

P.O. Box 990 • 1201 Lexington Road • Nicholasville, Kentucky 40340-0990 Phone: (859) 885-4191 • Fax: (859) 885-2854 • www.bgenergy.com

# VIA HAND DELIVERY ON 04/13/2007

April 13, 2007

Ms. Elizabeth O'Donnell Executive Director Kentucky Public Service Commission 211 Sower Boulevard P.O. Box 615 Frankfort, Kentucky 40602-0615 RECEIVED

APR 1 3 2007 PUBLIC SERVICE COMMISSION

Re: An Investigation of The Reliability Measures of Kentucky's Jurisdictional Electric Distribution Utilities and Certain Reliability Maintenance Practices; Case No. 2006-00494

Dear Ms. O'Donnell:

Enclosed are an original and seven copies of Blue Grass Energy Cooperative Corporation's responses to the Staffs Informal Conference set of data requests in the above-referenced case along with the testimony of Gary E. Grubbs, PE on behalf of BGE.

Please date-stamp and return the two extra copies of this letter in the enclosed envelope.

Should you have any questions, please do not hesitate to contact me, Dan Brewer or Mike Williams of this office or Gary Grubbs of Patterson and Dewar Engineers, Inc. (270-404-5030).

I certify that an original and seven photocopies of Blue Grass Energy's (BGE's) response to the Informal Conference (IC) information request and testimony were served and filed by hand delivery to Beth O'Donnell, Executive Director, Public Service Commission, 211 Sower Boulevard, Frankfort, Kentucky 40601; I further state that true and accurate copies of the foregoing were mailed via First Class U.S. Mail, postage pre-paid, to all parties of record.

Sincerely,

R. Chris Breve

R. Chris Brewer, PE Vice President, Engineering

cc: All parties of record

## CASE NO. 2006-00494

## SERVICE LIST (PARTIES OF RECORD)

Allen Anderson South Kentucky R.E.C.C. P.0. Box 910 Somerset, KY 42502-0910

Mark A. Bailey Kenergy Corp. P.0. Box 1389 Owensboro, KY 42302

Kent Blake Director - Rates & Regulatory Kentucky Utilities Company c/o Louisville Gas & Electric P.0. P.O. Box 32010 Louisville, KY 40232-2010

Dudley Bottom, Jr. Shelby Energy Coop, Inc. 620 Old Finchville Road Shelbyville, KY 40065

Daniel W. Brewer Blue Grass Energy Coop. Corp. P.0. Box 990 Nicholasville, KY 40340-0990

Jackie B. Browning Farmers R.E.C.C. P.0. 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 Clark Energy Cooperative, Inc. P.0. Box 748 Winchester, KY 40392-0748 Carol H. Fraley, CEO Grayson R.E.C.C. 109 Bagby Park Grayson, KY 41143

Ted Hampton Cumberland Valley Electric, Inc. Highway 25E P.0. Box 440 Gray, KY 40734

Larry Hicks Salt River Electric Coop. Corp. 111 West Brashear Avenue P.0. Box 609 Bardstown, KY 40004

Kerry K. Howard Licking Valley R.E.C.C. P.0. Box 605 West Liberty, KY 41472

James L. Jacobus Inter-County Energy Coop. Corp. P.0. Box 87 Danville, KY 40423-0087

Robert M. Marshall Owen Electric Cooperative, Inc. P.0. Box 400 Owenton, KY 40359

Burns E. Mercer Meade County R.E.C.C. P.0. Box 489 Brandenburg, KY 40108-0489

Michael L. Miller President & CEO Nolin R.E.C.C. Elizabethtown, KY 42701-8701

Timothy C. Mosher American Electric Power P.0. Box 5190 Frankfort, KY 40602 Barry L. Myers, Manager Taylor County R.E.C.C. P.0. Box 100 Campbellsville, KY 42719

G. Kelly Nuckols Jackson Purchase Energy Corp. P.0. Box 4030 Paducah, KY 42002-4030

Anthony P. Overbey Fleming-Mason Energy Coop. P.0. Box 328 Flemingsburg, KY 41041

Bobby D. Sexton President /General Manager Big Sandy R.E.C.C. 504 11th 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

	BLUE GRASS ENERGY COOPERATIVE CORPORATION
	RESPONSE TO STAFF INFORMAL CONFERENCE OF 03/08/2007 CASE NO. 2006-00494
	CASE NO. 2006-00494
1	COMMONWEALTH OF KENTUCKY
2	BEFORE THE PUBLIC SERVICE COMMISSION
3	
4	In the Matter of:
5	) AN INVESTIGATION OF THE RELIABILITY ) ADMINISTRATIVE
6	MEASURES OF KENTUCKY'S ) CASE NO.: 2006-00494 JURISDICTIONAL ELECTRIC )
7	DISTRIBUTION UTILITIES AND CERTAIN ) RELIABILITY MAINTENANCE PRACTICES )
8	RELIABILITY MAINTENANCE PRACTICES ) )
9	
10	
11	
12	RESPONSE OF
13	
14	BLUE GRASS ENERGY COOPERATIVE CORPORATION ("BGE")
15	TO INFORMATION REQUESTED VIA STAFF INFORMAL CONFERENCE
16	FOR COMMISSION'S ORDER 2006-00494
17	DATED DECEMBER 12, 2006
18	
19	
20	FILED: APRIL 13, 2007
21	
22	
23	Witnesses for All Response Contained Hereinafter:
24	Chris Brewer, BGE
25	Mike Williams, BGE
26	Gary Grubbs, P&D Engineers, Inc.
ļ	

	BLUE GRASS ENERGY COOPERATIVE CORPORATION RESPONSE TO STAFF INFORMAL CONFERENCE OF 03/08/2007
	<u>CASE NO. 2006-00494</u>
1	TABLE OF CONTENTS
2	Rural Utility Service (RUS) Form 300 (O&M) for Past 5 Year Period 3
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BLUE	GRASS	ENERGY	COOPERAT	IVE CORPO	RATION
RESPONSE	TO STA	FF INFOR	RMAL CONF	ERENCE OF	03/08/2007

