MEMORANDUM

TO: Bob McDavid, Mayor

FROM: Water & Light Advisory Board John T. Conway

DATE: July 30, 2015

SUBJECT: Water & Light Rate Impacts on Middle Class Families

Both the water and electric utilities perform cost of service analysis to minimize any subsidies' between different rate classes. Within each of these rate classes different rate structures are used to recover the revenue for the rate class. Both the water and electric residential rate classes use an inclining or increasing block rate structure. This means that as the monthly consumption increase the customer rate charged also increase. While these inclining block rate structures are not reflective of the cost of service incurred by the utility, they do have the goal of incentivizing the reduction in consumption.

An important influence on the monthly electric system consumption is ambient temperature, and Columbia Water & Light is a summer peaking utility. Our current residential rate structure will result in increasing rates for higher monthly electric usage resulting from high ambient temperature. While there is not a direct predicable relationship between the customer's electric rate and the utilities supply cost, typically as system usage increases cost of supplying required power will also increase. Additional costs can also include an increase in future planning or capacity requirements.

Both the water and electric utilities have fixed costs that are recovered with a variable commodity charge. With this approach annual revenue projections are used to recover actual monthly expenses. Throughout the year, different months results in different net losses or net gains from monthly activity. From a rate equity perspective more of the fixed cost of operation is recovered in higher use periods. The below net Income chart shows monthly net incomes for FY09-14:

Monthly and Annual Net Income For Water and Electric Utilities Starting In FY09

WATER	October	November	December	January	Februray	March	April	May	June	July	August	September*	Fiscal Year
FY09	($34,546)	($402,314)	($559,710)	($386,529)	($138,545)	($361,842)	($213,762)	($89,550)	($133,963)	$190,941	$325,547	($531,160)	**($2,335,433)**
FY10	$252,111	$19,160	($357,820)	$15,799	($46,149)	$47,522	($297,450)	$231,252	($70,300)	$55,305	$468,376	$368,240	**$696,046**
FY11	$390,926	$183,602	($376,260)	$131,499	($195,674)	($94,423)	$558,305	($549,936)	$566,795	$358,133	$872,583	$661,172	**$2,506,722**
FY12	$565,999	$53,491	($249,302)	($291,431)	$144,824	($352,621)	$467,622	$154,216	$571,030	$1,463,858	$906,266	$293,744	**$3,727,696**
FY13	$736,608	$164,592	($234,732)	($60,087)	$87,677	($357,852)	$524,778	$117,803	($1,037,984)	$1,830,137	$189,959	($213,267)	**$1,747,631**
FY14	$848,793	($162,771)	($498,023)	$338,649	$91,707	$28,825	$53,612	$107,258	($207,058)	$471,662	$690,576	$1,043,577	**$2,807,007**
ELECTRIC													
FY09	$585,929	$361,801	$724,646	$303,353	$484,169	$1,533,190	($503,712)	($459,640)	$992,760	$1,917,815	$1,515,522	$218,375	**$7,674,208**
FY10	($322,630)	($94,263)	$277,035	$122,353	$539,614	($428,880)	$1,483,699	($46,119)	$830,890	$533,675	$3,764,106	$239,413	**$6,898,893**
FY11	$942,995	($1,246,746)	($560,268)	($1,876,069)	($495,622)	($1,299,835)	($609,236)	($564,275)	$5,217,112	$5,265,323	$1,021,521	$974,959	**$6,769,859**
FY12	($1,761,052)	$439,695	$925,940	$1,188,786	($611,460)	($2,470,043)	($613,430)	($354,901)	$2,489,311	$3,672,487	$2,050,147	($815,083)	**$4,140,397**
FY13	($1,052,529)	($1,217,271)	($1,648,984)	($606,286)	($1,003,325)	($1,800,901)	($1,779,350)	($204,237)	($1,337,408)	$2,242,993	$700,776	$2,566,092	**($5,140,430)**
FY14	($1,510,937)	($1,682,291)	($897,156)	$1,427,648	($1,003,106)	($1,610,380)	($2,269,256)	($705,121)	$741,160	$819,086	$808,362	$565,273	**($5,316,718)**

