

NEW APPLICATION



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AZ CORP COMMISSION  
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IN THE MATTER OF THE APPLICATION OF ) DOCKET NO. E-01933A-15-0239  
TUCSON ELECTRIC POWER COMPANY FOR )  
APPROVAL OF ITS 2016 RENEWABLE )  
ENERGY STANDARD IMPLEMENTATION ) APPLICATION  
PLAN. )

Tucson Electric Power Company ("TEP" or the "Company"), through undersigned-counsel, hereby submits its 2016 Renewable Energy Standard and Tariff ("REST") Implementation Plan ("Plan") for Arizona Corporation Commission ("Commission") approval, in compliance with A.A.C. R14-2-1801 *et seq.*

TEP's Plan is designed to achieve 2016 REST requirement of providing six (6) percent of retail sales (or 543,825 megawatt hours ("MWh")) from renewable generating resources as cost-effectively as possible. Key components of the Plan include: i) new renewable energy resources intended to be added through 2019; ii) new and existing programs and budgets; and iii) proposed rates and REST tariffs.<sup>1</sup> To fund these efforts, TEP is proposing to recover approximately \$48 million through the REST tariff. The estimated cost to implement the Plan is approximately \$57 million, which will be partially offset by applying approximately \$9 million of carryover funds from the 2014 budget. In order to implement the Plan, TEP requests that the Commission approve an increase in the REST surcharge from \$0.00800 per kWh for 2015 to \$0.01300 per kWh for 2016, as

<sup>1</sup> For its Plan, Exhibit 3 (AMCCCG) and Exhibit 5 (New Implementation Plan New Resource Costs) are confidential and will be provided to Commission Staff upon execution of a protective agreement.

1 well as an increase in the surcharge caps across rate classes. The increase in the budget and the  
2 surcharge result primarily from: (i) an increase in difference between the cost of renewable  
3 generation compared with conventional generation, and (ii) higher volumes of purchased renewable  
4 energy from third party PPAs.


5 The Company's Plan also includes a request to expand TEP Residential Solar Program and a  
6 new Residential Community Solar Program. TEP is not proposing any new incentives for residential  
7 or non-residential solar distributed generation or solar water heating. TEP's Plan provides for  
8 renewable generation to meet the 2016 annual compliance requirement, with the exception of the  
9 residential portion of the annual Distributed Renewable Energy Requirement set forth in A.A.C. R14-  
10 2-1805(D). Therefore, TEP will require a waiver for the residential portion of the Distributed  
11 Renewable Energy Requirement set forth in A.A.C. R14-2-1805(D).  
12

13 TEP believes it is in the public interest to implement cost-effective, customer-based solutions  
14 to meet the Company's REST requirements while providing safe, reliable and affordable energy to all  
15 its customers. Accordingly, TEP requests the Commission to issue an order prior to December 31,  
16 2015, to be effective January 1, 2016 that:  
17

- 18 1. Approves of its 2016 Renewable Energy Implementation Plan; and
- 19 2. Provides a waiver from compliance with the residential portion of the annual Distributed  
20 Renewable Energy Requirement set forth in A.A.C. R14-2-1805(D).  
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1 RESPECTFULLY SUBMITTED this 1<sup>st</sup> day of July 2015.

2 TUCSON ELECTRIC POWER COMPANY

3 By 

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17 Original and 13 copies of the foregoing  
18 filed this 1<sup>st</sup> day of July, 2015, with:

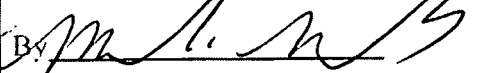
19 Docket Control  
20 Arizona Corporation Commission  
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23 Copies of the foregoing hand-delivered/mailed  
24 this 1st day of July, 2015, to the following:

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By 



Tucson Electric Power

**2016 Renewable Energy Standard  
Implementation Plan**

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## ATTACHED EXHIBITS

- Exhibit 1: Line Item Budget
- Exhibit 2: Definition of Market Cost of Comparable Conventional Generation (“MCCCG”)
- Exhibit 3: Above-Market Cost of Comparable Conventional Generation by Technology (“AMCCCG”)\*
- Exhibit 4: Implementation Plan New Resources
- Exhibit 5: Implementation Plan New Resource Costs \*
- Exhibit 6: Rider-6 Renewable Energy Standard Tariff and Statement of Charges
- Exhibit 7: Customer Load Percentage Analysis
- Exhibit 8: Residential Community Solar Tariff
- Exhibit 9: Renewable Energy Credit Purchase Program

\* Confidential

## I. EXECUTIVE SUMMARY

Tucson Electric Power Company ("TEP" or "Company") hereby submits its 2016 Implementation Plan ("Plan") in compliance with the Arizona Corporation Commission's ("Commission") Renewable Energy Standard and Tariff ("REST") Rules pursuant to A.A.C R14-2-1813. The cost-effective strategy set forth in the Plan demonstrates TEP's commitment to fulfilling the REST requirements for 2016 and beyond. Key components of the Plan include: new renewable energy resources to be added through 2020; proposed and existing Company programs and budgets; and related REST tariff.

Pursuant to A.A.C. R14-2-1804 and R14-2-1805, TEP must obtain six percent (6%) of its 2016 annual retail sales from renewable resources; and thirty (30) percent of that renewable energy must come from distributed generation ("DG") resources. Further, TEP must meet one-half of its annual DG requirement from residential applications and the remaining one-half from non-residential, non-utility applications. TEP plans to satisfy these REST requirement using existing utility-scale renewable generation and credits; power purchase agreements ("PPA") with renewable developers; new utility-owned renewable generation; and DG resources.

To fund these efforts, TEP is proposing to recover approximately \$48 million through the REST tariff. The estimated cost to implement the Plan is approximately \$57 million, which will be partially offset by applying approximately \$9 million of carryover funds from the 2014 budget. This funding is necessary to cover the cost of renewable energy purchases in excess of the cost of conventional generation; legacy performance-based incentive payments; and program, outreach and administrative costs.