#### CASE NO. 2006-00494

PSC Staff requested the following via Agenda Item 4 (Staff Summary of 1 Responses) of its prepared notes from the 03/08/2007 Informal Conference 2 ("IC"): 3 Each RECC should provide FORM 300 for the past 5 years to the staff. 4 Q. 5 RUS Form 300 is completed on a 3-year cycle by the RUS General Field Α. Representative ("GFR") and as such was conducted on the BGE system 6 during the years of 2002 and 2005. Reports for those two years (two 7 pages per) are attached as EXHIBIT 1A and 1B. 8 Each RECC should provide any CAP {corrective action plan} developed 9 Q. 10 within the past 5 years to the PSC staff. Corrective actions plans were not required by results of the 2002 or 11 Α. 2005 RUS Form 300 surveys. 12 Each RECC should provide a copy of RUS Form 7, Part G for the past 5 13 Q. 14 years to the PSC staff. 15 Α. Following is a summary of RUS Form 7, Part G information from years 2002 through 2006. The actual data is presented in EXHIBITS 2A-E. 16 17 PART G: SERVICE INTERRUPTIONS 18 AVERAGE HOURS PER CONSUMER BY CAUSE TOTAL ITEM / YEAR 19 (e) PREARRANGED ALL OTHER POWER SUPPLIER EXTREME STORM (a) (b) (C) (d)20 0.20 0.01 1.43 1.94 2002 0.30 21 0.14 17.18 0.01 1.70 19.03 2003 22 2.45 0.02 2.05 6.58 2004 1.16 23 0.05 1.62 1.97 2005 0.30 0.00 24 0.04 2.02 2.07 2006 0.01 0.00 25

26

5-YEAR AVG.

0.38

0.03

1.76

6.14

3.97

#### CASE NO. 2006-00494

PSC Staff requested the following via Staff Question 5 (All Utilities) of its prepared notes from the 03/08/2007 IC:

Q. See Handout No. 1 which reflects several types of tree pruning. Regardless of whether or not the Commission sets any tree trimming standards, should Through or V pruning, Side pruning, Under pruning, or Topping be allowed?

7 A. Yes. Tree trimming methods are like tools; the prudent choice may be 8 different depending on the type tree, the terrain, the type of line 9 construction, the line voltage, the growth contributors, the tree 10 maintenance cycle achievable, the location, the easement, the over-all 11 reliability required, etc. Utilities should be permitted to implement 12 any or all of the methods such as those illustrated in Handout No. 1.

Q. If the utility does not own the property over which its distribution lines are located, what are the utility's legal rights as far as access to the property, and ability to trim trees?

The ability to trim/cut trees beneath BGE's distribution lines, along 16 Α. 17 with the access for such, is normally obtained via easements from the property owner. For the most part, RUS distribution cooperatives such 18 19 as BGE are not allowed to monetarily purchase easements but must 20 instead ask for the right to traverse the lands needed to expand/maintain service. Prescriptive rights normally allow for 21 22 maintenance going-forward once facilities are in place; but with this said, the "happiness/satisfaction" of the property owner must be 23 24 diligently held in reverence.

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# BLUE GRASS ENERGY COOPERATIVE CORPORATION RESPONSE TO STAFF INFORMAL CONFERENCE OF 03/08/2007 CASE NO. 2006-00494 PSC Staff requested the following via Staff Question 5 (Blue Grass Energy) 1 of its prepared notes from the 03/08/2007 IC: 2 3 Provide a relative sample of any reports that list the steps for Q. 4 improvement or reasons for reliability measures being lower than 5 satisfactory as Blue Grass Energy notes in response to Item No. 2 of б Second Data Request in this case. 7 Refer to page 2 of EXHIBIT 1A and 1B as reasons for BGE's reliability Α. measures being lower than satisfactory. Refer to EXHIBIT 3 for a 8 detailed explanation of the "rating method" as noted in Item No. 2 of 9 the Second DR in this case. 10 11 12 13 14 15 16 17 18 19 20 21 22 23

- 24
- 26

		RESP						<b>VE CORPORATION</b> RENCE OF 03/08/2007	
					CASE	NO. 20	06-00	494	
					I	EXHIBI	r 1a		
the data needed	and completing	and reviewing	formation is estim the collection of it ure, Clearance Of	formation. Ser	nd commends r	regarding this bu	rden estimate o	eviewing instructions, searching existing data sources, gathering or any other aspect of this collection of information. Including sug	and maintais zestions for
You are not req	uired to respond	to this collectic TED STAT	n of information 1 ES DEPARTN JRAL UTILIT	<i>uless this form</i> AENT OF A	displays the ci GRICULTU	urrently valid OA	AB control num	BORROWER DESIGNATION KY 64	******
	R		V RATIN			Y		DATE PREPARED	
			0: Unsatisfac	tume No P	words	2: Accepta	ble but Sho	9/19/2002 uld be Improved See Attached Recommendations	
Ratings on f	orin are: Not Applica		1: Corrective	Action Nee	ded	3: Satisfac	lory No A	dditional Action Required at this Time	
				PART I. TI	RANSMISS			ON FACILITIES	
1	ns (Transmit					(Rating) NA		tion - Underground Cable ling and Cotrosion Control	(A
1	Clearance, Conditions:		ance Major Equipm	ent. Appeara	ince	NA	1	e Grading, Appearance	
1 1	ion Records I			• ••		NA	c. Ríser P	Pole: Hazards, Guying, Condition	
d. Oil Spi	ll Prevention					NA			
							1	ation Line Equipment: Conditions and Records	
2, Transmi		na Erorian	Appearance, I	Intraciona		NA	-	e Regulators nalizing Equipment	
		-	onductor, Guyi			NA	7	bution Transformers	
· · ·	on Program a					NA	1	iounted Equipment	
							]	Safety: Locking, Dead Front, Barriers	
3. Distribut	ion Lines - O	verhead						Appearance: Settlement, Condition	
· ·	on Program a					3		Other	*****
b. Compli	ance with Saf	lety Codes:		Clearances	where	<u>3</u> 2	4	att-hour and Demand Meter ding and Testing	
				Foreign Stru Attachments		2	, Rea	ding and rearing	
r. Observe	d Physical Co	ondítion fro	m Field Check		5		1		
				Right-of-Wa	ay	3	1		
				Other		N/A			
}				PART II.	OPERAT	IONS and M	AINTENA	NCE	·
6. Line Ma	ntenance an	d Work Or	der Procedure			(Rating)	8. Power C		(1
a. Work P	lanning & Sc	heduling				3	a. Genera	al Freedom from Complaints	P
b. Work F	acklogs:		Right-of-Way	Maintenanc	e	3	-		
			Poles			3		g and Load Balance bution Transformer Loading	
			Retirement of	Idle Service	DS	3	4	Control Apparatus	P
7. Service	nterruptions		Other				4	ation and Feeder Loading	
			r by Cause (Co	mplete for each	of the previous	s 5 years)		-	
PREVIOUS	POWER	MAJOR	SCHEDULED	ALL	TOTAL	1		and Plant Records	
5 YEARS	SUPPLIER	STORM	1	OTHER				ting Maps: Accurate and Up-to-Date	
(Year)	<u>a.</u>	<u>b.</u>	<u>c.</u>	<u>d.</u>	e.	(Rating)	···]	t Diagrams	
1997	0.91	0.34 3.15	0.01	0,41	<u>1.67</u> 4.51	3	c. Stakin	រដ្ឋ ទារទទន	
1998 1999	0.16	0.55	0.01	0.73	1.72	3	1		
2000	0.04	0.22	0.03	0.60	0.89	3	]		
2001	0.30		0.03	1.31	1.64	3	4		
b. Emerg	ency Restorat	tion Plan				3	1		
					PART III.	ENGINEE	L RING		
11. System	Load Condit	tions and L	DSSES					Studies and Planning	(.
	System Loss			2.60%		3		Range Engineering Plan	
J	Load Factor			46.6%	-	3	-	ruction Work Plan	
	Factor at Mor		Annual 12-1-1-1	95%+	-	3		nalizing Study Data for Engineering Studies	
d. Ratios	or individual	Supstation .	Annual Peak k	WUKVA				Forecasting Data	-
12. Voltage	Conditions								
a. Voltag	e Surveys					3	4		
	· · · · · · · · · · · · · · · · · · ·	New Output	Voltage Spread	1		3	1		

