

**Energy Independence and  
Security Act of 2007**

**PURPA Section 111(d)(16)**

**State Consideration of  
Smart Grid Investments**

## Executive Summary

Choctawhatchee Electric Cooperative, Inc. (“CHELCO”) is a member-owned, non-profit electric cooperative headquartered in DeFuniak Springs, Florida which provides retail electric service in the counties of Walton, Okaloosa, Holmes, and Santa Rosa in the State of Florida. CHELCO, along with nineteen other cooperatives and municipalities, is a member-owner of PowerSouth Energy Cooperative (“PowerSouth”). PowerSouth is a member-owned, non-profit electric generation and transmission cooperative providing wholesale electric service in Alabama and northwest Florida. CHELCO receives all of its electric energy from PowerSouth and has by contract placed all wholesale power supply responsibilities with PowerSouth through December 31, 2050.

On December 19, 2007, President George W. Bush signed into law the Energy Independence and Security Act of 2007 (“EISA”). The EISA requires electric utilities with annual retail sales of electric energy exceeding 500 million kilowatt hours to consider whether to adopt four new standards added to the Public Utilities Regulatory Policies Act of 1978 (“PURPA”) Section 111(d), including:

- Integrated Resource Planning;
- Rate Design Modifications to Promote Energy Efficiency Investments ([Standard already met, not being considered at this time](#));
- Consideration of Smart Grid Investments; and
- Smart Grid Information.

The EISA requires that affected utilities consider whether the standards encourage PURPA’s stated purposes of conservation of: (1) energy supplied by electric utilities; (2) optimal efficiency of electric utility facilities and resources; and (3) equitable retail rates for electric consumers. The EISA does not require adoption of any of the four new standards. Instead, the EISA requires affected utilities **to consider** each standard and make a determination concerning whether or not it is appropriate to implement.

CHELCO is included on the most recent Department of Energy list of utilities which have retail sales in excess of 500 million kilowatt hours for 2007. As such, CHELCO is required to consider the four new standards. CHELCO, through its Board of Trustees, began consideration of the four new standards on November 20, 2008, including the Consideration of Smart Grid Investments Standard (the “Smart Grid Investments Standard”).

The Smart Grid Investments Standard was written to encourage **states** to require that utilities examine smart grid technologies before investing in traditional transmission and distribution systems. Even though the Smart Grid Investments Standard is directed at **states**, both CHELCO and PowerSouth have in the past and continue to consider various smart grid investments when updating their respective transmission and distribution systems. More specifically, CHELCO and PowerSouth have evaluated the cost effectiveness, reliability and performance associated with the incorporation of Supervisory Control and Data Systems (“SCADA”) and advanced metering infrastructure (“AMI”) and other “smart technologies” in their systems instead of similar, non-advanced grid technologies. Smart Grid technologies show potential for more efficient and cost-effective means of transmitting and distributing electric power. However, these efficiencies are often offset by the increased capital requirements and higher operation and maintenance expenses with currently available Smart Grid technologies. PowerSouth and CHELCO will continue to explore viable Smart Grid options.

Furthermore, the standards set forth in Sections 1307(16)(B) and (C) of the EISA are not applicable to self-regulated cooperatives like PowerSouth and CHELCO. If CHELCO chooses to invest in Smart Grid technologies, the money for the new investments and the stranded assets can only come from CHELCO’s members.

## **Procedural Background**

The EISA amends Section 111(d) of PURPA (16 U.S.C. 2621(d)) by requiring the consideration of new standards for those electric utilities with annual retail sales of electric energy exceeding 500 million kilowatt hours. The new standards added to PURPA Section 111 (d) by the EISA are titled: (16) Integrated Resource Planning; (17) Rate Design Modification to Promote Energy Efficiency investments; (16) Consideration of Smart Grid Investments; and (17) Smart Grid Information. The stated purposes of the PURPA standards are to encourage (1) conservation of energy supplied by electric utilities, (2) optimal efficiency of electric utility facilities and resources, and (3) equitable retail rates to electric consumers. [16 U.S.C 2601(1)]

The EISA requires affected utilities to consider the standards after public notice and hearing and to issue written determinations as to whether it is appropriate to implement each standard based upon the evidence presented at the hearings and using the procedures established by the nonregulated electric utility. [16 U.S.C 2621(b)] The EISA specifically states that “...each nonregulated electric utility shall consider each standard...and make a determination concerning whether or not it is appropriate to implement such standard...Nothing in this subsection prohibits any...nonregulated electric utility from making any determination that it is not appropriate to implement any such standard...” [16 U.S.C. 2621(a)] Therefore, affected utilities are only required to consider each standard and may choose not to implement any of the standards. [16 U.S.C. 2621(a)]

