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Tucson Electric Power Company

One South Church Ave., P.O. Box 711
Tucson, Arizona 85702

April 1, 2009

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

Re: Decision No. 70314, Docket No. E-01933A-07-0594
2009 Renewable Energy Standard and Tariff Compliance Report

Pursuant to A.A.C. R14-2-1812, each Affected Utility shall file with Docket Control a report that describes its compliance with the requirements of the Renewable Energy Standard and Tariff ("REST") Rules. Decision No. 70314 (April 28, 2008) approved Tucson Electric Power Company's ("TEP") 2008 REST Plan. Please find enclosed an original and thirteen copies of TEP's 2009 REST Compliance Report for year-end 2008. This report contains confidential information that is being provided to Commission Staff separately.

If you have questions or comments please contact me at (520) 884-3680.

Sincerely,

Jessica Bryne

Jessica Bryne
Regulatory Services

Enclosures: Compliance Report

cc: Compliance, ACC
Shannon Kanlan, ACC

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Tucson Electric Power Company

Response to R14-2-1812 Utility Reporting Requirements

of the

Arizona Corporation Commission

RENEWABLES DATA
FOR
YEAR-END 2008

A UniSource Energy Company
P.O. Box 711
Tucson, Arizona 85702

Executive Summary

On August 14, 2007, the Renewable Energy Standard and Tariff, ("REST") R14-2-1801, became effective, following approval from the Arizona Corporation Commission ("ACC"). The REST rules require that Tucson Electric Power Company ("TEP") and other affected utilities generate or purchase at least 15% of their total annual retail energy requirements from eligible renewable energy resources by 2025, with smaller amounts required in earlier years.[1] This report covers TEP's progress for June 1, 2008 through December 31, 2008, the prorated 2008 REST implementation period.

TEP's REST requirement for this period was **106,346,000** Renewable Energy Credits ("RECs"), which reflects 1.75% of TEP's retail energy sales for the period of June 1, 2008, through December 31, 2008.[2] Ten percent (10%) of this requirement must be met through distributed energy ("DE") renewable resources (10,640,000 kWh); of this amount, 50% must come from residential customer systems, and 50% must come from non-residential, non-utility applications. The remaining portion of the REST requirement (90% of the total goal) includes 95,760,000 kWh of utility-scale renewable energy resources.

TEP has **188.4 million** RECs available to meet the 2008 REST requirement. This REC availability includes RECs that were carried over (not retired) from 2007 and RECs produced in 2008, including the 2008 prorated Arizona Environmental Portfolio Standard ("EPS") implementation period. The total REC amount includes actual kWh production from eligible renewable energy resources as well as applicable extra credits that were achieved through the REST multipliers.

Table ES-1 summarizes the REST compliance requirements, progress toward those requirements, and the installed capacity for each category of resources: utility-scale resources, residential DE resources, and non-residential DE resources. Additional detail on TEP's progress toward each of these goals is described below.

On April 28, 2008, the ACC approved TEP's REST Implementation Plan, including an annual budget of $15.58 million. The budgeted amount was prorated for the 2008 REST compliance period (June 1, 2008, through December 31, 2008); this seven-month budget was $9.1 million.[3] Of the $9.1 million allocated for the REST program, TEP spent $3.7 million, including $2 million on customer incentives alone. In addition to REST funds actually spent, nearly $850 thousand was reserved for commercial DE projects, $1.67 million was reserved for residential photovoltaic ("PV") projects, and $345 thousand was reserved for solar water heating projects. The amount of surcharge collected from customers relative to program expenditures will be deferred and reflected in TEP's financial statements as a regulatory liability. REST funds that are not spent in a given year are then deducted from the annual approved funding in the following year.

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[1] Under REST, eligible renewable energy resources include the following: biogas electricity generation, biomass electricity generation, eligible hydropower resources, fuel cells that use renewable fuels only, hybrid wind and solar electric generation, new small hydro (10 MW or less), solar electric generation, wind generation, and distributed renewable energy resources (these include renewable CHP, commercial solar pool heaters, biomass and biogas thermal systems, biogas electric generation, geothermal space and process heating, solar daylighting, solar HVAC, solar space heating, solar water heating, and small wind generation (1 MW or less).

[2] One renewable energy credit, or REC, is equivalent to one kilowatt-hour (kWh) of production from an Eligible Renewable Energy Resource. Except for RECs from Distributed Energy resources, the energy from an Eligible Renewable Energy Resource that is associated with a REC must be delivered to its retail customers.

[3] The RES Tariff for TEP customers includes a $0.004988 per kWh rate, and caps of $2.00, $39.00, and $500.00 respectively for residential, commercial, and industrial customers.

ES-1 2008 REST Compliance Summary

	Utility-Scale Resources	Distributed Energy: Residential	Distributed Energy: Non-Residential
Installed Capacity			
Pre-2008 (kW)	9,914	1,474	29
2008 New Installations (kW)	0	359	805
Reserved in 2008 but Not Yet Installed (kW)	0	820	3,400
Renewable Energy Credits			
Carry Over from EPS	137,033,853	1,850,730	1,173,475
RECs Created in 2008	44,169,622	3,501,112	698,483
Total Available RECs	*181,203,475*	*5,351,842*	*1,871,958*
RECs Needed for Compliance	95,760,000	5,320,000	5,320,000
RECs Retired for Compliance[4]	95,760,000	5,320,000	1,871,958
2008 Compliance (%)	**100%**	**100%**	**35%**
RECs Carried Forward to 2009	85,443,475	31,842	0

Utility-Scale Renewable Energy Goals

TEP achieved the utility-scale renewable energy goals during the prorated 2008 REST compliance period. The RECs retired for the prorated 2008 compliance period came from these resources: landfill gas, solar PV, wind resources, and Partial Manufacturing Credits allowed through REST. The surplus RECs available at the end of 2008 were carried forward to be used in future years. No new utility-scale capacity was added during 2008; the total cumulative installed capacity remained at 9,914 kW.

Residential Distributed Energy Goals

TEP achieved its Residential DE goal during the prorated 2008 REST compliance period. The RECs retired for this period were associated with solar PV and solar hot water installations at residential sites. Roughly one-third of the RECs retired in 2008 were carried over from the EPS program; RECs created during 2008 accounted for two-thirds of the RECs retired for compliance. During 2008, TEP customers increased the installed capacity of residential PV systems by 12.8% from 1,474 kW to 1,662 kW. The installed capacity for solar hot water installations is 171 kW.

[4] Had the non-residential reserved systems been installed this year, the number of non-residential DE RECS available would have been 5,780,000

Non-Residential Distributed Energy Goals

TEP fell short of its Non-Residential DE Goals during the prorated 2008 compliance period. Although installed capacity increased by over 30 times the installed capacity at the end of 2007, these systems did not produce enough electricity to achieve the non-residential portion of the distributed energy goals.

Several reasons contributed to this shortfall:

- The lead time to develop and install a non-residential PV system is roughly one year, which was shorter than the prorated 2008 compliance period;
- Uncertainty regarding the renewal of the federal Investment Tax Credit ("ITC") delayed schedules for projects that may not have been completed by the end of 2008; the bank bailout in October 2008 addressed this issue, but not soon enough to put sufficient projects on track for completion by the end of the year; and
- The credit crisis of the fourth quarter of 2008 made it more difficult to finance a PV system of sufficient scale.

Non-residential customers have reserved 3,400 kW of PV systems, which would quintuple the current amount of installed capacity (834 kW) if built. TEP anticipates that these systems will be built during 2009.

