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421 West Main Street
Post Office Box 634
Frankfort, KY 40602-0634
15021 223-3477
15021 223-4124 Fax
www.stites.com

March 20, 2013

HAND DELIVERED

Jeff R. Derouen
Executive Director
Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, Kentucky 40602-0615

R Benjamin Crittenden
(502) 209-1216
(502) 223-4388 FAX
rcrittenden@stites.com

Re: *In the Matter of: Consideration of the Implementation of
Smart Grid and Smart Meter Technologies*
Administrative Case No. 2012-00428

Dear Mr. Derouen:

Please find enclosed and accept for filing the original and required copies of Kentucky Power Company's responses to the first set of data requests propounded by the Commission Staff and the Attorney General.

A copy of this letter and the Company's responses is being served on the individuals indicated on the attached service list.

Please do not hesitate to contact me if you have any questions.

Very truly yours,

STITES & HARBISON, PLLC


R. Benjamin Crittenden

Enclosure

ALLEN ANDERSON
PRESIDENT & CEO
SOUTH KENTUCKY RECC
925-929 NORTH MAIN STREET
PO BOX 910
SOMERSET KY 42502-0910

LONNIE E BELLAR
VP STATE REGULATION
KENTUCKY UTILITIES COMPANY
LOUISVILLE GAS & ELECTRIC CO
220 WEST MAIN STREET
PO BOX 32010
LOUISVILLE KY 40202

JOHN B BROWN
CHIEF FINANCIAL OFFICER
DELTA NATURAL GAS CO INC
3617 LEXINGTON ROAD
WINCHESTER KY 40391

ANTHONY S CAMPBELL
PRESIDENT & CEO
EAST KY POWER COOPERATIVE
4775 LEXINGTON ROAD
PO BOX 707
WINCHESTER KY 40392-0707

JUDY COOPER
MGR REGULATORY SERVICES
COLUMBIA GAS OF KENTUCKY
2001 MERCER ROAD
PO BOX 14241
LEXINGTON KY 40512-4241

ROCCO D'ASCENZO
SENIOR COUNSEL
DUKE ENERGY KENTUCKY INC
139 EAST 4TH ST ROUTE 25 AT 11
PO BOX 960
CINCINNATI OH 45201

PAUL G EMBES
PRESIDENT & CEO
CLARK ENERGY COOPERATIVE
2640 IRONWORKS ROAD
PO BOX 728
WINCHESTER KY 40302-0748

DAVID ESTEPP
PRESIDENT & GENERAL MANGER
BIG SANDY RECC
504 11TH STREET
PAINTSVILLE KY 41240-1422

CAROL ANN FRALEY
PRESIDENT & CEO
GRAYSON RECC
109 BAGBY PARK
GRAYSON KY 41143

TED HAMPTON
MANAGER
CUMBERLAND VALLEY ELECTRIC
HIGHWAY 25E
PO BOX 440
GRAY KY 40734

JENNIFER B HANS
KY ATTY GENERAL'S OFFICE
SUITE 200
1024 CAPITAL CENTER DRIVE
FRANKFORT KY 40601-8204

LARRY HICKS
PRESIDENT & CEO
SALT RIVER ELECTRIC
COOPERATIVE CORP
111 WEST BRASHEAR AVENUE
PO BOX 609
BARDSTOWN KY 40004

KERRY K HOWARD
CEO
LICKING VALLEY RECC
271 MAIN STREET
PO BOX 605
WEST LIBERY KY 41472

JAMES L JACOBUS
PRESIDENT & CEO
INTER-COUNTY ENERGY
COOPERATIVE CORPORATION
1009 HUSTONVILLE ROAD
PO BOX 87
DANVILLE KY 40423-0087

MICHAEL L KURTZ
BOEHM KURTZ & LOWRY
SUITE 1510
36 EAST SEVENTH STREET
CINCINNATI OH 45202

MARK MARTIN
VP RATES & REG AFFAIRS
ATMOS ENERGY CORPORATION
3275 HIGHLAND POINTE DRIVE
OWENSBORO KY 42303

DEBBIE J MARTIN
PRESIDENT & CEO
SHELBY ENERGY COOPERATIVE
620 OLD FINCHVILLE ROAD
SHELBYVILLE KY 40065

BURNS E MERCER
PRESIDENT & CEO
MEADE COUNTY RECC
PO BOX 489
BRANDENBURG KY 40108-0489

MICHAEL L MILLER
PRESIDENT & CEO
NOLIN RECC
411 RING ROAD
ELIZABETHTOWN KY 42701-6767

BARRY L MYERS
MANAGER
TAYLOR COUNTY RECC
625 WEST MAIN STREET
PO BOX 100
CAMPBELLSVILLE KY 42719

G KELLY NUCKOLS
PRESIDENT & CEO
JACKSON PURCHASE ENERGY
CORPORATION
2900 IRVIN COBB DRIVE
PO BOX 4030
PADUCAH KY 42002-4030

CHRISTOPHER S PERRY
PRESIDENT & CEO
FLEMING-MASON ENERGY
COOPERATIVE INC
1449 ELIZAVILLE ROAD
PO BOX 328
FLEMINGSBURG KY 41041

BILL PRATHER
PRESIDENT & CEO
FARMERS RECC
504 SOUTH BROADWAY
PO BOX 1298
GLASGOW KY 42141-1298

CAROL WRIGHT
PRESIDENT & CEO
JACKSON ENERGY COOPERATIVE
CORPORATION
115 JACKSON ENERGY LANE
MCKEE KY 40447

IRIS G SKIDMORE
SUITE 2
415 WEST MAIN STREET
FRANKFORT KY 40601

MARK STALLONS
PRESIDENT & CEO
OWEN ELECTRIC COOPERATIVE
8205 HIGHWAY 127 NORTH
PO BOX 400
OWENTON KY 40359

GREGORY STARHEIM
PRESIDENT & CEO
KENERGY CORP
PO BOX 18
HENDERSON KY 42419

MIKE WILLIAMS
PRESIDENT & CEO
BLUE GRASS ENERGY
COOPERATIVE CORP
1201 LEXINGTON ROAD
PO BOX 990
NICHOLASVILLE KY 40340-0990

