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To: Arizona Corporation Commission
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Re: **Staff Report on Proposed Changes to the Environmental Portfolio Standard Rules**
(Docket Nos. RE-00000C-00-0377 & RE-00000C-05-0030).

As a renewable energy co-generator with Unisource Energy Services since May, 2003, I have more than a passing interest in the role of distributed generation as part of a modified Environmental Portfolio Standard. I have focused on the **Portfolio Percentage**, the **New Distributed Renewable Energy Requirement**, and **In-state Resources** and have made observations and formulated questions as follows:

Portfolio Percentage of 15% of the total retail energy sales by 2025 is ambitious but possible. The EPS will ramp-up the percentage at ½ percent to 1 percent annually over the next 20 years. This should allow time for the construction industry, especially the housing market to adapt. Ideally, more homes will be built that incorporate both passive solar designs as well as photovoltaic systems to create a structure that will produce, or save, as much energy as it would have consumed if constructed without such enhancements.

New Distributed Renewable Energy Requirement is also an ambitious goal with 25% of the EPS coming from various forms of on-site renewables including passive systems such as solar daylighting, solar space heating, in addition to high-tech oriented photovoltaics, wind turbines, solar hot water heaters, solar air conditioners, small hydro generators and fuel cell derived from renewables.

Currently, most small distributed energy devices are typically retrofits of existing buildings. These systems generally cost \$7.00-plus per DC watt to install. Systems integrated with new residential construction typically cost less than \$7.00 per DC watt to install. Should the ACC encourage electric utilities to prioritize the installation of photovoltaic systems in new construction in order to receive more renewable watts per dollar invested?

With the ACC seeking to increase the EPS to 15% by 2025, and 25% of that coming from distributed generation (estimated 2.6 billion kWhrs, p. 13, ACC Staff Report), the building and development codes of cities and counties should promote distributed generation, especially in new construction, given the inclusion of solar day-lighting and passive solar heating in the technology mix. Such encouragement could be directed at local city and county permitting agencies. Many cities and counties in Arizona have general plans which support energy conservation and renewable energy development. The City of Scottsdale and Coconino County have gone one step further and

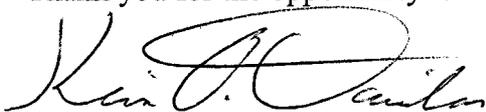
have adopted "green" building standards.¹ Solar modules could be encouraged along with low emissivity windows, passive solar designs and the use of recycled building materials.

Could the ACC seek a "solar set aside" rule where 20% of new housing construction in a typical high-end master planned community must meet a zero-energy standard (production equals consumption over a one-year period)? A review of the ACC's estimated retail electric sales projection shows that by 2025, 2.6 billion kWhrs will come from distributed generation and at least 20% of that being solar, or 522 million kWhrs. That would equal over 100,000, 3.0 kWh photovoltaic systems, if the percentage in made up strictly from photovoltaic systems.²

Exposure to various forms of distributed generation is important to public acceptance. For example, seeing photovoltaic systems on the roof tops, or living and working in buildings with passive solar heating and solar day-lighting incorporated into their design, should get people to talk about the benefits and should increase public acceptance. Presently, energy production is "out of sight and out of mind" for most citizens. Ideally, the revised EPS will bring added awareness and value to the energy both produced and conserved, foster a sense of ownership, and, ultimately, an increased level of environmental stewardship.

In-state Resources will provide additional economic development in Arizona because 75% of the EPS, or 7,800 million kWhrs, will be produced from non-distributed generation facilities, such as TEP's Springville facility, in 2025. In 2005, the 4.6MW Springerville facility is projected to produce 7.7 million kWhrs or less than 0.1 percent of the 2025 EPS goal (about 0.5 percent of the "solar electric" goal). Even with only a 20% solar requirement, some 200 Springerville-like facilities will have to be on-line. The state's solar resource is estimated at 101 million mWhrs/year. Wind resources are less (5 million mWhrs/year) but significant enough to be utilized.³ Here is a chance to promote new and comparatively benign technologies when compared to conventional power plants. Given the large amounts of relatively inexpensive land needed to produce solar energy, development will most likely occur in rural counties with good solar, wind and biomass resources, especially at higher elevations. Cooperation with the State Land Department and the Bureau of Land Management in placing these new renewable energy generation facilities is essential from the early planning stages given the environmental review under NEPA for development on federal lands.⁴

Thank you for the opportunity to contribute to the Environmental Portfolio Standard Rule Changes.



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¹ See Scottsdale's program at: <http://www.ci.scottsdale.az.us/greenbuilding/default.asp> and Coconino County's program at: <http://co.coconino.az.us/commdevelopment/sustainable.asp> These have been modeled on the US Green Building Council's LEED (Leadership in Energy and Environmental Design) standards: <http://www.usgbc.org/>

² Or, about 210,000, 1.5 kW solar arrays based on the author's empirical evidence from his photovoltaic system that produced nearly 2.5 mWhr in 2004.

³ Renewable Energy Atlas of the West, 2002 edition (<http://www.energyatlas.org/>)

⁴ The Department of the Interior has prepared a Draft Wind Energy Development Programmatic EIS for Eleven Western States which seeks to expedite the NEPA permitting process for new wind turbine farms: <http://windeis.anl.gov/>