# CASE NO. 2006-00494

## EXHIBIT 1A

			ERATION AND MAINT For Present Year		For Future 3 Years	
	For Previou	2001	2002	2003	2004	2005
YEAR	2000	Actual	Budget	Budget	Budget	Budget
	Actual S Thousands	\$ Thousands	\$ Thousands	\$ Thousands	\$ Thousands	\$ Thousand
Normal Operation	1,677	1,756	1,865	1,921	1,979	2,038
Normal Maintenance	2,917	3,269	3,546	3,652	3,762	3,875
Additional (Deferred) Maintenance						
Total	\$4,594	\$5,025	\$5,411	\$5,573	\$5,741	\$5,913
	adequacy of Budgets for No ed with Board of Director		3	(Rating) (Date)		
	N		EXPLANATORY NO	TES		
ITEM NO.	T		COM	MENTS		
3b.	Telephone poles left	standing next to elec	ctric poles need to be re	moved.		
	Cable TV attachmen	ts require constant for	ollow-up to ensure cod	e compliance.		
	A computerized mai	ntenance program W	ill he implemented.			
5a. 5b.	A computerized mai	ntenance program w	ill be implemented.			
50.	1					
10a.			blogy will be implemen	ted.		
13a.	Preparation of a long	g range plan is in pro	ogress.			
	11	1 01		T	TITLE ENT OF OPERATIONS	DATI
	miketos	trattin				9/19/20
RATED BY:	Chris	Caller-	5	VICE PRESIDE	INT OF ENGINEERING	
REVIEWED B	Y: Color	1		PRES	ident & CEO	9/19/20
KUTIERLUD	- Elle	<u>genn</u>				9/19/20
		1 11			KUS GFR	9/19/20
REVIEWED B		L. lum	~	1		
		· 11			RUS GFR	

		RESP						<b>VE CORPORATION</b> RENCE OF 03/08/2007	
					CASE	NO. 20	06-00	494	
					E	XHIBI	r 1B		
whic reporting	g burden for thi	s collection of i	nformation is estin	nated to averag	e i hours per r	esponse, includi	ng the time for	reviewing instructions, searching existing data sources. gather or any other aspect of this collection of information. Including	ing and m
+	and any to Deserve	mane of Ameleur	ture, Clearance O ion of Information	firse OC OM	B Control #09	172.0025 AG Bo	x 7630. Woxum	12Ton 1X, 20250.	
	UN		ES DEPARTN JRAL UTILIT			JRE		BORROWER DESIGNATION KY 64	
	р		V RATIP			Y		DATE PREPARED	
	n		1 1023 1 11			-		9/16/2005	
atings on fo	m are:		0: Unsatisfac	tory No Re	cords	2: Acceptal	ole, but Show	Id be Improved See Attached Recommendations	
NA:	Not Applic	able	1: Corrective			And the Party of t	and the state of t	dditional Action Required at this Time ON FACILITIES	**************************************
. Substatio	ns (Transml	ssion and D		PARTI, II	CAUYOM100			tion - Underground Cable	
	Clearance, C					NA		ting and Corrosion Control	-
	l Conditions: on Records I		iajor Equipmer ion	ц, Appearan	ce	NA NA		e Grading, Appearance Jole: Hazards, Guying, Condition	-
-	Prevention					NA			-
. Transmis	dan Tinar							tion Line Equipment: Conditions and Records	
a, Right-of	Way: Clear		Appearance, Is			NA	b. Section	salizing Equipment	•
			nductor, Guyir	ıg		NA NA		ution Transformers ounted Equipment	
c. inspects	on Program a	ina kecotas					u. I au ivi	Safety: Locking, Dead Front, Battiers	
	ion Lines - C					2		Appearance: Settlement, Condition	
-	on Program : mcc with Saf			Clearances		3	e. Kilowa	Other htt-hour and Demand Meter	
0. n mili				Foreign Stri		2	Rea	ding and Testing	
o Obronie	d Physical (	ondition from	n Field Checki	Attachments	8	2			
C. Observe	d i Hyaba C	onumon 1101		Right-of-Wa	ay	2			
				Other		<u>NA</u>			
I have before		d Wash Ord	er Procedures		OPERATI	ONS and M (Rating)	8. Power Q		, <b>4</b> 1077 <b>- 1</b>
	lanning & Sc					3	-	al Freedom from Complaints	
b. Work B	acklogs:		Right-of-Way Poles	Maintenane	c	3	9 Loadin	g and Load Balance	
			Retirement of	Idle Service	s	3	· ·	ution Transformer Loading	
<b>6</b>			Other			NA	1	Control Apparatus tion and Feeder Loading	
	nterruptions Annual Hot		r by Cause (Cor	uplote for each	of the previous	5 yours)	C. DUDSIA	ion and rococi roading	
PREVIOUS	POWER	MAJOR	SCHEDULED	ALL.	TOTAL		-	and Plant Records	
5 YEARS (Year)	SUPPLIER a.	STORM b.	с.	OTHER d.	c.	(Rating)		ing Maps: Accurate and Up-to-Date Diagrams	
2000	0.04	0.22	0.03	0.60	0,89	3	c. Staking	•	
2001 2002	0.30	0.20	0.03	<u>1.31</u> 1.43	<u>1.64</u> 1.94	3	1		
2002	0.14	17.18	0.01	1.70	19.03	2	1		
2004	1.16	2.45	0.02	2.05	5.68	2	1		
b. Emerg	ency Restora	tion Plan				3	<u> </u>	، روان در ۲۰۰۰ میلاد اور	
11. System	Load Cond	tions and L	osses		PART III.	ENGINEE (Rating)		Studies and Planning	
a Annual	System Loss	es		5.30%	-	3	a. Long I	Range Engineering Plan	
	Load Factor Factor at Mo			44.5%		3	1	niction Work Plan nalizing Study	
			unnual Peak kW			3	d. Load I	Data for Engineering Studies	
17 17-14	Condition						e. Load I	Forecasting Data	
a. Voltage						3	1		
			Voltage Spread	۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰		3	1		
RUS FORM	4 300 (2/98)							PAGE 1 C	FZPA