The cost of renewable energy is included in two components of TEP's rates – the REST surcharge and the Purchased Power and Fuel Adjustment Clause ("PPFAC"). The market price for conventional generation in TEP's Plan is approximately thirty percent (30%) below the price for conventional generation that was included in its 2015 REST Plan. As a result of these lower conventional prices and an increased amount of purchased energy from existing PPAs, the cost of renewable energy in excess of

conventional generation included in TEP's Plan is approximately \$16 million higher last year and the offsetting decrease in the cost of conventional generation will be reflected in TEP's PPFAC. TEP expects its annual REST budgets for 2017 through 2020 to average approximately \$45 million. (See Exhibit 1).

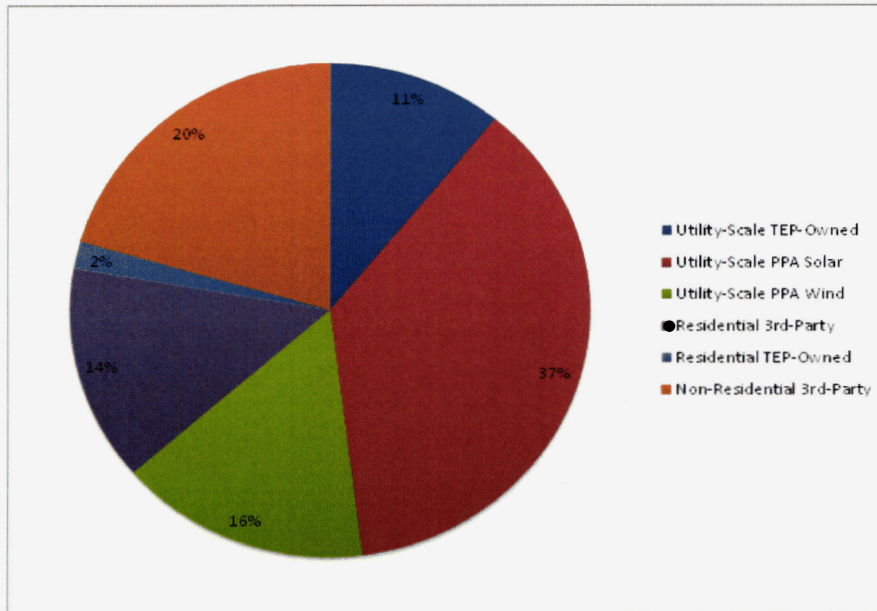
TEP's Plan demonstrates the Company's commitment to meeting the renewable energy requirements in the most cost effective manner and is in the public interest. TEP's Plan provides for renewable generation to meet the 2016 annual compliance requirement. However, as the Company no longer receives Renewable Energy Credits ("REC") from customer-based installations, TEP will require a waiver for the residential portion of the DG requirement set forth in A.A.C. R14-2-1805(D). TEP respectfully requests that the Commission approve the Plan, as well as its associated budget and tariff, prior to December 31, 2015 to be effective January 1, 2016.

## **II. TEP 2016 IMPLEMENTATION PLAN COMPONENTS**

For 2016, TEP's total renewable generation requirement is six percent (6%) of retail kWh sales, a level projected to equal 543,825 megawatt hours ("MWh"). The REST targets two resource categories: utility-scale generation and DG.

TEP's Plan will allow the Company to provide 6% of its retail energy requirements from renewable resources in 2016 and continue its efforts to maintain a diversified and cost-effective renewable resource portfolio as set forth in Graph 1.

**Graph 1. TEP's 2016 Renewable Resource Portfolio**



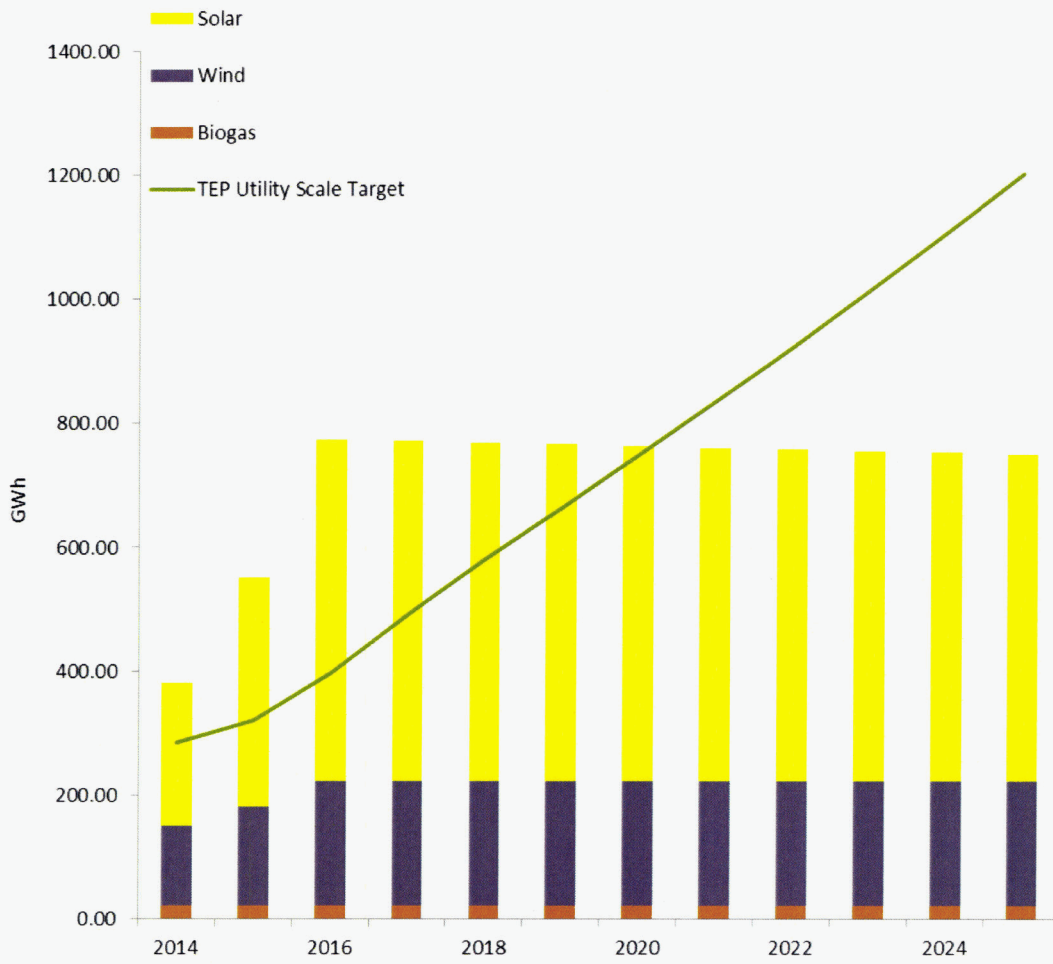
**A. Utility-Scale Renewable Generation**

