



# Meade County RECC

P.O. Box 489  
Brandenburg, KY 40108-0489  
(270) 422-2162  
Fax: (270) 422-4705

February 21, 2007

**RECEIVED**

FEB 22 2007

PUBLIC SERVICE  
COMMISSION

BETH O'DONNELL  
KENTUCKY PUBLIC SERVICE COMMISSION  
211 SOWER BLVD  
FRANKFORT KY 40602

Dear Ms. O'Donnell:

Enclosed please find Meade County RECC's reply to the commissions second data request in case #2006-00494.

Very truly yours,

Burns E. Mercer  
President/CEO

**SERVICE LIST FOR ADMINISTRATIVE CASE NO. 2006-00494**

**(Copy of Appendix A responses for abovementioned case mailed by regular U.S. Mail to all listed parties.)**

Allen Anderson  
CEO  
South Kentucky RECC  
P. O. Box 910  
Somerset, KY 42502-0910

Mark A. Bailey  
President/CEO  
Kenergy Corp.  
P. O. Box 1389  
Owensboro, KY 42302

Kent Blake  
Director – Rates & Regulatory  
Kentucky Utilities Company  
P. O. Box 32010  
Louisville, KY 40232-2010

Kent Blake  
Director–State Regulation & Rates  
Kentucky Utilities Company  
P. O. Box 32010  
Louisville, KY 40232-2010

Debbie Martin  
President/CEO  
Shelby Energy Cooperative, Inc.  
620 Old Finchville Road  
Shelbyville, KY 40065

Daniel W. Brewer  
President/CEO  
Blue Grass Energy Cooperative  
P. O. Box 990  
Nicholasville, KY 40340-0990

Jackie B. Browning  
President/CEO  
Farmers RECC  
P. O. Box 1298  
Glasgow, KY 42141-1298

Sharon K. Carson  
Finance & Accounting Manager  
Jackson Energy Cooperative  
115 Jackson Energy Lane  
McKee, KY 40447

Duke Energy Kentucky, Inc.  
  
139 East Fourth Street  
Cincinnati, OH 45202

Paul G. Embs  
President/CEO  
Clark Energy Cooperative, Inc.  
P. O. Box 748  
Winchester, KY 40392-0748

Carol H. Fraley  
President/CEO  
Grayson RECC  
109 Bagby Park  
Grayson, KY 41143

Ted Hampton  
Manager  
Cumberland Valley Electric, Inc.  
Hwy. 25E, P. O. Box 440  
Gray, KY 40734

Larry Hicks  
President/CEO  
Salt River Electric Cooperative  
111 West Brashear Avenue  
Bardstown, KY 40004

Kerry K. Howard  
General Manager/CEO  
Licking Valley RECC  
P. O. Box 605  
West Liberty, KY 41472

James L. Jacobus  
President/CEO  
Inter-County Energy Cooperative  
P. O. Box 87  
Danville, KY 40423-0087

Robert Hood  
President/CEO  
Owen Electric Cooperative, Inc.  
P. O. Box 400  
Owenton, KY 40359

Burns E. Mercer  
President/CEO  
Meade County RECC  
P. O. Box 489  
Brandenburg, KY 40108-0489

Michael L. Miller  
President/CEO  
Nolin RECC  
411 Ring Road  
Elizabethtown, KY 42701-6767

Timothy C. Mosher  
American Electric Power  
P. O. Box 5190  
Frankfort, KY 40602

Barry L. Myers  
Manager  
Taylor County RECC  
P. O. Box 100  
Campbellsville, KY 42719

G. Kelly Nuckols  
President/CEO  
Jackson Purchase Energy  
P. O. Box 4030  
Paducah, KY 42002-4030

Anthony P. Overbey  
President/CEO  
Fleming-Mason Energy  
P. O. Box 328  
Flemingsburg, KY 41041

Bobby D. Sexton  
President/General Manager  
Big Sandy RECC  
504 Eleventh Street  
Paintsville, KY 41240-1422

Lawrence C. Cook  
Assistant Attorney General  
Office of the Attorney General  
Utility & Rate Intervention Div.  
1024 Capital Center Dr. – Suite 200  
Frankfort, KY 40601-8204

**MEADE COUNTY RURAL ELECTRIC COOP. CORP.  
RESPONSE OF MEADE COUNTY RECC  
TO SECOND DATA REQUEST OF COMMISSION STAFF**

**CASE NO. 2006-00494**

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**Question #1)** Describe in detail how the company utilizes all of the reliability measures it monitors.

