



Big Sandy Rural Electric Cooperative Corporation

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ORIGINAL

In the Matter of:

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

RECEIVED

JAN 10 2007

PUBLIC SERVICE
COMMISSION

RESPONSE

- Does utility management measure, monitor or track distribution reliability?

Big Sandy RECC measures reliability using SAIDI, SAIFI & CAIDI standards.

- If so, describe the measures used and how they are calculated.

See Attachment "A"

- If reliability is monitored, provide the results for the past 5 years for system wide reliability.

See Attachment "B"

- Are any outages excluded from your reliability measurement? If so, what criteria are used to exclude outages?

Big Sandy RECC doesn't exclude any outages from our reliability measures.

- Does the utility differentiate between momentary and sustained outages?

Big Sandy RECC doesn't currently maintain information on momentary outages.

a. What criteria are used to differentiate?

N/A

b. Is information about momentary interruptions recorded?

N/A

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

Big Sandy RECC records the outage by individual customer, in the area affected by the outage.

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

Customer must call to report a power outage.

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

Service Tech will verify that power is restored in the field or the AMR Meter will be used to verify the restoration of power to the meter.

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

Causes of outages are categorized as follows:

Power Supplier	Extreme Storm	Pre-arranged
Equipment Failure	Weather	Man-Made
Animals	In Right of Way Trees	Other
Out of Right of Way Trees		

8. Can the utility record outage information for each circuit in the system including for each customer outage:
- a. Length of each disruption?
 - b. Number of customers affected by each disruption?
 - c. Number of customers served by each circuit?
 - d. Causes of each interruption?

Big Sandy RECC can record an approximate number of customers affected by each outage, the length of the outage, an approximate number served by each circuit, and the cause of the outage.

9. If the answer to any part of Item 8 is no, what would be required to enable the utility to collect this level of data?
- a. Provide an estimated cost to obtain this level of detail.
 - b. Provide an estimated timeline to implement such upgrades.

In order to provide exact outage times & numbers, Big Sandy would need to implement an electronic mapping program.

- a. **The estimated cost would be approximately \$500,000 to purchase necessary equipment and software, and \$25,000 per year for maintenance.**
 - b. **This would require approximately 1 year to implement.**
10. Does the utility follow any type of standard (e.g., ANSI A300) for trimming trees in or near distribution right-of-way?

Yes, our ROW workers have had Arborist Training and are Certified Line Clearance Professionals.

11. What criteria does the utility use to determine when vegetation maintenance or tree trimming is required?

Big Sandy RECC performs line inspections to determine area to cut. We also utilize cycles to cut all of our Right-of-Way.

12. Is the tree trimming performed by utility personnel or by contractor? If by a contractor, describe the controls management uses to ensure trees are trimmed per utility requirements.

Big Sandy RECC utilizes both contractors and utility personnel to cut ROW. Our Maintenance Superintendent makes physical inspections on ROW cut or trimmed by contractors.

13. Is any portion of the utility system subject to local codes or ordinances regarding tree trimming or vegetation management?

No.

- a. N/A
- b. N/A

14. How often does utility clear its distribution easements?

Big Sandy RECC's target is to cut ROW on a 7 year cycle.

15. How much has the utility spent on distribution easement clearing for each of the last 5 years? Include the cost per mile expended.

See Attachment "C"

16. What annual amount of money is included in the current retail rates for distribution easement clearing?

In accordance with PSC Case # 2005-00125, Big Sandy RECC has \$566,928 in its rate base for distribution easement clearing.



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CAIDI * SAIDI * SAIFI**CAIDI** (Customer Average Interruption Duration Index)

Define: The average service restoration time or the average interruption duration for those customers interrupted during a month.

Formula: Divide the sum of all customer interruption durations by the total number of customers interrupted in a month

Example:

$\frac{1,010}{1,114} = 1.13$ hour/customer served out of power

SAIDI (System Average Interruption Duration Index)

Define: The average interruption duration in minutes per customer served.

Formula: Divide the sum of all customer interruption durations during the month by the number of customers served

Example:

$\frac{1,010}{24,332} = 0.04$ hour/customer served

SAIFI (System Average Interruption Frequency Index)

Define: The average number of times that a system customer is interrupted in a month.

Formula: Divide the total number of customers interrupted in the month by the average number of customers served during the year.