TEP will satisfy the 2016 utility-scale requirement through the total output of renewable resources of 326 megawatts (“MW”) (see [Table 1](#)) – this total is comprised of solar photovoltaic (“PV”) systems with a combined rated capacity of approximately 236 MW as well as wind and other renewable resources with a combined rated capacity of approximately 90 MW. Of this total, 266 MW will come from renewable PPAs currently in effect or with anticipated completion dates in 2016. The remaining 60 MW will come from TEP-owned facilities.

The combination of TEP-owned generation facilities and PPAs should allow the Company to continue to meet and exceed its renewable energy requirements for the next five years. [Graph 2](#) shows how TEP’s current and planned resources will allow the Company to satisfy its utility-scale requirement through approximately 2020. [Table 1](#) details TEP’s utility-scale projects, including existing systems and planned resources.

## Graph 2. Renewable Energy Standard Targets

Note: Graph 2 does not include carryover credits



**Table 1. Utility Scale Generation**

Project	Capacity MW	Annual MWh	Technology	Expected In-Service Date	TEP Owned
<b>Existing Renewable Generation</b>					
SGS (4.6 + 1.81)	6.40	7,265	Fixed PV	Operational	Yes
UASTP I	1.60	2,981	SAT PV	Operational	Yes
* Macho Springs	50.40	130,244	Wind	Operational	No
Picture Rocks	25.00	57,372	SAT PV	Operational	No
Avra Valley	34.41	75,930	Fixed PV	Operational	No
Avalon Solar	35.00	82,563	Fixed PV	Operational	No
UASTP III	5.00	7,835	Fixed PV	Operational	Yes
Solon Prairie Fire	5.00	7,835	Fixed PV	Operational	Yes
Gatos Montes	6.00	10,303	Fixed PV	Operational	No
Cogenra	1.38	2,650	LCPV	Operational	No
Amonix UASTP	2.00	4,049	CPV	Operational	No
E.On Tech Park	6.60	15,300	SAT PV	Operational	No
Valencia Solar	13.20	26,768	SAT PV	Operational	No
White Mountain Solar	10.00	19,947	Fixed/LCPV	Operational	Yes
* Sundt Augmentation	5.00	14,310	Steam Aug	Operational	Yes
Fort Huachuca PHI	17.20	38,635	Fixed PV	Operational	Yes
SunPower (OH & HQ)	0.62	2,076	Fixed PV	Operational	Yes
* Sundt Landfill Gas	4.00	21,100	Biogas	Operational	Yes
<b>Total Existing</b>	<b>228.81</b>	<b>527,164</b>			
<b>Bright Tucson Solar Buildout Plan</b>					
Project	Capacity MW	Annual MWh	Technology	Expected In-Service Date	TEP Owned
Fort Huachuca PHII	5.00	11,231	Fixed PV	15-Nov	Yes
<b>Total Future - BTSBP</b>	<b>5</b>	<b>11,231</b>			
<b>Future Renewable Generation</b>					
Avalon Solar II	21.00	49,787	SAT PV	15-Dec	No
* Red Horse (Wind)	30.00	70,956	Wind	15-Aug	No
* Red Horse (Solar)	41.00	120,610	Solar	15-Aug	No
<b>Total Future – Pending (Contracts)</b>	<b>92.00</b>	<b>241,353</b>			
<b>Total Planned Generation (Contracts)</b>	<b>326</b>	<b>779,748</b>			
<b>Total Planned Generation thru 2016</b>	<b>326</b>	<b>779,748</b>			

\* Notes AC Capacity

## **B. Bright Tucson Solar Buildout Plan**

TEP's solar ownership plan ("Bright Tucson Solar Buildout Plan" or "Buildout Plan") has accounted for a portion of the Company's compliance with the REST utility-scale requirement. TEP's 2011 proposed investment of \$28 million in the Buildout plan was approved by the Commission in Decision No. 72033 and subsequently affirmed in Decision No. 72736. TEP subsequently received Commission approval in Decision No. 74165 to invest an additional \$28 million in the Bright Tucson Solar Buildout Plan in 2014 and another \$12 million in 2015. The combined \$40 million was designated for the development of a solar array at the U.S. Army's Fort Huachuca. Phase I of Ft. Huachuca was completed at the end of 2014. Phase II is currently under construction, and is expected to be commercially operational by the first quarter of 2016.

The Bright Tucson Solar Buildout Plan continues to be an essential component of the Company's renewable energy strategy, however, going forward the Company will no longer request recovery of costs related to new investments through the REST. TEP will continue to invest in renewable technologies in the future as the Company transitions to a more sustainable resource portfolio but will recover those costs through traditional methods. Through the Bright Tucson Solar Buildout Plan and other projects, TEP expects to own approximately eighteen (18) percent of its renewable energy portfolio by the end of 2016.

Table 2 and Table 3 show forecasted revenue requirements associated with the Company's Buildout program by category and project.

