COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

JOINT APPLICATION OF LOUISVILLE GAS	**)**	
AND ELECTRIC COMPANY AND KENTUCKY	**)**	
UTILITIES COMPANY FOR REVIEW,	**)**	
MODIFICATION, AND CONTINUATION OF	**)**	**CASE NO. 2014-00003**
EXISTING, AND ADDITION OF NEW,	**)**	
DEMAND-SIDE MANAGEMENT AND ENERGY	**)**	
EFFICIENCY PROGRAMS	**)**	

REBUTTAL TESTIMONY OF
MICHAEL E. HORNUNG
MANAGER, ENERGY EFFICIENCY PLANNING/DEVELOPMENT
LG&E AND KU SERVICES COMPANY

Filed: June 16, 2014

Q. Please state your name, position, and business address.

A. My name is Michael E. Hornung. I am the Manager, Energy Efficiency Planning/Development, for LG&E and KU Services Company, which provides services to Louisville Gas and Electric Company ("LG&E") and Kentucky Utilities Company ("KU") (collectively "Companies"). My business address is 220 West Main Street, Louisville, Kentucky.

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my testimony is to respond to analysis- and program-related comments made in the intervenors' filings. I conclude by recommending the Kentucky Public Service Commission ("Commission") approve the Companies' proposed 2015-2018 Demand-Side Management and Energy Efficiency Program Plan ("Proposed DSM/EE Program Plan") as filed.

<u>Response to the Testimony of Tim Woolf</u>

Q. On behalf of Wallace McMullen and the Sierra Club, Mr. Woolf testified, "The Companies significantly understate the benefits of energy efficiency by failing to include the avoided costs of complying with environmental regulations … in their [DSM/EE] cost-benefit analyses."[1] Do you agree that the Companies have understated the avoided costs of complying with environmental regulations?

A. No; the Companies fully account for the avoided cost of environmental regulations in their cost-benefit analyses. The Companies determine cost-effectiveness using the industry-standard and Commission-required California tests, which include accounting for costs to comply with applicable environmental regulations. For many years in multiple applications, the Commission has repeatedly approved the Companies' DSM/EE

[1] Woolf Testimony at 3.

program plans, which the Companies evaluated using the California tests with cost and benefit inputs substantively identical to those the Companies used developing the Proposed DSM/EE Program Plan. Indeed, Mr. Woolf acknowledges later in his testimony that the Companies have in fact accounted for the costs of currently applicable environmental regulations: "The Companies have incorporated SO_2, NO_x, and seasonal ozone allowance prices into their avoided energy costs estimates, recognizing that these allowance prices will affect the variable cost of electricity generation."[2]

After acknowledging that the Companies have indeed accounted for currently applicable environmental costs, Mr. Woolf claims the Companies' DSM/EE cost-benefit analyses are flawed for "not includ[ing] any cost associated with greenhouse gas ("GHG") emissions in their avoided costs."[3] This assertion, too, is incorrect. The Companies conducted their California cost-benefit tests using an avoided capacity cost of $100/kW-year. That avoided capacity cost reflects the choice of a 2x1 natural-gas combined-cycle generator as the Companies' next generating unit, which unit the Companies' analysis "chose" based on running numerous scenarios, including scenarios in which GHG emissions costs were assumed. That generator has an avoided capacity cost of $99.72/kW-year;[4] the Companies' DSM/EE analysis has, therefore, been affected by the potential for GHG emissions costs.

