

BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

**IN THE MATTER OF THE INQUIRY)
INTO THE PROVISION OF)
NET METERING SERVICES)
BY ELECTRIC UTILITIES)**
_____)

Case No. 06-00241-UT

COMMENTS OF THE COALITION FOR CLEAN AFFORDABLE ENERGY

The Coalition for Clean Affordable Energy (“CCAIE”) hereby submits its initial written comments in response to Hearing Examiner William Herrmann’s request of July 7, 2006 for written comments on the June 17, 2006 Notice of Inquiry (“NOI”) issued by the Public Regulation Commission (“Commission” or “PRC”).

CCAIE is a coalition of ten environmental and consumer organizations active in New Mexico and the broader Rocky Mountain and Desert Southwest region formed to promote clean energy policies in New Mexico. A list of CCAIE member organizations is provided in Attachment A.

The purpose of CCAIE’s comments is two-fold. First we provide input on the process for moving forward with changes to New Mexico’s net metering and interconnection policies. Second, we provide substantive input on issues raised in the NOI and raise other issues that CCAIE believes the PRC should address with respect to net metering and interconnection.

Background on Net Metering in New Mexico

The PRC’s existing rules on net metering and interconnection, Rule 570 (NMAC 17.9.570) and Rule 571 (NMAC 17.9.571), have provided utility customers the opportunity to install small renewable energy systems and interconnect to the utility grid. Since Rule 571 went into effect in 1999, New Mexico has enjoyed a small but successful program for small renewable energy systems. This program has been successful in that:

- a) It has resulted in the interconnection of more than 60 systems that have performed well, in that they have reliably provided clean power to the electrical grid without creating problems for the grid;

- b) There have been no known injuries or other accidents associated with the operation of these systems; and
- c) The program created an opportunity for utilities, the public, and solar installers to gain experience with and confidence in the technology of small, distributed renewable energy systems.

While the number of systems installed under Rule 571 was not large, the installation rate has now increased, apparently about fourfold, with the Commission's approval of PNM's PV buyback program, whereby PNM purchases the Renewable Energy Credits ("RECs"), in addition to net metering. The State of New Mexico has also adopted a number of policies and programs to encourage renewable energy technologies, including clean energy grants, tax credits, and the Renewable Portfolio Standard (NMAC 17.9.572).

Since the time Rules 570 and 571 were adopted there has been significant progress in adopting new national standards to address concerns of safety, reliability, and various technical issues associated with distributed generation technologies (such as the Institute of Electrical and Electronics Engineers, "IEEE", standard on interconnection, IEEE 1547).

Given the recent developments in technical standards and expansion of policies to promote renewable energy in New Mexico, the PRC has an opportunity to adopt clear, workable and technically viable rules for net metering and interconnection to respond to these changing market conditions.

CCAЕ recommends that the PRC update rules on net metering and interconnection issues, but that these issues be addressed separately

The existing Rules 570 and 571 each have components related to net metering and to interconnection. The process of connecting a customer-owned generation system to the utility grid and arranging financial compensation for excess energy delivered to the grid requires clear rules on both net metering and interconnection. Net metering rules should typically cover financial arrangements between a utility and its customer. Interconnection rules should typically cover the technical issues of connecting a customer-owned distributed generation system with a utility's electrical grid system. We believe that addressing the issues of net metering and interconnection in two separate rules will provide more clarity for utilities, customers and

equipment installers who will have to comply with the rules. CCAE recommends in the upcoming workshops that net metering and interconnection issues be discussed separately, with the aim of developing two clearly separate rules, one on net metering and another on interconnection.

CCAEResponse to Questions Raised in the NOI

(a) Who are the electric customers, if any, with generating capabilities who are excluded from net metering services under Commission Rules 570 and 571, but who would nevertheless benefit from such services?

The current PRC rules apply only to systems smaller than 10kW, therefore any consumers who wish to install larger systems are currently excluded from net metering services.

The fastest growing segment for grid-connected solar energy systems is commercial electric consumers. In 2005, according to Solarbuzz, a total of 80 MW was installed in the US grid connect market. There were significant shifts in the five main market segments, as the large commercial segment grew fastest to reach 33% of the total grid connect market. In terms of application surface, the largest share was held by commercial flat roofs, which accounted for 23% of the market. The market for commercial scale PV is growing, both here in the United States and abroad. In New Mexico, CCAE is aware of serious interest in larger, commercial scale solar energy systems. For example, Sharon Doye, a Santa Fe Schools Administrator, has been leading an effort to provide PV generation for New Mexico schools. Mrs. Doye appeared in a news feature in the Santa Fe New Mexican on this topic.