**Table 2. Revenue Requirement for the Bright Tucson Solar Buildout Plan**

<b>Revenue Requirement</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Carrying Costs	\$4,085,866	\$531,329	\$475,422	\$310,061	\$ -
Book Depreciation	4,388,532	600,000	600,000	600,000	-
Property Tax Expense	392,960	-	-	65,013	-
O&M	498,667	69,525	71,611	73,759	-
Lease Expense	-	-	-	-	-
<b>Total Revenue Requirement</b>	<b>\$ 9,366,025</b>	<b>\$ 1,200,854</b>	<b>\$ 1,147,033</b>	<b>\$ 1,048,833</b>	<b>\$ -</b>

**Table 3. Estimated Annual REST Budget for the Bright Tucson Solar Buildout Plan**

<b>Utility Owned Solar Projects by Year</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
2012 - HQ Rooftop 0.05 MW	\$ 25,584	\$ -	\$ -	\$ -	\$ -
2014 - Springerville Expansion 10 MW	4,202,501	-	-	-	-
2014 - Ft Huachuca 17.5 MW	3,105,501	-	-	-	-
2015 - AREVA 5 MW	840,169	-	-	-	-
2016 - Ft Huachuca 4.5 MW	1,192,271	1,200,854	1,147,033	1,048,833	-
<b>Annual Revenue Requirement</b>	<b>\$9,366,025</b>	<b>\$1,200,854</b>	<b>\$1,147,033</b>	<b>\$1,048,833</b>	<b>\$ -</b>

**C. Energy Storage Solicitation**

As part of TEP’s 2015 REST Implementation Plan, the Company included its intent to issue a solicitation for energy storage capacity. The Commission ordered TEP to include information on the energy storage solicitation in the Company’s 2016 REST Implementation Plan, including customer rate impacts and other information relevant to the Commission’s consideration of the results in TEP’s Plan.

In June 2015, TEP issued a solicitation to lease a utility-scale 10 MW capacity Energy Storage System (“ESS”). The goal of the solicitation is to review the cost effectiveness of available technologies and product offerings. The solicitation was administered through a third party independent monitor, Accion Group, LLC, who used various channels of media to reach out to as many companies representing as many technologies as possible. At the time of this filing, over 100 companies had registered on the independent monitor’s request for proposal (“RFP”) website with twenty-one (21) qualified vendors (those vendors who have a verifiable history of ESS management and possess the financial wherewithal to provide long term security) submitting bids. Those bids are currently under review.

The Company believes that as higher penetration levels of intermittent and variable renewable generation are integrated into the grid, utilities will need additional, more flexible resources to manage

these intermittent resources while providing ancillary services such as operating capacity, voltage control, VAR support, and frequency control.

In addition, these new storage technologies and resources create cost recovery issues that will have an impact on all customers. Although these new storage technologies will be used to mitigate the impacts of the variable generation, there is no clear guidance on how their costs should be recovered. As such, the Company requested guidance from the Commission in the 2015 REST Implementation Plan. Staff recommended, and the Commission ordered, that the “current preference for cost recovery of a project resulting from Tucson Electric Power’s energy storage solicitation is through the PPFAC”. TEP expects to provide the Commission with additional information regarding the outcome of its ESS solicitation and evaluation in August 2015, including potential customer rate impacts in the Company’s PPFAC.

#### **D. TEP-Owned Residential Solar Program**

In the Company’s 2015 REST Implementation Plan, the Commission approved the first year of a TEP-Owned Residential Solar Program. Per Commission order (Decision No. 74884) the overall program costs are capped at \$10 million and TEP has limited the size of the Program to a maximum of 600 residential customers. In the first half of 2015, the Company completed an RFP for local installers, solar PV panels, and inverters. Contracts were awarded to three local solar PV installers, a solar PV panel manufacturer, and a solar PV inverter company.

While the program was being designed, TEP created a list of interested customers. At the time of this filing, the Company had approximately 3,400 customers on the list who had heard about the program via press releases, website announcements and word-of-mouth.

Thirty (30) customers from the general interest list were invited via email to participate in a soft launch of the program beginning in late April 2015. This soft launch was done to ensure that processes and workflows for the programs worked as planned. Twenty-three (23) customers responded to the invitation and eighteen (18) met all the TEP-Owned Residential Solar Program requirements. Ten (10) of those customers have executed contracts, initiating the installation process, while eight (8) customers are still reviewing their contracts. As of this submittal, one (1) system has been installed, inspected and commissioned.

In pursuit of technical research and development goals, discussed in more depth in following paragraphs, the Company has also prioritized the participation of an additional fifty-seven (57) customers. These customers were identified from the interest list as being located on particular feeder circuits within the Company's distribution network that meet loading and communication criteria. Once installations have been completed on these circuits, TEP will begin to incorporate the systems into the energy management system in order to directly communicate with the PV systems.

The Company plans to complete the broader launch in July 2015 and notify interested customers that the TEP-Owned Residential Program has launched and that applications are available to be submitted to TEP. Due to time needed for installation of the arrays, the Company anticipates that customers who sign up towards the end of 2015, will not have their arrays installed until the beginning of 2016.

Decision No. 74884 requires the Company to provide an annual report that discusses several key aspects of utility DG ownership including: (1) information regarding specific feeder capacity limits impacted by program installations; (2) avoided system reinforcements or capital improvements due to the program installations; (3) operational impacts of the proposed distribution management system with

respect to voltage and frequency control; and (4) any potential opportunities to study energy storage and PV coordination management at the feeder level.

With regards to (1), (2) and (3) the Company's engineering and distribution planning groups have identified several feeders that would potentially benefit from additional generation capacity, in this case solar DG. This information is being used to prioritize, on a geographical basis, potential customers of the TEP-Owned Residential Solar Program. As systems are installed on identified feeders, the Company will monitor, assess and report on the operational effects on feeders, avoided system reinforcements, and voltage and frequency support. In addition to the current utility-scale energy storage project solicitation (with regards to (4) above), TEP will consider potential storage and PV coordination management study opportunities. This will be an ongoing process as additional arrays are deployed onto TEP's distribution grid.

TEP is proposing to expand the TEP-Owned Residential Solar Program in 2016, by investing up to an additional \$15 million and expanding participation by up to an additional 1,000 customers.

#### **E. Residential Community Solar Program**

As part of TEP's 2015 REST Implementation Plan (Decision No. 74884), the Commission ordered the Company to provide a report on the *"feasibility, costs, benefits, and other aspects of larger scale distributed generation options, either company-owned or through purchased power agreements and if Tucson Electric Power Company wishes, an implementation proposal, as part of their REST activities."* TEP's Plan includes a new Residential Community Solar tariff that will provide customers with more options for going solar, while enabling the Company to build more cost-effective utility-scale community

solar facilities.