Concerning the variable-cost impacts of possible GHG emissions costs, the Companies correctly excluded such potential costs from avoided energy costs precisely because there are presently no such costs to avoid, nor will there be for the entire life of

[2] Woolf Testimony at 14.
[3] *Id.*
[4] LG&E and KU's Response to Wallace McMullen and Sierra Club's Supplemental Request for Information Dated March 20, 2014, Response to DR No. 3(a) (Apr. 3, 2014).

the Proposed DSM/EE Program Plan. Mr. Woolf concedes as much when he commends the Companies for using his consulting firm's 2012 CO_2 price forecast.[5] That forecast, however, does not predict CO_2 pricing beginning before 2020, which is beyond the time-frame of the Companies' Proposed DSM/EE Program Plan, which addresses DSM/EE programming for the years 2015 through 2018.[6]

When—or if—carbon pricing is enacted, the Companies can quickly adjust their DSM/EE programming to account for new potential savings. Unlike generation assets, DSM/EE measures can be implemented and create benefits relatively quickly.[7] That is why the Companies should not price possible future carbon prices into the value of long-lived DSM/EE measures today: If a long-lived DSM/EE measure that is uneconomical absent CO_2 pricing can be deployed rapidly to respond to impending CO_2 pricing (if any should arise), it would be uneconomical to deploy the measure today; the better approach is to wait until CO_2 pricing, if any, is known before making a potentially uneconomical investment. For example, if a hypothetical long-lived DSM/EE measure requires an total up-front investment of $10, can be deployed in less than a year, will produce lifetime benefits of $8 in a no-$CO_2$-pricing world, and will produce lifetime benefits of $12 in a CO_2-pricing world, and assuming CO_2 pricing will be known with certainty by 2019 (for 2020 implementation, as Synapse Energy Economics, Inc. forecasts),[8] the sound financial course is to wait until the fate of CO_2 pricing is known to decide whether to deploy the

---

[5] Woolf Testimony at 15-16.

[6] *Id.* at 15 ("The carbon prices used by the Companies start in 2020 at 21 $23 per short ton, increase to $59 per short ton by 2030, and to $107 per short ton by 2040. These estimates are based on the mid-case carbon price forecast prepared by colleagues of mine at Synapse Energy Economics.").

[7] *See* Woolf Testimony, Exhibit TW-3 at 3 ("[EE measures] can be brought on line much faster than traditional generation. Each individual energy efficiency investment begins to save energy as soon as it is brought online, unlike traditional generation investments that do not become useful until they are completely built, which can take years.")

[8] *See* Synapse Energy Economics, Inc., 2012 Carbon Dioxide Price Forecast dated October 4, 2012, page 3. Available at http://www.synapse-energy.com/Downloads/SynapseReport.2012-10.0.2012-CO2-Forecast.A0035.pdf.

measure, not to deploy it today. *No net benefits are foregone by waiting*. Therefore, the Companies have recommended deploying only those measures known to be economical today and will evaluate future deployments as regulatory and other conditions change.

Q. Why did the Companies include forecasted carbon prices in their certificate of public convenience and necessity ("CPCN") and integrated resource plan ("IRP")?

A. As noted by Mr. Woolf,[9] the Companies included in their most recent CPCN case forecasted carbon prices assumed under some scenarios to take effect no earlier than 2020;[10] however, they did so because investment decisions in individual generation assets, as opposed to investment decisions in thousands of DSM/EE measures, require long-term analysis to justify a single long-term investment. The Companies also include carbon pricing in their IRP proceedings; however, they do so because, as noted by Mr. Woolf,[11] including such information in IRPs allows the Commission "adequate time to perform its statutory duties in determining that new facilities and modifications are necessary in order to provide safe and adequate service, and that the rates charged are fair, just, and reasonable."[12] Because of the differences between generation assets and DSM/EE measures, time constraints and long-term investment decisions are not the same concern with DSM/EE measures. The implementation of carbon-pricing regulation will likely take years to become final and enforceable after it is first proposed by a responsible governmental entity, if it occurs at all; the Companies will have ample time to modify

---

[9] Woolf Testimony at 15.

[10] *See In the Matter of Joint Application of Louisville gas and Electric Co. and Kentucky Utilities Co. for a Certificate of Public Convenience and Necessity for the Construction of a Combined Cycle Combustion Turbine at the Green River Generating Station and a Solar Photovoltaic Facility at the E.W. Brown Generating Station*, Case No. 2014-00002, Exhibit DSS-1 at 15 (Jan. 17, 2014)

[11] Woolf Testimony at 16.

