COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF KENTUCKY )
UTILITIES COMPANY FOR AN )
ADJUSTMENT IN ITS ELECTRIC RATES ) CASE NO. 2018-00294
AND FOR CERTIFICATES OF PUBLIC )
CONVENIENCE AND NECESSITY )

TESTIMONY OF

RONALD L. WILLHITE

KENTUCKY SCHOOL BOARDS ASSOCIATION

FILED: January 16, 2019
INTRODUCTION

Q. Please state your name and business address.

A. My name is Ronald L. Willhite and business address is 7375 Wolf Spring Trace, Louisville, KY 40241.

Q. By whom are you engaged?

A. I have been engaged by the Kentucky School Boards Association (KSBA) and the Kentucky Non-Public School Commission (KyNPSC) to represent the interest of public and private K - 12 schools. The Kentucky School Boards Association (KSBA) is a nonprofit corporation of school boards from each public-school district in Kentucky. The association, founded in 1936, now has over 75 years of serving school board members and school districts in such areas as governmental relations, board member and team development, risk management, facility planning, energy management, legal services, policy services, publications and community relations. It is governed by a 27-member board of directors made up of representatives elected as regional chairpersons or as directors-at-large. With nearly 900 school board members, KSBA is the largest organization of elected officials in Kentucky. The KyNPSC, Inc. is a diverse group drawing membership from religiously-affiliated schools, private independent schools, and home schools.

Q. Please describe your regulatory and public-school experience.

A. In December 2001 I retired from LG&E Energy Services. During my tenure at the Companies I testified before this and other commissions on numerous rate and regulatory matters. In addition, my responsibilities included load research and analysis. In March 2010 I was employed by KSBA to develop and direct the School Energy Managers Project (SEMP). The SEMP was closed this past August. From 1989 to 1998 I served on the Scott County Board of Education, the last six years as its chairman, and since 2009 have served on their Energy Committee. I graduated from the University of Kentucky in 1969 earning a B.S. in Electrical Engineering.

Q. What specific issues are you addressing?

A. I will address the following: 1) increase impact on schools, 2) pilot school tariffs SPS and STOD, 3) Rates PS and TODS rate design, 4) Rates PS and TODS switching, and 5) school energy management initiatives.

IMPACT ON SCHOOLS

Q. How will the requested increase impact schools?
A. Kentucky’s schools continue to be severely impacted by today’s economic conditions. After personnel, energy is the second highest cost for schools. Unlike businesses that can increase sales or prices to offset cost increases, schools must either cut programs or attempt to raise taxes or tuition. While schools understand the Company is faced with challenges the revenue increase as proposed would be unfair to schools and their students. Public school districts continue to be disadvantaged as many of their schools are required to take service under rate schedules along with commercial and industrial customers. I will address options for the Commission to mitigate the impact on public schools.

**PILOT SCHOOL TARIFF SPS and TODS**

**Q. Please overview the implementation process for Pilot School Tariffs SPS and TODS that were authorized in Case Nos. 2016-00370.**

A. The Commission approved the Pilot Rates by Orders of June 22, 2017 in Case Nos. 2016-00370 to be effective for service on and after July 1, 2017. Participating schools in the Pilot were to receive annual cumulative savings of $750,000. Pursuant to the Order KSBA filed a Pilot School Tariff Implementation Process on July 17, 2017. The Process was developed in collaboration with the KyNPSC. Using the Kentucky Schools Directory eligible public and private schools were identified. Next using enrollment data from the Directory, the apportionment of approved savings among the groups was determined. After assembling specific account information a list of candidate accounts was provided to the Company on July 20, 2017. A few of the 225 chosen accounts required some follow up to clarify the applicable rate and account number. The Company chose August 18, 2017 as the effective date and prorated initial billings for accounts whose billing period straddled that date. KSBA had expressed concern on August 3, 2017 that with each passing day the intended savings was decreasing unless adjustments were made to reflect the rate change effective on bills on and after July 1, 2017.

