

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

**JOINT APPLICATION OF LOUISVILLE GAS)
AND ELECTRIC COMPANY AND KENTUCKY)
UTILITIES COMPANY FOR A CERTIFICATE)
OF PUBLIC CONVENIENCE AND NECESSITY,)
AND A SITE COMPATIBILITY CERTIFICATE ,)
FOR THE EXPANSION OF THE TRIMBLE)
COUNTY GENERATING STATION)**

CASE NO: 2004-_____

DIRECT TESTIMONY OF

**JOHN P. MALLOY
DIRECTOR -- GENERATION SERVICES
LG&E ENERGY SERVICES INC.**

Filed: December 9, 2004

1 **Q. Please state your name, position and business address.**

2 A. My name is John P. Malloy. My business address is 220 West Main Street,
3 Louisville, Kentucky 40202. I am the Director of Generation Services for LG&E
4 Energy Services Inc. on behalf of Louisville Gas and Electric Company ("LG&E")
5 and Kentucky Utilities Company ("KU") (collectively "the Companies"). A
6 statement of my qualifications is attached as Appendix A.

7 **Q. Have you previously testified before this Commission?**

8 A. Yes, I testified in Case Nos. 2004-00213 and 2004-00214, the Companies' most
9 recent six month Fuel Adjustment Clause reviews.

10 **Q. Are you sponsoring any exhibits?**

11 A. Yes. I will be sponsoring the following exhibits:

12 Exhibit JPM-1, Resource Assessment

13 Exhibit JPM-2, LG&E and KU Generating Units Table

14 Exhibit JPM-3, Black & Veatch 2004 Integrated Resource Plan Supply-Side Data

15 **Q. What is the purpose of your testimony?**

16 A. The purpose of my testimony is to present a recommendation for obtaining the
17 capacity, on a least-cost basis, that the Companies' projections show will be required
18 to reliably and cost effectively serve their customers and maintain the reserve margin
19 requirements established in their 2002 Integrated Resource Plan ("IRP") (Case No.
20 2002-00367). To that end, I am sponsoring the Companies' Resource Assessment,
21 attached as Exhibit JPM-1, and I will discuss that Resource Assessment in detail. I
22 will also discuss the existing LG&E and KU generating fleet as modeled in the
23 Resource Assessment, and will outline how the load forecast and the bid solicitation
24 process were incorporated into the Resource Assessment. I will summarize the

1 analysis methodology and will conclude that the construction of a second coal fired
2 base load unit at the Trimble County Generating Station (“Trimble Station”) is the
3 least-cost alternative to meet the capacity needs of LG&E and KU for 2010 and
4 beyond.

5 **Q. Please describe the overall scope and function of the Resource Assessment.**

6 A. The Resource Assessment is an analysis performed to compare the various options
7 available to the Companies to meet the projected needs of their respective customers.
8 The analysis compares the revenue requirements associated with each option over a
9 thirty-year time period. The analysis is performed primarily using PROSYM, a
10 proprietary production cost model provided by Henwood Energy Services, Inc. The
11 inputs to the program include generating unit characteristics, load projections, fuel
12 and purchased power cost projections, and other information. The output includes
13 generation, purchased power, and off-system sales profiles, along with the
14 corresponding production costs. This cost information is combined with the capital
15 cost information for each option to determine the net present value of revenue
16 requirements for each resource alternative.

17 **Q. What are LG&E’s and KU’s projected capacity needs as considered in the**
18 **Resource Assessment?**

19 A. LG&E’s and KU’s projected capacity needs are shown in Table 2 of the Resource
20 Assessment (Exhibit JPM-1). According to the load forecast presented in Mr.
21 Sinclair’s testimony and used in the Resource Assessment, LG&E and KU project
22 they will need baseload capacity beginning in 2010, and will need between 401 MW
23 and 552 MW of additional capacity by 2012, in order to maintain the present reserve
24 margin range of 13% to 15%, as shown in Table 1 below. The load forecast utilized

1 in producing this table is that provided by Mr. Sinclair and is used in the final detailed
 2 analysis in the Resource Assessment.

