COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

Electronic Application of Kentucky Utilities Company for an Adjustment of its Electric Rates and Approval of Certain Regulatory and Accounting Treatments	)))))	Case No. 2025-00113
Electronic Application of Louisville Gas and Electric Company for an Adjustment of its Electric Rates and Approval of Certain Regulatory and Accounting Treatments	)))))	Case No. 2025-00114

DIRECT TESTIMONY

OF

ROGER D. COLTON

On Behalf of:

JOINT INTERVENORS KENTUCKIANS FOR THE COMMONWEALTH, KENTUCKY SOLAR ENERGY SOCIETY, METROPOLITAN HOUSING COALITION, AND MOUNTAIN ASSOCIATION

August 29, 2025

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Introduction and Witness Credentials

Q. PLEASE STATE YOUR NAME AND ADDRESS.

A. My name is Roger Colton. My address is 34 Warwick Road, Belmont MA 02478.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT POSITION?

A. I am employed by Fisher Sheehan & Colton, Public Finance and General Economics of Belmont, Massachusetts. In that capacity, I provide technical assistance to a variety of federal, state, and municipal agencies, consumer organizations, and public utilities on rate and customer service issues involving water/sewer, natural gas and electric utilities.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?

A. I am testifying on behalf of Kentuckians for the Commonwealth, Kentucky Solar Energy Society, Metropolitan Housing Coalition, and Mountain Association (Joint Intervenors) to the Public Service Commission in response to the applications of Kentucky Utilities Company and Louisville Gas and Electric Company .

Q. PLEASE DESCRIBE YOUR PROFESSIONAL BACKGROUND.

A. I work primarily on low-income utility issues. This involves regulatory work on rate and customer service issues, as well as research into low-income usage, payment patterns, and affordability programs. At present, I am working on various projects in the states of New Hampshire, Massachusetts, New Jersey, Maryland, Pennsylvania, Florida, Ohio, Illinois,, Minnesota, Missouri, and Kentucky. My typical clients include state agencies (e.g., Pennsylvania Office of Consumer Advocate, Maryland Office of People's

Counsel, Connecticut Office of Consumer's Counsel), federal agencies (e.g., the U.S. Department of Health and Human Services), community-based organizations (e.g., Northwest Energy Coalition, Legal Action of Chicago, Sierra Club), and private utilities (e.g., Toledo Water). In addition to state-specific and utility-specific work, I engage in national work throughout the United States. For example, in 2011, I worked with the U.S. Department of Health and Human Services (the federal LIHEAP office) to advance the review and utilization of the Home Energy Insecurity Scale as an outcomes measurement tool for the federal Low-Income Home Energy Assistance Program ("LIHEAP"). In 2007, I was part of a team that performed a multi-sponsor public/private national study of low-income energy assistance programs. In 2020, I completed a study of water affordability in twelve U.S. cities for the London-based newspaper, The Guardian. In 2021, I prepared a Water Affordability Plan for the City of Toledo (OH). In 2022, I prepared an evaluation of the New Hampshire Electric Assistance Program (EAP) for the New Hampshire Public Utilities Commission. A description of my professional background is provided in Exhibit-RDC-1.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. After receiving my undergraduate degree in 1975 (Iowa State University), I obtained further training in both law and economics. I received my law degree in 1981 (University of Florida). I received my Master's Degree (Regulatory Economics) from the MacGregor School of Antioch University in 1993.

Q. HAVE YOU EVER PUBLISHED ON PUBLIC UTILITY REGULATORY ISSUES?

A. Yes. I have published three books and more than 80 articles in scholarly and trade journals, primarily on low-income utility and housing issues. I have published an equal number of technical reports for various clients on energy, water, telecommunications and other associated low-income utility issues. My most recent publication is a chapter in the book "Energy Justice: US and International Perspectives," published by Edward Elgar Publishing in London. My chapter was titled "The equities of efficiency: distributing usage reduction dollars." It offers an objective definition of "equity" based on legal and economic doctrine.

Q. HAVE YOU EVER TESTIFIED BEFORE THIS OR OTHER UTILITY COMMISSIONS?

A. Yes. I most recently testified before the Kentucky Public Service Commission (PSC or Commission) in Case No. 2021-00154 regarding the rate request of Martin County Water District.[1] In addition, I testified in Case No. 2000-00548 regarding the proposal of Louisville Gas and Electric Company to implement prepayment meters (2001); and in Case No. 90-041 regarding the Union Heat Light & Power rate case (1990); in Case No. 90-013 (1990) regarding the rate request of West Kentucky Gas Company.