BILLIE J RICHERT
CFO VP ACCOUNTING RATES
BIG RIVERS ELECTRIC
CORPORATION
201 THIRD STREET
HENDERSON KY 42419-0024

MARK DAVID GOSS
DAVID S SAMFORD
GOSS SAMFORD PLLC
SUITE B130
2365 HARRODSBURG ROAD
LEXINGTON KY 40504

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PUBLIC SERVICE
COMMISSION

COMMONWEALTH OF KENTUCKY
BEFORE THE
PUBLIC SERVICE COMMISSION OF KENTUCKY

IN THE MATTER OF

CONSIDERATION OF THE IMPLEMENTATION)	
OF SMART GRID AND SMART METER)	ADMINISTRATIVE
TECHNOLOGIES)	CASE NO. 2012-00428

**KENTUCKY POWER COMPANY RESPONSES TO COMMISSION STAFF'S
FIRST SET OF DATA REQUESTS**

March 20, 2013

VERIFICATION

The undersigned, David M. Roush being duly sworn, deposes and says he is the Director Regulated Pricing and Analysis, that he has personal knowledge of the matters set forth in the forgoing responses for which he is the identified witness and that the information contained therein is true and correct to the best of his information, knowledge, and belief



David M. Roush

STATE OF OHIO

)

) Case No. 2012-00428

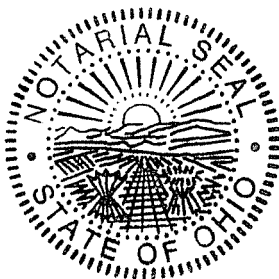
COUNTY OF FRANKLIN

)

Subscribed and sworn to before me, a Notary Public in and before said County and State, by David M. Roush, this the 12th day of March 2013.



Notary Public



ELLEN A. MCANINCH
NOTARY PUBLIC
STATE OF OHIO
Recorded in
Franklin County
My Comm. Exp. 5/11/16

My Commission Expires: May 11th, 2013

Kentucky Power Company

REQUEST

Refer to pages 5-7 of the Direct Testimony of Lila P. Munsey (“Munsey Testimony”) regarding primary Kentucky Power Smart Grid initiatives implemented and the focus on DA, VoIWAR Optimization (“WO”), and Supervisory Control and Data Acquisition (“SCADA”).

- a. Refer to page 6 at lines 9-15 regarding WO technology. The testimony indicates that 25 circuits are planned for WO technology by the end of 2013. Provide a more detailed discussion of WO technology and what it entails. Also, explain why implementation of this technology has not taken place prior to this time.
- b. Refer to the Munsey Testimony, page 6, lines 19-20. Kentucky Power states that “SCADA is needed to support DA and WO, as well as to provide other reliability benefits.” Describe the needed SCADA support involved.

RESPONSE

- a. Volt/Var Optimization (VVO) technology can achieve energy efficiency and demand reduction benefits for customers with no change required to their building structures, equipment or behavior. VVO is a method of remotely monitoring and managing the voltage on the electric grid. The equipment and associated software is deployed on the existing distribution grid network, providing for active and dynamic control of voltage on the distribution circuit. The voltage can be optimized for delivery to the customer in a narrower band that reduces energy and demand consumed. VVO is a new technology that is evolving as a result of the demand for energy efficiency and is being incorporated in new controls and equipment.
- b. The data communication to monitor and control DA and VVO equipment is accomplished through the SCADA system. The SCADA system also allows distribution operators to visualize system conditions, provide information to crews restoring service, and to remotely operate equipment for faster restoration.

WITNESS: Lila P. Munsey

Kentucky Power Company

REQUEST

Refer to the Munsey Testimony, pages 5 and 6, which identify three Smart Grid initiatives initiated to date.

- a. Describe the cost savings to date in terms of amount and type of savings.
- b. Describe how these initiatives have improved reliability on the Kentucky Power system

RESPONSE

- a. The focus of the DA and SCADA projects are to improve reliability. VVO has not been implemented, but is expected to provide a cost savings, however the savings will depend on the scale of deployment and the amount of energy consumed over the circuits equipped with VVO.
- b. The expected reliability improvements are discussed on page 7 of the direct testimony of Company witness Munsey.

WITNESS: Lila P. Munsey

Kentucky Power Company

REQUEST

Refer to the Munsey Testimony, pages 6-7, regarding AMR meters.

- a. Confirm that Kentucky Power's AMR meters are only capable of communicating one-way.
- b. If the answer to part a. is yes, state whether Kentucky Power's current AMR meters can be upgraded to have two-way communication functionality.
- c. If the answer to part b. is yes, has Kentucky Power considered or evaluated the feasibility of upgrading its existing AMR meters in order to be able to communicate two-way? Provide a summary of this consideration or evaluation.
- d. Provide the name(s) of the manufacturer(s) of the meters.
- e. State whether the energy data available to customers is real-time. If not real-time, include in the explanation how current the available data is.
- f. State whether Kentucky Power's AMR meters have the capability to provide any functions other than remote meter reading and making energy-usage information available to customers.
- g. State whether Kentucky Power's AMR meters are upgradable either through software updates or modular upgrades.
- h. Provide the total investment cost to Kentucky Power of switching to AMR meters. Also include, but identify separately, the total depreciation expense assigned to the replacement meters to date.

