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MEMORANDUM

To: Public Service Commission

From: Division of Public Utilities

Constance White, Director
Artie Powell, Manager, Energy Section
Judith Johnson, Technical Consultant

Subject: EAct 2005 Amendments to PURPA – Interconnection Standard - Docket 06-999-03

Date: March 1, 2007

ISSUE

On August 8, 2005, the President signed into law the Energy Policy Act of 2005 (EAct2005) which included amendments to the Public Utility Regulatory Policies Act (PURPA) and added five new federal standards to PURPA section 111(d) for state commissions and utilities to consider. PURPA states that “each state regulatory authority (with respect to each electric utility for which it has ratemaking authority) and each nonregulated electric utility shall consider each standard” and “make a determination concerning whether or not it is appropriate to implement such standard”¹ The standards are regarding the following: Net Metering, Fuel Diversity, Fossil Fuel Generation Efficiency, Time-Based Metering and Communication, and Interconnection.

According to a reference manual produced by EEI and NARUC, and others, the law requires that state commissions and unregulated utilities consider the standards; they are not required to implement them. They may:

...implement any standard, decline to implement any standard, or adopt a different or modified standard from those described in the statute (PURPA section 117(b)). However, if they decline they are required to state in writing the reason for their decision and make that statement available to the public (PURPA section 111(c)). State commissions and utilities

¹ PURPA section 111(a)

may also take into account prior determination of the standards if it complies with the requirement of Title I of PURPA (PURPA section 112(a)).²

This memo is the Division of Public Utilities' recommendation regarding the Interconnection Standard which is reproduced in the following section.

PURPA Interconnection Standard

Each electric utility shall make available, upon request, interconnection service to any electric consumer that the electric utility serves. For purposes of this paragraph, "interconnection service" means service to an electric consumer under which an on-site generating facility on the consumer's premises shall be connected to the local distribution facilities. Interconnection services shall be offered based upon the standards developed by the Institute of Electronics Engineer; IEEE Standard 1547 for Interconnecting Distributed Resources with Electric Power Systems, as they may be amended from time to time.

In addition, agreements and procedures shall be established whereby the services are offered shall promote current best practices of interconnection for distributed generation, including but not limited to practices stipulated in model codes adopted by associations of state regulatory agencies. All such agreements and procedures shall be just and reasonable, and not unduly discriminatory or preferential.

RECOMMENDATION

The Division of Public Utilities (DPU) recommends that the Utah Public Service Commission adopt the standard as written. Facilitating distributed generation in the Utah jurisdiction would be particularly beneficial in managing peak growth and meeting the needs of the growing service territory.

We recommend that the PURPA Standard be adopted as written as a first step in helping the State realize those benefits. However, it is only a first step. We further recommend that an Interconnection Docket be opened to define terms such as "best practices", explore opportunities and barriers for small, medium, and large DR projects, look at model interconnection codes to determine if any would be beneficial to Utah. The interconnection docket would also coordinate with the proposed investigation into net metering as interconnection issues that are barriers to greater participating in Utah's net metering program. The docket would also provide an opportunity to flesh out the details of the standards and to establish measurements to determine utility adherence.

² Reference Manual and Procedures for Implementation of the "PURPA Standards" in the Energy Policy Act of 2005, March 22, 2006. Sponsored by American Public Power Association (APPA); Edison Electric Institute (EEI); National Association of Regulatory Utility Commissioners (NARUC); National Rural Electric Cooperative Association (NRECA). Prepared by Kenneth Rose and Karl Meeusen.

ANALYSIS

Interconnection Standard Purpose

The purpose of the standard would support the facilitation of distributed generation (DR) and help remove barriers to DR installations. Some experts expect DR to be able to contribute greatly to the energy supply in the future with as much as 10% of new capacity additions over the next 20 years while providing multiple benefits to the system. Thus the purpose of the standard would support all three of stated PURPA goals: 1) conservation of energy supplied by an electric utility; 2) optimization of the efficient use of facilities and resources by electric utilities; and 3) equitable rates to consumers. These experts, however, recognize that there are reliability and safety concerns.