**Q. What is the impact of August 18, 2017 being chosen by the Company as the effective date?**

A. Approximately $100,000 (48/365 x $750,000), or 13 percent of the promised annual savings was not provided.

**Q. Was there a windfall created by ending the Pilot Tariffs with the filing of the Company Application on September 28, 2018.**

A. Yes. With the proposed May 1, 2019 effective date of the requested increase the Company will receive seven months of the otherwise reduced revenues from schools, or approximately $437,000 (7/12 x $750,000). I believe this to be an inadvertent oversight in the June 22, 2017 Order as that Order envisioned establishment of a regulatory liability to record the difference between the pilot and otherwise effective rate should the next
case not be filed until after the authorized pilot termination date of July 1, 2020. The Order went on to state the reserved amount would be handled in a future case.

Q. Have you reviewed the School Pilot Tariffs Reports filed by the Company as directed by the Commission’s June 22 Order?

A. Yes, the Company filed the required semi-annual reports on December 21, 2017, June 22, 2018 and December 21, 2018. The first report was brief as there was little to report as only limited data had been gathered. The second report contained hourly load data for December 2017 through March 2018. The Company made preliminary statements of findings based on still very limited data. The third report provided analysis of hourly load data recorded from November 2017 through October 2018 and statements of findings which I discuss next.

In the second and third reports the Company provided tables setting forth a comparison of the pilot school accounts to a sample of non-school accounts on three factors that drive the cost of providing service: 1) load factor, 2) coincidence factor and 3) loss of load probability. From the second to third reports the Company changed their interpretation of the coincidence factor information comparing the school accounts to the sample from being “about the same” to “slightly lower”. For coincident peak (CP) and non-coincident peak (NCP) load factors they changed the interpretation from “approximately the same” to “slightly lower”.

Q. Do you agree with their conclusion?

A. No. As you can observe from the below Report tables there is a significance difference in each of the measurement factors. An average coincidence factor 5.0 percent lower for the KU pilot schools compared to the sample is certainly significant, “not slightly lower” as is the case for the CP and NCP load factors. The coincidence factor is most significant as it relates directly to generation plant cost causation and as such is reflected in developing the generation cost allocator in the Company’s cost of service study.

<table>
<thead>
<tr>
<th>Kentucky Utilities Company</th>
<th></th>
<th></th>
<th>Percent Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Customers Taking Service Under the Pilot Rates for Schools</td>
<td>Sample of Customers Taking Service Standard Rates</td>
<td></td>
</tr>
<tr>
<td>Average Coincidence Factor</td>
<td>0.674012</td>
<td>0.707894</td>
<td>5.0 %</td>
</tr>
<tr>
<td>Average CP Load Factor</td>
<td>0.680610</td>
<td>0.744180</td>
<td>9.3 %</td>
</tr>
<tr>
<td>Average NCP Load Factor</td>
<td>0.458739</td>
<td>0.526757</td>
<td>14.8 %</td>
</tr>
</tbody>
</table>
Q. What is the significance of the coincidence factor, and coincident (CP) and non-coincident (NCP) demands?

A. As the Company states in their Report No. 3 “The CP demands are important because they represent each school’s demand during the hour of KU and LG&E’s combined monthly system peak. Because KU and LG&E must install or purchase sufficient generation capacity to meet their combined system peak demands, CP demands are important determinants of the Utilities’ cost of providing service, particularly production demand-related costs. NCP demands represent the maximum monthly demand of each customer. NCP demands are important because KU and LG&E must install delivery capacity (transmission and distribution capacity) to serve each customer’s maximum demand. Both CP and NCP demands are utilized to allocate costs in KU and LG&E’s class cost of service studies. Coincidence factor represents the ratio of the customer’s CP demand to its NCP demand and, therefore, provides a measure of whether a maximum demand occurs at the time of KU and LG&E’s combined system peak. In other words, coincidence factor provides information about the portion of a customer’s total demand that occurs at the time of the utility’s peak load.”