3 **Table 1. Projected Needs**

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Scenario		2004	2005	2006	2007	2008	2009	2010	2011	2012
13% RM	MW Need Before DSM	-827	-647	-486	-313	-103	100	224	419	535
	MW Need After DSM	-877	-722	-588	-437	-237	-35	90	285	401
15% RM	MW Need Before DSM	-696	-513	-350	-174	40	245	372	570	688
	MW Need After DSM	-747	-590	-453	-300	-97	109	235	434	552

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10 **Q. How do LG&E and KU plan to meet this need for additional capacity?**

11 A. LG&E and KU propose to construct a 750 MW net nominal rating (732 MW summer
 12 rating) super-critical pulverized coal-fired base load generating unit (“TC2”) at the
 13 Trimble Station. The engineering and construction details of TC2 are presented in the
 14 testimony of Mr. Voyles. The Resource Assessment described herein demonstrates
 15 that the construction of TC2 will allow LG&E and KU to meet the growing needs of
 16 their native load customers in the most efficient and least-cost manner.

17 **Q. What is the recommendation of the Resource Assessment?**

18 A. The conclusion of the Resource Assessment is that the construction of TC2 for 2010
 19 in-service is the preferred alternative for meeting native load capacity needs for 2010
 20 and beyond. A summary of results for the final detailed analysis can be found in
 21 Table 2 below.

1

Table 2. Summary of Resource Assessment Results

Case	NPVRR (\$000)	Rank	Delta from Min (\$000)
TC2 2010 and Marketer F's PPA in 2013	16,370,555	1	0
Marketer F's PPA in 2010 and TC2 2011	16,377,517	2	6,962
TC2 and Marketer F's PPA in 2010	16,399,793	3	29,238
TC2 in 2010	16,443,935	4	73,380
TC2 in 2011	16,450,735	5	80,180
Marketer E's Joint Ownership and Marketer F's PPA in 2010	16,462,347	6	91,792
Marketer E's Joint Ownership in 2010	16,508,339	7	137,784
Marketer E's Joint Ownership in 2011	16,512,364	8	141,809
No Baseload Addition	16,850,301	9	479,746

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3 **Q. What other supply alternatives are considered in the Resource Assessment?**

4 A. The Resource Assessment evaluates the construction of TC2, shared unit ownership,
5 and market-based Purchased Power Alternatives ("PPA"). All of the resource
6 alternatives considered are described on pages 10-12 of the Resource Assessment.

7 **Q. Did LG&E and KU formally solicit proposals for other supply alternatives?**

8 A. Yes. The Companies issued a formal Request for Proposals ("RFP") on April 1,
9 2003. Responses were requested to be returned by May 30, 2003. The RFP was sent
10 to over ninety potential energy suppliers, nine of whom responded. The RFP itself,
11 the list of recipients, and the responses received can be found in the Resource
12 Assessment's Appendix A. The Companies contacted the nine respondents to collect
13 further information in order to better evaluate or screen the varying proposals. All
14 participants were notified via letter on October 3, 2003 of whether or not they were
15 considered for further analysis. Three suppliers were eliminated during the screening
16 process due to their considerably higher costs, and a preliminary detailed analysis was
17 performed based on data used in the screening analysis. Table 3 briefly describes the
18 six offers that were analyzed following the screening analysis.

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Table 3. Offers Analyzed

Marketer	Description
A	200 MW unit contingent PPA; Term: 6/2007 through 5/2027
B	200 MW in 2007 and increasing to 500 MW in 2009; Thirty year PPA starting in early 2007.
C	500 MW firm (LD) PPA; Term: 1/2007 through 12/2021
D	485 MW asset ownership; Available in early 2005
E	500 MW PPA; Term: 10/2007 through 9/2022
F	114 MW average summer capacity, anticipated 716 GWh annually; Term: Thirty year PPA starting in early 2007

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One supplier was eliminated as a result of the preliminary detailed analysis due to its higher costs, and the remaining five suppliers provided additional information for further analysis. The Companies met with the five remaining participants in October and November 2003. The analysis process and progress were discussed as well as what additional information and updates such as those relating to pricing and delivery could be provided.

9

Q. Did the Resource Assessment consider any renewable resources?

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A. Yes, W.V. Hydro Inc. (“W.V. Hydro”), Marketer F in the table above, offered a renewable resource.

