INVESTIGATION INTO THE ENERGY POLICY ACT OF 2005 ADDITION OF FIVE NEW PURPA STANDARDS

Docket No. 06I-169E

REPORT TO THE
COLORADO PUBLIC UTILITIES COMMISSION

By the Staff of the Colorado Public Utilities Commission

December 6, 2006

Executive Summary

On August 8, 2005 the Energy Policy Act of 2005 (EPAct) was enacted. The EPAct is comprehensive legislation addressing a myriad of national energy issues. Within the EPAct are amendments to the Public Utility Regulatory Policies Act (PURPA). Essentially, the EPAct amends two sections of PURPA: (1) Standards for Electric Utilities and (2) Cogeneration and Qualifying Facility Purchase and Sale Requirements. Only those amendments to the Standards for Electric Utilities are addressed in this investigation.

The purpose of the Standards for Electric Utilities (16 USC 2621) are to encourage conservation of energy supplied by electric utilities; to optimize the efficiency of use of facilities and resources by electric utilities; and provide for equitable rates to electric consumers. Prior to the EPAct, there were ten standards specified. The standards in place prior to the EPAct are:

(1) Cost of Service
(2) Declining Block Rates
(3) Time-of-Day Rates
(4) Seasonal Rates
(5) Interruptible Rates
(6) Load Management Techniques
(7) Integrated Resource Planning
(8) Investments in Conservation and Demand Management
(9) Energy Efficiency Investments in Power Generation and Supply
(10) Consideration of the effects of wholesale power purchases on utility cost of capital; effects of leveraged capital structures on the reliability of wholesale power sellers; and assurance of adequate fuel supplies

The new standards added by the EPAct are:

(11) Net Metering
(12) Fuel Diversity
(13) Fossil Fuel Generation Efficiency
(14) Smart Metering
(15) Interconnection

The PURPA requires that each state commission consider each standard and then make a determination concerning whether or not it is appropriate to implement the standards. To that end, the Commission on March 31, 2006 ordered the opening of an Investigatory Docket for the purpose collection information in order to consider implementation of the new PURPA Standards. The order included an inquiry seeking suggestions from interested parties on changes or modifications that should be made to rules regulating electric utilities consistent with the EPAct. Six parties responded to the Commission's Inquiry.

This report summarizes Staff's investigation and makes specific recommendations to the Commission for their consideration concerning whether it is appropriate to implement the new PURPA standards. A brief summary of the findings of this investigation follow.

- NET METERING - It is the conclusion of Staff that the Commission's Rules 4 CCR 723-3664 and 4 CCR 723-3925 comport with the Net Metering Standard.

- FUEL DIVERSITY - It is the conclusion of Staff that the Commission's Rules 4 CCR 723-3610 and 4 CCR 723-3654 comport with the Fuel Diversity Standard.

- FOSSIL FUEL GENERATION EFFICIENCY - It is the opinion of Staff that the Fossil Fuel Generation Efficiency Standard is not in accord with the Commission's Least-Cost Planning Rules at 4 CCR 723-3-3600. It is more likely that the Least-Cost Planning Rules will result in a balance between fuel-efficiency and least-cost resources for the selection of future production units. As a result, Staff concludes that it is not appropriate to implement the Fossil Fuel Generation Efficiency Standard.

- SMART METERING - PSCo is currently in the midst of a Commission authorized Residential Price Response pilot program that will not be complete until December of 2007. As a result, Staff concludes that it is not appropriate to implement the Smart Metering Standard until the Commission has had adequate time to evaluate PSCo's Report on its pilot program. It is recommended that consideration for implementation of the Smart Metering Standard be deferred until March 31, 2008 to allow for a review of the results of the Residential Price Response pilot program and that the Commission make such a finding.

- INTERCONNECTION - - It is the conclusion of Staff that the Commission's Rule 3665 comports with the PURPA Interconnection Standard.

It is recommended that the Commission issue a order with the determination that the Commission's Rules Regulating Electric Utilities (4 CCR 723-3) comport with the Net Metering, Fuel Diversity and Interconnection Standards without modification, that the Fossil Fuel Generation Efficiency Standard is not appropriate for implementation, and that consideration for implementation of the Smart Metering Standard be deferred until March 31, 2008 to allow for a review of the results of the Residential Price Response pilot program.

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Section 1: Introduction

Background of PURPA and the Energy Policy Act of 2005

The Public Utility Regulatory Policies Act of 1978 (PURPA) established certain standards to encourage conservation of energy supplied by electric utilities; to optimize the efficiency of use of facilities and resources by electric utilities; and provide for equitable rates to electric consumers. Each State regulatory authority is directed to make determinations concerning whether it is appropriate to implement the standards to carry out the purposes of the PURPA.

On August 8, 2005, the Energy Policy Act of 2005 (EPAct) was enacted. The EPAct, in part, amended the PURPA by adding five new standards. Brief descriptions of the new PURPA standards follow:

- NET METERING - Each electric utility shall make available upon request net metering service to any electric consumer that the electric utility serves.

- FUEL DIVERSITY - Each electric utility shall develop a plan to minimize dependence on any single fuel source and to ensure that the electric energy it sells to consumers is generated using a diverse range of fuels and technologies, including renewable technologies.

- FOSSIL FUEL GENERATION EFFICIENCY - Each electric utility shall develop and implement a 10-year plan to increase the efficiency of its fossil fuel generation.

- SMART METERING - Each electric utility shall offer each of its customer classes, and provide individual customers upon request, time-based metering and rate schedules.

- INTERCONNECTION - Each electric utility shall make available, upon request, interconnection service to any electric consumer with on-site generation that the electric utility serves.

The complete text of the standards as specified in the EPAct is included as Appendix A.

Specific Requirements for State Commissions

The PURPA requires that each state commission consider each standard and then "make a determination concerning whether or not it is appropriate to implement such standard".[1] The PURPA further explains that "[N]othing in this title prohibits any State regulatory authority or nonregulated electric utility from adopting, pursuant to State law, any standard or rule affecting electric utilities which is different from any standard established by this subtitle".[2]

The PURPA outlines the procedural requirements for consideration and determination. The PURPA states "[T]he consideration referred to in subsection (a) shall be made after public notice and hearing. The determination referred to in subsection (a) shall be – (A) in writing, (B) based

[1] PURPA Section 111(a), Consideration and Determination Respecting Certain Ratemaking Standards.
[2] PURPA Section 117, Relationship to State Law.

on findings included in such determination and upon evidence presented at the hearing, and (c) available to the public".[3]

The publication *Reference Manual and Procedures for Implementation of the "PURPA Standards" in the Energy Policy Act of 2005* (Manual) provides further clarification to the process for consideration and determination. The Manual indicates that the PURPA "appears to allow a range of consideration of the federal standards by state commissions and utilities, from a "paper" hearing, for example, where the commission makes a determination based on the written filings from interested parties, to a full evidentiary hearing with written testimony from expert witnesses, rebuttals, and an opportunity for cross-examination of the witnesses by the participating parties".[4]

Timeline for Compliance

The EPAct established the following deadlines for each State regulatory authority first, to commence consideration and second, to complete the determination and issue a decision with respect to implementation:

Standard	Begin Consideration	Issue Decision
NET METERING	8-Aug-07	8-Aug-08
FUEL DIVERSITY	8-Aug-07	8-Aug-08
FOSSIL FUEL GENERATION EFFICIENCY	8-Aug-07	8-Aug-08
SMART METERING	8-Aug-06	8-Aug-07
INTERCONNECTION	8-Aug-06	8-Aug-07

Commission Consideration and Determination Process

The Commission initiated a "paper" hearing with its order opening an Investigatory Docket[5] for the purpose of collecting of written comments from interested parties to begin consideration and determination of the new PURPA Standards. The order is included as Appendix B.

The order includes a Notice of Inquiry (Inquiry) seeking suggestions from interested parties on changes or modifications that should be made to rules regulating electric utilities consistent with the EPAct. To that end, interested parties were requested to address specific questions relative to the standards under consideration, but were also allowed to provide additional suggestions that parties deemed appropriate for consideration.

Six parties responded to the Inquiry for comments on the new PURPA Standards. Two parties, the City of Boulder and Holy Cross Energy responded indicating interest, but provided no comments. The Colorado Rural Electric Association (CREA) responded indicating that while seven Colorado cooperative electric associations are required to address the new PURPA standards, they are not under Commission jurisdiction. Hunt Technologies (Hunt), a provider of

[3] PURPA section 111(b)(1), Procedural Requirements for Consideration and Determination.
[4] "Reference Manual and Procedures for Implementation of the "PURPA Standards" in the Energy Policy Act of 2005", prepared by Kenneth Rose and Karl Meeusen, March 22, 2006, sponsored by the American Public Power Association (APPA), the Edison Electric Institute (EEI), the National Rural Electric Cooperative Association (NRECA), and the National Association of Regulatory Utility Commissioners (NARUC), p. 8.
[5] Decision No. C06-0302, Docket No. 06I-169E, In the Matter of the Investigation into the Energy Policy act of 2005 Addition of Five New PURPA Standards to Address Current Conservation and Efficiency Needs, Order Opening Investigatory Docket and Notice of Inquiry, Adopted March 29, 2006.

advanced meter reading and infrastructure systems, provided comments on the Smart Metering standard. Interwest Energy Alliance (Interwest) provided comments relative to the Fuel Diversity Standard. Public Service Company (PSCo) provided comments on all of the standards. The complete texts of the responses are included as Appendix C.

This report summarizes the new PURPA standards, Commission rules in effect that relate to the standards, responses to the Inquiry submitted by interested parties, and recommendations of the Staff of the Commission (Staff) as to whether it is appropriate to implement the new standards.

Section 2: Net Metering Standard

The EPAct, Subtitle E – Amendments to PURPA, Section 1251 "Net Metering and Additional Standards", amend Section 111(d) of the Utility Regulatory Policies Act of 1978 (16 U.S.C. 2621(d)) by adding at the end the following standard.

> *(11) Net metering.--Each electric utility shall make available upon request net metering service to any electric consumer that the electric utility serves. For purposes of this paragraph, the term `net metering service' means service to an electric consumer under which electric energy generated by that electric consumer from an eligible on-site generating facility and delivered to the local distribution facilities may be used to offset electric energy provided by the electric utility to the electric consumer during the applicable billing period.*

Rule 3664 for the Renewable Energy Standard

The Code of Colorado Regulations, 4 CCR 723-3, Part 3, Rules Regulating Electric Utilities, include requirements for net metering for the Renewable Energy Standard. Specifically, Rule 3664 states:

> 3664. Net Metering
>
> (a) All QRUs shall allow the customer's retail electricity consumption to be offset by the electricity generated from Eligible Renewable Energy Resources on the customer's side of the meter that are interconnected with the QRU, provided that the generating capacity of the customer's facility meets the following two criteria:
>
> (I) The rated capacity of the generator does not exceed 2000 kW; and
>
> (II) The rated capacity of the generator does not exceed the customer's service entrance capacity.
>
> (b) If a customer with an Eligible Renewable Energy Resource generates Renewable Energy pursuant to subsection (a) of Rule 3664 in excess of the customer's consumption, the excess kilowatt-hours shall be carried forward from month to month and credited at a ratio of 1:1 against the customer's retail kilowatt-hour consumption in subsequent months. Within 60 days of the end of each calendar year, or within 60 days of when the customer terminates its retail service, the QRU shall compensate the customer for any accrued excess kilowatt-hour credits, at the QRU's average hourly incremental cost of electricity supply over the most recent calendar year.
>
> (c) The QRU shall file tariffs that comply with these rules within 30 days of the effective date of these rules.
>
> (d) A customer's facility that generates Renewable Energy from an Eligible Renewable Energy Resource shall be equipped with metering equipment that can measure the flow of electric energy in both directions. The QRU shall utilize a single bi-directional electric revenue meter.
>
> (e) If the customer's existing electric revenue meter does not meet the requirements of these rules, the QRU shall install and maintain a new revenue meter for the customer, at

the company's expense. Any subsequent revenue meter change necessitated by the customer shall be paid for by the customer.

(f) The QRU shall not require more than one meter per customer to comply with this Rule 3664. Nothing in this Rule 3664 shall preclude the QRU from placing a second meter to measure the output of a Solar Renewable Energy System for the counting of RECs subject to the following conditions:

(I) For customer facilities over 10 kW, a second meter shall be required to measure the Solar Renewable Energy System output for the counting of RECs.

