COMMONWEALTH OF KENTUCKY
BEFORE THE
PUBLIC SERVICE COMMISSION

AN INVESTIGATION OF THE RELIABILITY MEASURES OF KENTUCKY'S JURISDICTIONAL ELECTRIC DISTRIBUTION UTILITIES AND CERTAIN RELIABILITY MAINTENANCE PRACTICES - CASE NO. 2006-0494

Due on or before April 1st. 2008

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CLARK ENERGY COOPERATIVE, INC
WINCHESTER, KENTUCKY

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

AN INVESTIGATION OF THE RELIABILITY MEASURES OF KENTUCKY'S JURISDICTIONAL ELECTRIC DISTRIBUTION UTILITIES AND CERTAIN RELIABILITY MAINTENANCE PRACTICES	) ADMINISTRATIVE) CASE NO. 2006-0494

RESPONSE TO DATA REQUEST OF
THE KENTUCKY PUBLIC SERVICE COMMISSION
DATED OCTOBER 26, 2007

Clark Energy Cooperative, Inc. ("Clark Energy"), pursuant to the Public Service Commission's (PSC) information request dated October 26, 2007, hereby submits the following response dated March 31, 2008 regarding Case No. 2006-0494.

DATE: March 31, 2008

ATTEST:

Paul G. Embs
President & CEO

Introduction

The following report contains information on outages for Clark Energy Cooperative's system and includes an update on the cooperatives vegetation management plan and any changes to that plan that will be implemented in 2008. Enough outage information was available to assimilate five years of outage data reported in the IEEE reporting format as requested using SAIDI, SAIFI & CAIDI indices reported in minutes. A more detail account of outages for the calendar year 2007 is included with each index calculated for the utility's complete system, then broken down into individual circuits and analyzed to determine the contributing factors for the 10 worst performing circuits.

More than 10 categories of outage causes are tracked in Clark Energy's outage management system so therefore the top ten categories of significance will be analyzed and discussed as requested in the order.

Five years of System Average Interruption Duration Index (SAIDI)

Year	All	MED	PS	Scheduled	Other
2003	226.3	149.1	4.2	0.0	73.0
2004	178.9	59.5	7.9	3.1	108.4
2005	109.6	25.1	9.3	0.6	74.6
2006	117.8	26.9	1.1	2.0	87.8
2007	133.1	44.1	5.4	2.5	81.0

Customer Average Interruption Duration Index (CAIDI) in minutes and System Average Interruption Frequency Index (SAIFI).

		CAIDI		SAIFI
Year		All		All
2003		166.7		1.36
2004		82.8		2.16
2005		77.7		1.41
2006		72.8		5.18
2007		94.4		1.41

Substation list

Listed below is each substation in Clark Energy's system with the number of customers, the number of outage events for each substation for 2007 and the three indices requested.

Substation	# CUST	Events	CAIDI	SAIDI	SAIFI
BLEVINS VALLEY	1007	59	7.2	8.17	1.89
BOWEN	920	58	1.8	2.00	0.61
CAVE RUN	336	19	4.2	4.74	2.68
CLAY CITY	2661	62	5.4	6.16	0.88
FRENCHBURG	2505	80	7.9	8.97	1.32
HARDW CREEK	734	35	3.8	4.26	0.96
HIGH ROCK	236	12	0.7	0.75	1.45
HINKSTON	524	22	2.1	2.33	1.15
HOPE	1534	100	3.3	3.71	0.64
HUNT	2086	160	24.8	28.15	2.59
JEFFERSONVILLE	1557	47	5.6	6.40	1.41
MARIBA	1606	68	11.8	13.32	2.16
MILLER HUNT	723	36	1.6	1.86	1.23
MT. STERLING	1608	77	5.3	6.01	1.36
REID VILLAGE	901	38	3.7	4.16	1.78
SIDEVIEW	1887	134	14.7	16.61	2.75
STANTON	3074	61	0.9	1.05	0.13
THREE FORKS	1032	50	4.7	5.28	1.45
TRAPP	810	39	3.7	4.22	0.78
TREEHAVEN	337	1	0.1	0.16	0.19
UNION CITY	1466	52	3.3	3.79	0.73
VAN METER	732	59	0.8	0.96	0.43

This chart lists each substation by circuit.

