

Kansas City Power & Light Company Greater Missouri Operations  
Case No ER-2012-0175

**Energy Efficiency and Environmental Impacts**

**Energy Efficiency of Energy Delivered to the Home<sup>1</sup>**

	Extraction	Processing	Transportation <sup>2</sup>	Conversion	Distribution	Cumulative Efficiency
Natural Gas	97.00%	96.90%	99.00%	-	98.80%	91.90%
Oil	96.30%	93.80%	98.80%	-	99.30%	88.60%
Propane	95.90%	95.30%	98.60%	--	99.20%	89.30%
Electricity:						
Coal-Based	98.00%	98.60%	99.00%	32.70%	93.80%	29.30%
Oil-Based	96.30%	93.80%	98.80%	31.70%	93.80%	26.50%
Natural Gas-Based	97.00%	96.90%	99.00%	42.10%	93.80%	36.70%
Nuclear-Based	99.00%	96.20%	99.90%	32.70%	93.80%	29.20%
Other <sup>3</sup> -Based	--	--	--	56.00%	93.80%	49.70%
Electricity Weighted Average <sup>4</sup>	-	-	-	35.80%	-	31.90%

Source: *Source Energy and Emission Factors for Building Energy Consumption*, Prepared by the Gas Technology Institute for the Codes & Standards Research Consortium, August 2009.

--" indicates not applicable or no efficiency loss.

<sup>1</sup> Efficiency of energy delivered to the home refers to the energy used or lost, from the point of extraction to the residence, not including the end-use device.

<sup>2</sup> Transportation of natural gas from processing plant to local distribution system; transportation of fossil fuel to electricity generating plants.

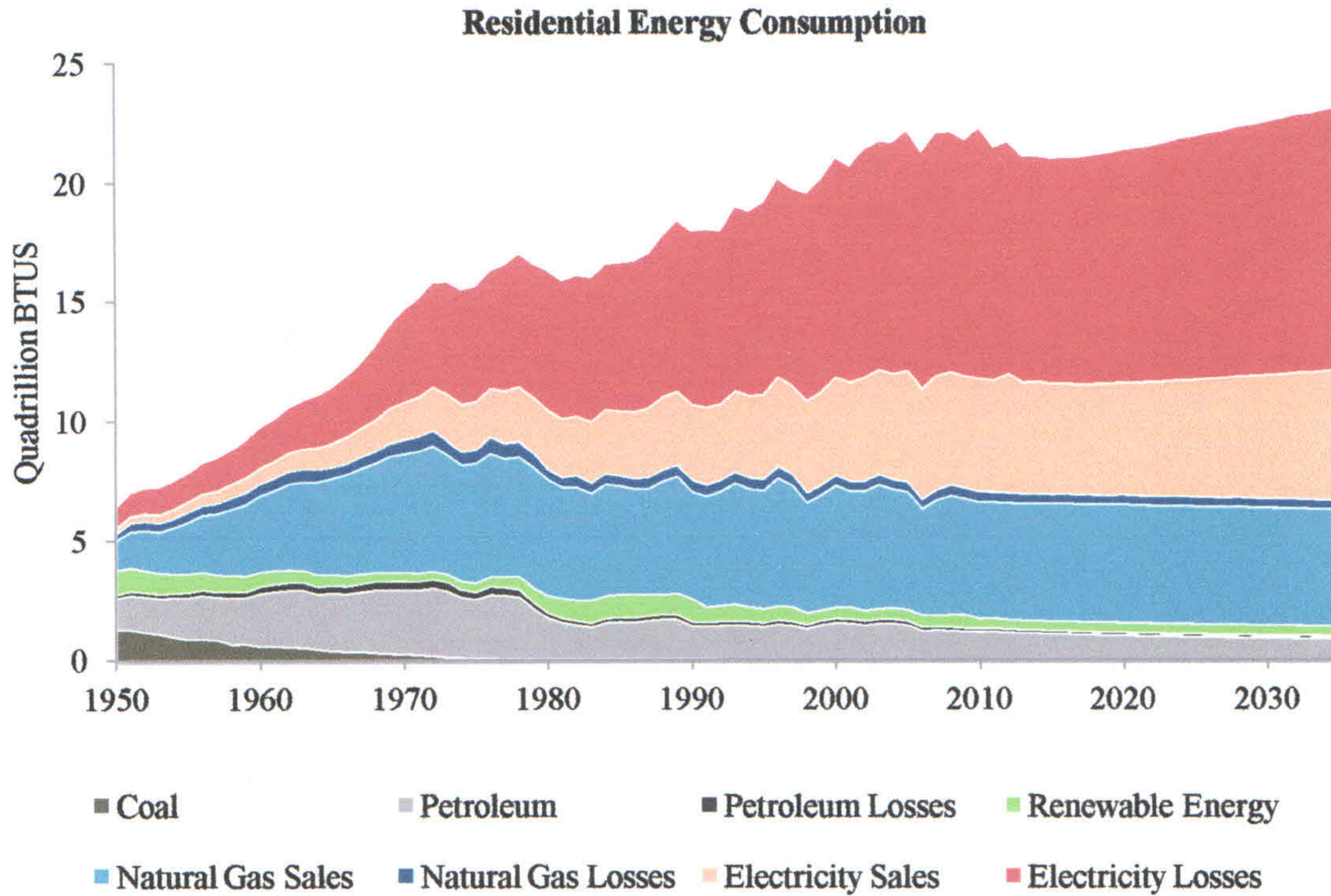
<sup>3</sup> Includes renewable energy

<sup>4</sup> Current national weighted average mix of all power generation sources.

