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2006 OCT 20 P 4: 27

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IN THE MATTER OF THE GENERAL) DOCKET NO. E-00000A-99-0431
 INVESTIGATION OF DISTRIBUTED)
 GENERATION AND INTERCONNECTIONS FOR) **JOINT COMMENTS OF TUCSON**
 POTENTIAL RETAIL ELECTRIC COMPETITION) **ELECTRIC POWER COMPANY**
 RULES CONSIDERATION.) **AND UNS ELECTRIC, INC.**

Tucson Electric Power Company ("TEP") and UNS Electric, Inc. ("UNSE") (collectively, "UniSource Energy"), through undersigned counsel, hereby submit Joint Comments, responding to the Arizona Corporation Commission's ("Commission") request for certain information on Net Metering.

UniSource Energy was asked to comment on the following topics related to Net Metering:

- A. Net Metering's support of the three purposes of the Public Utility Regulatory Policies Act of 1978 ("PURPA") - conservation, optimal effectiveness of utility facilities, and equitable rates;
- B. Participation in and eligibility for Net Metering;
- C. The type of meters to be used for Net Metering;
- D. Treatment of net excess generation;
- E. Payment of costs associated with Net Metering;
- F. Potential changes in rate structures to accommodate Net Metering; and
- G. Costs and benefits of Net Metering.

1 **I. INTRODUCTION.**

2 UniSource Energy supports programs and rate structures that increase long-run net benefits to
3 the state and offer utilities a reasonable opportunity to earn their authorized return and timely recover
4 prudently incurred operating expenditures. Economic efficiency, an implicit goal of PURPA,
5 requires that the incremental benefit of a program be greater than, or equal to, its incremental cost.
6 UniSource Energy acknowledges that some substitution of specific emissions-free renewable
7 resources for non-renewable resources may be economically efficient. Some cost-effective
8 renewable programs may be justified; Net Metering options provide an extra financial incentive
9 which may facilitate the accelerated implementation of these programs. Programs should be
10 designed to send price signals that accurately reflect the true cost of both renewable and non-
11 renewable resources while providing the utility a reasonable opportunity to recover the full cost of
12 such programs.

13 **II. NET METERING TOPICS.**

14 **A. How would Net Metering support the three purposes of PURPA - conservation,
15 optimal effectiveness of utility facilities, and equitable rates?**

16 These goals should be pursued with economic and technical efficiency in mind. Goals can be
17 met through various programs, including, but not limited to, demand-side-management, time-of-use
18 rates, and Net Metering. The promotion of renewable and/or customer-owned generation must be
19 evaluated under the cost-benefit tests. However, under no circumstances should the utility pay more
20 than societal value for the renewable and/or customer-owned generation. This is a necessary
21 condition for the economically efficient use of utility facilities. In a practical sense, UniSource
22 Energy will typically pay generators the avoided unbundled generation (and in some cases, a portion
23 of distribution) costs and not the full retail rate, which also includes delivery. "Equitable rates," in
24 UniSource Energy's view, means cost-based rates.¹ UniSource Energy rates still include interclass
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26 ¹ "Cost based rates" as used in this filing refers to those elements of a customer's rates that are not related to
27 the cost of generation. These include, but are not limited to the costs associated with: billing, meter reading,
finance, meters, information services, customer support services, and all costs associated with the operation,

1 (between classes) and intraclass (within one class) subsidies. For example, the customer-related
2 charges are typically still set at less-than-cost. The parties must place emphasis on cost-based rates,
3 and minimize rate impact considerations and political constraints to achieve economic efficiency.

4 **B. Who will be eligible for participation in Net Metering?**

5 **i. Sector Participation.**

6 Net metering is a super-subsidy; it provides an extra financial incentive for installation of
7 customer-sited distributed generation. As a super-subsidy, Net Metering should only be offered
8 where an extra incentive is needed to transform the market for a specific technology or market
9 segment where such market transformation can support achievement of a societal goal. Based on
10 this fundamental societal benefit concept, it is the belief of UniSource Energy that if Net Metering is
11 to be implemented, it should only be available to residential and small commercial customers that
12 have installed solar or wind generation systems of 10 kW-AC or less. Other small qualifying
13 cogeneration facilities ("QF"), or renewable generation systems (greater than 10 kW-AC), should not
14 be eligible for Net Metering. Such distributed generation systems should be eligible only for Net
15 Billing, more appropriate to better align cost recovery with cost causation. Net Billing compensates
16 a distributed generator for energy generated at a utility's avoided cost of production of energy.

17 To limit the need to recover lost revenues associated with Net Metered self-generation from
18 all non-benefiting customers, UniSource Energy proposes a total aggregate Net Metering installed
19 generation capacity cap of 1,500 kW, or 0.25% of the previous year's minimum hourly system load,
20 whichever is greater, for TEP and 250 kW, or 0.25% of the previous year's minimum hourly system
21 load, whichever is greater, for UNSE. UniSource Energy proposes the total aggregate cap be linked
22 to minimum hourly system load as that is the distribution system condition when energy production
23 intermittencies of time variant generation sources, such as wind and solar, generally have the greatest

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26 maintenance and asset cost recovery of the distribution and transmission system. "Avoided cost" of
27 generation as used in this filing refers to the variable costs of producing one more unit of electricity. These
costs can be market-based or cost of service-based but are not defined in any one frame of reference for this
filing.

1 potential negative impact on system stability. These aggregate Net Metering program caps are in
2 addition to the single system limitation of 10 kW-AC. UniSource Energy proposes no aggregate cap
3 for Net Billing for any QF or renewable generation system of 100 kW-AC or less. However, QF, or
4 renewable generation systems greater than 100 kW-AC, should not have blanket eligibility for Net
5 Billing, but should be reviewed on a case-by-case basis. Generation systems that are neither QF or
6 renewable should not be eligible for either Net Metering or Net Billing.