Example:

$\frac{1,144}{24,332} = 0.04$ times



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SUMMARY
For Month of Dec
For Calendar Year 2001

	Power Supply	Free-Arranged	Trees	Lightning	Broken Jumper	Blown Fuses	Animals & Birds	Unknown	Other	TOTAL ALL CAUSES
NUMBER OF OUTAGES										
This Month	0	6	21	5	0	18	1	1	6	58
This Month Last Year	0	1	6	5	0	19	0	0	6	37
This Year to Date	3	74	177	49	0	265	13	7	81	619
Last Year to Corresponding Date	2	8	186	71	0	179	13	0	102	561
CONSUMER HOURS OUTAGE										
This Month	0	32'	671.5"	91'	0	43'30"	50'	191'40"	144'30"	1171'35"
This Month Last Year	0	40'	574.25"	58'30"	0	33'25"	0	0	34'50"	226'30"
This Year to Date	8688'50"	1918'45"	5539'	435'30"	0	575'35"	52'40"	244'30"	2187'30"	17279'40"
Last Year to Corresponding Date	8260'	321'	3206.25"	412'55"	0	492'35"	74'30"	0	6263'30"	27113'35"
AVERAGE* OUTAGE TIME PER CONSUMER										
This Month	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
This Month Last Year	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
This Year to Date	42.2"	6.9"	27.8"	2.2"	0	2.8"	.20"	1.2"	10.7"	1.6' hrs.
Last Year to Corresponding Date	40.7"	.4"	35.6"	3.7"	0	2.4"	.4"	0	30.9"	1.9' hrs.
RECAPITULATION FOR DECEMBER REPORT ONLY										
Average* Outage Hours Per Consumer Per Year										
This Year	42.2"	6.9"	27.8"	2.2"	0	2.8"	.3"	1.2"	10.7"	1.6' hrs.
Last Year	40.7"	.4"	35.6"	3.7"	0	2.4"	.4"	0	30.9"	1.9' hrs.
DATA FOR COMPUTING AVERAGE* OUTAGE HOURS PER CONSUMER										
Number of Consumers Served: This Month <u>12,410</u>										
Weighted Average Number of Consumers Served: This Year to Date <u>12,301.2</u>										

REMARKS:

*Average outage hours per consumer are based on total consumers served on the system, not just those affected by the outages.

OUTAGE SUMMARY
For Month of Dec
For Calendar Year 2002

NUMBER OF OUTAGES	Power Supply	Pre-Arranged	Trees	Lightning	Broken Jumper	Blown Fuses	Animals	Birds	Unknown	Other	TOTAL ALL CAUSES
This Month	0	2	8	32	0	12	1	1	0	8	63
This Month Last Year	0	6	21	5	0	18	1	1	1	6	58
This Year to Date	1	98	216	97	0	185	15	15	6	76	694
Last Year to Corresponding Date	3	74	177	49	0	215	13	13	7	81	619
CONSUMER HOURS OUTAGE											
This Month	0	25'	136'	1620'30"	0	14'15"	25"	25"	0	376'15"	160,625'45"
This Month Last Year	0	32'	671'5"	91'	0	43'30"	50"	50"	191'40"	141'50"	1171'55"
This Year to Date	93'45"	1172'30"	7049'15"	163'57'25"	0	530'30"	75'50"	75'50"	207'40"	4611'25"	177,288'20"
Last Year to Corresponding Date	816'48'30"	1418'45"	5694'	455'20"	0	575'35"	52'40"	52'40"	244'50"	2189'30"	19,279'40"
AVERAGE* OUTAGE TIME PER CONSUMER											
This Month	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
This Month Last Year	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
This Year to Date	1.5"	5.6"	33.9"	13.1'11"	0	2.6"	.4"	.4"	1.1"	22.2"	14.2'11"
Last Year to Corresponding Date	42.2"	6.9"	27.8"	22"	0	2.8"	.3"	.3"	6.2"	10.7"	1.6'11"

RECAPITULATION FOR DECEMBER
REPORT ONLY

Average* Outage Hours Per Consumer Per Year

This Year	1.5"	5.6"	33.9"	13.1'11"	0	2.6"	.4"	.4"	1.1"	22.2"	14.2'11"
Last Year	42.2"	6.9"	27.8"	22"	0	2.8"	.3"	.3"	6.2"	10.7"	1.6'11"

DATA FOR COMPUTING AVERAGE* OUTAGE HOURS PER CONSUMER

Number of Consumers Served: This Month 12,578
 Weighted Average Number of Consumers Served: This Year to Date 12,490.8

REMARKS:

*Average outage hours per consumer are based on total consumers served on the system, not just those affected by the outages.