(II) For systems 10 kW and smaller, an additional meter may be installed under either of the following circumstances:

(A) The QRU may install an additional production meter on the Solar Renewable Energy System output at its own expense if the customer consents; or

(B) The customer may request that the QRU install a production meter on the Solar Renewable Energy System output in addition to the revenue meter at the customer's expense.

(g) A QRU shall provide net metering service at non-discriminatory rates to customers with Eligible Renewable Energy Resources. A customer shall not be required to change the rate under which the customer received retail service in order for the customer to install an eligible renewable energy resource. Nothing in this rule shall prohibit a QRU from requesting changes in rates at any time.

Rule 3925 for Small Producers and Generators

The Code of Colorado Regulations, 4 CCR 723-3, Part 3, Rules Regulating Electric Utilities, includes requirements for net metering for Small Power Producers and Cogenerators. Specifically, Rule 3925 states:

3925. Meters.

(a) A utility shall own, install, and maintain meters and associated metering equipment to measure the generation of a qualifying facility.

(b) A qualifying facility shall supply, at no expense to the utility, a suitable location for the installation of metering equipment.

(c) The cost of meters and associated metering equipment, their installation, and their maintenance shall be an interconnection cost of the qualifying facility.

Response to Inquiry

Only PSCo provided comments on the Net Metering Standard. PSCo provided the following:

"The vast majority of on-site generating facilities that provide power to the local distribution grid already qualify for net metering through the provision of the two previously mentioned statutes. The Company does not believe additional net metering services are necessary for those very few customers with facilities that are on-site, larger than 10kW and not fueled by a renewable resource as stipulated in 4 CCR 723-3650(f)."

Conclusion and Recommendation

The Net Metering standard uses the phrase "*eligible on-site generating facility"*. This indicates that the Commission has the right to define what generating facilities are eligible. The few customers with facilities that are on-site, larger than 10kW and not fueled by a renewable resource are not currently considered eligible. A customer typical of this ineligible class would be one with an on-site diesel generator for emergency or back-up service. In general, these generating units produce electricity at a cost well above market rates. As a result, Staff does not perceive any benefit of providing this class of customers with access to net metering.

Staff concludes that the Commission's Rules 4 CCR 723-3664 and 4 CCR 723-3925 comport with the Net Metering Standard and recommends that the Commission make such a finding.

Section 3: Fuel Diversity Standard

The EPAct, Subtitle E – Amendments to PURPA, Section 1251 "Net Metering and Additional Standards", amend Section 111(d) of the Utility Regulatory Policies Act of 1978 (16 U.S.C. 2621(d)) by adding at the end the following standard.

> *(12) FUEL SOURCES- Each electric utility shall develop a plan to minimize dependence on 1 fuel source and to ensure that the electric energy it sells to consumers is generated using a diverse range of fuels and technologies, including renewable technologies.*

Rule 3610 for Least-Cost Planning

The Code of Colorado Regulations, 4 CCR 723-3, Part 3, Rules Regulating Electric Utilities, include requirements for fuel diversity within the rules for Least-Cost Planning (LCP). Specifically, Rule 3910(f) states:

> 3610. Utility Plan for Meeting the Resource Need.
>
> (f) In selecting its final resource plan, the utility's objective shall be to minimize the net present value of rate impacts, consistent with reliability considerations and with financial and development risks. In its bid solicitation and evaluation process, the utility shall consider renewable resources; resources that produce minimal emissions or minimal environmental impact; energy-efficient technologies; and resources that provide beneficial contributions to Colorado's energy security, economic prosperity, environmental protection, and insulation from fuel price increases. Further, the utility shall grant a preference to such resources where cost and reliability considerations are equal.

Rule 3654 for the Renewable Energy Standard

The Code of Colorado Regulations, 4 CCR 723-3, Part 3, Rules Regulating Electric Utilities, include requirements for net metering for the Renewable Energy Standard. Specifically, Rule 3654 states:

> 3654. Renewable Energy Standard
>
> (a) Each QRU shall generate or cause to be generated (through purchase or by providing rebates or other form of incentive) Eligible Renewable Energy in the following minimum amounts:
>
> (I) 3% of its retail electric energy sales in Colorado for each of the Compliance Years 2007 through 2010;
>
> (II) 6% of its retail electric energy sales in Colorado for each of the Compliance Years 2011 through 2014;
>
> (III) 10% of its retail electric energy sales in Colorado for each Compliance Year beginning in 2015 and continuing thereafter.
>
> (b) Of the Eligible Renewable Energy amounts specified in Rule 3654(a), at least four percent shall be derived from Solar Electric Generation Technologies. At least one-half

of this four percent shall be derived from On-site Solar Systems located at customers' facilities.

Response to Inquiry

Interwest and PSCo provided comments on the Fuel Diversity Standard. Interwest suggested the addition of a new paragraph VIII under Commission Rule 3607(a) to read:

> "Contribution and characterization of utility's existing and planned generation resources toward meeting the fuel diversity requirements of EPAct Sect. 1251(a)12".

Interwest also urges the commission "to consider enhancements to the electric rules that will facilitate construction of transmission projects, especially to areas that are primed for wind energy development, but which do not have sufficient existing transmission".

PSCo commented that "[t]he Company does not believe any changes to existing rules are necessary. The existing rules of the Commission fulfill the intent and purpose of the revisions to PURPA."

Conclusion and Recommendation

As the PURPA standards have been amended from time-to-time over the years, the Commission has revised the language of the Rules Regulating Electric Utilities (4 CCR 723-3) to provide compliance. The language in the rules reflects the Commission's determination for the implementation of the standards. There are no specific references to the PURPA standards. It is Staff's recommendation that the new paragraph suggested by Interwest not be included since there are no other specific references in the rules to either PURPA standards or to the EPAct.

With regard to "enhancements to the rules" for the purpose of facilitating transmission for wind energy development, it is Staff's view that this is beyond the scope of the consideration and determination required by the EPAct.

As a result, Staff concludes that the Commission's Rules 4 CCR 723-3610 and 4 CCR 723-3654 comport with the Fuel Diversity Standard and recommends that the Commission make such a finding.

Section 4: Fossil Fuel Generation Efficiency Standard

The EPAct, Subtitle E – Amendments to PURPA, Section 1251 "Net Metering and Additional Standards", amend Section 111(d) of the Utility Regulatory Policies Act of 1978 (16 U.S.C. 2621(d)) by adding at the end the following standard.

> *(13) FOSSIL FUEL GENERATION EFFICIENCY- Each electric utility shall develop and implement a 10-year plan to increase the efficiency of its fossil fuel generation.*

Rule 3610 for Least-Cost Planning

The Code of Colorado Regulations, 4 CCR 723-3, Part 3, Rules Regulating Electric Utilities, include requirements for fuel diversity within the rules for Least-Cost Planning (LCP). Specifically, Rule 3910(f) states:

> 3610. Utility Plan for Meeting the Resource Need.
>
> (f) In selecting its final resource plan, the utility's objective shall be to minimize the net present value of rate impacts, consistent with reliability considerations and with financial and development risks. In its bid solicitation and evaluation process, the utility shall consider renewable resources; resources that produce minimal emissions or minimal environmental impact; ***energy-efficient technologies***; and resources that provide beneficial contributions to Colorado's energy security, economic prosperity, environmental protection, and insulation from fuel price increases. Further, the utility shall grant a preference to such resources where cost and reliability considerations are equal [Emphasis added].

Response to Inquiry

Only PSCo provided comments on the Fossil Fuel Generation Efficiency Standard. Several excerpts from PSCo's response are provided below.

> "Establishing a target for increased fossil fuel generation efficiency will be extremely difficult to measure and verify and could very likely be contrary to the least-cost objective of the LCP rules."
>
> "[I]t is possible to increase the average installed efficiency of the supply fleet by a specific target but have the actual average operational efficiency increase by far less than the target.
>
> For example, if a hypothetical 5000 MW system has an average heat rate of 10,000 btu/kWh and adds a 500 MW unit with a heat rate of 7000 btu/kWh, it would increase the average installed heat rate of the fleet by 3%. However, since this new unit operates only a fraction of the time, from an operational perspective, system efficiency is improved by only 0.1%."
>
> "The least-cost mix of resource additions may not result in an overall increase in the efficiency of the fossil fleet. For example, the addition of the 750 MW Comanche 3 plant operating at a 9500 btu/kWh heat rate will displace some amount of 7000 btu/kWh heat rate gas-fired combined cycle energy. While the addition of Comanche 3 provides an

overall savings for customers it could act to decrease the overall efficiency of the fossil fleet."

Conclusion and Recommendation

Based on the comments and issues raised by PSCo, it is Staff's opinion that imposing specific efficiency targets for fossil fuel generation is problematic. It is likely that implementing specific targets for fossil fuel generation will be contrary to the LCP process. In addition, the Commission's LCP rules include the requirement for consideration of energy efficient technologies.

It is the opinion of Staff that the Fossil Fuel Generation Efficiency Standard is not in accord with the Commission's Least-Cost Planning (LCP) Rules at 4 CCR 723-3-3600 and that it is more likely that the LCP Rules will result in a balance between fuel-efficiency and least-cost resources for the selection of future production units. As a result, Staff concludes that it is not appropriate to implement the Fossil Fuel Generation Efficiency Standard and recommends that the Commission make such a finding.

Section 5: Smart Metering Standard

The EPAct, Subtitle E – Amendments to PURPA, Section 1252 "Smart Metering", amend Section 111(d) of the Utility Regulatory Policies Act of 1978 (16 U.S.C. 2621(d)) by adding at the end the following standard.

> *(14) TIME-BASED METERING AND COMMUNICATIONS- (A) Not later than 18 months after the date of enactment of this paragraph, each electric utility shall offer each of its customer classes, and provide individual customers upon customer request, a time-based rate schedule under which the rate charged by the electric utility varies during different time periods and reflects the variance, if any, in the utility's costs of generating and purchasing electricity at the wholesale level. The time-based rate schedule shall enable the electric consumer to manage energy use and cost through advanced metering and communications technology.*

The standard continues to detail the types of time-based rate schedules, advanced meters and communications, education and demand response programs that may be offered. The complete text of the standard is included in Appendix A.

Experimental Residential Price Response Pilot Program

The Commission in Decision No. C05-0390[6], Docket No. 04A-566E, granted PSCo the authority to implement an experimental residential price response pilot (RPR Pilot) program. The program is intended to measure the feasibility and effectiveness of dynamic pricing. The RPR Pilot makes available on a voluntary basis residential pricing for Time-of-Use Service, Critical-Peak Pricing and Critical Time-of-Use. The RPR Pilot program is currently in progress with results due to the Commission in December of 2007.

Transmission, Primary and Secondary TOU ECA

In addition, the Settlement Agreement[7] for The Investigation and Suspension of Tariff Sheets Filed by Public Service Company of Colorado Advice Letter No. 1454–Electric, Advice Letter No. 671-Gas, Docket No. 06S-234EG, PSCo agreed to offer an optional time-of-use ECA rate for all transmission and primary customers and for secondary customers with demands greater than 300 kW.

Response to Inquiry

Only PSCo provided comments on the Smart Metering Standard. PSCo provided considerable commentary on the RPR Pilot program as well as response to the specific questions put forward

[6] Decision No. C05-0390, Docket No. 04A-566E, In the Matter of Application of Public Service Company of Colorado for Authority to implement an Experimental Residential Price Response Pilot program, Order Approving Settlement Agreement, Adopted March 30, 2005.

[7] Settlement Agreement, Docket No. 06S-234EG, RE: The Investigation and Suspension of Tariff Sheets Filed by Public Service Company of Colorado with Advice Letter No. 1454 – Electric, Advice Letter No. 671 – Gas, entered into by Public Service Company of Colorado, Staff of the Commission, Colorado Office of the Consumer Counsel, Colorado Energy Consumers, The Kroger Co., Climax Molybdenum Company, the Commercial Group, and Adams County, dated 0ctober 20, 2006, p 13, lines 5 through 12.

in the Commissions Inquiry. An excerpt from PSCo's response to the Inquiry commentary on the RPR Pilot program follows.

> "In December of 2007 the Company will file a report on the results of the program. By December 2007 Public Service will have analyzed the results of the program for an entire year, and will be prepared to estimate customers' response to higher energy prices during peak periods, as well as to lower prices during off-peak periods. (The program has been designed to generate sufficient data from which to draw statistically significant inferences)."

Conclusion and Recommendation

Staff is confident that Smart Metering or Time-based Metering and Communications will be offered on a voluntary basis in the near future. The issue at hand today is whether the Commission should require utility companies under its ratemaking jurisdiction to offer the service within the timeframe specified within the standard.

