EAST KENTUCKY POWER COOPERATIVE, INC.

PSC CASE NO. 2005-00089

INFORMATION REQUEST RESPONSE

COMMISSION STAFF'S 1ST DATA REQUEST DATED 6/16/05

ITEM 4

RESPONSIBLE PARTY: ROBERT J. RUSCH

REQUEST: Provide the CD and a printed copy of Rusch Exhibit III referred to on page 6 of the testimony of Robert J. Rusch.

RESPONSE: See the following attached **Data Response 4 and Data Response 4 Rusch Exhibit III.**

Review of Cranston-Rowan 138kV Transmission Project

In 2004, the Cranston-Rowan project was reviewed due to the modifications in the Northern Kentucky Area for the Spurlock-Flemingsburg-Goddard Project (SFG Project). The purpose was to review network operations with the SFG Project installed and to identify alternate operating procedures to address potential system issues caused by the construction schedule delay of the Cranston-Rowan Project. The same generation scenarios were utilized as in the original 2002 studies.

Analysis Approach

This analysis used revised base cases that were prepared to support analysis of the transmission additions associated with the E.A. Gilbert Unit 3 generation addition at the Spurlock Generating Station and the SFG Project. These bases cases were utilized as they reflected the most current Northern Kentucky transmission system. Contingencies were run on these cases using the list summarized in Table 1. The Base Case results are summarized in Tables 2 and 3. Only Generation Scenarios 0 and 3 are included as they produced the issues of concern.

The most critical outages are summarized and the contingencies requiring attention are color coded using the Appendix A format. The color codes also identify existing operating procedures that relieve the identified situation. Terminal facilities that are identified are being addressed through normal annual procedures for system improvements.

Tables 2 and 3 form the basis for subsequent comparisons for issues associated with the Cranston-Rowan Project's delay. Any issues identified with the Cranston-Rowan delays that are common to the base case are already addressed. Therefore, they do not require attention.

Review of Project Delays

Potential areas of concern were identified. These same issues would be present if the Cranston-Rowan project were not constructed. Three operating scenarios were considered:

- **Base Case with Cranston-Rowan 138kV Out of Service, Goddard Tie Closed** – This represents the basic system configuration without the Cranston-Rowan 138kV Project (CR Project).

  The SFG Project included the opening of the EKPC-LG&EE 138kV Goddard Substation Tie at the Goddard Substation. EKPC and LGE&E have agreed to keep the tie closed to address other issues until all area transmission is commissioned. This scenario reflects that agreement.

  This analysis compared the results summarized in Table 2 with those listed in Table 4. The closing of the Goddard Tie without the Cranston-Rowan Project significantly increases the number of potential overloads (Table 4) as compared to the base case (Table 2). Note that the Goddard-Rodburn 138kV and Goddard-Hilda 69kV line overloads reappear as they did in the original 2002 studies. Short term operating procedures have been developed to alleviate these conditions until the Cranston-Rowan Project is completed.

The available capacitors are capable of providing adequate voltages during the Table 1 outages with the exception of the Rodburn-Rowan 138kV line. With or without the Goddard Tie, the voltages at Elliotville 69kV bus and the Rowan 138kV bus are below criteria after capacitors have been switched (approximately 89.7% in both cases).

- **Base Case with Cranston-Rowan 138kV Out of Service, Goddard Tie Closed and All J.K. Smith Units Off Line** – This scenario illustrates the effect of using non-economic dispatch generation support from the J.K. Smith Generating Station to alleviate issues associated with for the Cranston-Rowan Project delay by removing all the J.K. Smith generation. Table 5 summarizes the overload results.

  Comparing the Table 5 results with Table 4 indicates that there are a number of contingencies that require the J.K. Smith combustion turbines to be operating to prevent additional overloads including:

  - Brown North-Ghent 345kV line
  - Brown-Fawkes 138kV line
  - Goddard-Rodburn 138kV line
  - Kenton-Rodburn 138kV line
  - Louden-Avon 138kV line
  - Avon-Dale 138kV line
  - Laurel County-Laurel Dam 161kV line
  - Fawkes 138-W Berea 69kV line and transformer

  Under normal peak load conditions, the JK Smith units are at least partially operating. However, with the overloads shown, the Smith units provide significant support to the area and will probably need to be operated to prevent overloads under other conditions..

- **Base Case with Cranston-Rowan 138kV Out of Service, Goddard Tie Closed J.K. Smith Units Off Line and EKPC Loads Reduced** – This scenario is designed to illustrate system operation without the JK Smith units and with a reduced system load. The total EKPC load was reduced by 405MW (load level represents approximately 80% of peak) with the remainder supplied with purchases. Table 6 contains the system overloads.

  Comparing with Table 5, the results indicate that, without the Cranston-Rowan Project, operation of the JK Smith units is necessary to forestall and/or alleviate overloads and confirms the scenario immediately above. Similar to previous results, approximately 89.7% voltages are observed after capacitor switching when support to the Rowan/Goddard area is removed. The secondary voltage regulators should be able to keep customer voltages to within criteria, but are being reviewed.

Based on this analysis, the following observations are made:

1. The results are similar to the previous Cranston-Rowan study and show that there is a continued need for the project as proposed.

2. The SFG Project and E.A. Gilbert Unit 3 transmission and generation additions do not materially affect the original results.

3. The J.K. Smith combustion turbines will be required to operate outside of their economic dispatch order to support the general area until such time as the Cranston-Rowan project is completed

Table 1 Outage List

Outage Facility	Outage Facility
Avon - Spurlock 345 kV Line	Pineville - Alcald 345 kV Line
Avon 345/138 kV Transformer	Alcald 345/161 kV Transformer
Argentum - Fuller 138 kV Line	West Lexington - Ghent 345 kV Line
Avon - Boonesboro Tap 138 kV Line	Brown North - West Lexington 345 kV Line
Boonesboro Tap - Dale 138 kV Line	West Lexington 345/138 kV Transformer
Boonesboro Tap - Boonesboro 138 kV Line	Harden - Brown North 345 kV Line
Boonesboro 138/69 kV Transformer	Harden - Smith 345 kV Line
Avon - Fayette 138 kV Line	Harden 345/138 kV Transformer
Fayette - 138/69 kV Transformer	Speed - Ghent 345 kV Line
Avon - Bourbon 138 kV Line	Batesville - Ghent 345 kV Line
Bourbon - Jacksonville 138 kV Line	Trimble Co. - Clifty Creek 345 kV Line
Jacksonville - Renaker 138 kV Line	W Irvine - Delvin 161 kV Line
Bourbon 138/69 kV Transformer	W Irvine Tap - W Irvine 161 kV Line
Avon - Loudon 138 kV Line	W Irvine Tap - Lake Reba Tap 161 kV Line
Barren - Summershade 161 kV Line	W Irvine 161/69 kV Transformer
Barren County 161/69 kV Transformer	Lake Reba 161/138 kV Transformer
Powell County 161/138 kV Transformer	Paddy Run 161/138 kV Transformer
Bountyville - Powell 161 kV Line	Paddy Run 161/138 kV Transformer (Circuit #2)
Bountyville - Delvin 161 kV Line	Paddy Run - Summershade 161 kV Line
Bountyville - Beatty 161/69 kV Transformer	Ghent - Butler 138 kV Line
Boone - Renaker 138 kV Line	Carntown T - Butler 138 kV Line
Boone - Parker 138 kV Line	Carntown - Carntown T 138 kV Line
Spurlock - Parker 138 kV Line	Kenton - Carntown T 138 kV Line
South Parker - 138/69 kV Transformer	Carntown 138/69 kV Transformer
Boone - Buffington 138 kV Line	Rodburn - Farmer T 138 kV Line
Blue Lake 345/161 kV Transformer	Spencer - Farmer T 138 kV Line
Bullit Co - Blue Lake 161 kV Line	Farmer - Farmer T 138 kV Line
Cooper - Laurel Dam 161 kV Line	Farmer 138/69 kV Transformer
Cooper - Elihu 161 kV Line	Fawkes - Clark 138 kV Line
Dale - JKSmith 138 kV Line	Fawkes - Brown P 138 kV Line
Dale -TFJ 138 kV Line	Ibm N - Haefli 138 kV Line
Fawkes - JKSmith 138 kV Line	Lake Reba - Lake Reba Tap 138 kV Line
Fawkes - W.Berea 138 kV Line	Lake Reba 138/69 kV Transformer
W.Berea - 138/69 kV Transformer	Fawkes - Fawkes T 138 kV Line
Fawkes - 138 kV Line	Fawke T - Fawkes 138 kV Line
Galitin - Ghent 138 kV Line	Fawke T - Lake Reba Tap 138 kV Line
Green - Taylor Co. Tap 161 kV Line	Pocket North 500/161 kV Transformer
Taylor Co. Tap - Taylor 161 kV Line	Pineville 345/161 kV Transformer
CMPVPJ - Taylor Co. Tap 161 kV Line	W Frankfort - Ghent 345 kV Line
MAR IJ - CMPVPJ 161 kV Line	