## CASE NO. 2006-00494

## EXHIBIT 1B

	For Previo	ous 2 Years	For Present Year		For Future 3 Years		
YEAR	2003	2004	2005	2006	2007	2008	
1	Actual	Actual	Budget	Budget	Budget	Budget	
	\$ Thousands	\$ Thousands	\$ Thousands	\$ Thousands	\$ Thousands	\$ Thousan	
Normal Operation	\$1,873,203	\$1,983,184	\$2,228,650	\$2,295,510	\$2,364,375	\$2,435,30	
Normal Maintenanco	\$4,230,748	\$4,123,514	\$3,929,900	\$4,047,797	\$4,169,231	\$4,294,30	
Additional (Deferred) Maintenance							
Total	\$6,103,951	\$6,106,698	\$6,158,550	\$6,343,307	\$6,533,606	\$6,729,61	
14. Budgeting: A	Adequacy of Budgets for N	eeded Work	3	(Rating)			
15, Date Discuss	ed with Board of Director	5	10/20/2005				
			EXPLANATORY NO	TES			
ITEM NO.		······································	COMI	ÆNTS			
36,	Cable TV attachments re	-	o ensure code compliance.				
	A program is underway t	o review all attachment ag	greements.				
Зc.		Non-yard trees in the right-of-way should be removed, not trinuned.					
5a. and 5b.	A computerized maintenance program will be developed with the new GIS system.						
7a.	There was a severe ice st	orm in 2003 and a lesser i	ice storm in 2004.				
10a.	The new mapping system	n with GPS technology wi	ill be completed in early 200	06.			
				1	TILE	DATE	
RATED BY:	Chap B	net or		VP ENC	HNEERING	9/16/200	
REVIEWED BY	Kere	Shu-			ENT & CHO	9/16/200	
REVIEWED BY	Kik 1	lon		RU	IS GFR	9/16/200	

			PERATIVE CORP		
	RESPONSE TO S		CONFERENCE O	E 03/08/2007	
		CASE NO. 2	2006-00494		
EXHIBIT 2A		FROM 2002	RUS FORM 7		
		PART G. SERVICE	INTERRUPTIONS		
LITENT	'A	VERAGE HOURS PER CO	DNSUMER BY CAUSE		TOTAL
ITEM -	POWER SUPPLIER	EXTREME STORM	PREARRANGED	ALL OTHER	
	(a)	(b)	(c)	(d)	(e)
1. Present Year	. 30	.20	.01	1.43	
2. Five-Year Average	.48	1.00	. 04 [	1.16	
EXHIBIT 2B		FROM 2003	RUS FORM 7		
		PART G. SERVICE			
ITEM	A'	VERAGE HOURS PER CO	ONSUMER BY CAUSE		TOTAL
	POWER SUPPLIER	EXTREME STORM	PREARRANGED	ALL OTHER	
	( <i>a</i> )	(b)	.01	( <i>d</i> )	(e)
1. Present Year	. 14	17.18		1.70	
2. Five-Year Average	.41	4.23	.03	1,27	and grant and a star of the second
EXHIBIT 2C	<u></u>	FROM 2004	and a second		
		PART G. SERVICE			
ITEM -		VERAGE HOURS PER CO		ALL OTHER	TOTAL
	POWER SUPPLIER (a)	EXTREME STORM (b)	PREARRANGED (c)	(d)	(e)
1. Present Year	1.16	2.45	. 02	2.05	
2. Five-Year Average	. 56	3.87	. 03	1,43	
[36] Yu. Su. Mathematika on cards spectra and work.					
EXHIBIT 2D		FROM 2005	RUS FORM 7		
	Agenetisti ettiminen sistemi tarihinta karana ka	PART G, SERVICE	INTERRUPTIONS	ann a gu ann an an an ann an an ann an ann an an	
ITEM	A	VERAGE HOURS PER CO			TOTAL
	POWER SUPPLIER	EXTREME STORM	PREARRANGED (c)	ALL OTHER (d)	(0)
1. Present Year	( <i>u</i> ) .30	(b)	.05	1.62	(e)
2. Five-Year Average	. 51	3.10	.03	1.47	
		<b></b>		anne an	nanti ürren Allmart (ölün
a rive real reage		FROM 2006	RUS FORM 7		
EXHIBIT 2E					
in the second		PART G. SERVICE	INTERRUPTIONS		
EXHIBIT 2E	A	PART G. SERVICE VERAGE HOURS PER CO			TOTAL
in the second	POWER SUPPLIER	VERAGE HOURS PER CO EXTREME STORM	ONSUMER BY CAUSE PREARRANGED	ALL OTHER	
EXHIBIT 2E		VERAGE HOURS PER CO	ONSUMER BY CAUSE	ALL OTHER ( <i>d</i> ) 2.02	TOTAL (e)

	BLUE GRASS ENERGY COOPERATIVE CORPORATION RESPONSE TO STAFF INFORMAL CONFERENCE OF 03/08/2007
	CASE NO. 2006-00494
1	EXHIBIT 3
2	EARLEL
3	
4	UNITED STATES DEPARTMENT OF AGRICULTURE Rural Utilities Service
5	
6	Bulletin 1730-1
7	SUBJECT: Electric System Operation and Maintenance (O&M)
8	To: RUS Electric Borrowers and RUS Electric Staff
9	Effective Date: Date of Approval
10	Expiration Date: Seven Years from Effective Date
11	Office of Primary Interest: Electric Staff Division
12	<b>Filing Instructions:</b> This Bulletin supersedes REA Bulletin 161-5, Electric System Review and Evaluation, dated October, 1978. File this bulletin with 7 CFR 1730.
13	Purpose: This bulletin contains guidelines related to electric borrowers' operation and
14	maintenance (O&M) and outlines the Rural Utilities Service's (RUS) standard practices with respect to review and evaluation of O&M practices.
16	
17	
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19	
20	
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22	
23	
24	Assistant Administrator - Electric Program Date
25	
26	
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## CASE NO. 2006-00494