RESPONSE

- a. Yes, the Company's AMR meters are only capable of communicating one-way, with the exception of approximately 55 meters installed under an experimental Residential DSM program.

- b. The Company currently has Single Phase (Single ERT) and Complex (3 ERT) AMR meters. Single ERT meters can not be upgraded, 3 ERT meters could be upgraded but it would not be practical or economical to do so. An upgrade would require a hardware upgrade which would need to be completed in a lab environment.
- c. Because of the impracticality of doing so, the Company has no plans to upgrade the meters to provide two-way communication.
- d. General Electric and Itron
- e. Energy data is available in real time at the meter; all billing values/registers are displayed.
- f. Tamper and outage information is included in the meter data package collected each month.
- g. See response to sub-part (b.).
- h. The transition to AMR metering began in 2005 and was completed in 2010. The total loaded capital cost of this conversion was approximately \$15.4 million.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

Refer to the Munsey Testimony, page 7, lines 5-6. Does Kentucky Power have the capability to track how many of its customers access their usage data through Kentucky Power's website? If so, provide on a monthly basis the average number of customers who access their usage data through Kentucky Power's website.

RESPONSE

On average in 2012, there were over 1,062 visits to the Your Energy Usage page on the Kentucky Power website (www.kentuckypower.com) on a monthly basis.

WITNESS: Lila P. Munsey

Kentucky Power Company

REQUEST

- a. Refer to the Munsey Testimony, page 7, lines 13-20, concerning the DA installation on certain of Kentucky Power's distribution circuits and the benefits derived therefrom.
- b. Provide the year in which the DA installation was completed on the five circuits in the Ashland District, the two circuits in the Hazard District, and the two circuits in the Pikeville District.
- c. For each of the nine circuits mentioned in part a., provide the SAIFI and the System Average Interruption Duration Index ("SAIDI") data for each of the five years prior to the DA installation and for each of the years after the DA installation.
- d. Provide the basis for the statement that approximately more than five million customer-outage minutes have been avoided since the DA installation began.

When does Kentucky Power anticipate the installation of DA to be completed for the 22 circuits referenced on page 6 of the Munsey Testimony?

RESPONSE

- a. See the following table:

Kentucky Power DA Installations 3-11-13

Station-Circuit	District	Year Completed
Cannonsburg-Cannonsburg	Ashland	2009
Cannonsburg-Rt 3	Ashland	2009
Princess-Meade	Ashland	2009
Busseville-Louisa	Ashland	2010
Busseville-Wallbridge	Ashland	2010
Chavies-Chavies	Hazard	Not in Service Yet
Haddix-Canoe	Hazard	Not in Service Yet
Dewey-Inez	Pikeville	2008
Lovely-Lovely	Pikeville	2008

- b. Please see Attachment 1 to this response.
- c. Operations of the DA schemes are monitored in the Distribution Dispatch Center. The daily report from the Center highlights the operations of DA for the prior 24 hour period. This info is reviewed and a determination of the number of customers automatically switched by DA to another source is made. This number of customers is multiplied by the duration (in minutes) of the outage experienced by the customers that could not be switched to determine the number of customer minutes saved by the DA operation. This information is kept in a spreadsheet which calculates the savings experienced by each of the DA schemes and the total saved by all schemes in Kentucky Power territory.
- d. Kentucky Power anticipates that all DA installations will be completed in late 2013 or early 2014. It should be noted that on page 6, line 7 of the direct testimony of Company witness Munsey, the number of proposed circuits for Hazard were incorrectly listed as 6, instead of 3, which made the total incorrectly listed as 22, instead of 19. A table of the DA circuits, both currently installed and proposed, by district, is located in the response to Staff 1-100.