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Q. Please describe the proposal from W.V. Hydro.

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A. W.V. Hydro’s original offer consisted of two 80 MW hydroelectric projects to be built at two dams on the Ohio River using a relatively new design technology. The projected average output during the peak month was approximately 114 MW. Prior to completing the final analysis, W.V. Hydro revised its RFP offer on October 14, 2004. This revision was incorporated into the final analysis in the Resource

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1 Assessment. The revised offer now consists of three 80 MW hydroelectric projects
2 and is based on conventional hydro technology. The average summer output during
3 peak month increased to 181 MW as a result of the updated response. Current
4 analysis indicates that pursuing this PPA to commence in 2013 after construction of
5 TC2 lowers overall revenue requirements. The Companies are continuing to work
6 with W. V. Hydro to assess this resource alternative.

7 **Q. Would pursuit of the W.V. Hydro offer negate or delay the need for TC2?**

8 A. The three W.V. Hydro Plants as offered have the potential to delay the construction of
9 TC2 by one year, but the hydro units are not sufficient in size to eliminate the need
10 for TC2. The Companies would need an additional 169 MW to meet a 14% reserve
11 margin in 2010. Therefore, the output from these run-of-river plants marginally
12 meets the 2010 reserve margin need. However, the pursuit of the W.V. Hydro PPA in
13 2013 after construction of TC2 in 2010 results in the lowest net present value of
14 revenue requirements as shown in the Resource Assessment.

15 **Q. Did the Resource Assessment consider any other renewable resources?**

16 A. No. Of the ninety potential energy suppliers, only W.V. Hydro offered a renewable
17 resource. However, the Companies are moving forward with plans for significant
18 rehabilitation and/or renovation of the Ohio Falls Hydroelectric facility, as discussed
19 in detail below.

20 **Q. Why were no other renewable resource options considered in the Resource
21 Assessment?**

22 A. The purpose of the Resource Assessment is to identify the least-cost option for
23 implementing the overall resource acquisition plan identified in the most recent IRP.
24 The 2002 IRP identified the need for a base load capacity in the timeframe referenced

1 herein. The 2002 IRP considered several renewable resource alternatives, none of
2 which were found to be economically justified as least-cost options. Thus, the
3 Resource Assessment is focused on identifying the least-cost alternative for supplying
4 the base load capacity identified in the 2002 IRP, rather than on completely recreating
5 the 2002 IRP.

6 **Q. How is Demand-Side Management (“DSM”) handled in the Resource**
7 **Assessment?**

8 A. The anticipated reductions in demand provided by the DSM programs are reflected in
9 the analysis as a decrease of the Companies' overall capacity need in each case. It is
10 assumed that the DSM program recommended in the 2002 IRP will be effectuated.

11 **Q. Please describe the combined generating fleet of LG&E and KU as it exists**
12 **today.**

13 A. The fleet of generating units for LG&E and KU as it exists today is described in
14 Exhibit JPM-2. For each unit the table shows the name, in-service date, age as of
15 12/1/2004, net winter and summer ratings, and the ownership share between LG&E
16 and KU.

17 **Q. Are any changes to the existing generating fleet of LG&E and KU, since the**
18 **filing of the 2002 IRP, modeled in the Resource Assessment?**

19 A. Yes. Since the October 1, 2002 IRP filing, Green River 1 and 2 were retired on
20 December 31, 2003.

21 **Q. Please discuss the existing coal units in the LG&E and KU fleet.**

22 A. As reflected in Exhibit JPM-2, the current age of LG&E and KU's coal units range
23 from 14 to 51 years, with the average age being 34 years. More than 650 MW of the
24 Companies capacity is from coal units that have been in operation for more than forty

1 years. These aging units are more prone to catastrophic failures. While such an event
2 would increase the value of constructing TC2, this value was neither quantified nor
3 used in the Resource Assessment.

