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**VIA U.P.S. NEXT DAY**

April 20, 2009

James J. McNulty, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street
Harrisburg, PA 17120

Re: **Smart Meter Procurement and Installation Plans; Docket M-2009-2092655**

Dear Secretary McNulty:

Enclosed is the original copy of the Comments of West Penn Power Company d/b/a Allegheny Power on the proposed Smart Meter Procurement Plans submitted under the Commission's Secretarial Letter dated March 30, 2009. This filing is also made electronically. The original copy is filed by UPS Next Day and electronically and is deemed filed today. An electronic copy is also being sent to the Commission's Act 129 email account at ra-Act129@state.pa.us.

Very truly yours,

John L. Munsch
Attorney

JLM:sac

Enclosures

**BEFORE THE**
**PENNSYLVANIA PUBLIC UTILITY COMMISSION**

| | | |
|---|---|---|
| Smart Meter Procurement and Installation Plans | : | Docket No. M-2009-2092655 |

**COMMENTS OF WEST PENN POWER COMPANY**
**d/b/a ALLEGHENY POWER**

West Penn Power Company d/b/a Allegheny Power ("Allegheny Power" or "the Company") is an electric distribution company serving approximately 700,000 customers in 24 counties in central and western Pennsylvania. It submits comments in response to the Secretarial Letter dated March 30, 2009, at Docket No. M-2009-2092655 concerning smart meter deployment. In response to the Commission's Implementation Order, Allegheny Power provides general comments, followed by specific responses to the "additional questions" contained in the Commission's Attachment A.

**General Comments**

The Company encourages the Commission to act quickly to provide an Initial Decision to the filed plan. Installation of smart meters and implementation of the smart meter infrastructure including all necessary back-office functions required to have a truly functioning smart meter is a time consuming process. To achieve benefits and milestones associated with the functioning of the metering and infrastructure, it will be necessary to start the implementation process quickly.

Allegheny Power is encouraged with the establishment of a grace period but suggests that the period not be limited to 18 months. It should be based on the EDC's plan and the justification provided by the EDC for a longer grace periods. Additionally, customers requesting interval meters should bear the incremental cost of providing such metering, including any

communication costs, until such time as a smart meter is fully functional for the customer, or the customer no longer requests interval metering.

**Responses to "Attachment A" Additional Questions concerning Smart Meter Procurement and Installation**

**1. Overall Adaptability:**

a. Should there be some common "plug and play" format and/or hardware on the meter to accommodate future technology changes? If so, provide suggested standards for this capability.

**Response**

Although a "plug and play" format and/or hardware to accommodate technology changes is a desirable attribute of a smart meter, it is difficult to imagine the types and scope of future technology changes to envision such a feature of this type. Therefore, Allegheny Power does not favor placing a requirement such as this on the meters. Development of such a standard could take years to develop and deploy.

There has been some movement in this area with the ANSI C-12-20 and C-12-22 standards relating to meter communications (which has yet to be adopted by all smart metering vendors) but a truly "plug and play standard" is still in its infancy. In order to meet the goals set forth in Act 129, we cannot wait for this development to occur and be accepted across the meter industry.

**2. Home Area Network (HAN) Protocols:**

a. What HAN protocol may be appropriate from the meter to the customer? What HAN open protocols are most readily available and accessible to customers? Should the Commission standardize a protocol? Should there be more than one protocol?

**Response**

Almost all AMI metering vendors support two standards for HAN protocols – their own proprietary protocol and ZigBee. For this reason, the Company believes the best standard to adopt is the ZigBee standard as it has become the de facto "universal" standard for HAN communications. ZigBee is a specification built on the IEEE 802.15.4 open standard for radio technology, which was completed about two years ago. On top of the radio technology standard, the ZigBee Alliance has added functionality to the stack, including networking and security. The organization ratified its specification in December 2008 and just this month announced that four platforms have received compliance certificates.

Chipcon, ComXs, Ember and Freescale Semiconductor received the certification for their platforms, and the ZigBee Alliance said it expects to begin certification testing of end user products based on these platforms and ZigBee applications profiles in the months ahead. The ZigBee Alliance is currently completing its certification and logo program for testing end products such as thermostats, smoke detectors and lighting control devices based on ZigBee compliant platforms and application profiles, and the organization now has products for consumers on store shelves now.