WITNESS: Lila P Munsey

**Annual Reliability Performance of KyPCo's DA-CR Circuits
 Including and excluding major events**

CktID	Station	Circuit	Year	No Exclusions		Excluding MEDs ¹	
				SAIDI	SAIFI	SAIDI	SAIFI
3007903	Busseyville	Louisa	2004	961.9	2.558	586.7	2.186
3007903	Busseyville	Louisa	2005	877.1	3.048	877.1	3.048
3007903	Busseyville	Louisa	2006	1,435.5	3.442	1,435.5	3.442
3007903	Busseyville	Louisa	2007	380.0	1.947	380.0	1.947
3007903	Busseyville	Louisa	2008	1,472.3	8.422	1,472.3	8.422
3007903	Busseyville	Louisa	2009	3,391.9	3.606	196.9	2.449
3007903	Busseyville	Louisa	2010	146.5	0.514	107.1	0.430
3007903	Busseyville	Louisa	2011	2,139.2	2.287	247.1	1.365
3007903	Busseyville	Louisa	2012	972.5	3.489	464.3	3.324
3007906	Busseyville	Walbridge	2008	8.4	0.054	8.4	0.054
3007906	Busseyville	Walbridge	2009	7,276.9	3.457	510.2	1.979
3007906	Busseyville	Walbridge	2010	878.5	5.193	841.7	5.169
3007906	Busseyville	Walbridge	2011	3,733.3	8.012	1,610.5	7.042
3007906	Busseyville	Walbridge	2012	4,562.4	5.094	649.5	3.247
3008701	Cannonsburg	Cannonsburg	2004	482.2	2.746	384.0	2.659
3008701	Cannonsburg	Cannonsburg	2005	147.2	0.670	147.2	0.670
3008701	Cannonsburg	Cannonsburg	2006	295.1	2.197	295.0	2.196
3008701	Cannonsburg	Cannonsburg	2007	618.8	2.306	184.5	1.961
3008701	Cannonsburg	Cannonsburg	2008	945.0	4.776	944.3	4.768
3008701	Cannonsburg	Cannonsburg	2009	2,188.2	2.643	250.8	2.020
3008701	Cannonsburg	Cannonsburg	2010	239.2	1.173	236.9	1.144
3008701	Cannonsburg	Cannonsburg	2011	572.4	3.568	352.7	3.290
3008701	Cannonsburg	Cannonsburg	2012	5,013.7	4.225	366.5	1.550
3008702	Cannonsburg	Route 3	2004	837.1	2.727	449.7	2.462
3008702	Cannonsburg	Route 3	2005	443.4	2.272	443.4	2.272
3008702	Cannonsburg	Route 3	2006	181.6	1.123	181.6	1.123
3008702	Cannonsburg	Route 3	2007	722.5	2.146	365.9	1.978
3008702	Cannonsburg	Route 3	2008	874.4	4.777	874.4	4.777
3008702	Cannonsburg	Route 3	2009	3,502.1	4.452	431.2	2.386
3008702	Cannonsburg	Route 3	2010	462.0	2.387	453.9	2.363
3008702	Cannonsburg	Route 3	2011	1,111.9	3.726	491.5	3.242
3008702	Cannonsburg	Route 3	2012	2,350.5	3.054	356.9	1.743
3117601	Princess	Meade Station	2004	220.9	1.208	85.3	0.738
3117601	Princess	Meade Station	2005	288.0	3.541	288.0	3.541
3117601	Princess	Meade Station	2006	181.7	1.015	181.7	1.015
3117601	Princess	Meade Station	2007	1,327.4	2.467	401.7	1.379
3117601	Princess	Meade Station	2008	556.6	5.455	556.6	5.455
3117601	Princess	Meade Station	2009	412.5	1.194	71.0	0.994
3117601	Princess	Meade Station	2010	172.7	0.830	164.1	0.799
3117601	Princess	Meade Station	2011	207.2	1.443	192.0	1.350
3117601	Princess	Meade Station	2012	5,766.8	1.765	133.7	0.675
3202201	Lovely	Lovely	2004	942.6	2.691	806.7	2.581
3202201	Lovely	Lovely	2005	779.8	6.087	779.8	6.087
3202201	Lovely	Lovely	2006	165.1	1.868	165.1	1.868
3202201	Lovely	Lovely	2007	937.7	3.547	427.8	2.925
3202201	Lovely	Lovely	2008	358.8	2.267	334.1	2.200

CktID	Station	Circuit	Year	No Exclusions		Excluding MEDs ¹	
				SAIDI	SAIFI	SAIDI	SAIFI
3202201	Lovely	Lovely	2009	10,935.1	7.343	779.1	3.977
3202201	Lovely	Lovely	2010	486.1	1.379	157.0	1.115
3202201	Lovely	Lovely	2011	1,951.9	6.078	919.8	5.335
3202201	Lovely	Lovely	2012	5,781.4	9.208	636.5	6.288
3301101	Chavies	Chavies	2004	2,185.4	2.245	559.7	1.472
3301101	Chavies	Chavies	2005	524.4	2.869	524.4	2.869
3301101	Chavies	Chavies	2006	527.8	2.088	424.0	1.974
3301101	Chavies	Chavies	2007	543.8	2.104	529.2	2.076
3301101	Chavies	Chavies	2008	474.5	1.639	474.5	1.639
3301101	Chavies	Chavies	2009	7,009.8	4.058	1,430.3	2.611
3301101	Chavies	Chavies	2010	1,411.9	4.697	1,411.9	4.697
3301101	Chavies	Chavies	2011	1,878.2	5.484	1,561.9	4.876
3301101	Chavies	Chavies	2012	660.1	2.043	498.3	1.838
3310502	Haddix	Canoe	2004	2,968.7	7.257	2,060.5	5.898
3310502	Haddix	Canoe	2005	2,049.0	8.491	2,049.0	8.491
3310502	Haddix	Canoe	2006	1,961.3	9.647	1,959.3	9.645
3310502	Haddix	Canoe	2007	877.1	5.659	631.7	4.921
3310502	Haddix	Canoe	2008	1,551.5	5.594	1,173.7	4.858
3310502	Haddix	Canoe	2009	8,315.7	5.942	625.4	2.537
3310502	Haddix	Canoe	2010	955.5	3.070	879.5	2.942
3310502	Haddix	Canoe	2011	1,629.0	9.595	1,611.4	9.581
3310502	Haddix	Canoe	2012	2,105.3	4.062	836.3	2.816
3411401	Dewey	Inez	2004	1,842.4	8.057	591.1	6.502
3411401	Dewey	Inez	2005	1,015.5	7.517	1,015.5	7.517
3411401	Dewey	Inez	2006	1,001.4	5.366	1,001.4	5.366
3411401	Dewey	Inez	2007	1,700.7	9.372	1,505.2	9.001
3411401	Dewey	Inez	2008	561.3	5.935	492.9	5.811
3411401	Dewey	Inez	2009	5,560.0	9.762	723.6	5.520
3411401	Dewey	Inez	2010	988.8	3.907	797.9	3.521
3411401	Dewey	Inez	2011	1,014.0	5.414	682.5	4.398
3411401	Dewey	Inez	2012	9,707.6	7.203	959.1	3.412

¹ MEDs - Major Event Days

Kentucky Power Company

REQUEST

Refer to the Munsey Testimony, page 10, regarding the Green Button initiative. Provide a more detailed description of the Green Button initiative and how Kentucky Power will participate.

RESPONSE

On March 22, 2012, AEP announced that it will participate in the Green Button initiative, a joint effort among utilities, technology companies, and the Federal Government to help customers save energy and money to spur the development of new energy usage applications and tools. The Green Button initiative provides customers with a simple, standardized way to download their energy usage information from their utility's website. Green Button is a White House - inspired, industry-led initiative. The White House press release can be viewed at <http://www.whitehouse.gov/administration/eop/ostp/pressroom/03222012>.