4 **Q. Please describe the work in progress or planned at the Ohio Falls Hydroelectric**
5 **facility.**

6 A. As mentioned earlier, the Companies are moving forward with plans to rehabilitate
7 and/or renovate the Ohio Falls Hydroelectric facility. Work in progress at Ohio Falls
8 includes downstream stop log rehabilitation to prepare for the upcoming rehabilitation
9 project as well as the installation of a new sluice gate to allow for debris bypass.
10 Future work at the station consists of a plant-wide rehabilitation project during which
11 each of the eight generating units will be rehabilitated and upgraded to more modern
12 and efficient equipment. The onsite work for the first unit will begin in May 2005,
13 and will continue one unit per year until 2012. The rehabilitation project at Ohio
14 Falls started during the summer of 2004. Detailed design and procurement activities
15 were initiated at that time. The rehabilitation project will include several large
16 components including the replacement of each unit runner, rewind of the generator,
17 rehabilitation of the wicket gates, replacement of the discharge ring, and a complete
18 plant automation that will allow for remote operation of the facility. The expected
19 outcomes of the project include remote operation capability, increased reliability, and
20 a capacity increase of 2 MW per unit during the summer. Currently, long lead time
21 items are in procurement, the first runner is being manufactured, and detailed design
22 is in progress for the first unit outage. The anticipated cost of this project is
23 approximately \$75 million. The improvements at this run of river facility are

1 included in the Resource Assessment. The benefits from rehabilitation are expected
2 to be fully realized by 2013.

3 **Q. Has an analysis been performed regarding the two open bays at Ohio Falls,**
4 **otherwise known as Ohio Falls Units 9 and 10?**

5 A. Yes. An expansion of the powerhouse for the addition of units 9 and 10 was
6 evaluated by Voith Siemens Hydro Power Generation. This expansion included two
7 209.2” diameter propeller units housed in an extension of the existing powerhouse
8 with the maximum turbine output of 16.8 megawatts each. The size continues to be
9 constrained by the existing intake for these units. The expansion has not proven to be
10 financially justified as a least-cost resource.

11 **Q. Have any significant changes occurred in the electric power market since the**
12 **Companies’ RFP process was initiated? If changes have occurred, please discuss**
13 **how they would impact the study.**

14 A. The Companies considered recent market changes and concluded that those changes
15 would likely result in the RFP respondents increasing their bids if given the
16 opportunity. This conclusion was based on the fact that coal, gas and power prices in
17 general have all increased compared to when the RFPs were last updated.

18 **Q. Did LG&E and KU consider Integrated Gasification Combined Cycle (“IGCC”)**
19 **technology?**

20 A. Yes. The Companies are nearing the final phase of completing their 2005 IRP
21 process and part of the process requires the review of an abundant amount of supply
22 resources to meet native load requirements in the least-cost manner. As in the
23 Companies’ 2002 IRP, Black & Veatch has assisted the Companies in this review
24 process. The Companies have considered a variety of resources ranging from wind

1 and solar power to more traditional resources like combustion turbines and pulverized
2 coal. The Companies also considered IGCC technology and concluded that IGCC is
3 likely to be less reliable and more costly than the technology proposed for TC2.
4 Specifically, the information provided to and reviewed by the Companies indicates
5 that the capital costs for a greenfield IGCC (532 MW) is approximately 20% higher
6 (in \$/kW) than a greenfield super-critical coal unit (750 MW). Additionally, fixed
7 and variable operation and maintenance costs are approximately 56% and 58%,
8 respectively, higher for an IGCC when compared to a super-critical coal unit as noted
9 in the Black & Veatch 2004 Integrated Resource Plan Supply-Side Data report as
10 attached in Exhibit JPM-3. Additionally, IGCC technology is commercially
11 immature and unit availability is projected to be poor compared with conventional
12 pulverized coal in the early years of operation.

13 **Q. How will the ownership of TC2 be apportioned between LG&E and KU?**

14 A. The recommended ownership ratio for TC2 is 81% KU and 19% LG&E.

15 **Q. What is the basis for the recommended ownership ratio?**

16 A. The ownership ratio is calculated by making the production cost benefit share
17 achieved by the addition of TC2 equal to the ownership share. This calculation is
18 made over the 30-year study period. In addition to aligning the costs with the benefits
19 for both Companies, this methodology also aligns the timing of the next capacity
20 addition need for both Companies. Pursuant to the Power Supply System
21 Agreement (“PSSA”), the Operating Committee met and approved this ownership
22 ratio on December 1, 2004.

