OPPORTUNITIES FOR CLEAN ENERGY FOR THE COLORADO SPRINGS UTILITY

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Preface

As a customer-owned municipal utility, CSU has a special responsibility to its ratepayers. It is not subject to oversight by the Colorado Public Utilities Commission (PUC), which regulates, in the public interest, Xcel and other private, for-profit utilities in the State. Along with greater freedom and not-for-profit status comes the responsibility to act in the interest of the greater community it serves. It is the role of the Colorado Springs City Council, sitting as the Utilities Board, to assure that it meets this mandate. CSU develops the information and recommendations utilized by its Board to make critical decisions with long lasting implications. We believe that due diligence, good process, and common sense dictate that interested and informed customer-owners be invited to participate in a timely and meaningful way in the development of plans and alternatives and that substantial weight be accorded its recommendations so that division, acrimony, and ill-considered decisions at the Board level can be avoided.

This White Paper is prepared at the request of an ad hoc coalition of Colorado Springs Utilities customer-owners who have a particular interest and expertise regarding energy and natural resource matters, and who seek to assist CSU in fulfilling its mission of meeting its customer's electrical energy needs in a cost-effective manner while balancing environmental quality and long-range planning. These customer-owners participated in development of the February, 2002 Integrated Resource Plan and the July 28, 2003 meeting to amend the plan. They represent individual customer-owners, local voter-education organizations, and statewide and national environmental organizations with large local memberships.

This coalition of customer-owners fully supports the substance of this white paper.

Summary

Over the last decade, the City of Colorado Springs has grown at a rapid pace. To determine the energy demands of its burgeoning population, Colorado Springs Utilities (CSU) projects growth in overall demand and energy consumption out 15 to 20 years, and seeks resources to meet those estimated needs. Presently, CSU is engaged in an update of its Integrated Resource Plan (IRP) and is pursuing development of a 150 megawatt (MW) circulating fluidized bed (CFB) coal plant at its Nixon site some 17 miles south of the City.

In our view, CSU has not yet adequately evaluated the full range of resource options to meets its projected electric needs. More specifically, we believe that investments in energy efficiency and renewable energy are preferable to building the proposed new coal plant.

Energy Efficiency and Renewable Energy Proposal

Colorado Springs should establish vigorous energy savings goals and expand its energy efficiency programs in order to achieve the goals. CSU's own plan to acquire 50MW of demand-side resources over the next decade is a good first step, but more can and should be done. We recommend that the utility increase DSM program funding to around $7 million per year, and set explicit goals of achieving electricity savings of 6% by 2010 and 12% by 2020, relative to recent forecasts of electricity demand. This level of investment in energy efficiency programs and measures in turn could save consumers and businesses in Colorado Springs on the order of $300 million net during 2004-2020.

On the supply side, we recommend that CSU issue a formal request for proposals for scalable wind resources of a minimum size large enough to capture significant economies of scale. Currently, utility scale wind projects are delivering power at flat rates of 2.5 to 3.0 cents/kWh, less than new coal or gas-fired generation. If needed, there are ample consulting, non-profit, and utility resources in the region to provide assistance in the development of such an RFP. In addition, there are other utilities and retail customers along the Front Range interested in partnering or otherwise participating in large-scale wind development in Colorado. We urge CSU to gather relevant cost, operational, and other information in the very near term in order to perform a credible evaluation of wind resources in its amendment of the February 2002 resource plan. Furthermore, assuming wind project proposals are competitive from a total resource cost perspective, we urge CSU to acquire at least 75 MW of wind power in the near term. This amount would provide about 5% of the electricity currently consumed in Colorado Springs.

By combining a strong DSM effort with a major wind project (or projects), CSU could add the equivalent of a 100-150 MW baseload conventional power plant through cost-effective energy efficiency and renewable energy investments by 2010. Doing so would displace the need for the proposed coal-fired power plant entirely. In addition, energy efficiency programs and utility scale wind generation can be adjusted to more closely match resource investments with the changing load, unlike coal plants which have relatively long lead times.

Between these two cost-effective, abundant, and environmentally sound resources, CSU can meet the electric service needs of its constituents through 2020 in keeping with its philosophy of reliability, fiscal soundness, and environmental stewardship. In addition, energy efficiency and renewable resource programs and measures are flexible, balance risk and cost, reduce water use, increase local employment, and reduce pollutant emissions. Colorado Springs should not pass up this opportunity to benefit its citizens, economy, and environment.

Background

As a customer-owned municipal utility, CSU has a special responsibility to its ratepayers. It is not subject to oversight by the Colorado Public Utilities Commission (PUC), which regulates, in the public interest, Xcel and other private, for-profit utilities in the State. Along with greater freedom and not-for-profit status comes the responsibility to act in the interest of the greater community it serves. It is the role of the Colorado Springs City Council, sitting as the Utilities Board, to assure that it meets this mandate.

