas; the Sacramento Municipal Utility District (SMUD) of California; Waverly Light and Power of Iowa; and Florida Power and Light in the commitment to having 20% of their energy sold by 2020 derived from renewable sources.⁶²

The Vermont Building Greener Program (www.bsrvt.org/homepage.html) is the first green building certification program in the Northeast. The program certifies and quantifies that homes participating in the program are constructed to meet sustainable criteria.⁶³ Certification via Vermont Builds Greener comes from a home passing 54 requirements and earning at least 100 points in the system. Not surprisingly, the easiest way to earn VGB certification is by building a small house that uses less energy, a fact acknowledged by Richard Faesy of Vermont Energy Investment Corporation this summer: "We hope to spur education and discussion to get people to acknowledge size is a significant factor in green homes." Homeowners have fretted that resale value – where bigger, not smaller, is better for most buyers – is an impediment to green homes.⁶⁴

Vermont has two innovative energy technology programs underway: a demonstration microgrid and "cow power." In Claremont, New Hampshire, the Sustainable Valley Group (www.sustainablevalleygroup.org), based in Springfield, VT, has been briefed on the concept of permaculture, a "design system for ecological living that integrates buildings, plants, animals, people and communities into productive and beautiful environments," essentially a low-energy use philosophy based on biological resources and energy recycling.⁶⁵ Such practice is in effect in Vermont, with methane-based power production from cows. Central Vermont Public Service's "Cow Power" program allows consumers to opt in to buying the power for an addition charge of \$0.04 kWh above the normal rate. CVPS then

⁵⁹ "The Kennedy School Award, Efficiency Vermont Winner of Harvard Kennedy School of Government Innovations Award, May 8." *Efficiency Vermont*.

<http://www.encyvermont.com/index.cfm?L1=292&L2=370&sub=bus>. Accessed Sept. 10, 2004.

⁶⁰ *Burlington Electric*. <http://www.burlingtonelectric.com/>

⁶¹ Pacific Northwest National Laboratory/DOE, 2004.

⁶² "Five power companies commit to clean energy." *Energy User News*. No. 4. Vol. 29. Pg. 20. April 1, 2004.

⁶³ "Green building network" *Vermont Business Magazine*. Vol. 32, No. 7; Pg. 50. June 1, 2004.

⁶⁴ Baker, Linda. "Great big green monster mansions." *Salon.com*. July 7, 2004.

⁶⁵ www.sustainablevalleygroup.org

pays the farmer the market price for the power, in addition to the \$0.04 cents. The program went on line Sept. 1, with customers receiving their first bill on Oct. 1. The firm farm to provide energy in the program is Blue Spruce Farm in Bridport, with 1,400 cattle capable of producing 1.75 million kWh/year.⁶⁶

Yet, the most advanced power technology in the state may be the "microgrid" at Mad River Park, in Waitsfield, VT, a demonstration project undertaken with the support of the Washington Electric Cooperative (WEC), the Vermont Department of Public Service (DPS), and DOE.⁶⁷ A microgrid is two or more distributed generation assets networked together and able to operate independent from, parallel with, or in conjunction with the larger electric grid. The Mad River Park grid connects "a cluster of propane-fueled reciprocating engines, energy storage devices, microturbines, wind turbines and photovoltaic panels to serve business and residential customers," with a total initial output of 350 kW.⁶⁸

In addition to the public entities and utilities, a number of private groups advocate for energy efficiency in the state. Southern Vermonters for a Fair Economy and Environmental Protection, headed by John Berkowitz, organized the 2002 "Town Meeting Energy Independence" vote in Vermont that advocated for stronger state action to increase renewable energy and energy efficiency programs. Additionally, Berkowitz proposed that Vermont replace the nuclear power of the Yankee plant in 2012 by buying the eight hydro-power dams on the Connecticut and Deerfield rivers.⁶⁹ The Vermont Public Interest Research Group advocates for the environment in the state. VPIRG in August released a report that presented a goal for energy conservation of 25% from present levels by 2025.⁷⁰ VPIRG's plan contrasts with the December, 2002 report released by Vermont Governor Gov. Jim Douglas (R-VT), which did not sit well with Vermont's Senate Democrats and environmental groups. The revised state energy plan released by Vermont's Department of Public Service in early August (the original was released in December) was again criticized by environmentalists and Democratic state legislators. Other critics of the state's energy plan included Patrick Berry, policy director for the Vermont Natural Resources Council, and Senate Pro Tem Peter Welch, a Democrat from Windsor.⁷¹