1. Introduction to TEP

TEP, a regulated investor-owned electric utility, has provided electric service to the community of Tucson, Arizona, for over 100 years. TEP is the primary subsidiary of UniSource Energy Corporation ("UniSource Energy"), which was incorporated in the State of Arizona in 1995 and obtained regulatory approval to form a holding company in 1997. In 1998, TEP and UniSource Energy exchanged shares of stock resulting in TEP becoming a subsidiary of UniSource Energy. Following the share exchange, TEP transferred the stock of its subsidiary Millennium to UniSource Energy.

TEP has pursued renewable energy development both on the customer side and the utility side of the meter since the inception of its Sunshare program in 2001 and the development of its utility-owned Springerville Solar PV array, which was originally constructed in 2002. TEP also offers the GreenWatts program, which allows customers to buy a renewable form of power and pool resources in order to fund the construction of community-based solar projects. Among other similar projects funded by GreenWatts, the two PV projects at the Tucson Botanical Gardens and the 9.6 kW PV system at Davidson School (Tucson Unified School District) have been completed in recent years.

This report covers TEP's progress for January 1, 2008 through December 31, 2008, including the prorated 2008 REST implementation period from June 1, 2008 through December 31, 2008. It also describes renewable energy production from the EPS compliance period, January 1, 2008, through May 31, 2008.

2. Renewable Energy Standard and Tariff Legislation and Requirements

On August 14, 2007, the REST R14-2-1801 became effective, following approval from the ACC. The REST rules require that TEP and other affected utilities generate or purchase at least 15% of their total annual retail energy requirements from eligible renewable energy resources by 2025, with smaller amounts required in earlier years.[5]

The ACC ruled that REST superseded the EPS. Like REST, the EPS was designed to encourage the development of renewable generation; EPS was adopted by the ACC in 2001. When REST supplanted EPS, the ACC ordered that all remaining EPS funds be transferred to the REST program and that TEP be released from all requirements of the EPS. Accordingly, some of the RECs generated during the EPS program were also transferred into the REST compliance period.

Table 1, below, shows the REST Goals, disaggregated by category, for the period 2008-2025.

Table 1 - REST Goals 2008-2025

Year	REST Goals	Year	REST Goals
2008	1.75% (10% DG)	2017	7.00% (30% DG)
2009	2.00% (15% DG)	2018	8.00% (30% DG)
2010	2.50% (20% DG	2019	9.00% (30% DG)
2011	3.00% (25% DG)	2020	10.00% (30% DG)
2012	3.50% (30% DG)	2021	11.00% (30% DG)
2013	4.00% (30% DG)	2022	12.00% (30% DG)
2014	4.50% (30% DG)	2023	13.00% (30% DG)
2015	5.00% (30% DG)	2024	14.00% (30% DG)
2016	6.00% (30% DG)	2025	15.00% (30% DG)

Source: Renewable Energy Standard and Tariff, Section R14-2-1804 and R14-2-1805

TEP's REST Implementation Plan was approved by the ACC and became effective on June 1, 2008, at which time the RES Tariff was added to customer bills.[6] After this date, the REST compliance period began, and the EPS compliance period ended.

[5] Under REST, eligible renewable energy resources include the following: biogas electricity generation, biomass electricity generation, eligible hydropower resources, fuel cells that use renewable fuels only, hybrid wind and solar electric generation, new small hydro (10 MW or less), solar electric generation, wind generation, and distributed renewable energy resources (these include renewable CHP, commercial solar pool heaters, biomass and biogas thermal systems, biogas electric generation, geothermal space and process heating, solar daylighting, solar HVAC, solar space heating, solar water heating, and small wind generation (1 MW or less).

[6] The customer RES tariff for 2008 was set at $0.004988 per kWh, with caps for maximum monthly payment established for each customer class.

2.1 TEP 2008 Compliance Requirements

TEP's REST requirement for this period was **106,346,000** RECs, which reflects 1.75% of TEP's retail energy sales for the period of June 1, 2008, through December 31, 2008.[7] Ten percent (10%) of this requirement must be met through DE renewable resources (10,640,000 kWh); of this amount, 50% must come from residential customer systems, and 50% must come from non-residential, non-utility applications. The remaining portion of the REST requirement (90% of the total goal) includes 95,760,000 kWh of utility-scale renewable energy resources. The following table shows the breakdown of TEP's REST requirement for 2008.

Table 2 - 2008 REST Goal

Category	kWh
June-Dec 2008 TEP Retail Sales	6,080,004,000
REST Goal @ 1.75% of Retail Sales	106,400,000
Distributed Energy @ 10% of REST Goal, including:	10,640,000
50% Residential DE	5,320,000
50% Non-Residential, Non-Utility DE	5,320,000
Utility Scale @ 90% of REST Goal	95,760,000

2.2 Extra Credit Multipliers

The REST order allows affected utilities to earn RECs from sources other than actual energy production based on applicable Extra Credit Multipliers ("multipliers"). These multipliers include the Early Installation Extra Credit Multiplier, the In-State Power Plant Installation Extra Credit Multiplier, the In-State Manufacturing and Installation Content Extra Credit Multiplier, and the Distributed Solar Electric Generator and Solar Incentive Program Extra Credit Multiplier.

The multipliers are applied to the energy generated by an Eligible Renewable Energy Resource. The energy generated by a given facility during a compliance period is multiplied by the multiplier, producing the "Extra Credit" earned by that facility. This "Extra Credit" is then added to the RECs produced by the facility as a result of its energy production to provide the total number of RECs generated by that facility during a given compliance period. The multipliers are additive, but the total multiplier cannot exceed 2.0.

Table 3, below, shows each multiplier and its related value.

[7] One renewable energy credit (REC) is equivalent to one kilowatt-hour (kWh) of production from an Eligible Renewable Energy Resource.

Table 3 - REST Extra Credit Multipliers

Extra Credit Multipliers	Value
Early Installation Extra Credit: Installed and Began Operating in	
2001	0.3
2002	0.2
2003	0.1
In-State Power Plant Extra Credit (1997-2005)	0.5
In-State Manufacturing and Installation Content (1997-2005)	0.5 * (% in-state content in installed plant)
DE Solar Electric Generator and Solar Incentive Program (1997-2005)	0.5

Source: Renewable Energy Standard and Tariff, R14-2-1806.

The multipliers only apply to systems installed between January 1, 1997, and December 31, 2005, and in some cases, the definition is narrower. There is no expiration date for any of the multipliers except the Early Installation Extra Credit Multiplier. The Early Installation Extra Credit Multiplier is only applied during the first five years following a facility's operational startup; as a result, 2008 will be the final year for applying this multiplier. The remaining multipliers can be applied to facility generation for the life of the facility.

3. Overview of 2008 Compliance Status

TEP has **188.4 million** Renewable Energy Credits ("RECs") available to meet the 2008 REST requirement. This REC availability includes RECs that were carried over (not retired) from 2007 and the 2008 prorated EPS implementation period. The total REC amount includes actual kWh production from eligible renewable energy resources as well as applicable extra credits that were achieved through the REST multipliers. Table 4 summarizes the breakdown of the 188.4 million total RECs available to TEP, including those retired to meet each category of the REST 2008 requirements and the amount of surplus RECs. The certificate of retirement for the RECs retired for REST compliance year 2008 can be viewed in Appendix C. The surplus in RECs for the 2008 compliance period will be carried over to a future compliance period. More detailed calculations are included in Appendix A.