In 1999, more than 16 years ago, the Commission initiated the development of a mandatory environmental portfolio standard. By 2000, Arizona had one of the nation's first renewable energy standards, known as the Environmental Friendly Portfolio Standard. The Commission found the standard to be in the public interest, in part by relying on a critical Finding of Fact that should apply to all decisions regarding renewable energy:

*"The development of renewable resources should be designed to achieve maximum benefit for the money spent."* (Decision No. 62506, Fact 38, page 25)

In 2006, the Commission approved the REST (Decision No. 69127).<sup>1</sup> Since its adoption, affected utilities have strived to not only achieve, but exceed, the standard. The Commission has supported the utilities' efforts to "achieve the maximum benefit for the money spent" by approving specific programs, clarifying vague provisions, or providing exceptions when in the public interest.

In the context of the requirement to provide information regarding the "feasibility, costs, benefits, and other aspects" of larger scale DG, the Company would like to focus on the definition of DG included in the REST, the rationale for having DG and the requirements pertaining to implementing DG. There are several definitions relating to DG in the REST, and while all are similar to standard industry definitions, they all contain a singular provision unique to Arizona requiring that the generation be sited on a

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<sup>1</sup> This reference is provided as Appendix A and contains A.A.C. R14-2-1801 through 1815, which thoroughly describe the provisions and requirements set forth in the REST. The Decision itself contains nearly 57 pages of Findings of Fact providing a summary of discussions, filings, and comments from interested parties throughout the development of the current standard.

customer's premises. This requirement prevents affected utilities from (i) using all DG resources in meeting the REST standard and, more importantly, (ii) maximizing the benefits of investing in DG that can be placed anywhere on the Company's distribution system and not just limiting DG to that which is on the customer's premises.

There does not appear to be any specific rationale in the record pertaining to the requirement that DG must be sited solely on a customer's premises. It is noted in the Commission's own analysis following approval of the REST rules<sup>2</sup> that the use of distributed resources will ensure that a percentage of the Annual Renewable Energy Requirement will come from Arizona resources. However, there is no need for the resource to be located on a customer's premises to achieve that objective.

In Decision No. 69127 (November 14, 2006), the Commission Staff's Economic, Small Business, and Consumer Impact Statement<sup>3</sup> emphasized the reliability benefits of using renewable resources in Arizona, such as fewer supply disruptions and less volatile price fluctuations. While acknowledging a "major emphasis in the proposed Renewable Energy Standard and Tariff Rules on Distributed Resources", it only stipulates an increase in reliability of service to areas with distributed resources and an avoidance of negative impacts of cost run ups due to natural disasters such as hurricanes. Again, the above are all benefits that can be achieved through DG located anywhere on an affected utility's distribution system.

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<sup>2</sup> Decision No. 69127, Appendix B, page 22.

<sup>3</sup> Filed as part of the decision (Decision 69127, Appendix C).

Even if the basis for limiting DG to a customer's premises was to force the deployment of customer sited generation, it is a moot point in today's world of renewable energy. Customer based solutions are no longer tied to cash incentives whereby the utility would take title to REC's, and the customer has multiple options including outright ownership, leasing structures, utility rooftop programs, and community solar.

The definitions associated with DG included in the REST are provided below, with the specific customer premises provision emphasized.<sup>4</sup>

**"Distributed Generation"** means electric generation sited at a customer premises, providing electric energy to the customer load on that site or providing wholesale capacity and energy to the local Utility Distribution Company for use by multiple customers in contiguous distribution substation service areas. The generator size and transmission needs shall be such that the plant or associated transmission lines do not require a Certificate of Environmental Compatibility (CEC) from the Corporation Commission.

**"Distributed Solar Electric Generator"** means electric generation sited at a customer premises, providing electric energy from solar electric resources to the customer load on that site or providing wholesale capacity and energy to the local Utility Distribution Company for use by multiple customers in contiguous distribution substation service areas. The generator size and transmission needs shall be such that the plant or associated transmission lines do not require a Certificate of Environmental Compatibility

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<sup>4</sup> These definitions are contained in R14-2-1801 and R14-2-1802 of the renewable Energy Standard and Tariff.

from the Corporation Commission.

**“Distributed Renewable Energy Resources”** are applications of the following defined technologies that are *located at a customer’s premises* and that displace Conventional Energy Resources that would otherwise be used to provide electricity to Arizona customers:

As a reference, the Solar Electric Industry Association (SEIA) defines DG as “electricity that is produced at or near the point where it is used. Distributed solar energy can be located on rooftops or ground-mounted, and is typically connected to the local utility distribution grid.”<sup>5</sup>

There was considerable discussion throughout the development of the REST regarding the benefits of DG. Nearly 10 years later these discussions continue, and while there still remains some disagreement to the extent of these benefits, they all revolve around the notion that the generation resides near the load. Numerous comments included in the REST decision’s Findings of Fact state that the benefits of DG within major load pockets enhances system reliability, relieves stress on the grid and reduces the need for unsightly or unpopular transmission lines. Additionally, it is noted that DG – as with ALL generation resources located within the load pocket – are available during transmission and substation outages. While this particular benefit is not unique to renewable resources, it does highlight a benefit of DG.

Regardless of the extent of the benefits that are actually realized from DG, the overriding concept – and benefit – is that the generator is located at or near the source of load irrespective of the generator’s

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<sup>5</sup> <http://www.seia.org/policy/distributed-solar>.

exact location or to which side of the meter it is attached . The idea that it must be located on a customer's premise diminishes the ability of an affected utility from (i) complying with the REST mandate in the most cost effective manner, and (ii) realizing widespread deployment and benefits associated with DG. DG should not be confused with, or associated with, the idea that it must be customer owned, behind the meter, limited in size, or even tied to a specific load. In fact, as the Commission acknowledged in previous decisions, the current standard allows for DG systems to be located on the utility side of the meter, owned by the utility for residential customers and is not limited in size (as long as a CEC is not required).