Integrated Resource Planning

As a recipient of federal hydropower from the Western Area Power Administration (WAPA), CSU is required to complete and submit an IRP every five years. By law, CSU is required to:

> "engage in an open planning process in which all reasonable resource options to meet future energy service requirements are considered. Resource options must include demand side management techniques and renewable energy resources, as well as traditional supply-side resources. To the extent practical, adverse environmental effects must be minimized. Ample opportunity for full public participation in preparing and developing the IRP must be provided. A five year Action Plan is required."[1]

The first three components of its 2002 seven point Action Plan that encapsulated CSU's means of meeting future resource needs were demand-side measures that would reduce the load requirements and hence the rapid growth the utility has been experiencing. The next two items address CSU's plans for further study of possible hydroelectric sites and maintenance of its small premium-priced wind purchase from Xcel Energy. Item six deals with the use of short-term power purchase contracts to maintain adequate reserve margins. It is not until the last component of the action plan that the utility indicates that "Possible actions [should CSU experience higher load growth than forecasted] include expansion of DSM programs, entering into a long-term power-purchase agreement, and installation of one or more new thermal resources."

While the details of the updated forecast have not yet been provided, utility representatives presenting at the July 28, 2003 IRP public meeting indicated that the forecast growth rate had been reduced. Indeed, the Colorado Springs Gazette reported on September 11, 2003 that "A weak economy and resulting loss of jobs have slowed population growth in El Paso County this year to a 13 year low, according to a regional planning agency."

In response to inquiries about demand-side management programs at that public meeting, CSU had the following response:

> "Demand-side management, conservation and efficiency continue to be an important cornerstone of our electric resource plan and a key project for Springs Utilities. It's true that one of the major shortfalls of some of these conservation programs is their adverse impact on customer rates. Springs Utilities is seeking 50 megawatts of demand-side management over the next ten years. Springs Utilities will continue to look at more opportunities in this area."[2]

While this response is encouraging, the 2002 resource plan reflects no savings from DSM programs throughout its reserve margin calculation period (winter of 2006-7). Furthermore, 50 MWs of DSM

[1] Quote from the Introduction and Purpose Section of CSU's most recent IRP filing dated February 22, 2002.
[2] See page 5 of 15 of *Amended IRP Workshop Summary Questions and Answers July 28, 2003*, provided by CSU to interested parties on August 27, 2003.

over a 10-year period is below the cost-effective and achievable potential for greater energy efficiency and load management in the CSU service area.

Coal Plant Proposal

According to CSU, the circulating fluidized bed (CFB) coal plant proposal (termed the *Clean Coal Project* by CSU) "was a unique and valuable opportunity that arose after the IRP report was issued in February 2002. In addition to hydroelectric, wind power, short-term seasonal purchases and demand-side management programs, The Clean Coal Project could be a resource providing electricity to meet a growing population and its resultant electric demands near the end of this, and into the next decade. This portfolio of resources provides a balanced and responsible plan that meets reliability requirements; is fiscally sound; promotes environmental stewardship; is flexible, and balances risk and cost."[3]

Far from being an electric resource alternative to be considered alongside the demand-side and renewable energy options cited in the 2002 IRP Action Plan, the CFB plant is being aggressively pursued by CSU through (1) several meetings on the project with its Board, (2) ongoing negotiations with the Department of Energy and Foster Wheeler, (3) initiation of the Environmental Impact Statement process, (4) expenditure of $2.0 million during 2003, and (5) proposed expenditure of $14.3 million in 2004.

However, significant questions remain regarding the advisability of the CFB proposal including (1) the presumed busbar cost of the power generated, (2) the rate impact on electric customers of CSU (2-3% per year for the next five years), (3) the risks of future regulation of certain emissions, including carbon dioxide, (4) the potential for fuel price increases, (5) the financial viability of Foster Wheeler, (6) the technical risk of an unproven technology, and (7) the possible impact on the bond rating of CSU.

Finally, based on the limited information currently available, it appears that 150 MW is well beyond CSU's needs over the next decade, and by its very nature coal generation is difficult and costly to scale down or add in more modest increments. Investments in efficiency and renewables are preferable to building the proposed new coal-fired power plant.

Clean Energy Alternatives for Colorado Springs

Expanding Energy Efficiency Programs

There are opportunities to cost effectively save energy (both electricity and natural gas) in virtually every home, business, and public building in Colorado Springs. Readily available, cost-effective energy efficiency measures include high efficiency, ENERGY STAR® appliances and air conditioners, compact fluorescent lamps and ENERGY STAR light fixtures, better building insulation, sealing leaky air distribution ducts, high efficiency ENERGY STAR windows, high efficiency furnaces and water heaters, energy efficient heating, air conditioning and lighting system for commercial buildings, and high efficiency motors and control systems for industries. All of these measures provide energy bill savings over their lifetime that are many times greater than their

[3] CSU's preamble to *Amended IRP Workshop Summary Questions and Answers July 28, 2003*, provided to interested parties on August 27, 2003.

first cost (or additional first cost). But these energy efficiency measures are underutilized due to lack of awareness, lack of financial incentives, lack of capital, and other barriers.

Because of this situation, most utilities operate energy efficiency and load management programs to stimulate greater adoption of cost-effective efficiency measures. Many states have adopted a small surcharge on all electricity sales to fund energy efficiency programs and other "public benefit" activities such as low-income energy bill assistance and renewable energy demonstration or implementation. The size of the surcharge varies from less than 0.1 cents per kWh to as much as 0.4 cents per kWh. At least 12 states (CA, CT, ME, MA, MT, NH, NJ, NY, OR, RI, VT, and WI) have adopted a surcharge of 0.15 cents or greater.