CCAER is also aware of a number of other commercial electric customers in New Mexico who are interested in developing on-site renewable energy systems: La Posada Hotel, Mesalands Community College, Sunland (an agribusiness), and others.

(b) Would the provision of net metering services to any excluded customers or customer groups advance the objectives of the federal Public Utility Regulatory Policies Act (“PURPA”)? If so, how would it do so?

CCAER believes that clear, workable and technically viable net metering and interconnection rules are necessary to advance New Mexico’s policies to encourage renewable

energy, such as the Renewable Portfolio Standard (NMAC 17.9.572), tax incentives and grants programs for renewable energy systems, and Governor Richardson's endorsement of the Western Governors' Association goals for renewable energy generation.

Expanding net metering is consistent with PURPA. PURPA created opportunities for non-utility generators with *qualifying facilities* ("QF") to sell power to utilities at the utility's *avoided cost of energy*. QFs, as specifically defined by PURPA, can be quite large compared to the typical size of systems owned by customers who would participate in net metering.

(c) Would extending the coverage of net metering services facilitate the utilities' compliance with PURPA? If so, how would it do so?

Extending net metering is consistent with PURPA.

(d) Would extending the coverage affect non-eligible customer groups in any way and, if so, how?

CCAIE presumes that this question refers to non-participating customers, because virtually all customers are eligible, in principle, to net meter. Therefore it is probably better to ask how extending the coverage would affect ratepayers in general. This is because the benefits of net metering generally do not flow only to the system owners, except for perhaps the pride of being able to show off a system, or if a system is used for backup power during blackouts. CCAIE would like to emphasize that the benefits of net metering, including environmental benefits, avoided costs to the infrastructure, health benefits, etc., accrue to all ratepayers, not just to participating customers.

The question of actual, quantifiable benefits to ratepayers of net metering has been hotly debated, with utilities, generally downplaying the benefits and using the argument that the net metering customers avoid paying transmission and distribution costs and so shifting costs to others, while advocates of distributed generation estimate the cumulative benefits as high.

To discuss this question, we can break it into short-term and long-term benefits. The short-term benefits include any kind of direct savings to ratepayers resulting from factors such as reduced load on utility equipment, any avoided generation or transmission upgrades that might result, grid support, hedging against fuel prices, direct health and environmental benefits, etc. A number of groups, such as Americans for Solar Power and the Vote Solar Initiative, have

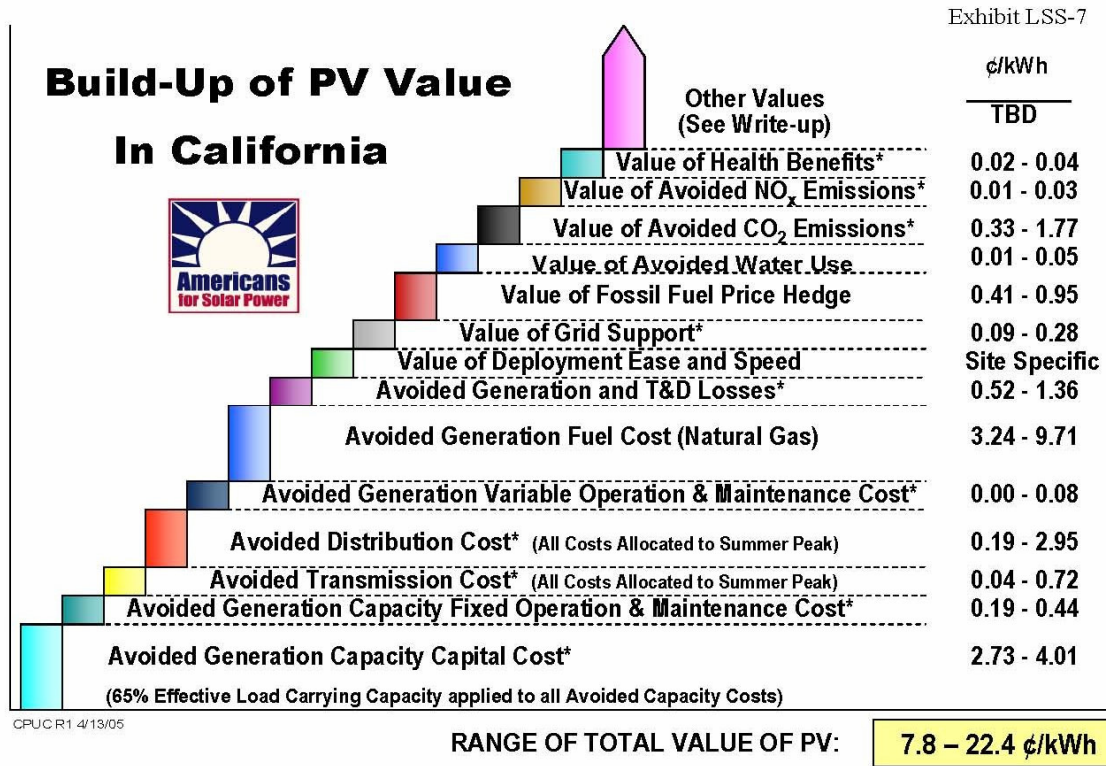
attempted to quantify these benefits in a rigorous fashion (interestingly, few utilities have done so publicly). A “waterfall” graph of such benefits has been provided in Figure 1, from a fairly conservative study by Americans for Solar Power.