Table 1 Outage List

Outage Facility	Outage Facility
Marion - MAR IJ 161 kV Line	W Frankfort 345/138 kV Transformer
Taylor Co 161/69 kV Transformer	Ghent 345/138 kV Transformer
Grnhlj - Delvin 161 kV Line	Adams 138/69 kV Transformer
JKSmith - Powell 138 kV Line	Clark 138/69 kV Transformer
JKSmith - Union City 138 kV Line	Haefln 138/69 kV Transformer
Laurl Co - Laurel Dam 161 kV Line	Kenton 138/69 kV Transformer
Laurl Co - Pittsburg 161 kV Line	Louden - Louden B 138/69 kV Transformer
Pittsburg - Tyner 161 kV Line	Rodburn 138/69 kV Transformer
Pittsburg 161/69 kV Transformer	Spencer 138/69 kV Transformer
Marion - Lebanon 138 kV Line	Broadf - Baker 765 kV Line
Marion 161/138 kV Line	Cullod - Wyoming 765 kV Line
Maysville - Spurlock 138 kV Line	Hillsboro - Sinkg8 138 kV Line
Renaker - Spurlock 138 kV Line	Millsboro - Sinkg8 138 kV Line
Rowan - Rodburn 138 kV Line	Hillsboro - Ohh 138 kV Line
Rowan - Skaggs 138 kV Line	Bussyville - Big Sand 138 kV Line
Skaggs 138/69 kV Transformer	Kenton - Emera8 138 kV Line
Rowan 138/69 kV Transformer	Mercer - Brown P 138 kV Line
Cooper - S Oakhill 161 kV Line	Mercer - Lebanon 138 kV Line
Russel - S Oakhill 161 kV Line	Mercer - Danville 138 kV Line
Russel - Wolf Cr 161 kV Line	Danville 138/69 kV Transformer
Russel - Russco 161 kV Line	Goddard - Plumville 138 kV Line
Russco 161/69 kV Transformer	Flemingsburg - Goddard 138 kV Line
Spurlock - Kenton 138 kV Line (Circuit #2)	Goddard - Rodburn 138 kV Line
Argentum 138/69 kV Transformer	Kenton - Wedonia 138 kV Line
Brown North - Baker Lane 138 kV Line	Flemingsburg - Wedonia 138 kV Line
Baker Lane - Higby 138 kV Line	Goddard KY 138 kV Tie
Baker Lane 138/69 kV Transformer	Kenton - Wedonia 138 kV Line
Goddard 138/69 kV Transformer	Goddard - Rodburn 138 kV Line
Owen Co Tap - Ghent 138 kV Line	Buffington1 345/138 kV Transformer
Owen Co Tap - Scott 138 kV Line	Spurlock - Zimmer 345 kV Line
Owen Co Tap - Owen Co. 138 kV Line	Spurlock - Stuart 345 kV Line
Owen Co 138/69 kV Transformer	Goddard - Cranston 138 kV Line
Plumville 138/69 kV Transformer	Kenton T - Kenton 138 kV Line
Powell 138/69 kV Transformer	Kenton T - Spurlock 138 kV Line
Renaker 138/69 kV Transformer	Kenton T - Flemingsburg 138 kV Line
Pocket - Pineville 500 kV Line	JKSmith - Spence 138 kV Line
Phipp B - Pocket 500 kV Line	
Alcald - Brown North 345 kV Line	

Table 2 Base Case with Economic Dispatch (Dispatch 0)

2004/05 WINTER PEAK ECAR DYNAMIC BASE CASE (1999 SERIES)
GILBERT#3+SPURLOCK-STUART/ZIMMER 345 KV+SPURLOCK 345/138 KV#3 ADDED
CRANST-ROWAN,SPLK-FLEM-GODDRD 138KV ADD;GODDRD EK-KU 138KV OPEN
5% REACTR SPLK-KENT#1;SPLK-KENT#2 OPEN;AVON-LOUDN 4% REACTOR

	OUTAGED FACILITY					MONITORED FACILITY						FLOW MVA		PCT RATNG	
	FROM		TO		CKT	FROM		TO		CKT		BASE	CONT	BASE	CONT
DISP	--NAME--	KV-	--NAME--	KV-	ID	--NAME--	KV-	--NAME--	KV-	ID	RATNG	CASE	CASE	CASE	CASE
BASE CASE CONDITIONS															
						11RODBRN	69	05MOREHE	69	1	276.1A	38	--	117	--
SINGLE CONTINGENCY															
0	11BRWN N	345	11SMITH	345	1	11SMITH	138	11GR STL	138	1	287	81	285	28	99
0	11BLUE L	161	20BLIT C	161	1	20SHLBYC	69	11SC TAP	69	1	72	30	78	41	108
0	11DELVIN	161	20GRNHLJ	161	1	11PINEVI	69	11KU PK	69	1	80	66	82	83	102
0	11RODBRN	138	11SPENC	138	1	11RODBRN	138	11RODBRN	69	1	44	36	56	82	128
0	11FAWKES	138	20FAWKES	138	1	11FAWKES	138	11FAWK T	138	1	240	126	276	53	115
0	11FAWKES	138	11LR TAP	138	1	20FAWKES	138	11FAWKES	138	1	287	152	273	53	95
0	20JKSMIT	138	20POWELL	138	1	11LR TAP	138	11LR TAP	161	1	223	151	215	68	96
						11LR TAP	161	11WI TAP	161	1	223	150	213	67	96
						20DALE	69	20HUNT2	69	1	72	31	69	43	96
0	20ROWAN	138	20SKAGGS	69	1	05MOREHE	69	11RODBRN	69	1	43	38	54	88	125
						11RODBRN	138	11RODBRN	69	1	44	36	48	82	108
0	20FAWKES	138	20WBEREA	69	1	11FAWKES	69	20CROOKJ	69	1	86	35	90	41	104

Table 3 Base Case with Brown Unit 3 Off (Dispatch 3)

2004/05 WINTER PEAK ECAR DYNAMIC BASE CASE (1999 SERIES)
GILBERT#3+SPLK-STU/ZIM 345+SPLK 345/138#3 ADD;BROWN #3 OFF:AEP IMPORT
CRANST-ROWAN,SPLK-FLEM-GODDRD 138KV ADD;GODDRD EK-KU 138KV OPEN
5% REACTR SPLK-KENT#1;SPLK-KENT#2 OPEN;AVON-LOUDN 4% REACTOR

	OUTAGED FACILITY					MONITORED FACILITY							FLOW MVA		PCT RATNG	
	FROM		TO		CKT	FROM		TO		CKT			BASE	CONT	BASE	CONT
DISP	--NAME--	KV-	--NAME--	KV-	ID	--NAME--	KV-	--NAME--	KV-	ID	RATNG		CASE	CASE	CASE	CASE
SINGLE CONTINGENCY																
3	11BRWN N	345	11SMITH	345	1	11SMITH	138	11GR STL	138	1	287		72	285	25	100
3	11BRWN N	345	11GHENT	345	1	11SMITH	138	11SMITH	345	1	308		254	305	82	99
						11SMITH	345	11HARDN	345	1	308		253	303	82	98
3	11BLUE L	161	20BLIT C	161	1	20SHLBYC	69	11SC TAP	69	1	72		32	78	45	109
3	11DELVIN	161	20GRNHLJ	161	1	11PINEVI	69	11KU PK	69	1	80		69	84	86	105
3	11RODBRN	138	11SPENC	138	1	11RODBRN	138	11RODBRN	69	1	44		36	58	82	132
3	11FAWKES	138	20FAWKES	138	1	11FAWKES	138	11FAWK T	138	1	240		143	307	60	128
						20FAWKES	138	11FAWK T	138	1	287		126	289	44	101
3	11LOUDON	138	20AVON	138	1	20FAYETT	69	20DAVIS	69	1	86		63	82	73	95
3	11FAWK T	138	11LR TAP	138	1	20FAWKES	138	11FAWKES	138	1	287		165	301	58	105
3	20ROWAN	138	20SKAGGS	69	1	05MOREHE	69	11RODBRN	69	1	43		35	51	82	118
						11RODBRN	138	11RODBRN	69	1	44		36	47	82	107
3	20FAWKES	138	20WBEREA	69	1	11FAWKES	69	20CROOKJ	69	1	86		34	88	40	103