Colorado Springs Energy Efficiency Proposal

We propose that the Colorado Springs municipal utility adopt a utility bill surcharge of 0.15 cents per kWh to support a comprehensive set of energy efficiency and load management programs, also known as demand-side management (DSM) programs. This is equivalent to approximately 2.6% of the average retail electricity rate which is around 5.7 cents per kWh as of 2003.

This level of utility bill surcharge would generate about $7 million per year[4] for DSM programs considering that total electricity use in the CSU service area is projected to reach about 4,800 GWh in 2004.[5] For comparison, we believe Colorado Springs Utilities is now spending less than $1 million annually on energy efficiency and load management programs. Even with a DSM surcharge of 0.15 cents per kWh, retail electricity prices in Colorado Springs will still be below those in the Xcel service area.

We propose that the majority of the funds produced by the DSM surcharge be dedicated to energy efficiency programs, including energy efficiency programs for low-income households, as is the case in most other states. The money could be used for a variety of activities that save energy cost effectively, including:

- weatherization of low-income households,
- rebates for consumers that purchase energy-efficient appliances and lighting devices or undertake home retrofits,
- audits for and rebates to businesses that upgrade the efficiency of their heating, cooling, and lighting equipment,
- technical and financial assistance to industries that are interested in improving the energy efficiency of their processes,
- grants to pay a portion of the cost for energy savings projects in local government buildings and schools,
- training, certification, and outreach to increase the skills of builders, contractors, and energy efficiency service providers in the Colorado Springs area,
- education and promotion to increase the availability of and markets for energy-efficient products,

[4] Equivalent to a 2.5% carrying cost on the $275 million capital requirement for the proposed CFB plant.
[5] This estimate assumes electricity sales increase 3%/yr in 2003 and 2004.

- demand-side bidding to solicit energy efficiency projects from businesses and Energy Service Companies (ESCOs), and
- design assistance and incentives to builders and/or owners that construct highly energy-efficient new homes and commercial buildings.

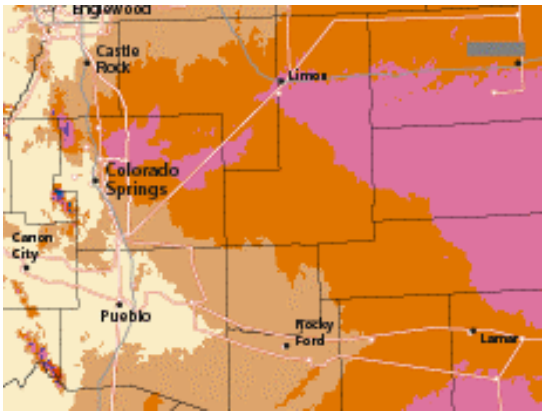
Renewable Energy Opportunities

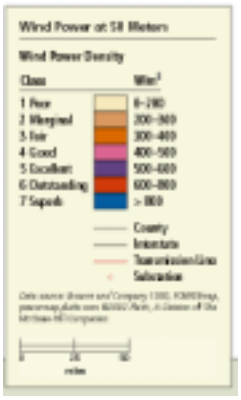
Renewable Energy refers to electricity produced by biomass, hydropower, geothermal, wind and solar energy. It can diversify energy supplies with clean, domestic resources, help stabilize electricity prices, hedge against future fuel price volatility and environmental costs, create jobs — especially in rural areas — and bring new income and economic development to farmers and ranchers. A dozen states and the City of Fort Collins have enacted minimum renewable energy requirements.

In terms of utility scale renewable resources, wind-generated electricity is generally accepted as having the lowest direct economic cost, and thus a good resource choice for Colorado, although distributed resources (e.g. rooftop solar electric systems, ground source heat pumps, fuel cells, microturbines, and small wind turbines) can provide significant benefits and should not be overlooked. In regards to hydroelectric power, Colorado Springs Utilities said, "Many of the best hydroelectric sites in the west have already been developed. In addition, hydroelectric has its own unique set of environmental and fiscal challenges. However, we believe there may be some small site-specific hydroelectric opportunities that could be developed in the future."[6]

Abundant Renewable Resources

The Renewable Energy Atlas of the West (see www.energyatlas.org) found sufficient wind resources exist in Colorado to provide over ten times the electricity currently consumed – and the vast majority of these resources are found in rural areas, with some close to existing power transmission lines. Also, good wind resources are present in El Paso County (see map).





In addition, Colorado has enough biomass resources to power nearly half of the electric needs of all our homes. And solar electricity can turn individual homes and business into small, distributed power stations, shaving peak demands that overload power lines and drive the need for new power plants.

[6] CSU response to Question 21, *Amended IRP Workshop Summary Questions and Answers July 28, 2003*, provided to interested parties on August 27, 2003.

Colorado Springs Renewable Energy Proposal

Colorado is blessed with extensive cost-effective renewable resources, especially wind. In Colorado, there are currently two, soon to be three wind projects – 30 MW at Ponnequin just east of I-25 on the Wyoming border, 30 MW at Peetz near Sterling on the Nebraska border, and a 162 MW facility under construction near Lamar. The Ponnequin and Peetz projects were built based upon customer demand for Public Service Company's (PSCo) Windsource green pricing program. Ponnequin, in particular, was built in small increments that didn't allow for capturing economies of scale, but was the basis for the green pricing tariff.