# Bulletin 1730-1 Page 2

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5	2. Borrower Guidelines	
6		f O&M Practices by RUS 5
7	Exhibit A: RUS Form 300 I	Rating Guide7
8	<b>INDEX:</b> Inspection	
9	Maintenance	
10	Operations and N	<i>Maintenance</i>
	Records	
11		
12		ABBREVIATIONS
13	ANSI	American National Standards Institute
14	CAP	Corrective Action Plan
	CFR	Code of Federal Regulations
15	СТ	Current Transformer
16	EMF	Electric and Magnetic Fields
17	EPA	Environmental Protection Agency
11	GFR	General Field Representative
18	IFT	Interfacial Tension
19	kVA	Kilovolt-Ampere
	kW	Kilowatt
20	kWh	kilowatt-hour
21	NESC	National Electrical Safety Code
22	O&M	Operations and Maintenance
22	OCR	Oil Circuit Recloser
23	РСВ	Polychlorinated Biphenyl
24	PSD	Power Supply Division
	РТ	Potential Transformer
25	REA	Rural Electrification Administration
26	RUS	Rural Utilities Service

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**1. Purpose:** This bulletin contains guidelines related to electric borrowers' operation and maintenance (O&M) and outlines the Rural Utilities Service's (RUS) standard practices with respect to review and evaluation of O&M practices. 7 CFR 1730 contains the policies and procedures of RUS related to electric borrowers' O&M practices and RUS' review and evaluation thereof.

## 2. Borrower Guidelines

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**2.1 Records:** Each borrower is responsible for maintaining records of the physical and electrical condition of its electric system. Any or all of these records may be reviewed by RUS during its review and evaluation. Such records include, but are not limited to:

- (a) Service interruption reports and summaries of experience (including power supply outages.)
- (b) Overhead and underground line inspection and maintenance records, including pole inspection and line patrol records.
- (c) Substation inspection and maintenance records.
- <sup>18</sup> (d) Recloser and sectionalizer records.
- (e) Line Voltage regulator records.
- 21 (f) Distribution transformer records.
- 22 (g) Watt-hour and demand meter records.
- (h) Right-of-way maintenance records.
- 25 (i) Line Voltage and current records.
- 26 (j) Up-to-date system maps.

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(k) System losses.

(l) Idle services.

(m) External system impacts (including EMF questions, stray voltage, radio and television interference, etc.)--records of inquiries and resulting actions.

**2.2 Emergency Restoration Plan:** Each borrower should have a written plan detailing how to restore its system in the event of a system wide outage resulting from a major natural disaster or other causes. This plan should include how to contact emergency agencies, borrower management and other key personnel, contractors and equipment suppliers, other utilities, and any others that might need to be reached in an emergency. It should also include recovery from loss of power to the headquarters, key offices, and/or operation center facilities. It should be readily accessible at all times under any and all circumstances.

**2.3 System Ratings:** RUS Form 300, Review Rating Summary, includes a numerical rating system as follows:

18	0: Unsatisfactory - no records
19	1: Unsatisfactory - corrective action needed
20	2: Acceptable, but could be improved - see attached recommendations
21	3: Satisfactory - no additional action required at this time
21	N/A: Not applicable
22	
23	Exhibit A provides a guide for the conditions normally needed to justify a rating of 3 for each of
	the items on RUS Form 300. The explanatory notes section of RUS Form 300 should include a
24	list of all items rated as unsatisfactory (ratings 0 or 1) along with comments indicating the action
25	or implementation that is proposed. This is in addition to the corrective action plan (CAP)
26	required by 7 CFR 1730. Additional expenditures required for deferred maintenance should be

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indicated in the O&M Budgets, Part IV of RUS Form 300. These may be distributed over a period of 2 or 3 years as indicated on the form.

## 3. Review and Evaluation of O&M Practices by RUS

**3.1.** RUS will conduct a periodic review and evaluation of each borrower's operation and maintenance programs and practices. The purpose of this review is to assess loan security and to determine borrower compliance with RUS policy as outlined in part 7 CFR 1730.

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**3.2. Distribution Borrowers:** The General Field Representative (GFR) is responsible, within the GFR's assigned territory, for initiating and conducting a periodic review and evaluation of each distribution borrower's operation and maintenance programs, practices, and records. This review and evaluation is to be done at least once every 3 years.

**3.2.1** The GFR may inspect facilities as well as records, and may also observe construction and
 maintenance work in the field. Key borrower personnel responsible for the facilities being
 inspected should accompany the GFR during such inspections.

3.2.2 If adequate information is available, the GFR will complete the review and evaluation and
 consult with the borrower regarding its programs and records for operation, maintenance, and
 system improvements. The GFR's signature on the Form 300 signifies concurrence with the
 borrower's analysis, ratings, and explanatory notes unless indicated otherwise.

3.2.3 If adequate information is not available, the GFR's review and evaluation will be deferred
 until the borrower has remedied the deficiencies identified by the GFR.

**3.2.4** Upon completion of the O&M review and evaluation, the GFR will communicate his/her findings to the borrower.

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**3.3 Power Supply Borrowers:** The Power Supply Division (PSD) is responsible for initiating and conducting a periodic review and evaluation of each power supply borrower's operation and maintenance programs, practices, and records . PSD will consult with the borrower and arrange a scheduled time for the review and evaluation. PSD will determine the frequency of this review and evaluation.

**3.3.1** The GFR will, upon request by PSD, assist in the review and evaluation, particularly with respect to transmission, subtransmission, and substation facilities.

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# EXHIBIT A

# **RUS FORM 300 RATING GUIDE**

# **CONDITIONS NORMALLY NEEDED TO JUSTIFY A RATING OF 3**

## **PART I - TRANSMISSION and DISTRIBUTION FACILITIES**

## 1. Substations (Transmission and Distribution)

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a.	Safety, Clearance, Code Compliance: No violations of RUS or NESC requirements
	including clearance or separations in any substation. All substations accessible by
	authorized personnel only. Operating manual available for each substation.