Most recently, TEP, Arizona Public Service, and UNS Electric all requested that the Commission address the issue of meeting the DG requirements when the companies were no longer taking title to customers' RECs. This issue was addressed by the Commission in Decision No. 74753, more commonly referred to as the "Track and Record" decision. Although the original intent of this docket was to develop a new methodology for utilities to comply with the REST requirements that was not based solely on the use of RECs, the Commission ultimately concluded that the affected utilities should request annual waivers based on overall development within their respective regions.

Since the REST requirements only pertain to affected utilities, it is incumbent upon the utilities to propose the most cost-effective solutions and alternatives to meet the REST requirements. Simple modifications to the interpretation of DG would enable the continuation of customer sited DG as it exists today, and would also enable the affected utilities and their customers to realize greater benefits through the widespread use of larger scale, considerably more cost effective, DG facilities to meet the current DG

requirements included in the REST.

These simple changes are as follows:

“Distributed Generation” means electric generation sited at a customer premises *or directly connected to the Company’s distribution system*, providing electric energy to the customer load on that site or providing wholesale capacity and energy to the local Utility Distribution Company for use by multiple customers in contiguous distribution substation service areas. The generator size and transmission needs shall be such that the plant or associated transmission lines do not require a Certificate of Environmental Compatibility from the Corporation Commission.

“Distributed Solar Electric Generator” means electric generation sited at a customer premises *or directly connected to the Company’s distribution system*, providing electric energy from solar electric resources to the customer load on that site or providing wholesale capacity and energy to the local Utility Distribution Company for use by multiple customers in contiguous distribution substation service areas. The generator size and transmission needs shall be such that the plant or associated transmission lines do not require a Certificate of Environmental Compatibility from the Corporation Commission.

“Distributed Renewable Energy Resources” are applications of the following defined technologies that are located at a customer’s premises *or directly connected to the Company’s distribution system*, and that displace Conventional Energy Resources that would otherwise be used to provide electricity to Arizona customers:

While the Company is not requesting that the Commission consider changes to the definition of

DG<sup>6</sup> as part of TEP's REST implementation plan, it is important to highlight how this narrowly defined concept of DG limits the affected utilities ability to maximize benefits for the money spent.

This definition of DG is significantly flawed and contradicts the Commission's own finding of fact that "*The development of renewable resources should be designed to achieve maximum benefit for the money spent.*" This limitation is the exact concept that the Company would like to Commission to consider when determining the Company's request for approval of its new Residential Community Solar Tariff and allowing the Company to utilize RECs associated with the capacity subscribed under the program for compliance.

There is not, however, anything in the current definition of DG that would prevent a utility from building a larger scale solar facility, as long as it is sited on a customer's premises (which could be achieved through a land lease) and provides energy to multiple customers in contiguous distribution substation service areas.

TEP believes it can achieve greater DG benefits from deploying more cost effective, larger scale solar installations and is requesting the Commission approve the Company's proposed Residential Community Solar tariff in TEP's 2016 Implementation Plan. The REST Rules do not preclude affected utilities from satisfying a portion of the residential DG requirement from utility-owned generators. The only limitations included in the REST Rules apply to satisfying the non-residential portion of the DG requirement.

If approved, the Company would build a utility-owned solar facility connected to the distribution

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<sup>6</sup> Changing the definitions contained with the Arizona Administrative Code R14-2-1801 and R14-2-1802 would encompass a broader hearing process.

system which would then serve multiple customers through TEP's contiguous service area. Residential customers could apply to be served from the solar facility and be billed using the Company's new Residential Community Solar tariff. The REST's distributed renewable energy provision does not include any locational restrictions, and only requires the Company meet one-half of its distributed renewable energy from "residential applications". By providing TEP's customers with an option to participate in the newly created Residential Community Solar program, it will also allow the Company to assign the associated capacity and renewable energy credits associated with the program towards meeting the REST's residential DG energy requirement.

(i) **Program Details**

The Company's proposed Residential Community Solar program is a hybrid of the Company's existing Bright Tucson Community Solar program and the more recently approved TEP Residential Solar program. Customers choosing to participate would pay a fixed energy rate, similar the TEP-Owned Residential Solar Program. The Company proposes to spend up to \$10 million to develop a solar facility of approximately 5 MW in size and interconnect this facility to the Company's distribution system. Depending on the level of customer interest and participation, the Company could expand the program to meet customer demand. As with all renewable energy contracts or capital expenditures, the Commission determines the prudence through the Company's annual REST Implementation Plans and general rate cases.

The proposed Residential Community Solar program would operate much like the TEP-Owned Residential Solar Program. The customer's equivalent net-zero value ("Solar Rate Capacity") would be

calculated in the same manner (previous annual consumption / average solar production per kW); the customer would enjoy a fixed monthly solar payment based upon their Solar Rate Capacity; the rate would be evaluated annually and raised or lowered if consumption increased or decreased by fifteen percent (15%); and there will be similar regulatory out and termination clauses. (See Exhibit 8 Residential Community Solar Tariff).

Although similar, a number of differences exist between the TEP-Owned Residential Solar Program and the Residential Community Solar Program, including:

- The capacity associated with a customer's equivalent Solar Rate Capacity calculation would be deducted from the larger facility's overall capacity, rather than a stand-alone system on the customer's property.
- The fixed contract term would be 10 years, rather than 25 years.
- The Residential Community Solar tariff would use a price of \$17.50 per kW to calculate the fixed rate, as opposed to \$16.50 for the TEP-Owned Residential Solar Program. The slight premium in the rate reflects that customers can go solar without placing a solar facility on their property and being exposed to: potential insurance implications, roof maintenance or repair costs, construction disruptions, possible tax consequences, or the general long term commitment to their physical property that a PV system installation requires. In addition, TEP's proposed Residential Community Solar tariff will reduce the amount of unrecovered fixed costs shifted to other, non-solar customer classes.
- The customer would not have the option to purchase the system (or any portion thereof).

- The customer would pay an early termination fee based on the number of months remaining on contract. Capacity made available by a customer terminating their participation would be available for other customers who wanted to participate in the program.