Table 4 Base Case with Cranston-Rowan 138 kV Out of Service, Goddard Tie Closed

2004/05 WINTER PEAK ECAR DYNAMIC BASE CASE (1999 SERIES)
GILBERT#3+SPURLOCK-STUART/ZIMMER 345 KV+SPURLOCK 345/138 KV#3 ADDED
SPLK-FLEM-GODDRD 138KV ADD
5% REACTR SPLK-KENT#1;SPLK-KENT#2 OPEN;AVON-LOUDN 4% REACTOR

	OUTAGED FACILITY					MONITORED FACILITY									
												FLOW MVA		PCT RATNG	
	FROM		TO		CKT	FROM		TO		CKT		BASE	CONT	BASE	CONT
DISP	--NAME--	KV-	--NAME--	-KV-	ID	--NAME--	-KV-	--NAME--	-KV-	ID	RATNG	CASE	CASE	CASE	CASE
BASE CASE CONDITIONS															
						11RODBRN	69	05MOREHE	69	1	276.1A	36	--	111	--
						11GODDRD	138	20GODDRD	138	1	598.3A	147	--	103	--
						11GODDRD	138	11RODBRN	138	1	799.1A	182	--	95	--
SINGLE CONTINGENCY															
0	05B SAND	138	05BUSSYV	138	1	11GODDRD	138	11RODBRN	138	1	191	182	195	95	102
0	11BRWN N	345	11SMITH	345	1	11SMITH	138	11GR STL	138	1	287	81	285	28	99
0	11BRWN N	345	11GHENT	345	1	11GODDRD	138	11RODBRN	138	1	191	182	196	95	102
0	11BLUE L	161	20BLIT C	161	1	20SHLBYC	69	11SC TAP	69	1	72	30	78	41	108
0	11DELVIN	161	20GRNHLJ	161	1	11PINEVI	69	11KU PK	69	1	80	66	82	83	102
0	11CLARK	138	11FAWKES	138	1	11GODDRD	138	11RODBRN	138	1	191	182	204	95	107
0	11RODBRN	138	11SPENC	138	1	11RODBRN	138	11RODBRN	69	1	44	34	52	78	119
0	11FAWKES	138	20FAWKES	138	1	11FAWKES	138	11FAWK T	138	1	240	127	278	53	116
0	11GODDRD	138	11RODBRN	138	1	20GODDRD	69	20HILDA	69	1	72	33	78	45	108
0	11KENTON	138	11RODBRN	138	1	20GODDRD	69	20HILDA	69	1	72	33	78	45	109
0	11KENTON	138	20SPURLK	138	1	20GODDRD	138	11GODDRD	138	1	215	147	212	68	99
0	11RODBRN	138	20ROWAN	138	1	05MOREHE	69	11RODBRN	69	1	43	36	49	83	114
						20GODDRD	69	20HILDA	69	1	72	33	81	45	112
						11RODBRN	138	11RODBRN	69	1	44	34	44	78	101
0	11FAWKES	138	11LR TAP	138	1	20FAWKES	138	11FAWKES	138	1	287	152	275	53	96
0	20SPURLK	345	20AVON	138	1	11GODDRD	138	11RODBRN	138	1	191	182	207	95	108
0	20AVON	138	20DALE	138	1	11GODDRD	138	11RODBRN	138	1	191	182	194	95	102

Table 4 (continued)

2004/05 WINTER PEAK ECAR DYNAMIC BASE CASE (1999 SERIES)
GILBERT#3+SPURLOCK-STUART/ZIMMER 345 KV+SPURLOCK 345/138 KV#3 ADDED
SPLK-FLEM-GODDRD 138KV ADD
5% REACTR SPLK-KENT#1;SPLK-KENT#2 OPEN;AVON-LOUDN 4% REACTOR

	OUTAGED FACILITY					MONITORED FACILITY						FLOW MVA		PCT RATNG	
	FROM		TO		CKT	FROM		TO		CKT		BASE	CONT	BASE	CONT
DISP	--NAME- -	KV- -	--NAME--	KV- -	ID	--NAME--	KV- -	--NAME--	KV- -	ID	RATNG	CASE	CASE	CASE	CASE
0	20GODDRD	138	20GODDRD	69	1	11GODDRD	138	11RODBRN	138	1	191	182	208	95	109
0	20JKSMIT	138	20POWELL	138	1	20DALE	69	20HUNT2	69	1	72	31	70	44	97
						11LR TAP	138	11LR TAP	161	1	223	150	215	67	96
						11LR TAP	161	11WI TAP	161	1	223	150	213	67	96
0	20ROWAN	138	20SKAGGS	69	1	05MOREHE	69	11RODBRN	69	1	43	36	52	83	121
						11RODBRN	138	11RODBRN	69	1	44	34	46	78	105
0	20FAWKES	138	20WBEREA	69	1	11FAWKES	69	20CROOKJ	69	1	86	35	90	41	104

Table 5 Base Case with Cranston-Rowan 138 kV Out of Service, Goddard Tie Closed and All J.K. Smith Units Off Line

2004/05 WINTER PEAK ECAR DYNAMIC BASE CASE (1999 SERIES)
GILBERT#3+SPURLOCK-STUART/ZIMMER 345 KV+SPURLOCK 345/138 KV#3 ADDED
SPLK-FLEM-GODDRD 138KV ADD;5% REACTR SPLK-KENT#2;SPLK-KENT#2 OPEN
AVON-LOUDN 4% REACTOR;JKSMITH CT'S OFF;IMPORT NORTH-SOUTH

	OUTAGED FACILITY					MONITORED FACILITY						FLOW MVA		PCT RATNG	
	FROM		TO		CKT	FROM		TO		CKT		BASE	CONT	BASE	CONT
DISP	--NAME--	KV-	--NAME--	KV-	ID	--NAME--	KV-	--NAME--	KV-	ID	RATNG	CASE	CASE	CASE	CASE
SINGLE CONTINGENCY															
7	05B SAND	138	05BUSSYV	138	1	11GODDRD	138	11RODBRN	138	1	191	224	238	117	125
7	11BRWN N	345	11SMITH	345	1	11SMITH	138	11GR STL	138	1	287	70	286	25	100
7	11BRWN N	345	11GHENT	345	1	11GODDRD	138	11RODBRN	138	1	191	224	240	117	126
						20AVON	138	20BOONST	138	1	278	308	334	111	120
						11SMITH	138	11SMITH	345	1	308	260	311	84	101
						11SMITH	345	11HARDN	345	1	308	259	310	84	101
						11GHENT	138	11OC TAP	138	1	287	208	276	72	96
7	11BLUE L	161	20BLIT C	161	1	20SHLBYC	69	11SC TAP	69	1	72	33	77	46	106
7	11BRWN P	138	11FAWKES	138	1	20AVON	138	20BOONST	138	1	278	308	374	111	135
						20DALE	138	20BOONST	138	1	287	239	298	83	104
7	11RODBRN	138	11SPENC	138	1	11RODBRN	138	11RODBRN	69	1	44	33	61	75	139
7	11GODDRD	138	11RODBRN	138	1	20GODDRD	69	20HILDA	69	1	72	36	91	50	127
						20AVON	138	20BOONST	138	1	278	308	344	111	124
						20GODDRD	69	20GODDRD	138	1	137	87	145	63	106
7	11KENTON	138	11RODBRN	138	1	20GODDRD	69	20HILDA	69	1	72	36	91	50	126
						20AVON	138	20BOONST	138	1	278	308	345	111	124
						20GODDRD	69	20GODDRD	138	1	137	87	145	63	106
7	11KENTON	138	11WEDONI	138	1	20GODDRD	138	11GODDRD	138	1	215	169	221	79	103
7	11KENTON	138	20SPURLK	138	1	20GODDRD	138	11GODDRD	138	1	215	169	237	79	110

Table 5 (continued)

2004/05 WINTER PEAK ECAR DYNAMIC BASE CASE (1999 SERIES)
GILBERT#3+SPURLOCK-STUART/ZIMMER 345 KV+SPURLOCK 345/138 KV#3 ADDED
SPLK-FLEM-GODDRD 138KV ADD;5% REACTR SPLK-KENT#2;SPLK-KENT#2 OPEN
AVON-LOUDN 4% REACTOR;JKSMITH CT'S OFF;IMPORT NORTH-SOUTH