Considering that (1) PSCo is currently in the midst of its RPR Pilot program, (2) the data that would allow for the design of a long-term smart metering program will not be available until December 2007, and (3) it was agreed that the results of the pilot would determine the future of the residential price response program, Staff concludes that it is not appropriate to implement the Smart Metering Standard until the Commission has had adequate time to evaluate PSCo's Report on its RPR Pilot Program. It is recommended that consideration for implementation of the Smart Metering Standard be deferred until March 31, 2008 to allow for a review of the results of the RPR Pilot Program and that the Commission make such a finding.

Section 6: Interconnection Standard

The EPAct, Subtitle E – Amendments to PURPA, Section 1254 "Interconnection", amend Section 111(d) of the Utility Regulatory Policies Act of 1978 (16 U.S.C. 2621(d)) by adding at the end the following standard.

> *(15) INTERCONNECTION- Each electric utility shall make available, upon request, interconnection service to any electric consumer that the electric utility serves. For purposes of this paragraph, the term `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 Electrical and Electronics Engineers: 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.*

Rule 3665 for Interconnection

The Code of Colorado Regulations, 4 CCR 723-3, Part 3, Rules Regulating Electric Utilities, include requirements for the provision of interconnection within the rules for Renewable Energy Standard, Rule 3665 Interconnection. The Commission's requirements for interconnection detailed within Rule 3665 are extensive and too lengthy to reproduce here. Regardless, the Rule 3665 Interconnection was reviewed and found to comport with both FERC Order 2006-A and IEEE Standard 1547.

Response to Inquiry

Only PSCo provided comments on the Fossil Fuel Generation Efficiency Standard. Several excerpts from PSCo's response are provided below.

> "The Commission's Renewable Energy Standard 4 CCR 723-3665 includes provisions for interconnection for small generation facilities no larger than ten MW. The commission's rule comports with both IEEE Standard 1547 and FERC Order 2006-a.
>
> The Company does not believe the rule needs to be changed or enhanced to comply with the changes to PURPA in the Act."

Conclusion and Recommendation

Staff concludes that the Commission's Rule 3665 comports with the PURPA Interconnection standard and recommends that the Commission make such a finding.

Section 7: Conclusions and Recommendations

Below is a summary of Staff's conclusions and recommendations concerning whether it is appropriate to implement the five new PURPA standards.

PURPA Standard	Conclusions and Recommendations
NET METERING - Each electric utility shall make available upon request net metering service to any electric consumer that the electric utility serves.	Staff concludes that Commission's Rules 4 CCR 723-3664 and 4 CCR 723-3925 comport with the Net Metering Standard and recommends that the Commission make such a finding.
FUEL DIVERSITY - Each electric utility shall develop a plan to minimize dependence on any single fuel source and to ensure that the electric energy it sells to consumers is generated using a diverse range of fuels and technologies, including renewable technologies.	Staff concludes that Commission's Rules 4 CCR 723-3610 and 4 CCR 723-3654 comport with the Fuel Diversity Standard and recommends that the Commission make such a finding.
FOSSIL FUEL GENERATION EFFICIENCY - Each electric utility shall develop and implement a 10-year plan to increase the efficiency of its fossil fuel generation.	It is the opinion of Staff that the Fossil Fuel Generation Efficiency Standard is not in accord with the Commission's Least-Cost Planning (LCP) Rules at 4 CCR 723-3-3600 and that it is more likely that the LCP Rules will result in a balance between fuel-efficiency and least-cost resources for the selection of future production units. As a result, Staff concludes that it is not appropriate to implement the Fossil Fuel Generation Efficiency Standard and recommends that the Commission make such a finding.
SMART METERING - Each electric utility shall offer each of its customer classes, and provide individual customers upon request, time-based metering and rate schedules.	PSCo is currently in the midst of a Commission authorized Residential Price Response pilot program that will not be complete until December of 2007. As a result, it is not appropriate to implement the Smart Metering Standard until the Commission has had adequate time to evaluate PSCo's Report on its pilot program. It is recommended that consideration for implementation of the Smart Metering Standard be deferred until March 31, 2008 to allow for a review of the results of the Residential Price Response pilot program and that the Commission make such a finding.
INTERCONNECTION - Each electric utility shall make available, upon request, interconnection service to any electric consumer with on-site generation that the electric utility serves.	Staff concludes that Commission's Rule 3665 comports with the PURPA Interconnection standard and recommends that the Commission make such a finding.

Appendix A: Energy Policy Act of 2005

SEC. 1251. Net Metering and Additional Standards,

SEC. 1252. Smart Metering and

SEC. 1254. Interconnection.

ENERGY POLICY ACT OF 2005

Public Law 109-58
109th Congress

An Act
To ensure jobs for our future with secure, affordable, and reliable energy.

Aug. 8, 2005 - [H.R. 6]

TITLE XII—ELECTRICITY`(11) NET METERING- Each electric utility shall make available upon request net metering service to any electric consumer that the electric utility serves.

Subtitle E--Amendments to PURPA

SEC. 1251. NET METERING AND ADDITIONAL STANDARDS.

(a) Adoption of Standards- Section 111(d) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2621(d)) is amended by adding at the end the following:

`(11) Net metering.--Each electric utility shall make available upon request net metering service to any electric consumer that the electric utility serves. For purposes of this paragraph, the term `net metering service' means service to an electric consumer under which electric energy generated by that electric consumer from an eligible on-site generating facility and delivered to the local distribution facilities may be used to offset electric energy provided by the electric utility to the electric consumer during the applicable billing period.

`(12) FUEL SOURCES- Each electric utility shall develop a plan to minimize dependence on 1 fuel source and to ensure that the electric energy it sells to consumers is generated using a diverse range of fuels and technologies, including renewable technologies.

`(13) FOSSIL FUEL GENERATION EFFICIENCY- Each electric utility shall develop and implement a 10-year plan to increase the efficiency of its fossil fuel generation.'

(b) Compliance-

(1) TIME LIMITATIONS- Section 112(b) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2622(b)) is amended by adding at the end the following:

`(3)(A) Not later than 2 years after the enactment of this paragraph, each State regulatory authority (with respect to each electric utility for which it has ratemaking authority) and each nonregulated electric utility shall commence the consideration referred to in section 111, or set a hearing date for such consideration, with respect to each standard established by paragraphs (11) through (13) of section 111(d).

`(B) Not later than 3 years after the date of the enactment of this paragraph, each State regulatory authority (with respect to each electric utility for which it has ratemaking authority), and each nonregulated electric utility, shall complete the consideration, and shall make the determination, referred to in section 111 with respect to each standard established by paragraphs (11) through (13) of section 111(d).'.

(2) FAILURE TO COMPLY- Section 112(c) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2622(c)) is amended by adding at the end the following: `In the case of each standard established by paragraphs (11) through (13) of section 111(d), the reference contained in this subsection to the date of enactment of this Act shall be deemed to be a reference to the date of enactment of such paragraphs (11) through (13).'.

(3) PRIOR STATE ACTIONS-

(A) IN GENERAL- Section 112 of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2622) is amended by adding at the end the following:

`(d) Prior State Actions- Subsections (b) and (c) of this section shall not apply to the standards established by paragraphs (11) through (13) of section 111(d) in the case of any electric utility in a State if, before the enactment of this subsection--

`(1) the State has implemented for such utility the standard concerned (or a comparable standard);

`(2) the State regulatory authority for such State or relevant nonregulated electric utility has conducted a proceeding to consider implementation of the standard concerned (or a comparable standard) for such utility; or

`(3) the State legislature has voted on the implementation of such standard (or a comparable standard) for such utility.'.

(B) CROSS REFERENCE- Section 124 of such Act (16 U.S.C. 2634) is amended by adding the following at the end thereof: `In the case of each standard established by paragraphs (11) through (13) of section 111(d), the reference contained in this subsection to the date of enactment of this Act shall be deemed to be a reference to the date of enactment of such paragraphs (11) through (13).'.

SEC. 1252. SMART METERING.

(a) In General- Section 111(d) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2621(d)) is amended by adding at the end the following:

`(14) TIME-BASED METERING AND COMMUNICATIONS- (A) Not later than 18 months after the date of enactment of this paragraph, each electric utility shall offer each of its customer classes, and provide individual customers upon customer request, a time-based rate schedule under which the rate charged by the electric utility varies during different time periods and reflects the variance, if any, in the utility's costs of generating and purchasing electricity at the wholesale level. The time-based rate schedule shall enable the electric consumer to manage energy use and cost through advanced metering and communications technology.

`(B) The types of time-based rate schedules that may be offered under the schedule referred to in subparagraph (A) include, among others--

`(i) time-of-use pricing whereby electricity prices are set for a specific time period on an advance or forward basis, typically not changing more often than twice a year, based on the utility's cost of generating and/or purchasing such electricity at the wholesale level for the benefit of the consumer. Prices paid for energy consumed during these periods shall be pre-established and known to consumers in advance of such consumption, allowing them to vary their demand and usage in response to such prices and manage their energy costs by shifting usage to a lower cost period or reducing their consumption overall;

`(ii) critical peak pricing whereby time-of-use prices are in effect except for certain peak days, when prices may reflect the costs of generating and/or purchasing electricity at the wholesale level and when consumers may receive additional discounts for reducing peak period energy consumption;

`(iii) real-time pricing whereby electricity prices are set for a specific time period on an advanced or forward basis, reflecting the utility's cost of generating and/or purchasing electricity at the wholesale level, and may change as often as hourly; and

`(iv) credits for consumers with large loads who enter into pre-established peak load reduction agreements that reduce a utility's planned capacity obligations.

`(C) Each electric utility subject to subparagraph (A) shall provide each customer requesting a time-based rate with a time-based meter capable of enabling the utility and customer to offer and receive such rate, respectively.

`(D) For purposes of implementing this paragraph, any reference contained in this section to the date of enactment of the Public Utility Regulatory Policies Act of 1978 shall be deemed to be a reference to the date of enactment of this paragraph.

`(E) In a State that permits third-party marketers to sell electric energy to retail electric consumers, such consumers shall be entitled to receive the same time-based metering and communications device and service as a retail electric consumer of the electric utility.

`(F) Notwithstanding subsections (b) and (c) of section 112, each State regulatory authority shall, not later than 18 months after the date of

enactment of this paragraph conduct an investigation in accordance with section 115(i) and issue a decision whether it is appropriate to implement the standards set out in subparagraphs (A) and (C).'.

(b) State Investigation of Demand Response and Time-Based Metering- Section 115 of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2625) is amended as follows:

(1) By inserting in subsection (b) after the phrase `the standard for time-of-day rates established by section 111(d)(3)' the following: `and the standard for time-based metering and communications established by section 111(d)(14)'.

(2) By inserting in subsection (b) after the phrase `are likely to exceed the metering' the following: `and communications'.

(3) By adding at the end the following:

`(i) Time-Based Metering and Communications- In making a determination with respect to the standard established by section 111(d)(14), the investigation requirement of section 111(d)(14)(F) shall be as follows: Each State regulatory authority shall conduct an investigation and issue a decision whether or not it is appropriate for electric utilities to provide and install time-based meters and communications devices for each of their customers which enable such customers to participate in time-based pricing rate schedules and other demand response programs.'.

(c) Federal Assistance on Demand Response- Section 132(a) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2642(a)) is amended by striking `and' at the end of paragraph (3), striking the period at the end of paragraph (4) and inserting `; and', and by adding the following at the end thereof:

`(5) technologies, techniques, and rate-making methods related to advanced metering and communications and the use of these technologies, techniques and methods in demand response programs.'.

(d) Federal Guidance- Section 132 of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2642) is amended by adding the following at the end thereof:

`(d) Demand Response- The Secretary shall be responsible for--

`(1) educating consumers on the availability, advantages, and benefits of advanced metering and communications technologies, including the funding of demonstration or pilot projects;

`(2) working with States, utilities, other energy providers and advanced metering and communications experts to identify and address barriers to the adoption of demand response programs; and

`(3) not later than 180 days after the date of enactment of the Energy Policy Act of 2005, providing Congress with a report that identifies and quantifies the national benefits of demand response and makes a recommendation on achieving specific levels of such benefits by January 1, 2007.'.

(e) Demand Response and Regional Coordination-

(1) IN GENERAL- It is the policy of the United States to encourage States to coordinate, on a regional basis, State energy policies to provide reliable and affordable demand response services to the public.

(2) TECHNICAL ASSISTANCE- The Secretary shall provide technical assistance to States and regional organizations formed by two or more States to assist them in--

(A) identifying the areas with the greatest demand response potential;

(B) identifying and resolving problems in transmission and distribution networks, including through the use of demand response;
(C) developing plans and programs to use demand response to respond to peak demand or emergency needs; and
(D) identifying specific measures consumers can take to participate in these demand response programs.