Kentucky Power's residential customers currently have access to the Green Button download tool through its website, www.kentuckypower.com. The Green Button download allows residential customers to retrieve up to 36 months of their monthly data in a standardized format. The information currently provided includes date, monthly usage (kWh), and price.

Planning is underway to extend the current Green Button data offering to commercial customers for Kentucky Power in 2013. An additional enhancement to provide interval data from smart meters and other interval data sources is also being planned, but a delivery date for this phase has not yet been determined.

WITNESS: Lila P. Munsey

Kentucky Power Company

REQUEST

Refer to the Munsey Testimony, page 14. Provide the status and findings of Kentucky Power's testing of radio-frequency transceivers and radio repeaters to determine reliability of communications process to remote devices during storm events.

RESPONSE

Prior to their installations, tests were completed to ensure that the radios could communicate with adjacent radios at the proposed location. These communication devices contain batteries to allow the communications needed during outage events to switch the appropriate customers to the alternate source. Of course in a major storm event, the alternate source may not be energized either so no transfer would take place. It is also possible that one or more of the units could be damaged during storm events which may interrupt the communications path and prevent transfer of customers. This did occur during the tornado in 2012 which affected a couple of radios on the Dewey-Inez circuit when the poles they were mounted on were destroyed.

During normal day-to-day operations, alarms are sent to the Dispatch Center when abnormal equipment status has disrupted communications and disabled operation for a section of the DA scheme. This enables the Company to quickly make repairs and get the equipment back in service so the DA scheme will be fully operational when called upon to switch customers to other sources during outage situations.

WITNESS: Lila P. Munsey

Kentucky Power Company

REQUEST

Refer to the Munsey Testimony, page 15, lines 10-23, regarding Kentucky Power's participation in Smart Grid Pilots. For each American Electric Power operating company, provide a list and description of each Smart Grid pilot project being conducted. Identify the Smart Grid pilots in which Kentucky Power participates.

RESPONSE

According to AEP personnel, the following Smart Grid pilot projects are being conducted by the other operating companies:

AEP OH (American Electric Power Ohio)

- AMI (Advanced Metering Infrastructure) Basic – 110,000 AMI meter installation. Additional 22,000 plus meters to fill gaps of coverage (not part of project). Customer Web Portal in production. Energy Consumption Reports deployed. Customer Outreach / Education is on-going.
- Consumer Programs – 2 Tier TOD (Time-of-Day), Direct Load Control, Critical Peak Pricing, and Real Time Pricing – Double Auction programs with enabling HAN (Home Area Network) technology and in-home devices.
- Distribution Automation (DA) – Installation on 70 circuits. GE VVO (Volt/VAR Optimization) installations on 11 circuits - 6 circuits with Adaptivolt. Eleven Plug-in electric vehicles provided with Level 1 and Level 2 chargers.
- Cyber Security Operations Center – The physical construction is completed. Beta software from Lockheed Martin is in production.

AEP TX (American Electric Power Texas)

- AMI Basic – 1,011,000 AMI meter installation are planned.
- Market Messaging and customer communication is provided through the SMT (Smart Meter Texas) common web portal. HAN and enabling in-home devices will be provisioned through SMT. Customer Outreach and Education is on-going. The Mobile Display Unit has been scheduled for various community events.

PSO (Public Service Company of Oklahoma)

- AMI Basic – 12,700 residential and 700 commercial/industrial meter installations are complete. Automated service order capabilities will be expanded to include credit and collections orders. The Customer Web Portal will be implemented, and PSOKLAHOMA.COM will be enhanced for consumer information. Customer Outreach / Education is on-going.
- Consumer Programs - Two tier TOD (existing), Critical Peak Pricing, and a Direct Load Control via a Programmable Communicating Thermostat tariffs will be pursued with enabling HAN and in-home devices.
- Distribution Automation – Eleven DA and VVO installations began early 2011 and were completed summer 2012.

I&M (Indiana Michigan Power Co)

- AMI Basic - 9,580 AMI meters were installed in the pilot area. Since September 30, 2010, an additional 270 AMI meters have been installed in the South Bend and Ft Wayne districts.
- Consumer Programs – The SMART Shift TOD program for residential and small commercial customers currently has over 150 participating customers. The SMART Cooling Direct Load Control program currently has 119 participating customers. The SMART Cooling program remains available to current participates; however, no new equipment is being installed to expand this program. An alternative peak reduction program was approved in 2011, and is available to Indiana residential customers not currently participating in the SMART Cooling program since April 2012. A Web Portal is available for all AMI metered customers. I&M currently uses the Web Portal designed provided by AEP.
- Distribution Automation – Eight circuits in the South Bend district have been equipped with automated controls and a central grid management system. Nine VVO circuit installations are near complete.

In KPCo, DA and VVO are being pursued.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

Refer to the Direct Testimony of David M. Roush (“Roush Testimony”), page 6, lines 12-14, which state, “While time based pricing or load management provisions are available to most Kentucky Power customers, less than one-half of one percent of the Company’s customers have elected to take service under one of these provisions.”

- a. Provide the percentage of Kentucky Power’s customers that are able to take service under time-based pricing or load management provisions.
- b. Describe how these options have been communicated to Kentucky Power’s customers, including the frequency of such communications.
- c. Compare and contrast the acceptance of time-based pricing and load management provisions by Kentucky Power customers with that of other AEP subsidiary utilities.