The Lamar facility is being built as a result of a PUC decision finding it to be the most cost-effective resource bid into PSCo's 1999 resource plan, and ordering the company to enter negotiations with the developer. The cost of electricity from Lamar wind is 3.261¢/kWh. As this cost is effectively four years old and costs at similar projects have declined since that time, any analysis of utility scale wind opportunities should be based upon current data obtained through a new competitive solicitation. Thus, we recommend that CSU issue a formal request for proposals (RFP) for scalable wind resources of a size large enough to capture significant economies of scale. The results of the RFP should then be evaluated in the utility's integrated resource planning process.

Assuming the results are in line with those obtained by many other utilities in the Midwest and West, CSU should move to acquire at least 75 MW of wind power, which will provide about 230 GWh of electricity annually – about 5% of the energy currently consumed in the CSU service area today. A joint venture with other Colorado utilities and retail consumers can increase opportunities for enhancing economies of scale and should be a component of the RFP.

Acquiring energy from wind production facilities will provide economic, environmental, and social benefits to Colorado Springs and communities where the wind turbines are located.

Potential Benefits of the Clean Energy Alternatives

Cost Savings

Energy and Cost Savings related to Energy Efficiency

The Southwest Energy Efficiency Project (SWEEP) issued a major study on electricity conservation potential in the Southwest region (including Colorado) late last year.[7] The study estimates the potential electricity savings from widespread adoption of cost-effective and available efficiency measures in all sectors during 2003-2020, the costs and benefits of achieving these savings, the water savings and avoided pollutant emissions from a high efficiency future, and the potential impact on employment and wages from a high efficiency future. Based on these results, it is possible to estimate the potential benefits from expenditures on energy efficiency and load management programs in Colorado Springs.

Spending $7 million per year on electricity conservation programs should save about 45 GWh of electricity (around 1% of electricity use in the CSU service area in 2003) based on experience nationwide. Assuming the programs start in 2004 and scale up in budget and savings 2%/yr as electricity demand grows, the savings would reach 335 GWh/year (about 6% of projected sales in

[7] The study, *The New Mother Lode: The Potential for More Efficient Electricity Use in the Southwest*, is available on the SWEEP web site, www.swenergy.org/nml/index.html

the CSU area) by 2010 and 900 GWh/year (about 12% of projected sales) by 2020. The DSM programs would not totally eliminate load growth in Colorado Springs, but they would reduce load growth to a more manageable level, say from 3%/yr to 2%/yr.[8]

These savings estimates are in line with the savings goals recently adopted by the Ft. Collins municipal utility and City Council. The Ft. Collins goals are to reduce electricity consumption per capita by 10% and peak demand per capita by 15% by 2012. The Ft. Collins municipal utility is expected to begin a broad range of energy efficiency and load management programs starting in 2004, funded through a small utility bill surcharge, in order to achieve these goals. Funding for the Ft. Collins DSM programs could be on the order of 0.15 cents per kWh, or even greater.

Cost Savings related to Renewable Energy

The most current large scale wind development project in Colorado is under construction near Lamar, Colorado pursuant to an original bid made in Xcel Energy's 1999 IRP process. Despite the four year old price for Lamar wind, the company's analysis of the effect of the project on its production costs using its PROSYM modeling software found that it will save its electricity consumers $4.6 million per year. According to recent testimony, "the comparison is meant to show that the Lamar wind facility, at a cost of $.03261 per kWh, will displace higher cost generation over the cost of a year inuring to the benefit of customers."[9]

Moreover, in Oklahoma, a group of energy intensive industrial consumers of Oklahoma Gas and Electric company testified in opposition to the company's proposal to market electricity from a wind facility as a premium-priced green power option (similar to Xcel's Windsource program), in favor of simply including the contract as part of the company's purchased power costs. Its rationale was that "the cost is lower than other marginal OG&E-generated or purchased power produced from natural gas which represents OG&E's marginal costs in most hours "and the fixed price will help reduce volatility in OG&E's monthly Fuel Cost Adjustment filings."[10] The fixed rate for the contract is $0.02468 per kWh for 15 years.

More recently, Xcel selected 450 MW of wind capacity that was bid into an all resource RFP for 1000 MW of power in Minnesota, based on cost alone. The wind bids came in around $0.025 per kWh compared to new coal and gas power plant bids of between $0.045 and $0.055 per kWh. Furthermore, Xcel said that ancillary services to support this level of wind was less than $0.002 per kWh. Thus, we believe it reasonable to assume a $.02/kWh savings from wind power compared to a new coal or gas-fired power plant. A 75 MW wind project yielding 230 GWh each year would save consumers and businesses about $4.5 million annually.

Summary of Cost Savings

In terms of resource needs, the energy savings estimates for Colorado Springs would mean that about 68 MW of baseload generating capacity can be avoided by 2010 and 180 MW of new

[8] Although load growth in Colorado Springs has been very high in recent years, it is expected to drop to 2-3% per year during 2006-2020, without accelerated DSM programs. See Electric Integrated Resource Plan, Colorado Springs Utilities, Colorado Springs, CO, Feb. 22, 2002.
[9] Direct Testimony of Ronald N. Darnell before the Federal Energy Regulatory Commission, pages 17-18, June 2003.
[10] July 24, 2003 Responsive Testimony of Douglas L. Burton before the Corporation Commission of the State of Oklahoma, Cause No. PUD 200300363, page 9.

baseload generating capacity can be avoided by 2020, as a result of the proposed DSM effort.[11] Furthermore, the DSM programs should have a disproportionate impact on peak load; i.e., the percentage reduction in peak load is greater than the percentage reduction in overall electricity use. Given the experience with DSM programs in the Xcel Energy service area in Colorado, the summer peak demand reduction could be 130-140 MW by 2010, and 320-350 MW by 2020.[12] In addition, capacity and energy from renewable resources such as wind can meet the resource needs of CSU at a lower cost than coal or gas-fired generation. Together, these resources can meet CSU's electrical needs through 2020.