Table 4 - 2008 Renewable Energy Credits for TEP

	Utility-Scale Resources	Distributed Energy: Residential	Distributed Energy: Non-Residential
Installed Capacity			
Pre-2008 (kW)	9,914	1,474	29
2008 New Installations (kW)	0	359	805
Reserved in 2008 but Not Yet Installed (kW)	0	820	3,400
Renewable Energy Credits			
Carry Over from EPS	137,033,853	1,850,730	1,173,475
RECs Created in 2008	44,169,622	3,501,112	698,483
Total Available RECs	*181,203,475*	*5,351,842*	*1,871,958*
RECs Needed for Compliance	95,760,000	5,320,000	5,320,000
RECs Retired for Compliance	95,760,000	5,320,000	1,871,958
2008 Compliance (%)	**100%**	**100%**	**35%**
RECs Carried Forward to 2009	85,443,475	31,842	0

As of December 31, 2008, TEP had reserved or installed over 16,000 kW of renewable generating capacity, excluding solar systems installed under the GreenWatts program. This amount reflects cumulative capacity, including the amount installed during EPS program years as well as the amount installed during the prorated 2008 REST program year. Over 3 MW in commercial DE projects were reserved during 2008. Of the over 3 MW of reserved projects, only one was installed and began operation in late October 2008, a 750 kW thin-film CIGS plant at the Global Solar manufacturing plant, which is the largest of its kind in the United States. The owners of the remaining reserved projects intend to install and operate them during 2009.

Table 5 disaggregates by technology the renewable energy generating capacity and installed kW capacity that TEP had in place at the end of 2008.

Table 5 - Disaggregation of Renewable Energy Resource Installed Capacity, by Technology

Technology Type	kW Capacity, Cumulative	Annualized kWh production	2008 kW Capacity, New	2008 Actual kWh production
Utility Scale:				
Solar PV	4,912	8,350,400	0	7,947,448
Solar Thermal	0	0	0	0
Wind	1.8	3,465	0	1,960
Landfill Gas	5,000	n/a	n/a	25,808,735
Subtotal Utility Scale	***9,914***	***8,353,865***	***0***	***33,758,143***
Distributed Energy:				
Solar PV	2,143	3,642,250	993	2,471,287
Solar Thermal	171	599,142	171	599,142
Wind	0	0	0	0
Subtotal DE	***2,314***	***4,241,392***	***1,164***	***3,070,429***
TOTALS	**12,227**	**12,595,257**	**1,164**	**36,828,571**

Additional technology-specific detail is provided in Sections 4 and 5, including the programs operated and the progress made during the prorated 2008 compliance period. These sections describe the resources used to fulfill the utility-scale and distributed energy components of the REST. Within the utility-scale and distributed energy sections, the discussion is divided into technology-specific subsections.

3.1 2008 Expenditures and Surcharge

On April 28, 2008, the ACC approved TEP's REST Implementation Plan, including a budget of $15.58 million. The budgeted amount was prorated for the 2008 REST compliance period (June 1, 2008, through December 31, 2008); this seven-month budget was $9.1 million.[8]

This budget is the result of a Staff recommendation, which the ACC approved in lieu of either of the two plans that TEP proposed, the Full Compliance and Sample Tariff Plans. The Staff plan established the goal for TEP at full compliance with all segments of the REST requirements: utility-scale, residential distributed energy, and non-residential distributed energy. In order to achieve this plan at a reasonable cost, Staff relied on lower costs of DE administration and DE integration and lower levels of solar incentive payments ($3/Watt) than TEP outlined in its Full Compliance Plan. Further, the maximum

[8] The RES Tariff for TEP customers includes a $0.004988 per kWh rate, and caps of $2.00, $39.00, and $500.00 respectively for residential, commercial, and industrial customers.

monthly payments under this plan were less than the maximum monthly payments outlined in TEP's proposed Full Compliance Plan.

Of the $9.1 million allocated for the REST program, TEP spent $3.7 million, including $2 million on customer incentives alone. In addition to REST funds actually spent, nearly $850 thousand was reserved for commercial DE projects, $1.67 million was reserved for residential PV projects, and $345 thousand was reserved for solar water heating projects.

As detailed in Sections 4 and 5, TEP encountered several barriers to implementation during the 2008 compliance period. These barriers resulted in the installation of fewer projects than initially anticipated, which in turn affected TEP's spending.

Table 6, below, shows the breakdown of TEP's 2008 REST collections and expenditures. The 2008 total includes funds collected under REST, EPS, and GreenWatts.

Table 6 - 2008 REST Collections, Expenditures, & DE Reservations (June 1, 2008-December 31, 2008)

	2008 REST Collections ($)	Expenditures ($)	2008 Funds Reserved under RECPP ($)	2008 kWh Reserved under RECPP (kWh)
Total	**$9,162,697**	**$3,678,214**	**$2,867,673**	**$9,464,939**
Customer Incentives:		$2,027,338	$2,867,673	$9,464,939
Residential Incentives		$2,021,338	$2,017,772	$1,655,139
Commercial Incentives		$6,000	$849,901	$7,809,800
Program Administration		$800,164	n/a	n/a
Utility Scale Spending		$499,710	n/a	n/a
CC&B Database		$237,066	n/a	n/a
GreenWatts		$113,936	n/a	n/a

The amount of surcharge collected from customers relative to program expenditures will be deferred and reflected in TEP's financial statements as a regulatory liability. REST money that is not spent in a given year is then deducted from the annual approved funding in the following second year. In other words, TEP does not keep the unspent REST dollars from 2008; they will be deducted from TEP's net REST funding in 2010.

Table 7, below, shows the REST surcharge that TEP collected from its customers during the 2008 compliance period. Table 8, below, shows the EPS surcharge that TEP collected from its customers during the 2008 EPS compliance period. Of the EPS collection in 2008, $733,000 rolled over into the 2008 REST collection.

Table 7 - REST Surcharge Collections from Customers, 2008

Date	Residential	Small Commercial	Large Commercial	Total
May-08	$350.19	$105.88	$0.00	$456.07
Jun-08	$655,539.34	$501,131.40	$17,875.14	$1,174,545.88
Jul-08	$687,477.76	$566,875.75	$16,758.64	$1,271,112.15
Aug-08	$685,510.57	$547,527.64	$14,343.40	$1,247,381.61
Sep-08	$682,574.59	$544,752.78	$16,763.94	$1,244,091.31
Oct-08	$730,878.82	$550,178.15	$16,726.16	$1,297,783.13
Nov-08	$546,505.93	$390,965.20	$16,133.21	$953,604.34
Dec-08	$641,243.44	$465,518.19	$20,024.52	$1,126,786.15
	$4,630,080.64	**$3,567,054.99**	**$118,625.01**	**$8,315,760.64**

Table 8 - EPS Surcharge Collections from Customers, 2008

Date	Residential	Small Commercial	Large Commercial	Total
Jan-08	$119,035.35	$116,059.31	$2,068.41	$237,163.07
Feb-08	$112,369.01	$100,910.38	$2,093.13	$215,372.52
Mar-08	$109,801.95	$98,426.43	$2,045.09	$210,273.47
Apr-08	$113,790.84	$102,957.86	$2,149.86	$218,898.56
May-08	$110,051.58	$106,431.99	$2,131.20	$218,614.77
Jun-08	$1,069.53	$1,456.44	$236.38	$2,762.35
Jul-08	$39.41	$170.46	$0.00	$209.87
Aug-08	$23.41	$285.81	$0.00	$309.22
Sep-08	$1.83	$46.83	$0.00	$48.66
Oct-08	$15.20	$27.95	$0.00	$43.15
Nov-08	($1.45)	$102.25	$0.00	$100.80
Dec-08	$0.09	$0.00	$0.00	$0.09
Total	**$566,196.75**	**$526,875.71**	**$10,724.07**	**$1,103,796.53**
Life-to-Date				**$18,719,298.42**

4. Utility-Scale Renewable Energy Resources

In 2008, 90% of TEP's REST goal was for utility-scale renewable energy resources. TEP met this goal with existing resources and continued to negotiate contracts for additional utility-scale resources to meet future REST goals. Section 4.1 describes the process that TEP uses to procure new utility-scale renewable energy resources, the competitive bid process as conducted through requests for proposals. Section 4.2 describes TEP's compliance position relative to the 2008 REST utility-scale goals and breaks down these results along technology lines.