By building larger distributed community facilities of approximately 5 MW the Company can achieve several benefits, including:

- Greater cost-effectiveness of construction due to economies of scale. The typical residential rooftop solar installation costs between \$2.50 - \$2.85 per watt. TEP calculates a grid-tied community DG facility to cost approximately \$1.60 - \$1.70 per watt— a savings of approximately forty percent (40%) over smaller scale rooftop installations. This price differential would result in significant savings for the same number of participating customers, or a significant increase in the number of participating customers for the same level of investment.
- Greater cost-effectiveness of operations and maintenance expenses, due to economies of scale of the larger facilities
- Advanced inverter functionality can be incorporated into the utility's grid Operations Management System through pre-existing sub-station and feeder circuit communications network and enhance system reliability.
- Single, larger facilities would be able to utilize existing communications infrastructure at a much lower cost.

The popularity of the Company's existing TEP-Owned Residential Solar Program demonstrates

the desire of TEP's customer's to have more solar energy options. Roughly twenty-five percent (25%) of the customers who indicated strong interest in the TEP-Owned Residential Solar Program and initiated the application process were unable to participate for a variety of technical reasons, such as expensive upgrades to either their roof or point of interconnection, or simply a lack of sufficient roof space. A program such as the proposed Residential Community Solar program would enable these and other customers to enjoy the benefits of going solar with a fixed rate while supporting the Company's overall expansion of its renewable resource portfolio.

**F. Distributed Generation Incentive Program**

TEP is not proposing any new incentives for residential or non-residential solar DG or solar water heating. DG installations are occurring at a rapid pace despite the lack of utility incentives. While many issues may affect future adoption rates for solar DG – including changes to tax incentives, net metering rates or other Commission policies – the Company does not believe new incentives will be required to maintain an adequate pace for solar DG installations in 2016.

TEP anticipates that sufficient renewable DG resources will be generated in its service territory to meet the 2016 residential and non-residential DG targets. However, since the Company no longer pays incentives necessary to acquire RECs from qualifying DG projects, it will not have an adequate number of RECs necessary to meet the REST requirements for 2016 related to the residential DG carve-out provision of A.A.C. R14-2-1805(D). TEP does have enough projects associated with RECs to meet the non-residential DG carve-out provision. As a result, TEP is requesting a waiver of the residential DG requirement. Table 4 shows the Company's projections for 2016 DG compliance (as a percentage of

retail sales), as well as the capacity and expected production from DG facilities that the Company holds title to the REC's.

**Table 4. DG Compliance**

2016	Est. DG Req't (kWh)	Capacity (kW)	Est. REC's Available
Residential	81,573,750	32,030	62,947,228
Non-Residential	81,573,750	47,030	90,862,229

In the Company's request for a waiver of the residential DG requirement, TEP requests that the Commission consider the additional 35,520 kW of residential DG capacity that is currently operational or under construction.

TEP is including in the Plan funds for performance-based incentives ("PBI") awarded in prior years, before those incentive programs were discontinued. To fund these programs, the budget for the proposed incentive program is \$7,192,720.

**G. Market Cost of Comparable Conventional Generation**

Consistent with the REST Rules, TEP calculates program expenses using the Market Cost of Comparable Conventional Generation ("MCCCG"). Details on the methodology for the MCCCG calculation are included in Exhibit 2 attached hereto. The annual MCCCG rates are calculated in advance and stated as a single dollar per MWh value by technology type. The expenses are based on the PPA pricing after subtracting the corresponding MCCCG based on projected hourly energy profiles and are included in Exhibits 3 (AMCCG)(confidential) and Exhibit 5 (Implementation Plan New Resource Costs)

(confidential).<sup>7</sup> Exhibit 4 (Implementation Plan New Resources) shows associated energy production. The profiles are determined by TEP's production cost model. The MCCCCG will be included for wind, PV systems, concentrated solar with storage, and bio-fueled renewable resources.

## H. Metering Costs

The Company continues to receive greater than anticipated demand for residential DG— over 3,500 applications are anticipated for 2015, even with the continued elimination of incentives. The Company plans to continue providing DG production meters for residential and commercial installations, as well as the associated metering sockets and safety equipment for each residential installation. The costs of these necessary components are shown in Table 5. The Company anticipates 2,750 DG installations in 2016 (1,700 third party residential installations, 1,000 TEP-owned residential installations, and 50 commercial installations), therefore the Plan budgets \$697,975 for these metering costs in 2016.

**Table 5. Metering Costs**

<b>Components for 3<sup>rd</sup> party residential solar install</b>	<b>Cost</b>	<b>Components for TEP-owned residential solar install</b>	<b>Cost</b>	<b>Components for 3<sup>rd</sup> party non-residential solar install</b>	<b>Cost</b>
Net Meter	\$ 129.77	Net Meter	\$ -	Net Meter	\$ -
Production Meter	39.45	Production Meter	39.45	Production Meter	206.05
AC Disconnect	86.91	AC Disconnect	84.79	AC Disconnect	-
Labels	9.66	Labels	11.39	Labels	-
Meter Sockets	37.57	Meter Sockets	36.33	Meter Sockets	-
<b>Total Material Per Install</b>	<b>\$ 303.36</b>	<b>Total Material Per Install</b>	<b>\$ 171.96</b>	<b>Total Material Per Install</b>	<b>\$ 206.05</b>
Total Estimated Residential DG Installs	1,700	Total Estimated TEP-Owned Installs	1,000	Total Estimated Non-Residential DG Installs	50
<b>Total Estimated Meter Budget</b>	<b>\$ 515,712</b>	<b>Total Estimated Meter Budget</b>	<b>\$ 171,960</b>	<b>Total Estimated Meter Budget</b>	<b>\$ 10,303</b>
<b>Total Meter Material Budget</b>				<b>\$</b>	<b>697,975</b>

<sup>7</sup> Exhibits 3 and Exhibit 5 will be provided to Commission Staff upon execution of a Protective Agreement.

### III. THE PLAN BUDGET

As stated previously, TEP is proposing to recover approximately \$48 million through the REST tariff to fund the Plan. The estimated cost to implement the Plan is approximately \$57 million, which will be partially offset by applying approximately \$9 million of carryover funds from the 2014 budget. The Plan's detailed budget is attached as Exhibit 1, which includes a breakdown of the costs for utility-scale energy, residential and non-residential DG programs, research and development, outside services support and reporting, technology, and education and outreach. Table 6 includes a high level Plan budget.