	OUTAGED FACILITY					MONITORED FACILITY						FLOW MVA		PCT RATNG	
	FROM		TO		CKT	FROM		TO		CKT		BASE	CONT	BASE	CONT
DISP	--NAME--	KV-	--NAME--	KV-	ID	--NAME--	KV-	--NAME--	KV-	ID	RATNG	CASE	CASE	CASE	CASE
SINGLE CONTINGENCY															
7	05B SAND	138	05BUSSYV	138	1	11GODDRD	138	11RODBRN	138	1	191	224	238	117	125
7	11BRWN N	345	11SMITH	345	1	11SMITH	138	11GR STL	138	1	287	70	286	25	100
7	11BRWN N	345	11GHENT	345	1	11GODDRD	138	11RODBRN	138	1	191	224	240	117	126
						20AVON	138	20BOONST	138	1	278	308	334	111	120
						11SMITH	138	11SMITH	345	1	308	260	311	84	101
						11SMITH	345	11HARDN	345	1	308	259	310	84	101
						11GHENT	138	11OC TAP	138	1	287	208	276	72	96
7	11BLUE L	161	20BLIT C	161	1	20SHLBYC	69	11SC TAP	69	1	72	33	77	46	106
7	11BRWN P	138	11FAWKES	138	1	20AVON	138	20BOONST	138	1	278	308	374	111	135
						20DALE	138	20BOONST	138	1	287	239	298	83	104
7	11RODBRN	138	11SPENC	138	1	11RODBRN	138	11RODBRN	69	1	44	33	61	75	139
7	11GODDRD	138	11RODBRN	138	1	20GODDRD	69	20HILDA	69	1	72	36	91	50	127
						20AVON	138	20BOONST	138	1	278	308	344	111	124
						20GODDRD	69	20GODDRD	138	1	137	87	145	63	106
7	11KENTON	138	11RODBRN	138	1	20GODDRD	69	20HILDA	69	1	72	36	91	50	126
						20AVON	138	20BOONST	138	1	278	308	345	111	124
						20GODDRD	69	20GODDRD	138	1	137	87	145	63	106
7	11KENTON	138	11WEDONI	138	1	20GODDRD	138	11GODDRD	138	1	215	169	221	79	103
7	11KENTON	138	20SPURLK	138	1	20GODDRD	138	11GODDRD	138	1	215	169	237	79	110

Table 5 (continued)

2004/05 WINTER PEAK ECAR DYNAMIC BASE CASE (1999 SERIES)
GILBERT#3+SPURLOCK-STUART/ZIMMER 345 KV+SPURLOCK 345/138 KV#3 ADDED
SPLK-FLEM-GODDRD 138KV ADD;5% REACTR SPLK-KENT#2;SPLK-KENT#2 OPEN
AVON-LOUDN 4% REACTOR;JKSMITH CT'S OFF;IMPORT NORTH-SOUTH

	OUTAGED FACILITY					MONITORED FACILITY						FLOW MVA		PCT RATNG	
	FROM		TO		CKT	FROM		TO		CKT		BASE	CONT	BASE	CONT
DISP	--NAME--	KV-	--NAME--	KV-	ID	--NAME--	KV-	--NAME--	KV-	ID	RATNG	CASE	CASE	CASE	CASE
SINGLE CONTINGENCY															
7	11LOUDON	138	20AVON	138	1	20AVON	138	20BOONST	138	1	278	308	352	111	127
7	11RODBRN	138	20ROWAN	138	1	20GODDRD	69	20HILDA	69	1	72	36	80	50	111
7	20SPURLK	345	20AVON	138	1	11GODDRD	138	11RODBRN	138	1	191	224	259	117	136
7	20AVON	138	20DALE	138	1	11GODDRD	138	11RODBRN	138	1	191	224	257	117	135
						11BRWN P	138	11FAWKES	138	1	287	190	298	66	104
7	20GODDRD	138	20GODDRD	69	1	11GODDRD	138	11RODBRN	138	1	191	224	259	117	136
						20GODDRD	138	11GODDRD	138	1	215	169	214	79	100
7	20SPURLK	138	20FLEMB	138	1	20SPURLK	138	20MAYSVJ	138	1	287	216	286	75	100
						20MAYSVJ	138	20PLUMV	138	1	287	212	280	74	98
7	20LAURLC	161	20LAURLD	161	1	11PINEVI	69	11KU PK	69	1	80	78	95	98	118
						11FARLEY	161	11FARLEY	69	1	139	103	158	74	114
0	20ROWAN	138	20SKAGGS	69	1	11RODBRN	138	11RODBRN	69	1	44	33	44	75	100
						20GODDRD	69	20HILLSB	69	1	72	59	70	82	97
7	20GREENC	161	20MARION	161	1	20GREENC	69	11GRBURG	69	1	54	24	53	43	97
7	20FAWKES	138	20WBEREA	69	1	20SOMERS	69	20CABN H	69	1	72	60	74	84	103

Table 6 Base Case with Cranston-Rowan 138 kV Out of Service, Goddard Tie Closed J.K. Smith Units Off Line and EKPC Loads Reduced

2004/05 WINTER PEAK ECAR DYNAMIC BASE CASE (1999 SERIES)
GILBERT#3+SPLK-STU/ZIM 345+SPLK 345/138 #3 ADD;JKSMITH CT'S OFF
SPLK-FLEM-GODDRD 138KV ADD
5% REACTR SPLK-KENT#1;SPLK-KENT#2 OPEN;AVON-LOUDN 4% REACTOR
IMPORTS(MW):AEP(400),SOCO(200):EKPC LOAD SCALED DOWN 405 MW

	OUTAGED FACILITY					MONITORED FACILITY						FLOW MVA		PCT RATNG	
	FROM		TO		CKT	FROM		TO		CKT		BASE	CONT	BASE	CONT
DISP	--NAME--	KV-	--NAME--	KV-	ID	--NAME--	KV-	--NAME--	KV-	ID	RATNG	CASE	CASE	CASE	CASE
BASE CASE CONDITIONS															
						20AVON	138	20BOONST	138	1	1045.9A	293	--	119	--
						11GODDRD	138	20GODDRD	138	1	598.3A	168	--	119	--
						11GODDRD	138	11RODBRN	138	1	799.1A	219	--	115	--
						20AVON	345	20AVON	138	1	536.0M	544	--	102	--
SINGLE CONTINGENCY															
7A	05BROADF	765	05BAKER	765	1	20AVON	138	20BOONST	138	1	278	297	323	107	116
7A	05B SAND	138	05BUSSYV	138	1	11GODDRD	138	11RODBRN	138	1	191	219	231	114	121
7A	11BRWN N	345	11GHENT	345	1	11GODDRD	138	11RODBRN	138	1	191	219	235	114	123
						11FFRT E	138	11TYRONE	138	1	271	161	278	60	102
7A	11BLUE L	161	20BLIT C	161	1	20SHLBYC	69	11SC TAP	69	1	72	36	72	50	100
7A	11BRWN P	138	11FAWKES	138	1	20AVON	138	20BOONST	138	1	278	297	334	107	120
7A	11RODBRN	138	11SPENC	138	1	11RODBRN	138	11RODBRN	69	1	44	32	60	73	136
7A	11GODDRD	138	11RODBRN	138	1	20AVON	138	20BOONST	138	1	278	297	332	107	120
						20GODDRD	69	20HILDA	69	1	72	33	85	46	118
						20GODDRD	138	20GODDRD	69	1	137	73	134	53	98
7A	11KENTON	138	11RODBRN	138	1	20AVON	138	20BOONST	138	1	278	297	333	107	120
						20GODDRD	69	20HILDA	69	1	72	33	85	46	118
7A	11KENTON	138	20SPURLK	138	1	11GODDRD	138	20GODDRD	138	1	215	168	234	78	109

Table 6 (continued)

2004/05 WINTER PEAK ECAR DYNAMIC BASE CASE (1999 SERIES)
GILBERT#3+SPLK-STU/ZIM 345+SPLK 345/138 #3 ADD;JKSMITH CT'S OFF
SPLK-FLEM-GODDRD 138KV ADD
5% REACTR SPLK-KENT#1;SPLK-KENT#2 OPEN;AVON-LOUDN 4% REACTOR
IMPORTS(MW):AEP(400),SOCO(200):EKPC LOAD SCALED DOWN 405 MW