By emphasizing peak load reduction, DSM programs and distributed generation can help to increase the system-wide capacity factor, allowing the current CSU system to operate at more efficient levels – especially important with the dramatically increased penetration of air conditioning in recent years.

Regarding cost effectiveness, we estimate that the overall cost of the efficiency measures necessary to realize these energy savings would be approximately $150 million during 2004-2020. Building 75 MW of wind will have a capital cost of about $75 million, or, if purchased from a third party developer, about $63 million over ten years. Together efficiency and renewables cost less than the capital cost *alone* of the proposed CFB plant, and will have no fuel costs. In addition, consumers and businesses in Colorado Springs would realize about $450 million in energy bill savings over the same period, meaning a net savings of about $300 million on energy efficiency measures only. Wind resources can save another $45 million by 2020, assuming the wind project comes on line by 2010.[13]

In total, the energy efficiency and renewable energy alternative would save consumers and businesses in Colorado Springs nearly $350 million between 2004 and 2020.

Water savings

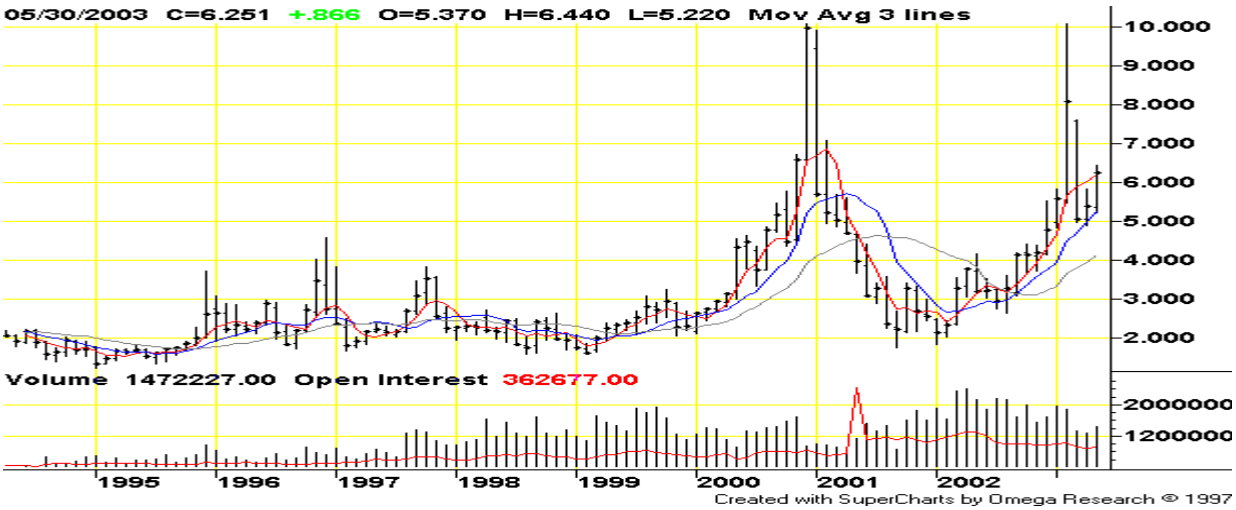
Saving and supplying these amounts of electricity from efficiency and renewables would result in significant water savings since fossil fuel-fired power plants are major water consumers. Assuming that an equal mix of coal and natural gas-fired generation is avoided through the energy efficiency and renewable energy efforts and that these power plants have conventional cooling systems, the water savings would reach about 230 million gallons per year by 2010 and 560 million gallons per year by 2020.

Reduced Risk of Fuel Price Spikes

The issue of high and volatile natural gas prices has become so important on the national front that Federal Reserve Chairman Alan Greenspan focused his June 10, 2003 remarks to the House Committee on Energy and Commerce on the subject. Because of the widespread use of Electric Cost Adjustment (ECA) Clauses by utilities, including CSU, increasing reliance on natural gas-fired power plants leaves consumers vulnerable to natural gas price spikes (see chart) as the utility

[11] These estimates assume the baseload power plant operates at a 70% average capacity factor and there are 7% T&D losses.
[12] Xcel's DSM programs in Colorado are reducing peak demand at an average program cost of about $460 per kW.
[13] These benefits are derived from reduced investment in new power plants, associated transmission and distribution equipment, fuel and operating and maintenance cost savings, and so forth.

automatically passes that cost (and risk) along to its ratepayers, as it does with all fuel costs.[14] In addition, natural gas prices are expected to remain at high levels for years because of depletion of the gas resource base in North America and tight gas markets. As a result, it would not be surprising to see the price of coal increase in the future as well.