(3) REPORT- Not later than 1 year after the date of enactment of the Energy Policy Act of 2005, the Commission shall prepare and publish an annual report, by appropriate region, that assesses demand response resources, including those available from all consumer classes, and which identifies and reviews--

(A) saturation and penetration rate of advanced meters and communications technologies, devices and systems;
(B) existing demand response programs and time-based rate programs;
(C) the annual resource contribution of demand resources;
(D) the potential for demand response as a quantifiable, reliable resource for regional planning purposes;
(E) steps taken to ensure that, in regional transmission planning and operations, demand resources are provided equitable treatment as a quantifiable, reliable resource relative to the resource obligations of any load-serving entity, transmission provider, or transmitting party; and
(F) regulatory barriers to improve customer participation in demand response, peak reduction and critical period pricing programs.

(f) Federal Encouragement of Demand Response Devices- It is the policy of the United States that time-based pricing and other forms of demand response, whereby electricity customers are provided with electricity price signals and the ability to benefit by responding to them, shall be encouraged, the deployment of such technology and devices that enable electricity customers to participate in such pricing and demand response systems shall be facilitated, and unnecessary barriers to demand response participation in energy, capacity and ancillary service markets shall be eliminated. It is further the policy of the United States that the benefits of such demand response that accrue to those not deploying such technology and devices, but who are part of the same regional electricity entity, shall be recognized.

(g) Time Limitations- Section 112(b) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2622(b)) is amended by adding at the end the following:

`(4)(A) Not later than 1 year after the enactment of this paragraph, each State regulatory authority (with respect to each electric utility for which it has ratemaking authority) and each nonregulated electric utility shall commence the consideration referred to in section 111, or set a hearing date for such consideration, with respect to the standard established by paragraph (14) of section 111(d).

`(B) Not later than 2 years after the date of the enactment of this paragraph, each State regulatory authority (with respect to each electric utility for which it has ratemaking authority), and each nonregulated electric utility, shall complete the consideration, and shall make the

determination, referred to in section 111 with respect to the standard established by paragraph (14) of section 111(d).'.

(h) Failure to Comply- Section 112(c) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2622(c)) is amended by adding at the end the following: `In the case of the standard established by paragraph (14) of section 111(d), the reference contained in this subsection to the date of enactment of this Act shall be deemed to be a reference to the date of enactment of such paragraph (14).'.

(i) Prior State Actions Regarding Smart Metering Standards-

(1) IN GENERAL- Section 112 of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2622) is amended by adding at the end the following: `(e) Prior State Actions- Subsections (b) and (c) of this section shall not apply to the standard established by paragraph (14) of section 111(d) in the case of any electric utility in a State if, before the enactment of this subsection--

`(1) the State has implemented for such utility the standard concerned (or a comparable standard);

`(2) the State regulatory authority for such State or relevant nonregulated electric utility has conducted a proceeding to consider implementation of the standard concerned (or a comparable standard) for such utility within the previous 3 years; or

`(3) the State legislature has voted on the implementation of such standard (or a comparable standard) for such utility within the previous 3 years.'.

(2) CROSS REFERENCE- Section 124 of such Act (16 U.S.C. 2634) is amended by adding the following at the end thereof: `In the case of the standard established by paragraph (14) of section 111(d), the reference contained in this subsection to the date of enactment of this Act shall be deemed to be a reference to the date of enactment of such paragraph (14).'.

SEC. 1254. INTERCONNECTION.

(a) Adoption of Standards- Section 111(d) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2621(d)) is amended by adding at the end the following:

`(15) INTERCONNECTION- Each electric utility shall make available, upon request, interconnection service to any electric consumer that the electric utility serves. For purposes of this paragraph, the term `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 Electrical and Electronics Engineers: 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.'.

(b) Compliance-

(1) TIME LIMITATIONS- Section 112(b) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2622(b)) is amended by adding at the end the following:

`(5)(A) Not later than 1 year after the enactment of this paragraph, each State regulatory authority (with respect to each electric utility for which it has ratemaking authority) and each nonregulated utility shall commence the consideration referred to in section 111, or set a hearing date for consideration, with respect to the standard established by paragraph (15) of section 111(d).

`(B) Not later than two years after the date of the enactment of the this paragraph, each State regulatory authority (with respect to each electric utility for which it has ratemaking authority), and each nonregulated electric utility, shall complete the consideration, and shall make the determination, referred to in section 111 with respect to each standard established by paragraph (15) of section 111(d).'.

(2) FAILURE TO COMPLY- Section 112(d) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2622(c)) is amended by adding at the end the following: `In the case of the standard established by paragraph (15), the reference contained in this subsection to the date of enactment of this Act shall be deemed to be a reference to the date of enactment of paragraph (15).'.

(3) PRIOR STATE ACTIONS-

(A) IN GENERAL- Section 112 of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2622) is amended by adding at the end the following:

`(f) Prior State Actions- Subsections (b) and (c) of this section shall not apply to the standard established by paragraph (15) of section 111(d) in the case of any electric utility in a State if, before the enactment of this subsection--

`(1) the State has implemented for such utility the standard concerned (or a comparable standard);

`(2) the State regulatory authority for such State or relevant nonregulated electric utility has conducted a proceeding to consider implementation of the standard concerned (or a comparable standard) for such utility; or
`(3) the State legislature has voted on the implementation of such standard (or a comparable standard) for such utility.'.

(B) CROSS REFERENCE- Section 124 of such Act (16 U.S.C. 2634) is amended by adding the following at the end thereof: `In the case of each standard established by paragraph (15) of section 111(d), the reference contained in this subsection to the date of enactment of the Act shall be deemed to be a reference to the date of enactment of paragraph (15).'.

Appendix B: Decision No. C06-0302

ORDER OPENING INVESTIGATORY
DOCKET AND NOTICE OF INQUIRY

Decision No. C06-0302

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO

DOCKET NO. 06I-169E

IN THE MATTER OF THE INVESTIGATION INTO THE ENERGY POLICY ACT OF 2005 ADDITION OF FIVE NEW PURPA STANDARDS TO ADDRESS CURRENT CONSERVATION AND EFFICIENCY NEEDS.

ORDER OPENING INVESTIGATORY DOCKET AND NOTICE OF INQUIRY

Mailed Date: March 31, 2006
Adopted Date: March 29, 2006

I. BY THE COMMISSION

A. Statement

1. On August 8, 2005, the Energy Policy Act of 2005 (EPAct) was enacted. The EPAct, in part, amended Sections 111, 112, and 124 of the Public Utility Regulatory Policies Act of 1978 (PURPA) as implemented in 16 U.S.C. § 2621, by adding five new standards to § 2621(d). Those standards, which are spelled out in detail in Attachment A to this Order, include net metering, fuel sources, fossil fuel efficiency, time based metering, and interconnection. The PURPA directs each State regulatory authority to "make a determination concerning whether or not it is appropriate to implement such standards to carry out the purposes of this chapter." Further, the PURPA provides that the State regulatory authority may "implement any such standard determined under subsection (a) of this section to be appropriate to carry out the purposes of this chapter."

2. The purposes established within the PURPA are to encourage conservation of energy supplied by electric utilities; to optimize the efficiency of use of facilities and resources by electric utilities; and provide for equitable rates to electric consumers.

3. The EPAct established the following deadlines for each State regulatory authority to commence the consideration and to complete the determination and issue a decision with respect to implementation:

Standard	Begin Consideration	Issue Decision
(11) NET METERING	8-Aug-07	8-Aug-08
(12) FUEL SOURCES	8-Aug-07	8-Aug-08
(13) FOSSIL FUEL GENERATION EFFICIENCY	8-Aug-07	8-Aug-08
(14) TIME-BASED METERING	8-Aug-06	8-Aug-07
(15) INTERCONNECTION	8-Aug-06	8-Aug-07

4. By this Order, we deem it necessary to open an investigatory docket to consider whether it is appropriate to implement each of the five new PURPA standards.

5. The investigatory docket begins this inquiry. Depending on the outcome of the comments and information gleaned, we may initiate rulemaking to address the new PURPA standards or take other actions. The course of this inquiry is to be determined by the nature and content of the information gathered.

6. We recently recodified our rules found at 4 *Code of Colorado Regulations* (CCR) 723-3, including rules pertinent to this docket. Those rules shall be effective on April 1, 2006. We find it prudent that this docket proceed in the context of the new rules.

7. We are in the process of establishing final rules with regard to the Renewable Energy Standard. These rules are also pertinent to this docket. The most recent draft version of the Renewable Energy Standard rules is available on the Commission web site.

8. The primary goal of this inquiry is to determine whether the implementation of each new standard will result in purposes established in the EPAct. Accordingly, we seek suggestions from interested parties on changes or modifications that should be made to rules regulating electric utilities consistent with the EPAct. To that end, we request that interested

parties address in particular, but not as a limitation, any or all of the following questions relative to the standards under consideration.

9. NET METERING - Considering that Net Metering is effectively available to customers with Eligible Renewable Energy Resources as defined in 4 CCR 723-3650(f) and Small Power Producers and Cogenerators as defined in 4 CCR 723-3900, please respond to the following:

a. Are there electric customers with generating capabilities excluded from Net Metering that would benefit from the service?

b. Are there any enhancements that should be made to existing electric rules that would better fulfill the purposes stated in the PURPA?

10. FUEL SOURCES – Considering that the Least-Cost Planning Rule 4 CCR 723-3610(e) establishes that:

> the utility shall consider renewable resources; resources that produce minimal emissions or minimal environmental impact; energy-efficient technologies; and resources that provide beneficial contributions to Colorado's energy security, economic prosperity, environmental protection, and insulation from fuel price increases.

And the Renewable Energy Standard, 4 CCR-723-3650 *et seq.* establishes specific renewable energy requirements for retail electric utilities serving over 40,000 customers, please respond to the following:

a. Are changes to existing rules required to comply with the standard?

b. Are there any enhancements that should be made to existing electric rules that would better fulfill the purposes stated in the PURPA?

11. FOSSIL FUEL GENERATION EFFICIENCY - The Least-Cost Planning Rule 4 CCR 723-3610(f) states:

> In selecting its final resource plan, the utility's objective shall be to minimize the net present value of rate impacts, consistent with reliability considerations and with financial and development risks. In its bid solicitation and evaluation process, the utility shall consider renewable resources; resources that produce minimal emissions or minimal environmental impact; energy-efficient technologies; and resources that provide beneficial contributions to Colorado's energy security, economic prosperity, environmental protection, and insulation from fuel price increases. Further, the utility shall grant a preference to such resources where cost and reliability considerations are equal.

In order to determine whether planning should include requirements for achieving increases in fossil fuel generation it is necessary to gather additional information. To that end, please respond to the following:

a. Should resource planning rules establish specific targets for increases in fossil fuel generation efficiency?

b. Should efficiency targets be set on a unit specific basis, overall fossil fuel generation fleet basis?

c. Should efficiency targets be different for base load, load following and peaking units?

d. Should efficiency targets be different for the coal, oil or gas thermal steam units, oil or gas simple cycle combustion turbines, and oil or gas combined cycle combustion turbines?

e. Should efficiency targets be different for existing fossil fuel units and proposed resources?

f. Should the measure of increase in efficiency basis be average heat rate, or incremental heat rate?

g. What existing proven technologies are available for increasing the efficiency of existing fossil fuel generation units, and at what cost or benefit to rate payers?

h. In a ten-year or Least Cost Planning period, what level of increase in efficiency would be reasonable to target for the various categories above?

12. TIME-BASED METERING AND COMMUNICATIONS. - Currently, the rules established by the Commission do not require utilities to offer time-based rate schedules under which the rates charged vary during different time periods and reflect the variance, if any, in the utility's costs of generating and purchasing electricity at the wholesale level. In order to determine whether it would be appropriate to do so it is necessary to gather additional information. To that end, please respond to the following:

a. Where Time Based Metering has already been implemented on either a voluntary or test basis, do results indicate that customers respond to higher peak energy pricing by reducing consumption during peak periods?

b. What available metering technologies are available for making available the various time based rate schedules indicated in the standard, and at what cost or benefit to rate payers?

c. Is there a quantifiable level of unfulfilled demand for time based metering and, if so, what level of subscription may be anticipated for the various classes of service?