[12] *In the Matter of: 2011 Joint Integrated Resource Plan of Louisville Gas and Electric Company and Kentucky Utilities Company*, Case No. 2011-00140, Order at Appendix p. 41 (Mar. 13, 2013).

their DSM/EE programming, and the Commission will have ample time to review the modifications, to ensure that achievable savings are captured.

Q. Mr. Woolf further testified, "The Companies significantly understate the benefits of energy efficiency by failing to include … program participant non-energy benefits (NEBs) in their [DSM/EE] cost-benefit analyses."[13] Should the Companies' cost-benefit analyses have included non-energy benefits?

A. As Robert M. Conroy explains in his Rebuttal Testimony, non-energy benefits are outside the jurisdiction of the Commission. Moreover, because non-energy benefits do not affect the Companies' rates or service, the Companies do not include such benefits in their cost-benefit analyses. The Companies use the cost-effectiveness tests and inputs contained in the California Standard Practice Manual ("SPM"), the use of which the Commission has repeatedly approved and the Companies have repeatedly used to develop their historically cost-effective programming. The Companies include as participant costs only a customer's out-of-pocket expenses resulting from participation, including any initial or annual investments.[14] For some programs, there is no participant cost.[15] Therefore, the Companies include only energy benefits received by the participant. This approach is consistent with the SPM.[16] Contrary to Mr. Woolf's belief,[17] the Companies do not include all participant costs in their cost-effectiveness analysis, e.g. the cost of complying

[13] Woolf Testimony at 3.
[14] *See* Exhibit MEH-1, Appendix B at 1.
[15] Exhibit MEH-1 at 12.
[16] *See* California Standard Practice Manual at 8, available at http://www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/Cost-effectiveness.htm. ("The benefits of participation in a demand-side program include the reduction in the customer's utility bill(s), any incentive paid by the utility or other third parties, and any federal, state, or local tax credit received. … The costs to a customer of program participation are all out-of-pocket expenses incurred as a result of participating in a program, plus any increases in the customer's utility bill(s).")
[17] Woolf Testimony at 19 ("Given that the test includes all participant costs, it is necessary to include all participant benefits …."); at 21 ("Since the TRC test includes all participant costs, it is necessary to also include all participant benefits ….").

with disposal requirements for light bulbs containing mercury or the lost value of the remaining life of a replaced appliance; because the Companies do not include all conceivable participant benefits, it is illogical to include all conceivable participant benefits. If non-energy benefits are to be included in such analyses—and the Companies believe they should *not* be, and indeed cannot be in Kentucky—then non-energy costs must be included, too.

Finally, Mr. Woolf's proposed accounting for non-energy benefits is an attempt to impose a minority method on Kentucky (and one that conflicts with statute). Mr. Woolf's testimony cites only eight states that have adopted some form of accounting for non-energy benefits.[18] Among these states are some of the highest-electric-cost states in the union.[19] The Commission should refuse Mr. Woolf's invitation to join this minority of states as being both statutorily impermissible and economically inadvisable.

Q. Mr. Woolf testified that the Companies should continue their existing DSM/EE programs and expand the budgets of modified programs.[20] Why do the Companies propose modifications and terminations to their DSM/EE programs?

A. The Companies' modifications and terminations are justified by rigorous cost-benefit analysis. The Companies are not proposing to let programs expire to reduce rate impacts, contra Mr. Woolf's belief.[21] In fact, the Companies already employ the means suggested by Mr. Woolf (e.g. modifying program designs to reduce program costs) to mitigate rate impacts.

[18] Woolf Testimony at 20. The eight states Mr. Woolf cites are California, Colorado, Maryland, Massachusetts, New York, Oregon, Vermont, and Washington.
[19] *See* http://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_06_a.
[20] Woolf Testimony at 48.
[21] *Id.* at 24.

