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BEFORE THE ARIZONA CORPORATION COMMISSION
AZ CORP COMMISSION

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DOCUMENT CONTROL

IN THE MATTER OF THE COMPETITION IN) DOCKET NO. U-0000-94-165
THE PROVISION OF ELECTRIC SERVICES)
THROUGHOUT THE STATE OF ARIZONA.)
_____)

**EXCEPTIONS OF THE LAND AND WATER FUND OF THE ROCKIES
TO THE PROPOSED ELECTRIC UTILITY RESTRUCTURING RULES**

The Land and Water Fund of the Rockies (LAW Fund) hereby submits its comments on the recommendation of Hearing Officers Jane L. Rodda and Teena Wolfe regarding the Rules governing competition in the provision of electric services. The LAW Fund is a regional non-profit environmental law center providing legal and policy assistance to community groups throughout the Rocky Mountain and Desert Southwest region, and advocating for sustainable energy policy and practices in a variety of state and national forums. It has been actively involved in these proceedings since 1996, as well as the proceedings leading up to this docket.

Introduction and Summary

On February 5, 1999, Hearing Officers Jane L. Rodda and Teena Wolfe recommended certain changes to the draft Restructuring Rules to the Commissioners. Among those recommendations was elimination of R14-2-1609, the solar portfolio standard, and modifications to R14-2-1608, system benefits charges. We urge the Commission not to eliminate the solar portfolio standard at this time, but seek to maximize the benefits that use of solar energy provides with minimal cost impacts. Solar energy is an enormous natural resource to the state of Arizona, and among other things, provides significant economic development benefits. The Commission should encourage the parties to develop a meaningful method of accelerating the use of solar electric technologies that addresses the cost concerns.

Second, in both sections R14-2-1601, definition 36, and R14-2-1608.A, we recommend that the Commission include a parenthetical following "demand side management" to read (including market transformation programs), and eliminate market transformation as a separate item. This should eliminate the confusion evident in Calpine's comments.

Discussion of R14-2-1608 Solar Portfolio Standard

The LAW Fund does not disagree that the cost of solar energy is presently higher than conventional sources of electricity. However, we believe, and the Commission and others have acknowledged, that there are significant benefits associated with developing the solar electric market in Arizona. Indeed, the evaluation of the comments regarding the portfolio standard in Appendix C to the proposed Order states "We [the Commission] believe that solar generation has the potential to offer great public benefits." We agree and suggest that these benefits are ripe for acquiring at the present time.

There are cost-effective off-grid applications for solar energy including remote lighting, remote water pumping, remote homes and ranches, remote traffic control signals, and urban lighting and signals where line extensions, such as underground extensions, are prohibitively expensive. In addition, solar energy can be used to augment the capacity of transmission and distribution facilities.

A good example of a cost-effective off-grid application is the Hopi Solar Electric Enterprise, NativeSUN¹. Thousands of Native American people living in isolated locations have no electricity. The mission of NativeSUN is to "to promote the use of renewable resources and provide global leadership in their use," and to provide a method for Native societies to move towards greater self-sufficiency. Located in the village of Kykotsmovi on the Hopi Reservation in northeastern Arizona, NativeSUN provides electrical power to those who have none. Since 1985, it has installed over three hundred small solar electric systems at traditional housing in the Hopi villages and at rural Navajo residences, sponsored PV training with Ecuadorian natives, and installed a demonstration project at the Pueblo of Zuni. This in-state expertise is a valuable resource that can at once provide economic development benefits to Native Americans and advance the use of solar electric resources. Unfortunately, progressive suppliers such as NativeSUN have limited capital resources. Maintaining a solar utility program crafted to support these efforts is a very inexpensive way to continue and expand these efforts.

Moreover, because of the creation of a larger regional demand, a balanced solar program will make Arizona more attractive to manufacturers of photovoltaic cells and modules, dish-Stirling equipment, other solar thermal equipment, and the balance of system components, thereby adding to Arizona's economic base. A study completed in July 1998 by Economic Research Associates of Alexandria, Virginia found enormous economic benefits for Arizona associated with an alternative energy future that includes increased energy efficiency and solar electric resources.²

There are many other reasons for retaining a solar energy utility program in Arizona that were discussed in the LAW Fund's comments of January 29, 1999. These are incorporated by reference.