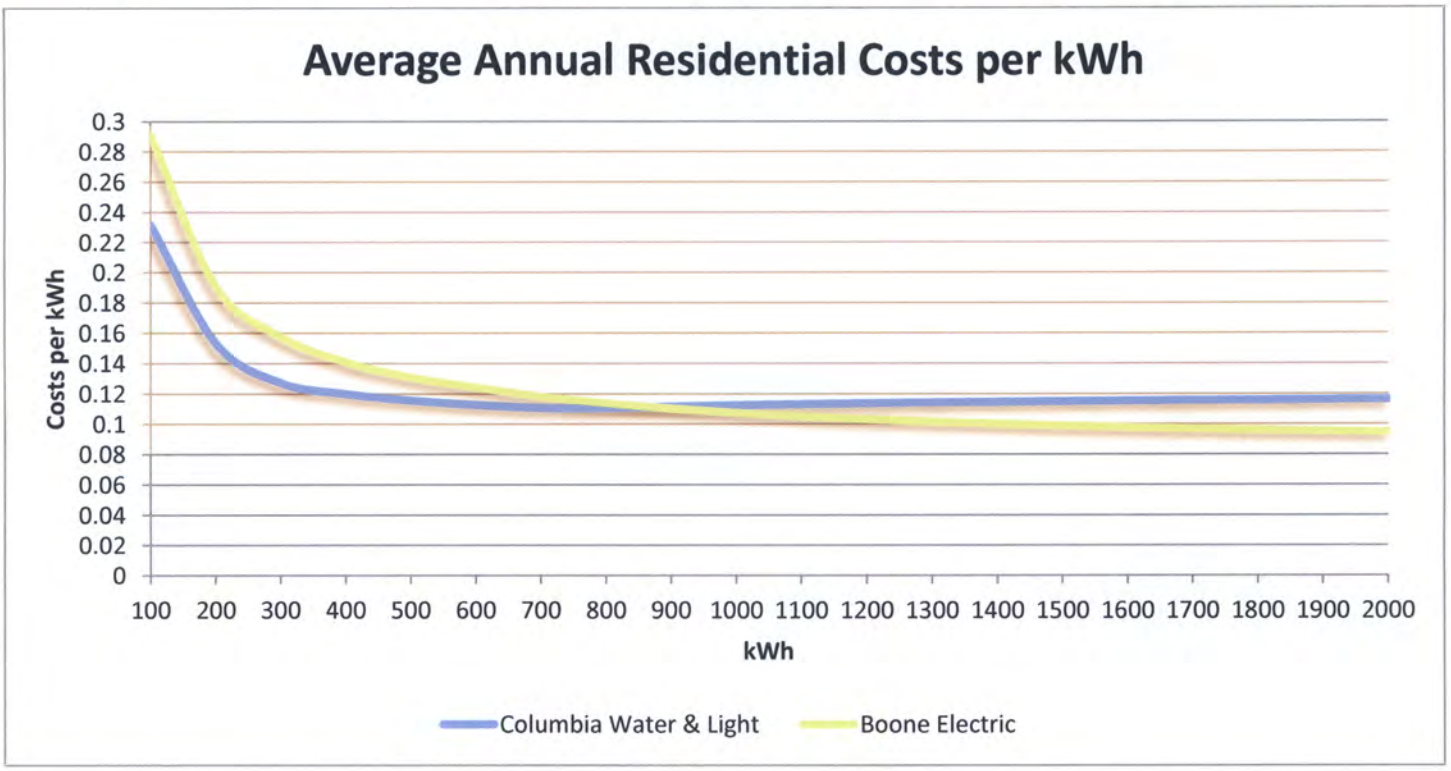
Use of an inclined block rate structure is not done by all utilities in Missouri. Below is a rate and cost comparison for different utilities in Missouri:

June 2015

ELECTRIC RATE COMPARISON
Residential Charges for 788 kWh
(without taxes)

			Summer	Summer KWh Rate Charge				FAC	Non-Summer	Non-Summer KWh Rate Charge					FAC
Utility name	Summer	Non-Summer	Base	Tier 1	Tier 2	Tier 3	Tier 4	fuel adj	Base	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	fuel adj
Columbia W&L-current	$91.88	$90.41	$15.60	$0.0752	$0.0980	$0.1336	$0.1445		$15.60	$0.0752	$0.0980	$0.1132			
Boone Electric	$92.80	$92.80	$20.00	$0.0910	$0.0820	$0.0760			$20.00	$0.0910	$0.0820	$0.0760			
Kansas City Power & Light	$108.93	$89.12	$9.00	$0.1216					$9.00	$0.1093	$0.0655	$0.0548			
AmerenUE	$110.75	$79.93	$8.00	$0.1208				0.004200	$8.00	$0.0858	$0.0573				0.004200
Independence	$126.66	$119.13		$0.2014	$0.1292	$0.1224		0.028230		$0.2014	$0.1292	$0.1224	$0.1109	$0.1040	0.028230
Empire	$107.86	$103.08	$12.52	$0.1149	$0.1149			0.001080	$12.52	$0.1149	$0.0934				0.001080
Springfield, MO	$82.79	$77.25	$10.75	$0.0930	$0.1102			-0.012100	$10.75	$0.0930					-0.012100
Springfield, IL	$113.36	$100.70	$5.76	$0.1162				0.014697	$5.76	$0.1008					0.014697
Fulton, MO	$77.95	$77.95	$6.00	$0.0840	$0.0930	$0.0800			$6.00	$0.0840	$0.0930	$0.0800			

Below is a graph shows the effect a increasing vs. decreasing block rate structure has on the total customer cost/KWh.



One aspect of the usage request is how the incentives in our current electric rate structure affect family households. The following tables graph show statistical data around 2000 sq. ft. residences:

FY14 Single Unit Housing Locations with Continuous Usage (SQFT 1,950-2,050)