The PURPA standard states that it addresses “service to an electric consumer under which an on-site generating facility on the consumer’s premises shall be connected to the local distribution facilities.” Thus, it does not address interconnection between a regulated electric company and a commercial electricity provider. The Standard also states that it covers connection to the distribution facility, not the transmission system which is primarily covered by the Federal Energy Regulatory Commission.

We are including in this analysis, extracts from publications regarding benefits and concerns about DR. The following citation details the potential benefits for electricity providers, electrical customers, DR providers, and the environment.

Distributed generation (DG) not only provides local benefits to its owner, but it also offers new options for utilities. These options range from a physical hedge against purchased power to alternatives to transmission and distribution system upgrades or construction.

Projections for new distributed resources (DR) electricity generation capacity range up to 30 GW over the next 20 years, accounting for about 10% of new capacity additions during this period. Attaining the high end of this range depends on improvements in DR unit cost and performance, favorable energy prices, and fewer barriers to DR installations.

When properly integrated with the grid, DG has potential benefits such as reduced electric line loss; grid/EPs investment deferment and improved grid/EPs asset utilization; improved reliability; ancillary services such as voltage support or stability, VARs, contingency reserves, and black start capability; clean energy; lower-cost electricity; reduced price volatility; greater reliability and power quality; energy and load management; and combined heat and power (CHP) synergies.

Further, DG, especially in CHP mode, has the potential to dramatically reduce industrial and commercial sectors’ carbon and air pollutant emissions and increase source energy efficiency. In CHP mode, overall energy effectiveness is enhanced because CHP

produces electricity and usable byproduct thermal energy onsite, converting 80% or more of the fuel into useable energy.³

The following quotation continues to discuss benefits, but also references some of the safety and reliability concerns.

The use of distributed generation and, more generally, distributed resources (DR)—which includes distributed generation and energy storage systems—has the potential to provide more reliable and lower-cost energy for electricity customers as well as benefits for today’s electric transmission and distribution (T&D) systems.

...

Although the application of distributed generation and storage can have many benefits, the technologies and operational concepts to properly integrate them into the existing power system must be developed to realize these benefits and avoid negative effects on reliability and safety. The electric distribution system traditionally was not designed to accommodate active generation and storage at the distribution level or, generally, at the sub-transmission level, and, especially, it was not designed to allow distributed generators to supply energy to other distribution customers. The technical issues involved in readily interconnecting and effectively integrating these types of DR applications with grid operations are significant.⁴

Utah Equivalent Standard

The DPU believes that there is currently not an equivalent standard to the PURPA proposed standard in Utah. However, Utah law does address interconnection and the development of distributed generation.

The Net Metering law discusses interconnection as to the electrical corporation’s liability and obligations in Title 54-15-106. In addition, we believe that Title 54, Chapter 12 -- Small Power Production and Cogeneration, is support for adoption of the PURPA standard. The law states as legislative policy that,

“It is the policy of this state to encourage the development of small power production and cogeneration facilities, to promote a diverse array of economical and permanently sustainable energy resources in an environmentally acceptable manner, and to conserve our finite and expensive energy resources and provide for their most efficient and economic utilization.

³ Basso, T.; Friedman, N. R. (2003). “IEEE 1547 National Standard for Interconnecting Distributed Generation: How Could It Help My Facility?” Preprint.

⁴ Thomas S. Basso, and Richard DeBlasio (2003). “IEEE P1547 Series of Standards for Interconnection” Preprint

While we believe Utah statute supports the interconnection standard, we do not believe that it provides an equivalent standard. We have included the two sections of Utah code as part of Attachment A to this memo.

Conclusions

The DPU concludes that there are benefits to be gained from greater participation from business and industry in distributed generation. We see DG as being particularly beneficial in Utah to manage managing peak growth and to meet the needs of the growing service territory.

The PURPA standard states, "... agreements and procedures shall be established whereby the services are offered shall promote current best practices of interconnection for distributed generation ...". The adoption of the standard would provide an opportunity to improve the interconnection process in Utah.