	OUTAGED FACILITY					MONITORED FACILITY						FLOW MVA		PCT RATNG	
DISP	FROM --NAME--	KV	TO --NAME--	KV	CKT ID	FROM --NAME--	KV	TO --NAME--	KV	CKT ID	RATNG	BASE CASE	CONT CASE	BASE CASE	CONT CASE
7A	11LOUDON	138	20AVON	138	1	20AVON	138	20BOONST	138	1	278	297	345	107	124
7A	11RODBRN	138	20ROWAN	138	1	20GODDRD	69	20HILDA	69	1	72	33	73	46	101
7A	20SPURLK	345	20AVON	138	1	11GODDRD	138	11RODBRN	138	1	191	219	255	114	133
7A	20AVON	138	20DALE	138	1	11GODDRD	138	11RODBRN	138	1	191	219	250	114	131
7A	20GODDRD	138	20GODDRD	69	1	11GODDRD	138	11RODBRN	138	1	191	219	250	114	131
7A	20ROWAN	138	20SKAGGS	69	1	11RODBRN	138	11RODBRN	69	1	44	32	43	73	97

Appendix A

To simplify the review of results, the tables listed above were developed along with a color code to identify major issues. The tables classify planning criteria violations by using a "highlight"color code as follows:

- Overloads associated with LGEE facilities:
  - Terminal Facilities that require upgrade – DARK RED
  - Terminal Facilities with existing operating procedures to address the issue – BLUE
  - Lines and/or transformers and/or other facilities with existing operating procedures to address the issue – DARK YELLOW
  - Lines and/or transformers and/or other facilities with no existing operating procedures to address the issue – YELLOW
- Voltage violations associated with LGEE facilities:
  - Buses and/or other facilities with existing operating procedures to address the issue – TEAL
  - Buses and/or other facilities with no existing operating procedures to address the issue – TURQUOISE
- Overloads associated with EKPC facilities:
  - Terminal Facilities that require upgrade – PINK
  - Terminal Facilities with existing operating procedures to address the issue – GREEN
  - Lines and/or transformers and/or other facilities with existing operating procedures to address the issue – BRIGHT GREEN
  - Lines and/or transformers and/or other facilities with no existing operating procedures to address the issue – RED
- Voltage violations associated with EKPC facilities:
  - Buses and/or other facilities with existing operating procedures to address the issue – GRAY 25%
  - Buses and/or other facilities with no existing operating procedures to address the issue – VIOLET
- Overloads associated with other utilities' facilities: GRAY 50%
- Voltage violations associated with other utilities' facilities: [redacted]

Contingencies with no color (WHITE) require no action as they are included only for general reference.

EAST KENTUCKY POWER COOPERATIVE, INC.

PSC CASE NO. 2005-00089

INFORMATION REQUEST RESPONSE

COMMISSION STAFF'S 1ST DATA REQUEST DATED 6/16/05

ITEM 5

RESPONSIBLE PARTY: MARY JANE WARNER

REQUEST: Provide a description of the effect of the proposed Cranston-Rowan transmission line on transmission system energy losses.

RESPONSE: The proposed Cranston-Rowan County 138 kV project and associated disconnection from LGEE/KU at Goddard 138 kV increases EKPC system losses slightly (approximately 1 to 2 MW) for both summer and winter peak load periods through the planning horizon. The LGEE/KU system losses decrease by 4 to 5 MW for both summer and winter peak load periods through the planning horizon.

These shifts in losses occur because the completion of Cranston-Rowan County 138 kV and disconnection of the Goddard 138 kV interconnection results in a large shift in flow from the LGEE/KU system to the EKPC system. Therefore, a large loss reduction occurs on the LGEE/KU system, and an increase that is smaller in magnitude occurs on the EKPC system.

The largest net reduction for the two systems at peak load was found in 2005 Summer. This net reduction in the combined losses for the two systems was 3.3 MW.

EAST KENTUCKY POWER COOPERATIVE, INC.

PSC CASE NO. 2005-00089

INFORMATION REQUEST RESPONSE

COMMISSION STAFF'S 1ST DATA REQUEST DATED 6/16/05

ITEM 6

RESPONSIBLE PARTY: MARY JANE WARNER

REQUEST: East Kentucky suggested several reasons for the proposed transmission line based on local needs, including: preventing overloads in the area; supporting customer load growth in the area; providing a second source to Cranston; and preventing low voltages in the area. East Kentucky also suggested other reasons for the proposed line based on regional needs, such as allowing full economic dispatch of generation (i.e., increasing full output at Spurlock and decreasing required output for local area support of combustion turbines at J.K. Smith) and becoming part of a planned 138 kV transmission loop in eastern Kentucky.

a. Is this an accurate characterization of East Kentucky's position? If no, provide such a characterization.

b. Describe the extent to which the local need as compared to the regional need drives the need for the proposed project.

RESPONSE:

a. Generally yes. The "other reasons" listed are ancillary benefits to the system associated with this project. While they do not constitute the basis for the project need, they are important benefits that should be noted.

b. The Cranston-Rowan County 138 kV line is needed for three reasons:

- Eliminates overloads of LGEE/KU's Goddard-Rodburn 138 kV line and EKPC's Goddard-Hilda 69 kV line
- Eliminates undervoltages at EKPC's Hilda and Elliottville 12.5 kV busses
- Provides a second source for the Cranston 138-13.2 kV substation

All three problems are local area issues. The Goddard-Rodburn 138 kV line is part of a 138 kV system that stretches from Maysville, KY to Richmond, KY and is therefore critical to the areas between these points, but that would not be considered a "regional" need. The local need is primary - the regional impacts are ancillary benefits.

EAST KENTUCKY POWER COOPERATIVE, INC.

PSC CASE NO. 2005-00089

INFORMATION REQUEST RESPONSE

COMMISSION STAFF'S 1ST DATA REQUEST DATED 6/16/05

ITEM 7

RESPONSIBLE PARTY: MARY JANE WARNER

REQUEST: Are thermal overloads and low voltages an issue only at the time of system peaks?

a. Do they also occur at shoulder peak periods?
b. At what percentage of the system peak do lines overload and/or does the system experience low voltage?

RESPONSE: No.

a) The April 2002 study considered only peak load periods (2005 Summer, 2005/06 Winter, 2010 Summer, 2010/11 Winter) for analysis. This analysis identified the following problems:

- Loadings of the Goddard-Rodburn 138 kV line of anywhere from 101% to 133%.
- Loadings of the Goddard-Hilda 69 kV line of anywhere from 101% to 128%
- Undervoltages as low as 84% of nominal voltage at the Hilda and Elliottville 12.5 kV busses

Based on potentially exceeding the emergency ratings of the Goddard-Rodburn and Goddard-Hilda lines by as much as 33% and 28%, respectively, the expectation is that these problems would occur for load levels that are significantly below peak load levels. Similarly, due to contingency voltages in the area being as much as 8.5% below EKPC's minimum criteria, the expectation is that undervoltages could potentially occur at levels well below peak. For these reasons, efforts to pinpoint and assess shoulder peak periods were not undertaken.

b) The 2004 Operational Review looked at both peak and shoulder-peak load levels for 2004/05 Winter. This analysis found the following:

- For contingency conditions at peak load level, loadings as high as 136% for the Goddard-Rodburn 138 kV line
- For contingency conditions at peak load level, loadings as high as 126% for the Goddard-Hilda 69 kV line
- For normal conditions with EKPC load reduced by 405 MW, a loading of 115% for the Goddard-Rodburn 138 kV line
- For contingency conditions with EKPC load reduced, loadings as high as 133% for the Goddard-Rodburn 138 kV line
- For contingency conditions with EKPC load reduced, loadings as high as 118% for the Goddard-Hilda 69 kV line

Therefore, the 2004 Operational Review appears to indicate that the problems are still potentially severe even at reduced load levels.

EAST KENTUCKY POWER COOPERATIVE, INC.

PSC CASE NO. 2005-00089

INFORMATION REQUEST RESPONSE

COMMISSION STAFF'S 1ST DATA REQUEST DATED 6/16/05

ITEM 8

RESPONSIBLE PARTY: JIM LAMB

REQUEST: The application and supporting documents do not contain information about the forecasts of customer load growth in the area. For each member cooperative in the area affected by the proposed project, provide:

a. Historic winter and summer peak demand levels for the last 5 years

b. Projected winter and summer peak demand levels for the next 10 years.

c. Historic annual energy requirements for the last 5 years.

d. Projected annual energy requirements for the next 10 years.

e. Information on the mix of customers (residential, commercial, industrial) served by area member cooperatives.

RESPONSE: See attached **Data Response 8(a,b) Exhibit 1_1- 1_5.** The data requested by 8(c), 8(d) and 8(e) are the subject of a Petition for Confidential Treatment filed this date and are included with that Petition as required by 807 KAR 5:007, Section 7(2).

