

Exhibit No.:	
Issues:	Residential and Small General Service Rate Design
Witness:	Douglas B. Jester
Sponsoring Party:	Renew Missouri and The Sierra Club
Type of Exhibit:	Rebuttal Testimony
Case No.:	ER-2016-0285
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MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. ER-2016-0285

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Missouri Public
Service Commission

SURREBUTTAL TESTIMONY

OF

DOUGLAS B. JESTER

ON BEHALF OF

RENEW MISSOURI

AND

THE SIERRA CLUB

January 27, 2017

Renew Exhibit No. 401
Date 2.23.17 Reporter mm
File No. ER.2016.0285

1 Q. State your name, business name and address.

2 A. My name is Douglas B. Jester. I am a principal of 5 Lakes Energy LLC, a Michigan
3 limited liability corporation, located at Suite 710, 115 W Allegan Street, Lansing, Michigan
4 48933.

5 Q. On whose behalf are you appearing in this case?

6 A. I am appearing here as an expert witness on behalf of Renew Missouri and the Sierra
7 Club.

8 Q. Did you file direct testimony in this case?

9 A. Yes.

10 Q. What is the purpose of your testimony?

11 A. The purpose of my testimony is to respond to analysis and recommendations in the direct
12 testimony in this case by Division of Energy witness Martin Hyman and to issues raised by
13 Commission Staff witness Robin Kliethermes in rebuttal testimony.

14 Q. To which portion of witness Hyman's testimony do you wish to respond?

15 A. I am specifically responding to witness Hyman's testimony concerning block rate
16 designs¹.

17 Q. Please summarize your response to Mr. Hyman's testimony concerning block rate
18 design.

19 A. In my direct testimony in this case, I recommended that the Commission move away
20 from KCP&L's current declining block rate structure for the winter months, toward a flat rate or
21 potential inclining block rate in future cases. I also recommended that the Commission move
22 away from KCP&L's current flat rate structure for summer months and establish an inclining

¹ Direct Testimony of Martin R. Hyman, filed December 14, 2016, concerning rate design, page 18, line 11 through page 30, line 22.

1 block rate structure. Mr. Hyman's testimony on this topic is consistent with my own and I
2 commend it to the Commission.

3 In response to Mr. Hyman's specific rate proposal, I offer some preliminary calculations
4 as to the reduction in energy consumption by residential customers, both overall and in the peak
5 month, that will likely result from the specific rates proposed by Mr. Hyman.

6 **Q. What is Mr. Hyman's specific rate proposal to which you are responding?**

7 A. Mr. Hyman has calculated revenue-neutral rates that limit bill impacts on the 95th
8 percentile residential customer to 5%. His proposed rate structure is shown in the following table
9 from page 20 of his testimony:

Table 2. DE's proposed residential general use rate design.

Rate Component	Season	Block	Current	DE Proposal	Change
Customer Charge			\$11.88	\$11.88	0.00%
Energy Charge	Summer	First 600 kWh	\$0.13328	\$0.12521	-6.05%
		Over 600 kWh		\$0.14485	8.68%
	Winter	First 600 kWh	\$0.11982	\$0.11878	-0.87%
		Next 400 kWh	\$0.07183	\$0.07183	0.00%
		Over 1000 kWh	\$0.06003	\$0.06372	6.14%

10

11 **Q. In general, what effect on energy and capacity consumption should we expect from**
12 **the change in rate structure proposed by Mr. Hyman?**

13 A. Consistent with economic theory and evidence, one should expect that when the price of
14 something increases, consumption should decrease. Similarly, one should expect that when the
15 price of something decreases, consumption should increase. In the case of a block rate structure,
16 it is necessary to be careful when reasoning about this since a customer whose consumption
17 during a billing month extends into a later block cannot increase their consumption in the earlier
18 blocks. Thus, with the block structure recommended by Mr. Hyman, one should expect that a

1 customer using less than 600 kWh in a month might increase their consumption and that a
2 customer using more than 600 kWh in a summer month or more than 1000 kWh in a winter
3 month might decrease their consumption. Since Mr. Hyman’s proposal is designed to be revenue
4 neutral overall, the quantitative effects of the proposal will depend on the number and
5 responsiveness of customers whose monthly consumption is falls in each block in each month.