23 **Q. What action are you recommending that the Commission take regarding the**
24 **Companies’ Joint Application?**

1 **A.** It is my recommendation that the Commission grant the Companies' Joint
2 Application and approve the planned expansion of the Trimble Station through the
3 construction of TC2 as proposed. The Companies have established a need for
4 additional capacity and that the construction of TC2 is the least-cost alternative to
5 meet that need.


6 **Q.** **Does this conclude your testimony?**

7 **A.** Yes it does.

VERIFICATION

STATE OF KENTUCKY)
) SS:
COUNTY OF JEFFERSON)

The undersigned, **John P. Malloy**, being duly sworn, deposes and says that he is the Director of Generation Services for LG&E Energy Services Inc., that he has personal knowledge of the matters set forth in the foregoing testimony, and the answers contained therein are true and correct to the best of his information, knowledge and belief.



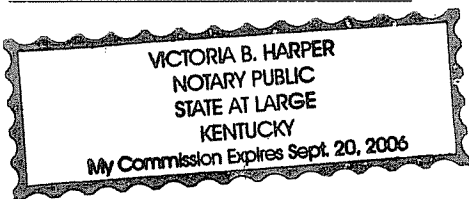
JOHN P. MALLOY

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 1st day of December, 2004.



Notary Public (SEAL)

My Commission Expires:



Appendix A

John P. Malloy

Director – Generation Services
LG&E Energy LLC
220 West Main Street
P.O. Box 32010
Louisville, Kentucky 40202
(502) 627-4836

Education

Indiana University Southeast, B.S. in Finance - 1998
Indiana University, Masters in Business Administration - 2000

Previous Positions

Louisville Gas and Electric Company, Louisville, Kentucky:
1999-2003 – Maintenance Manager, Mill Creek
1995-1999 – Manager Resource / Project Management, Louisville Gas and
Electric - Fleet
1989-1995 – Instrument and Electrical Supervisor, Mill Creek
1986-1989 – Instrument and Electrical Technician, Mill Creek
1984-1986 – Production Operations, Mill Creek
1983-1984 – Coal Handling Operations, Cane Run
1980-1983 – Instrument and Electrical Technician, Cane Run

Other Professional Associations

LG&E Credit Union
2001-Present Chairman, Board of Directors
1998-2001 Treasurer, Board of Directors
1995-1998 Board of Directors

Kentucky Utilities Company
Louisville Gas and Electric Company
2004 Generator Ratings (MW)

1-Dec-2004

Plant Name	Owner	In-Service Date	Age	Ownership		Net	
				Percentage		Winter ³	Summer ³
				KU	LGE	2004	2004
Brown 1	KU	May 1, 1957	47.62			102	101
Brown 2	KU	June 1, 1963	41.53			169	167
Brown 3	KU	July 1, 1971	33.44			433	429
Total Brown Coal						704	697
IAC on 11N2	KU	June 1, 2000	4.50	90%	10%		98
Brown 5	Joint	June 8, 2001	3.48	47%	53%	143	117
Brown 6	Joint	August 11, 1999	5.31	62%	38%	168	154
Brown 7	Joint	August 8, 1999	5.32	62%	38%	168	154
Brown 8	KU	February 1, 1995	9.84			140	106
Brown 9	KU	August 1, 1994	10.34			140	106
Brown 10	KU	December 1, 1995	9.01			140	106
Brown 11	KU	May 1, 1996	8.59			140	106
Total Brown CT						1,039	947
Cane Run 4	LGE	May 1, 1962	42.62			155	155
Cane Run 5	LGE	May 1, 1966	38.61			168	168
Cane Run 6	LGE	May 1, 1969	35.61			240	240
Total Cane Run						563	563
Dix Dam 1	KU	November 1, 1925	79.14			8	8
Dix Dam 2	KU	November 1, 1925	79.14			8	8
Dix Dam 3	KU	November 1, 1925	79.14			8	8
Total Dix Dam						24	24
Ghent 1	KU	February 1, 1974	30.85			468	475
Ghent 2	KU	April 1, 1977	27.69			466	484
Ghent 3	KU	May 1, 1981	23.60			495	493
Ghent 4	KU	August 1, 1984	20.35			495	493
Total Ghent						1,924	1,945
Green River 3	KU	April 1, 1954	50.70			71	68
Green River 4	KU	July 1, 1959	45.45			102	95
Total Green River						173	163
Haefling 1	KU	October 1, 1970	34.19			14	12
Haefling 2	KU	October 1, 1970	34.19			14	12
Haefling 3	KU	October 1, 1970	34.19			14	12
Total Haefling						42	36
Lock 7	KU	April 1, 1927	77.72			N/A	N/A
Lock 7	KU	April 1, 1927	77.72			N/A	N/A
Lock 7	KU	April 1, 1927	77.72			N/A	N/A
Total Lock 7						0	0
Mill Creek 1	LGE	August 1, 1972	32.36			303	303
Mill Creek 2	LGE	July 1, 1974	30.44			299	301
Mill Creek 3	LGE	August 1, 1978	26.35			397	391
Mill Creek 4	LGE	September 1, 1982	22.27			492	477
Total Mill Creek						1,491	1,472
Ohio Falls 1 ¹	LGE	January 1, 1928	76.97			4	6
Ohio Falls 2 ¹	LGE	January 1, 1928	76.97			4	6
Ohio Falls 3 ¹	LGE	January 1, 1928	76.97			4	6
Ohio Falls 4 ¹	LGE	January 1, 1928	76.97			4	6
Ohio Falls 5 ¹	LGE	January 1, 1928	76.97			4	6
Ohio Falls 6 ¹	LGE	January 1, 1928	76.97			4	6
Ohio Falls 7 ¹	LGE	January 1, 1928	76.97			4	6
Ohio Falls 8 ¹	LGE	January 1, 1928	76.97			4	6

