



MEMORANDUM

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TO: Docket Control
Arizona Corporation Commission
1200 West Washington Street
Phoenix, AZ 85007

FROM: David Berry
Western Resource Advocates
PO Box 1064
Scottsdale, AZ 85252-1064

DATE: April 1, 2008

SUBJECT: Revision to Western Resource Advocates' Comments on Tucson Electric Power Company – Application for Approval of Its Renewable Energy Standard and Tariff Implementation Plan (Docket No. E-01933A-07-0594).

Attached are Western Resource Advocates' (WRA's) revised comments on Tucson Electric Power Company's (TEP's) Renewable Energy Standard Implementation Plan. WRA filed its comments on March 31, 2008. Following a discussion with TEP, we deleted the discussion of green power sales and hereby submit revised comments.

Arizona Corporation Commission
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BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

MIKE GLEASON, Chairman
WILLIAM A. MUNDELL
JEFF HATCH-MILLER
KRISTIN K. MAYES
GARY PIERCE

IN THE MATTER OF THE
APPLICATION OF TUCSON ELECTRIC
POWER COMPANY FOR APPROVAL
OF ITS RENEWABLE ENERGY
STANDARD AND TARIFF
IMPLEMENTATION PLAN.

DOCKET NO. E-01933A-07-0594

**Comments of Western Resource
Advocates (Revised)**

On October 12, 2007, Tucson Electric Power Company (TEP) filed its 2007 Renewable Energy Standard (RES) Implementation Plan pursuant to A.A.C. R14-2-1813. On March 25, 2008, Staff filed a report on TEP's plan that apparently recommends no changes to TEP's plan for non-distributed resources. Western Resource Advocates (WRA) hereby files its comments concerning the non-distributed resource portion of TEP's plan.

First of all, it is important that TEP expeditiously begin obtaining the eligible resources necessary to meet RES requirements. In addition, WRA recommends that the Commission modify TEP's plan with regard to non-distributed resources as follows:

- TEP should seek wind projects with capacity factors in excess of 30% as other utilities have done instead of low capacity factor projects implied by the plan.
- For initial planning purposes, the above-market cost for non-distributed resources should be \$30 per MWh, not \$45.50 per MWh as proposed by TEP.
- TEP's 2008 full year budget for non-distributed resources should be \$3,900,000 for energy plus administrative costs of \$370,000 for a total of \$4,270,000.¹ This budget should be prorated for a partial year.
- TEP's 2009 budget for non-distributed resources should be \$4,300,000 for energy plus administrative costs of \$370,000 for a total of \$4,670,000.
- Because actual costs will deviate from budgeted costs, TEP should be able to recover, in future surcharge adjustments, all above-market costs and reasonable administrative costs actually incurred under Commission-approved purchased power contracts or Commission-approved, utility-owned projects for non-distributed resources.

¹ TEP requested \$6,263,259 for 2008 (Attachment 9: Purchased Renewable Energy = \$5,893,259 + \$95,000 for grid stability analysis, RFP preparation, auditor, and labor overhead + \$275,000 for Energy Management System and Energy Accounting and Settlements).

The following sections provide support for the recommendations listed above.