RESPONSE

- a. As shown on DMR Exhibit 1 of the Direct Testimony of David M.Roush, virtually all of Kentucky Power's customers have access to time-based pricing or load management provisions. Residential customers have the opportunity to take service under Tariffs RS-TOD, RS-TOD2 and RS-LM-TOD and the load management water heating provision of Tariff RS. Commercial and industrial customers have the opportunity to take service under tariffs SGS-TOD, MGS-TOD and LGS-TOD as well as several load management time-of-day provisions. The Company's Tariffs QP and CIP-TOD, intended for larger commercial and industrial customers, contain time-of-use billing demand provisions.

- b. These options are communicated to KPCo's customers through KPCo's published tariffs provided on the Company website. Where computer access is not available, questions about the tariffs are answered through the Call Center and customer service representatives. Additionally, during each open house held at each of the three district offices in 2012, a Company representative was available to discuss the tariffs with customers in attendance.
- c. As discussed by Company witness Roush in his direct testimony in this proceeding at page 7, a very small percentage of KPCo's customers have elected to take service under one of the Company's available time-based pricing or load management provisions. Other AEP-East subsidiary utilities offer similar pricing options to their customers with similar modest customer-acceptance levels. It is apparent that most customers have decided that the economic rewards associated with participating in the various time-based programs do not outweigh the inconvenience or cost associated with changing their usage characteristics.

WITNESS: David M Roush

Kentucky Power Company

REQUEST

With regard to calendar years 2007 through 2012, identify and discuss what Smart Grid and/or Smart Meter initiatives the utility implemented. The discussion should include but not be limited to the reasons why each initiative qualifies as a Smart Grid and/or Smart Metering initiative; the date of installation; the total cost of installation; and any benefits resulting from the initiatives, quantifiable or otherwise: received by both the utility and the customers.

RESPONSE

The Company does not consider AMR meters to be Smart Grid technology, so there is no discussion provided.

During 2007-2012, the Company installed 4 Distribution Automation (DA) Projects at a total loaded capital cost of \$2.4 million. These 4 installations affect a total of 11,716 customers on 9 different distribution circuits. Benefits from these installations include reduced SAIDI and SAIFI on these circuits, faster identification of fault locations, and the ability to remotely operate a number of line devices. Since these systems have been in operation, the minutes of outage time the customers would have experienced if the systems had not been in place was reduced by an estimated 5.4 million minutes.

DA is considered a Smart Grid technology because it applies new technology on distribution systems to improve reliability and energy efficiency. This technology is further defined in the Joint Case Participant Response to Case No. 2008-00408 that was filed with the Commission on March 25, 2011.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

With regard to calendar years 2013 through 2018, identify and discuss what additional Smart Grid and/or Smart Meter initiatives the utility has forecasted to be implemented. The discussion should include but not be limited to why each forecasted initiative qualifies as a Smart Grid and/or Smart Metering initiative; the forecasted date of installation; the forecasted total cost of installation; and any forecasted benefits to result from the initiatives, quantifiable or otherwise, received by both the utility and the customers.

RESPONSE

The Company is presently working on the installation of a Volt/VAR Optimization (VVO) system on 25 distribution circuits (approximately 12% of the distribution circuits in Kentucky Power's service area). The system is designed to control the voltages in a narrower bandwidth than is presently done and will slightly reduce the overall voltages delivered to the Company's customers on these circuits. The net effect of these changes to the voltage profile is an estimated reduction in demand of approximately 5 MW and an estimated reduction in energy usage of approximately 24,000 MWh. This project is planned for completion in 2013 at a projected cost of approximately \$7,000,000.

The Company is also working on the installation of 3 additional Distribution Automation (DA) projects which will affect approximately 16,000 customers on 19 distribution circuits. It should be noted that on page 6, line 7 of the direct testimony of Company witness Munsey, the number of proposed circuits for Hazard were incorrectly listed as 6, instead of 3, which made the total incorrectly listed as 22, instead of 19. A table of the DA circuits, both currently installed and proposed, by district, is located in the response to Staff 1-100. These DA projects should be completed by early 2014 at a projected cost of approximately \$4,000,000. These projects will reduce the number of outages and length of outages experienced by the customers served from these circuits.

DA and VVO are considered Smart Grid because they apply new technology on distribution systems to improve reliability and energy efficiency. These technologies are further defined in the Joint Case Participant Response to Case No. 2008-00408 that was filed with the Commission on March 25, 2011.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

With regard to DA Smart Grid Initiatives provide the following:

- a. the number of DA systems installed as of December 31, 2012, along with the associated benefits realized.
- b. the number of DA systems to be installed in the next five years.
- c. the total number of DA systems to be installed when the DA system is completely deployed.

RESPONSE

- a. & b. As of the end of 2012, there were four DA systems installed on the Kentucky Power distribution system. Three additional DA systems will be installed in 2013 or early 2014. Please see page 6 of the direct testimony of Company witness Munsey.
- c. There will be a total of seven DA systems installed on the Kentucky Power distribution system by the end of 2013 or early 2014. These seven systems will cover all or parts of 28 distribution circuits. No future DA installations have been planned or funded at this time.

DISTRICT	CURRENT DA CIRCUITS	PROPOSED DA CIRCUITS	TOTAL CIRCUITS
ASHLAND	5	12	17
HAZARD	2	3*	5
PIKEVILLE	2	4	6
TOTAL	9	19	28

* It should be noted that on page 6, line 7 of the direct testimony of Company witness Munsey, the proposed circuits for Hazard were incorrectly listed as 6, instead of 3.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

With regard to Volt/VAR Optimization, provide the following:

- a. the number of Volt/VAR Optimization systems installed as of December 31 , 2012, along with the associated benefits realized.
- b. the number of Volt/VAR Optimization systems to be installed in the next five years, along with the forecasted in-service date.
- c. the total number of Volt/VAR Optimization systems to be installed when the Volt/VAR Optimization system is completely deployed.