OUTAGE SUMMARY
For Month of Dec
For Calendar Year 2003

NUMBER OF OUTAGES	Power Supply	Pre-Arranged	Trees	Lightning	Broken Jumper	Blown Fuses	Animals & Birds	Unknown	Other	TOTAL ALL CAUSES
This Month	0	1	8	1	0	16	0	0	7	33
This Month Last Year	0	2	8	32	0	16	1	0	8	63
This Year to Date	0	83	194	50	0	196	8	5	82	618
Last Year to Corresponding Date	1	98	216	97	0	185	15	6	76	694
CONSUMER HOURS OUTAGE										
This Month	0	17'	132'35"	22'30"	0	36'15"	0	0	1926'15"	25520'35"
This Month Last Year	0	25'	136'	1600'30"	0	14'15"	25"	0	376'15"	16060'5'45"
This Year to Date	0	208'35"	6102'53"	627'45"	0	671'40"	50'40"	142'5"	4562'15"	192238'55"
Last Year to Corresponding Date	93'45"	172'30"	7049'15"	4359'26"	0	1320'30"	75'20"	307'40"	4611'25"	177288'20"
AVERAGE* OUTAGE TIME PER CONSUMER										
This Month	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
This Month Last Year	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
This Year to Date	0	9.9"	29.0"	3.0"	0	3.2"	1.2"	.7"	21.7"	1.1' hr
Last Year to Corresponding Date	.5"	5.6"	33.9"	13.1 hrs	0	2.6"	1.4"	1.1"	22.2"	14.2' hrs

ECAPITULATION FOR DECEMBER
REPORT ONLY

Average* Outage Hours Per Consumer Per Year	This Year	Last Year
	9.9"	5.6"
	29.0"	33.9"
	3.0"	13.1 hrs
	3.2"	2.6"
	1.2"	1.4"
	.7"	1.0"
	21.7"	22.2"
	1.1' hrs	14.2' hrs

ATA FOR COMPUTING AVERAGE*
OUTAGE HOURS PER CONSUMER
Number of Consumers Served: This Month 12,748
Weighted Average Number of Consumers Served: This Year to Date 12,616.1

REMARKS:

Average outage hours per consumer are based on total consumers served on the system,

Outage Summary	Power Supply		Extreme storm		Pretanged		Equipment Failure		Weather		Man-made		Animals		R-Way		Unknown		Other		Total Causes	
	For Calendar Year 2004	Number Of Outages																				
This Month	0	0	0	7	13	7	0	25	9	0	25	9	0	25	9	0	25	9	0	25	9	63
This Month Last Year	0	0	0	1	0	1	0	8	16	0	8	16	0	8	16	0	8	16	0	8	16	33
this year to date	2	0	0	99	39	129	27	288	133	51	288	133	51	288	133	51	288	133	51	288	133	784
Corresponding date	0	0	0	83	0	50	8	194	201	82	194	201	82	194	201	82	194	201	82	194	201	618
Consumer Hours Outages																						
This Month	0	0	0	98'20"	261'10"	185'5"	30'50"	868'25"	1370'25"	0	868'25"	1370'25"	0	868'25"	1370'25"	0	868'25"	1370'25"	0	868'25"	1370'25"	1578'15"
This Month Last Year	0	0	0	3'	0	22'30"	0	532'35"	316'15"	0	532'35"	316'15"	0	532'35"	316'15"	0	532'35"	316'15"	0	532'35"	316'15"	2520'35"
This Year to date	1403'	0	0	2193'25"	424'50"	154'13'50"	217'5"	7216'25"	590'	75'5"	7216'25"	590'	75'5"	7216'25"	590'	75'5"	7216'25"	590'	75'5"	7216'25"	590'	167352'20"
Corresponding date	0	0	0	2081'35"	0	627'45"	0	6102'55"	813'45"	28'40"	6102'55"	813'45"	28'40"	6102'55"	813'45"	28'40"	6102'55"	813'45"	28'40"	6102'55"	813'45"	14,238'55"
S.A.I.D.I. Consumer	Average Outage Time Per Consumer																					
This year to date	6.6"	0	0	10.5"	2.0"	12.0' hrs	1.0"	33.9"	2.8"	.4"	33.9"	2.8"	.4"	33.9"	2.8"	.4"	33.9"	2.8"	.4"	33.9"	2.8"	13.0' hrs
Corresponding date	0	0	0	9.9"	0	3.0"	0	29.0"	3.9"	.2"	29.0"	3.9"	.2"	29.0"	3.9"	.2"	29.0"	3.9"	.2"	29.0"	3.9"	1.1' hrs
S.A.I.F.I. Consumer	Average Number of Outages Per Consumer																					
This year to date	0	0	0	.01	.0	.01	0	.02	.01	0	.02	.01	0	.02	.01	0	.02	.01	0	.02	.01	.06
Corresponding date																						
C.A.I.D.I. Consumer	Average Outage Time Per Number of Outages																					
This last year to date	701.5'	0	0	22.2'	10.9'	119.47'	13.6'	25.2'	4.4'	2.8'	25.2'	4.4'	2.8'	25.2'	4.4'	2.8'	25.2'	4.4'	2.8'	25.2'	4.4'	213.5'
corresponding date																						

