

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of the Consideration of)	
Adoption of the PURPA Section 111(d)(15))	Case No. EO-2006-0497
Interconnection Standard as Required by)	
Section 1254 of the Energy Policy Act of 2005)	

**Department of Natural Resources Expert Witness Frank Cunningham's
Position Statement on Applicability of Prior State Action Exemption**

Premise

Although Missouri has a statute § 386.887, RSMo, that addresses the interconnection of customer-owned renewable generation up to 100 kilowatts, it does not constitute a comparable standard to the EAct 2005 interconnection standard.

Discussion

My position is based upon my technical background and experience with the design, installation and interconnection of small photovoltaic systems and my knowledge of the Institute of Electrical and Electronics Engineers (IEEE) Standard 1547 for Interconnecting Distributed Resources with Electric Power Systems. Mr. Rick Anderson, my colleague at the Department of Natural Resources' Energy Center, is also an expert witness in this case, and he is addressing the policy aspects of the standard.

The EAct of 2005 Section 1254 amends the Public Utility Regulatory Policies Act of 1978 (PURPA) by adding the requirement that state regulatory agencies consider the adoption of comparable standards for the interconnection of customer on-site power generation, unless the state has taken action on a comparable standard. EAct §1254 states the following:

- Each electric utility shall make available upon request interconnection service to any electric consumer that the electric utility serves.
- Interconnection services shall be offered based upon the standards developed by the Institute of Electrical and Electronics Engineers (IEEE) Standard 1547 for Interconnecting Distributed Resources with Electric Power Systems.
- All such agreements and procedures shall be just and reasonable and not unduly discriminatory or preferential.

Current Missouri law, § 386.887, RSMo, and rules, 4 CSR 240-20.060 and 4CSR 240-20.065, are substantially different. To better understand the differences between the EPAct and Missouri law one should examine the requirements found in IEEE Standard 1547. IEEE 1547-2003 is the Standard for Interconnecting Distributed Resources with Electric Power Systems, adopted in 2003. The standard was developed through a large and sustained collaboration among engineers, regulators, utilities and numerous other industry experts.

IEEE Standard 1547-2003 builds on prior IEEE standards, including IEEE standard 929-2000, Recommended Practices for Utility Interfaces of Photovoltaic Systems, and IEEE standard 1001-1988, Guides for Interfacing Dispersed Storage and Generation Facilities with Electric Utility Systems. IEEE Standard 1547-2003 criteria and requirements are applicable to all distributed resource (DR) technologies with aggregate capacity of 10 MVA (megavolt-amperes; equivalent to 10,000 kilowatts) or less.

Standard 1547 is designed to protect all parties connected to the grid, including the utility workers, utility customers, and the utility system as a whole. Specific criteria include:

- DR units of 250 kVA or more shall have provisions for monitoring their connection state, real power output, reactive power output, and voltage at the point of connection to the area electric power system (EPS).
- Requirements for voltage and frequency set points and clearing times
- Requirements for connection to the area EPS
- Power quality requirements
- Islanding requirements
- Interconnection test specifications and requirements along with factory production tests of equipment used in a DR system.

When contrasting Standard 1547 and EAct Sec 1254 with § 386.887, RSMo, the following differences are identified:

- §386.887.2(5)(c) limits system capacity to no more than 100 Kilowatts. Standard 1547 applies to system capacity of 10 MVA (10,000 kilowatts) or less.
- §386.887.7 does not include a direct reference to Standard 1547-2003. This is understandable since the Missouri statute was adopted in 2002, while IEEE adopted Standard 1547 in 2003. However, the fact that Missouri law does not contain a reference to Standard 1547 indicates a lack of comparable standards between EAct 2005 and Missouri law.
- §386.887.7 allows the retail electric supplier to determine what is a reasonable standard and requirement for interconnection. In comparison, EAct Sec 1254 requires the state regulatory agency to set the procedures and standards, and they “shall be just and reasonable and not unduly discriminatory or preferential.”

I would like to note some additional site-specific variances between existing Missouri Public Service Commission rules and the provisions of EPAct Section 1254:

- Cogeneration 4 CSR 240-20.060

This rule implements PURPA with regard to small power production and cogeneration systems. EPAct section 1254 amends PURPA by adding paragraph (15), Interconnection, and the Code of State Regulations has not yet been modified to reflect this addition to the PURPA law. More specifically 4 CSR 240-20.060 (2)(C) references the requirement for the customer to supply “relays, locks and seals, breakers, automatic synchronizer, a disconnecting device and other control and protective devices required by the utility” whereas EPACT Sec 1254 requires that system interconnection be based on upon IEEE 1547.

- Section 4 CSR 240-20.060(8), Standards for Operating Reliability

This rule constrains the PSC to consideration of factors related to safety and grid stability, specifying that if the PSC establishes standards, it shall specify the need for the standards on the basis of system safety and reliability. In comparison EPAct §1254 incorporates consideration of fairness and equitable treatment, specifying that "all such agreements and procedures shall be just and reasonable, and not unduly discriminatory or preferential.”

- Net Metering/Interconnection Model Agreement, 4 CSR 240-20.065

The portion of this rule that offers the model “Interconnection Application/Agreement for Net Metering Systems with Capacity of 100 kW or Less,” Section C, references IEEE 929-2000. This standard was specifically for photovoltaic systems and has been

discontinued by IEEE with the adoption of IEEE standard 1547, which covers the interconnection of all on-site generating systems located on a utility customer's premises.

Consequently, for all of the reasons outlined above, Missouri's law, §386.887 RSMo, is not comparable to §1251 of EPAct, 16 U.S.C. 2621.