13. INTERCONNECTION – The rules for the Renewable Energy Standard include Interconnection Rule 4 CCR 723-3665 that applies to all small generation resources including Eligible Renewable Energy Resources. The rule is for the most part based on Federal Energy Regulatory Commission (FERC) Order No. 2006-A, issued November 22, 2005, but limits the application to generating facilities no larger than ten MW in order to comply with Institute of Electrical and Electronics Engineers (IEEE) Standard 1547. Considering that the rule complies with FERC and IEEE guidelines, please respond to the following:

a. Are changes to existing rules required to comply with the standard?

b. Are there any enhancements that should be made to existing electric rules that would better fulfill the purposes stated in the PURPA?

14. At this time, we will not order a specific procedural schedule. However, the docket will proceed in the following fashion. Interested parties shall submit written comments on or before close of business Monday, May 29, 2006. After due consideration of the comments, we will take appropriate action which may include initiation of additional proceedings in this or another docket. Commission Staff (Staff) is directed to devise, evaluate, and recommend to the Commission efficient and expeditious means of obtaining public input on the issues in this matter. Staff's efforts should include, at a minimum, consideration of the mechanisms utilized in past dockets such as customer surveys, public hearings and meetings, and work shops.

II. ORDER

A. The Commission Orders That:

1. An investigatory docket shall be opened consistent with the discussion above.

2. Interested persons may file their initial written comments on or before May 29, 2006.

3. This Order is effective on its Mailed Date.

B. ADOPTED IN COMMISSIONERS' WEEKLY MEETING March 29, 2006.

(S E A L)

THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

GREGORY E. SOPKIN

POLLY PAGE

CARL MILLER

Commissioners

ATTEST: A TRUE COPY

Doug Dean,
Director

Appendix C: Responses to Inquiry

City of Boulder

Colorado Rural Electric Association

Holy Cross Energy

Hunt Technologies, Inc

Interwest Energy Alliance

Public Service Company of Colorado

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO

Docket No. 061-169E

IN THE MATTER OF THE INVESTIGATION INTO THE ENERGY POLICY ACT OF 2005 ADDITION OF FIVE NEW PURPA STANDARDS TO ADDRESS CURRENT CONSERVATION AND EFFICIENCY NEEDS.

COMMENTS OF THE CITY OF BOULDER

The City of Boulder submits the following comments to the Colorado Public Utilities Commission ("Commission" or "PUC"), in this proceeding:

1. Boulder is a Colorado home-rule municipality and political subdivision created pursuant to Article XX of the Constitution of the State of Colorado and the Charter of the City of Boulder.

2. At this time, Boulder is still evaluating the questions posed by the PUC and is not in a position to comment. However, these issues are of great concern to Boulder, and we anticipate commenting in the future.

3. Boulder requests that all pleadings, correspondence, discovery, and other documents be served on the following:

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Senior Assistant City Attorney
City of Boulder
Box 791
1777 Broadway
Boulder, CO 80306
303-441-3020
303-441-3859 (fax)
harrisons@bouldercolorado.gov

Kara Mertz
Environmental Analyst
City of Boulder
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1777 Broadway
Boulder, CO 80306
303-441-3004
303-441-4070(fax)
mertzk@bouldercolorado.gov

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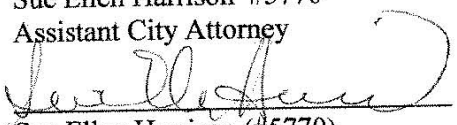
DATED this 26th day of May, 2006.

Respectfully submitted,

Ariel Pierre Calonne(#35414)
City Attorney
City of Boulder

Sue Ellen Harrison #5770
Assistant City Attorney



Sue Ellen Harrison (#5770)
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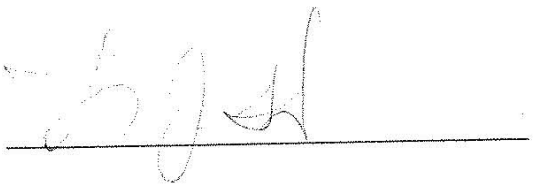
City of Boulder
Box 791 1777 Broadway
Boulder, CO 80306
303 441 3020
303 441 3859 (Facsimile)
harrisons@bouldercolorado.gov

CERTIFICATE OF SERVICE

I hereby certify that on the 26th day of May, 2006, a copy of the Comments of the City of Boulder were faxed, and an original and 15 copies were mailed, first class mail to Doug Dean, Director, Colorado Public Utilities Commission, 1580 Logan, OL2, Denver, CO 80203.



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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

IN THE MATTER OF THE INVESTIGATION INTO THE ENERGY POLICY ACT OF 2005 ADDITION OF FIVE NEW PURPA STANDARDS TO ADDRESS CURRENT CONSERVATION AND EFFICIENCY NEEDS	)))))	**DOCKET NO. 06I-169E**

COMMENTS OF THE COLORADO RURAL ELECTRIC ASSOCIATION

The Colorado Rural Electric Association (CREA), by and through undersigned counsel, hereby submits the following comments with regard to the Commission's investigation into the new PURPA standards contained in the Energy Policy Act of 2005. The Commission set a deadline of May 29, 2006, for the filing of comments in this Docket however, under Rule 1203 of the Commission's Rules of Practice and Procedure, when a deadline falls on a weekend or legal holiday, the deadline is extended until 5:00 p.m. of the next business day. Therefore, these comments are timely filed.

1. Introduction

CREA is a trade association that represents all twenty-two electric distribution cooperatives in Colorado, as well as Tri-State Generation and Transmission Association, Inc. ("Tri-State"). All of CREA's members have elected to exempt themselves from the Commission's ratemaking jurisdiction pursuant to §40-9.5-104, C.R.S. (CREA's distribution cooperative members remain subject to the jurisdiction of the Commission with respect to complaints by consumers, as well as certain reporting requirements.) Tri-State provides the wholesale power requirements of eighteen of the distribution cooperatives in Colorado.

The new PURPA standards set forth in the Energy Policy Act of 2005 do not apply directly to Tri-State because they only apply to utilities with retail sales of 500 million kilowatt hours (Tri-State does not make retail sales). The new provisions do apply to those cooperative electric associations in Colorado with retail sales of at least 500 million kilowatt hours. At the present time, the following Colorado cooperative electric associations meet the retail sales threshold: Intermountain Rural Electric Association, Holy Cross Energy, La Plata Electric Association, United Power, Poudre Valley Rural Electric Association, Mountain View Electric Association, and Delta-Montrose Electric Association[1].

2. Compliance With PURPA

PURPA requires all electric utilities which meet the retail sales threshold to "consider" five new standards which relate to energy conservation and efficiency. While state utility commissions are charged with the responsibility of creating a process for such consideration for rate-regulated utilities, that process is not applicable to non-rate regulated utilities such as cooperative electric associations. In the case of electric cooperatives that are not subject to the economic jurisdiction of a state utility commission, PURPA provides that the utilities themselves will be responsible for developing a procedure to consider the new standards.

While PURPA contains some basic procedural requirements (i.e., notice, specific findings, written determinations, etc.), the self-regulated utilities have broad discretion to determine the appropriate methods for consideration of the standards. Electric cooperatives across the country are taking various measures to determine how best to comply with the new

[1] Two of these electric cooperatives, IREA and Holy Cross, purchase a substantial portion of their power requirements from Public Service Company of Colorado, and may therefore submit comments and wish to participate as individual entities separate from CREA. The new standards may impact those cooperatives differently than those that have all-requirements contracts with Tri-State.

5. Therefore, initially, Holy Cross is intervening in this Docket for the purpose of appearing on the Service List in order to monitor all activities, suggesetions and issues raised in the proceeding.

Respectfully submitted this 24 day of May, 2006.

JOHN L. KEMP, P.C.

By: John L. Kemp

John L. Kemp, Reg. No. 1075
Attorney for Intervenor,
Holy Cross Energy
605 West 9th Place
Glenwood Springs, CO 81601
Tel. (970) 945-2223
Fax. (970) 945-2376

CERTIFICATE OF SERVICE

I hereby certify that on this 24 day of May, 2006, the original and six (6) copies of the foregoing Petition for Leave to Intervene were mailed by United States Mail, first class postage, prepaid, to:

Doug Dean, Director
Colorado Public Utilities Commission
1580 Logan, OL2
Denver, CO 80203

John L. Kemp

CERTIFICATE OF SERVICE

A copy of the foregoing Petition for Leave to Intervene was mailed by United States Mail, first class postage prepaid, on the 24 day of May, 2006, to the following:

Paula M. Connelly, Esq.
Xcel Energy Services, Inc.
1225 17th Street, Suite 900
Denver, CO 80202

Alan Rose
J C Penney Co Inc
P.O. Box 10001
Dallas, TX 75301-5301

BEFORE THE
PUBLIC UTILITIES COMMISSION OF COLORADO

Camp

IN THE MATTER OF THE INVESTIGATION INTO THE ENERGY POLICY ACT OF 2005 ADDITION OF FIVE NEW PURPA STANDARDS TO ADDRESS CURRENT CONSERVATION AND EFFICIENCY NEEDS	**DOCKET NO.: 06I-169E**

INITIAL COMMENTS OF HUNT TECHNOLOGIES, INC.

Scott H. DeBroff, Esquire
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DATED: AUGUST 23, 2006

COUNSEL FOR HUNT TECHNOLOGIES, INC.

BEFORE THE
PUBLIC UTILITIES COMMISSION OF COLORADO

IN THE MATTER OF THE INVESTIGATION INTO THE ENERGY POLICY ACT OF 2005 ADDITION OF FIVE NEW PURPA STANDARDS TO ADDRESS CURRENT CONSERVATION AND EFFICIENCY NEEDS	**DOCKET NO.: 06I-169E**

INITIAL COMMENTS OF HUNT TECHNOLOGIES, INC.

INTRODUCTION

AND NOW COMES **Scott H. DeBroff, Esquire** of Smigel, Anderson & Sacks LLP, on behalf of his client, **Hunt Technologies, Inc.** ("Hunt") for the purpose of intervening in the above captioned investigatory docket and filing comments to the proceeding and avers the following:

1. Hunt Technologies, Inc. ("Hunt") is a party interested in the above-captioned docket as it is a meter technology provider which is keenly interested in the efforts of the Public Utilities Commission of Colorado ("PUCC" or "Commission") to consider whether it is appropriate to implement the Time-Based Metering PURPA standard in the State of Colorado. Hunt has existing business relationships with several Colorado utilities and has a real and substantial interest in the above–captioned proceeding.

2. Hunt Technologies is a leading global provider of reliable, accurate and fully functional Advanced Meter Reading (AMR) and Advanced Metering Infrastructure (AMI) utility data systems.

3. With its international headquarters in Pequot Lakes, Minnesota, Hunt provides electric, water, and gas automated meter reading systems for Investor-Owned Utilities, Rural Electric Cooperatives, and Municipal Utilities.

4. Hunt has been involved in smart metering regulatory issues in more than twelve (12) states and has a significant interest in the outcome of this investigatory docket.

5. The Federal Energy Policy Act of 2005 requires each state public utility commission to consider and make a determination regarding five "standards," unless the state already has a comparable standard in effect, or the state commission has already conducted a proceeding considering implementation of a comparable standard, or the state legislature has already voted on the implementation of a comparable standard.

6. On March 29, 2006, the Colorado Public Utilities Commission adopted an order opening an investigatory docket and Notice of Inquiry (Decision No. C06-0302) to commence the consideration of whether to implement five new standards in the Public Utilities Regulatory Policies Act of 1978 (PURPA) as amended by the Energy Policy Act of 2005 ("EPACT"). Based upon the language in EPACT, consideration of time-based metering must commence by August 8, 2006 and a decision must be issued by August 8, 2007.

7. In this docket, the Commission asks interested parties to respond to a series of questions related to each of these proposed standards.

8. Even though the Commission set May 29, 2006 as their initial due date for interested persons to file their initial written comments, Hunt has spoken with the Commission staff, and they encouraged us to submit our late-filed comments to this on-going investigatory docket.

9. Hunt requests that it be placed on the Official Service List in this proceeding, and served with all filings, pleadings, notices and orders. All correspondence in this docket should be directed to:

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Following are Hunt's responses to the questions posed by the Commission related to time-based metering.

INITIAL COMMENTS ON TIME-BASED METERING

Introduction

Of particular importance to Hunt is the PURPA standard which says that each electric utility shall offer each of its customer classes, and provide individual customers upon customer request, a time-based rate schedule under which the rate charged by the electric utility varies during different time periods and reflects the variance, if any, in the utility's costs of generating and purchasing electricity at the wholesale level. The time-based rate schedule shall enable the electric consumer to manage energy use and cost through advanced metering and communications technology. Each electric utility shall provide each customer requesting a time-based rate with a time-based meter capable of enabling the utility and customer to offer and receive such rate, respectively.