**Response #1)** Meade County analyzes its outage and reliability data monthly. Monthly and year-to-day data is reviewed to detect or observe any trends that could be occurring. The data is viewed and analyzed by the operations, engineering, and administration groups of the Cooperative. If issues or trends are detected, the Cooperative will investigate and act accordingly.

**Witness)** David Poe

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**Question #2)** Has the company determined an appropriate operating range or performance threshold based on these measures? If yes, identify.

**Response #2)** In regards to defining specific ranges reliabilities should be operating within, there are none. As stated in the first response, the data is analyzed and compared with previous months and years to determine if trends or problems may be developing.

However, Meade County does use the reliability data when evaluating the performance of the Cooperative and its personnel. An incentive program has been in place at Meade County since 2001 that measures several aspects of the business, including customer satisfaction, cost of service, and reliability. Each year the reliability data is weighed against previous years to determine the level of performance by the Cooperative. The SAIDI, CAIDI, and SAIFI year-end levels are totaled and the resultant compared to the five-year average of the previous years. All recorded outages are included in the data for the incentive program with the exception of those caused by the power supplier (Big Rivers Electric) or any storms. The idea of this program is to grade the Cooperative and its employees' performance, not Mother Nature's or another entity's.

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**Question #3)** Describe in detail how the company develops formal plans to address its worst performing circuits. If the company does not develop such plans, indicate so in the response.

**Response #3)** As stated in the initial inquiry, Meade County does not monitor or track specific circuit outages or reliabilities; therefore there are no formal plans or procedures devised or used. However, the Cooperative must formulate a Construction Work Plan (CWP) that forecasts and defines the areas of the system to be upgraded to meet the growing needs and improve reliabilities. These areas and circuits are defined by the collaboration of the engineering and the operations departments of the Cooperative, based upon their experience. System outages are reviewed weekly by management and supervisory personnel, the same ones who determine the needs in the CWP.

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**Question #4:** Why are momentary outages excluded?

**Response #4:** The majority of the momentary outages are a result of an operation of an upline reclosure, either at the substation or downline in the circuit. Most of these devices do not have the capability to log momentary outages. Only the most modern, larger reclosures have the electronic-type controls with this capability. Meade County has only 3 substations with any central communications to these reclosures and they are located within the substations themselves. The majority of the reclosures in the system are downline on the circuit. These devices do not normally have any controls to note momentary interruptions and do not have any communications or communication capabilities.

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**Question #5)** Why are major event days or major storms excluded?

**Response #5)** One reason major storms or events may be excluded is that RUS has required Cooperatives to track this data separately for many years. The thought behind this is that major storms or similar events could be considered unavoidable or uncontrollable. RUS and the cooperatives themselves have tried to evaluate their efforts and systems based upon what they can control or have an affect upon.

As explained in response #2, Meade County tracks reliability data with and without storms and power supplier related events in order to evaluate the efforts of the Cooperative, not just how lucky or unlucky the utility have been.

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**Question #6)** Provide a hard copy citing the Rural Utilities Service (“RUS”) reliability monitoring or reporting requirements or, in the alternative, provide an accessible Internet site.

**Response #6)** RUS requires an Operation and Maintenance audit to be performed once every three years by the RUS field representative. From that, a Form 300 is completed signifying the state of the cooperative’s facilities and records. Meade County’s most recent audit was performed in August 2004. The resultant Form 300 is attached to this response.