Table 1-1 (continued)
Big Sandy RECC
2004 Load Forecast Peaks Summary

Noncoincident Peak Demand (MW)				*Purchased Power*		*Load Factor*
Season	Winter	Year	Summer	Year	(MWh)	(%)
1989 - 90	50.0	1990	40.4	1990	187,133	42.7%
1990 - 91	44.5	1991	41.4	1991	197,486	50.7%
1991 - 92	46.1	1992	41.8	1992	202,680	50.2%
1992 - 93	48.0	1993	45.2	1993	214,356	50.9%
1993 - 94	62.6	1994	44.9	1994	216,165	39.4%
1994 - 95	57.1	1995	49.7	1995	236,950	47.4%
1995 - 96	69.0	1996	47.6	1996	252,046	41.7%
1996 - 97	64.5	1997	50.8	1997	244,809	43.3%
1997 - 98	55.4	1998	47.8	1998	235,997	48.6%
1998 - 99	63.1	1999	53.7	1999	247,852	44.8%
1999 - 00	68.7	2000	49.9	2000	256,835	42.7%
2000 - 01	68.5	2001	51.8	2001	259,507	43.2%
2001 - 02	69.1	2002	54.9	2002	275,516	45.5%
2002 - 03	72.0	2003	51.3	2003	271,620	43.1%
2003 - 04	74.8	2004	59.5	2004	283,214	43.2%
2004 - 05	75.5	2005	60.8	2005	286,408	43.3%
2005 - 06	76.9	2006	62.2	2006	293,232	43.5%
2006 - 07	78.7	2007	63.6	2007	300,245	43.6%
2007 - 08	80.0	2008	64.8	2008	306,690	43.8%
2008 - 09	81.6	2009	66.3	2009	313,018	43.8%
2009 - 10	83.0	2010	67.6	2010	318,700	43.8%
2010 - 11	84.3	2011	68.8	2011	324,288	43.9%
2011 - 12	85.4	2012	69.8	2012	330,066	44.1%
2012 - 13	87.2	2013	71.1	2013	336,193	44.0%
2013 - 14	88.8	2014	72.3	2014	342,430	44.0%
2014 - 15	90.2	2015	73.5	2015	348,266	44.1%
2015- 16	91.2	2016	74.3	2016	353,496	44.3%
2016 - 17	93.0	2017	75.7	2017	359,902	44.2%
2017 - 18	94.5	2018	76.8	2018	365,870	44.2%
2018 - 19	97.5	2019	80.2	2019	380,817	44.6%
2019-2020	99.0	2020	81.1	2020	387,555	44.7%
2020-2021	100.7	2021	82.4	2021	393,393	44.6%
2021-2022	102.1	2022	83.3	2022	398,644	44.6%
2022-2023	103.7	2023	84.3	2023	404,906	44.6%
2023-2024	105.1	2024	85.3	2024	411,663	44.7%

Table 1-1 (continued)
Clark Energy Cooperative
2004 Load Forecast Peaks Summary

Noncoincident Peak Demand (MW)				***Purchased Power***		***Load Factor***
Season	Winter	Year	Summer	Year	(MWh)	(%)
1989 - 90	64.0	1990	51.1	1990	235,946	42.1%
1990 - 91	57.9	1991	54.5	1991	248,153	48.9%
1991 - 92	59.9	1992	52.1	1992	252,997	48.2%
1992 - 93	63.5	1993	60.0	1993	274,687	49.4%
1993 - 94	77.0	1994	59.0	1994	277,933	41.2%
1994 - 95	68.0	1995	65.0	1995	296,611	49.8%
1995 - 96	79.8	1996	66.8	1996	323,310	46.2%
1996 - 97	80.1	1997	70.3	1997	321,396	45.8%
1997 - 98	72.8	1998	73.5	1998	337,162	52.4%
1998 - 99	87.3	1999	82.4	1999	353,317	46.2%
1999 - 00	94.5	2000	81.9	2000	374,001	45.2%
2000 - 01	103.5	2001	84.6	2001	401,373	44.3%
2001 - 02	93.7	2002	88.7	2002	411,248	50.1%
2002 - 03	110.3	2003	86.6	2003	418,275	43.3%
2003 - 04	111.2	2004	94.5	2004	447,454	45.9%
2004 - 05	113.8	2005	97.1	2005	457,537	45.9%
2005 - 06	117.2	2006	99.5	2006	471,273	45.9%
2006 - 07	121.0	2007	102.1	2007	486,326	45.9%
2007 - 08	124.3	2008	104.2	2008	500,507	46.0%
2008 - 09	128.1	2009	106.9	2009	514,199	45.8%
2009 - 10	133.3	2010	110.9	2010	536,287	45.9%
2010 - 11	136.7	2011	113.1	2011	549,230	45.9%
2011 - 12	140.1	2012	115.4	2012	564,112	46.0%
2012 - 13	144.5	2013	118.4	2013	579,548	45.8%
2013 - 14	148.3	2014	120.9	2014	594,076	45.7%
2014 - 15	152.0	2015	123.4	2015	608,553	45.7%
2015- 16	155.4	2016	125.6	2016	623,165	45.8%
2016 - 17	159.9	2017	128.7	2017	639,266	45.6%
2017 - 18	164.3	2018	131.8	2018	656,443	45.6%
2018 - 19	169.2	2019	135.1	2019	675,269	45.6%
2019-2020	175.4	2020	139.6	2020	702,965	45.8%
2020-2021	180.6	2021	143.2	2021	721,370	45.6%
2021-2022	185.5	2022	146.5	2022	740,193	45.5%
2022-2023	190.6	2023	149.9	2023	759,941	45.5%
2023-2024	195.4	2024	153.1	2024	780,448	45.6%

Table 1-1 (continued)
Fleming-Mason Energy
2004 Load Forecast Peaks Summary

Noncoincident Peak Demand (MW)				*Purchased Power*		*Load Factor*
Season	Winter	Year	Summer	Year	(MWh)	(%)
1989 - 90	76.1	1990	59.5	1990	326,767	49.0%
1990 - 91	69.7	1991	61.8	1991	349,621	57.3%
1991 - 92	71.5	1992	66.8	1992	391,946	62.6%
1992 - 93	100.5	1993	95.1	1993	559,956	63.6%
1993 - 94	110.5	1994	98.1	1994	565,267	58.4%
1994 - 95	107.7	1995	101.2	1995	596,829	63.2%
1995 - 96	117.6	1996	96.7	1996	613,647	59.6%
1996 - 97	119.8	1997	106.3	1997	633,277	60.3%
1997 - 98	117.2	1998	112.3	1998	678,141	66.1%
1998 - 99	131.9	1999	123.5	1999	714,885	61.9%
1999 - 00	141.6	2000	129.6	2000	772,325	62.3%
2000 - 01	156.1	2001	141.4	2001	809,791	59.2%
2001 - 02	161.6	2002	151.7	2002	904,358	63.9%
2002 - 03	194.3	2003	145.8	2003	921,785	54.2%
2003 - 04	181.5	2004	163.1	2004	956,421	60.2%
2004 - 05	191.7	2005	167.7	2005	978,992	58.3%
2005 - 06	196.7	2006	172.0	2006	1,004,822	58.3%
2006 - 07	202.1	2007	176.5	2007	1,031,561	58.3%
2007 - 08	206.6	2008	180.2	2008	1,056,666	58.4%
2008 - 09	212.1	2009	184.7	2009	1,080,672	58.2%
2009 - 10	216.7	2010	188.5	2010	1,103,657	58.1%
2010 - 11	221.3	2011	192.3	2011	1,126,189	58.1%
2011 - 12	225.5	2012	195.8	2012	1,149,906	58.2%
2012 - 13	231.1	2013	200.3	2013	1,173,763	58.0%
2013 - 14	235.8	2014	204.0	2014	1,196,052	57.9%
2014 - 15	240.3	2015	207.5	2015	1,217,566	57.8%
2015- 16	245.5	2016	211.9	2016	1,247,620	58.0%
2016 - 17	251.2	2017	216.5	2017	1,271,254	57.8%
2017 - 18	256.5	2018	220.6	2018	1,295,950	57.7%
2018 - 19	262.0	2019	224.9	2019	1,321,565	57.6%
2019-2020	266.9	2020	228.6	2020	1,347,365	57.6%
2020-2021	273.0	2021	233.3	2021	1,372,122	57.4%
2021-2022	278.4	2022	237.5	2022	1,396,738	57.3%
2022-2023	284.0	2023	241.7	2023	1,422,347	57.2%
2023-2024	288.8	2024	245.4	2024	1,448,120	57.2%