The Hearing Officer's recommendation in this proceeding apparently finds that, on balance, the cost outweighs the benefits. The recommendation also suggests that solar power is more properly addressed as part

¹ NativeSUN is a project of the Hopi Foundation, a 501(c)3 nonprofit corporation.

² A copy of the Executive Summary of this report is included as Attachment A.

of the System Benefits and/or the Integrated Resource Planning docket. We believe it is unlikely that an effective IRP process will continue in Arizona in a competitive supply environment. Indeed, as noted in Appendix C of the draft Order, TEP recommended that the IRP Rules be repealed. However, the System Benefits Charge is a mechanism for recovery of costs and could, with other appropriate public policies, provide strong incentives for solar energy.

We urge the Commission to not throw away four years of effort by making such a dramatic change to the Rules at this time. We recommend that the parties be allowed time to work out a solar program that addresses the concerns raised in the comments of January 29, and bring a recommendation to the Commission that fits within the schedule presently contemplated

Discussion of R14-2-1608 System Benefits Charge

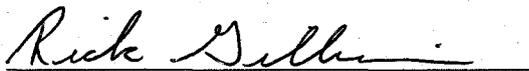
Second, it appears that one of the recommended changes to the system benefits charge is based upon a misunderstanding of the language by the commenting party. Calpine suggested, and the Hearing Officer adopted, elimination of the words "market transformation." Market transformation, as used here, refers to DSM programs that will help transform the energy efficiency market to become self-sustaining, i.e. over time reduce the need for utility-sponsored DSM programs to promote the use of more efficient electric end-use technologies. The confusion may be eliminated by including a parenthetical following "demand side management" to read (including market transformation programs) and eliminating market transformation as a separate item. This should occur in both sections R14-2-1601, definition 36, and R14-2-1608.A.

Conclusion

For the above reasons, we urge the Commission to retain the solar portfolio standard and allow the parties to come forward with a modified joint proposal that addresses the concerns raised in the January 29 comments. This can be done in a reasonable period of time that will not compromise the current procedural schedule.

Second, we recommend that the Commission modify sections R14-2-1601, definition 36, and R14-2-1608.A of the Rule to include the parenthetical described above immediately following "demand side management."

Respectfully submitted this 16th day of February, 1999.



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Arizona Energy Outlook 2010:

**Energy Efficiency and Renewable Energy Technologies
as an Economic Development Strategy**

Prepared for the

National Renewable Energy Laboratory

Land and Water Fund of the Rockies

**Arizona State Energy Office
a Division of the Arizona Department of Commerce**

Prepared by

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July 1998

Executive Summary

The state of Arizona has long been noted for its sunny days, dry, warm climate, and scenic beauty. The Grand Canyon, deserts, mountains, rivers, and attractive business climate make the state a very popular tourist destination and a desirable place to live, work, and retire. As a result, the state is experiencing startling population and job growth, and the economy is thriving. This growth and economic prosperity is shaping a growing demand for energy.

The access to quality energy resources ensures the availability of adequate power to drive the state's industrial processes, electricity to provide light and water to homes and businesses, and fuels to transport both people and goods throughout the world. Yet Arizona's most significant resources — energy efficiency and solar energy technologies — are relatively untapped.

A recent study by the National Renewable Energy Laboratory notes, for example, that Arizona has one of the best markets in the nation for cost-effective customer-sited photovoltaic systems. Moreover, the state has a high-technology manufacturing capacity that is well-above the national average, and the financial resources to support new industrial initiatives. Combined, these and other factors make Arizona a prime area for developing the manufacturing capacity to produce its own renewable energy technologies. Hence, Arizona is poised to take advantage of its renewable energy resources and the many associated job and economic development benefits.

At the same time, energy that is inefficiently used will constrain the Arizona economy. Conversely, energy efficient technologies will lower energy bills for residents and increase the productivity of Arizona businesses. The lower energy bills and higher productivity levels, in turn, will promote overall economic efficiency in ways that create new jobs

in the state. Moreover, accelerated investments in both energy efficiency and renewable energy technologies will enhance Arizona's air quality. Such investments will also diversify the mix of energy resources available to homes and businesses to ensure a stable and reliable resource base to meet future energy needs. Finally, new investments in energy efficiency and renewable energy technologies will encourage the development of new clean technologies and industries in Arizona.