Q. Why do the Companies propose to terminate the Residential High-Efficiency Lighting program?

A. The Companies propose allowing this program to expire because its goal has been met. The Residential High-Efficiency Lighting program was implemented as a transformation program to introduce and familiarize customers with compact-fluorescent lights ("CFLs").[22] Pending federal standards coupled with current market saturation indicate customers are now well aware of CFLs and are likely to purchase CFLs absent utility incentives.[23] The Companies considered continuation of the program with a focus toward light-emitting-diode ("LED") technology but determined the current cost-prohibitive nature of LEDs justified termination of the program at this time.[24] Nevertheless, the Companies will continue to monitor LED prices, similar programs in other states, and opportunities for alternate delivery mechanisms.[25]

Q. Why do the Companies propose to terminate the Residential New Construction program?

A. The Companies, like other utilities across the country, are reassessing and discontinuing this program due to decreasing cost effectiveness,[26] primarily due to state adoption of higher new-construction standards. Further, the Companies' original objective of the program has been achieved through the Companies' outreach efforts, though the

[22] *See In the Matter of Joint Application of Louisville Gas and Electric Co. and Kentucky Utilities Co. Demand-Side Management for the Review, Modification, and Continuation of Energy Efficiency Programs and DSM Cost Recovery Mechanisms*, Case No. 2007-00319, Application Volume I at 44 (April 14, 2011).
[23] Exhibit MEH-2 at 17-18.
[24] *Id*. at 19.
[25] *Id*.
[26] *Id*. at 21.

Companies propose to continue providing technical training classes through the Customer Education and Public Information Program.[27]

Q. Why do the Companies propose to terminate the HVAC Tune-Up program?

A. The Companies propose allowing this program to expire because of low-participation rates and cost-effectiveness.[28] Contrary to Mr. Woolf's assertion, it is not uncommon for these programs to be marginally cost-effective at best, and the Companies have engaged, and will continue to engage, with HVAC service providers to provide non-competitive programming.[29] Further, the Companies will continue to offer opportunities for residential and commercial customers to participate in programs with HVAC components, including the Home Energy Rebate program and Commercial Rebate program.[30]

Q. Why do the Companies propose to terminate the Dealer Referral Network?

A. The Companies propose allowing this program to expire because it is no longer necessary to support expiring programs, and because its goals can be achieved through other programs.

Q. Why do the Companies propose to reduce the focus on small commercial customers in the Commercial Load Management program?

A. Because of the historical success of the large commercial program, and low adoption rates in the small commercial program, more focus will be placed on large commercial customers in order to achieve the most cost-effective EE.[31] Contrary to Mr. Woolf's

---

[27] Exhibit MEH-1 at 55.
[28] *Id.* at 56.
[29] *Id.* at 56-57.
[30] Proposed DSM/EE Program Plan at 57.
[31] Exhibit MEH-1 at 20-21.

assertion,[32] the Companies have repeatedly stated they are not eliminating small commercial customers from this program;[33] rather, they are shifting the focus of the program to large commercial customers. Because small commercial customers use similar equipment as residential customers, continuation of the small commercial program does not create operational issues. The proposed budget reallocation reflects the Companies' best participation projections based upon historical experience. If small commercial customers start to participate at higher levels, the Companies will continue to serve these customers' participation in the small commercial program.

Q. Why do the Companies propose to eliminate onsite audits in the Commercial Conservation / Commercial Incentives program?

A. The Companies propose to terminate onsite audits because of low conversion rates between audits completed and measures implemented and because of changes in market conditions and costs.[34] Nonetheless, the Companies intend to rebate commercial customers who employ independent onsite audits and implement the resulting recommended measures.[35] The Companies will also provide online audits to generate useful and specific recommendations for customers.[36]

Q. Why do the Companies propose to maintain current funding levels for the Residential Conservation program while simultaneously expanding the program to expressly include multi-family units?