We recommend that the PURPA Standard be adopted as written as a first step in helping the State realize those benefits. However, it is only a first step. We further recommend that an Interconnection Docket be opened to define terms such as "best practices", explore opportunities and barriers for small, medium, and large DR projects, look at model interconnection codes to determine if any would be beneficial to Utah. The interconnection docket would also coordinate with the proposed investigation into net metering, as interconnection issues that are barriers to greater participating in Utah's net metering program. The docket would also provide an opportunity to flesh out the details of the standards and to establish measurements to determine utility adherence.

During the technical conference, some parties expressed discomfort with the ambiguity of the term "best practices" and whether one standard could apply to all distribution system interconnection projects with varying locations and sizes. The DPU believes that an effective standard should not be overly restrictive and should have room for the state of Utah to resolve through a public process such matters as the following:

- How to assure that interconnection standards are consistent with IEEE Standard 1547 for Interconnecting Distributed Resources with Electric Power Systems.
- Establishing interconnection best standards and developing a process to assure that electrical corporations continue to seek out and use best practices as they develop.
- Establishing guidelines and process to assure that agreements and procedures are "just and reasonable, and not unduly discriminatory or preferential."

cc: Committee of Consumer Services
Dave Taylor, PacifiCorp

ATTACHMENT A

Utah Code -- Title 54 -- Chapter 15 -- Net Metering of Electricity

54-15-106. Customer to provide equipment necessary to meet applicable code requirements -- Commission may adopt additional requirements -- Testing and inspection of interconnection.

(1) Each customer participating in a net metering program shall provide at the customer's expense all equipment necessary to meet applicable local and national standards regarding electrical and fire safety, power quality, and interconnection requirements established by the National Electrical Code, the National Electrical Safety Code, the Institute of Electrical and Electronics Engineers, and Underwriters Laboratories.

(2) After appropriate notice and opportunity for comment, the commission may by rule adopt additional safety, power quality, and interconnection requirements for customer generation systems that the commission considers to be necessary to protect public safety and system reliability.

(3) (a) If a customer participating in a net metering program complies with requirements referred to under Subsection (1) and additional requirements established under Subsection (2), an electrical corporation may not require that customer to:

- (i) perform or pay for additional tests; or
- (ii) purchase additional liability insurance.

(b) An electrical corporation may not be held directly or indirectly liable for permitting or continuing to permit an interconnection of a customer generation system to the electrical corporation's system or for an act or omission of a customer participating in a net metering program for loss, injury, or death to a third party.

(4) An electrical corporation may test and inspect an interconnection at times that the electrical corporation considers necessary to ensure the safety of electrical workers and to preserve the integrity of the electric power grid.

Utah Code -- Title 54 -- Chapter 12 -- Small Power Production and Cogeneration

54-12-1. Legislative policy.

(1) The Legislature declares that in order to promote the more rapid development of new sources of electrical energy, to maintain the economic vitality of the state through the continuing production of goods and the employment of its people, and

to promote the efficient utilization and distribution of energy, it is desirable and necessary to encourage independent energy producers to competitively develop sources of electric energy not otherwise available to Utah businesses, residences, and industries served by electrical corporations, and to remove unnecessary barriers to energy transactions involving independent energy producers and electrical corporations.

(2) It is the policy of this state to encourage the development of small power production and cogeneration facilities, to promote a diverse array of economical and permanently sustainable energy resources in an environmentally acceptable manner, and to conserve our finite and expensive energy resources and provide for their most efficient and economic utilization.

54-12-2. Purchase of power from independent energy producers.

(1) Purchasing utilities shall offer to purchase power from independent energy producers.

(2) The commission shall establish reasonable rates, terms, and conditions for the purchase or sale of electricity or electrical generating capacity, or both, between a purchasing utility and an independent energy producer. In establishing these rates, terms, and conditions, the commission shall either establish a procedure under which small power producers and cogenerators offer competitive bids for the sale of power to purchasing utilities or devise an alternative method which considers the purchasing utility's avoided costs. The capacity component of avoided costs shall reflect the purchasing utility's long-term deferral or cancellation of generating units which may result from the purchase of power from independent energy producers.

(3) Purchasing utilities and independent energy producers may agree to rates, terms, or conditions for the sale of electricity or electrical capacity which differ from the rates, terms, and conditions adopted by the commission under Subsection (2).

(4) The commission may adopt further rules which encourage the development of small power production and cogeneration facilities.