## **Proposed Standard**

Section 1307(a) of the EISA of 2007 amends PURPA by adding Standard 16 (PURPA Section 111(d)(16)), which states in its entirety:

“(16) CONSIDERATION OF SMART GRID INVESTMENTS -

(A) IN GENERAL.—Each State shall consider requiring that, prior to undertaking investments in nonadvanced grid technologies, an electric utility of the State demonstrate to the State that the electric utility considered an investment in a qualified smart grid system based on appropriate factors, including—

- (i) total costs;
- (ii) cost-effectiveness;
- (iii) improved reliability;
- (iv) security;
- (v) system performance; and

(vi) societal benefit.

(B) RATE RECOVERY. —Each State shall consider authorizing each electric utility of the State to recover from ratepayers any capital, operating expenditure, or other costs of the electric utility relating to the deployment of a qualified smart grid system, including a reasonable rate of return on the capital expenditures of the electric utility for the deployment of the qualified smart grid system.

(C) OBSOLETE EQUIPMENT. —Each State shall consider authorizing any electric utility or other party of the State to deploy a qualified smart grid system to recover in a timely manner the remaining book-value costs of any equipment rendered obsolete by the deployment of the qualified smart grid system, based on the remaining depreciable life of the obsolete equipment.”

The EISA generally establishes deadlines for the commencement and completion of the required consideration for each standard. However, for the Smart Grid Investment Standard, the EISA did not set a timeline for commencement of consideration of the standard. The “Failure to Comply” provision of PURPA 112(c) was amended to include this standard. Thus, if CHELCO fails to consider and make a determination on the Smart Grid Investment Standard, a determination could occur in the first rate proceeding after December 19, 2010. [16 U.S.C 2622(c)]

### **Definition of a Smart Grid**

The EISA does not provide a definition of the term “Smart Grid.” However, one generally accepted definition of a Smart Grid is a system which incorporates the use of communications and modern technology to operate an electric power grid in a more efficient and effective manner. Section 1306(d) of the EISA further characterizes the functions of a Smart Grid as:

- “1. Ability to develop, store, send and receive digital information (electricity use, costs, prices, time of use, nature of use) through a combination of devices.
2. Ability to do the above to or from a computer or other control devices.
3. Ability to measure or monitor electricity use as a function of time of day, power quality, source and type of generation.
4. Ability to sense and localize disruptions or changes in power flows on the grid and communicate such instantaneously to enable automatic protective responses to sustain reliability and security of grid operations.
5. Ability to detect, prevent, communicate, respond or recover from system security threats, including cyber security and terrorism.

6. Ability of any appliance or machine to respond to such signals automatically without human intervention.
7. Ability to use digital information for grid operations that were previously electromechanical or manual.
8. Ability to use digital controls to manage and modify demand, congestion, and provide ancillary services.
9. Other functions the Secretary may identify.”

### **Relationship between CHELCO and PowerSouth**

CHELCO is a member-owner of PowerSouth along with nineteen other electric distribution cooperatives and municipalities located in central and south Alabama and northwest Florida. In addition to being a member-owner of PowerSouth, CHELCO has entered into a Contract for Wholesale Power Service with PowerSouth which requires that CHELCO purchase all of its electric power and energy from PowerSouth until December 31, 2050. It is the long-standing intent of both CHELCO and PowerSouth that all wholesale power supply responsibilities be placed upon PowerSouth.

PowerSouth is a nonprofit membership corporation which operates on a cooperative basis. CHELCO, being one member among PowerSouth’s twenty, has only limited effect upon the practices of PowerSouth without the majority participation of PowerSouth’s remaining members.

### **Summary of PowerSouth’s Investment in Smart Grid Technology**

PowerSouth has made historically significant investments in its electric transmission grid. When making investments in its electrical grid, PowerSouth takes into consideration a number of factors. Included among those factors are: the total cost of the investment; the cost-effectiveness of the investment; whether the investment improves reliability and performance of the system; and the method in which the investment enhances the security and performance of the system. PowerSouth is continually upgrading outdated and traditional technologies within its system and replacing the same with technologies that can lead to energy efficiency and reliability and enhanced communications throughout PowerSouth’s system.