Q. Did the Company perform additional analysis?

A. Yes, the Company also evaluated and compared the Loss of Load Probability (“LOLP”) for the pilot schools and the sample group as the “LOLP represents the probability that a utility system’s total demand will exceed its generation capacity during a given hour.” The production demand allocator used in the Company’s Cost of Service Study (COSS) is the sum of each class’s load-weighted LOLP. As stated by the Company the LOLP methodology is a key measure in planning generation resources and as such is used in the Company’s cost of service study to allocate production costs. The Company presented results in the below tables comparing the LOLP on both a per CP (coincident peak) kw basis for the pilot schools and non-school accounts for both Rate Power Service (PS) and Rate TOD Service secondary (TODS). The Company concludes there is little difference between the pilot school and the non-school accounts and as a result from the perspective of production cost allocation there would be little difference and no reason to separate the schools into a different rate category.

<table>
<thead>
<tr>
<th>Kentucky Utilities LOLP per CP kw Summary</th>
<th>Power Service</th>
<th>TOD Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools</td>
<td>0.003482</td>
<td>0.003575</td>
</tr>
<tr>
<td>Non-Schools</td>
<td>0.003630</td>
<td>0.003646</td>
</tr>
</tbody>
</table>
**Q.** How does the Company’s LOLP analysis compare to similar data provided on a rate class basis?

**A.** The Company in the Report’s Conclusion section (pages 6 - 7) goes on to present the following tables showing LOLP per CP (coincident peak) kW by rate class.

<table>
<thead>
<tr>
<th>Rate Class</th>
<th>LOLP per Customer</th>
<th>LOLP Per CP kW</th>
<th>NCP Load factor</th>
<th>12 CP Load Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential Rate RS</td>
<td>0.220</td>
<td>0.006051</td>
<td>16.3%</td>
<td>51.5%</td>
</tr>
<tr>
<td>All Electric Schools Rate AES</td>
<td>0.258</td>
<td><strong>0.004442</strong></td>
<td>23.0%</td>
<td>54.7%</td>
</tr>
<tr>
<td>General Service Rate GS</td>
<td>2.637</td>
<td>0.006777</td>
<td>23.0%</td>
<td>74.2%</td>
</tr>
<tr>
<td>Power Service Secondary Rate PSS</td>
<td>5.394</td>
<td><strong>0.006578</strong></td>
<td>29.6%</td>
<td>67.6%</td>
</tr>
<tr>
<td>Power Service Primary Rate PSP</td>
<td>8.083</td>
<td>0.005870</td>
<td>41.0%</td>
<td>69.7%</td>
</tr>
<tr>
<td>TOD Secondary Rate TODS</td>
<td>30.386</td>
<td><strong>0.006136</strong></td>
<td>43.3%</td>
<td>68.7%</td>
</tr>
<tr>
<td>TOD Primary Rate TODP</td>
<td>169.396</td>
<td>0.0086088</td>
<td>45.2%</td>
<td>76.5%</td>
</tr>
<tr>
<td>Retail Transmission Service Rate RTS</td>
<td>575.438</td>
<td><strong>0.006022</strong></td>
<td>58.6%</td>
<td>84.4%</td>
</tr>
<tr>
<td>Fluctuating Load Service Rate FLS</td>
<td>6067.113</td>
<td>0.006014</td>
<td>45.5%</td>
<td>84.5%</td>
</tr>
<tr>
<td>Street Lighting Rate (RLS, LS)</td>
<td>0.001</td>
<td>0.001464</td>
<td>40.3%</td>
<td>279.7%</td>
</tr>
<tr>
<td>Lighting Energy Rate LE</td>
<td>0.017</td>
<td>0.001630</td>
<td>36.9%</td>
<td>295.0%</td>
</tr>
<tr>
<td>Traffic Energy Rate TLE</td>
<td>0.016</td>
<td>0.005239</td>
<td>79.2%</td>
<td>93.2%</td>
</tr>
<tr>
<td>Outdoor School Lighting Rate OSL</td>
<td>0.340</td>
<td>0.003357</td>
<td>4.7%</td>
<td>84.6%</td>
</tr>
</tbody>
</table>

KU’s All Electric Schools Rate (“AES”) shown above with an LOLP per kw of “.004442” provides a reasonableness check for the Company’s calculations for the pilot schools. As would be expected the pilot schools would likely have an LOLP per CP kW less than AES since many of the pilot accounts do not have electric space heating load. The tables below summarize the LOLP per kW for the relative classes. Noticeably, the Company computed PS and TODS LOLP per CP kW for the non-school sample accounts that are significantly lower than the below stated LOLP per CP kw of “.006578” for the KU Power Service Secondary class and “.006136” for Rate TOD Secondary class.