Generally speaking, these studies find that benefits range from about (or slightly below) the retail cost of conventional power up to about the cost of the PV power. *Even at the low end, these estimates generally exceed the difference between avoided cost and retail rates, which provides a direct economic justification for net metering. Or in other words, all ratepayers generally benefit from net-metering.*

The benefits of expanding net-metering to commercial systems are definitely greater. Larger systems have significantly lower cost, sometimes as much as 50% or less, and are often geographically well co-located with large refrigerated air loads, which directly translates into fewer transformer upgrades, etc.

The long-term benefits of net metering are another matter. Many advocates of distributed renewable energy are motivated by serious concerns that problems such as global warming, dependence on foreign oil, and other energy problems now present immense and imminent threats to the health of our communities and the world. Net metering is just one small part of enabling a transition to a much cleaner energy infrastructure.

Figure 1. (Source: Americans for Solar Power, <http://www.forsolar.org/?q=node/98>)



(e) Are the simplified interconnection procedures found in Rule 571 appropriate for facilities larger than 10 kW and, if so, why should the capacity be increased? If increased, should the Commission set a new maximum capacity for these streamlined interconnection requirements? Would this outer limit be 50 kW, 100 kW, 500 kW, 1 MW, 2 MW, or other specified limit and why would such a specified limit be advisable?

CCAIE believes that it is important for the Commission to update its net metering and interconnection rules to reflect recent developments and new model standards. CCAIE encourages the PRC to increase the threshold above 10 kW and consider establishing different interconnection procedures for different size systems, in accordance with the national model standards.

IEEE 1547

One important advance is IEEE 1547, for Interconnecting Distributed Resources with Electric Power Systems, approved by the IEEE Standards Board in June 2003 (and approved as an American National Standard in October 2003). It is an extremely thorough standard, and covers such things as voltage regulation, integration with area grid grounding, synchronization, distributed resources on secondary grids, inadvertent energizing of the area grids, monitoring provisions, isolation devices, interconnect integrity, fault, area grid, reclosing coordination, voltage, frequency, loss of synchronism, power quality, response to abnormal conditions, voltage flicker induced by distributed generation, harmonics, islanding, unintentional islanding, testing, etc. The thoroughness of this technical standard recommends that it should be the primary authority for the PRC on technical interconnection issues for systems up to 10 MW.

FERC Small Generator Interconnection Procedures

Another important advance is the Federal Energy Regulatory Commission (“FERC”) development of new interconnection standards, including the Small Generator Interconnection Procedures (“SGIP”) applicable to systems up to 2 MW in size.

Interstate Renewable Energy Council Small Generator Interconnection Procedures

Following the issuance of the IEEE and FERC standards, a number of parties have developed model interconnection and net metering rules. Significant among these are the model interconnection rules developed by the Interstate Renewable Energy Council (“IREC”), and the National Association of Regulatory Commissioners (“NARUC”). IREC also developed a model net metering rule that was strongly influenced by the input presented to the FERC as a consensus filing in Docket No. RM02-12-000.