Data For Computing Avg*
OUTAGE HOURS PER CONSUMER
 Number of consumer served: this month 12,924
 Weighted-Avg: Number of Consumer Served: This Year to Date 12,729.6

Outage Summary For month of For Calendar Year Number Of Outages	Power Supply		Extreme storm		Prearranged		Equipment Failure		Weather		Man-made		Animals		R-Way		Unknown		Other		Total Causes	
This Month	0	0	0	5	21	0	0	2	10	0	0	0	0	0	0	0	0	0	0	0	0	38
This Month Last Year	0	0	0	7	13	7	2	0	25	9	0	0	0	0	0	0	0	0	0	0	0	63
this year to date	0	0	0	82	196	98	26	23	214	1	0	0	0	0	0	0	0	0	0	0	0	650
Corresponding date	2	0	0	99	39	129	16	27	288	133	51	0	0	0	0	0	0	0	0	0	0	784
Consumer Hours Outages																						
This Month	0	0	0	109'45"	260'25"	0	0	5'10"	269'	0	0	0	0	0	0	0	0	0	0	0	0	644'20"
This Month Last Year	0	0	0	98'20"	261'10"	185'5"	30'50"	0	268'25"	130'25"	0	0	0	0	0	0	0	0	0	0	0	8574'15"
This Year to date	0	0	0	2849'30"	2010'45"	1335'55"	576'50"	183'20"	4966'35"	40'5"	0	0	0	0	0	0	0	0	0	0	0	11,963'
Corresponding date	1403'	0	0	2193'25"	424'50"	154,118'50"	217'5"	25'5"	7246'25"	590'	1088'10"	0	0	0	0	0	0	0	0	0	0	167,352'20"
S.A.I.D.I	Average Outage Time Per Consumer																					
This year to date	0	0	0	13.2"	9.3"	6.2"	2.7"	.9"	23."	.2"	0	0	0	0	0	0	0	0	0	0	0	55.4 hrs
Corresponding date	6.6"	0	0	10.5"	21.0"	12.0 hrs.	1.0"	.4"	33.9"	2.8"	5.1"	0	0	0	0	0	0	0	0	0	0	13.0 hrs
S.A.I.F.I	Average Number of Outages Per Consumer																					
This year to date	0	0	0	.01	.02	.01	0	0	.02	0	0	0	0	0	0	0	0	0	0	0	0	.05
Corresponding date	0	0	0	.01	0	.01	0	0	.02	.01	0	0	0	0	0	0	0	0	0	0	0	.06
C.A.I.D.I	Average Outage Time Per Number of Outages																					
This last year to date	0	0	0	34.7'	10.3'	13.6'	22.2'	8.0'	23.2'	3.6'	0	0	0	0	0	0	0	0	0	0	0	18.4'
corresponding date	701.5'	0	0	22.2'	10.9'	1194.7'	13.6'	2.8'	25.2'	4.4'	21.3'	0	0	0	0	0	0	0	0	0	0	213.5'

Data For Computing Avg*
OUTAGE HOURS PER CONSUMER
 Number of consumer served: this month 15,017
 Weighted Avg. Number of Consumer Served: This Year to Date 12,964.0

Outage Summary	Power supply		Extreme storm		Pretarranged		Equipment failure		Weather		Man-made		Animals		In RMV		Out RMV		Other		Total
	For month of 1/00	For Calendar year 2006																			
Number of Outages	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46
This month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46
This month last year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72
This year to date	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	455
Corresponding date	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6/2
Consumer Hours outages																					
This month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527.65"
This month last year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	662.15"
This year to date	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14561.25"
Corresponding date	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11-218.40"
S.A.I.D.I.																					
This year to date	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1 hrs.
Corresponding date	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52.4 hrs.
S.A.I.F.I.																					
This year to date	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03
Corresponding date	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.05
Average Number of Outages Per Consumer																					
This year to date	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03
Corresponding date	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.05
Average Outage Time Per Consumer																					
This year to date	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32.1 hrs
Corresponding date	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18.5 hrs
Data For Computing Avg* OUTAGE HOURS PER CONSUMER																					
This last year to date	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32.1 hrs
Corresponding date	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18.5 hrs
Number of consumer served this month:	13,128																				
Weighted Avg. Number of Consumer served this year to date:	13,041.7																				



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ATTACHMENT "C"

<u>Year</u>	<u>Total ROW Cost</u>	<u>Cost per Mile - Contractor</u>
2002	\$ 328,397	\$ 1,700
2003	\$ 456,397	\$ 2,390
2004	\$ 566,928	\$ 2,875
2005	\$ 599,970	\$ 3,200
2006	\$ 584,988	\$ 3,400