6 **Q. What is known about the responsiveness of customers to block pricing?**

7 A. Responsiveness of customers to pricing is often summarized as the own-price elasticity,
8 commonly called the elasticity of demand, which expresses the percentage change in
9 consumption of a good or service in response to a percentage change in price. Mr. Hyman cites a
10 2013 presentation of a specific analysis for Ameren Missouri by Ahmad Faruqui and Ryan
11 Hledik of the Brattle Group that is available in the Electronic Filing Information System of this
12 Commission² as providing one source of data about the elasticity of demand for electricity in a
13 block rate structure. In particular, he notes³ that in that study, Brattle Group “used elasticities of -
14 0.130 and -0.260 (i.e., 0.130 and 0.260 percent declines in consumption for a one percent price
15 increase) when evaluating an inclining block rate for Ameren Missouri.” More specifically than
16 described in Mr. Hyman’s summary, Brattle Group used an elasticity of -0.130 for the first block
17 and an elasticity of -0.260 for the second block in that analysis. In other words, customers are
18 twice as responsive to price changes in the second block of consumption, which tends to reflect less
19 essential uses of electricity. In the presentation by Brattle Group cited by Mr. Hyman, the specific
20 study from which those elasticities were determined is not cited nor have I been able to find a
21 source that exactly matches those results. However, the results are consistent with other studies
22 with which I am familiar both in that elasticity of demand in the 1st block is less than in later

² <https://www.efis.psc.mo.gov/mpsc/commoncomponents/viewdocument.asp?DocId=935874871>

³ Direct testimony of Martin R. Hyman filed December 23, 2016, page 22, lines 10-13.

1 blocks and in that the cited elasticities are quantitatively proximate to results from those other
2 studies.⁴ I will therefore use these elasticities for illustrative purposes.

3 **Q. Based on those elasticities, what is your estimate of the effect of Mr. Hyman's**
4 **proposal on energy consumption by KCP&L's residential customers?**

5 A. My estimates of the effect of Mr. Hyman's proposal are expressed as percentage changes
6 from the base year of January 2015 through December 2015 on which he based his analysis. I did
7 not forecast forward to future years based on load growth, since my purpose is to illustrate the
8 effects of this policy shift and not to forecast future load. The response in the first year of
9 application of this rate design is likely to be significantly less than implied by the elasticities that
10 I apply, because it will likely take one to three years for customers to respond to the change in
11 tariff.

12 I estimate that the residential rate design shown in Mr. Hyman's Table 2 will reduce
13 annual energy consumption by general residential customers by 0.88%. Data on yearly peak
14 demand by residential customers cannot be directly estimated with available data, but can be
15 approximated by the percentage energy reduction in the peak month of August. I estimate that
16 energy consumption by general residential customers in August will decrease by 1.98%.

17 **Q. How did you make these estimates?**

18 A. Mr. Hyman's Table 3 contains estimates of monthly average kWh and 95th percentile
19 kWh for general residential customers. I used those data and Microsoft Excel's LOGNORM.INV
20 function and Solver feature to find the lognormal distribution of customer electricity usage that
21 best fit these data in each month. I then used Microsoft Excel's LOGNORM.DIST to estimate

⁴ See, for examples, Li, M et al. Are Residential Customers Price-Responsive to an Inclining Block Rate? Evidence from British Columbia. *The Electricity Journal*, 27(1) 85-92; Herriges, J. and K King. Residential Demand for Electricity Under Block rate Structures: Evidence from a Controlled Experiment. *Journal of Business and Economic Statistics* 419-430 (1994).

1 the percentage of customers in each month whose usage was below or above 600 kWh and for
2 winter months the percentage of customers whose usage was below or above 1000 kWh. I then
3 applied the elasticities and rate changes summarized earlier in my testimony to calculate the
4 expected average percentage change in energy consumption per customer for each month. To
5 derive annual change in energy consumption I calculated the average percentage change in
6 monthly energy consumption weighted by monthly average consumption.

7 **Q. How certain are you of those estimates?**

8 A. I am quite confident of the direction and general magnitude of the effects I have
9 estimated, but I do not consider these estimates to be precise because the elasticities used are
10 derived from another service territory at another time and because the lognormal approximation
11 to customer load distribution is only roughly correct.

12 **Q. Does that complete your response to Martin Hyman's testimony?**

13 A. Yes.

14 **Q. To which issues raised by Staff witness Robin Kliethermes do you wish to respond?**

15 A. Witness Robin Kliethermes discusses four issues in rebuttal to my direct testimony, to
16 which I am responding.

17 First, she suggests that a shift toward an inclining block rate for the winter months should
18 be differentiated between the shoulder months of April, May and November and the winter
19 months of December, January, February and March.

20 Second, she posits that shifting revenue recovery from the 1st to the 2nd and 3rd rate block
21 will increase revenue volatility.

1 Third, she suggests that shifting revenue recovery from the 1st to the 2nd and 3rd rate
2 blocks will cause over- or under-recovery of revenues through the Company's fuel adjustment
3 clause.