[1] Case No. 2021-00154, *Electronic Application of Martin County Water District for an Alternative Rate Adjustment*, Direct Testimony and Exhibits of Roger D. Colton on Behalf Of: Martin County Concerned Citizens, Inc. MCCC Statement No. 1 (Sep. 06, 2021).

Other than these Kentucky proceedings, I have testified in more than 350 regulatory and judicial proceedings in 44 states and various Canadian provinces on a wide range of utility issues, primarily involving low-income rates, energy efficiency, and customer service issues. A list of states and provinces in which I have testified is provided in Exhibit RDC-1.

Q. PLEASE EXPLAIN THE PURPOSE OF YOUR DIRECT TESTIMONY.

A. My Direct Testimony is presented in the following parts.

- Part 1 examines the declining affordability of rates for Louisville Gas and Electric Company and Kentucky Utilities (LGE/KU) and proposes reasonable responses. The section examines unaffordability at existing and proposed rates, and explains why it is not reasonable to rely primarily on federal LIHEAP funding as an appropriate response;

- Part 2 examines the impact of unaffordability on the payment patterns of low-income customers. In turn, those impacts on payment patterns have noticeable impacts on the costs included in rates charged to all ratepayers. Addressing bill unaffordability will have a beneficial impact on the costs included in rates;

- Part 3 identifies the need for, and a reasonable structure of, an Arrearage Management Program (AMP) for LGE/KU;

- Part 4 examines LGE/KU's clean energy strategies and how those strategies, as currently structured, will affect low-income customers. Since the implementation of clean energy strategies is an essential component of delivering reasonably adequate utility service in today's world, this section proposes a reasonable response to address the impacts;

- Part 5 examines how performance-based ratemaking can (and should) be used by LGE/KU to address problems arising from increasing bill unaffordability; and

- Part 6 addresses the need for greater low-income energy efficiency programs as a solution to energy unaffordability.

Summary of Recommendations

Q. PLEASE SUMMARIZE THE RECOMMENDATIONS YOU MAKE IN YOUR TESTIMONY BELOW.

A. Based on the data and discussion I present in my testimony below, I recommend as follows:

- LGE/KU should be directed to engage in a two-year pilot project that focuses on enlisting community-based organizations in the provision of outreach for the Company's time-of-day rates initiative in particular. The pilot project should be funded at a level of $200,000 annually for two years. The $200,000 should be distributed through a competitive bid process, through which community partners would commit to serve specific communities (e.g., rural, Black, Hispanic, aged, families with children). Through such a competitive bid process, LGE/KU could incorporate its desired outcomes along with periodic performance measurement.

- The LGE/KU policy to exempt low-income customers from being charged late payment fees should be expanded to additional low-income customers. This policy should be modified to exempt a customer from the late payment charge if the customer has received an energy assistance grant from an "authorized agency" within the current or immediately preceding two LIHEAP program years. Moreover, a customer should be exempted from being charged a late payment charge if they document participation in a public assistance program with income eligibility that is consistent with LIHEAP eligibility.

- For much the same reason that late charges have been waived for low-income customers in the first instance, fees related to the disconnection and reconnection of service should be waived for low-income customers as well.

- The availability of the LGE/KU Time-of-Day rates should be expanded to deliver financial benefits to low-income customers. LGE/KU should review the accounts of each of the Company's customers receiving energy assistance benefits through one of the programs which LGE/KU use to establish low-income status. Through this review, LGE/KU should identify energy assistance recipients on basic residential service who, by mining hourly data for those recipients, would receive a bill savings of no less than $50 through a switch to each Company's TOD rates based on the customer's current usage levels. Upon a finding of projected savings of $50 or more, LGE/KU should switch the energy assistance recipient to the TOD rate, while providing those customers with an opportunity, prior to the

switch, to opt-out of the switch should they choose to do so. The optimal rate should be guaranteed for the customers that were switched.

- The Commission should direct LGE/KU to remedy their complete lack of knowledge about their low-income customers. In consultation with the Joint Intervenors and other interested stakeholders, the Companies should be directed to retain an independent firm to prepare, by no later than December 31, 2026, a customer segmentation study that examines the factors I identify above, disaggregated by socio-economic status: (1) patterns of nonpayment; (2) characteristics of nonpayers; (3) predictors of nonpayment; (4) strategies to reduce nonpayment; or (5) early indicators of nonpayment.

