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-2016-0179
Date Testimony Prepared:	January 24, 2017

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. ER-2016-0179

REBUTTAL TESTIMONY

OF

DOUGLAS B. JESTER

ON BEHALF OF

RENEW MISSOURI

AND

THE SIERRA CLUB

January 24, 2017

Q. State your name, business name and address.

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

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

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

Q. Did you file direct testimony in this case?

A. Yes.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to respond to analysis and recommendations in the direct testimony in this case by Division of Energy witness Martin Hyman.

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

A. I am specifically responding to witness Hyman's testimony concerning block rate designs.[1]

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

A. In my direct testimony in this case, I recommended that the Commission move away from Ameren Missouri's current declining block rate structure for the winter months, toward a flat rate or potential inclining block rate in future cases. I also recommended that the Commission move away from Ameren Missouri's current flat rate structure for summer months

[11] Direct Testimony of Martin R. Hyman, filed December 23, 2016, concerning rate design, page 19, line 1 through page 35, line 19.
[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 23, lines 12-15
[4] See, for examples, Li, M et al. Are Residential Customers Price-Responsive to an Inclining Block Rate? Evidence

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

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

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

A. Mr. Hyman has calculated revenue-neutral rates that limit bill impacts on the 95th percentile residential customer to 5%. His proposed rate structure is shown in the following table from page 21 of his testimony:

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

			Current	DE Proposed	Change (vs. Current)
Customer Charge			$8.00	$8.00	0.00%
Energy Charge	**Summer**	**First 750 kWh**	$0.1208	$0.1166	-3.50%
		Over 750 kWh		$0.1310	8.47%
	Winter	**First 750 kWh**	$0.0858	$0.0834	-2.84%
		Over 750 kWh	$0.0573	$0.0603	5.30%

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

A. Consistent with economic theory and evidence, one should expect that when the price of something increases, consumption should decrease. Similarly, one should expect that when the price of something decreases, consumption should increase. In the case of a block rate structure, it is necessary to be careful when reasoning about this since a customer whose consumption during a billing month extends into a later block cannot increase their consumption in the earlier blocks. Thus, with the block structure recommended by Mr. Hyman, one should expect that a customer using less than 750 kWh in a month might increase their consumption and that a

customer using more than 750 kWh in a month might decrease their consumption. Since Mr. Hyman's proposal is designed to be revenue neutral overall, the quantitative effects of the proposal will depend on the number and responsiveness of customers whose monthly consumption is below and above 750 kWh in each month.

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

A. Responsiveness of customers to pricing is often summarized as the own-price elasticity, commonly called the elasticity of demand, which expresses the percentage change in consumption of a good or service in response to a percentage change in price. Mr. Hyman cites a 2013 presentation of a specific analysis for Ameren Missouri by Ahmad Faruqui and Ryan Hledik of the Brattle Group that is available in the Electronic Filing Information System of this Commission[2] as providing one source of data about the elasticity of demand for electricity in a block rate structure. In particular, he notes[3] that in that study, Brattle Group "used elasticities of -0.130 and -0.260 (i.e., 0.130 and 0.260 percent declines in consumption for a one percent price increase) when evaluating an inclining block rate for Ameren Missouri." More specifically than described in Mr. Hyman's summary, Brattle Group used an elasticity of -0.130 for the first block and an elasticity of -0.260 for the second block in that analysis. In other words, customers are twice as responsive to price changes in the second block of consumption, which tends to reflect less essential uses of electricity. In the presentation by Brattle Group cited by Mr. Hyman, the specific study from which those elasticities were determined is not cited nor have I been able to find a source that exactly matches those results. However, the results are consistent with other studies with which I am familiar both in that elasticity of demand in the 1st block is less than in

[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 23, lines 12-15

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

Q. Based on those elasticities, what is your estimate of the effect of Mr. Hyman's proposal on energy consumption by Ameren Missouri's residential customers?

A. My estimates of the effect of Mr. Hyman's proposal are expressed as percentage changes from the base year of April 2015 through March 2016 on which he based his analysis. I did not forecast forward to future years based on load growth, since my purpose is to illustrate the effects of this policy shift and not to forecast future load. The response in the first year of application of this rate design is likely to be significantly less than implied by the elasticities that I apply, because it will likely take one to three years for customers to respond to the change in tariff.

I estimate that the residential rate design shown in Mr. Hyman's Table 2 will reduce annual energy consumption by non-space-heating customers by 0.73% and will reduce annual energy consumption by electric-space-heating customers by 1.1%. Data on yearly peak demand by residential customers cannot be directly estimated with available data, but can be approximated by the percentage energy reduction in the peak month of August. I estimate that energy consumption by non-space-heating customers in August will decrease by 1.62% and that energy consumption by space-heating customers in August will decrease by 1.3%.

Q. How did you make these estimates?

A. Mr. Hyman's Table 3a contains estimates of monthly average kWh and 95th percentile kWh for non-space-heating customers. Mr. Hyman's Table 3b contains similar estimates for

[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).

electric-space-heating customers. I used those data and Microsoft Excel's LOGNORM.INV function and Solver feature to find the lognormal distribution of customer electricity usage that best fit these data in each month. I then used Microsoft Excel's LOGNORM.DIST to estimate the percentage of customers in each month whose usage was below or above 750 kWh. I then applied the elasticities and rate changes summarized earlier in my testimony to calculate the expected average change in energy consumption per customer for each month. To derive annual change in energy consumption I calculated the average change in monthly energy consumption weighted by monthly average consumption.

Q. How certain are you of those estimates?

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

Q. Does that complete your testimony?

A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Union Electric	)	
Company d/b/a Ameren Missouri's Tariffs to	)	**File No. ET-2016-0179**
Increase Its Revenues 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 rebuttal 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 rebuttal 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

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

Elizabeth Caesar

ELIZABETH CAESAR
NOTARY PUBLIC
State of Michigan
My Commission Expires
November 27, 2020