- b. <u>Physical Condition: Structure, Major Equipment, Appearance</u>: Rare instances of rust, weeds, dangerous insects, and bird nesting. No leaks, no temporary bus being used on an ongoing basis, only minor material associated with maintenance of the substation equipment stored in yard. No debris, no openings under fence greater than 3 inches (76 mm), no broken insulators, parallel power transformers properly fault protected. Circuit, phases & airbreak switch handles are properly identified.
- 18 Inspection Records Each Substation: Written monthly inspection reports completed and c. reviewed by responsible personnel for all substations. Infrared inspection of all 19 connectors at least every five years. Dielectric, dissolved gas, and interfacial tension 20 (IFT) tests of oil filled equipment performed at least every five years or within one year 21 of exposure to a through fault which causes the transformer protective devices to 22 de-energize the transformer. Annual power factor test of all equipment rated 230 kV or 23 above. Relays are functionally tested annually and cleaned, calibrated, and tested every three years. 24
- d. <u>Oil Spill Prevention</u>: Oil spill prevention and mitigation plans prepared and available for
   all substations.

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3 **CONDITIONS NORMALLY NEEDED TO JUSTIFY A RATING OF 3** 4 2. **Transmission Lines** 5 Right-of-Way - Clearing, Erosion, Appearance, Intrusions: No uncontrolled erosion. 6 a. Gates or gaps at all fence crossings. Structures and lines not impacted by untrimmed 7 right of way. Structures generally accessible by service vehicles. 8 Physical Condition - Structure, Conductor, Guying: All structures vertical and guys taut. b. 9 No broken insulators or crossarms, and no unauthorized attachments. Essentially all 10 structures numbered. Structures and attachments conform to NESC requirements. 11 Inspection Program and Records: Walking, riding, or aerial line patrol of all lines c. 12 (including those on private right-of-way) performed at least annually. Records 13 maintained for pole inspection and line patrol and deficiencies corrected on a timely 14 basis. Above and below ground pole inspection performed on cycle based upon decay zone using experienced inspectors. 15 16 3. Distribution Lines - Overhead 17 Inspection and Maintenance - Program and Records: Above and below ground pole a. 18 inspection performed on cycle based upon decay zone using experienced inspectors. 19 Records of all poles inspected, treated, rejected and changed out readily available in summary form. All overhead lines (including those on private right-of-way) patrolled 20 annually (walking, riding, or aerial); more frequently if experience dictates. Records 21 maintained for pole inspection and line patrol with deficiencies corrected in a timely 22 manner. Pole and equipment changeout program in place to keep rejected poles and 23 failed equipment to a minimum. 24 Compliance with Safety Codes - Clearances: All facilities staked prior to construction by b. 25 personnel familiar with NESC requirements. Line patrols identify changed conditions requiring greater clearances. 26

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## **CONDITIONS NORMALLY NEEDED TO JUSTIFY A RATING OF 3**

<u>Compliance with Safety Codes - Foreign Structures</u>: Utility has policy and practice of immediately remedying foreign structures which conflict with primary lines upon observation.

<u>Compliance with Safety Codes - Attachments</u>: All overhead attachments meet NESC separation and clearance requirements. Up-to-date joint-use and pole rental agreements are in effect. Unauthorized attachments and violations of the NESC promptly remedied.

# c. <u>Observed Physical Condition from Field Checking - Right-of-way</u>: Structures and lines not impacted by untrimmed right-of-way. Right-of-way re-trimming cycles to be dictated by local conditions.

Observed Physical Condition from Field Checking - Other: Rare instances of leaning poles, slack guys, broken grounds, loose hardware and superfluous material on structures. No broken crossarms or insulators, and no pole steps on wood poles. Installation of miscellaneous distribution equipment meets NESC requirements. Neutral properly identified when located on crossarm.

## 4. Distribution - Underground Cable

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a. <u>Grounding and Corrosion Control</u>: Ground rods located at each transformer plus at least four per mile (1.6 km), not including grounds at individual services, in accordance with the NESC. Record system kept of visible cable condition when excavated. Periodic testing at selected locations of underground cable and grounding points for evidence of corrosion. Appropriate and timely actions taken to correct any unsatisfactory conditions.

<sup>25</sup>
 b. <u>Surface Grading, Appearance</u>: Rare instances of earth settling which could create
 hazards to the general public and timely action taken to correct any deficiency.

	1	
		BLUE GRASS ENERGY COOPERATIVE CORPORATION RESPONSE TO STAFF INFORMAL CONFERENCE OF 03/08/2007
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3		NDITIONS NORMALLY NEEDED TO JUSTIFY A RATING OF 3
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4	с.	Riser Poles: Hazards, Guying, Condition: Cut-outs mounted per RUS requirements.
5		Riser cable covered with conduit to within 4 feet (1.2m) of the bottom of the potheads.
6		Adequate surge protection installed.
7		
8	5. Dis	tribution Line Equipment: Conditions and Records
9	a.	Voltage Regulators: Voltage regulators inspected and maintained in accordance with the
10		manufacturer's recommended timetable. Regulators checked for proper operation at
		least semi-annually. Knowledge of and compliance with EPA requirements with respect
11		to PCB contaminated oil and equipment. Dielectric, dissolved gas, and IFT tests of oil
12		filled equipment performed every five years or within one year of exposure to a through
13		fault which causes the protective devices to de-energize the regulator.
14	b.	Sectionalizing Equipment: Oil circuit reclosers (OCR's) and breakers inspected and
15		maintained in accordance with the manufacturer's recommended timetable. Records
16		reflect inspection results, maintenance performed, and date.
17		Distribution Transformers: Complete records kept as to size, location, and date
	c.	installed. Knowledge of and compliance with EPA requirements with respect to PCB
18		contaminated oil and equipment. Transformer loading analysis performed periodically as
19		needed.
20		
21	d.	Pad Mounted Equipment - Safety - Locking, Dead Front, Barriers: All padmount enclosures meet RUS dead-front requirements (secondary barriers, recessed penta-head
22		nut, and separate pad-lock.) Grounding in accordance with RUS and NESC
23		requirements. "Danger" signs inside all enclosures and "Warning" signs on the exterior
24		in accordance with ANSI Z535.
25		Ded Mounted Equipment Appendix Settlement Conditions Percingtoness of
26		Pad Mounted Equipment - Appearance - Settlement, Condition: Rare instances of leaning or undermined enclosures. Prompt action taken to correct deficiencies.
20		learning of underlining enclosures. I tompt action taken to correct denoted bies.

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## **CONDITIONS NORMALLY NEEDED TO JUSTIFY A RATING OF 3**

Watt-hour and Demand Meter Reading and Testing: All meters tested in accordance e. with state regulations (where applicable) or ANSI C12.1. PT, CT and demand meters are generally tested on at least a 3 year cycle. Complete records kept as to size, location, and date installed.