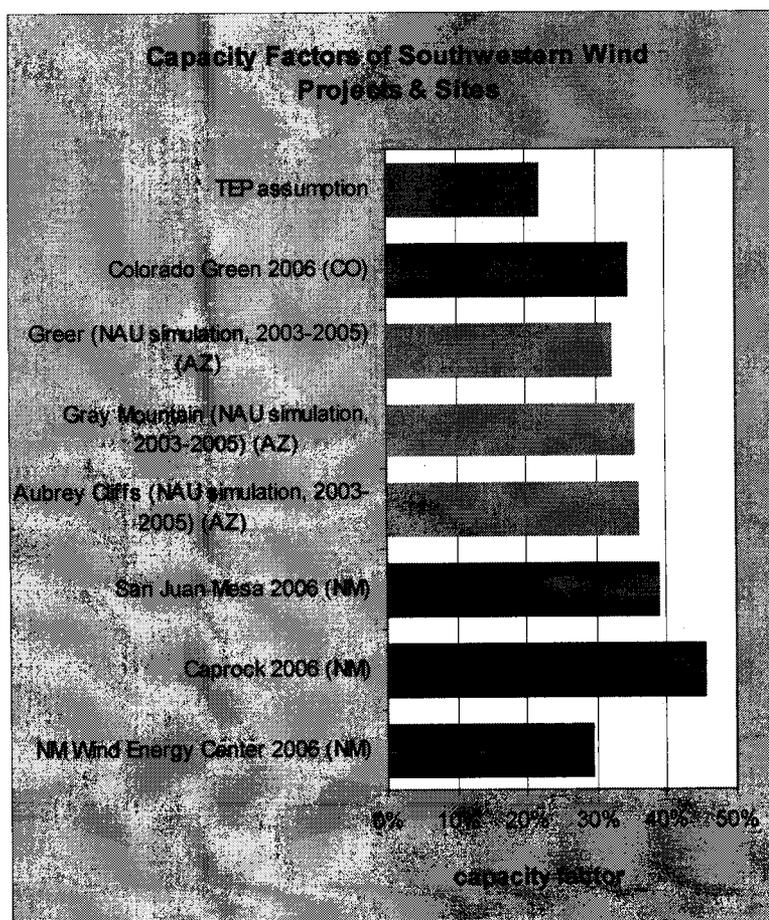
1. Non-Distributed Resources Available to TEP

TEP should seek non-distributed renewable resources throughout the Southwest. In some cases, TEP will need to make arrangements for additional transmission capacity to access these resources over the long run. Among the types of non-distributed resources potentially available to TEP are:

- High quality wind energy in northern Arizona, eastern New Mexico, and possibly southeastern Colorado.
- Geothermal energy from the Salton Sea area of California and from Utah.
- Biomass from a variety of sources in Arizona, including wastewater treatment plants, agricultural waste, landfill gas, and wood waste.
- Solar energy, including large scale concentrating solar power, such as the Nevada Solar One project and the proposed Abengoa Solana project.

2. Capacity Factors for Wind Projects

TEP's assumed capacity factor for possible wind projects is about 22%, which is much lower than the capacity factors of other projects and sites in the Southwest. The figure to the right shows the capacity factors in 2006 for existing large wind projects in eastern New Mexico and southeastern Colorado and estimated capacity factors for several sites in Arizona.² In general, the higher the capacity factor of a wind energy project, the lower its cost per MWh



² Data for the existing projects are from utilities' FERC Form 1 filings for 2006, EIA Form 906/920, and the American Wind Energy Association website for project nameplate capacity (www.awea.org). Capacity factors for Arizona sites are from Northern Arizona University, *Final Report: Arizona Public Service Company Wind Integration Cost Impact Study*, September 2007, Figure 18.

generated. Barring unusual opportunities, TEP should seek wind projects with annual capacity factors in excess of 30% as other utilities have done.

3. Above-Market Cost of Non-Distributed Resources.

TEP indicates that the above-market cost of non-distributed renewable energy projects (apparently wind and biomass) is \$45.50 per MWh in 2008 and 2009 (Attachments 1 and 9). The above-market cost of renewable energy is the difference between the cost of renewable energy resources and the cost of the conventional resources that would otherwise be used in the absence of the RES requirements. In the next few years, the largest portion of TEP's renewable energy is likely to come from wind resources. This section discusses TEP's avoided costs resulting from acquisition of wind energy and the costs of acquiring wind energy.³

We first address conventional generation costs. Renewable energy will displace TEP's marginal resources. Based on information provided in TEP's 2006 FERC Form 1 filing, we assumed the marginal units are the San Juan, Luna, and DeMoss Petrie plants.⁴ We estimated the 2009 avoided cost of conventional generation associated with a wind energy project that produced energy primarily in non-summer months to be \$41 per MWh.⁵ With renewable energy, TEP will also be able to avoid costs of complying with greenhouse gas emission regulations, but these regulations will not be in effect in 2009.