4 Finally, she suggests that time-of-use rates are a better rate design than inclining block
5 rate designs.

6 **Q. What is your response to witness Kliethermes' recommendation that any shift
7 toward inclining block rates should be differentiated between shoulder and winter
8 months?**

9 A. I do not fundamentally oppose that recommendation, but suggest that it is an unnecessary
10 complication at this time. My recommendations in this case result in a diminution of the existing
11 declining block rate design but do not cause much change in the pattern of use. Her argument
12 applies as much to the current rate design as to the one that I recommend. The following table
13 illustrates the monthly pattern of general residential customer response that I expect, based on
14 the analysis of witness Hyman's specific rate design as described above:

Month	Projected Energy Change
Jan-15	-0.50%
Feb-15	-0.36%
Mar-15	-0.31%
Apr-15	-0.10%
May-15	-0.10%
Jun-15	-1.02%
Jul-15	-1.80%
Aug-15	-1.98%
Sep-15	-1.66%
Oct-15	-0.28%
Nov-15	-0.10%
Dec-15	-0.34%

1 It is apparent from this table that winter month energy usage is little affected, particularly
2 in the shoulder months and that most of the effect is on summer energy usage.

3 **Q. What is your response to witness Kliethermes' testimony that shifting revenue**
4 **recovery from the 1st to the 2nd and 3rd rate blocks will increase revenue volatility?**

5 A. If customers did not respond to the shift in rates in the various rate blocks, then revenue
6 volatility would increase, as posited by Kliethermes. However, in my view, the effect she
7 describes will be modest and other elements of customer response to the rate design will tend to
8 reduce revenue volatility.

9 Based on the use of the lognormal distribution of customer monthly usage that I
10 described above in response to witness Hyman, I anticipate that the revenue recovered from the
11 2nd and 3rd rate blocks instead of the 1st rate block will be only about 1.76% of general residential
12 customer revenue. Even allowing for the greater volatility of 2nd and 3rd block sales, the
13 increased volatility in annual revenue will be only about 0.1% of KCP&L Missouri revenue.

14 Furthermore, as can be seen in the table I provided in response to the previous question,
15 the shift away from a winter declining block rate and toward a flat or inclining block winter rate
16 and away from a summer flat rate and to an inclining block rate in summer will tend to suppress
17 demand most during the weather-sensitive summer and deep winter months. This will tend to
18 reduce the volatility of energy sales on an annual basis, which will partially counteract the
19 increase in volatility just discussed.

20 **Q. Do you agree that shifting revenue recovery from the 1st to the 2nd and 3rd rate**
21 **blocks will cause over- or under-recovery of revenues through the Company's fuel**
22 **adjustment clause?**

1 A. Witness Kliethermes suggests that as revenue recovery is shifted from the 1st rate block to
2 the 2nd and 3rd rate blocks, weather variation will drive a more powerful revenue response and
3 that this response will lead to over- or under-recovery through the Company's fuel adjustment
4 clause. I have just shown that this effect will be modest. In addition, this variation should be fully
5 corrected through reconciliation.

6 **Q. Do you agree with witness Kliethermes that time-of-use rates would be a better
7 policy shift than shifting toward an inclining block rate design?**

8 A. First, I emphatically support migration toward time-of-use rates as these are generally
9 more economically efficient and better reflect cost causation than time-independent rates. In the
10 interim, however, reducing the use of declining block rates and shifting summer rates toward
11 inclining block rates is an improvement over current rate design, as I have shown in direct
12 testimony.

13 It is feasible to combine time-of-use rates and block rates, but this adds complexity to the
14 rate design. Moving winter rates toward a flat structure is a good precursor to straightforward
15 time-of-use rates in future. The additional complexity of an inclining block rate with time-of-use
16 rates may be warranted because well-designed time-of-use rates will be highest in summer and
17 the Commission may want to mitigate the effects of summer time-of-use rates on small, less-
18 weather-sensitive customers by combining time-of-use rates with an inclining block structure.

19 **Q. Does that complete your testimony?**

20 A. Yes.


BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Kansas City Power & Light Company's)
Request for Authority to Implement a General Rate) Case No. ET-2016-0285
Increase for Electric Service)

County of Ingham)
State of Michigan)

AFFIDAVIT OF DOUGLAS B. JESTER

Douglas B. Jester, of lawful age, on his oath states: that he has participated in the preparation of the following surrebuttal testimony in question and answer form, which is attached hereto and made a part hereof for all purposes, and is to be presented in the above case; that the answers in the following surrebuttal testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such answers are true to the best of his knowledge and belief.



Douglas B. Jester

23rd In witness whereof I have hereunto subscribed my name and affixed my official seal this day of January, 2017.