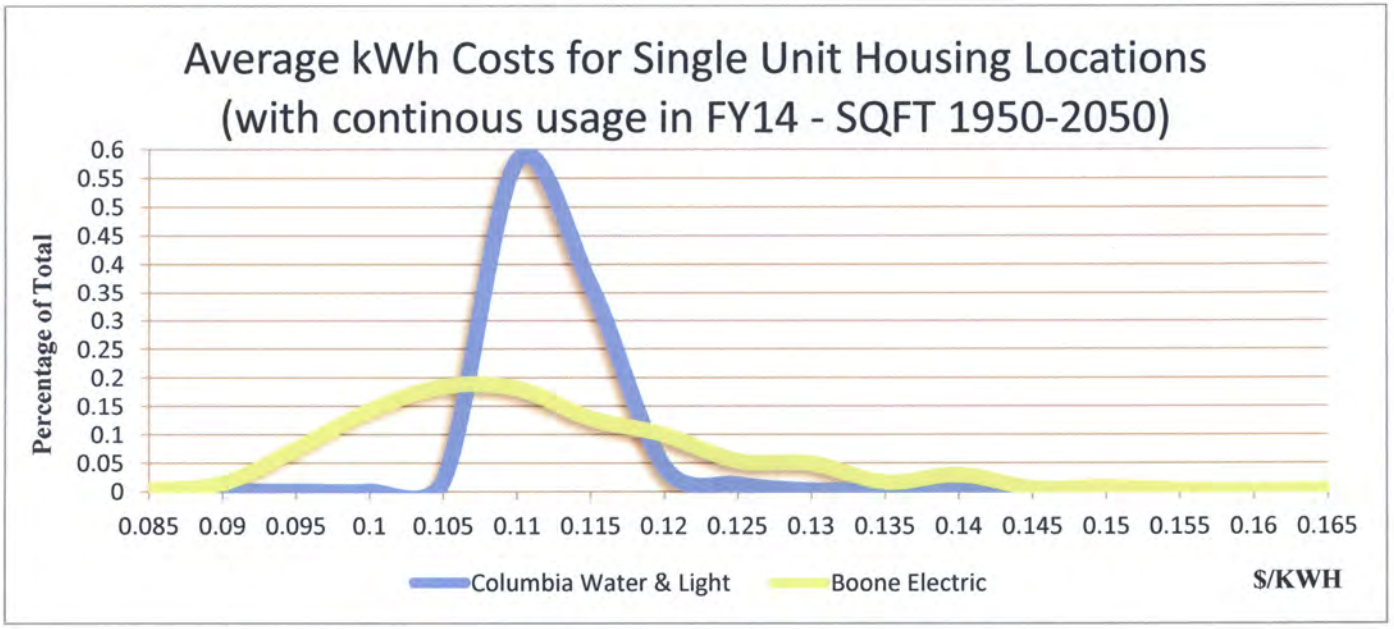
1950-2050	October	November	December	January	February	March	April	May	June	July	August	September	Total	$/KWh
MIN kWh	173	207	332	418	431	331	239	187	167	172	234	303	3,194	
CWL	$28.61	$31.17	$41.30	$49.72	$51.00	$41.20	$33.57	$29.66	$28.16	$28.53	$33.20	$38.45	$434.57	**0.1361**
Boone	$35.74	$38.84	$50.21	$58.04	$59.22	$50.12	$41.75	$37.02	$35.20	$35.65	$41.29	$47.57	$530.65	**0.1661**
Difference	-$7.13	-$7.67	-$8.92	-$8.31	-$8.22	-$8.92	-$8.18	-$7.35	-$7.04	-$7.12	-$8.10	-$9.12	-$96.08	
MEDIAN kWh	852	697	689	718	776	646	558	612	926	1,017	1,294	1,262	10,047	
CWL	$93.81	$77.07	$76.28	$79.12	$85.20	$72.07	$63.44	$68.74	$105.77	$117.93	$154.94	$150.66	$1,145.04	**0.1140**
Boone	$95.26	$82.55	$81.90	$84.28	$89.03	$78.37	$71.16	$75.58	$101.33	$108.79	$131.51	$128.88	$1,128.65	**0.1123**
Difference	-$1.46	-$5.49	-$5.62	-$5.15	-$3.83	-$6.30	-$7.71	-$6.85	$4.44	$9.14	$23.43	$21.78	$16.38	
Average kWh	819	723	761	1,012	861	715	671	718	937	1,129	1,257	1,203	10,806	
CWL	$90.07	$79.61	$83.51	$111.92	$94.83	$78.83	$74.52	$79.12	$107.24	$132.89	$150.00	$142.78	$1,225.32	**0.1134**
Boone	$92.56	$84.69	$87.80	$108.38	$96.00	$84.03	$80.42	$84.28	$102.23	$117.98	$128.47	$124.05	$1,190.89	**0.1102**
Difference	-$2.49	-$5.07	-$4.30	$3.53	-$1.18	-$5.20	-$5.90	-$5.15	$5.01	$14.92	$21.52	$18.73	$34.43	
MAX kWh	3,180	2,954	4,182	4,353	5,633	4,867	3,626	2,457	3,533	3,164	3,599	3,398	44,946	
CWL	$357.34	$331.75	$470.76	$490.12	$635.02	$548.30	$407.82	$275.49	$470.78	$417.46	$480.32	$451.27	$5,336.43	**0.1187**
Boone	$279.08	$261.90	$355.23	$368.23	$465.51	$407.29	$312.98	$224.13	$305.91	$277.86	$310.92	$295.65	$3,864.70	**0.0860**
Difference	$78.26	$69.85	$115.53	$121.89	$169.51	$141.01	$94.85	$51.36	$164.87	$139.59	$169.39	$155.62	$1,471.73	