**Table 6. Plan Budget by Category**

<b>Category</b>	<b>Budget</b>
Utility Scale	\$ 47,368,944
Existing Large Commercial PBIs	7,192,720
Associated Costs (Education & Outreach, Technical Training, I.T., Metering, Labor, and R&D)	2,084,185
<b>2016 Program Cost</b>	<b>\$ 56,645,849</b>
Carryover Funds	8,809,321
<b>Total 2016 Plan</b>	<b>\$ 47,836,528</b>

#### **IV. THE 2016 REST TARIFF**

The Company's REST tariff (Rider-6) and proposed Statement of Charges (both clean and redline versions setting forth revisions to the REST surcharge and customer caps are attached as Exhibit 6<sup>8</sup>. TEP's Plan includes an increase in the REST surcharge to \$0.01300 per kWh— from its 2015 level of \$0.0080 per kWh – with customer caps by class. The caps were developed using the proportional cap allocation method previously approved by the Commission. Under this methodology, the caps for all customer classes should increase in 2016. Table 7 details the Company's proposed budget for 2016, delineated by rate class. Table 8 shows the currently approved surcharge caps by rate class and the caps proposed for the Plan.

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<sup>2</sup> Customer Load Percentage Analysis is set forth in the attached Exhibit 7.

**Table 7. 2016 Budget by Rate Class**

<b>Rate Class</b>	<b>2015 Approved Budget</b>	<b>2016 Proposed Budget</b>
Residential	\$ 14,632,164	\$ 18,677,315
Small General Service	10,244,784	16,265,080
Large General Service	5,727,369	8,646,389
Industrial & Mining	2,496,000	3,813,236
Lighting (PSHL)	256,281	423,386
<b>Total</b>	<b>\$ 33,356,598</b>	<b>\$ 47,825,407</b>

**Table 8. 2015/2016 Surcharge Caps by Rate Class**

<b>Rate Class</b>	<b>2015 Approved Caps</b>	<b>2016 Proposed Caps</b>
Residential	\$ 3.76	\$ 4.56
Small General Service	\$ 100.00	\$ 150.00
Large General Service	\$ 1,015.00	\$ 1,500.00
Industrial & Mining	\$ 8,000.00	\$ 12,000.00
Lighting (PSHL)	\$ 100.00	\$ 150.00
<b>Per kWh to All Classes</b>	<b>\$ 0.0080</b>	<b>\$ 0.0130</b>

V. **RENEWABLE ENERGY BALANCING, INTEGRATION, AND FIELD TESTING**

TEP typically commits a portion of its REST budget to provide technical research and support for the adoption of renewable energy. Table 9 outlines TEP’s proposed budget for this work in 2016. TEP plans to continue its commitment to furthering the integration of renewable energy on its system by participating in the following projects.

**Table 9. TEP’s Integration Initiatives by Project**

<b>Renewable Integration Initiatives</b>	
Energy Storage and Grid Operations Study	\$ 38,000
Solar Test Yard Maintenance and Equipment	50,000
Field and Lab PV Component Degradation Analysis	50,000
Solar and Wind Forecast Integration Portal	100,000
UWIG, SEPA, AWEA Membership Dues	15,000
<b>Total</b>	<b>\$ 253,000</b>

**A. PV Panel Lab Degradation Testing**

In order for TEP to adequately maintain its existing and future portfolio of PV generation, degradation problems that are specific to the Tucson environment need to be identified early in order to prepare for failures in the field. TEP plans to continue to use the University of Arizona’s (“UA”) state-of-the-art PV panel degradation laboratory to test panels either currently in use or proposed for use in TEP facilities, including panels used in the TEP-Owned Program. This testing is designed to reduce the long-term operations and maintenance cost of these facilities. The proposed budget for such research and testing is \$50,000.

**B. Solar Test Yard Maintenance**

TEP regularly performs technical analysis on existing and developing PV technologies in its widely regarded test yard facility. Data collected from the test yard helps the Company solicit partners to

provide funding for research projects. This collaboration and grant funding allows TEP to optimize investments in appropriate technology for the long-term benefit of customers. The proposed budget for maintaining this existing technology and managing the many interconnections in the yard, including labor, is \$50,000.

**C. Solar and Wind Forecast Integration Portal**

Since 2013, TEP has partnered with the UA's Departments of Physics and Atmospheric Sciences to create and implement a Solar and Wind Integration Forecasting portal. The tool is now functional and is being actively used in TEP's Wholesale Marketing and Operations departments. The forecasting portal has been key in helping TEP understand and integrate the amount of renewables on its grid. TEP has a dedicated weather forecaster working with the UA, to ensure that the forecasts would be effectively utilized for operational decisions. The proposed budget for this program is \$100,000.

**D. Energy Storage and Grid Operations Study**

As part of the Plan, the Company is requesting funding to conduct an Energy Storage and Grid Operations Study. TEP continues to experience a very high penetration of DG, and the long-term effects of these systems on the grid are not fully understood. This proposed study will help the Company identify how energy storage, combined with updates to grid operations, might mitigate any negative impacts of DG. The proposed budget for this study is \$38,000.

**E. UVIG, SEPA, AWEA Dues**

To facilitate its compliance with the REST, TEP actively participates in three renewable industry associations: the Utility Variable (Energy) Integration Group ("UVIG"), the Solar Electric Power Association ("SEPA"), and the American Wind Energy Association (AWEA). High penetrations of solar

and wind make UVIG (a variable generation group) relevant, while SEPA and AWEA provide resources and expertise that help the Company manage renewable programs and stay informed on issues facing the industry. The proposed budget for these groups' fees is \$15,000.

**VI. CONCLUSION**

TEP's 2016 REST Implementation Plan was developed to allow the Company to cost-effectively comply with the REST requirements. The Company believes that the proposed Plan is prudent and is in the public interest. The Company respectfully requests that the Commission adopt TEP's 2016 REST Implementation Plan as submitted, including a waiver of the residential portion of the Distributed Renewable Energy requirement.