In 1994, Arizona consumers and businesses spent approximately \$7.5 billion to provide for their overall energy needs. This total is 33 percent more than the combined annual tax collections authorized by the Arizona legislature during that same year. Many community

Policy and business leaders are looking at more productive strategies to meet the nation's economic and environmental needs. Energy efficiency and renewable energy technologies offer Arizona one such opportunity.

and business leaders are looking for ways to use state tax dollars more efficiently, yet few think about energy expenditures as a source of inefficiency. The size of the state's total energy bill suggests that Arizona consumers and businesses may also want to explore ways to use energy more efficiently.

Growing uncertainty about the economy and concern for continued environmental degradation are stimulating greater interest in energy efficiency and renewable energy technologies throughout the world. Largely due to significant increases in energy consumption, energy expenditures, and the resulting impact on the environment, interest in energy efficient technologies grows in spite of dramatic reductions in real energy prices in the past decade. Policy analysts and business leaders are looking at more productive strategies to meet the nation's economic needs, but to do so in a way that enhances environmental benefits. Energy efficiency and renewable energy technologies offer Arizona one such opportunity.

An alternative energy future in the year 2010 means an energy bill savings of \$1.4 billion for Arizona ratepayers and a net gain of 11,100 jobs for the Arizona economy.

This report examines the current energy consumption patterns and expenditures within the Arizona economy. It projects what "business-as-usual" energy patterns might look like through the year 2010. The findings suggest that by 2010 the state will be almost 15 percent more efficient in how it uses energy (compared

with 1994) to support a dollar of economic activity (measured as Gross State Product). But the findings also show that total energy consumption will increase by 35 percent as a result of a rapidly expanding population and a growing economy.

The study then analyzes the economic benefits of an accelerated investment in energy-efficient and renewable energy technologies. The energy efficiency target evaluated in this study is the level of investment needed to create an economy that is almost 26 percent more efficient by the year 2010. This target is somewhat lower than the 30 percent target suggested by the Energy Policy Act, first enacted by Congress and signed by then-President George Bush in October 1992, but represents a more realistic short-term target for Arizona. Although the federal target is not a mandate, it is a reasonable objective to encourage the aggressive development of a more energy-efficient economy whenever cost-effective technologies are available to ratepayers and businesses.

The findings of the study suggest that Arizona has made important strides in reducing the inefficient use of energy, especially in the period 1977 to 1987. But there is a larger opportunity available for the state's economy. More important, the untapped potential of energy efficient and renewable energy technologies represents a critical economic development strategy for Arizona. This study provides a benchmark to understand the economic potential that clearly exists in Arizona from adopting and actively pursuing an energy future which incorporates energy efficiency and renewables.

The study paints two pictures of Arizona. The first, follows a “business as usual” energy course. The second, identifies an “alternative energy Arizona” which, in the year 2010, pays approximately \$1.4 billion less in energy bills, has 11,100 more jobs, and enjoys a cleaner environment. Hence, increased investments in both energy efficiency and renewable energy technologies are important steps toward promoting a sustainable energy future for Arizona. More specific findings of the report include:

- ◆ In 1994, Arizona consumed a total of 1,033 trillion Btus of energy for all end-uses, the latest year for which energy consumption data are available. That level of consumption represents a per capita consumption of 254 million Btus.

The Arizona economy annually consumes the equivalent of just over 2,000 gallons of gasoline per capita to maintain the economic well-being of each of its residents.

If we were to think of this energy use in terms of an equivalent amount of gasoline, the Arizona economy annually consumes the equivalent of just over 2,000 gallons of gasoline per capita to maintain the economic well-being of each of its residents.