## **PART II - OPERATION AND MAINTENANCE**

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## 6. Line Maintenance and Work Order Procedures

Work Planning and Scheduling: All lines staked prior to construction by personnel a. familiar with NESC requirements. Work order inspections performed in accordance with 7 CFR 1724, Electric Engineering, Architectural Services and Design Policies and Procedures (i.e., within 6 months of completion of construction.) Utility promptly provides inspector with written notice that clean-up work has been completed. Construction Work Plan projects completed in time to meet load level requirements. New service connections completed in reasonable time frames.

Work Backlogs - Right-of-way Maintenance: Adequate resources being provided to address re-clearing on timely basis. Right-of-way re-trimming cycles to be dictated by local conditions.

Work Backlogs - Poles: All reject poles replaced within 6 months of inspection. "Danger" and "Hazard" poles replaced as soon as possible.

Work Backlogs - Idle Services - Retirement of: Policy and procedures in place to address retirement of idle services so that ratio of idle services to total is less than 10% unless specific local conditions dictate otherwise.

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4			
5			Work Backlogs - Other: Job orders from line inspection completed in reasonable time
6			frames.
7	7.	Ser	vice Interruptions
8		a.	Average Annual Hours/Consumer by Cause: Rating to consider the effect of all types of
9			outages, including planned. Evidence of concern would be when total outages exceed 5
10			hours or power supply outages exceed 1 hour per consumer per year. Outages
11			accounted for in accordance with RUS Bulletin 161-1.
12		b.	Emergency Restoration Plan: Emergency restoration plan readily available and covers
13			multiple scenarios, including loss of power to the headquarters, key offices, and/or
14			operations centers.
15	8.	Pov	ver Quality
16			General Freedom from Complaints: Minimal complaints with respect to television and
17			radio interference, voltage flicker, neutral-to-earth voltage, harmonics, and EMF.
18			Complaints generally resolved quickly and effectively. Summary of complaints
19			maintained and analyzed periodically.
20	9.	Log	nding and Load Balance
21		a.	Distribution Transformer Loading: Loading ratio (kVA to peak kW) may range from 2
22			to 4, depending upon levels of load management, seasonal customers, as well as other
23			factors.
24		b.	Load Control Apparatus: Have records of individual controllers showing location, type
25			of load being controlled, and any maintenance. Load control results summarized.
26			

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1 Bulletin 1730-1 **Exhibit** A 2 Page 13 3 **CONDITIONS NORMALLY NEEDED TO JUSTIFY A RATING OF 3** 4 5 Substation and Feeder Loading: All feeders balanced at each substation to within 20% c. 6 during peak loads. 7 10. Maps and Plant Records 8 Operating Maps - Accurate and Up-to-Date: Consumers can be identified by location a. 9 with a set of maps carried by all service personnel. Maps depict roads, grid lines, 10 waterways, railroads, and other landmarks necessary to locate consumers. Maps are of a functional size and permit location of consumers irrespective of date of service. Detail 11 maps are current and up to date, generally 1 year old or less. 12 13 Circuit Diagrams: Current and up-to-date map (generally 2 years old or less) depicting a b. multiple line layout of distribution facilities of the utility. The location and sizes of 14 substations, line regulators, reclosers, capacitors, and substation boundaries are clearly 15 shown. Primary voltage drops are indicated at the ends of primary feeder lines. All 16 transmission lines are located and identified as to voltage and ownership. 17 Staking Sheets: Staking sheets are prepared for projects prior to construction. The d. 18 sketch and construction units are consistent. North arrow and grid reference are present. 19 Spans lengths are correctly listed and all line angles and guy lead lengths are stated. Final staking sheets are consistent with the "as-built" conditions. 20 21 22 **PART III - ENGINEERING** 23 11. System Load Conditions and Losses 24 25 Annual System Losses: System losses are appropriate for the conditions encountered. a. Reasonable efforts made to reduce system losses. 26

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4	b.	Annual Load Factor: Load factor is appropriate for the conditions encountered, generally at least 45%. Reasonable efforts made to improve load factor, where possible.	
6 7 8	c.	Power Factor at Monthly Peak: Each distribution substation maintains a power factor between 0.95 lagging and 0.95 leading at time of power supply coincident peak demand.	
9	12. Vo	Itage Conditions	
10 11 12 13	a.	<u>Voltage Surveys</u> : Sufficient number of recording and/or indicating voltmeters are available and utilized to monitor specific locations where voltage conditions warrant special attention. Annual graphs or statistical analyses are kept for each meter for the most recent 5 year period.	
14 15 16 17	b.	Substation Transformer Output Voltage Spread: All substations include automatic voltage regulators or voltage regulating transformers. Each substation has continuous voltage recording which is monitored monthly by computer analysis. Regulated substation output voltage and line regulators are maintained so that Range A service voltage per RUS Bulletin 169-4 is provided to all consumers.	
18	13. Lo:	ad Studies and Planning	
19 20	a.	Long Range Engineering Plan: System planning study is current, meets the requirements of 7 CFR 1710, can be used as a guide for preparing the next Construction Work Plan,	
21		and is prepared in accordance with RUS Bulletin 1724D-101A.	
22 23	b.	Construction Work Plan: Work Plan is up-to-date, meets the requirements of 7 CFR 1710, and is prepared in accordance with RUS Bulletin 1724D-101B.	
24 25 26	c.	Sectionalizing Study: System sectionalizing is reviewed and updated as needed concurrently with each Construction Work Plan and with significant change in fault current conditions.	
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## **CONDITIONS NORMALLY NEEDED TO JUSTIFY A RATING OF 3**

d. <u>Load Data for Engineering Studies</u>: A completely integrated data base automatically assigns consumers, and their load (kWh or kW) to specific geographical locations that are associated with specific distribution line sections. Data is sufficiently accurate that the difference between the calculated and measured substation kW is less than 5%.

e. <u>Power Requirements Data</u>: Power requirements study is current and completed in compliance with the requirements stated in 7 CFR 1710.

## PART IV - OPERATION AND MAINTENANCE BUDGETS

#### 14. Budgeting

<u>Adequacy of Budgets For Needed Work</u>: Utility prepares an annual budget with specific item quantities and dollars prior to the beginning of each year for each department. The O&M budget is broken down to show each program, the quantities of work to be accomplished and the timing during the year when the proposed work is to be performed.