(IREC rules: <http://www.irecusa.org/connect/modelrules.pdf>, and <http://www.irecusa.org/connect/netmeteringrules.pdf>).

(NARUC: <http://www.naruc.org>: Click on “Publications”, then click on “Model Interconnection Procedures and Agreement for Small Distributed Generation Resources”.)

CCAЕ recommends the PRC refer to the IREC model as a starting point for revising the New Mexico interconnection rule. The IREC model is preferred because it has fewer procedural ambiguities, builds on the best parts of the other standards, has explicit

treatment for generators under 10 kW, and contains slightly more liberal rules for synchronous generators if they meet strict noexport criteria.

The hallmark of both the NARUC and IREC models is that they provide a simplified process for interconnecting generators that are based on two key steps: First, components are certified to the IEEE 1547 standard, and second, the interconnection meets a series of tests or screens that demonstrate the generator is sufficiently small in relation to the grid, in a well defined technical sense, at the proposed point of interconnection. These screens are simple enough such that many systems can generally be approved in less than 15 minutes by an experienced utility technician, or rejected for further study. (See chart of screens, attached as Appendix B.) The screens employed by the models check the following kind of things:

- With the current configurations of today's grids, the aggregate distributed generation capacity must always remain below the minimum load of the distribution system to which it is interconnected to avoid problems. Because the minimum load of the grid is often not as well known as the peak load, the criteria are usually based on the peak load, which is generally about three times the minimum load. Roughly speaking, without getting into technical complexities about the differences between radial grids, distribution networks, or spot networks, the models propose limits of 5-15%. (NARUC uses a bifurcated process that leaves some procedural ambiguities.)
- Both models limit the added short circuit contribution from the aggregated distributed generators to no more than 85-90% of the rating of any utility device, to prevent distributed generator output from preventing a utility protective device to work.
- There are some other screens dealing with multi-phase systems, interconnection with 240 volt systems, etc. These are basically the same between the two models.
- Note also that the screens given in Appendix B address both radial, spot, and area networks separately.

Thus the standards rely heavily on the IEEE standard, with just a few basic system and grid specific tests. For the large class of systems that present no problems to the grid, this greatly reduces time and cost, and ensures that the system owner is not discriminated against for non-technical reasons. In practice, to utilize the IEEE standard, the models all rely heavily on national testing laboratories to certify specific equipment to the standards the Underwriters Laboratories has developed, that is, UL1741, which in turn uses many of the IEEE 1547 material. Conformity with UL1741, for example, resolves most of the concerns utilities might have with interconnection of inverters.

The interconnection models suggest different treatment for generators in the ranges of 0 to 10-25 kW, from 10-25 kW to 2 MW, and from 2 to 20 MW. *Existing PRC Rules 570 and 571 are not up to the task of expediting these different categories in appropriate ways.* This therefore suggests that the PRC rules be updated to handle these different areas separately, all with an eye toward expediting the approval of those systems that do not pose problems. Systems in the 10-25 kW to 2 MW range, in particular, can be “super-expedited”, as FERC termed it for this range, similar to but not quite as simply as PRC Rule 571 currently does. *This means that the Commission, with respect to technical problems and safety, will be on safe ground if it crafts a rule with a net metering limit of up to 2 MW on individual system size, with additional caps for the total aggregated net-metering generation capacity of around 10 to 15% on a given utility’s system, according to, but only according to, the technical screens, to avoid technical problems.*

For systems in the range from 2 MW to 10 MW, the models in general give little approval of guidance as to expediting systems in this range, except the IREC model expedites non-exporting systems. CCAE recommends that the PRC follow the IREC model in this area as well. This could be especially important for some biomass projects in the 2-10 MW range that will only serve the customer’s load, and pose no problems for the grid.

Finally, with respect to technical interconnection issues in general, the PRC should be very careful about leaving any decisions to unconstrained utility discretion. If the PRC feels that such discretion is necessary, generators must to be able to obtain a quick, low cost, technically competent, and neutral review of utility discretion. Otherwise, the competing interests of utilities and small generators may suppress development of distributed generation. In New Mexico, obtaining adequate resources for such a review process seems very unlikely. Therefore, CCAE

recommends the PRC should rely as much as possible on the IEEE standards, and basic screening processes provided by the IREC model rules.