4.1 Acquiring RECs from Utility-Scale Resources: Request for Proposals

TEP and UNS Electric, Inc. ("UNS Electric") issued two requests for proposals ("RFPs") for Eligible Renewable Energy Resources. The first RFP was released in 2007 and sought to procure cost-effective energy and RECs from projects at least 1 MW in size to diversify TEP's and UNS Electric's internal fuel resources and reduce the environmental impact of new resources. TEP and UNS Electric received 17 bids utilizing four different technologies. Accion Group, an independent auditor, found the RFP process and its results to be reasonable, fair, and transparent; Appendix B includes Accion Group's statement to this effect.

TEP short-listed three of the proposals received in response to the 2007 RFP. A contract with the Distributed Energy provider, SunEdison, was signed in August 2008, for 3 MW of distributed PV capacity per year for five years; the contract is for RECs only.

The second RFP for Eligible Renewable Energy Resources was issued in 2008. Like the 2007 RFP, the 2008 RFP solicited projects with a minimum capacity of 1 MW and was a competitively-bid process, open to all bidders. Projects lasting a minimum of 10 years were preferred, although all bids were considered. All proposals were required to include all RECs that would be associated with the project capacity and energy production. The RFP requested up to 250,000 MWh of both energy and RECs per year. In response to the 2008 RFP, TEP received bids for 38 projects.

TEP short-listed five of the proposals received in response to the 2008 RFP. One biomass, one utility-scale PV, two concentrated solar thermal, and one distributed energy project were included in the short list. As of the date of this report, TEP has not yet finalized contracts with any of these bidders, and negotiations for all of the bidders are ongoing in 2009. Table 9, below, summarizes the breakdown of proposals by technology for the 2007 and 2008 RFP processes.

Table 9 - Number of Bids Received in Response to 2007 and 2008 RFPs, by Technology

Technology	2007 RFP		2008 RFP	
	# of Bids Received	# of Bids Short-Listed	# of Bids Received	# of Bids Short-Listed
Wind	4	1	6	0
Biomass	1	1	2	1
Utility-Scale Solar (PV)	7	0	21	1
Utility-Scale Solar Thermal	4	0	3	2
Distributed Energy	1	1	6	1
Total Number of Bids	***17***	***3***	***38***	***5***

4.2 RECs from Utility-Scale Resources

TEP has met the utility-scale portion of the REST goal for 2008 with its Landfill Gas Credits, though it has a variety of eligible renewable energy sources, all of which were installed previous to the 2008 REST compliance period. TEP owns rights to a total of 44,169,622 RECs that were produced in 2008, and 137,033,853 RECs that were carried over from 2007 and previous periods, for a total of 181,203,475 utility-scale RECs that are available to meet the 2008 REST goal. Of these RECs available, TEP has retired 95,706,000 RECs, thus fulfilling the 2008 REST goal. See Table 10, below for a breakdown of these RECs by technology. Documentation of these retirements can be found in Appendix C.

Table 10 - Technology-Specific Breakdown of Utility-Scale Resources

	Landfill Gas	PV	Concentrated Solar Power	Partial Manufacturing Credit (kWh)	Wind
Installed Capacity					
Pre-2008 (kW)	5,000	4,912	0	n/a	2
2008 New Installations (kW)	n/a	0	0	n/a	0
Reserved in 2008 but Not Yet Installed (kW)	0	0	0	0	0
Cumulative Capacity	5,000	4,912	0	4,612,280	2
Energy Production					
Pro-Rated 2008 REST Compliance Period (kWh)	25,808,735	7,966,865	0	0	1,960
Annualized Energy Production (kWh)	25,808,735	8,350,400	0	0	3,465
Renewable Energy Credits (RECs)					
Carry Over from EPS	132,964,275	2,380,995	0	1,686,333	2,250
RECs Created in 2008 From Energy Production	25,808,735	7,966,865	0	0	1,960
RECs Created in 2008 From Extra Credit Multipliers	645,218	5,256,524	0	4,612,280	980
Total Available RECs	159,418,228	15,604,384	0	6,298,613	5,190
RECs Retired under GreenWatts Program	122,940				
RECs Retired for Compliance	95,706,000	0	0	0	0
RECs Carried Forward to 2009	63,589,288	15,604,384	0	6,298,613	5,190

4.2.1 Landfill Gas

In August 1999, TEP and the City of Tucson started producing electricity from the installation of a nameplate 5 MW landfill gas system at the Los Reales Landfill in Tucson, Arizona. The landfill gas is piped from the landfill to the Sundt Generating Station, where it is co-fired with coal and/or natural gas.

In 2008, TEP's landfill gas resource produced 25,808,735 kWh, equivalent to the same number of RECs. Applying the In-State Manufacturing and Installation Content Extra Credit Multiplier to this production added 645,218 RECs for 2008. In total, the landfill gas resource produced 26,331,013 RECs that are available for TEP to retire toward the utility-scale portion of the REST goals. Table 11, below, shows the actual production of electricity from landfill gas in 2008 as well as the multipliers that contribute to the total number of RECs eligible for retirement under REST.[9]

Table 11 - 2008 Landfill Gas RECs (kWh)

Category	Production (kWh)	REST Multiplier(s) Applied*	Multiplier Value	Extra credits (from multipliers)	Total RECs	RECs Sold	RECs Retired Under GreenWatts
Landfill Gas	**25,808,735**	In-State Manufacturing and Installation Conten	0.06	645,218	**26,453,953**	0	122,940

4.2.2 Springerville Solar Generating System PV Array

The Solar PV System located at the Springerville Generating Station ("SGS") has an approximately 4.6 MW nameplate capacity. In 2008, the actual energy production was 7,567,321 kWh.

Table 12, below, shows the RECs available for TEP to use toward meeting the REST requirement, including 2008 actual kWh production and applicable multipliers. No SGS RECs were sold, nor retired, in the 2008 REST compliance period.

Table 12 - RECs Generated from Springerville Solar Generating System PV Array

Category	Production (kWh)	REST Multiplier(s) Applied*	Multiplier Value	Extra credits (from multipliers)	Total RECs	RECs Sold	RECs Retired
Springerville Solar	**7,567,321**	**Annual kWh Production**					
	7,567,321	In-State Manufacturing and Installation Content	0.5 * % in-state cost	967,739			
	7,567,321	In-State Power Plant Installation Credit	0.5	3,783,661			
	7,567,321	Distributed Generation Credit	0.5	n/a			
	2,339,109	Early Installation Credit-2003	0.1	233,911	**12,552,631**	0	0
Springerville-Wind	**1,960**	**Annual kWh Production**					
	1,960	In-State Manufacturing and Installation Content	0.5	980	**2,940**	0	0

[9] Some RECs generated by the landfill gas project are retired under the GreenWatts program; they are not eligible for retirement under REST.