The Conservation Law Foundation criticized Vermont Electric Power Company's (VELCo) proposed construction of a \$128 million transmission line, which was the source of the utility's opposition to S261. In March 2003, the Vermont Senate passed a bill (S 261) that would require utilities to seek funding for distributed generation and energy efficiency from ratepayers across New England as an alternative to the construction of new transmission lines. The CLF's primary argument is that energy efficiency programs would obviate the need for the new line.⁷² Morris Silver, a CVPS lawyer, told reporters earlier in the year that "Vermont is now trying to impose its planning methods on other states." All but \$12 million of the estimated \$130 million cost of the line would be paid for by New Englanders outside of Vermont under the FERC rule, which would likely cause further litigation.⁷³ Chris Owen, Energy Efficiency Specialist

⁶⁶ "CVPS Cow Power™ links farms, renewables and customers." *Central Vermont Public Service*. <http://www.cvps.com/cowpower/index.shtml>. Accessed Sept. 15, 2004.

⁶⁷ See also "Small Wind Energy, VERMONT – MicroGrid Power Network to Address Risk of Power Outages." *Interstate Renewable Energy Council*. http://irecusa.org/articles/static/1/1061933762_1051597266.html

⁶⁸ Blankinship, Steve. "Vermont microgrid will showcase DG versatility; DG Update." *Power Engineering*. No. 1, Vol. 108; Pg. 52. Jan. 1, 2004.

⁶⁹ "Vermont's Hydrodams and Energy Independence." *Sustainable Valley Group*. <http://www.sustainablevalleygroup.org/modules.php?op=modload&name=News&file=article&sid=25&mode=thread&order=0&thold=0>. Accessed Sept. 15, 2004.

⁷⁰ "Clean Energy for Vermont: A Plan Today for Tomorrow." *Vermont Public Interest Research and Education Fund*. Summer 2004. http://www.vpirg.org/downloads/2004.08.27_Clean_Energy_for_Vermont_final_version.pdf. Accessed Sept. 15, 2004.

⁷¹ Rathke, Lisa. "State release revised energy plan." *Associated Press*. Aug. 6, 2004.

⁷² "Power grab; Vermont" No. 1, Vol. 10; Pg. 7. *Conservation Matters*. Jan. 1, 2004

⁷³ Gram, David. "Utilities seek to kill energy efficiency measure." *The Associated Press*. Feb. 25, 2004.

with the State's Department of Public Service, acknowledged that Vermont has high energy costs. Those costs, he said, make it especially important that Vermont promote energy efficiency in its construction.⁷⁴

Public Service Commissioner David O'Brien told reporters that though conservation should be part of how the state meets future electric demand, "the scale VPIRG is calling for raises a lot of questions. You can't conserve your way completely out of energy demand." Former Vermont PUC commissioner, now consultant, Richard Sedano, told reporters that he believed the 25% cut through conservation was feasible, telling reporters that, "There is a huge reservoir that remains untapped."⁷⁵ The PIRG report is driven in large part by the expiration of the license for the Vermont Yankee nuclear plant in 2012, and the expiration of Vermont's power contracts with Hydro-Quebec in the middle part of the next decade.⁷⁶

But everything in the state isn't partisan when it comes to the environment. Gov. Douglas drew media attention in March 2004 when one of his neighbors called him to ask for a ride to work when his carpool fell through. The rider, Lawrence Mott, got the ride. He likely benefited from the fact that he is the head of Renewable Energy Vermont: "I knew he supports renewable energy and energy efficiency and carpooling," Mott told reporters.⁷⁷

Regionally, there are a number of organizations that join the Northeastern states together to strive for energy efficiency. At a science and transportation subcommittee (Senate Commerce) hearing in May 2004, Ken Colburn, the executive director of the Northeast States for Coordinated Air Use Management, said that states are investing \$500 million in energy efficiency annually in the Northeast, with New York leading the way with a \$300 million investment.⁷⁸ Michael Dworkin, the chairman of the Vermont Public Services Board and president of the New England Conference of Public Utilities, told a demand-response conference sponsored by the Federal Energy Regulatory Commission (FERC) this spring: "A market without a demand response is like a bird with one wing; it just plain won't fly."⁷⁹