Circuit	CAIDI	SAIDI	SAIFI	Circuit	CAIDI	SAIDI	SAIFI
BLEVAL1	4.2	4.77	1.57	MARIBA3	0.7	0.83	0.81
BLEVAL2	0.9	1.06	0.40	MARIBA4	0.7	0.84	2.28
BLEVAL3	0.3	0.29	1.15	MILL HUNT1	1.4	1.57	2.28
BOWEN1	0.1	0.08	0.20	MILL HUNT2	0.1	0.12	0.12
BOWEN2	0.1	0.16	0.73	MILL HUNT3	0.1	0.17	1.02
BOWEN3	1.6	1.76	0.91	MTSTRLG1	0.6	0.73	0.37
CAVERUN1	3.6	4.09	3.12	MTSTRLG2	0.7	0.81	0.35
CAVERUN2	0.2	0.27	0.49	MTSTRLG3	0.6	0.66	0.58
CLAYCTY1	5.0	5.67	2.55	RDVILLAGE1	1.5	1.75	1.40
CLAYCTY2	0.1	0.15	0.13	RDVILLAGE2	0.2	0.23	0.17
CLAYCTY4	0.3	0.34	0.22	SIDEVIEW1	2.2	2.53	1.71
FRNBURG1	2.7	3.00	1.85	SIDEVIEW2	0.3	0.35	0.17
FRNBURG2	0.0	0.03	0.06	SIDEVIEW3	0.2	0.24	0.23
FRNBURG3	0.5	0.59	0.42	SIDEVIEW4	3.7	4.24	1.33
FRNBURG4	4.7	5.35	1.86	STANTON1	0.1	0.08	0.08
HARDWIC1	3.7	4.14	1.29	STANTON2	0.1	0.15	0.12
HARDWIC2	0.1	0.06	0.24	STANTON3	0.4	0.49	0.18
HARDWIC3	0.1	0.06	0.22	STANTON4	0.3	0.34	0.37
HIGHROC1	0.5	0.57	0.57	THRFRKS1	0.5	0.61	0.53
HINKSTO2	1.0	1.12	0.98	THRFRKS2	4.0	4.53	2.13
HINKSTO3	1.1	1.21	1.70	THRFRKS3	0.1	0.14	1.74
HOPE1	0.1	0.13	0.49	TRAPP1	0.2	0.22	0.62
HOPE2	0.6	0.65	0.28	TRAPP2	3.4	3.88	1.08
HOPE3	2.6	2.93	0.81	TRAPP3	0.1	0.12	0.23
HUNT1	8.2	9.30	2.29	TREEHAVEN2	0.1	0.16	0.98
HUNT2	0.1	0.15	0.26	UNIONCITY1	0.6	0.72	0.46
HUNT3	5.6	6.36	3.55	UNIONCITY2	2.5	2.82	1.29
HUNT4	10.9	12.33	2.29	UNIONCITY3	0.2	0.17	0.71
JVILLE1	3.2	3.63	1.87	UNIONCITY4	0.1	0.08	0.05
JVILLE2	2.4	2.77	0.68	VANMTR1	0.2	0.23	1.13
MARIBA1	0.0	0.04	0.11	VANMTR2	0.0	0.05	0.22
MARIBA2	10.2	11.62	2.77	VANMTR3	0.6	0.69	0.37

Analysis of outage categories

Clark Energy currently uses 33 cause descriptions in our outage management software to aid in determining trends in outages so steps may be taken to proactively reduce or eliminate future outages. Listed below are the top 10 categories with numbers of outages, consumers actually affected and the total number of customer hours out.

Top ten Causes	# of Outages	# of Consumers	# of hours
Woodcutter	21	308	359
Vehicles	22	325	368
Squirrel	43	384	420
Trees In R/W	44	503	454
Deterioration	53	1009	939
Other	57	1113	997
Animal / Bird	62	2244	2568
Overload	64	3349	2608
Unknown	166	3350	6236
Trees Out R/W	186	5152	7033
Lightning	440	9650	17272

These 10 categories represent 30% of the descriptions but were 91% of all actual recorded outages last year affecting 75% of our customer's outages and 80% of our customer hours out.

Weather continues to be the top cause of outages with the top two categories being lightning and trees being blown in from outside the ROW corridor taking down lines, poles and equipment. These two causes are 48% of all outages, 40% of our customer total and 49% of total customer hours. It can be argued that

the unknown category, affecting 11% of outages, is largely a result of lighting damage to fuses and equipment in case where the cutout fuse has melted out.

Overloading is responsible for 5% of all outages and approximately 5% of customer's hours out, largely due to extreme weather either hot or cold.

Deterioration contributed 4% to last year's outages but only about 2% of the number of customers affected. There are several causes attributed to deterioration including damage to conductor from falling trees, lighting damage to transformers and equipment and the effect of small, aging conductor that breaks due to metal fatigue.

Outages due to unmanaged trees and brush cause 3% of outages last year but affected less than 1% of the consumer hours.

Animals including birds, squirrels, varmints and large birds getting into the lines and equipment are responsible for about 6% of outages but less than 1% of total outage hours.