---

[32] Woolf Testimony at 29.
[33] *See* Companies' Response to Attorney General's first information request question 16, Wallace McMullen and Sierra Club's first information request question 14, Attorney General's second information request question 9, and Wallace McMullen and Sierra Club's second information request question 4.
[34] Exhibit MEH-1 at 30.
[35] *Id.*
[36] *Id.*

A. The Companies have historically allowed multi-family units to participate in the Residential Conservation program. The proposal to expressly include multi-family units is intended to ensure customers residing in or owning these properties are aware of their eligibility in the program.[37] If participation levels exceed expectations, the Companies will consider modifying the program and increasing the budget.

Q. How will the Companies ensure current programming does not limit future EE potential created by technological advances or increased customer participation?

A. The Companies actively engage in analysis of DSM/EE programs and market potential. To the extent technological advances increase cost-effectiveness of measures, or participation rates exceed projections, the Companies can adjust and modify programs and budgets. For example, the Companies have proposed in this proceeding to increase the budget for the Residential Incentive program to meet higher-than-forecasted participation levels.[38]

Q. Mr. Woolf testified that the Companies significantly understated EE potential for a variety of reasons.[39] Are the Companies' EE potential estimates reasonable?

A. Yes, the Companies' *Energy Efficiency Potential Study* ("*EE Potential Study*") involved rigorous analysis of EE technical, economical, and achievable potential in the Companies' service territories. The Companies commissioned the Cadmus Group, Inc. ("Cadmus") to complete the *EE Potential Study*, which involved an assessment of EE potential, considering a wide range of energy-efficient technologies and expected customer-participation levels.

---

[37] *Id*. at 39.
[38] *Id.* at 25.
[39] Woolf Testimony at 41.

The Companies include in their analysis only "measures with proven and well-documented savings, costs, and applicability[.]"[40] The Companies do not include emerging technologies, as Mr. Woolf proposes,[41] because such inclusion could result in speculative or unproven estimates of EE potential. Limiting the scope of technological review allows for proper analysis that can be used for DSM/EE-program-planning purposes. Further, it is not at all clear how the Companies could model technologies that do not yet exist, or how to model emerging technologies with insufficient data and uncertainties about costs, benefits, and expected improvements. The Commission has an established policy of using known and measurable information in ratemaking. But because the Companies continually review programs and evaluate emerging technologies, the Companies can update potential EE savings as technological changes demonstrate additional opportunities for implementing cost-effective DSM/EE measures. For example, if LED prices drop as Mr. Woolf expects, the Companies can create an LED program. If compressor load-control switches for window air-conditioning units become a proven and cost-effective measure, the Companies can incorporate the switches into their DSM/EE programming.

Q. Mr. Woolf testified that the Companies should include in their comparison of the cost of an efficiency measure with the cost of supply-side resource avoided energy costs and avoided potential-environmental-compliance costs. Do you agree??

A. No. The Companies' application of $100 per kW-year avoided cost of capacity as a cap to customer incentives is reasonable, contra Mr. Woolf's belief,[42] and consistent with methodologies historically used by the Companies and Commission to analyze DSM/EE

[40]*See* Companies' Response to Wallace McMullen and Sierra Club's first information request question 23.
[41] Woolf Testimony at 41.
[42] Woolf Testimony at 43.

programs. The primary, if not sole, savings realized by the Companies, and thus passed on to their customers, is the delay of constructing new facilities;[43] thus, capping incentives to customers at the avoided cost of capacity helps ensure the cost-effectiveness of DSM/EE measures.

Response to the Testimony of Cathy Hinko and Marlon Cummings

Q. The testimony of Association of Community Ministries, Inc. ("ACM") witness Marlon Cummings and Metropolitan Housing Coalition ("MHC") witness Cathy Hinko indicate a concern regarding lack of programming for low-income and multi-family-household customers. Does the Companies' Proposed DSM/EE Program Plan provide for programs that are available, affordable, and useful to all customers?