In terms of deployment approaches, it is critical for a Commission to keep the implementation issues as open as possible, and allow for as many technology alternatives to be available to the utilities that serve their customers.

Regarding the deployment of advanced metering technologies and functions, there should be great time devoted to the investigation of the needs of the specific utilities and an examination of the various functionalities that could provide an appropriate fit for those utilities. Utility commissions should be primarily concerned with functionality and considering the current metering "environment" of the utilities and what kinds of incremental information that they would like to garner through deployment of advanced metering. It is through that process that utilities would be able to identify levels of operational efficiencies as well as other benefits to its customers. Conversely, utility commissions should be less interested in the methodology that the utilities utilize to gather such meter information.

In regards to the discussion of costs and benefits of advanced metering to utilities and their customers, the Commission must look to first discuss what the needs of the utilities are today and what they will be in the future, and then conduct a cost/benefit analysis based upon those needs.

It is our experience that no two AMI deployments are the same. The business case for deploying advanced metering in urban areas greatly differs from that of rural areas. Similarly, the technology requirements in those two areas may differ greatly as well. What is economical for an area with less than five customers per mile of line may be uneconomical for an area with 100 customers per mile of line. Thus, to proscribe certain technologies or functions would most likely limit a utilities' choices in implementing a system and could drive the cost of deployment higher than necessary.

Finally, advanced metering technology is rapidly changing. To codify functionality requirements, as opposed to setting broad results-based standards, could inhibit utilities from using the most cost-effective solutions as they come to market. In fact, some deployments may actually involve a blend of technologies that match functionality to where the benefits are greatest for both the customer and utility.

Question A. *Where Time Based Metering has already been implemented on either a voluntary or test basis, do results indicate that customers response to higher peak energy pricing by reducing consumption during peak periods?*

Answer A. There have been a number of good pilot programs in California, Illinois, Florida and elsewhere across the United States. While these programs have shown substantial results and true movement by participants to respond to peak pricing through consumption reduction, we are only at the beginning not the end of the discussion. We are at the onset of a new age, one that certainly has its roots in our own history, when there were energy shortages, brownouts and blackouts. We had to seriously consider conservation as more than an option but as a requirement. The idea of residential customers responding to changes in energy pricing is not new, but with the advent of new capabilities in metering hardware and software, that ability to respond will be real and will mean a great deal for the consumer as well as the utility.

Customers changing their behavior and responding to higher peak prices by reducing consumption is going to take time, and most importantly, it is going to require education. No move to time-based rates and metering that can handle such tariff offerings will be effective if done over a long period of time and in fragmented implementations. What is needed is a substantial commitment, state by state, in response to the Energy Policy Act, to promote the deployment of smart meters in concert with a time-variant pricing tariff. Only in the context of full system deployment does one garner the value of an Advance Metering Infrastructure (AMI) and what the establishment of such a system could offer.

Question B. *What available metering technologies are available for making available the various time-based rate schedules indicated in the standard, and at what cost and benefit to ratepayers?*

Answer B. Hunt Technologies is a leading global provider of reliable, accurate and fully functional Advanced Meter Reading (AMR) and Advanced Metering Infrastructure (AMI) utility data systems. Its mainstay product line are the Power Line Carrier (PLC) Systems, both one way and two way capable, that it manufactures and which are available today. Hunt is also pursing other technologies in order to support multi-utility solutions for electric, natural gas and water utilities.

The other advanced metering technologies that are out there on the market today are all very different and their functions may also differ in terms of what level of information is available to utilities. Advanced meter reading (AMR) and advanced metering infrastructure (AMI) technology companies, such as Hunt Technologies, offer different capabilities to the utility community and count upon their individually designed technology to be successful in the market.

Advanced metering systems are currently defined not so much by the information or functionality provided, but by the technologies used to "backhaul" that information to a data collector. Currently, those technologies include Power Line Carrier (PLC)-based communications, Broadband over Power Line (BPL), Radio Frequency (RF), Wi-Fi networks and digital Cellular phone networks. Each technology has its strengths and weaknesses. Typically, PLC is most cost effective in rural and suburban deployments, while RF or Wi-Fi may

work better in urban and high density situations. Prescribing standards for the communication technology is not feasible nor desirable. Ultimately, such standards would forcibly dictate one preferential type of communication network and in the long run would be neither economical nor encourage research and development.

The Commission should focus on promotion of as much competition in the advanced metering technology area as possible. The Commission, the utilities and their customers are best served when there is diversity among types of technology offerings as well as kinds of meter functionality. Different utilities will have different operational needs, and in turn, will have different interests for smart metering capabilities.

There will certainly be functionality capabilities that the Commission may want utilities to consider as part of an implementation of an advanced metering system, but that should not require the Commission to implement standards that would require specific functions and potentially leave out other critical meter functions. With the technology constantly changing and adapting to meet the needs of the market, it would be a mistake for commissions to put a line in the sand by creating standards either too inclusive or too exclusive for certain functions.

Regarding the cost to ratepayers, since there is significant diversity in the design and the capabilities of different metering technologies, it would be a difficult task to place dollar figures on meters and their communications components in some apples to apples comparison for these comments. What is important to know is that meters and the meter technology that they employ, perform a wealth of services and their pricing is a factor of what capabilities that they provide. With the rollout of advanced meters over the course of the last several months, it is clear that the cost of the technology is starting to come down, making it even a more attractive option than ever before.

Regarding the benefits to ratepayers, there are a number of benefits that accrue not only to ratepayers but just as importantly to utilities as well. They include, non-cycle sensitive billing, daily momentary interruption data, notification of power outages and restorations, automated final read capability, virtual disconnection and reconnection, revenue protection, voltage monitoring, and other proactive tools for customer service. Perhaps of greatest importance to ratepayers will be their ability to access time-variant pricing that will allow them to decide when they use their electricity and how much they will pay for it.

Question C. *Is there a quantifiable level of unfulfilled demand for time-based metering and, if so, what level of subscription may be anticipated for the various classes of service?*

Answer C. This is not an easy question, but there is one thing for sure, that Commercial and Industrial customers have benefited from sophisticated metering and accompanying time-variant pricing tariffs for years, and there is every reason to believe that Residential customers, which far surpasss both of the other classes in pure number and combined energy usage, could certainly benefit from the same advantages.

The Energy Policy Act of 2005, in Section 1252, sets forth specific requirements regarding the promotion of smart metering throughout the states. This Commission should utilize these provisions and the process established in the Act, with references back to PURPA, to move forward with consideration of the implementation of advanced metering, time-variant pricing tariffs and wise regulations to insure that the EPACT requirements are fulfilled. This action will certainly move the discussion forward concerning the cost and benefit issues and will

open up opportunities for ratepayers while at the same time providing utilities with the ability to see operational efficiencies that they have never experienced in the past.

Hunt Technologies appreciates the opportunity to provide these comments to the Commission regarding implementation of the Energy Policy Act of 2005. We look forward to continuing to offer our knowledge and expertise in this area as the Commission moves forward in the process.

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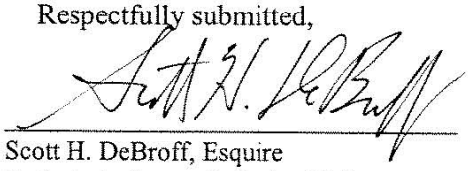
Respectfully submitted,

Dated: **August 23, 2006**

By: 

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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

* * * * *

IN THE MATTER OF THE INVESTIGATION INTO THE ENERGY POLICY ACT OF 2005 ADDITION OF FIVE NEW PURPA STANDARDS TO ADDRESS CURRENT CONSERVATION AND EFFICIENCY NEEDS.	)))))	**Docket No. 06I-169E**

STATEMENT OF THE INTERWEST ENERGY ALLIANCE

26 May 2006

Thank you very much for the opportunity to comment on provisions in the Energy Policy Act of 2005 ("EPAct") relating to the Public Utility Regulatory Policies Act of 1978 ("PURPA"). My short comments focus on EPAct Sec.1251(a)12, which reads:

> *"(12) FUEL SOURCES- Each electric utility shall develop a plan to minimize dependence on 1 fuel source and to ensure that the electric energy it sells to consumers is generated using a diverse range of fuels and technologies, including renewable technologies."*

If this provision is implemented properly on a nationwide basis, its fuel source diversity requirement would reward consumers across the country with greater price stability, improved system reliability, significant economic development benefits in rural areas, and increased environmental quality.

I provide brief answers below to the two questions you asked parties to answer regarding utility fuel sources in your order of 29 March 2006 in Decision No. C06-0302:

THE PUBLIC UTILITIES COMMISSION
ENTERED
MAY 30 2006
THE STATE OF COLORADO

a) Are changes to existing rules required to comply with the standard?

b) Are there any enhancements that should be made to existing electric rules that would better fulfill the purposes stated in the PURPA?

Are changes to existing rules required to comply with the standard?

The Interwest Energy Alliance suggests the addition of a new subparagraph VIII under Commission Rule 3607(a) to read:

"Contribution and characterization of utility's existing and planned generation resources toward meeting the fuel diversity requirements of EPAct Sect. 1251(a)12."

Are there any enhancements that should be made to existing electric rules that would better fulfill the purposes stated in the PURPA?

Acquisition of new, renewable, energy resources would be greatly facilitated through timelier construction of transmission lines to eastern Colorado and other parts of the state that are resource-rich but transmission-constrained. Currently, a very large wind energy project can be constructed much more quickly than transmission to that project, leading to difficulties in financing and negotiating power purchase agreements.

Colorado's feeble transmission infrastructure has already hindered development of wind energy projects. Xcel Energy characterized some of the transmission deficiencies in its All-Source Bid Evaluation report (Docket No. 05A-543E) of December 2005.

In that report, Xcel identified a number of specific transmission constraints preventing various cost-effective wind energy projects from moving electricity from rural Colorado to Xcel's Front Range markets. To build new transmission from these constrained areas would take a minimum of 44 months, according to Xcel. However, large new windfarms can normally be built in a year or less, creating a "chicken and egg" problem: windfarms can't be built without transmission access, but transmission can't be built until there is a windfarm at the other end.

Thus, the Interwest Energy Alliance urges the Commission to consider enhancements to electric rules that will facilitate construction of transmission projects, especially to areas that are primed for wind energy development, but which do not have sufficient existing transmission. We are a party to Docket No. 06S-234EG and will be discussing this issue in greater detail in that proceeding.

In conclusion, I would like to attach, for the record, a new report prepared by the Utility Wind Integration Group (UWIG) in cooperation with the nation's leading utility trade associations: American Public Power Association, Edison Electric Institute and the National Rural Electric Cooperative Association.

This report, entitled "Utility Wind Integration State of the Art," shows how wind energy can improve a utility system's stability and documents that the cost of wind, even at a penetration rate of up to 20%, is about 10% or less of the wholesale value of the wind energy. Further, this report confirms that wind energy does not require backup

generation (since it is used primarily as an energy —not capacity— resource) and provides a number of recommendations on how more wind energy can be accommodated onto utility systems in the future. I commend this report to the Commission's attention.

I wish to thank the Commission again for this opportunity to submit comments on Docket No. 06I-169E.

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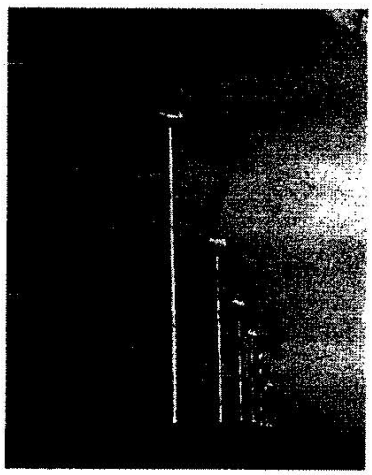
UWIG
Utility Wind
Integration Group

Utility Wind Integration State of the Art



Prepared by

Utility Wind Integration Group

in cooperation with

American Public Power Association (APPA)
Edison Electric Institute (EEI)
National Rural Electric Cooperative Association (NRECA)

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May 2006

Overview and Summary

In just five years from 2000-2005, wind energy has become a significant resource on many electric utility systems, with over 50,000 MW of nameplate capacity installed worldwide at the end of 2005. Wind energy is now "utility scale" and can affect utility system planning and operations for both generation and transmission. The utility industry in general, and transmission system operators in particular, are beginning to take note. At the end of 2005, the Power Engineering Society (PES) of the Institute of Electrical and Electronic Engineers (IEEE) published a special issue of its ***Power & Energy Magazine*** (Volume 3, Number 6, November/December 2005) focused on integrating wind into the power system. This document provides a brief summary of many of the salient points from that special issue about the current state of knowledge regarding utility wind integration issues. It does not support or recommend any particular course of action or advocate any particular policy or position on the part of the cooperating organizations.