8 <sub>3</sub> ,	BLUE GRASS ENERGY COOPERATIVE CORPORATION RESPONSE TO STAFF INFORMAL CONFERENCE OF 03/08/2007
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2	BEFORE THE PUBLIC SERVICE COMMISSION
3	PUBLIC SERVICE
4	In the Matter of: COMMISSION
5	) AN INVESTIGATION OF THE RELIABILITY ) ADMINISTRATIVE
6	MEASURES OF KENTUCKY'S ) CASE NO.: 2006-00494
7	JURISDICTIONAL ELECTRIC ) DISTRIBUTION UTILITIES AND CERTAIN )
8	RELIABILITY MAINTENANCE PRACTICES ) )
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13	TESTIMONY ON BEHALF OF
14	BLUE GRASS ENERGY COOPERATIVE CORPORATION ("BGE")
15	FOR COMMISSION'S ORDER 2006-00494
16	DATED DECEMBER 12, 2006
17	
18	
19	FILED: APRIL 13, 2007
20	WITNESS: Gary Grubbs, PE
21	
22	By: Kan K. Suh
23	Ralph K. Combs
24	Counsel for BGE 100 United Drive, Suite 4B
25	Versailles, Kentucky 40383 (859) 873-5427
26	
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1	Q1.	Please state your name, position, and business address.
2	A1.	My name is Gary E. Grubbs; I am a professional engineer ("PE") with
3		the consulting firm of Patterson and Dewar Engineers, Inc.
4		headquartered in Norcross, Georgia. I work from my home/office
5		located at 121 Hidden Forest Road in Glasgow, Kentucky.
6	Q2.	Please provide an overview of your professional qualifications.
7	A2.	I received my BSEE from the University of Kentucky and my
8		Professional Engineer's license from the Commonwealth of Kentucky. I
9		have been employed for the last 32 years in various positions within
10		the electric utility industry. Said positions have held direct
11		responsibility for both electric distribution and vegetation
12		management from the role of utility management, governmental
13		regulatory management and private consulting in the electric utility
14		industry.
15	Q3.	Have you previously testified before the Kentucky Public Service
16		Commission (the "Commission")?
17	A3.	No
18	Q4.	What is the purpose of your testimony?
19	A4.	My firm is retained by Blue Grass Energy Cooperative Corporation
20		("BGE") to provide various professional services. The purpose of my
21		testimony is to discuss issues and questions put forth by Commission
22		staff's guidance for testimony as outlined in the Informal Conference
23		("IC") notes for Case 2006-00494 on March 8 <sup>th</sup> , 2007.
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l	Q5.	With respect to reliability reporting requirements; is it appropriate
2		for the Public Service Commission to require regular reporting of
3		reliability information from all distribution utilities?
4	A5.	Present requirements for reporting portions of RUS Form 7 information
5		could be expanded to include RUS Form 7, Part G outage data; such is
6		also available during yearly PSC inspections. Reporting requirements
7		of greater detail or frequency would greatly increase workloads for
8		utility as well as Commission staff.
9	Q6.	With respect to reliability reporting requirements; is it appropriate
10		for the Commission to require reporting at a level smaller than the
11		entire system (i.e. by substation or circuit)
12	A6.	As stated in A5 above it would greatly increase workloads for utility
13		and Commission staff if reporting of detailed outage information is
14		required. Yearly reviews of system wide reliability indices and
15		basic guidelines/expectations by Commission staff would prove more
16		beneficial as compared to a cumbersome and costly "micro-management"
17		approach.
18	Q7.	With respect to reliability reporting requirements; are there any
19		concerns about sharing this information within the industry or with
20		the public?
21	A7.	Public disclosure of system outage information by RUS utilities
22		exists at present via RUS and Commission open-records laws.
23		Disclosure of such information on a more localized basis could have
24		undesirable consequences based upon the fact that reliability factors
25		for each specific customer/area will always be different and for

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comparison purposes must be evaluated on an "apple-to-apple" basis.

## BLUE GRASS ENERGY COOPERATIVE CORPORATION

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1	Q8. With respect to reliability performance standards; please comment on
2	the appropriateness of a reliability performance standard. An example
3	of a performance standard is found in the RUS requirement of no more
4	than five hours outage for the average customer for any reason, and
5	no more than one hour caused by power supply.

A8. Performance guidelines for system indices could be a viable option if used as only one facet of an overall system/utility review. The Commission presently has the option of management and/or operational audits and such could be triggered by a less than reasonable review.

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Q9. With respect to reliability performance standards; comment on an appropriate requirement to respond to non-attainment of a performance standard, or in the alternative explain why a response to non-attainment is not necessary.

14 A9. An appropriate response to non-attainment exists at present as stated 15 in A8 above; use of the existing management/operational audit.

16 Q10. With respect to right-of-way ("ROW") management; please provide 17 comments regarding the appropriateness of a PSC defined ROW 18 management minimum standard.

A10. ROW management methods are like tools; the prudent choice may be 19 20 different depending on the type tree, the terrain, the type of line 21 construction, the line voltage, the growth contributors, the tree 22 maintenance cycle achievable, the location, the easement, the over-23 all reliability required, etc. Utilities should be permitted to 24 implement any or all of the prudent methods available at the time of action and thus minimum standards would prove cumbersome with 25 26 possible negative results.

## BLUE GRASS ENERGY COOPERATIVE CORPORATION

RESPONSE TO STAFF INFORMAL CONFERENCE OF 03/08/2007

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1	Q11.	With respect to right-of-way ("ROW") management; if such a standard
2		were created, to what level of detail should it be defined?
3	A11.	Refer to A10; possible guidelines should be the extent of any
4		Commission initiative.
5	Q12.	With respect to right-of-way ("ROW") management; does a PSC
6		requirement give the utility any advantage when performing ROW
7		maintenance?
8	A12.	As eluded to in Al0 - Al2 above Commission ROW requirements are a
9		step in the wrong direction. However, Commission support in such
10		areas as strengthening the ability of utility ROW clearing and
11		increasing public awareness of the needs for such could be of great
12		benefit.
13	Q13.	With respect to right-of-way ("ROW") management; are there
14		disadvantages {to a PSC requirement that gives the utility possible
15		advantages when performing ROW maintenance}?
16	A13.	Yes. Most rural facilities in place at present are on private land
17		without written easements. The cutting/trimming of privately owned
18		trees is a very delicate undertaking and is best conducted on case-
19		by-case or landowner-by-landowner basis. Ill will impressed upon a
20		property owner not only interferes with vegetation management on said
21		owners property but on any future need for additional facilities
22		across the property.
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