**Witness)** David Poe



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*Public reporting burden for this collection of information is estimated to average 4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Agriculture, Clearance Officer, OC, OMB Control # 0572-0025, AG Box 7630, Washington, DC 20250. You are not required to respond to this collection of information unless this form displays the currently valid OMB control number.*

UNITED STATES DEPARTMENT OF AGRICULTURE RURAL UTILITIES SERVICE  <b>REVIEW RATING SUMMARY</b>				BORROWER DESIGNATION KY 18				
				DATE PREPARED 8/19/04				
Ratings on form are: NA: Not Applicable		0: Unsatisfactory - No Records 1: Corrective Action Needed	2: Acceptable, but Should be Improved - See Attached Recommendations 3: Satisfactory - No Additional Action Required at this Time					
<b>PART I TRANSMISSION and DISTRIBUTION FACILITIES</b>								
<b>1. Substations (Transmission and Distribution)</b>		<b>(Rating)</b>	<b>4. Distribution - Underground Cable</b>					
a. Safety, Clearance, Code Compliance		3	a. Grounding and Corrosion Control					
b. Physical Conditions: Structure, Major Equipment, Appearance		2	b. Surface Grading, Appearance					
c. Inspection Records Each Substation		3	c. Riser Pole: Hazards, Guying, Condition					
d. Oil Spill Prevention		3						
<b>2. Transmission Lines</b>			<b>5. Distribution Line Equipment: Conditions and Records</b>					
a. Right-of-Way: Clearing, Erosion, Appearance, Intrusions		NA	a. Voltage Regulators					
b. Physical Condition: Structure, Conductor, Guying		NA	b. Sectionalizing Equipment					
c. Inspection Program and Records		NA	c. Distribution Transformers					
			d. Pad Mounted Equipment					
			Safety: Locking, Dead Front, Barriers					
			Appearance: Settlement, Condition					
			Other					
<b>3. Distribution Lines - Overhead</b>			e. Kilowatt-hour and Demand Meter					
a. Inspection Program and Records		3	Reading and Testing					
b. Compliance with Safety Codes:								
Clearances		3						
Foreign Structures		2						
Attachments		2						
c. Observed Physical Condition from Field Checking:								
Right-of-Way		3						
Other		2						
<b>PART II OPERATIONS and MAINTENANCE</b>								
<b>6. Line Maintenance and Work Order Procedures</b>		<b>(Rating)</b>	<b>8. Power Quality</b>					
a. Work Planning & Scheduling		3	a. General Freedom from Complaints					
b. Work Backlogs:								
Right-of-Way Maintenance		3						
Poles		3						
Retirement of Idle Services		3						
Other		NA						
<b>7. Service Interruptions</b>			<b>9. Loading and Load Balance</b>					
a. Average Annual Hours/Consumer by Cause (Complete for each of the previous 5 years)			a. Distribution Transformer Loading					
PREVIOUS 5 YEARS (Year)	POWER SUPPLIER a.	MAJOR STORM b.	SCHEDULED c.	ALL OTHER d.	TOTAL e.	(Rating)	b. Load Control Apparatus	
1999	0.13	0.76	0.14	1.01	2.04	3	c. Substation and Feeder Loading	
2000	0.70	0.45	0.09	1.29	2.53	3		
2001	0.07	0.42	0.05	0.88	1.42	3		
2002	0.46	0.83	0.05	1.20	2.54	3		
2003	0.11	0.97	0.04	0.71	1.83	3		
b. Emergency Restoration Plan						3		
<b>PART III ENGINEERING</b>								
<b>11. System Load Conditions and Losses</b>		<b>(Rating)</b>	<b>13. Load Studies and Planning</b>					
a. Annual System Losses		7.20%	3	a. Long Range Engineering Plan	3			
b. Annual Load Factor		46.6%	3	b. Construction Work Plan	3			
c. Power Factor at Monthly Peak		91-97%	3	c. Sectionalizing Study	2			
d. Ratios of Individual Substation Annual Peak kW to kVA		3	d. Load Data for Engineering Studies		3			
			e. Load Forecasting Data		3			
<b>12. Voltage Conditions</b>								
a. Voltage Surveys		3						
b. Substation Transformer Output Voltage Spread		3						

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**Question #7)** Provide and describe in detail any service restoration or outage response procedure utilized.