In its favor, the ZigBee Alliance has an IEEE open standard at the base of its technology and several big companies as members. Before issuing compliance, the ZigBee Alliance requires the devices be tested for interoperability at one of two test houses.

b. Should smart meter information be available through a HAN or an internet browser? If through an internet browser, should this come from a website, or directly from the meter, or both? Through which browsers should this be made available?

**Response**

Smart meter information should be available to the owner through both a HAN and an internet browser. In the case of a HAN, the information would be available "real-time" to display usage and price information through an In Home Display (IHD) device. This information would come directly from the meter, through the HAN to the IHD. Additionally, this information would also be available to an information owner through an internet browser. Information accessed via the browser would have some latency associated with it due to the need to be communicated through the LAN/WAN to a back-office data warehouse and then back out to the owner through an internet portal.

Allegheny Power believes three popular internet browsers should be supported at a minimum – Microsoft Internet Explorer, Mozilla Firefox, and Opera.

c. Should there be other interconnectivity between the meter and other equipment in the home? If so, how much? [read capability vs. two way communication]

**Response**

Yes. The meter should support two-way communication to a minimum of four devices within the home via the HAN. This would include devices such as In Home Display units, Programmable Communicating Thermostats and load control centers. If a home would want more than four smart devices within the home, the homeowner would be required to purchase a load control center (which would be in communication with the meter through the HAN) and also serve as the monitoring and control point for the other devices in the home.

**3. Utility usage data and meter access:**

a. What usage data should the utility acquire through the smart metering system?

**Response**

Data should include kW, kWh and kVARh usage (if applicable) should be reported for each channel supporting up to four TOU rates.

b. Should the Commission establish minimum standards on how often the utility should acquire the usage data from the meter?

**Response**

Yes. The minimum standard should be once per day. More latency than that would preclude the consumer from being able to effectively manage his/her energy usage.

c. Should the Commission establish minimum data intervals? If so, what should that be? [Examples: 15 minute, 30 minute, 1 hr]

**Response**

Yes. Smart meters and the supporting infrastructure should be capable of supporting, at minimum, 15 minute interval reads. Although the use of smaller intervals should be dictated by the Commission-approved EDC retail tariff if a smaller interval other than hourly intervals is required to properly bill the customer in accordance with the controlling retail tariff rate schedule.

d. What minimum timeframe should the Commission establish on when usage data is made available by the Meter Data Service Provider (MDSP, usually the EDC) to the EDC, CSPs/EGSs and customers, respectively?

**Response**

The data should be made available by the MDSP to all interested parties within 24 hours after the read.

e. Should this usage data be validated first?

**Response**

Yes. It is very important that the data presented to the consumer and the customer service representative is corrected and consistent. This would imply that the data should be run through the standard VEE rules first.

f. Should the Commission establish a common Validation, Error Detection, and Editing (VEE) protocol? If so, what should that be?

**Response**

Yes. Common VEE (Validation, Estimation, and Editing) protocols (or rules) should be established by the Commission. California has taken the lead in specifying VEE rules. The Company suggests looking at the California Commission's set of rules for smart meter data as an example.

g. Should the Commission establish a maximum period in which the MDSP should complete the VEE analysis? If so, what should that maximum period be?

**Response**

Yes. The usage data completely processed by VEE and available to the owner should be available within 24 hours of the read by the meter.

h. How should customers be provided direct access to usage information? [examples, website access, HAN to an in-home display or other devices]

**Response**

Customers (data owners or their surrogates) should have access to the data through as many options as possible as not all consumers embrace a single technology. Website access and in-home displays should both be supported as vehicles to display data to the customers.

i. Should the Commission establish standard protocols and communication medium for providing direct access to usage information from the meter to the HAN? If so, what should those be?

**Response**

Yes. ZigBee (Smart Energy profile) is the recommended standard. Incorporation of the soon-to-be-released home automation profile is recommended for adoption upon its release.

j. How should this Commission provide direct access to the meter to third parties? What policies or regulations should this Commission promulgate to ensure that these third parties are provided timely access under reasonable terms and conditions to the customer metering facilities?

**Response**

Direct access to customer meters should be obtained only through the utilities security system. Access to meters is a security risk and for purposes of identifying a single point of accountability needs to be controlled through the utility's security systems. Thus, third parties can get access to meter configuration and data and issue control requests for the meter and in home devices, but the information must all pass through the utility's security system. Single point of accountability, traceability and

logging will be critical to maintaining the security infrastructure of the system and maintain consumer confidence.

k. What communications, software or hardware can facilitate this direct access to the meter for customers and their third parties, and should the Commission establish requirements and or standards to facilitate this access?