<table>
<thead>
<tr>
<th>KU</th>
<th>KU Rate AES</th>
<th>Schools</th>
<th>Sample</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS</td>
<td>.004442</td>
<td>.003482</td>
<td>.003630</td>
<td>.006578</td>
</tr>
<tr>
<td>TODS</td>
<td>.004442</td>
<td>.003575</td>
<td>.003646</td>
<td>.006136</td>
</tr>
</tbody>
</table>

**Q.** Did you perform additional analysis?

**A.** Yes. I looked deeper into the data and plotted the below system, rate class and pilot 24-hour load profile graphs for system peak days, particularly July and August as the LOLP for the test period Cost of Service Study (COSS) is almost totally dependent on those two months (91.3 % in total or 26.1 % for July and 65.2 % for August). To create comparable
24-hour load profiles the data was normalized by dividing each hourly load by the respective maximum load for that day. As can be observed for KU SPS and PS the profiles coincide in July peak period hours indicating similar load coincidence. However, the profiles differ significantly in August during the system peak hours (when hourly LOLP’s are most significant) showing significant dissimilar CP load. For KU STOD and TODS in July the profiles are partly similar during system peak hours and as SPS/PS significantly dissimilar in August.

Finally, it is important to recognize that while there is a closer relationship of the pilot and class load profiles in July, schools loads are significantly less as shown on the below graphs. This results in a much lesser LOLP weighted effect in July for schools compared to the PS and TODS classes.
Q. Please summarize your analysis of the pilot.

A. I found the following:

- Significant difference in company measurement factors: coincidence factors and average coincident and non-coincident peak load factors
- LOLP is an appropriate method for allocating production costs in Cost of Service Study\(^1\)
- July and August LOLPs account for 91 percent of probabilities\(^2\)
- School LOLP per kw varies significantly from otherwise applicable PS and TODS classes LOLP per kw as does class by class comparison\(^3\)
- Schools have significantly lower peak period coincidence factors than PS and TODS in August and partly for TODS in July
- School and PS class load coincidence more similar in July when schools are out-of-session
- PS and TODS class loads in summer period (June- August) are more consistent in magnitude across period
- School loads in June and July are significantly lower than August maximum load
- While coincidence difference is less in July school loads are significantly less than comparable class load

Q. What do you conclude?

A. Based on the data presented by the Company schools certainly have loads that are sufficiently different from the otherwise available Tariffs PS and TODS. The pilot load data verifies that schools operate different than commercial and industrial customers as while all operate on defined schedules, those schedules are drastically different. Many industries operate 2\(^{nd}\), 3\(^{rd}\) and weekend shifts while commercial accounts operate into late afternoon with some operating over extended hours into the evening year-round seven days per week. Schools typically are fully occupied early morning until early afternoon weekdays from early to mid-August through May with numerous shut down periods for breaks throughout the year. Schools continue open beyond instructional periods for extracurricular activities, but by this time automation systems and set back procedures have begun adjusting temperatures for unoccupied space and lighting and ancillary load have

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1 Weighted class LOLPs determined as product of hourly probability times hourly load
2 January accounts for 1.7 percent and June 5.7 percent. Other months are insignificant
3 Report 3 Table at pages 6 and 7
significantly decreased. In summer months when schools are out of session they operate in a reduced mode while facilitating some summer programs. In a nutshell school load build up in the warmer months typically begins early morning, peaks by lunch time when kitchen equipment is energized and declines at a significant pace until and after the instructional day ends in early-afternoon. In colder months schools tend to peak across the morning hours and like the warm periods’ usage/peak declines quickly after lunch.

Q. What do you recommend?

A. In order to eliminate the intra class subsidization by public schools currently served on Rates PS-secondary and TODS the SPS and STOD tariffs should be reinstated on a permanent basis without any monetary cap.