**Response #7)** RUS and the Homeland Security Administration require Meade County to have and use an Emergency Response Plan (ERP). Within the ERP is a Service Restoration section that contains a policy for such events. This section is attached to this response as follows:

**EMERGENCY RESPONSE PLAN  
OF  
MEADE COUNTY RURAL ELECTRIC  
COOPERATIVE CORPORATION  
SYSTEM RESTORATION**

**I. PURPOSE**

The purpose of this section is to establish the most orderly, efficient, safest and workable system to handle service interruptions. The levels of procedures will be progressive. The higher the level of need, the more activity for that need will be established in the response.

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**II. LEVELS OF INVOLVEMENT**

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4 A. Level 1 – A condition where 500 or less members are without power and it seems service can be  
5 restored in a two (2) hour time period. This would include residential, small commercial, but  
6 not to include essential services. The outage will be handled by the regular scheduled standby  
7 crew of two (2) men.

8  
9 B. Level 2 – A condition exists of 500 to 1,000 plus members without  
10 service and it isn't likely they can be restored within two (2) hours with two (2) men. An  
11 additional crew would assist and make every attempt to clear the major circuits within the two  
12 (2) hour period, leaving only the remaining consumers off no more than four (4) hours. This  
13 outage would take into consideration essential services and health-related consumers. (See  
14 attached Essential Services Listing, Pages 7 – 10.)

15  
16 C. Level 3 – A condition exists where more than 500 consumers are  
17 without power and it is determined the emergency crews are unable to clear the problems in a  
18 reasonable time – being four (4) hours from the original call. The entire work force, to include  
19 construction crews, will be activated to assist. At this point, Kentucky Public Service  
20 commission will need to be informed of our situation.

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2 D. Level 4 – A condition exists where more than 1,000 consumers are  
3 affected by the outage or an area is damaged to the point of rebuilding. Additional crews would  
4 be established through the contractor services listing (Contractor list included, Page 11). The  
5 state emergency system may be used. (State emergency plan on file).  
6

**III. PROCEDURES**

7  
8  
9 A. Level 1 – During normal working hours (7:30 a.m., thru 4:30 p.m., eastern time, Monday  
10 thru Friday) the Cooperative offices will assist with emergency service calls and serve as  
11 primary dispatches. During the evening hours, weekends and holidays, outage calls will be  
12 handled by a central dispatch system located in the Breckinridge County Sheriff's  
13 Department.

14 The dispatcher will:

- 15 1. Regular time: office dispatcher will contact the standby  
16 crew designated for emergency service during regular office hours (Monday –  
17 Friday, 7:30 a.m. – 4:30 p.m. eastern time).
- 18 2. After hours: central dispatch will contact standby crews  
19 for immediate response to emergency situations. Standby crews, along with other  
20 key personnel, are equipped with pagers. This crew responds to and establishes the  
21 need for additional crew support or office support. They normally consider two (2)  
22 hours or less from the time of the call as adequate time for response and repair. This

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1           may vary if essential services are affected. (See attached list for essential services,  
2           Pages 7 – 10).

- 3
- 4           3. In the event additional crews or office personnel are  
5           needed, the night dispatch is to inform the Superintendent of Operations, the District  
6           Supervisor of the district involved, or the VP of Operations, who are equipped with  
7           company communication equipment 24 hours a day.

8

9           B. Level 2 – The Superintendent of Operations, VP of Operations

10           or the District Supervisors in each district will have been notified of the emergency  
11           condition or conditions. He/she may respond with the following:

- 12           1. Call additional cooperative personnel to assist.
- 13           2. Call office personnel to take calls at the district office involved.
- 14           3. Call outage information to the Department head, if necessary.
- 15           4. Determine if essential services are involved and make decisions accordingly.
- 16                 a. Transfer crews to locations with vital essential services
- 17                 b. Call additional support crews to only work in the area of greatest need.