**Response**

As described above, the request should come through a secure, controlled web service or application to the business-to-business Enterprise Service Bus (ESB) to the utility's back office. Once verified by the utility's back office security system(s), the request for access to the meter would be issued through the standard communication infrastructure to the meter. The key communications software components necessary are the business-to-business ESB and the utility Security system.

l. What electronic access to customer meter data do CSPs and EGSs need from EDCs that they currently do not have? Provide specific examples where these entities do not have such access currently, and provide examples, if available, of electronic transactions that can be adopted by this Commission to comply with this statutory requirement.

**Response**

Conservation Service Providers require current and historical consumption information for individual consumers as well as consumer demographics. Conservation Service providers currently have access to the historical and demographic information sources however the currency of usage data is still lacking. A smart meter implementation where an Advanced Metering Infrastructure is able to provide daily

usage information would allow the Conservation Service Providers to provide timelier and therefore effective guidance to consumers.

Curtailment Service Providers require near real-time consumption information as well as group- and grid-level demand information. In addition, they require the ability to issue demand control requests to individual consumers and groups of consumers.

**4. Meter to EDC Communications:**

a. Should the Commission standardize public protocols from the meter to the grid?

**Response**

Public protocols from the meter to the grid should not be standardized at this time. There are two distinct communication segments from "the meter to the grid," the Local Area Network (LAN) from the meter to the regional collector, then the Wide Area Network (WAN) from the collector to the utility back office. While the industry has standardized the WAN communication segment on the IP protocol the LAN segment generally remains vendor proprietary specific. There is significant industry (NERC, EPRI) and technology (IEEE, NIST) efforts underway to drive protocol standardization at the LAN level however no clear solution is visible at this time. Additionally, the maturation of AMI systems to incorporate Smart Grid protocols and functionality is expected to significantly impact LAN standardization. Allegheny Power recommends delaying selection of a public protocol standard until the current industry and technology efforts are completed.

b. If certain protocols are not effective in certain geographic or rural regions, should the Commission adopt a list of protocols that can accommodate all of Pennsylvania

customer's communication requirements? If so, what additional protocols should be adopted?

**Response**

Communication channels and communication protocols should be differentiated. Protocols refer to the common signaling standards implemented over the physical communication channel. Since physical communication channels vary in their effectiveness based on geographic or topographical concerns we can expect to need a variety (power line carrier, mesh RF, direct RF, cellular, fiber, microwave, WiMax, etc) as the environment varies. A variety of physical communication channels will be required to achieve coverage cost-effectively. The signaling protocols implemented over those physical communication channels can be either private or public standards. Where public standards (such as IP over WAN) exist across physical channels they should be adopted. Where no clear public standard exists over a physical channel (such as LAN) a standard should not be defined until industry standards are identified

c. What bidirectional communication mediums [Example: broadband over power line, cellular, phone lines, RF] are least cost? What are the pros and cons of each?

**Response**

"Costs" must be evaluated as to their impact over time. Each communication medium has acquisition costs and operational costs, each of which varies based on topological, political and regional factors. This is a very complicated analysis but in general, the following summarizes the cost effectiveness of each technology:

- Phone Line: ubiquitous coverage, poor functionality, high installation cost, high operational cost.

- RF Mesh: localized coverage, medium functionality, medium installation cost, low operational cost.
- RF Broadcast: regional coverage, medium functionality, low installation cost, low operational cost.
- BPL: limited coverage, high functionality, high installation cost, medium operational cost.
- PLC: localized coverage, low functionality, high installation cost, and low operational cost.
- Cellular: regional coverage, medium functionality, medium installation cost, medium operational cost.

**5. Access to Price information:**

a. How should customers be provided direct access to pricing information? [examples, website access, HAN to an in-home display or other devices]

**Response**

Real-time pricing information should be available through an in-home display and/or website/portal. Forward pricing information should also be available through a website/portal.

b. Should the Commission require the meter to communicate price information, or should this information be provided over another communication medium?