A. Yes, the Companies work with their customers while preparing their DSM/EE programming to ensure all customers can participate in, and directly benefit from, the Companies' DSM/EE offerings. The Companies' EE Advisory Group, a group of customer-stakeholders that includes low-income advocates and the Attorney General,[44] was instrumental in the formulation of the Companies' Proposed DSM/EE Program Plan. The Companies will continue to work with their customers and continue to invite recommendations to better promote and provide cost-effective DSM/EE programs.

Q. Does the Companies' Proposed DSM/EE Program Plan provide programs available, affordable, and useful to low-income customers and multi-family households?

A. Yes, the Companies have worked with low-income and multi-family-household advocates to identify and provide cost-effective programming for these customers. For

[43] *See* Companies' Response to Wallace McMullen and Sierra Club's second information request question 11.
[44] MHC is a member of the EE Advisory Group and participated in the development of the Companies' Plan.

example, the Companies' Low-Income Weatherization Program ("WeCare") is limited to low-income customers, yet all customers must pay for it, and is the second largest program by budget (14% of the Proposed DSM/EE Program Plan four-year budget).[45] Ms. Hinko testified that the Companies should allocate DSM/EE spending to the census tracts from which fees are collected, thus ensuring low-income customers receive benefits equal to their DSM/EE charges;[46] however, low-income customers currently receive significant benefits. For example, in 2013 LG&E's WeCare program spent $953,000 to provide weatherization services to low-income customers.[47] The census-tract-allocation proposal might reduce this benefit. Further, the amount low-income customers are receiving in WeCare funding does not include other program benefits received by low-income customers; they, like all residential customers, can participate in all residential programs, including the Residential Conservation / Home Energy Performance Program and the Residential Incentives program. Although some residential programs require investments from customers, the programs provide benefits to the system as a whole, and thus to the customer-base as a whole, including non-participating low-income customers.[48] Moreover, some programs allow refunds to be credited to low-income customers without requiring the low-income customers to invest in the DSM/EE measure.[49]

Likewise, multi-family households are encouraged to participate in the Residential Conservation / Home Energy Performance Program and the Companies propose in the Proposed DSM/EE Program Plan express inclusion of multi-family

[45] Exhibit MEH-1 at 17.
[46] Hinko Testimony at 6.
[47] *See* Companies' Response to ACM's first information request question 17.
[48] *See* Companies' Response to Staff's first information request question 47.
[49] *See* Companies' Response to ACM's second information request question 12.

households. Also, as ACM noted,[50] the inclusion of a tier for weatherization and insulation provides additional opportunities for customers with limited incomes to achieve the required energy savings; moreover, multi-family households of any size may now participate in the WeCare program.

Q. What do you recommend to the Commission?

A. I continue to recommend that the Commission approve the Proposed DSM/EE Program Plan as filed. The Companies' Proposed DSM/EE Program Plan will achieve increased demand and energy savings and is the product of thorough analysis, cost-benefit testing, and collaboration with the Advisory Group.

Q. Does this conclude your testimony?

A. Yes.

[50] Cummins Testimony at 12.

VERIFICATION

COMMONWEALTH OF KENTUCKY)
) **SS:**
COUNTY OF JEFFERSON)

The undersigned, **Michael E. Hornung**, being duly sworn, deposes and says that he is Manager of Energy Efficiency Planning & Development for LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the foregoing testimony, and that the answers contained therein are true and correct to the best of his information, knowledge and belief.

Michael E. Hornung
Michael E. Hornung

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 13th day of June 2014.

Susan M. Watkins (SEAL)
Notary Public

My Commission Expires:

SUSAN M. WATKINS
Notary Public, State at Large, KY
My Commission Expires Mar. 19, 2017
Notary ID # 485723