18

19           C. Level 3 – More than 500 customers are out of service and the time will exceed four (4)  
20           hours to complete all outages. The Superintendent of Operations will:

- 21           1. Survey the situation and contact the working foreman to get a progress report.
- 22           2. Re-assign crew members to best fit the emergency condition.

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3. Give outside crew foreman information as to the condition of the system as calls continue.
4. Call in all employees to assist with construction, right-of-way and office services, including warehousing personnel, if needed.
5. Make the Department Head aware of the situation. Contact the KY PSC.
6. Again, check essential services and main feeders from substation to determine the best results from accomplished work.

D. Level 4 – Conditions exist with several thousand consumers out for more than four (4) hours. The possibility of locations with major construction, both single phase and three phase. Again, the condition is analyzed to determine essential services and health-related consumers. The Department Head, with the Superintendent, will:

1. Contact the President/CEO and Vice President of Operations.
2. Call warehouse personnel for materials.
3. Call construction contractors for crew support (contractor list attached, Page 11).
4. Call contract right-of-way contractors for support.  
(contractor list attached, Page 12).
5. Contact Public Service Commission
6. Contact the Vice President, Member Services & Marketing to work with media.  
(Page 13).

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- 7. Contact disaster and emergency services, if necessary  
(Page 13).
- 8. Contact state association of cooperatives to activate  
statewide support, if necessary (Page 13).

**IV. SERVICE RESTORATION POLICY**

- A. In order to assure quicker service in emergency conditions, the following priorities have been established:
  - 1. Substation
  - 2. Main substation, three phase feeders
  - 3. Three phase line, station to station, three phase feeders
  - 4. Single phase lines in major areas
  - 5. Single phase taps
  - 6. Customer transformers
  - 7. Service wires
  
- B. Any condition reported to the Cooperative office or central dispatch that includes wire(s) down will be checked immediately by trained personnel. The service may not be restored at this time, but protection will be given to the area.

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C. Essential services are given special attention. They include:

1. Hospitals
2. Nursing homes
3. Public facilities and services
  - a. water plants
  - b. sewer plants
  - c. communication towers
  - d. DES warning systems
  - e. fire protection
4. Public broadcasting companies
5. Individuals with special care needs registered
6. Designated shelters

D. Essential services listing by substation attached to this plan. (Pages 7 – 10).

Witness) David Poe



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**Question #8)** Refer to the RUS drawing M1.30G “RIGHT-OF-WAY CLEARING GUIDE” (“ROW Guide), a copy has been provided in Appendix A.

- a. Is this type of clearance requirement appropriate for all areas of a distribution system? If not, what types of exclusions or exceptions should be made?
- b. If the distribution utility is not already following this guide, provide an estimate of the cost and time-line to implement.

**Response #8)** a) Meade County uses this type of clearing criteria in most areas with the following exceptions. First, Meade’s ROW clearance for single-phase is 20’ (feet), not 30’ per the example. Second, the cutting of vegetation in yards and urban areas does not follow this criterion. Yard trees are cut or trimmed back to a reasonable distance and are addressed at a higher frequency than rural areas. Rural area trimming is performed on a five-year base whereas urban areas are every three years.

b) To implement the specifications given in the attached RUS guide for the entire distribution would be very difficult. To acquire the additional 10’ of clearance for all single-phase distribution lines would be near impossible. Many lines are located in yards and along streets where there is no or limited space to expand and property owners have limited assets themselves, meaning possession is very dear to them. As with most cooperatives, Meade County does not purchase ROW or easements for their lines; access is based upon good customer relations, cooperation, and

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2 respect for their properties. An order to implement this specification on all existing lines would  
3 incorporate years of court time and millions of dollars for expanded easements and legal fees.

4

5 **Witness)**      David Poe

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2 **Question #9)** Refer to the North American Electric Reliability Corporation (“NERC) standard FAC-  
3 003-1 “Transmission Vegetation Management Program” (NERC Standard”), a copy is attached in  
4 Appendix B.