Kentucky Utilities Company
Louisville Gas and Electric Company
2004 Generator Ratings (MW)

1-Dec-2004

Plant Name	Owner	In-Service Date	Age	Ownership		Net	
				Percentage		Winter ³	Summer ³
				KU	LGE	2004	2004
Total Ohio Falls Hydro						32	48
Paddys Run 13	Joint	June 27, 2001	3.43	47%	53%	175	158
Total Paddys Run CT						175	158
Trimble County 1 ²	LGE	December 23, 1990	13.95			386	383
Total Trimble County						386	383
Trimble County 5	Joint	May 14, 2002	2.55	71%	29%	180	160
Trimble County 6	Joint	May 14, 2002	2.55	71%	29%	180	160
Trimble County 7	Joint	June 1, 2004	0.50	63%	37%	180	160
Trimble County 8	Joint	June 1, 2004	0.50	63%	37%	180	160
Trimble County 9	Joint	July 1, 2004	0.42	63%	37%	180	160
Trimble County 10	Joint	July 1, 2004	0.42	63%	37%	180	160
Total Trimble CT						1,080	960
Tyrone 1	KU	October 1, 1947	57.21			30	27
Tyrone 2	KU	June 1, 1948	56.54			33	31
Tyrone 3	KU	July 1, 1953	51.45			73	71
Total Tyrone						136	129
Cane Run 11	LGE	June 1, 1968	36.53			14	14
Paddy's Run 11	LGE	June 1, 1968	36.53			13	12
Paddy's Run 12	LGE	July 1, 1968	36.44			28	23
Waterside 7	LGE	June 1, 1964	40.53			13	11
Waterside 8	LGE	February 1, 1964	40.86			13	11
Zorn 1	LGE	May 1, 1969	35.61			16	14
Total LG&E CT's						97	85

KU System

Coal	2,874	2,876
Peaking ⁴	1,732	1,557
Hydro	24	24
Total KU System	4,630	4,457

LG&E System

Coal	2,440	2,418
Peaking ⁴	764	687
Hydro	32	48
Total LG&E System	3,236	3,153

Total System

Coal	5,314	5,294
Peaking ⁴	2,496	2,244
Hydro	56	72
Total System	7,866	7,610

¹ These units have a monthly rating. Winter rating is January. Summer Rating is July.

² Ratings represent LG&E's ownership of Trimble County Unit 1, except Nameplate Rating.

³ Winter Rating Period Oct-Mar. Summer Rating Period Apr-Sept.

⁴ Peaking units include Brown CTs, Haefling, Trimble CTs, Tyrone 1&2, and LG&E CT's