4.2.3 Global Solar Partial Manufacturing Credit

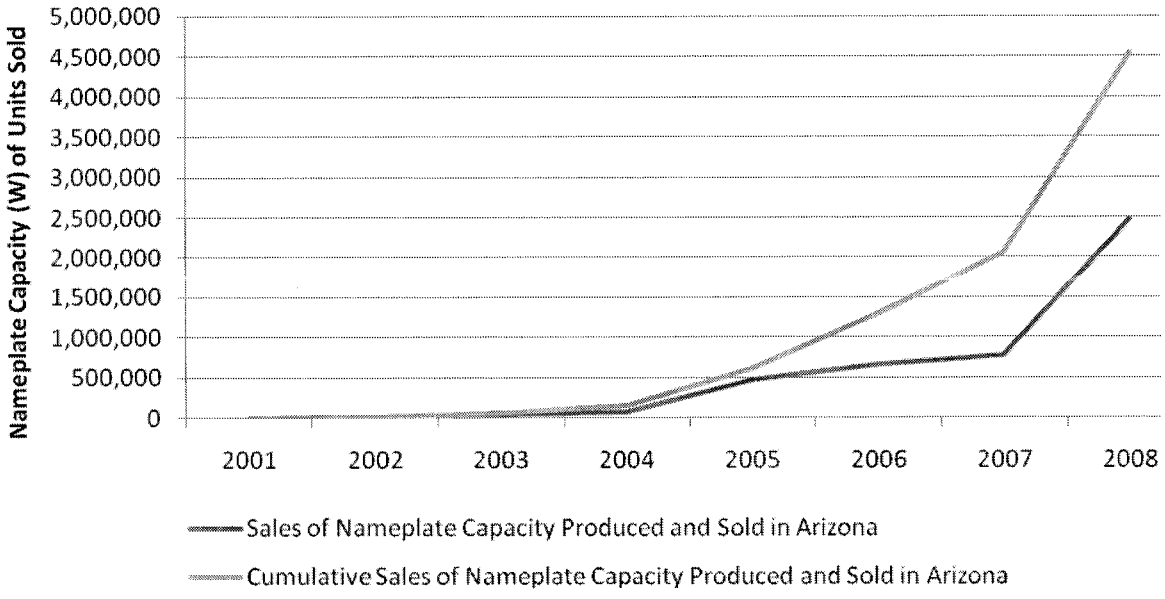
TEP buys RECs from Global Solar, under the REST "Manufacturing Partial Credit" (R14-2-1807) rule. This rule stipulates that an affected utility (TEP) can earn RECs using the following calculation:

*Nameplate capacity produced and sold in AZ in Year X * 2190 = Total RECs*

As a result of its investment in Global Solar, TEP obtained 4,612,280 RECs in 2008 that are eligible to contribute to its REST requirement. In 2008, Global Solar sold PV modules that were produced at the Tucson facility with a combined nameplate capacity of 2,474 kW, a 220% increase over 2007 sales. Using the 2,190 factor implies a 25% capacity factor for these units when they are deployed.

Figure 1, below, shows the nameplate capacity of Global Solar units produced and sold in Arizona for the period 2001-2008.

Figure 1 - Global Solar Nameplate Capacity Production, 2001-2008



4.2.4 OH & DMP Solar

Operating Headquarters ("OH") projects consist of utility-sited solar or wind generating systems, including TEP's test site projects. De Mosse Petrie ("DMP") is a substation in TEP's service territory that has PV panels sited on the utility-side of the meter. In 2008, these projects produced 399,544 kWh, all of which may be used toward the utility-scale REST requirement. Table 13, below, shows the actual generation and applicable multipliers that created RECs from these resources.

Table 13 - OH & DMP 2008 Production and RECs

Category	Production (kWh)	REST Multiplier(s) Applied*	Multiplier Value	Extra credits (from multipliers)	Total RECs	RECs Sold	RECs Retired
	399,544	**Annual kWh Production**					
OH/DMP Projects	399,544	In-State Manufacturing and Installation Content	0.5 * % in-state cost	69,229			
	399,544	In-State Power Plant Installation Credit	0.5	199,772			
	399,544	Distributed Generation Credit	0.5	n/a			
	22,116	Early Installation Credit-2003	0.1	2,212	**670,758**	0	0

5. Distributed Energy Resources

The REST rules place special priority on DE resources and ramp up their contribution toward the total REST goal during the first five years of the standard. In 2008, DE accounted for 10% of the total REST goal. Of this amount, half of the RECs must come from systems sited on residential customer sites and half must come from systems sited on non-residential, non-utility sites. TEP achieved this goal using a combination of RECs produced by existing and new resources in addition to the carry-over of RECs from the EPS program.

Section 5.1 describes the process that TEP uses to procure RECs from new DE systems, the Renewable Energy Credit Purchase Program ("RECCP"). Section 5.2 summarizes TEP's compliance position for RECs from DE installations, breaking down the results by the types of programs offered to different classes of customers. While a suite of technologies are eligible to participate in the DE program, only PV projects have been developed to date.

5.1 Acquiring RECs from Distributed Energy Resources: Renewable Energy Credit Purchase Program

In accordance with REST, TEP developed and received approval for the RECPP. RECPP is TEP's credit purchase plan, which is required under REST. The goal of RECPP is to create a program that will provide incentives for affordable, environmentally sensitive, customer-sited renewable energy generation systems to supplement customers' energy needs. This approach is intended to ensure that TEP meets its 2008 REST DE requirement. The ACC approved TEP's RECPP as part of the 2008 Implementation Plan, effectively deeming it reasonable, fair, and transparent to all ratepayers.

The RECPP provides two primary forms of incentives to customers:

- **Up-Front Incentive ("UFI")** - The UFI is based on installed capacity. The customer is given a one-time payment in exchange for TEP's right to the RECs. The UFI is generally for residential customers, though commercial projects smaller than 20 kW are also eligible.

- **Performance-Based Incentive ("PBI")** - The PBI is based on actual annual energy production, measured in kWh. The PBI provides a stream of payments to the customer for up to 20 years in exchange for TEP's right to the RECs. The PBI is generally for commercial customers and is required for all commercial projects larger than 20 kW.

RECPP incentives can be applied to systems designed to serve only the typical load of the customer with whom the incentive agreement has been established. The assessment of that typical load does not preclude the periodic production of electricity in excess of the customer's demand. Under some circumstances it is understood that select customer installations will be designed to serve loads greater than that of the customer. Under those circumstances, the RECPP incentive will be applied only to the fraction of the generation which is used to serve the typical customer load.

In exchange for the financial incentives that TEP provides to the customer, the customer transfers the rights to the RECs to TEP. TEP then applies the RECs toward the DE portion of the REST requirement. In return for TEP's payment of a UFI, TEP will be given complete and irrevocable ownership of the RECs until December 31st of the 20th full calendar year after completion of installation of the system. Operational life during that time frame must be supported by system warranty or planned maintenance schedules.

TEP's payment of a PBI will assure TEP complete and irrevocable ownership of the REC for the full duration of the PBI agreement. The agreement duration must fully coincide with the PBI payment schedule and the system must be supported by system warranty or planned maintenance schedules for the term of the agreement.