5

6 a. Does the company prefer the type of standard described in the NERC Standard over  
7 the type of standard described in the ROW Guide? Explain why you prefer one  
8 over the other.

9 b. Refer to the section R3 of the NERC Standard and substitute “distribution” for  
10 “transmission”. Is the distribution utility capable of meeting the reporting  
11 requirements described in the section? If not, why not?

12 c. Again referring to section R3 as applied to distribution, how many sustained outages  
13 would be reportable for the calendar year 2006?

14

15 **Response #9)** a) MCRECC does not prefer the NERC standard over the RUS ROW guide. The RUS  
16 guide does provide a technical ‘guide’ to trimming and clearing ROW, supplying actual specifications.  
17 The NERC standard does not but does increase the reporting and record keeping. This does not keep  
18 vegetation cut or trimmed, but simply places more burden upon the utility to report the work being  
19 done and the results from it. Meade County sees no advantage in the NERC Standard but more  
20 disadvantages. The existing manner works well for Meade County and its members. It incorporates  
21 less paperwork, provides good reliabilities, flexibility, and customer satisfaction. To implement the

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2 NERC Standard would mean more expense and personnel simply for the record keeping and reporting  
3 requirements.

4

5 b) Meade County is not capable of meeting the NERC Standard at this time due to the lack of  
6 personnel required for the tracking, recording, and reporting requirements stated in the standard. It is  
7 estimated that an additional individual would be required to meet this need.

8

9 c) Of the 1344 sustained outages reported and confirmed in 2006, only 69 (5.1%) were  
10 resultants of vegetation either in or outside of the ROW.

11

12 **Witness)** David Poe

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**Question #10:** Provide and discuss any right-of-way maintenance standard which is preferable to those identified in questions 1 and 2 above.

**Response #10:** Meade knows or prefers no other standard than the ones noted in this inquiry. MCRECC's philosophy has always entailed having a close, personal approach to any situation that arises and addressing each as an individual. Meade's existing approach seems technical enough to be fair and responsible for all, yet allows enough flexibility to work with special circumstances and members. This program has provided the reliabilities and cost effectiveness that helped Meade County RECC achieve a #4 nationwide ranking in overall customer satisfaction surveys recently.

Each utility has its own uniqueness and encounters different issues, whether it is the customers served or the topography and vegetation in which it serves. It seems that a specific approach or standard may work for some but not for all. Because of these differences, Meade County would prefer reporting standards, such as indices, when preparing and submitting their annual report for the Commission. These indices can then be used to evaluate the performance of each utility and its vegetation management and power restoration programs.

**Witness)** David Poe

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2 **Question #34)** Why doesn't Meade County exclude any outages from its reliability measures?

3

4 **Response #34)** Meade County measures and tracks all outages. However, MCRECC does  
5 calculate its reliability indices two different manners: one includes all outages and the other without  
6 power supplier and storm related interruptions. As noted in an earlier response, the intent in excluding  
7 these types of outages for the latter indices is to provide a measure that is indicative of the effort and  
8 effect the cooperative and its employees have in providing reliable power and responsive restorations.

9

10 **Witness)** David Poe

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**Question #35)** Describe in detail the capabilities of the Hunt Turtle II AMI System relating to monitor outages and provide reliability-related information.

**Response #35)** Please see Kentucky Public Service Commission case no. 2006-00494, Appendix A dated December 12, 2006. This is Hunt Technologies complete explanation of the above question and is included in this inquiry's response as follows. It should be noted that Meade County RECC has detected false outages due to the nature of the system. As described in the case above, in question number five, the signal intensity could drop due to several reasons (i.e. noise on the line, or switched capacitor banks) that would drop the signal intensity below the thresholds that Hunt has set for these endpoints. Total dependency upon the Hunt system for outage reporting or restoration would not seem recommendable at this time. However, this technology is making advancements, including the Hunt Turtle II system.