RESPONSE

- a. & b. There were no Volt/VAR systems installed as of the end of 2012. Six Volt/VAR systems covering 25 distribution circuits are planned for installation in 2013. Please see the direct testimony of Company witness Munsey at page 6.
- c. The initial installation of six Volt/VAR systems will be completed in 2013 on 25 circuits. Plans to install Volt/VAR systems on additional circuits have not been finalized or funded at the present time.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

With regard to Supervisory Control and Data Acquisition ("SCADA) Smart Grid Initiatives, provide the following:

- a. the number of SCADA systems installed as of December 31 , 201 2, along with the associated benefits realized.
- b. the number of SCADA systems to be installed in the next fiveyears, along with the forecasted in service date.
- c. the total number of SCADA systems to be installed when the SCADA system is completely deployed.

RESPONSE

- a. Approximately 31 distribution and 26 transmission stations have been equipped with SCADA systems as of December 31, 2012. Please see the direct testimony of Company witness Munsey at page 6.
- b. The total number of stations that will receive SCADA in the next five years has not been determined. However, with VVO, DA, and one major station project underway, there will be nine stations with new SCADA systems installed by June 2014.
- c. Kentucky Power Company has 82 distribution and 29 transmission stations. Presently, SCADA has been deployed in only 57 of these stations. The ultimate goal is to install SCADA in every station (currently 111 stations), but a deployment schedule has not been developed.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

As it relates to Dynamic Pricing (where rates are established hourly throughout the day) Tariffs or TOU Tariffs, provide the following:

- a. the number of customers the utility has or had on these types of tariffs, identified separately by specific tariff.
- b. whether these customers shifted load from high-price times periods to lower-priced time periods.
- c. whether these customers consumed more, less or the same number of kWh.
- d. whether the utility reached any findings or conclusions based on its experience with customers on Dynamic Pricing and/or TOU Tariffs.

RESPONSE

- a. Please see Attachment 1 to the response to Staff 1-103(a) for the average number of participants during the period December 2011 through November 2012.
- b. The Company has no specific evidence that customers served under its time-of-day tariffs shifted load from higher-priced periods to lower-priced periods. However, customers served under storage/load-management water heating and load management time-of-day tariffs and provisions have installed equipment that consumes electrical energy during off-peak periods, thus shifting usage from on-peak periods.
- c. The Company has no specific evidence of changes in customer consumption.
- d. It is apparent that for a number of reasons, at the current price level of the Company's rates, most customers have decided that the economic rewards associated with participating in the various time-based programs do not outweigh the inconvenience or cost associated with changing their usage characteristics.

WITNESS: David M Roush

Kentucky Power Company
Time-based Metering/Demand Response Tariff Provisions

<u>Tariff/Rider</u>	<u>Description of Service/Provision</u>	<u>Currently in Effect</u>	<u>Average # of Customers Dec 2011 - Nov 2012</u>
<u>Residential</u>			
Tariff RS	Storage water heating	X*	22
	Load management water heating	X	114
Tariff RS-LM-TOD	Load management time-of-day	X	179
Tariff RS-TOD	Time-of-day	X	3
Tariff RS-TOD 2	Time-of-day	X	0
RCLM**	Load management pilot	X	52
<u>Commercial & Industrial</u>			
Tariff SGS	Load management time-of-day	X	1
Tariff SGS-TOD	Time-of-day	X	1
Tariff MGS (formerly Tariff G.S.)	Recreational lighting	X	74
	Load management time-of-day	X	48
Tariff MGS-TOD	Time-of-day	X	79
Tariff LGS	Load management time-of-day	X	9
Tariff LGS-TOD	Time-of-day	X	0
Tariff QP	Off-peak excess billing demand	X	83
Tariff CIP-TOD	Time-of-day billing demand	X	15
Tariff IRP	Interruptible		0
Tariff CS-IRP	Interruptible	X	1
Rider TEC	Temporary emergency curtailable		0
Rider ECS - C&E	Emergency curtailable	X	0
Rider EPCS	Price curtailable	X	0
Tariff RTP	Real-Time Pricing	X	4

* Frozen provision available only to currently served customers

** Also available to small commercial customers

Kentucky Power Company

REQUEST

Describe precautions taken and/or standards developed by the utility to address concerns regarding cybersecurity and privacy issues.

RESPONSE

AEP has developed and implemented an Enterprise Security Management Program, which includes Information Security Policies, Standards, Guidelines and procedures that provide explicit guidance on how systems are to be configured and managed to ensure the confidentiality, integrity and availability on AEP's information assets as well as protection of consumer information.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

Provide a discussion and details of progress made regarding the concern raised by the utilities as it relates to the interoperability standards for Smart Grid equipment and software.

RESPONSE

The use of a common protocol, DNP3, for SCADA, Distribution Automation (DA) equipment, and back office software being developed with the Common Information Model (CIM) is allowing interoperability on distribution systems. Utilities and vendors are also working together to move from proprietary designs to designs which interoperate with other vendors' equipment. An example is the use of a Cooper recloser as part of a DA scheme with S&C's intelligent control scheme.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

Provide a discussion concerning how the costs (investment and operating and maintenance costs) associated with the installation of Smart Grid facilities should be recovered from the ratepayers.

RESPONSE

The Company recommends that the costs associated with the installation of Smart Grid facilities should be concurrently recovered.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

State whether the utility would favor a requirement that it report to the Commission so that the Commission is aware of the jurisdictional Smart Grid and/or Smart Meter activities within the Commonwealth. As a specific example, the requirement could order that a report be provided each September regarding the Smart Grid and/or Smart Meter activities the utility is planning to perform during the upcoming calendar year, followed by an April report of the Smart Grid and/or Smart Meter activities the utility completed the preceding calendar year.