7 **ii. Generation Resources.**

8 The new Renewable Energy Standard and Tariff ("REST") is based on providing customer
9 subsidies only for renewable distributed generation resources. In furtherance of that purpose, and if
10 Net Metering is used to provide a super-subsidy for transformation of the renewable energy self
11 generation market, UniSource Energy would support Net Metering of small solar and wind
12 generation resources only to the installed generation capacity caps mentioned above.

13 **C. What type of meters should be used for Net Metering?**

14 Dual Metering describes the use of two meters that are detented. One meter socket is wired
15 so that a meter will register the consumption of power delivered from the utility to the service point.
16 The second meter socket is wired so that a meter will register the consumption of power received
17 from the service point to the utility. This type of metering setup requires two meter sockets and
18 meters to provide the billing quantities of power flow through the service. The utility then incurs
19 greater cost to provide the desired billing quantities and the customer has the cost of two meter
20 sockets and the aesthetics of the additional equipment.

21 Bi-directional Metering refers to the use of a single meter to register the flow of power from
22 or to the utility from a service point. In general this refers to the use of a single un-detented meter
23 installed in the meter socket. If consumption is used from the service point, the meter registers the
24 amount as delivered kWh. If the consumption is used from the service point, the meter reduces the
25 amount registered on the delivered kWh register by the received quantity, in effect making the meter
26 run backwards and developing a single net quantity of power flow for billing quantities.

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1 UniSource Energy would prefer a bi-directional meter reading (kWH Net) for Net Metering
2 customers. It would be less costly to the utility and the customer for this application. It would also
3 take up less space at the customer's facility and be more aesthetically pleasing to the customer.

4 With the use of electronic meters, a register for kWH Delivered, kWH Received and kWH
5 Net can simultaneously be measured and displayed.

6 **D. How should net excess generation be treated?**

7 Eligible Net Metering customers should be credited monthly during the year for excess
8 generation, and the remaining credits should terminate at the end of the year. This provides
9 customers with the opportunity to maximize their Net Metering super-subsidy on an annual period,
10 without providing an incentive to size the solar or wind generator to produce more than the
11 customer's annual energy requirements. This maximizes economic efficiency.

12 **E. Who should pay the costs associated with Net Metering?**

13 Rate structures should recognize that Net Metering can shift revenue collection between
14 customer classes and within customer classes. Maximizing economic efficiency would minimize
15 these interclass and intraclass shifts of revenue collection. Customer charges, at a minimum, should
16 include metering, meter-reading, billing and the cost of the service drop. Net Metering falls into the
17 "metering" category that should be paid for by the affected customer.

18 **F. Should rate structures be changed to accommodate Net Metering?**

19 Applicable rates should be cost-based with clearly defined eligibility requirements. Rates
20 and provisions should change as costs change and all interclass and intraclass subsidies should be
21 eliminated through full cost-based customer charge rate structures.

22 **G. What are the costs and benefits of Net Metering?**

23 Net Metering provides the customer with the opportunity to be compensated at the current
24 retail pricing structure for excess generation provided by the renewable generator. Inherently, this
25 provides a direct benefit to the customer in treating his energy cost at par value. There is no net cost
26 to the customer to install Net Metering, and this method of billing is the most advantageous to the
27 customer. Net Metering, in UniSource Energy's view, is a super-subsidy for a class of generation

1 that needs an extra incentive to move the renewable technologies to market transformation over and
2 above all other incentives available.

3 The cost, including lost revenues, to the utility for Net Metering is not readily recovered
4 without a Net Metering tariff based on all self-generated energy. The utility's cost of implementing
5 Net Metering is all fixed investment and operating expenses incurred above the incremental cost of
6 avoided energy purchased or generated. This cost needs to be recovered through a non-bypassable
7 Net Metering surcharge paid by all customers or through only providing customers a Net Billing
8 option. As an example, based on estimates, under-recovery of revenues from implementation of Net
9 Metering will increase in future years with successful implementation of the distributed generation
10 requirements of the proposed new REST. TEP alone could lose recovery of as much as \$4.6 million
11 of rightfully earned revenue in year 2011, based on 80,000 MWh of customer renewable self-
12 generation production at \$58/MWh of unrecovered fixed investment and operating expenses if full,
13 uncapped Net Metering is implemented.

14 Benefits of small solar and wind distributed generation, not necessarily from Net Metering
15 per se, include a small increase in the operational life of certain distribution components through
16 reduction of the operating temperature of transformers, reactors and underground cables during peak
17 load periods. However, as the sun is not always shining nor the wind blowing when peak load
18 periods occur in the UniSource Energy service areas, these benefits are not a given for all years. As
19 no independent, qualified testing agency has yet quantified this benefit with Arizona specific data,
20 UniSource Energy hesitates to present an estimate of the quantified benefits at this time. Benefits
21 also include a reduction in distribution system related energy losses. This benefit will result in a
22 reduction of utility-avoided variable generation costs by approximately 2% when the distributed
23 generation systems were operating. This is effectively \$0.0005/kWh of the distributed generation
24 energy production. Consequently, the benefit of Net Metering would occur primarily from its effect
25 as a super-subsidy in accelerating the transformation of the renewable distributed generation market,
26 resulting in a small reduction of distribution-related energy losses and very slight increase in life of
27 some select distribution components.

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RESPECTFULLY SUBMITTED this 20th day of October, 2006.

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Original and thirteen copies of the foregoing
filed this 20th day of October, 2006, with:

Docket Control
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