APPENDIX A  
APPENDIX TO AN ORDER OF THE KENTUCKY PUBLIC SERVICE  
COMMISSION IN ADMINISTRATIVE CASE NO. 2006-00494  
Dated December 12, 2006

1. Does utility management measure, monitor, or track distribution reliability?
  - Yes
    - a. If so, describe the measures used and how they are calculated.

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Power Distribution Reliability Report

This report enables users to view a statistical sample of power distribution reliability indices.

It is used by operations to monitor performance of distribution systems and plan improvements to meet regulatory requirements for power distribution reliability.

The reliability report enables users to view a statistical sample of power distribution reliability indices as defined by IEEE Std 1366-1998 entitled: IEEE Trial-Use Guide for Electric Power Distribution Reliability Indices. The following reliability indices are calculated and displayed in tabular or graphical format:

**SAIFI** – System Average Interruption Frequency Index (total number of customer interruptions divided by total number of customers served) measures the average number of *sustained* interruptions experienced per year by the average customer.

**SAIDI** – System Average Interruption Duration Index (customer interruption durations divided by total number of customer served) measures the average duration of *sustained* interruption experienced per year by the average customer.



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**CAIDI** – Customer Average Interruption Duration Index (SAIDI divided by SAIFI) measures the average duration of the average *sustained* interruption experienced per year by the average customer.

**MAIFI** – Momentary Average Interruption Frequency Index (total number of customer momentary interruptions divided by total number of customers served) measures the average number of *momentary* interruptions experienced per year by the average customer.

**ASAI** – Average Service Availability Index (customer hours service availability divided by customer hours service demand) measures the average service availability for a specified time period for the average customer.

- b. If reliability is monitored, provide the results for the past 5 years for system wide reliability.
2. Are any outages excluded from your reliability measurement?  
If so, what criteria are used to exclude outages?

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3. Does the utility differentiate between momentary and sustained outages?

a. What criteria are used to differentiate?

**Momentary Interruptions:** A count of voltage interruptions lasting anywhere from 3 cycles to 30 seconds in duration.

**Momentary Event Interruptions:** A momentary event interruption is defined as two or more momentary interruptions occurring within a five minute time period. This counter enables multiple recloser operations resulting from a single fault to be classified as a single event.

**Sustained Interruptions:** A count of voltage interruptions with duration greater than 30 seconds.

**Sustained Interruption Duration:** A cumulative duration of sustained interruptions in minutes.

b. Is information about momentary interruptions recorded?

Yes

Each endpoint deployed under the Hunt PLC TS-2 system logs each endpoint event to the associated substation; which then reports those events to the central server Command Center software.

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- 1
- 2 4. At what level of detail does the utility record customer outages (individual
- 3 customer, by re-closer, by circuit, by substation, etc)?
- 4

5 The AMI/AMR Hunt PLC solution automatically identifies each endpoint that resides in a

6 meter for phase identification and substation. Circuits can be identified by the integration of the

7 Hunt Command Center endpoint information to CIS, OMS or other engineering software

8 packages compatible with MultiSpeak. The Hunt Technologies, INC Command Center

9 software package is built on an open architecture using technologies that allow tight integration

10 with the utility's other software applications.

11

12 Some of the interfaces provided:

13

14 CIS/Billing interfaces: provides sharing of data between CIS/billing systems and the

15 Command Center, including customer data, readings data, and meter data.

16 Outage Management System interfaces: the Command Center can automatically notify

17 outage management systems when a power outage or restoration occurs.

18 GIS and Engineering Analysis application interfaces: phase data can be provided from

19 the Command Center for use by GIS and EA applications. Coincident demand and max

20 demand data provided to engineering analysis applications can help with load balancing

21 and transformer sizing.

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2     Service Connect-Disconnect: an interface exists that allows another utility application to  
3     use the Command Center software to disconnect or connect meters from the utility  
4     office.

5     Usage Monitoring: Booted of “virtually disconnected” meters can be added to a usage  
6     monitoring group automatically from another utility application. The Command Center  
7     will alert the end-user when unexpected usage occurs.