Regional cooperation is important for Vermont, particularly under the Federal Energy Regulatory Commission's (FERC) New England-wide transmission cost allocation system (new in 2003), which requires region-wide financial support for any new transmission projects that improve regional reliability. Both Central Vermont Public Service and Green Mountain Power opposed S261 primarily because they did not want to renew litigation with the Independent System Operator – New England (ISO-NE) because of regional disagreements the prior year about funding new lines.⁸⁰

ISO New England (www.iso-ne.com) was created in 1997 as a not-for-profit corporation to bear responsible for the day-to-day reliable operation of New England's bulk power generation and transmission system. The entire system has installed capacity of 32,000 megawatts and has 200 market participants.⁸¹ ISO-NE offers four types of incentives under its "Load Response Program," which encourages efficiency by paying users for load reductions, either from reduced usage or onsite generation. Customers can participate in the program via any participating member of the New England Power Pool (utilities, power marketers, competitive suppliers, etc.) ISO-NE is offering four programs: Real Time

⁷⁴ "Green building network" *Vermont Business Magazine*. Vol. 32. No. 7. Pg. 50. June 1, 2004.

⁷⁵ Remsen, Nancy. "Power plan relies on conservation." *The Burlington Free Press*. Aug. 31, 2004.

⁷⁶ Gram, David. "VPIRG issues energy plan; DPS commissioner lambastes it." *Associated Press*. August 30, 2004

⁷⁷ "Man hitches ride to work with governor." *The Hotline*. March 12, 2004.

⁷⁸ "U.S. Senator John McCain (R-AZ) holds hearing on climate change." Committee Hearing, Science and Transportation Subcommittee, Senate Commerce Committee. *FDCH Political Transcripts*. May 6, 2004.

⁷⁹ Kosavanic, Lisa and Dan Engel. "Meeting the nation's demand for power: a new take on demand programs." *Energy User News*. No. 5. Vol. 29. Pg. 11. May 1, 2004.

⁸⁰ "Vermont lawmakers pass bill to force regional utilities to consider grid options." *Platts Power Markets Week*. March 1, 2004

⁸¹ "Welcome to ISO New England." <http://www.iso-ne.com/>. Accessed Sept. 15, 2004.

Demand Response, Real Time Profile Response, Day Ahead Demand Response, and Real Time Price Response.⁸²

In Feb. 2004, EPA and DOE named the Northeast ENERGY STAR(R) Appliance and Lighting Initiative the recipient of the Leadership in Energy Efficiency Award for Excellence in Energy Efficiency and Environmental Education. The initiative is a coalition of electric utilities and energy efficiency organizations, coordinated through Northeast Energy Efficiency Partnerships, Inc., (NEEP) that conducts awareness and education campaigns in Connecticut, Massachusetts, New York, Rhode Island and Vermont. Efficiency Vermont carried out the campaign in Vermont.⁸³

Conclusions

Efficiency Vermont saves money, power, and has environmental benefits. Is the concept of an efficiency utility too good to be true, both for Vermont and for other states eyeing structural improvements in power regulation? Some industrial consumers of power in Vermont oppose the universal fee, as it is difficult to draw a direct line of return on investment from the fees to savings elsewhere. Yet, Hamilton says, as Efficiency Vermont has worked with consumers, many have come around to see the benefits of the program as well as realizing significant cost savings after consultation.

As for the creation of this efficiency utility, the plethora of conservation—and sustainability—oriented organizations in the state, along with its higher power prices, may have created a situation ripe for the development and implementation of an efficiency utility. Perhaps most important to the purposes of this conference, Hamilton expresses confidence that an energy efficiency utility can scale to other states.