The RECPP provides for a uniform procedure and a transparent timeline to facilitate project realization. In order to receive an incentive from TEP, the customer must first submit a project request. Upon approval of this request, the customer receives a reservation confirmation, which reserves REST funds for that project. If the project is subsequently built within the required timeframe and meets all of the TEP RECPP conforming project guidelines, the customer is approved for the incentive for which it applied. The incentive rate depends on several factors: customer sector, capacity size of system (kW), technology type, and the year in which the reservation was approved.

See Appendix D for the 2008 RECPP Incentive Matrix for both UFIs and PBIs for all eligible renewable energy technologies as approved in the 2008 REST implementation plan.

5.2 RECs from Distributed Energy Resources

TEP segments its DE programs according to the size of the system and the customer class. Commercial systems smaller than 20 kW are grouped with residential projects, which are typically below this threshold. The selection of these projects is governed by the RECPP project described earlier in Section 5.1. The RECs acquired through the development of these projects contribute to the residential or non-residential REST goals, depending on the site at which the system is located.

Commercial projects larger than 20 kW are considered separately within the RECPP process, typically through a PBI-styled application. Section 5.2.2 summarizes the status of projects in this category, which contributes toward the non-residential DE REST requirement.

Table 14 - Technology-Specific Breakdown of Distributed Energy Resources

	Residential PV	Residential Solar Thermal	Non-Residential PV	Non-Residential Solar Thermal
Installed Capacity				
Pre-2008 (kW)*	1,474	0	29	0
2008 New Installations (kW)	188	171	804.9	0
Reserved in 2008 but Not Yet Installed (kW)	579	241	3,400	0
Cumulative Capacity	**2,242**	**411**	**4,234**	**0**
Energy Production				
Pro-Rated 2008 REST Compliance Period (kWh)	1,398,337	229,825	362,843	0
Annualized Energy Production (kWh)	2,397,149	393,986	470,231	0
Renewable Energy Credits (RECs)				
Carry Over from EPS	1,850,730	0	1,173,475	0
RECs Created in 2008 From Energy Production	2,397,149	393,986	470,231	0
RECs Created in 2008 From Extra Credit Multipliers	708,877	1,100	228,253	0
Total Available RECs	4,956,755	395,086	1,871,958	0
RECs Retired for Compliance	4,956,755	395,086	1,871,958	
RECs Carried Forward to 2009	0	0	0	0
Aggregate Cost				
Aggregate Cost (cents per kWh)-2008	170	51	16-18	0
Aggregate Cost ($ per kW)-2008	3,744	1,422	n/a	0

*Excludes Non-Residential systems installed under the GreenWatts program

5.2.1 Residential & Small Commercial Distributed Energy

TEP operates two programs targeted at residential and commercial customers seeking to develop projects smaller than 20 kW. The economics of systems on this scale are similar regardless of whether the customer is a residential or commercial customer, which leads to efficiencies in offering a single incentive for the two customer classes. This section describes the two programs that are targeted at these smaller projects. SunShare provides incentives for PV projects of this scale, and the Solar Hot Water ("SHW") program provides incentives for solar thermal (solar hot water) projects. Ongoing in REST compliance years, the SunShare program and the SHW program both fall under the RECCP (as would all other eligible renewable energy technologies).

During 2008, many residential and commercial reservations were restricted by delays and speculation regarding the Investment Tax Credit (ITC) legislation. The ITC was set to expire at the end of 2008, and developers could not guarantee that the systems would be placed in service by the December 31 deadline. Had the ITC expired, project owners would have to place a significant portion of the capital cost at risk; if the ITC were not extended, customers would have to pay the 30% of system cost that would have otherwise been covered by the ITC. As a result, some potential projects were delayed until the future of the ITC was clear. That did not occur until October 2008, when The Energy Improvement and Extension Act was included as part of the first bank bailout. This extended the ITC through the end of 2016, creating much more certainty in the marketplace.[10] This timing coincided with the credit crisis, which lasted the duration of the fourth quarter of 2008. This lack of liquidity in the marketplace made it more difficult to close financing on deals that had not already been closed. The extension of the ITC should stimulate project development in 2009 and beyond.

5.2.1.1 SunShare

TEP has offered the SunShare program to its customers since the ACC approved it under the EPS in 2001. Now incorporated into the RECPP, this program provides incentives for the installation of customer-sited solar PV systems, including both residential and commercial projects smaller than 20 kW, and commercial projects larger than 20kW. The SunShare program offers both UFIs and PBIs to qualifying customers to install these systems. In 2008, the incentive payments offered were $3.00/Watt, as outlined in the Staff Plan approved by the ACC.

In 2008, **140** customers qualified for a SunShare/RECPP incentive payment. This participation increased cumulative participation in the program to **565** since the program's inception in 2001.[11] Through the residential customers' participation in 2008, 188 kW of new PV was installed as a result of the SunShare Program; together with existing residential systems, these new residential systems produced 2,397,149 kWh during 2008. Through the small and large commercial customers' participation in 2008, 804.9 kW of new PV was installed as a result of the SunShare Program; together with existing commercial systems, these new systems produced 470,231 kWh during 2008.

5.2.1.2 Solar Hot Water

TEP began offering incentives for SWH systems in June 2008, as part of RECPP, the DE component of the REST Implementation plan. Commercial and Residential customer-sited systems installed as early as 1997 (retro-active systems) and through the end of 2008 can apply for an incentive through the RECPP process. The calculated kWh savings from each SHW project is based upon the SRCC OG-300 published rating of the system.

In 2008, 171 SHW systems, including 171 residential systems and zero commercial systems, received an incentive payment from TEP. The residential systems installed during 2008 resulted in the production of 393,986 kWh during 2008; when combined with the Extra Credit Multipliers, the residential SWH program generated 395,086 RECs that were applied toward 2008 residential DE compliance targets.

[10] The ITC legislation extended the 30% tax credit for residential solar systems to 2016, as well as removed the cap. It also ended the utility exclusion that prevented utilities from taking the tax credit.

[11] This number includes participants in 2008 that qualified for Sunshare before June 1, 2008, while the program was still under the EPS requirements.

TEP's cost per REC for SWH systems is less than for solar PV because SHW produces energy for more hours than PV. Due to the heat transfer, SHW can last until 10 p.m. with storage. At higher altitudes, it has a slightly higher capacity factor, which further adds to the efficiency of energy production.

At the end of 2008, customers had reserved funds for an additional 670,839 kWh equivalent of SWH systems. Since these projects were not completed during 2008, the reservation of funds was transferred to the 2009 budget. It is unclear at this time how many of these projects will ultimately be completed.

5.2.1.3 GreenWatts

GreenWatts is an ACC-approved TEP green power purchase program that enables commercial, industrial, and residential customers to pool funds and invest directly in the creation of green power. The renewable energy, as landfill gas, procured through GreenWatts does *not* count toward REST goals because the customers purchase the RECs; therefore, TEP cannot also own and retire the RECs. The purchase of the landfill gas for GreenWatts is funded by non-REST money. The community-based solar projects that are funded by the customer contribution to GreenWatts contribute energy production that does qualify under REST as eligible commercial DE systems. TEP counts this production toward the commercial DE portion of their REST requirement. What follows is a short description of the program and summary of its activity during 2008.

Each GreenWatt is sold in "blocks" of 20 kWh per month. Revenues from GreenWatts are used for installing more community-based solar generation, a program that is unique to UNS Energy Corporation. At the end of December 31, 2008, TEP had commitments from 2,445 residential customers, amounting to adoption of 5,217 blocks, and 58 commercial customers, amounting to 930 blocks of energy that are eligible under REST (through the production of the community-based solar PV systems) to provide TEP with **389,921** qualifying RECs (kWh production and applicable multipliers) toward their 2008 REST DG-commercial requirement.