682 Customers; Minimum, Median, and Maximum are individual customers determined by their total consumption for the year; Average kWh is determined by the aggregate for each month;

FY14 Single Unit Housing Locations with Continuous Usage (SQFT 1,750-2,250)

1750-2250	October	November	December	January	February	March	April	May	June	July	August	September	Total	$/KWh
MIN kWh	170	178	195	228	249	222	186	182	196	274	223	197	2,500	
CWL	$28.38	$28.99	$30.26	$32.75	$34.32	$32.29	$29.59	$29.29	$30.34	$36.20	$32.37	$30.41	$375.20	**0.1501**
Boone	$35.47	$36.20	$37.75	$40.75	$42.66	$40.20	$36.93	$36.56	$37.84	$44.93	$40.29	$37.93	$467.50	**0.1870**
Difference	-$7.09	-$7.21	-$7.48	-$8.00	-$8.33	-$7.91	-$7.34	-$7.28	-$7.50	-$8.73	-$7.92	-$7.51	-$92.30	
MEDIAN kWh	812	571	581	780	702	595	552	608	958	1,058	1,495	1,347	10,059	
CWL	$89.28	$64.72	$65.70	$85.66	$77.56	$67.07	$62.86	$68.34	$110.05	$123.41	$181.79	$162.02	$1,158.45	**0.1152**
Boone	$91.98	$71.96	$72.87	$89.36	$82.96	$74.15	$70.23	$75.26	$103.96	$112.16	$147.99	$135.85	$1,128.73	**0.1122**
Difference	-$2.71	-$7.24	-$7.17	-$3.70	-$5.41	-$7.07	-$7.38	-$6.91	$6.09	$11.25	$33.80	$26.17	$29.72	
Average kWh	805	712	752	1,005	859	715	659	715	935	1,120	1,263	1,191	10,731	
CWL	$88.49	$78.54	$82.49	$111.13	$94.60	$78.83	$73.34	$78.83	$106.98	$131.69	$150.80	$141.18	$1,216.88	**0.1134**
Boone	$91.41	$83.78	$87.06	$107.81	$95.84	$84.03	$79.44	$84.03	$102.07	$117.24	$128.97	$123.06	$1,184.74	**0.1104**
Difference	-$2.92	-$5.25	-$4.58	$3.32	-$1.24	-$5.20	-$6.10	-$5.20	$4.91	$14.45	$21.83	$18.12	$32.14	
MAX kWh	4,023	2,783	3,623	6,322	6,284	5,397	2,891	4,298	4,273	5,165	5,493	5,169	55,721	
CWL	$452.76	$312.40	$407.48	$713.01	$708.71	$608.30	$324.62	$483.89	$577.71	$706.60	$754.00	$707.18	$6,756.67	**0.1213**
Boone	$343.15	$248.91	$312.75	$517.87	$514.98	$447.57	$257.12	$364.05	$362.15	$429.94	$454.87	$430.24	$4,683.60	**0.0841**
Difference	$109.62	$63.49	$94.74	$195.14	$193.72	$160.73	$67.51	$119.85	$215.56	$276.66	$299.13	$276.94	$2,073.07	

3400 Customers; Minimum, Median, and Maximum are individual customers determined by their total consumption for the year; Average kWh is determined by the aggregate for each month;



In looking at this information we believe the following conclusions can be supported:

- An inclined block rate structure incentivizes conservation at some expense in rate equity.
- An inclined block rate structure is not directly related to the long and short term utility costs.
- CWL inclined block rate structure narrow the customer cost distribution based on usage.