RESPONSE

Given the limited nature of the Company's deployment of Smart Grid technologies, the Company does not believe the report would be beneficial at this time.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

State whether the utility believes KRS 278.285 is an appropriate approach to recovering the costs (investment and operation and maintenance) associated with Smart Grid investments.

RESPONSE

KRS 278.285 is an appropriate mechanism for rate recovery of certain Smart Grid investments. For instance, Volt/VAR Optimization (VVO) can provide energy consumption savings and reduce peak demand, so it fits well within the framework and intent of this statute. See also the Company's response to Staff 1-109.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

State whether the utility believes a tracking mechanism as described beginning on page 3 of the Wathen Testimony on behalf of Duke Kentucky is an appropriate approach to recovering the costs associated with Smart Grid investments.

RESPONSE

The Company believes that such a tracking mechanism, as described by Duke Energy Kentucky witness Wathen, could be an appropriate approach for recovery of costs associated with Smart Grid investments.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

State whether the utility has commissioned a thorough DSM and Energy Efficiency (“DSM-EE”) potential study for its service territory. If the response is yes, provide the results of the study. If no, explain why not.

RESPONSE

The Company has not commissioned a DSM and Energy Efficiency (“DSM-EE”) potential study for its service territory. Based on the Company's experience with DSM-EE programs, the Company has worked with a collaborative group of interested parties to select applicable programs that have demonstrated the desired results.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

Refer to the Munsey Testimony on behalf of Kentucky Power, page 10, lines 11-19 regarding the Green Button initiative. Describe the extent of your utility's participation in this industry-led effort.

RESPONSE

Please see the Company's response to Staff 1-73.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

Refer to the Roush Testimony on behalf of Kentucky Power, DMR Exhibit 1. Provide a similar exhibit containing a list of time-differentiated rates available to your customers.

RESPONSE

Please see DMR Exhibit 1 as previously provided.

WITNESS: David Roush

Kentucky Power Company

REQUEST

Provide a description of the type of meters (mechanical, electromechanical, AMR [one-way communication], AMI [two-way communication]) currently used by the utility. Include in the description the reasons the current meters were chosen and any plans to move to a different type of metering configuration.

RESPONSE

Kentucky Power primarily uses AMR meters for collecting meter data. This one-way technology has proven to be efficient by enabling a mobile collector to pick up readings by driving through areas instead of having to walk up to each meter. The Company also uses cellular based meters where interval data is required either for billing or load research purposes as the AMR meters do not support this functionality.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

If either AMR or AMI metering is in use, state whether the utility has received any customer complaints concerning those meters. If the response is yes, provide the following:

- a. the number of complaints, separated by gas and electric if a combination utility, along with the total number of customers served.
- b. how the complaints were addressed by the utility.
- c. a detailed explanation as to whether customers should have the ability to opt out of using either AMR or AMI metering.
- d. If customers were to be given the opportunity to opt out of using either AMR or AMI metering, provide:
 - i. an explanation as to whether the utility should establish a monthly manual metering reading tariff or charge applied to the opt-out customers to recover the costs associated with manually reading the non-AMR or -AMI accounts.
 - ii. an explanation as to whether these opt-out customers could still receive benefit from the utility using either AMR or AMI metering.
 - iii. an explanation addressing the point at which opt-out customers, either in terms of number of customers or a percent of customers, affect the benefits of the utility using either the AMR or AMI metering.

RESPONSE

- a. Since 2010 when the AMR meters were installed, Kentucky Power has employed AMR metering, and has received no complaints concerning the use of AMR meters. The Company provides only electric service and has approximately 173,000 customers.
- b. Not applicable. See the response to sub-part (a.)

- c. The Company does not agree that customers should be allowed to opt-out of smart meter deployment. This issue is discussed on page 12 of the direct testimony of Company witness Munsey. The witness states that "The Company would agree that mandatory TOU rates would not be in the best interest of all customers, but there could be value in providing uniform equipment installations, whereby customers will always have the option of TOU rates without the need for further equipment upgrades.". Uniform equipment installations would require all customers to use the same type of meter.

- d.
 - i. The Company repeats its opposition to customer opt-out of Company-selected meters. If customers were nevertheless permitted to opt-out of the AMR or AMI meters employed by the utility a monthly charge should be imposed to recover all costs associated with the opt-out. The charges must include not only the cost of manually reading the meter on a monthly basis, but also attendant costs of modifying the Company's accounting and billing system, as well as the cost of manual data entry. It is not reasonable to expect the overwhelming majority of the Company's customers to bear any of the costs associated with a decision by a few to opt-out.
 - ii. Neighboring AMI meters can provide customers who have opted-out information concerning outages, restoration, and electrical equipment diagnostics.
 - iii. For each customer that opts-out, a manual method of meter reading will have to be undertaken, thereby increasing the cost of collecting the usage information and diminishing the benefits to the utility.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

In testimony, each utility cited cybersecurity as an area of concern related to the implementation of Smart Grid technologies. Provide and describe your company's policy regarding cybersecurity or the standard your company has adopted governing cybersecurity. If your company has not adopted any policy or standard, identify and describe any industry or nationally recognized standards or guidelines that you may be aware of that the Commission should consider relating to cybersecurity issues and concerns.

RESPONSE

AEP has developed and implemented an Enterprise Security Management Program, which includes Information Security Policies, Standards, Guidelines and procedures that provide explicit guidance on how systems are to be configured and managed to ensure the confidentiality, integrity and availability on AEP's information assets as well as protection of consumer information.

WITNESS: Lila P Munsey

Kentucky Power Company

REQUEST

If not previously addressed, provide a detailed discussion of whether deployment of smart meters should allow for an opt-out provision.

RESPONSE

Please see the response to Staff 1-114(c.).

WITNESS: Lila P Munsey