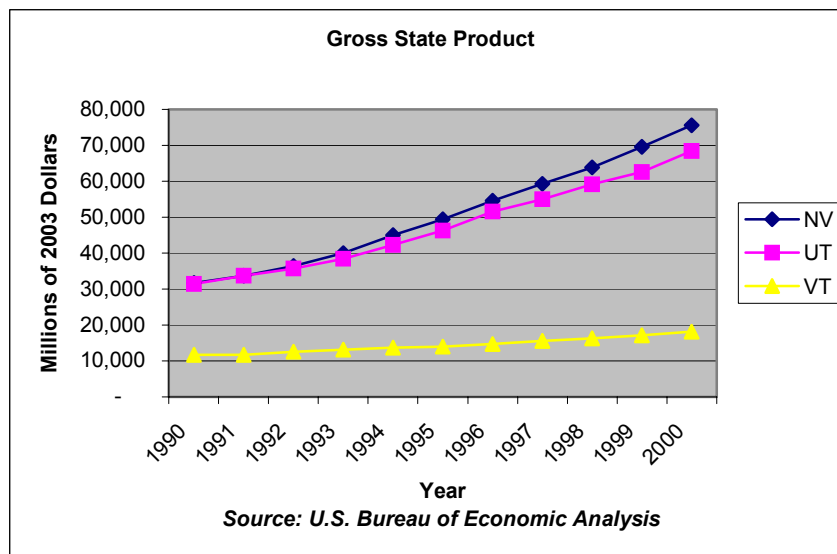
⁸² *ISO New England*. http://www.iso-ne.com/smd/market_rule_1_and_NEPOOL_manuals/NEPOOL_Manuals/M-LRP_Load_Response_Program/

⁸³ "EPA and DOE Recognize the Northeast Appliance and Lighting Initiative with the ENERGY STAR(R) Leadership in Energy Efficiency Award." *PR Newswire*. Feb. 23, 2004.

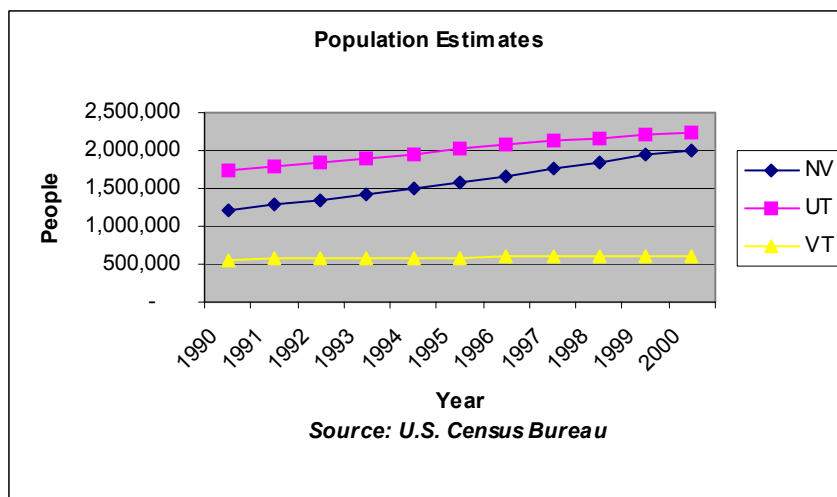
APPENDIX A – Longitudinal descriptions of case studies

While the three case study states have some commonalities, it may be useful to provide some general longitudinal descriptions (1990 to 2000) to show their differences. However, it is important to note here that this data set, the most recent comprehensive data available from Federal sources, precedes the energy crisis in the American West in 2001. Also referred to as the California Energy Crisis of 2001, power prices doubled in California and consumers suffered from rolling blackouts that year, the effects of which rippled throughout the American West. Many have attributed the crisis to a perfect storm of sorts, with a number of individual problems such as drought, a flawed deregulation scheme, and market manipulation driving the power shortage.⁸⁴ That crisis prompted the Nevada State Legislature, for example, to create the Nevada State Office of Energy (NSOE) in 2001.

The states' product of Nevada and Utah grew significantly, while Vermont stayed relatively flat⁸⁵:



Total population also grew in Nevada and Utah, while Vermont's population remained relatively stable:

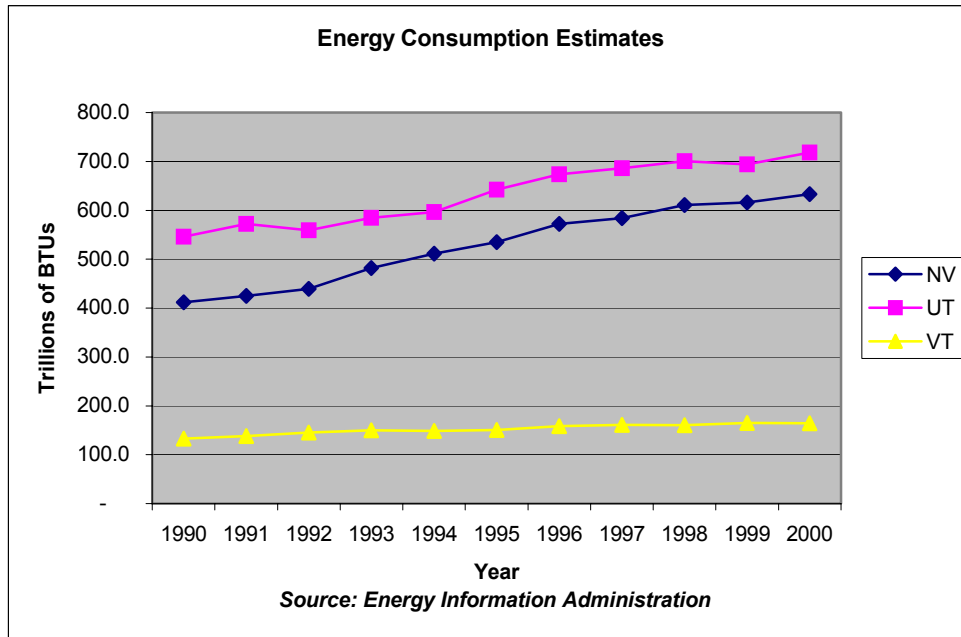


⁸⁴ "Blackout: What caused the power crisis in California? And who's profiting?" Frontline. PBS. <http://www.pbs.org/wgbh/pages/frontline/shows/blackout/>. Accessed Sept. 20, 2004.

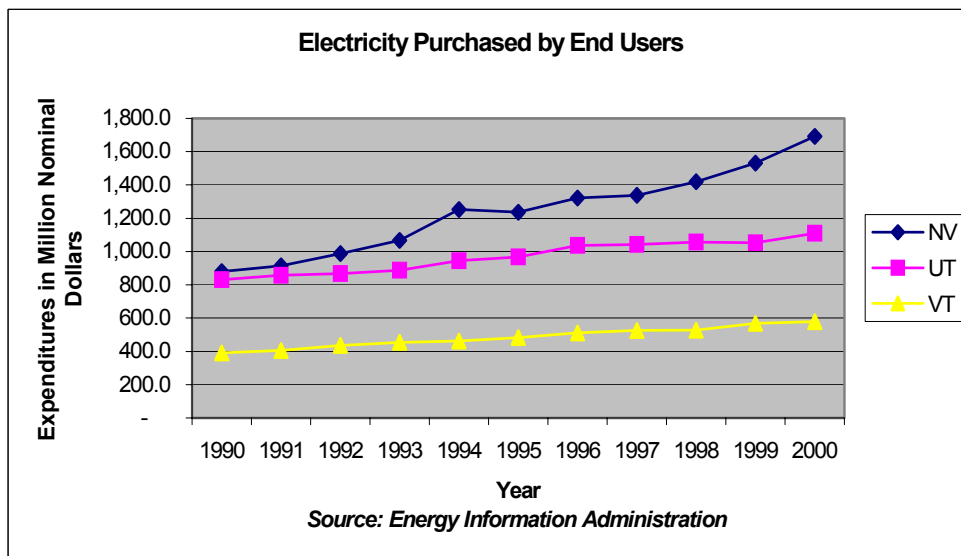
⁸⁵ Source data for tables appears in Appendix A.

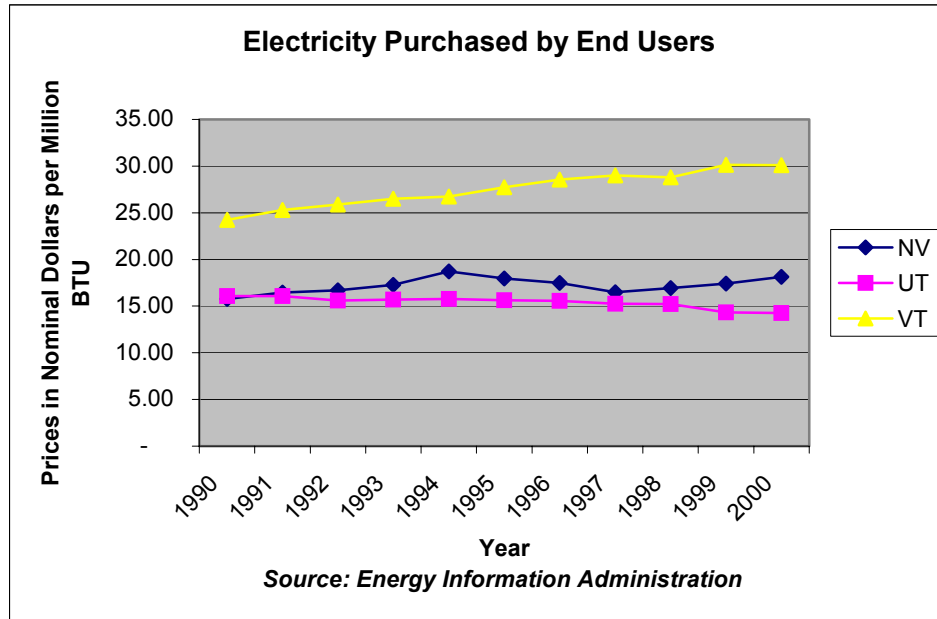
During the period, energy consumers in Vermont paid increasingly higher prices, which may have prompted the state's unique policy response – Efficiency Vermont, addressed later in this report. While power consumption is generally regarded to be inelastic, it is interesting to note that the sharp rise in total energy expenditures in Nevada in the late nineties was accompanied by only a marginal rise in price per BTU. Utah, in fact, saw a decline in prices paid per BTU, even as consumption grew.