Table 1-1 (continued)
Grayson RECC
2004 Load Forecast Peaks Summary

Noncoincident Peak Demand (MW)				*Purchased Power*		*Load Factor*
Season	Winter	Year	Summer	Year	(MWh)	(%)
1989 - 90	32.1	1990	27.8	1990	134,963	48.0%
1990 - 91	34.0	1991	32.3	1991	161,820	54.3%
1991 - 92	37.9	1992	32.1	1992	169,000	50.9%
1992 - 93	39.9	1993	37.8	1993	184,053	52.6%
1993 - 94	50.1	1994	36.4	1994	183,581	41.8%
1994 - 95	45.9	1995	42.0	1995	198,013	49.3%
1995 - 96	53.1	1996	40.5	1996	206,250	44.3%
1996 - 97	51.0	1997	43.0	1997	209,648	46.9%
1997 - 98	47.1	1998	44.1	1998	212,663	51.5%
1998 - 99	55.0	1999	50.7	1999	223,158	46.3%
1999 - 00	59.5	2000	46.2	2000	233,898	44.9%
2000 - 01	65.2	2001	51.2	2001	236,421	41.4%
2001 - 02	58.6	2002	52.0	2002	253,113	49.3%
2002 - 03	64.5	2003	50.1	2003	252,309	44.7%
2003 - 04	68.7	2004	54.5	2004	270,439	44.9%
2004 - 05	77.8	2005	63.4	2005	316,546	46.5%
2005 - 06	79.4	2006	64.6	2006	322,575	46.4%
2006 - 07	81.2	2007	65.8	2007	329,277	46.3%
2007 - 08	82.5	2008	66.7	2008	335,008	46.3%
2008 - 09	84.1	2009	67.8	2009	339,900	46.1%
2009 - 10	85.4	2010	68.8	2010	344,871	46.1%
2010 - 11	88.1	2011	71.3	2011	358,564	46.5%
2011 - 12	89.3	2012	72.2	2012	363,892	46.5%
2012 - 13	91.2	2013	73.4	2013	369,691	46.3%
2013 - 14	92.7	2014	74.5	2014	375,345	46.2%
2014 - 15	94.3	2015	75.5	2015	380,919	46.1%
2015- 16	95.6	2016	76.3	2016	386,496	46.2%
2016 - 17	97.4	2017	77.6	2017	392,409	46.0%
2017 - 18	99.2	2018	78.8	2018	398,716	45.9%
2018 - 19	101.1	2019	80.1	2019	405,600	45.8%
2019-2020	102.6	2020	81.0	2020	412,187	45.8%
2020-2021	104.7	2021	82.4	2021	418,750	45.6%
2021-2022	106.6	2022	83.6	2022	425,468	45.6%
2022-2023	108.6	2023	84.9	2023	432,480	45.5%
2023-2024	110.5	2024	86.0	2024	440,072	45.5%

Table 1-1 (continued) Licking Valley RECC 2004 Load Forecast Peaks Summary						
Noncoincident Peak Demand (MW)				***Purchased Power***		***Load Factor***
Season	Winter	Year	Summer	Year	(MWh)	(%)
1989 - 90	48.2	1990	34.4	1990	169,794	40.2%
1990 - 91	40.9	1991	36.5	1991	184,991	51.6%
1991 - 92	42.7	1992	35.2	1992	189,984	50.8%
1992 - 93	45.1	1993	41.0	1993	203,742	51.5%
1993 - 94	59.0	1994	40.0	1994	203,885	39.4%
1994 - 95	49.8	1995	45.6	1995	218,275	50.1%
1995 - 96	61.8	1996	43.0	1996	225,850	41.7%
1996 - 97	54.9	1997	46.5	1997	226,372	47.1%
1997 - 98	52.1	1998	46.8	1998	229,624	50.3%
1998 - 99	57.5	1999	52.1	1999	237,732	47.2%
1999 - 00	62.9	2000	50.7	2000	247,412	44.9%
2000 - 01	64.7	2001	51.4	2001	249,500	44.0%
2001 - 02	61.8	2002	53.3	2002	262,541	48.5%
2002 - 03	67.8	2003	51.4	2003	262,662	44.2%
2003 - 04	70.4	2004	52.8	2004	273,650	44.4%
2004 - 05	71.4	2005	53.8	2005	277,149	44.3%
2005 - 06	72.8	2006	54.6	2006	283,139	44.4%
2006 - 07	74.4	2007	55.5	2007	289,255	44.4%
2007 - 08	75.6	2008	56.2	2008	294,907	44.5%
2008 - 09	77.3	2009	57.2	2009	300,107	44.3%
2009 - 10	78.7	2010	58.0	2010	305,508	44.3%
2010 - 11	80.1	2011	58.8	2011	310,834	44.3%
2011 - 12	81.5	2012	59.6	2012	316,965	44.4%
2012 - 13	83.4	2013	60.8	2013	323,452	44.3%
2013 - 14	85.0	2014	61.8	2014	329,819	44.3%
2014 - 15	88.2	2015	64.4	2015	344,628	44.6%
2015- 16	89.7	2016	65.3	2016	351,118	44.7%
2016 - 17	91.7	2017	66.6	2017	357,883	44.6%
2017 - 18	93.4	2018	67.6	2018	364,644	44.5%
2018 - 19	95.3	2019	68.8	2019	371,706	44.5%
2019-2020	96.8	2020	69.7	2020	378,666	44.6%
2020-2021	98.9	2021	71.0	2021	385,832	44.5%
2021-2022	100.8	2022	72.2	2022	392,970	44.5%
2022-2023	102.7	2023	73.4	2023	400,369	44.5%
2023-2024	104.4	2024	74.4	2024	407,789	44.6%

EAST KENTUCKY POWER COOPERATIVE, INC.

PSC CASE NO. 2005-00089

INFORMATION REQUEST RESPONSE

COMMISSION STAFF'S 1ST DATA REQUEST DATED 6/16/05

ITEM 9

RESPONSIBLE PARTY: JIM LAMB

REQUEST: Identify any substations in the project area at which loads are projected to grow substantially faster than the system average.

RESPONSE: See attached **Data Response Exhibit 9.**

Distribution Substations That Are Projected To Grow Substantially Higher Than System Average

Grayson RECC

Leon

Fleming-Mason Energy

Pea Sticks

Hilda (1 And 2)

Sharkey

Licking Valley RECC

Index

Maggard

Crockett

Big Sandy RECC

Thelma

Clark Energy

Frenchburg

Jeffersonville

EAST KENTUCKY POWER COOPERATIVE, INC.

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COMMISSION STAFF'S 1ST DATA REQUEST DATED 6/16/05

ITEM 10

RESPONSIBLE PARTY: JIM LAMB

REQUEST: Provide the most recent annual load duration curves for the member cooperative in the area affected by the proposed project and the number of hours the load was at 95 percent of peak or higher, 90 percent of the peak or higher, and so on in cooperatives.

RESPONSE: The data requested by Item 10 is the subject of a Petition for Confidential Treatment filed this date and is included with that Petition as required by 807 KAR 5:007, Section 7(2).

EAST KENTUCKY POWER COOPERATIVE, INC.

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COMMISSION STAFF'S 1ST DATA REQUEST DATED 6/16/05

ITEM 11

RESPONSIBLE PARTY: JIM LAMB

REQUEST: Describe how program-driven and naturally occurring energy efficiencies (including efficiency standards and other matters affecting energy efficiency other than the programs offered by the cooperatives) are accounted for in the forecasts. Is the effect of energy efficiencies explicitly or implicitly included in the forecast for both the naturally occurring energy efficiency and cooperative program-driven energy efficiency?

RESPONSE: EKPC utilizes EIA appliance efficiency trends in order to account for the fact that future appliance stock will be more efficient. Such efficiency impacts are explicitly accounted for, in the sense that EKPC's forecasting model uses them as an input.

In its 2004 load forecast, EKPC projects member system residential sales of around 13,200,000 MWh by 2024. Its forecast model would have projected residential sales of around 13,600,000, were it not for the EIA appliance efficiency trends. The difference is around 3% of residential class sales.

EKPC member systems actively promote the DOE Energystar Home, off peak heat storage, and insulation programs, all of which act to reduce winter peak demand. In

2010, the net impact on winter peak of these programs is expected to be around 5 MW total for Big Sandy, Clark, Fleming-Mason, Grayson, and Licking Valley.

This amount has been implicitly accounted for in EKPC's 2004 load forecast.

EAST KENTUCKY POWER COOPERATIVE, INC.