Ten Years of Natural Gas Prices

In contrast to the volatile behavior of natural gas and wholesale electricity prices, renewable energy costs have steadily decreased. Moreover, the costs of wind and solar energy are largely fixed costs and are not subject to the vagaries of commodity markets. Expanding efficiency and renewable resource investments will help to shield consumers and businesses from fuel price volatility.

Reduced Environmental Risk

Utilizing energy efficiency measures and renewable resources to meet the future needs of Colorado Springs will reduce NO_x, SO_2, CO_2, and mercury emissions due to burning less fuel for power production. CO_2 emissions in particular would be cut significantly in percentage terms since this pollutant is not subject to other emissions controls.

With growing evidence that the earth's climate is being altered by emissions of carbon dioxide and other greenhouse gases, it is increasingly likely that the United States will act sooner or later to cap and then reduce its greenhouse gas emissions. The Wall Street Journal on May 7 of this year ran an article about insurance companies, Swiss Re in particular, weighing moves to reduce liability for global warming. Resource acquisition decisions that do not take into account potential future carbon regulation run the risk of imposing higher costs to power plant owners, the utility, and ultimately ratepayers, in the long run.

Acquiring generation resources with high carbon dioxide emissions risks even higher electric rates in the future as the costs of complying with future carbon dioxide regulation are passed on to

[14] Ironically, the genesis of the "fuel adjustment clause" in the early to mid-1970s was to stabilize utility earnings during periods of wildly fluctuating fossil fuel costs.

consumers.[15] The CSU resource plan did not quantify this risk, stating "Due to the current political and regulatory uncertainty, it's impossible to assign a risk or value at this time."[16] Notwithstanding the viewpoint of CSU, other utilities such as PacifiCorp are assigning a risk and value to such future regulation.

Current estimates are that carbon offset or reduction costs could range from around a few dollars to over $100 per metric ton of carbon.[17] To put these numbers in perspective, a carbon removal or offset cost of $40 per metric ton of carbon ($9.74 per U.S. ton of carbon dioxide) would add about $0.0086 per kWh to the cost of producing electricity at a coal plant and about $0.0038 per kWh to the cost of producing electricity at a natural gas fired combined cycle plant.[18] This implies at least a 20% increase in electricity cost from a coal-fired plant and about an 8% increase from a gas-fired plant. Energy efficiency and renewable energy resources, on the other hand, do not emit greenhouse gases and thus are not subject to this risk.

The circulating fluidized bed combustion unit being proposed by CSU leaves ratepayers particularly vulnerable to increased costs from future carbon dioxide emissions regulations. The "clean coal" technologies proposed at the facility do nothing to reduce or control carbon dioxide emissions from the facility. Indeed, from a carbon dioxide management perspective, the CFB unit has little to no advantage over last century's pulverized coal technologies. A CFB unit is only marginally more efficient than a pulverized coal unit, and economical opportunities to sequester or control carbon dioxide emissions from a CFB unit are extremely limited. Even other "clean coal" technologies, such as more efficient integrated-gasification combined-cycle or IGCC power plants, provide better opportunities for the sequestration of carbon dioxide.

Employment and Economic Development

Vigorous energy efficiency programs would have a positive effect on jobs and employment in the Colorado Springs area. Jobs would be created for promoting, selling, and installing energy

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[15] The history of environmental regulation in Colorado provides compelling examples of expensive retrofits and other environmental compliance costs that were not anticipated at the time the units were constructed. For instance, the owners of the Craig and Hayden coal plants in Northwest Colorado incurred hundreds of millions of dollars of retrofit costs to bring these facilities into compliance. Subsequently, Xcel imposed the Air Quality Improvement Rider (AQIR) to collect in excess of $200 million to clean up three Denver metro area coal-fired power plants that were built in the 1950s and 60s. More recently in the 2002 and 2003 legislative sessions, Xcel has sought a similar bill that would allow it to recover $250 million (2002 $) from ratepayers for the cleanup of two more coal stations – Pawnee and Comanche.

[16] CSU response to Question 7, *Amended IRP Workshop Summary Questions and Answers July 28, 2003*, provided to interested parties on August 27, 2003

[17] See, for example: Tellus Institute, *The American Way to the Kyoto Protocol*, prepared for the World Wildlife Fund, 2001. Andrew Plantinga, Thomas Mauldin, and Douglas Miller, "An Econometric Analysis of the Costs of Sequestering Carbon in Forests," *American Journal of Agricultural Economics*, November 1999: 812-824. Richard Newell and Robert Stavins, "Climate Change and Forest Sinks: Factors Affecting the Costs of Carbon Sequestration," *Journal of Environmental Economics and Management*, 2000: 211-235. Energy Information Administration, *Analysis of Strategies for Reducing Multiple Emissions from Power Plants: Sulfur Dioxide, Nitrogen Oxides, and Carbon Dioxide*, 2000. Charles Kolstad and Michael Toman, "The Economics of Climate Policy," Resources for the Future Discussion Paper 00-40REV, 2001. Natsource, *Assessment of Private Sector Anticipatory Response to Greenhouse Gas Market Development*, prepared for Environment Canada, 2002. World Resources Institute, Forest and Land-Use Change Carbon Sequestration Projects," www.wri.org/climate/sequester.html.