The cumulative participants in the GreenWatts program amount to 6,147. 2008 revenues from GreenWatts amount to $113,936. Table 15, below, shows the annual revenues generated from the program, which are rolled into REST as a result of the 2007 REST order, as well as the lifetime revenues and the amount of RECs that were retired under GreenWatts. These RECs are excluded from retirement under REST. The certificate of retirement for the 2008 GreenWatts RECs can be found in Appendix E.

Table 15 - GreenWatts, 2008.

GreenWatts	2008 Revenues	2008 Blocks	Life-to-Date Revenues	2008 RECs retired under program
Total	$113,936	6,147	$615,551	122,930
Commercial	$16,279	930	$102,253	18,600
Residential	$97,657	5,217	$513,298	104,330

Total revenues produced to date are $102,253 from commercial customers and $513,298 from residential customers for total revenue of $615,551. All of these funds have been, or soon will be, applied to installation costs of community based PV systems installed in the Tucson area. The cumulative community-based GreenWatts installations including the 2008 installations are listed below in Table 16.

Table 16 - Total GreenWatts Installations 2000-2008

GreenWatts Installation	Installation date	Installed Capacity (kW)
Reid Park Zoo (1)	2000	0.84
Reid Park Zoo (2)	2007	14.2
Pima Air Museum	2000	1.2
Tohono Chul	2002	2.8
Civano (Vail) School	2004	3
Hohokam School-TUSD	2004	4.48
Tucson Botanical Gardens 1	2005	3
Tucson Audubon Society-Mason Center	2005	1.35
Project MORE-TUSD	2005	15
Clements Center-City of Tucson	2005	6
Vail Empire High School	2005	6
Jewish Federation	2005	3.4
Tucson Airport Authority	2007	9.45
Tucson Botanical Garden-New Pavilion	2007	3.5
La Cima Middle School	2008	9.45
U of A Visitor's Center	2007	6.3
Tanque Verde High School	2007	10.15
Project Dunbar	2008	5.6
Total Installed kW to Date:		**256.14**

5.2.2 Medium to Large Commercial Distributed Energy

Medium to large commercial distributed energy projects are more cost-effective than residential projects due to economies of scale, and several projects were considered during 2008. As discussed in Section 4.1, bidders proposed several medium to large DE projects as a result of the 2008 RFP. Additionally, one project was completed through the RECPP program (and began operation in October 2008), including the Global Solar 750 kW PV project, which qualified for a PBI from the DE funding stream at $0.15 per kWh, for a 20-year contract period.

In 2008, **three** medium and large non-residential customers qualified for an incentive reservation through the RECPP. This participation increased cumulative participation in the program to **four** customers since the program's inception in 2008. Through the medium and large non-residential customers' participation in 2008, 750 kW of new PV was installed; this new system produced approximately 212,500 kWh during 2008.

6. Looking Forward: 2009

In December 2008, the ACC approved TEP's 2009 REST implementation plan, including a REST surcharge that is expected to collect nearly $30 million, or approximately $0.008 per kWh, from retail customers in 2009 to offset the costs of implementing the REST projects and programs. REST implementation plans and the associated surcharge are submitted annually to the ACC for their review and approval.

Although meeting the DE portion of the REST requirement is more costly, per kWh, than meeting the utility scale requirement, the external benefits to the local and statewide economy are numerous, due to the increased demand for the associated equipment and skilled labor necessary for quality installations.

Additionally, within the cost spectrum for DE, the cost to acquire a PV REC (kWh) is three times the cost to acquire a solar water heating REC. There are several new solutions listed below we are exploring to work toward meeting the residential goals.

- Solar "condo" concept – centralized solar and customer owned
- Solar rental/leasing concept
- Third party renewable sales to the utility on customer's premise (SunEdison's utility branded Commercial based solution)
- Exploring third party financing availability

Table 17 shows potential renewable energy resources that TEP may use to earn credits toward the utility-scale portion of their 2009 REST goal.

Table 17 - Potential 2009 Eligible Renewable Energy Resources

Technology	Typical Plant Capacity (MW)	Capacity Factor	Capital Cost ($/kW)	Levelized Cost $/MWh
Direct Fired Biomass	30 – 50	70 – 90	$2700-$3500	$ 65 - $ 100
Co-fired Biomass	10 – 30	70 – 90	$300-$500	$10 - $30
Landfill Gas	2 – 10	70 – 90	$1500-$2000	$40 - $80
Solar Thermal Parabolic Trough	50 – 100	35 – 50	$4500-$6500	$130 - $160
Solar Parabolic Dish	.01 - .05	20 – 25	$5000-$6000	$180 - $280
Solar Power Tower	10 – 250	50 – 70	$3000-$7000	$130 - $180
The Compact Linear Fresnel Reflector (CLFR)	5 – 15	30 – 50	$500-$1000	$80 - $120
Solar Photovoltaic (PV)	1 – 30	15 – 30	$6000-$8000	$260 - $360
Wind	5 – 300	25 – 40	$1600-$1900	$50 - $100
Geothermal	20 - 50	70 - 90	$3000-$ 4000	$40 - $80

7. Conclusion

During 2008, TEP achieved its utility-scale and DE residential REST goals. TEP retired sufficient RECs to comply with both the utility-scale and residential DE components of the target. TEP was not able to generate enough RECs to comply with its commercial DE REST goal. At the utility scale, landfill gas resources accounted for the bulk of the RECs, and RECs from wind, PV, and the partial manufacturing credit made up the remainder of the requirement. On the DE side, PV and SWH were the resources that counted toward the goal.

TEP installed some new DE systems in 2008, but relied heavily on RECs carried over from the EPS program to achieve both the utility-scale and DE goals. TEP customers installed 227 new DE systems during 2008 that would have contributed about 15% of the 2008 DE requirement in 2008 had they all been operational for the entire year. In the meantime, TEP was negotiating with bidders for additional utility-scale and DE resources during the year. One of these deals was closed in 2008 (a DE agreement), and several other negotiations are ongoing. These projects will help move TEP toward REST goals in the coming years.