RATE DESIGN

Q. Does the design of Rates PS and TODS result in unfair increases for public school accounts?

A. The Company has purposed recovering most, if not all, of the increase allocated to Rates PS-Sec and TODS through increased demand charges. This further exacerbates the subsidization by schools for others served on those rates. Such an approach is unreasonable and needs correcting. The Company is requesting an increase of 6.61 percent for Rate PS, but schools would experience an increase of 7.1 percent. Similarly, for Rate TODS the Company is requesting an increase of 6.11 percent, but schools would experience an increase of 7.0 percent.

Q. What do you propose to mitigate the impact on schools?

A. It is my recommendation that the percentage increase be applied equally to the demand and energy charges. Apportioning the increase in this manner produce a more equitable balance between low and high load factor customers. And fairly recognizes the diversity that exists within the rate class.

PS AND TODS RATE SWITCHING

Q. Is there an issue regarding accounts being moved back and forth from Rate Schedules PS and TODS?

A. When working with the Company in implementing the Pilot School Tariffs it was discovered there were several accounts floating around the 250 kW threshold for TODS service. It doesn’t make sense to move a customer back to PS from TODS because of year to year varying weather impact and more importantly a customer’s implementation of more efficient equipment. Such action creates a perverse incentive to become more efficient as movement back to PS results in a rate increase due to the demand charge structure difference in the two rate schedules. With time-of-day metering already in place the Company would not incur additional cost to continue service on rate TODS. It is my
recommendation that the TODS Tariff be modified to permit an account on rate TODS remain on that rate unless their average monthly demand has dropped below 200 kW.

**Public School District Energy Management Initiatives**

**Q.** Please describe energy management activities by K - 12 schools.

**A.** As advised in prior cases local school boards of education are the only entity in Kentucky that are required by statute to development and implement energy management plans. *“In an effort to reduce rising energy costs that are straining school budgets”* the General Assembly in 2008 passed House Bill 2, which became law on July 15, 2008 as KRS 160.325. To implement the mandate of the statute boards of education adopted Energy Management Policies and began mandated reporting annually through the Kentucky Pollution Prevention Center (“KPPC”) to the Department for Energy Development and Independence (“DEDI”) and the Legislative Research Commission (“LRC”) on the status of the development of energy management plans by those boards of education and the anticipated savings to be obtained from those plans.

**Q.** What is the status of the LGE/KU School Energy Management Program?


Following the commitment in Case Nos. 2016-00371 and 2016-00372 the Company determined it no longer had avoided capacity cost thus resulting in the Program being unable to pass the appropriate California Tests used by the Commission to evaluate the cost-effectiveness of DSM programs. While KSBA and Kentucky’s public-school districts were disappointed in this outcome they are extremely grateful for the support

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4 The Program supported the School Energy Managers Project ("SEMP") which KSBA created and implemented in 2010 as a state-wide school energy management infrastructure to assist public school districts with compliance with the statutory and board policy requirements that direct local boards of education to focus on rising energy costs. SEMP provided matching salary funds to districts to employ an energy manager to identify for Board approval and implementation best energy management practices. In addition, SEMP provided assistance to districts in the employment, coaching, monitoring and evaluation of the energy managers; analytical and engineering support; coordination of professional development opportunities for energy managers; communication of success stories to board members, superintendents, governmental officials and the general public; best practice implementation; monitoring and coordination of utility activities and relations; and development of the annually required Kentucky School Energy Management Report submitted to the Energy and Environment Cabinet and General Assembly.
provided by the Company in their compliance efforts with the statutory mandate to
address rising energy costs. By fostering intelligent energy choices in new and existing
school buildings through implementation of energy efficiency projects Kentucky school
districts since July 1, 2010 have captured more than $200 million in savings/cost
avoidance and placed Kentucky schools 3rd in the nation (as a percentage of its K-12
schools) with over 30 percent of its’ K – 12 schools having achieved the ENERGY
STAR certification.

Results for Company supported districts were provided the Commission on September 4,
2018 in Case No. 2015-00398.

Q. Does this conclude your testimony?

A. Yes.