(f) Loads above 50 kW typically have demand charges. Should the proposed rule or rules address demand measurements, charges and credits and, if so, how should these issues be addressed?

Demand measurements, charges and credits affect the financial aspects of and hence the development of distributed generation sources. Demand charges in particular can present obstacles to the development of intermittent renewable sources, even highly productive systems such as PV, because a single day or even hour of non-production can trigger a demand charge. For a relatively small amount of renewable energy generation, say, up to 5% or 10% penetration levels, it may make sense for the PRC to prohibit demand charges on net-metered systems, or grant demand credits, to encourage distributed generation. In particular, the PRC should be watchful for use of deliberate use of such charges as an impediment to distributed generation.

(g) What are the net metering problems or issues, if any, that should be addressed in the revision of net metering programs?

One primary concern is that systems above 10 kW are still excluded. This issue was explored more fully in an earlier section of these comments.

There is little time-of-use metering in New Mexico, so that renewable energy systems that provide power that is well correlated with peak load times are not being fully valued. New Mexico, especially Albuquerque, appears to growing “peakier” with time, so that the PRC may, at some point, want to consider time-of-use metering.

Another problem is that some electric customers, particularly customers of some rural electric cooperatives, have had difficulty interconnecting with their utility in a timely fashion, despite the fact that the standard interconnection agreement in Rule 571 says that utility approval “shall not be unreasonably withheld or delayed.” This problem calls out for the establishment of definite response times, which should be on the order of several days, the development of a method for customers to rapidly file grievances, and perhaps punitive provisions for non-compliance.

Another shortcoming of Rule 571 is that the standard interconnection agreement also says “Customer shall provide and install a meter socket *and any related interconnection equipment per Utility's requirements.*” This leaves much discretion to utilities, and the need to rely so much on utilities for such technical requirements has now been made obsolete by the new model interconnection standards discussed earlier in these comments.

(h) Are the single and three phase issues addressed adequately? If not, what else needs to be done?

CCAIE believes that the IEEE and IREC interconnection standards adequately address this issue.

(i) What are the interconnection standards, if any, that the Commission should consider within this Notice of Inquiry?

CCAIE recommends that the PRC review the IEEE interconnection standards, and the IREC interconnection and net-metering model rules. The IEEE standard is available through IEEE for a price. The IREC rules can be obtained at <http://www.irecusa.org/connect/modelrules.pdf> and <http://www.irecusa.org/connect/netmeteringrules.pdf>.

As well, CCAIE recommends that the PRC review the net metering and interconnection rules recently adopted in Colorado and New Jersey. These states are the first to adopt revised net metering and interconnection standards that reflect the IEEE and IREC models. Colorado (Net Metering is rule 3664 and Interconnection is rule 3665):

http://www.dora.state.co.us/puc/rules/-723-3_3650ff_07-02-06.pdf

New Jersey:

<http://www.state.nj.us/bpu/wwwroot/secretary/NetMeteringInterconnectionRules.pdf>

(j) What are the other enhancements, if any, which the Commission should consider in order to better fulfill the purposes of PURPA?

Besides improvements to net metering and interconnection rules, future power grid planning needs to take the rapidly increasing level, and the ultimate potential, of distributed generation into account. At present, the capacity of power grids, especially distribution grids, is

limited by such factors as their network, as opposed to radial design, and the very fast response of protective settings on distribution network circuits. According to Chris Cook with the Interstate Renewable Energy Council, options to upgrade the grid include:

- Delaying the very fast protection settings on distribution network circuits.
- Converting the configuration of distribution network circuits to radial lines.
- Addressing the problems of reverse power flow through circuit voltage regulators or replacing the regulators with ones that monitor power in both directions.

Conclusion

In conclusion, CCAE recommends that the PRC replace Rules 570 and 571 with new, simple, and well-thought-out rules based on the IREC interconnection and net metering models.

CCAЕ also suggests that the PRC consider upper limits on individual systems in the range of 2 MW (with aggregate limits as specified by the screens of the IREC model, to avoid technical problems).

Furthermore, CCAE recommends that the PRC seek ways to ensure that future upgrades to the grid be compatible with distributed generation. New Mexico will benefit greatly from these actions.

CCAЕ appreciates the opportunity to submit written comments on these issues and looks forward to working with other parties and PRC Staff to develop fair net metering and interconnection rules.

Respectfully submitted this 21st day of July,

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