We next address wind generation costs. The figure below shows the contract costs of new wind and geothermal contracts in the West where service starts in 2006, 2007, or 2008, thereby capturing the cost increases of the last few years. There are two samples – one compiled by WRA consisting of western contracts, and one compiled by Lawrence Berkeley Laboratory (LBL) consisting of contracts throughout the US.⁶ Based on the experience of other utilities, wind energy could be acquired for about \$56 per MWh in 2006. Escalating this price to reflect recent increases in electric structure construction

³ The cost of acquiring biomass energy is project specific. There are many types of biomass generation and the costs are likely to vary greatly. Therefore, we did not estimate biomass costs.

⁴ TEP may also avoid some power purchases.

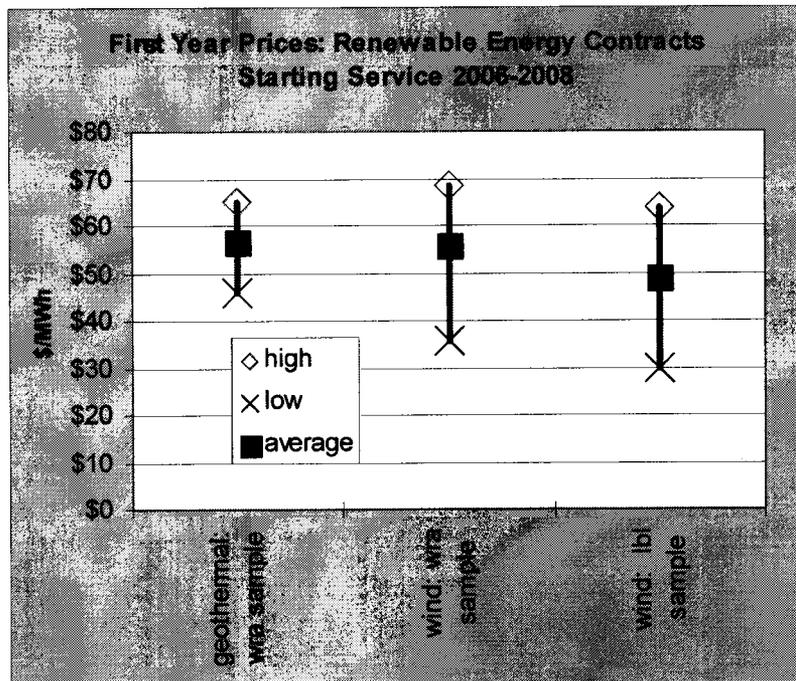
⁵ It was assumed that the San Juan plant would be the marginal unit 90% of the time, the Luna combined cycle plant would be the marginal unit 9% of the time, and that the DeMoss-Petrie combustion turbine would be the marginal unit 1% of the time. Heat rates are from TEP's 2006 FERC Form 1. The price of coal for San Juan in 2009 is assumed to be \$2.28 per MMBtu. The price of natural gas in 2009 is assumed to be \$9.00 per MMBtu which is the average of the monthly futures prices for 2009 based on NYMEX settlements as of March 19, 2008. The weighted average variable costs would be \$33.02 per MWh in 2009. Avoided capacity is assumed to be a new combustion turbine costing \$700 per kW (with a capital recovery factor of 15%) plus fixed operating and maintenance costs. Annual capacity costs are \$117.85 per kW per year. The wind energy project is assumed to have a capacity credit of 20% of nameplate capacity and a capacity factor of 35%. We did not estimate 2008 costs because we assumed TEP would buy very little new renewable energy in 2008 given the late start for the program.