Vehicle accidents and human error cause approximately 2 % of outages but less than 1% of consumers out or consumer hours last year.

List of ten worse performing substations circuits

Clark Energy currently has 22 substations with 71 circuits feeding out of those distribution substations. An average circuit on Clark Energy's service area is 42 miles in length and has an average of 463 members served from these feeders. A determination of the 10 worst circuits performing circuits has been made and is listed below for your review.

Ten worst circuits based on SAIDI		
	SAIDI	**Causes**
BLEVAL1	4.77	Tree Out R/W
CLAYCTY1	5.67	Tree Out R/W
FRNBURG4	5.35	Tree Out R/W
HARDWICKS1	4.14	Other
HUNT1	9.30	Tree Out R/W
HUNT3	6.36	Lightning
HUNT4	12.33	Tree Out R/W
MARIBA2	11.62	Lightning
SIDEVIEW4	4.24	Tree Out R/W
THRFRKS2	4.53	Other

Ten worst circuits based on SAIFI		
	SAIFI	**Causes**
CAVERUN1	3.12	Deterioration
CLAYCTY1	2.55	Tree Out R/W
HUNT1	2.29	Squirrel
HUNT3	3.55	Lightning
HUNT4	2.29	Tree Out R/W
JVILLE1	1.87	Tree Out R/W
MARIBA2	2.77	Lightning
MILLER HUNT1	2.28	Squirrel
MARIBA4	2.28	Tree Out R/W
THRFRKS2	2.13	Other

There were 13 substation circuits identified, with 6 of those circuits being the same ones. Of those circuits, 61% were greater in length than the average circuit and 69% of the circuits were larger than the average circuit in terms of members served. One circuit was very short in length with few members in a heavily wooded area and one was the longest circuit served with considerable exposure. A single cause was selected for each circuit if the outage or outages were significant enough to influence the outcome of the indices. Of the 13 circuits, there were 4 events that had causes that were significant enough to cause the indices to point toward poor performance.

1. Tree out of ROW
2. Lightning
3. Other
4. Squirrel

Two of the causes were weather related with trees being blown on to lines from outside the ROW corridor the major culprit and lighting being the other cause. The "other" cause is almost always related to material or equipment failure. Poor access to these sites during inclement weather is a contributing factor to the length of the outages. One circuit performed poorly because of a squirrel problem and conductor deterioration was another factor on one circuit.

Plans for improvement

During all outage restoration, personnel are instructed to note any deficiencies that need to be taken care after service restoration so repairs can be made as soon as practical to prevent repeat outages. Our outage management system report software tracks repeat outages and reports are reviewed quarterly to look for trends and repeat outages.

Listed below are steps taken to reduce outage causes and improve system reliability.

1. Animal protection – New construction units include animal guards as a standard part of construction including transformer bushing covers and covered jumper wires. An increase in conductor separation on overhead structures also aids in reducing bird related incidents where large bird roosts are a problem.

2. Work plan issues.
    a. During the upgrading of overhead primary lines due to load growth, lines are moved closer to the road corridor, where practical, to allow better access during wet weather and allow lines to be inspected more easily thus potentially reducing outage restoration times.

b. A concerted effort is underway to replace aging conductor in areas where load growth does not warrant the upgrading of lines. Plans are to upgrade 40 miles of line in our current 4 year work plan.

3. When problems cannot be located during the initial outage and must be listed as "unknown", field personnel patrol the lines as soon as possible to look for the cause and prevent repeat outages.

4. Our right-of-way personnel investigate outages where trees have blown in for the corridor walls to see if there are any additional danger trees in need of removal.

5. Ten percent of Clark Energy's overhead system is inspected for bad poles each year during which all ground wires attached to driven ground at the base of the pole are repaired and an ohm reading is taken. This is followed up by a contract crew that drives new ground rods to improve the grounding grid of the system in an effort to reduce lighting damage to fuses, poles and equipment.

Right-of-Way program update

Clark Energy's board and staff remain dedicated to implementing a strong ROW program and showed that by increasing Clark Energy's ROW budget by 16% in budget year 2008.

To insure good planning and oversight of the program, a ROW contractor management specialist was brought on board on January 2008 and is currently working on the system.

Outages related to ROW in the lines has steadily declined since 2004 due to an aggressive clearing program. The use of herbicide has been very beneficial in reducing stem counts on woody brush within the ROW corridor and spraying will continued in 2008.

Conclusion

At Clark Energy reliability is of the highest priority for each and every employee whether it is the office personnel or dispatcher recording the outage or the field personnel responding to outage calls at all hours of the day or night to restore service. Continual improvement is desired and pursued with the backing of the Clark Energy board and staff. We believe this report will reflect well on those efforts.