8  
9     5. How does the utility detect that a customer is experiencing an outage?

10     Continuous communication with each meter is the core basic operation of the  
11     Hunt PLC TS-2 solution for reliable outage and restoration detection and  
12     notification. The TS-2 (PLC)-based AMI system continuously transmits data from  
13     the meter to the utility office. This allows each AMR-enabled meter in the system  
14     to act as a power outage and restoration monitor.

15  
16     When a power outage occurs at a meter, the signal intensity on that particular  
17     communication channel begins to drop. Within 20 minutes, the SPU (substation processing  
18     unit) at the substation will flag the meter as out of power. Regular communication between the  
19     Command Center and the substation enables quick detection of changes in meter status. This  
20     information is continuous and unsolicited.

21     Command Center also initiates e-mail alerts for outage conditions specified by each user. This  
22     flexibility allows a different threshold for alerts determined by each staff member involved.

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1 The system can even be set to trigger an e-mail alert when an outage occurs at a specific meter  
2 on the end of the distribution line. Command Center is a web-based application that provides a  
3 number of APIs, allowing it to easily interface with many popular operations, engineering and  
4 GIS applications. When integrated with a utility's outage management system, outage analysis  
5 and predictions are automatically triggered as soon as Hunt's TS2 system reports an outage.  
6 Additionally, OMS and GIS systems provide a geographical representation of the location of  
7 outages and restorations, increasing the reliability and usability of outage information when  
8 directing operations personnel in the field. When outages are identified by another source, such  
9 as an IVR system, Hunt's system provides verification of the extent of the outage as well as  
10 notification that the power has been fully restored.

11  
12 6. How does the utility know when a customer is restored?

13 With the Hunt AMI PLC solution, restorations are managed exactly like outages; just in  
14 reverse. Each endpoint channel signal intensity is consistently monitored at each substation  
15 enabling restoration notification within 20 minutes of every endpoint continuously and  
16 unsolicited. Restorations follow the same process and procedure as outlined in the response to  
17 question 5.

18  
19 7. Are the causes of outages categorized and recorded? If they are, provide a list of the categories  
20 used.

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2 8. Can the utility record outage information for each circuit in the system including for each  
3 customer outage:

4 a. Length of each disruption?

5 Yes

6 b. Number of customers affected by each disruption?

7 Yes

8 c. Number of customers served by each circuit?

9 Yes

10  
11 Command Center maintains a dynamic record of the power status of each meter in a  
12 utility's service territory. This data is made available to the user in a report which is  
13 included in the EPIC reporting package. This report provides a listing of all current power  
14 outages with the estimated duration each meter has been out of power. In the event of  
15 widespread outages across the utility service territory, this list of meters may be grouped  
16 by substation. This enables dispatch personnel to easily identify power outages and their  
17 approximate duration – information that is invaluable in prioritizing restoration efforts.

18  
19 Interruption Reports

20  
21 These reports can be used by operations and engineering groups to monitor and characterize  
22 the performance of the distribution system as well as analyze patterns for interruptions.

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2 These reports can also be used by the customer service representatives to address customer  
3 inquiries in regards to power interruptions.

4  
5 **Criteria Selections:**

- 6 • Averages by month and SPU
- 7 • Cumulative for multiple meters
- 8 • For single meter
- 9 • Momentary interruptions date and time stamps

10  
11 Outage Tracker

12  
13 The Outage Tracker report augments the power restoration process by allowing detailed  
14 tracking of the status of customer outages and restorations and the approximate elapsed  
15 time of the outage. All power failure and restoration features are compatible with  
16 MultiSpeak<sup>®</sup> outage notification.

17  
18  
19 Service History Report

20  
21 The utility's customer service representation frequently deals with consumer complaints  
22 about high bills, outages or a number of other issues. The Service History report

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contains information about usage and interruptions, both in a graphical and spreadsheet view. The report has the capability to be e-mailed as well as printed.

**Witness)** Mike French