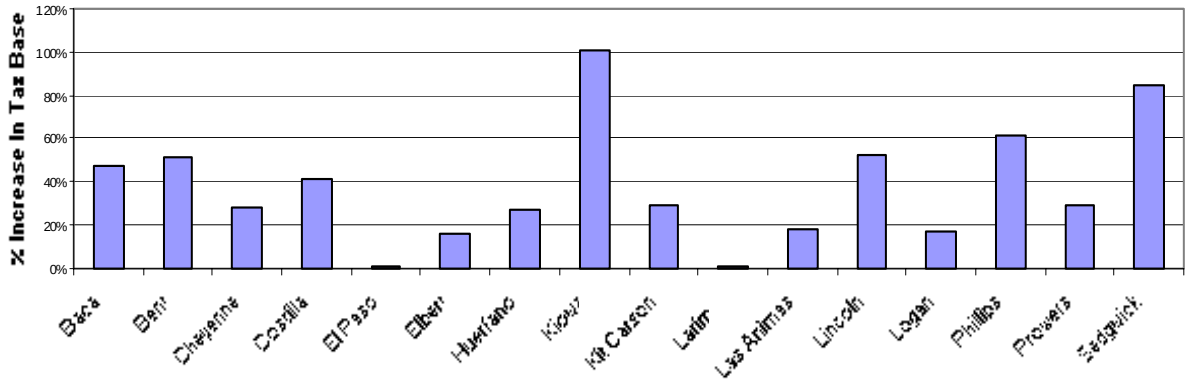
[18] The assumptions are as follows for a coal plant: a 400 MW coal plant, 190 pounds of carbon dioxide per MMBtu of fuel, a heat rate of 9,253 Btu per kWh, a 90 percent capacity factor, 3.67 pounds of carbon dioxide per pound of carbon, 2240 pounds per metric ton. The assumptions for a gas-fired combined cycle plant are as follows: a 400 MW plant, 117 pounds of carbon dioxide per MMBtu of fuel, a heat rate of 6,639 Btu per kWh, a 70 percent capacity factor, 3.67 pounds of carbon dioxide per pound of carbon, 2240 pounds per metric ton.

efficiency measures. Jobs also would be supported through the respending of energy bill savings by households and businesses in the local economy. Based on the New Mother Lode study, SWEEP estimates that operating energy efficiency programs at the level of $7 million per year starting in 2004 would lead to an overall net increase of 150 jobs in the local economy by 2010 and 500 additional jobs by 2020.

Outside of the City of Colorado Springs, Colorado's rural areas are facing the worst economic downturn in a decade. In some rural counties mortgage foreclosures are at record levels. Renewable energy development can have significant economic development benefits for rural communities.

Landowners typically earn royalties of between two and five thousand dollars per wind turbine per year. It's estimated that the six landowners will share $350,000 in annual income at the 168 megawatt[19] Lamar wind farm in Prowers County. In addition, biomass and geothermal power offer opportunities for farmers and ranchers to earn additional income and offset expenses.

This chart illustrates the increases in the tax base in Colorado's windiest counties related to installation of a 162 MW wind project. It shows that just one wind power project could increase the tax base of many counties by 20-100%, thereby supporting various county services, hospitals, fire departments, water districts, and community colleges as well as local school districts.



The Lamar wind project will add an estimated 83 installation jobs lasting for one year, indirectly supporting the creation of 95 additional jobs which could be located in other parts of the state, and 23 full-time operation and maintenance jobs for workers who will be employed locally for at least 25 years, supporting another 26 indirect jobs.

Efficiency and Renewable Energy Resources are the Peoples Choice

CSU's own research has found that 60% of residential and 73% of business customers want the utility to "research" power sources other than coal and natural gas. Indeed, only 3% of each category disagreed with that suggestion. Fully 75% of customers want CSU to consider environmentally friendly energy sources.[20]

[19] Due to the cost-effectiveness of the Lamar wind farm, the Lamar municipal utility is adding four turbines to the project, about 6 MW, to meet the electric needs of its own constituents. Thus the total project is 168 MW.
[20] From "Utilities Board/UPAC Orientation: Environmental Stewardship and Environmental Ends" presentation by Dave Padgett, August 21, 2003.

Energy efficiency programs are very popular with the general public. For example, deliberative polling sponsored by utilities in Texas found that increasing energy efficiency is usually the first choice of households when asked where utilities should acquire new resources, and is far more popular than building new fossil fuel power plants.[21] Likewise, a national poll conducted in December, 2001 found that in response to the question "Which of the following do you think is the best way to solve the nation's energy problems?", 37% of respondents chose "alternative energy", 34% chose "increased efficiency", and only 19% chose "increased production".[22]

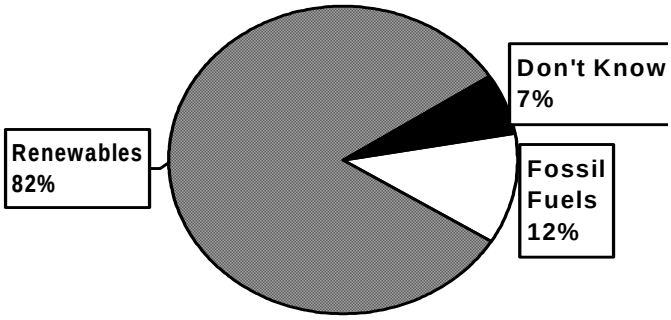
These figures are further supported by a survey to assess Coloradoans' knowledge and preferences concerning electricity generation and the fuels that may be used in the production process, undertaken by the Wells Fargo Public Opinion Research Program of the Graduate School of Public Affairs, University of Colorado at Denver.[23] The survey, issued on February 17, 2003, found:

1. When asked how utilities should generate additional electric power, fully 82% of Coloradoans said they should focus on renewable sources such as wind, solar or hydropower.