As would be expected from a growing population and a growing economy, the energy consumption of both Nevada and Utah outpaced Vermont significantly, with similar implications for emissions.

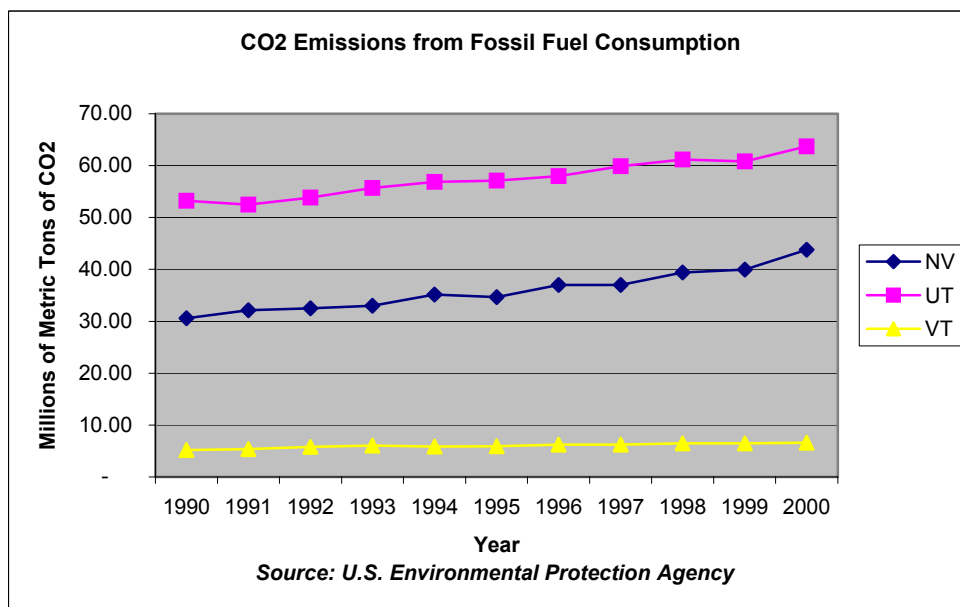


Total energy expenditures in each of the three states showed a difference between Utah and Nevada. Utah's total energy expenditures did not match the increasing price paid by consumers of Nevada, while the aggregate price users paid for electricity in Vermont matched the slow annual growth rate of its population, GSP, and energy consumption.





The data presented here show clearly diverging trend lines in energy consumption and prices, which may or may not be fully explained by population and economic growth. It is possible that higher power prices in Vermont, or a stronger conservation ethic, may have led to an environment of policy innovation. These are but a few of the variables that may explain the delta in price and consumption – and the attendant variance in emissions, as shown below. It is hoped that the case studies provided herein and the proceedings of the conference will show structural changes that will enable more effective and efficient power systems in the Intermountain West.