Appendix A

Breakout of TEP's 2008 RECs

	Category	Production (kWh)	REST Multiplier(s) Applied*	Multiplier Value	Extra credits (from multipliers)	Total RECs	RECs Sold	RECs Retired
Utility-Scale (Non-DG)	Landfill Gas	**25,808,735**	In-State Manufacturing and Installation Content	0.06	645,218	**26,453,953**	0	122,940
	Global Solar		Manufacturing Partial Credit	2,190 * nameplate capacity of solar electric generators produced and sold in calendar year (~25% capacity factor)		**4,612,280**	0	0
	Springerville Solar	**7,567,321**	**Annual kWh Production**					
		7,567,321	In-State Manufacturing and Installation Content	0.5 * % in-state cost	967,739			
		7,567,321	In-State Power Plant Installation Credit	0.5	3,783,661			
		7,567,321	Distributed Generation Credit	0.5	n/a			
		2,339,109	Early Installation Credit-2003	0.1	233,911	**12,552,631**	0	0
	Springerville-Wind	**1,960**	**Annual kWh Production**					
		1,960	In-State Manufacturing and Installation Content	0.5	980	**2,940**	0	0
	OH/DMP Projects	**399,544**	**Annual kWh Production**					
		399,544	In-State Manufacturing and Installation Content	0.5 * % in-state cost	69,229			
		399,544	In-State Power Plant Installation Credit	0.5	199,772			
		399,544	Distributed Generation Credit	0.5	n/a			
		22,116	Early Installation Credit-2003	0.1	2,212	**670,758**	0	0
	Total Production	38,389,840						
	Subtotal Non-DG					**44,292,562**	0	122,940
DG	SunShare (DG Res)***	**2,471,287**	**Annual kWh Production**					
			In-State Manufacturing and Installation Content	0.15	93,907			
			In-State Power Plant Installation Credit	0.5	313,023			
			Distributed Generation Credit	0.5	313,023			
			Early Installation Credit-2003	0.1	10,847	**3,202,088**	0	0
	GreenWatts (DG Com)	**183,592**	**Annual kWh Production**					
			In-State Manufacturing and Installation Content	0.5 * % in-state cost	22,736			
		183,592	In-State Power Plant Installation Credit	0.5	91,796			
		183,592	Distributed Generation Credit	0.5	91,796	**389,921**	0	0
	Solar Hot Water (DG Res)	**393,986**	Early Installation Credit-2003	0.1	1100	**395,086**	0	0
	Global Solar CIGS (DG Com)	212,500				**212,500**		
	Subtotal DG	3,261,366				**4,199,595**	-	-
	2008 New Production (DG +NonDG - Sold/Retired)					**48,369,217**		
	Carryover credits from 2007	140,058,058				**140,058,058**		
	TOTAL (2008 new production + 2007 carryover)					**188,427,275**		

Appendix B

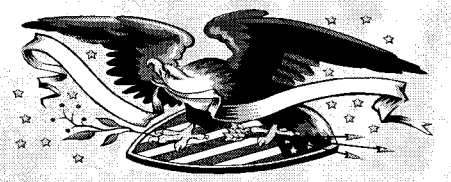
Auditor's Statement of Fair Process and Procedure

REDACTED

Appendix C

Documentation of TEP REC Retirements for 2008

(Signed Certificate available upon request)



Certificate of Retirement of Renewable Energy Credits

Original Certificate Issue

Certificate No. TEP/REST: LG00000001 – 95,760,000
Certificate No. TEP/REST: DERPV0000001-4,956,755
Certificate No. TEP/REST: DERSHW000001-395,086
Certificate No. TEP/REST: DECPV0000001-1,871,958

On January 31, 2009 Tucson Electric Power Company (TEP) retired 95,760,000 Landfill Gas Credits, 4,956,755 Distributed Energy-Residential-Solar PV Credits (DERPV), 395,086 Distributed-Energy-Residential-Solar Hot Water Credits (DERSHW), and 1,871,958 Distributed Energy-Commercial-Solar PV Credits (DECPV) towards meeting its 2008 Renewable Energy Standard requirements.

1. TEP certifies that it derived the Landfill Credits from application of the Actual Generation of Electricity from the combustion of landfill gas produced at the Los Reales Landfill for the generation of electricity at TEP's Sundt Generating Station.

2. TEP Certifies that it derived all Utility Scale Solar and Distributed Energy Solar from Actual Generation of Electricity and the application of the multipliers as permitted by the EPS and the RES

3. TEP further certifies that, at the time of this transfer, it had title to the Credits transferred to TEP and that such Credits have not previously expired, have not been otherwise used by TEP to meet its Environmental Portfolio Standard or Renewable Energy Standard requirements, and have not been transferred by TEP to any other entity.

Attested to:

Name of TEP officer – Philip J. Dion
Title – Vice President, Legal & Environmental Services
Date – January 31, 2009

Signature _____

Appendix D

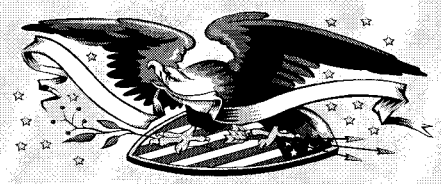
2008-2009 RECPP Conforming Project Incentive Matrix

Technology/Application	UP FRONT INCENTIVE [1] 20-Year REC Agreement	10-Year REC Agreement [2] 10-Year Payment ($/kWH)	15-Year REC Agreement [2] 15-Year Payment ($/kWH)	20-Year REC Agreement [2] 20-Year Payment ($/kWH)
BIOMASS/BIOGAS (Electric)	NA	0.060	0.056	0.054
BIOMASS/BIOGAS – CHP (Electric) [3]	NA	0.035	0.032	0.031
BIOMASS/BIOGAS – CHP (Thermal) [3]		0.018	0.017	0.016
BIOMASS/BIOGAS (thermal)	NA	0.015	0.014	0.013
BIOMASS/BIOGAS (cooling)	NA	0.032	0.030	0.029
DAYLIGHTING (Non-Residential)	$0.20/kWH [7] See this note for clarification	NA	NA	NA
GEOTHERMAL – (electric)	NA	0.024	0.022	0.022
GEOTHERMAL – (thermal)	1.00/Watt	0.048	0.045	0.043
GEOTHERMAL – (cooling)	NA	0.032	0.030	0.029
SMALL HYDRO	NA	0.060	0.056	0.054
SMALL WIND (grid-tied) [4]	$2.50/Watt AC	0.145	0.135	0.130
SMALL WIND (off-grid) [4]	$2.00/Watt AC	0.116	0.108	0.104
SOLAR ELECTRIC:				
RESIDENTIAL (GRID-TIED)	$3.00/Watt DC [8]	0.202	0.187	0.180
Non-Residential (Grid-Tied) 20 kW or less	$2.50/Watt DC [8]	0.202	0.187	0.180
NON-RESIDENTIAL (GRID-TIED) More than 20 kW	NA	0.202	0.187	0.180
RESIDENTIAL (OFF-GRID)	$2.00/Watt DC [8]	NA	NA	NA
NON-RESIDENTIAL (OFF-GRID)	NA	0.121	0.112	0.108
SOLAR SPACE COOLING [5]	NA	0. 129	0. 120	0. 115
SOLAR WATER HEATING/SPACE HEATING [5] (Non-Residential)	NA	0. 057	0. 052	0. 051
RESIDENTIAL SOLAR WATER/SPACE HEATING [6]	$750.00 plus $0.25/kWH to a maximum of $1,750.00 [9, 10]	0. 057	0. 052	0. 051
NON-RESIDENTIAL POOL HEATING	NA	0.012	0.011	0.011

Appendix E

GreenWatts Certificate of Retirement

(Signed Certificate available upon request)



Certificate of Retirement of GreenWatts Credits

Original Certificate Issue

Certificate No. TEP/GW: 000001 – 122,930

On January 31, 2009 Tucson Electric Power Company (TEP) retired 122,930 kWh of Landfill Gas Credits in meeting its 2008 GreenWatts Program Energy requirements.

1. TEP certifies that it derived the Landfill Credits from application of the Actual Generation of Electricity from the combustion of landfill gas produced at the Los Reales Landfill for the generation of electricity at TEP's Sundt Generating Station.

2. TEP further certifies that, at the time of transfer, it had title to the Landfill Credits and that such Credits have not previously expired, have not been otherwise used by TEP to meet its Environmental Portfolio Standard or Renewable Energy Standard requirements, and have not been transferred by TEP to any other entity.

Attested to:

Name of TEP officer – Philip J. Dion
Title – Vice President, Legal & Environmental Services
Date – January 31, 2009

Signature _____