Many of PowerSouth’s investments have been made in technologies which could be considered as “Smart Grid” technologies based on to the characteristics of those functions set forth in Section 1306 of the EISA. More specifically, PowerSouth has invested in a number of

grid technologies, software packages and functions that promote a Smart Grid, including: fault location, isolation and service restoration (which includes sensing devices, relays, regulators, micro-processor protective-based relays, electronically operable switches and motor operated disconnect); feeder load balancing; voltage control through the use of voltage regulators; and equipment condition monitoring. PowerSouth also has constructed, implemented and updated an advanced, real-time SCADA communications network which permits PowerSouth to communicate with remote devices and receive data pertinent to the efficient and secure operation of its system. PowerSouth's and CHELCO's SCADA network, combined with other "smart technologies," have resulted in enhanced reliability, performance and efficiency across PowerSouth's system.

### **Summary of CHELCO's Investment in Smart Grid Technology**

CHELCO has made historically significant investments in its electric distribution system. When making investments in its distribution system, CHELCO takes into consideration a number of factors. Included among those factors are: the total cost of the investment; the cost-effectiveness of the investment; whether the investment improves reliability and performance of the system; and the method in which the investment enhances the security and performance of the system. CHELCO is continually upgrading outdated and traditional technologies within its distribution system and replacing the same with technologies that can lead to energy efficiency and reliability and enhanced communications throughout the system.

Some of CHELCO's investments have been made in technologies which could be considered "Smart Grid" technologies based on to the characteristics of those functions set forth in Section 1306 of the EISA. More specifically, CHELCO has invested in a number of metering and Advanced Metering Infrastructure (AMI) technologies, software packages and functions that promote a Smart Grid, including: fault location, isolation and service restoration (which includes sensing devices, SCADA ready regulators, and SCADA ready micro-processor protective-based reclosers); feeder load balancing; and voltage control through the use of voltage regulators. CHELCO's AMI network, combined with other "smart technologies," have resulted in enhanced reliability, performance and efficiency across CHELCO's system.

## **Discussion**

As required, the Smart Grid Investment Standard has been considered by CHELCO using the three stated purposes of the PURPA amendment. [16 U.S.C. 2611] Title I of PURPA identifies the three purposes for implementation of the Standard as follows:

### **(1) Conservation of energy supplied by electric utilities.**

Investments in “smart technology” integrated into the electrical grid of PowerSouth, combined with the demand side programs and “smart technology” employed by CHELCO, can potentially lead to reduced energy usage by the end consumer. Smart Grid investments can also lead to conservation of energy by reducing electric demand during peak periods of usage. PowerSouth and CHELCO are currently utilizing Smart Grid technology when cost effective to promote conservation of energy.

### **(2) The optimization of efficiency of use of facilities and resources by electric utilities.**

Investment in a Smart Grid can potentially optimize PowerSouth’s and CHELCO’s efficient use of facilities and resources. The receipt of real time data from SCADA, instead of modeling information, permits the utility to increase thermal loading over short periods of time which, in turn, can defer upgrades to the system. Also, the SCADA technology at the substation level provides the utility with the opportunity to reduce voltage over peak hours. Such a reduction in voltage lowers energy costs by reducing peak demand. Furthermore, the communication and control of capacitors and regulators throughout the system have the potential to increase system performance and control reliability and costs in those areas that are experiencing issues of low voltage. Lastly, the use of Smart Meters and an AMI system improves distribution reliability by determining line and transformer loading and offers consumers alternate rate options based on time of use. PowerSouth and CHELCO are currently utilizing Smart Grid technology when cost effective to optimize the efficient use of facilities and resources.

**(3) Equitable rates to electric customers.**

Investing in Smart Grid Technology may impact the rates charged to electric consumers. Data from communication and software technology incorporated into the electricity grid can be used to evaluate the sufficiency and fairness of rate designs. Such an evaluation may promote equitable rates to end consumers. PowerSouth and CHELCO are currently utilizing Smart Grid technology when cost effective to ensure equitable rates to electric consumers.

**Contacts and Other Resources**

Consumers seeking additional information about Integrated Resource Planning may contact the cooperative or visit our website for information on this and other matters of interest as follows:

Cooperative:	CHELCO P.O. Box 512 DeFuniak Springs, FL 32433
Phone Number:	(850) 892-2111
Website:	<a href="http://www.chelco.com">http://www.chelco.com</a>

In addition, the following resources are available as reference material:

Rose, Kenneth and Mike Murphy, *Reference Manual and Procedures for Implementation of the "PURPA Standards" in the Energy Independence and Security Act of 2007*, APPA/EEI/NARUC/NRECA, August 11, 2008.