The discussion below focuses on wind's impacts on the operating costs of the non-wind portion of the power system and on wind's impacts on the electrical integrity of the system. These impacts should be viewed in the context of wind's *total* impact on reliable system operation and electricity costs to consumers. The case studies summarized in the magazine address early concerns about the impact of wind power's variability and uncertainty on power system reliability and costs. Wind resources have impacts that can be managed through proper plant interconnection, integration, transmission planning, and system and market operations.

On the cost side, at wind penetrations of up to 20% of system peak demand, system operating cost increases arising from wind variability and uncertainty amounted to about 10% or less of the wholesale value of the wind energy.[1] These incremental costs, which can be assigned to wind-power generators, are substantially less than imbalance penalties generally imposed through Open Access Transmission Tariffs under FERC Order No. 888. A variety of means – such as commercially available wind forecasting and others discussed below – can be employed to reduce these costs. In many cases, customer payments for electricity can be decreased when wind is added to the system, because the operating-cost increases could be offset by savings from displacing fossil fuel generation.

Further, there is evidence that with new equipment designs and proper plant engineering, system stability in response to a major plant or line outage can actually be improved by the addition of wind generation. Since wind is primarily an energy – not a capacity – source, no additional generation needs to be added to provide back-up capability provided that wind capacity is properly discounted in the determination of generation

[1] These conclusions will need to be reexamined as results of higher-wind-penetration studies -- in the range of 25% to 30% of peak balancing-area load -- become available. However, achieving such penetrations is likely to require one or two decades. During that time, other significant changes are likely to occur in both the makeup and the operating strategies of the nation's power systems. Depending on the evolution of public policies, technological capabilities, and utility strategic plans, these changes can be either more or less accommodating to the natural characteristics of wind power plants.

capacity adequacy. However, wind generation penetration may affect the mix and dispatch of other generation on the system over time, since non-wind generation is needed to maintain system reliability when winds are low.

Wind generation will also provide some additional load carrying capability to meet forecasted increases in system demand. This contribution is likely to be up to 40% of a typical project's nameplate rating, depending on local wind characteristics and coincidence with the system load profile. Wind generation may require system operators to carry additional operating reserves. Given the existing uncertainties in load forecasts, the studies indicate that the requirement for additional reserves will likely be modest for broadly distributed wind plants. The actual impact of adding wind generation in different balancing areas can vary depending on local factors. For instance, dealing with large wind output variations and steep ramps over a short period of time could be challenging for smaller balancing areas, depending on the specific situation.

The remainder of this document is divided into four sections: wind plant interconnection, wind plant integration, transmission planning and market operation, and accommodating more wind in the future.

Wind Plant Interconnection

- Wind power plant terminal behavior is different from that of conventional power plants, but can be compatible with existing power systems. With current technology, wind-power plants can be designed to meet industry expectations such as riding through a three-phase fault, supplying reactive power to the system, controlling terminal voltage, and participating in SCADA system operation.
- Increased demands will be placed on wind plant performance in the future. Recent requirements include low voltage ride-through capability, reactive power control, voltage control, output control, and ramp rate control. Future requirements are likely to include post-fault machine response characteristics more similar to those of conventional generators (e.g., inertial response and governor response).
- Better dynamic models of wind turbines and aggregate models of wind plants are needed to perform more accurate studies of transmission planning and system operation.
- In areas with limited penetration, modern wind plants can be added without degrading system performance. System stability studies have shown that modern wind plants equipped with power electronic controls and dynamic voltage support capability can improve system performance by damping power swings and supporting post-fault voltage recovery.
- Because of spatial variations of wind from turbine to turbine in a wind plant – and to a greater degree from plant to plant – a sudden loss of all wind power on a system simultaneously due to a loss of wind is not a credible event.

Wind Plant Integration

- Utility planners traditionally view new generation primarily in terms of its *capacity* to serve peak demand. But wind is primarily an *energy* resource. Its

primary value lies in its ability to displace energy produced from the combustion of fossil fuels and to serve as a hedge against fuel price risk and future restrictions on emissions.

- The addition of a wind plant to a power system does not require the addition of any backup conventional generation since wind is used primarily as an energy resource. In this case, when the wind is not blowing, the system must rely on existing dispatchable generation to meet the system demand.
- Wind plants provide additional planning reserves to a system, but only to the extent of their capacity value. Capacity for day-to-day reliability purposes must be provided through existing market mechanisms and utility unit commitment processes.
- The capacity value of wind generation is typically up to 40% of nameplate rating, and depends heavily on the correlation between the system load profile and the wind plant output.
- The addition of a wind plant to a power system increases the amount of variability and uncertainty of the net load. This may introduce measurable changes in the amount of operating reserves required for regulation, ramping and load-following. Operating reserves may consist of both spinning and non-spinning reserves. In two major recent studies, the addition of 1,500 MW and 3,300 MW of wind (15% and 10%, respectively, of system peak load) increased regulation requirements by 8 MW and 36 MW, respectively, to maintain the same level of NERC control performance standards.
- Fluctuations in the net load (load minus wind) caused by greater variability and uncertainty introduced by wind plants have been shown to increase system operating costs by up to about $5/MWH at wind penetration levels up to 20%. The greatest part of this cost is associated with the uncertainty introduced into day-ahead unit commitment due to the uncertainty in day-ahead forecasts of real-time wind energy production.
- The impact of adding wind generation can vary depending on the nature of the dispatchable generating resources available, market and regulatory environment, and characteristics of the wind generation resources as compared to the load. Dealing with large output variations and steep ramps over a short period of time (e.g., within the hour) could be challenging for smaller balancing areas, depending on their specific situation.
- Wind's variability cannot be treated in isolation from the load variability inherent in the system. Because wind and load variability are statistically uncorrelated, the net increase of variability due to the addition of wind is less than the variability of the wind generation alone.
- Commercially available wind forecasting capability can reduce the costs associated with day-ahead uncertainty substantially. In one major study, state-of-the-art forecasting was shown to provide 80% of the benefits that would result from perfect forecasting.
- Implementation of wind-plant-output forecasting in both power market operation and system operations planning in the control room environment is a critical next step in accommodating increasing amounts of wind penetration in power systems.

Transmission Planning and Market Operation

- Upgrades or additions to transmission facilities may be needed to access locations with large wind-energy potential. Current transmission planning processes are able to identify solutions to transmission problems, but the time required for implementation of solutions often exceeds wind-plant permitting and construction times by several years.
- Well-functioning hour-ahead and day-ahead markets provide the best means of addressing the variability in wind plant output.
- Energy imbalance charges based on actual costs or market prices provide appropriate incentives for accurate wind forecasting. Since wind plant operators have no control over the wind, penalty charges applied to wind imbalances do not improve system reliability. Market products and tariff instruments should properly allocate actual costs of generation energy imbalance.
- Wind turbine output or ramp rates may need to be curtailed for limited periods of time to meet system reliability requirements economically.
- Consolidation of balancing areas or the use of dynamic scheduling can improve system reliability and reduce the cost of integrating additional wind generation into electric system operation.

Accommodating More Wind in the Future

- Understanding and quantifying the impacts of wind plants on utility systems is a critical first step in identifying and solving problems.
- A number of steps can be taken to improve the ability to integrate increasing amounts of wind capacity on power systems. These include:
    - Improvements in wind-turbine and wind-plant models
    - Improvements in wind-plant operating characteristics
    - Carefully evaluating wind-integration operating impacts
    - Incorporating wind-plant forecasting into utility control-room operations
    - Making better use of physically (in contrast with contractually) available transmission capacity
    - Upgrading and expanding transmission systems
    - Developing well-functioning hour-ahead and day-ahead markets, and expanding access to those markets
    - Adopting market rules and tariff provisions that are more appropriate to weather-driven resources
    - Consolidating balancing areas into larger entities or accessing a larger resource base through the use of dynamic scheduling.

The ***Power & Energy Magazine*** articles summarized in this document are available to IEEE PES members at the following link:
http://www.ieee.org/portal/site/pes/menuitem.bfd2bcf5a5608058fb2275875bac26c8/index.jsp?&pName=pes_home

and to UWIG members at www.uwig.org through the Members link.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

IN THE MATTER OF THE INVESTIGATION	)	
INTO THE ENERGY POLICY ACT OF 2005	)	
ADDITION OF FIVE NEW STANDARDS TO	)	**Docket No. 06I-169E**
ADDRESS CURRENT CONSERVATION	)	
AND EFFICIENCY NEEDS	)	

Comments of Public Service Company of Colorado
May 30, 2006

On March 29, 2006 the Colorado Public Utilities Commission ("PUC") adopted an order opening an investigatory docket and Notice of Inquiry (Decision No. C06-0302, mailed March 31, 2006) to commence the consideration of whether to implement five new standards in the Public Utility Regulatory Policies Act of 1978 (PURPA) as amended by the Energy Policy Act of 2005 ("the Act"). The Act requires state public utility regulatory commissions "to make a determination concerning whether or not it is appropriate to implement such standards..." Section 111(d) of PURPA is amended by the Act by adding standards related to:

(11) Net Metering
(12) Fuel Sources
(13) Fossil Fuel Generation Efficiency
(14) Time-Based Metering
(15) Interconnection

where the numbering convention reflects the paragraph added at the end of PURPA. Consideration of Paragraphs 11 through 13 must commence by August 8, 2007 and a decision must be issued by August 8, 2008. Consideration of Paragraphs 14 and 15 must commence by August 8, 2006 and a decision must be issued by August 8, 2007.

In this docket, the Commission asks interested parties to respond to a series of questions related to each of these proposed standards.

Public Service Company of Colorado ("Public Service" or "the Company") is the largest provider of electric and natural gas energy in the state of Colorado and is regulated by the Commission in its provision of such services. The implementation of the proposed standards will impact the Company and its customers. Therefore the Company provides the following responses to the questions posed by the Commission.

Net Metering

The Act amends PURPA by adding a new paragraph (11) at the end of section 111(d) as follows:

> (11) NET METERING – Each electric utility shall make available upon request net metering service to any electric consumer that the electric utility serves. For purposes of this paragraph, the term, 'net metering' means service to any electric consumer under which electric energy generated by that electric consumer from an eligible on-site generating facility and delivered to the local distribution facilities may be used to offset electric energy provided by the electric utility to the electric consumer during the applicable billing period.

The Act leaves the important distinction of what qualifies as an "eligible on-site generating facility" to the discretion of state regulatory authorities.

As the Commission notes in its Decision, net metering is already available to electric consumers through existing or anticipated tariffs. For facilities less than 10 kw, in the case or Small Power Producers and Co-generators, an existing tariff qualifies such on-site generators for net metering. For Eligible Renewable Energy Resources, defined in 4 CCR 723-3650(f) to include solar

radiation, wind, geothermal, biomass, hydropower, and fuel cells using hydrogen; net metering is available through the statute.

The Commission requests responses to the following specific questions:

a. Are there electric customers with generating capabilities excluded from Net Metering that would benefit from the service?

The vast majority of on-site generating facilities that provide power to the local distribution grid already qualify for net metering through the provision of the two previously mentioned statutes. The Company does not believe additional net metering services are necessary for those very few customers with facilities that are on-site, larger than 10kW and not fueled by a renewable resource as stipulated in 4CCR 723-3650(f).

b. Are there any enhancements that should be made to existing electric rules that would better fulfill the purposes stated in the PURPA?

The Company supports conforming the net metering provisions of both statutes to one consistent mechanism for net metering.

Fuel Sources

The Act amends PURPA by adding at the end of section 111(d):

> (12) FUEL SOURCES – Each electric utility shall develop a plan to minimize dependence on 1 fuel source and to ensure that the electric energy it sells to consumers is generated by a diverse range of fuels and technologies, including renewable technologies.

Existing Least Cost Planning Rules 4CCR 723-3610(e) require a consideration of renewable resources, and resources that provide a beneficial contribution to Colorado's energy security, economic prosperity, environmental protection and insulation from fuel price increases. The Renewable Energy

Standard 4 CCR-723-3650 requires various targets for renewable energy production for utilities, including Public Service, through the year 2015 and beyond. The Company has the following replies to the specific questions posed by the Commission.

a. Are changes to existing rules required to comply with the standard?

The Company does not believe any changes to existing rules are necessary. The existing rules of the Commission fulfill the intent and purpose of the revisions to PURPA.

b. Are there any enhancements that should be made to existing electric rules that would better fulfill the purposes stated in PURPA?