**Response**

This should be accomplished through the meter/HAN/IHD channel and through the back office/portal channel to assure that the information is current, consistent and reliable.

c. What pricing information should the Commission require to be provided? [examples, RTP, Day ahead prices, default service rates]

**Response**

The AMI infrastructure should support the pricing option elected by the customer, which could include options such as RTP, TOU, day-ahead pricing and fixed-price default rates.

d. Should the Commission establish minimum standards on how frequently price information should be provided? If so, what should be the minimum standard?

**Response**

The frequency of price information would be dependent upon the communication medium, with a website/portal being able to support more frequent price changes than a metering communication network. Pushing a lot of pricing information does place a burden on the communication network. Nonetheless, the infrastructure should be capable of pushing a reasonable amount of information whenever it changes to the consumer. RTP might need to be sent in four hour "buckets" to those customers.

e. Should the Commission establish standard formats for presentation of price information? If so, suggest a format

**Response**

No, standard formats for price presentation should not be established at this time. Utilities will be creative in developing pricing programs and display formats (numbers, bar graphs, curves, pie charts, etc.). Once programs and display formats have been deemed successful, an attempt at standardization might occur.

## 6. Automatic Control:

a. How can smart meters "effectively support" automatic control of customer's electricity consumption by customers, utilities and the customer's third party?

**Response**

Automatic control can be accomplished in two manners:

1. Through the devices in the home such as programmable communicating thermostats or load control devices. Signals could be sent to the utility and out through the AMI infrastructure to the meter to the devices to control those devices (lower or raise thermostat settings, turn off a water heater, etc). The consumer could always have the option to override this (if necessary).
2. The meter itself should have remote disconnect/connect capability. For serious demand management situations, commands could be sent to disconnect the meter. This capability could also be used for pre-payment and load limited programs where non-payment or usage above a certain amperage could result in a remote disconnect.

b. How is the smart metering system engaged in the initiation, maintenance, relinquishment, and verification of the automatic control of customer consumption?

**Response**

There should be multiple paths to accomplish initiation, maintenance, relinquishment, and verification of automatic control. Certainly, the customer service representatives could assist anyone who called in to accomplish these activities. There

should also be a secured web-enabled access to do it also. In simple cases, the IVR system might be able to accomplish some of these activities as well.

c. What smart metering protocols and communication mediums are needed to implement these automated controls? Should the Commission establish standard protocols and standards for this purpose?

**Response**

ZigBee (Smart Energy and Smart Home) are the only required protocols necessary to implement these automated controls.

d. What energy consuming customer assets can be controlled by these smart meter systems for each of the customer segments, and how is control of these assets impacted by the choice of communication medium and protocol?

**Response**

The HVAC systems can be controlled through the use of Programmable Communicating Thermostats (PCT's). Other electric load devices such as hot water heaters, clothes dryer, washing machine, dishwasher, pool pump, and pool heaters could be controlled through wired or wireless (ZigBee) load control devices.

**7. Smart Metering Acceleration:**

To the extent permissible under the law, should the Commission provide an incentive to EDCs to accelerate their smart meter deployment by giving a credit towards the required Energy Efficiency and Conservation Goals? If so, how should such credit be determined?

**Response**

Yes. Allegheny Power believes strongly that an incentive for acceleration of smart meters is in the public interest and will advance the goals of Act 129. The credit

should be determined based on the contribution of specific EE&C and/or demand reduction programs that require the smart meter and associated infrastructure to be installed. The credit should be a 2:1 contribution to the overall goals. For a program that is determined to provide "X" contribution to the EE&C and/or demand reduction goal, the credit should be "2X". Allegheny Power urges the Commission to establish clear and strong incentives for the early introduction of smart meters.

**8. Cost Recovery:**

a. Should the Commission establish a standard format for providing the various components of the capital and operating costs and benefits of these smart metering systems to facilitate the comparison of the EDC plans? If so, please provide a suggested standard format.

**Response**

The use of a standard format to evaluate the costs and benefits of smart metering systems and to facilitate comparison of the various EDC plans may have merit. However, the use of such a format should be evaluated and developed by a working group that is inclusive of all the EDCs as well as the Commission staff. Since there are many questions surrounding smart metering technology, an attempt to develop any type of a format in the midst of so many unknowns may be somewhat premature. Before such

a format could be developed, the working group should have an understanding of the various components that make up the smart metering technology and the ultimate uses of this technology.

Respectfully Submitted,

Date: April 20, 2009

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