Source for table: American Gas Association, "A Comparison of Energy Use, Operating Costs, and Carbon Dioxide Emissions of Home Appliances," October 20, 2009, pages 6.

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**Full-Fuel-Cycle Carbon Dioxide Equivalent Emissions For New Homes<sup>1</sup>**  
(Metric Tons of CO<sub>2</sub>e<sup>2</sup> per Average Household Energy Use)

Natural Gas	6.4
Electricity <sup>3</sup>	10.1
Oil	9.0
Propane	7.6

<sup>1</sup> Space heating, water heating, cooking, and clothes drying only

<sup>2</sup> Includes impact of unburned methane gas

<sup>3</sup> Based on actual generating mix in 2007

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**Residential Average Bill Impacts:  
Comparison of KCP&L-Kansas To KCP&L-GMO<sup>1</sup>**

Line	Description (a)	General Use (b)		Electric Space Heating (c)
		General Use	Space Heating	
1	Percentage Change Due to KCP&L-Kansas 2010 Rate Case			
2		Winter	-7.0%	28.2%
3		Annual	-0.7%	18.4%
4	Percentage Change Due to KCP&L-GMO Recommended Current Rate Change With Revenue Shift <sup>2</sup>			
5	<b>GMO-MPS:</b>			
6	Eliminate Space Heat	Winter	1.9%	7.0%
7		Annual	0.0%	3.2%
8		Winter	-3.4%	7.9%
9	Freeze Space Heat	Annual	-3.0%	3.7%
10				
11				

<sup>1</sup> Bill calculations based on average usage for each rate schedule in each season. These usage levels are calculated from Schedule PMN-3, pages 26 and 28, Docket No. 10-KCPE-415-RTS in Kansas, and from KCP&L-GMO's Responses to Data Request MGE-4 for GMO-MPS and MGE-5 for GMO-L&P in this case. The annual bill consists of eight winter billing months and four summer billing months.

<sup>2</sup> The bill increases on lines 7-11 will be larger if the Commission approves a Residential base revenue increase in this case. For example, with the assumed revenue increase illustrated in Schedules FJC-9A, the bill impacts would be as follows:

	GMO-MPS:	
	General Use	Space Heat
Eliminate Space Heat		
	Winter	2.3%
	Annual	1.4%
	Winter	-1.2%
	Annual	-0.5%
Freeze Space Heat		
	Winter	9.8%
	Annual	3.4%
	Winter	10.7%
	Annual	4.0%

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**Residential Average Bill Impacts:  
Comparison of KCP&L-Kansas To KCP&L-GMO**

Line	Description (a)	General Use (b)		Electric Space Heating (c)	
		Winter	Annual	Winter	Annual
12	Percentage Change Due to KCP&L-Kansas 2010 Rate Case				
13		Winter	-7.0%	28.2%	
14		Annual	-0.7%	18.4%	
15	Percentage Change Due to KCP&L-GMO Recommended Current Rate Change With Revenue Shift <sup>2</sup>				
16	<b>GMO-L&amp;P:<sup>3</sup></b>				
17	Eliminate Space Heat	Winter	-22.5%	10.9%	
18		Annual	-9.6%	7.8%	
19					
20	Freeze Space Heat	Winter	-12.2%	6.6%	
21		Annual	-3.6%	5.0%	
22					

<sup>2</sup> The bill increases on lines 18-22 will be larger if the Commission approves a Residential base revenue increase in this case. For example, with the assumed revenue increase illustrated in Schedule FJC-9B, the bill impacts would be as follows:

	GMO-L&P:	
	General Use	Space Heat
Eliminate Space Heat		
	Winter	16.9%
	Annual	13.7%
Freeze Space Heat		
	Winter	12.6%
	Annual	10.9%

<sup>3</sup> The GMO-L&P bill impacts would be smaller if KCP&L-GMO has provided the necessary billing determinants to retain a blocked rate structure upon elimination of Electric Space Heating.

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**GMO-L&P Residential Space Heating Bill Changes Due to  
 Cost-Based Current Revenue Shift and Elimination of Space Heating**

Line	Rate Component and Bills (a)	Current Rates (b)	Recommended Rates (c)
1	Service Charge	9.75	9.75
2	Energy Charge		
3	<u>Summer</u>		
4	All kWh	0.1117	0.1144
5	<u>Winter</u>		
6	First 1000 kWh	0.0776	0.0742
7	Over 1000 kWh	0.0521	0.0742
8	<u>Monthly Bills:</u>		
9	Summer at 1000 kWh	121.45	124.19
10	Winter at 1500 kWh	113.40	121.02
11	<u>Annual Bills:</u>		
12	Summer Season	485.80	496.76
13	Winter Season	907.20	968.16
14	Annual Bills	1393.00	1464.92
15	Percentage Change		5.2%

Sources:

Column b, lines 1-7: Schedule FJC-1B, column c, lines 3-11.

Column c, line 1: Schedule FJC-8B, column c, line 12.

Column c, line 4: Schedule FJC-1, column c, line 6 + Schedule 8, column f, line 22.

Column c, lines 6-7: Schedule FJC-8B, column b, line 15. The resulting winter bill on line 10 would be

smaller if KCP&L-GMO had provided the necessary billing determinants in KCP&L-GMO's Response to Data Request MGE-2-1.