The existing resource mix of Public Service, as projected in 2007 and beyond, comports with the purpose of the amendment to PURPA. Illustrating this fact is the table below, depicting the percent of energy produced by different fuel sources on the Company's system over the next ten years.

GWh

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Hydro/Pumped Storage	441	462	469	449	463	470	467	460	465	431	374
Wind	907	3002	3010	3002	3002	3002	3010	3002	2980	2930	2928
Gas_CT	1177	1114	991	392	220	239	216	162	144	270	325
Gas_CC	9276	8345	8591	9516	5774	6508	5642	6640	7211	7253	9261
Coal	24171	23647	23210	23660	26460	26426	25711	25459	25820	26522	25383

Fossil Fuel Generation Efficiency

The Act amends PURPA by adding the following at the end of Section 111(d):

> (13) FOSSIL FUEL GENERATION EFFICIENCY. – Each electric utility shall develop and implement a 10-year plan to increase the efficiency of its fossil fuel generation.

The Least Cost Planning Rule 4 CCR 723-3610(f) states:

> In selecting its final resource plan, the utility's objective shall be to minimize the net present value of rate impacts, consistent with reliability considerations and with financial and development risks. The utility shall consider renewable resources; resources that produce minimal emissions or minimal environmental impact; energy-efficient technologies; and resources that provide beneficial contributions to Colorado's energy security, economic prosperity, environmental protection, and insulation from fuel price increases; as a part of its bid solicitation and evaluation process. Further, the utility shall grant a preference to such resources where cost and reliability considerations are equal.

The Company has the following general responses to the Commission's questions related to the establishment of efficiency targets, targets differentiated by type of fuel source or operating characteristics, and measurement of such targets.

Establishing a target for increased fossil fuel generation efficiency will be extremely difficult to measure and verify and could very likely be contrary to the least-cost objective of the LCP rules. An important consideration of such targets is whether any target would apply only to owned units or to both owned and purchased power.

Additional issues to consider are described below.

Real Time

The electric supply system operates as a fleet with numerous resources being dispatched at any one time to serve customer load, meet reserve requirements, and operate within acceptable transmission system parameters, all in a least cost manner. As a result, the mix of units serving load are in a constant state of flux. Furthermore, it is possible to increase the average installed

efficiency of the supply fleet by a specific target but have the actual average operational efficiency increase far less than the target.

For example, if a hypothetical 5000 MW system has an average heat rate of 10,000 btu/kWh and adds a 500 MW unit with a heat rate of 7000 btu/kWh, it would increase the average installed heat rate of the fleet by 3%. However, since this new unit operates only a small fraction of the time, from an operational perspective, system efficiency is improved by only 0.1%. Would the generation owner be in compliance with the target or not? This type of issue leads to a measurement and verification problem.

Longer Term

Over the next ten years, the Company's system resource mix will change significantly as a result of load growth and power purchase contract terminations.

- Load growth requires that additional generation supplies be acquired. If the Commission's least-cost planning rules remain in effect then the resources selected will be those that integrate with the existing system to serve load projections in a least cost manner; including both fixed costs (demand payments or capital costs) and operating costs (fixed O&M, variable O&M, fuel burn, etc). The least-cost mix of resource additions may not result in an overall increase in the overall efficiency of the fossil fleet. For example, the addition of the 750 MW Comanche 3 plant operating at a 9500 btu/kWh heat rate will displace some amount of 7000 btu/kWh heat rate gas-fired combined cycle energy. While the addition of Comanche 3 provides an overall cost savings for

customers it could act to decrease the overall efficiency of the fossil fleet.

- Power purchase contract terminations will result in additional resource needs above what is required to meet growth. How the Company replaces these power supplies would depend on how any heat rate target was set. The Company's replacement strategy might be significantly different if both owned and purchased power supplies were considered in establishing the benchmark heat rate for the system versus if only owned units were considered. If owned and purchases were considered in setting the target then the Company might pursue a strategy of meeting its targets through termination of less efficient PPA's. If only owned units influence the target then a different strategy may be pursued. A further complication arises if a target is based on installed heat rates or actual operation of the system, as illustrated above.

Consistency with Least-Cost Planning Rules

Assume an efficiency target only applies to owned units and is based on an installed capacity basis. It is likely that at some point a utility purchasing its future power needs will need to do something to its owned units to increase their efficiency. Efficiency improvement measures can have rather high capital costs for relatively small performance gains. It is therefore possible that the capital costs of efficiency improvements exceed the energy production cost savings of the improvements resulting in a net cost to customers. In this circumstance

establishing efficiency targets may be contradictory to the policy of least-cost planning and some type of allowance in the rules would be required.

Given the above considerations, any specific targets proposed or adopted by the Commission should be subject to a rulemaking, where all issues can be fully examined by the Commission.

Time Based Metering and Communications

The Act amends PUPPA by adding requirements for State regulatory authorities to investigate and issue decisions related to requirements that electric utilities offer each of its customer classes time-based rate schedules and advanced metering to enable such services.

Public Service supports the policy goal of communicating better price signals to customers through time-of-use (TOU) rates. The cost of providing electricity to customers varies significantly with the time of day, the temperature, the availability of generating units and transmission capacity, and other factors. By allowing prices to vary with these cost differences, pricing can help ensure customers are incented to conserve. The result is a more efficient use of resources. Theoretically, customers will reduce their use during peak periods when the cost of providing electricity is relatively high. Customers may or may not increase their use during off-peak periods when the cost of service is relatively low.

But implementing this sound policy can be difficult. TOU rates that yield better price signals are justified only if the efficiency gains exceed the additional metering and administrative costs of implementing TOU rates. Consequently,

the goal should be to design TOU rates that capture the most significant cost differences and eliminate the greatest inefficiencies (resulting from flat prices) at the lowest cost. Achieving this goal requires information about:

- customers' elasticities of demand,
- the levels of and variations in the wholesale market price of electricity or the utility's marginal cost of service, and
- the metering and administrative costs of sending better price signals and,
- the extensive customer education process required to shift from flat to TOU pricing, including behavior modification and load-shifting tools.

RESPONSE TO COMMISSION'S QUESTIONS

a. Where Time Based Metering has already been implemented on either a voluntary or test basis, do results indicate that customers respond to higher peak energy pricing by reducing consumption during peak periods?

Public Service notes that customer response can vary significantly by type of customer and region. However, pilot programs results elsewhere do seem to indicate customers respond to higher peak energy pricing by reducing consumption during peak periods, as experienced in a California pilot for example. To date the Company has insufficient experience with TOU rates in Colorado to know how various types of customers may respond to higher prices during peak periods. But Public Service will soon start a pilot pricing program for its residential electric customers in Colorado. In this voluntary program customers opt for three alternatives to the standard tariff.

The first alternative features an on-peak price of $0.13203/kWh during all summer weekday hours between 2 p.m. and 8 p.m., and an off-peak price of $.03681/kWh during all remaining hours.

The second tariff includes an on-peak charge of $0.31487/kWh from 2 p.m. to 8 p.m. for up to ten summer weekdays (when system use and marginal costs are extremely high), and an off-peak price of $.04169/kWh during all remaining hours.

The third tariff charges an on-peak price of $.09758/kWh during most of the summer weekday hours between 2 p.m. and 8 p.m., a critical-peak price of $.31487/kWh for up to ten summer weekdays from 2 p.m. to 8 p.m. (when system use and marginal costs are extremely high), and an off-peak price of $.03681/kWh during all remaining hours.

Participating customers will begin receiving service under these optional tariffs on July 15, 2006. Service under the tariffs will continue through July 14, 2007, thereby ensuring an entire year of experience with each tariff. Approximately 3,500 customers are participating in this pilot program, either as customers on one of the three voluntary tariffs or as part of the control group of customers on the standard tariff.

In December 2007 the Company will file a report on the results of the program. By December 2007 Public Service will have analyzed the results of the program for an entire year, and will be prepared to estimate customers' response to higher energy prices during peak periods, as well as to lower prices during off-

peak periods. (The program has been designed to generate sufficient data from which to draw statistically significant inferences.)

b. What available metering technologies are available for making available the various time based rate schedules indicated in the standard, and at what cost and benefit to rate payers?

There are a wide variety of metering technologies available for making the various time based rate schedules, with similarly varying costs and benefits to customers. The Company will highlight a couple of options it has considered for its residential time-of-use pilot. Because this listing is not exhaustive, we have not delved into the costs associated with these examples. For its voluntary pilot project explained above, the Company is using an Itron Sentinel meter. It can be equipped to measure hourly use, and can be used with a wide variety of TOU offerings. The Sentinel meter can be programmed for two-part or three-part TOU rates, in which case the Company can read the meters remotely from mobile vans. For TOU tariffs that require rate changes on short (one-day) notice, the meter cannot be read remotely. Instead, the interval data must be downloaded into a hand-held probe and translated for billing. However, if the pilot was standardized and made available to a larger participant pool, the Company would consider the Itron Centron meter for the first alternative pricing program noted.

Another alternative for the second and third pricing options above is an Itron SmartSynch meter, which is a radio-controlled, two-way meter.

Either of these two meters could be used for a wide variety of voluntary TOU offerings whose rates vary with the season, time of day, or daily or hourly price of electricity. However, metering solutions for a mandatory (or widely-

accepted voluntary) program would likely be more cost-effective with a fixed network using radio or powerline carrier solutions.

The Company emphasizes that metering technologies change rapidly. The Company's metering options, and their costs, may change significantly over the next several years. The Company will continue to monitor the best metering options for voluntary TOU services, as well as assessing the viability of metering decisions that may support a mandatory participation approach.

Customers as a whole (including customers who choose TOU rates and those who do not) benefit from such meters to the extent the improved price signals facilitated by the meters prompt them to use electricity more efficiently. As explained above, these benefits accrue from decreased use during high-cost periods. We also hope to be able to assess the benefit, if any, of increased use during low-cost periods.

The specific benefits of any given metering technology depend on the extent to which current flat rates result in inefficient energy use, the design of the new TOU rates, variations in market prices and/or the utility's marginal cost of electricity, and customer elasticities of demand.

Moreover, the distribution of benefits and costs to participants and non-participants can vary widely. For example, a customer with an off-peak load may realize benefits from a TOU tariff without shifting or curtailing any load. In that case, the customer's decision to switch to TOU rates actually harms the remaining customers, because they pick up a greater share of the same total costs. This example illustrates to importance of distinguishing between the cost-

effectiveness of a TOU offering for participating customers and its cost-effectiveness for customers as a whole.

c. Is there a quantifiable level of unfulfilled demand for time based metering and, if so, what level of subscription may be anticipated for the various classes of service?

Customer demand for time-based metering itself cannot easily be quantified, because the metering is simply a vehicle for offering TOU (and perhaps other) services. Customer demand for such TOU services may be estimated based on the results of the pilot program mentioned above and customer response to other time-of-use rates.

In general, the level of subscription to any TOU service will depend on the length and timing of the different costing periods and the rate differentials among periods. Obviously, some customers with relatively flat or off-peak loads can lower their bills under TOU rates without shifting or curtailing any energy use. A large percentage of such customers will opt for a voluntary TOU tariff.

It is difficult to estimate a generic level of subscription for customers who would lower their bills under TOU rates only by shifting or curtailing load. Customers able to shift loads for short periods may opt for TOU rates only if the on-peak period is relatively short and the rate differentials significant. Other customers who have more flexibility might accept TOU tariffs with longer on-peak periods and/or smaller rate differentials.

Moreover, a customer will choose service under a TOU tariff only if the savings from the TOU rate differentials exceed any incremental metering and administrative costs recovered from the customer through a higher fixed charge,

and the perceived costs of their behavior modifications regarding their energy usage.

Interconnection

The Act amends PURPA by adding the following at the end of Section 111(d):

> (15) INTERCONNECTION. - Each electric utility shall make available, upon request, interconnection service to any electric consumer that the electric utility serves. For purposes of this paragraph, the term '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 standards developed by the Institute of Electrical and Electronics Engineers: 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 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.

The Commissions Renewable Energy Standard 4 CCR 723-3665 includes provisions for interconnection for small generation facilities no larger than ten MW. The Commission's rule comports with both IEEE Standard 1547 and FERC Order 2006-A.

The Company does not believe the rule needs to be changed or enhanced to comply with the changes to PURPA in the Act.

The Company appreciates this opportunity to provide comments to the Commission regarding the implementation of the Energy Policy Act of 2005. We will continue to participate in the Commissions action regarding these matters

and request that the Commission serve all proceedings on the undersigned in this docket.

Respectfully submitted

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