⁶ US Department of Energy, Energy Efficiency and Renewable Energy, *Annual Report on US Windpower Installation, Cost and Performance Trends: 2006*, May 2007, p. 11.

costs,⁷ a new wind energy contract in 2009 would have a price of about \$67.10 per MWh. In addition, TEP would incur integration costs for wind energy of about \$3.50 per MWh in 2009.⁸

Using these data, the above-market cost of wind energy in 2009 would be about \$30 per MWh ($\$67.10 + \$3.50 - \41.00, rounded to the nearest whole dollar), somewhat lower than TEP's estimate.

Therefore, we recommend that the Commission adopt an above-market price for non-distributed energy projects for this initial plan of \$30 per MWh for the remainder of 2008 and for 2009. Doing so will reduce TEP's budget as explained below. TEP should be able to recover its actual above-market costs after it has incurred those costs, and after the Commission has reviewed TEP's purchased power contracts or utility-owned projects and TEP's calculation of its avoided costs. Deviations between actual above-market costs and the \$30 per MWh estimate would be handled in future surcharge adjustments.



Therefore, we recommend that the Commission adopt an above-market price for non-distributed energy projects for this initial plan of \$30 per MWh for the remainder of 2008 and for 2009. Doing so will reduce TEP's budget as explained below. TEP should be able to recover its actual above-market costs after it has incurred those costs, and after the Commission has reviewed TEP's purchased power contracts or utility-owned projects and TEP's calculation of its avoided costs. Deviations between actual above-market costs and the \$30 per MWh estimate would be handled in future surcharge adjustments.

4. Budget for Non-Distributed Resources

To develop a budget for the non-distributed portion of TEP's RES implementation plan, an estimate of the non-distributed RES requirement must be made. TEP's plan makes assumptions about its 2008 and 2009 electricity sales.⁹ It is also necessary to account for generation and multipliers from existing non-distributed resources. We adopted TEP's assumptions in which TEP plans to acquire 129,522 MWh of biomass and wind energy for 2008 and 144,150 MWh of wind and biomass for 2009.

⁷ Bureau of Economic Analysis, National Income and Product Accounts, Table 5.4.4.B.

⁸ Based on: Northern Arizona University, *Final Report: Arizona Public Service Company Wind Integration Cost Impact Study*, September 2007, and on B. Parsons, et al., "Grid Impacts of Wind Power Variability, Recent Assessments from a Variety of Utilities in the United States," Golden, CO: National Renewable Energy Laboratory, NREL/CP-500-39955, 2006.

⁹ According to UniSource Energy Corporation's 2006 Annual Report (p. 48), TEP's retail sales grew from 7,989,667 MWh in 2002 to 9,201,419 MWh in 2006 for an average annual compound growth rate of about 3.6%. Over the period 1982 to 2006, the average annual growth rate in sales was about 3%. TEP's RES implementation plan assumes future growth of only 1.52% per year.

Based on an above-market cost of \$30 per MWh, TEP's 2008 full year budget for non-distributed resources should be \$3,900,000 plus administrative costs¹⁰ of \$370,000 for a total of \$4,270,000. TEP requested a budget of \$6,263,259 for 2008.¹¹ The 2008 budget should be prorated for a partial year. TEP's 2009 budget for non-distributed resources should be \$4,300,000 for generation plus administrative costs of \$370,000, for a total in 2009 of \$4,670,000.

Respectfully submitted, this 1st day of April, 2008 by

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Original and 13 copies filed this 1st day of April 2008 with: Docket Control, Arizona Corporation Commission, 1200 West Washington Street, Phoenix, AZ 85007.

Electronic copies to service list.

¹⁰ Per Attachment 9: \$95,000 for a grid stability analysis, RFP preparation, an independent auditor, and labor overhead, plus \$275,000 for energy management system and energy accounting and settlements.

¹¹ TEP's budget for 2008 is as follows: Purchased Renewable Energy = \$5,893,259 + \$95,000 for grid stability analysis, RFP preparation, auditor, and labor overhead + \$275,000 for Energy Management System and Energy Accounting and Settlements (TEP Attachment 9).