- ◆ Under the baseline projections, Arizona’s economy — represented by the change in Gross State Product (GSP) — will grow from \$89.4 billion in 1994 to \$141.5 billion in 2010 (measured in constant 1996 dollars). This is a 58 percent growth in GSP in that period. At the same time, the number of Btus of energy needed to support a dollar of GSP will decline by only 15 percent under the business-as-usual projection. This implies that total energy consumption will increase 35 percent to 1,395 trillion Btus in the year 2010.
- ◆ The accelerated energy efficiency and renewable energy scenario outlined in this study would lower the number of Btus needed to support a single dollar of Arizona GSP by another 11 percent — from a 15 percent decline in the baseline projection to a 26 percent decline in the alternative energy scenario. This combination of factors would lower Arizona’s energy requirements to 1,216 trillion Btus. This change represents a 13 percent reduction in total energy consumption over the baseline energy projections for the year 2010 — without reducing either the services or standard of living for Arizona residents and businesses.
- ◆ Under the alternative energy scenario for the year 2010, new energy efficiency investments would provide 179 trillion Btus of energy savings while new renewable energy technologies would provide another 5.6 trillion Btus. Arizona ratepayers in 2010 would save approximately \$1.4 billion in lower energy costs. Energy efficiency and renewable energy investments, on the other hand, would require a total of \$461 million from residents and businesses in 2010. Net energy bills, therefore, would decline by approximately \$952 million in 2010 (in 1996 dollars).

- ❖ The energy efficiency and renewable energy scenario would require a \$4.8 billion (in 1996 dollars) cumulative investment in the years 1998 through 2010. This relatively small level of investment (less than 0.3 percent of Arizona's cumulative GSP in that same period) can be achieved by

The benefits of Arizona's energy efficiency and renewable energy scenario can be achieved by redirecting less than 0.3 percent of the state's cumulative GSP toward more productive energy investments.

redirecting technology investments toward more productive energy efficiency investments and a mix of renewable technologies. This includes \$4.1 billion for efficiency in all end-use sectors, and \$700 million for electricity generating renewables.

- ❖ If successful, Arizona ratepayers would enjoy a cumulative energy bill savings of almost \$9.2 billion over that same period of time. With all values in 1996 dollars, the energy efficiency and renewable energy scenario generates a positive benefit-cost ratio of 1.92 over the 13-year period of analysis. But even this value understates the cost-effectiveness of the alternative energy investments since the energy savings and environmental benefits will continue for many years after the year 2010.
- ❖ New investments in energy efficiency and renewable energy technologies would increase Arizona's employment base — from a net increase of 900 jobs in the year 2000 to a net gain of 11,100 jobs by the year 2010.
- ❖ In 2010, renewable electricity generation accounts for 15 percent of total electricity consumption. This includes existing hydro resources and a mix of new renewable energy technologies. New renewable technologies (providing 534 million kilowatt-hours) account for 1 percent of total electricity consumption in 2010.
- ❖ The rise in employment in year 2010, driven largely by an increase in net energy bill savings, is equivalent to the number of jobs supported by the expansion or relocation of almost 90 small manufacturing plants in Arizona. Total wage and salary compensation would similarly rise by a net of \$233 million by 2010 (in 1996 dollars), the equivalent of tourist expenditures from approximately 1.5 million visitor days.
- ❖ While the average wage would fall by about \$27 per job in 2010 under the alternative energy scenario (the result of a slightly larger increase in the number of jobs relative to the rise in wage and salary compensation), the cost of living would also fall by an average of \$161 per job. Hence, Arizona's overall standard of living

would be expected to increase by an average of \$133 per job, or \$195 per household by the end of the study period.

- ◆ The alternative energy scenario examined in this study is aggressive and at the same time achievable. In fact, other studies suggest that additional gains in cost-effective energy efficiency improvements and greater use of renewables are highly possible. If these additional savings are pursued, the net return would extend the energy and economic benefits described in this analysis. Furthermore, if Arizona is able to develop a renewables manufacturing industry capable of producing 50 MW by 2010 — to meet in-state renewable electricity generating needs and take advantage of growing export opportunities — the market potential will be \$115 million in 2010 and generate 1,100 new jobs in that year.

BEFORE THE ARIZONA CORPORATION COMMISSION

JIM IRVIN

Commissioner-Chairman

RENZ D. JENNINGS

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CARL J. KUNASEK

Commissioner

IN THE MATTER OF THE COMPETITION IN)
THE PROVISION OF ELECTRIC SERVICES)
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DOCKET NO. RE-00000C-94-0165

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that the original and ten (10) copies of the EXCEPTIONS OF THE LAND AND WATER FUND OF THE ROCKIES TO THE PROPOSED ELECTRIC UTILITY RESTRUCTURING RULES were hand-delivered to Docket Control, Arizona Corporation Commission, 1200 West Washington Street, Phoenix, Arizona 85007, on the 16th day of February, 1999, and a true and correct copy was sent by U.S. mail, first-class and postage prepaid, to each of the following:

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