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INFORMATION REQUEST RESPONSE

COMMISSION STAFF'S 1ST DATA REQUEST DATED 6/16/05

ITEM 12

RESPONSIBLE PARTY: JIM LAMB

REQUEST: Describe how East Kentucky develops its load forecasts. How are member cooperative forecasts developed and incorporated into the East Kentucky system forecast?

RESPONSE: See attached **Data Response Exhibit 12**

SECTION 2.0

LOAD FORECAST METHODOLOGY

Section 2.0
Load Forecast Methodology

2.1 Coordination with Member Systems

EKPC prepares a load forecast by working jointly with its member systems in preparing their individual load forecasts. These individual forecasts are included in Appendix A. Member system projections are then summed to determine EKPC's forecast for the 20-year period. Factors considered in preparing the forecasts include national, regional, and local economic performance, appliance saturations and efficiencies, population and housing trends, service area industrial development, electric price, household income, and weather. Each member system reviews the preliminary forecast for reasonability. Final projections reflect analysis of historical data combined with the experience and judgment of the member system manager and staff. In recognition of the uncertainty present in long-term forecasting, both high and low case projections are also prepared.

The general steps followed by EKPC in developing its load forecast are summarized as follows:

1. EKPC prepares a preliminary forecast for each of its member systems which is based on retail sales forecasts for six classes: residential, seasonal, small commercial, public buildings, large commercial, and other. The classifications are taken from the Rural Utilities Services (RUS) Form 7, which contains publicly available retail sales data for member systems. EKPC's sales to member systems are then determined by adding distribution losses to total retail sales. EKPC's total requirements are estimated by adding transmission losses to total sales. Seasonal peak demands are determined by applying peak factors for heating, cooling, and water heating to energy. The same methodology is used in developing each of the 16 member system forecasts.

2. EKPC meets with each member system to discuss their preliminary forecast. Member system staff at these meetings include the manager and other key individuals. The RUS General Field Representative (GFR) is also invited to attend the meetings.

3. The preliminary forecast is usually revised based on mutual agreement of EKPC staff, member system's Manager and staff, and the RUS GFR. This final forecast is approved by the board of directors of each member system.

4. The EKPC forecast is the summation of the forecasts of its 16 members.

There is close collaboration and coordination between EKPC and its member systems in this process. This working relationship is essential since EKPC has no retail members. Input from member systems relating to such things as industrial development, subdivision growth, and other specific service area information is crucial to the preparation of accurate forecasts. Review meetings provide opportunities to critique the assumptions and the overall results of the preliminary forecast. The resulting load forecast reflects a combination of EKPC's structured forecast methodology tempered by the judgment and experience of the member system staff. Over the years, this forecasting process has resulted in projections accepted by and useful to both EKPC and its members. Member cooperatives use their load forecast in developing two, three and four-year work plans, long-range work plans, and financial forecasts. EKPC uses the load forecast in such areas as marketing analyses, transmission planning, generation planning, and financial forecasting.

2.2 Forecast Model Summary

Models are used to develop the load forecast for each member system. A brief overview of each is given in this section with additional information regarding the models and resulting forecasts presented in Sections 4 through 8 of this report.

2.2.1 Regional Economic Model

EKPC has divided its members' service area into six economic regions with economic activity projected for each. Regional forecasts for population, income and employment are developed and used as inputs to residential customer and small commercial customer and energy forecasts. Therefore, EKPC's economic assumptions regarding its load forecast are consistent.

2.2.2 Residential Sales

This class of energy sales is forecasted using regression analysis. Variables include electric price, economic activity, and regional population growth. The number of residential customers is also projected with regression analysis using economic variables such as population. Residential energy use per customer is calculated by dividing the forecasted number of customers into the energy sales forecast.

2.2.3 Small Commercial Sales

Small commercial energy sales forecast results from regression analysis. The number of small commercial customers is forecasted by means of regression analysis on various regional economic data in addition to the resulting residential customer forecast described above. Exogenous variables include real electric price, economic activity, and residential customer growth. Energy use per customer is calculated as with the residential class.

2.2.4 Large Commercial Sales

This class is projected by member systems and EKPC. Member systems project existing large loads. EKPC projects new large loads based on historical development, the presence of industrial parks, and the economy of the service territory.

2.2.5 Seasonal Sales Forecast

Seasonal sales are sales to customers with seasonal residences such as vacation homes and weekend retreats. Seasonal sales are relatively small and are reported by only two of EKPC's member systems.

2.2.6 Public Building Sales Forecast

Public Building sales include sales to accounts such as government buildings and libraries. The sales are relatively small and are reported by only four of EKPC's member systems.

2.2.7 Other Sales

The 'Other Sales' class represents street lighting. This class is relatively small and is usually projected as a function of residential sales. There are 11 member systems that report this class.

2.2.8 Peak Demand and High and Low Cases

Seasonal peak demands are projected using the summation of monthly energy usages and load factors for the various classes of customers. Residential energy usage components include heating, cooling, water heating, and other usage. Using load factors, demand is calculated for each component and then summed to obtain the residential portion of the seasonal peak. Small commercial and large commercial classes use load factors on the class usage to obtain the class contribution to the seasonal peak. High and low case projections have been constructed around the base case forecast. Methodology is discussed in Section 8.

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INFORMATION REQUEST RESPONSE

COMMISSION STAFF'S 1ST DATA REQUEST DATED 6/16/05

ITEM 13

RESPONSIBLE PARTY: ROBERT J. RUSCH

REQUEST: Describe the circumstances under which low voltages occur.

a. Do low voltage problems occur anywhere other than along the Hilda-Elliottville 69 kV line?

b. Explain where the 89.7 percent voltage (Rusch Exhibit III, page 3) occurs and how that is "similar to previous results."

c. Which power flow runs confirm the 89.7 percent voltage?

d. Explain where the voltages are measured and whether the power flow modeling takes into account variable capacitor additions before assessing the voltage.

RESPONSE 13: During the May 10, 2005, meeting, it was agreed that the low voltages listed in the April 2002 Report on Page A-5 for the Hilda and Elliottville 12.5kV buses in 2010 be revisited to determine if there were any other buses that also experienced low voltages under these conditions. It was agreed that this would be explored for only the following conditions:

- On peak Summer 2010 and Winter 2010/2011
- Base Case without Cranston-Rowan 138kV Line in service to show results without system additions

- Goddard-Rodburn 138kV outage as this is the most severe outage of concern
- Smith-Spencer 138kV Line not included, as the line has not been constructed
- Dispatch 0. (Economic Dispatch)

The original studies were performed in 2001 using the latest available version of the GE PSLF software at that time (V12.5). Since 2001, GE has updated its software several times so that the latest Versions are V14.2.08 and V15. Even using the exact same input data files, GE informs its customers that the numerical results will not be exactly the same due to changes in the computational algorithms with Version 14. Therefore, the conclusions are the same as listed in the April 2001 Report Section 3 and Appendix A, but the absolute value of specific numbers are slightly different. Tables A summarizes the results of rerunning the above listed load flow case using the same input data file but with V14.2.08.

Table A
12kV Bus Voltage Percentages Below Criteria

Bus	2010 Summer	2010/2011 Winter
Cave Run	89.9	90.0
EKPC Office	90.0	----
Elliottville	87.1	87.7
Hilda 1	87.5	87.0
Hilda 2	88.0	87.6

The following is noted from Tables A:

- Only 12kV buses of interest in the area are listed that are 92.5% or less.
- EKPC Criteria applies to 12kV unregulated buses
- There are two Hilda 12kV buses served by different transformers
- The April 2001 Report listed the 12kV buses with the lowest voltages. The same buses are shown to still be the lowest value

RESPONSE 13a: Yes – low voltages also occur at the Cave Run and EKPC Office substations.

RESPONSE 13b: The approximate 89.7% voltages referenced in Rusch Exhibit III, page 3 occur at the Elliotville 69kV bus and the Rowan 138kV bus. The statement "similar to previous results" on page 3 of Rusch Exhibit III refers to similar voltage performance at these two locations in the first and third cases described on pages 1 through 3 of Rusch Exhibit III.

RESPONSE 13c: The power flow runs that confirm the 89.7 % voltage are the first and third cases described on pages 1 through 3 of Rusch Exhibit III for the Rodburn – Rowan 138kV line outage.

RESPONSE 13d: Voltages are measured on the low side of the distribution power transformer. Transmission capacitors are modeled as switched devices and so are incorporated in our power flow modeling. We cannot include distribution capacitors in our transmission model, so we represent the power factor at each substation based on its power factor history, which incorporates distribution capacitors if they are present.