APPENDIX B – Data Set for Charts Provided in Appendix A

Gross State Product

Millions of Current Dollars (@ May 2003)

State	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NV	31,643	33,665	36,480	39,929	45,022	49,377	54,564	59,248	63,786	69,534	75,533
UT	31,359	33,658	35,671	38,395	42,236	46,290	51,523	55,070	59,084	62,635	68,430
VT	11,771	11,771	12,570	13,154	13,747	13,974	14,662	15,510	16,294	17,155	18,124

Source: Bureau of Economic Analysis

Population Estimates

State	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NV	1,220,695	1,296,171	1,351,367	1,411,215	1,499,298	1,581,578	1,666,320	1,764,104	1,853,191	1,934,718	1,998,257
UT	1,731,223	1,779,780	1,836,799	1,898,404	1,960,446	2,014,177	2,067,976	2,119,784	2,165,960	2,203,482	2,233,169
VT	564,798	568,606	572,751	577,748	583,836	589,002	593,701	597,239	600,416	604,683	608,827

Source: Census Bureau

Electricity Purchased by End Users

Prices in Nominal Dollars per	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NV	15.77	16.47	16.71	17.27	18.73	17.95	17.48	16.49	16.95	17.43	18.14
UT	16.09	16.09	15.61	15.69	15.78	15.63	15.57	15.25	15.22	14.32	14.27
VT	24.25	25.29	25.89	26.49	26.74	27.73	28.56	28.99	28.80	30.13	30.10

Source: Energy Information Administration

Electricity Purchased by End Users

Expenditures in Million Nomi	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NV	879.8	914.0	988.2	1,066.1	1,253.0	1,236.0	1,322.1	1,338.4	1,419.4	1,532.0	1,691.5
UT	831.0	857.9	867.8	887.1	944.5	967.5	1,036.5	1,042.2	1,056.9	1,051.9	1,110.6
VT	390.3	405.9	436.5	453.4	462.3	482.9	510.5	525.4	527.1	568.3	579.1

Source: Energy Information Administration

Energy Consumption Estimates -- All Fuels

Trillions of BTU	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NV	411.6	424.8	439.3	482.1	511.2	534.9	572.2	584.2	610.6	615.9	632.8
UT	545.9	572.4	558.8	584.3	596.6	642.4	673.7	686.2	700.7	694.2	718.2
VT	133.0	138.0	145.5	149.7	148.5	150.7	158.3	161.3	160.5	164.9	164.6

Source: Energy Information Administration

CO2 Emissions from Fossil Fuel Combustion (Million Metric Tons CO2)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NV											
Commercial	1.04	1.12	1.06	1.25	1.28	1.31	1.43	1.31	1.44	1.37	1.53
Industrial	2.26	2.20	2.30	2.99	3.27	3.87	3.49	3.52	3.50	3.27	3.89
Residential	1.22	1.31	1.23	1.35	1.37	1.30	1.42	1.59	1.91	1.82	1.81
Transportation	9.38	9.72	9.93	10.36	10.94	11.34	12.62	12.61	12.95	13.79	14.33
Electric Utilities	16.66	17.79	17.97	17.05	18.32	16.87	18.05	17.97	19.64	19.70	22.25
TOTAL	30.56	32.14	32.49	33.00	35.18	34.69	37.01	37.00	39.44	39.95	43.81
UT											
Commercial	1.64	1.90	1.58	1.70	1.91	1.86	2.04	2.21	2.19	2.22	2.08
Industrial	9.58	9.10	8.91	9.33	9.54	10.70	10.32	10.25	10.84	9.42	11.01
Residential	2.75	3.13	2.75	3.11	2.88	2.85	3.12	3.39	3.23	3.23	3.28
Transportation	10.60	11.03	11.26	11.70	11.94	12.95	13.57	14.14	14.30	14.79	15.65
Electric Utilities	28.66	27.32	29.35	29.88	30.60	28.73	28.94	29.89	30.60	31.17	31.72
TOTAL	53.23	52.48	53.85	55.72	56.87	57.09	57.99	59.88	61.16	60.83	63.74
VT											
Commercial	0.48	0.54	0.61	0.60	0.58	0.52	0.59	0.65	0.69	0.64	0.68
Industrial	0.40	0.42	0.49	0.52	0.41	0.38	0.41	0.42	0.70	0.61	0.52
Residential	1.26	1.34	1.46	1.50	1.40	1.42	1.54	1.52	1.44	1.40	1.57
Transportation	2.99	3.00	3.20	3.40	3.43	3.57	3.69	3.61	3.58	3.76	3.68
Electric Utilities	0.04	0.06	0.05	0.02	0.02	0.02	0.01	0.02	0.06	0.04	0.12
TOTAL	5.17	5.36	5.81	6.04	5.84	5.91	6.24	6.22	6.47	6.45	6.57

Source: Environmental Protection Agency