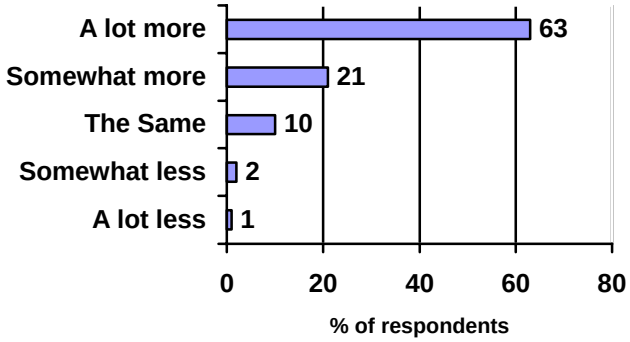
2. "Compared to what they are doing now, how much renewable energy should utilities in Colorado use?" Fully 84% of respondents say they want utilities in Colorado to use more renewable energy, with 63% saying they should use "a lot more" renewable energy, and 21%, "somewhat more."

3. 78% said they would support the state legislature requiring the large utilities in Colorado to produce 10% of their electricity from renewable sources within the next 10 years. Nearly half – 47% -- say they "strongly support" this measure, and an additional 30% "somewhat support" it. Only 19% express opposition: 11% "strongly oppose" the measure and 8% "somewhat oppose" it.

What Should Utilities Focus On?



Amount of Renewable Energy Utilities Should Use



[21] R. Lehr, W. Guild, and D. Thomas, Texas Utility Deliberative Polls. Draft Report to the National Renewable Energy Laboratory, Aug. 10, 2001.
[22] Results of Recent National Survey. The Mellman Group, Inc., Washington, DC, Jan. 15, 2002.
[23] The Wells Fargo Program completed a total of 602 telephone interviews with registered voters in Colorado between January 16 and February 5, 2003.

Interestingly, it is often found that when a utility begins to listen to what its customers want, particularly those that view the customers as the true owners of the utility, it begins to engage in greater amounts of energy efficiency and renewable energy programs. Examples in Colorado include the Fort Collins Utility, Holy Cross Rural Electric Association, and Delta-Montrose Electric Association. Fort Collins is setting the pace by establishing goals of reducing electricity consumption per capita by 10% and peak demand per capita by 15% by 2012, and obtaining 15% of its electricity from new renewable sources by 2017.

As a customer-owned and locally regulated municipal utility, similar to Ft Collins Municipal Utility, CSU has a responsibility to act in the interest of the greater community it serves. The Colorado Springs City Council, as the Utilities Board, assures that this mandate is met. We believe that due diligence, good process, and common sense dictate that interested and informed customer-owners participate in a meaningful way in the development of utility plans and alternatives and that substantial weight be accorded its recommendations.

Conclusion and Recommendation

By combining a strong DSM effort with a major wind project (or projects), CSU could add the equivalent of a 100-150 MW baseload conventional power plant through cost-effective energy efficiency and renewable energy investments by 2010. Doing so would displace the need for the proposed CFB plant entirely. In addition, energy efficiency programs and utility scale wind generation can be adjusted to more closely match resource investments with the changing load, unlike coal plants which have relatively long lead times.

Between these two cost-effective, abundant, and environmentally-sound resources, CSU can meet the electric service needs of its constituents in keeping with its philosophy of reliability, fiscal soundness, and environmental stewardship. In addition, the energy efficiency and renewable resource programs and measures are flexible, balance risk and cost, reduce water use, increase local employment, and reduce pollutant emissions. Colorado Springs should not pass up this opportunity to benefit its citizens, economy, and environment.

Recommendation

Colorado Springs should join Ft. Collins in establishing vigorous energy savings goals and expanding its energy efficiency programs in order to achieve the goals. Colorado Springs could do so by: 1) adopting a 0.15 cent per kWh surcharge on all electricity sales in order to increase DSM program funding to the level of around $7 million per year, and 2) setting goals of achieving electricity savings of 6% by 2010 and 12% by 2020, relative to recent forecasts of electricity demand. This level of investment in energy efficiency programs and measures in turn could save consumers and businesses in Colorado Springs on the order of $300 million net during 2004-2020. In addition, the energy efficiency programs and measures would reduce water use, increase local employment, and reduce pollutant emissions.

From a supply-side perspective, Colorado is blessed with abundant renewable resources and many utilities, both public and private, have begun to take advantage of the renewable energy benefits that include risk reduction, cost savings, and economic development. Further, acquisition of renewable energy is very much in line with public opinion. We urge CSU to proceed to gather relevant cost,

operational, and other information in the very near term in order to perform a credible evaluation of wind resources in its amendment of the February 2002 resource plan. Furthermore, assuming wind project proposals are competitive from a total resource cost perspective, we urge CSU to acquire at least 75 MW of wind power in the near term. This amount of capacity would provide about 5% of the electricity currently consumed in Colorado Springs and would provide economic, environmental, and social benefits in Colorado Springs and communities where the wind turbines are located.