- The prepayment meter program requested by LGE/KU should be disapproved. Several reasons support this conclusion.

- LGE/KU should be directed to implement a means-tested Arrearage Management Program (AMP). LGE/KU should collect the costs of its AMP through a reconcilable surcharge. The surcharge would reconcile actual expenditures on an annual basis to the projected expenditures. Under-payments and over-payments are rolled into the surcharge in the next fiscal year.

- As part of their solarization programs, LGE/KU should be directed by the Commission to work with stakeholders to develop a ten-year solarization plan directed toward low-income households. This Ten Year Plan can and should incorporate existing efforts and identify the specific role of the utilities in supporting and advancing those efforts. The Ten Year Plan should document the Companies' efforts to collaborate with state and community-based organizations to target low-income participants with the highest energy use using braided utility dollars, state and federal funding, and other community resources for investments in clean energy measures. the Ten-Year Plan be filed with the Commission no later than December 31, 2026, and be updated biannually thereafter using objective metrics developed with the stakeholders to measure the success of the Plan in serving low-income households.

- LGE/KU should explicitly track the costs of their promotion of transportation electrification. The Companies should be required to develop, and present to the Commission for approval, a program of fleet and public transportation incentives to entities situated in or that primarily service Environmental Justice (EJ) communities.

- The Commission should adopt a series of outcome metrics to measure the Company's performance with respect to its credit and collection outcomes. The

first outcome metric to be used should be an increase in the enrollment of LGE/KU low-income customers in LIHEAP and in WeCare. The second outcome metric I recommend should involve a suite of four interrelated outcomes: (1) a reduction by 15% each year for three years in the absolute number of defaulted residential deferred payment arrangements. For purposes of this outcome, a "defaulted payment arrangement" is a payment arrangement from which the customer has been removed for nonpayment prior to completion of all of the payments required under the payment arrangement to retire the arrears made subject to the arrangement; (2) a reduction by 15% each year for three years in the absolute number of residential nonpayment disconnections; (3) A reduction by 15% each year for three years in the number of residential customers who have, since April 1 of a given year, had their service disconnected for nonpayment and who, as of November 1 of that year, remain in their home with service not yet reconnected; and (4) a reduction by 15% each year for three years in the average monthly arrears, measured in "Bills Behind," for identified low-income customers not on agreement. Failure to achieve the proposed collection outcomes shall result in sanctions determined as follows: (1) a dollar amount equivalent to 15 basis points ROE reduction for noncompliance with a single improvement goal; (2) a dollar amount equivalent to 25 basis points ROE reduction for noncompliance with multiple improvement goals. The sanction does not result in a change to LGE/KU's authorized ROE but is calculated to produce a revenue reduction that is equivalent to the specified ROE reduction.

- At a minimum, the Companies should increase their annual WeCare spending to serve the annual number of households included in their most recent Energy Efficiency Plan (4,590). To the extent that increased outreach is required to achieve these objectives, WeCare should be incorporated into the outreach proposals I recommend above. To the extent that actual spending falls short of the budgeted expenditures, that excess budget should be rolled over into the next fiscal year.

- Within twelve months of a final order in this proceeding, working in collaboration and consultation with the Joint Intervenors and other stakeholders, the Companies should file an amended WeCare plan with the Commission, with an amended budget, designed to serve no fewer than 50% of the eligible population over no more than a 15 year period.

- The proposed increases in the electric and natural gas fixed Basic Service Charges should be found to be unjust and unreasonable. The proposed increases should be denied and the fixed Basic Service Charges should be retained at their existing levels.

Part 1. The Affordability of LGE/KU Bills for Current Service.

Q. PLEASE EXPLAIN THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY.

A. In this section of my testimony, I examine the affordability of LGE/KU bills for current service. I consider bill affordability from three different perspectives. First, I examine the history of rate increases for LGE/KU since 2018 and compare those increases to the changes in the income of low-income households during that same time period. Second, I examine bill affordability to low-income customers. Third, I examine bill affordability to more moderate-income customers.

A. LGE/KU Rates Over Time.

Q. PLEASE DESCRIBE THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY.

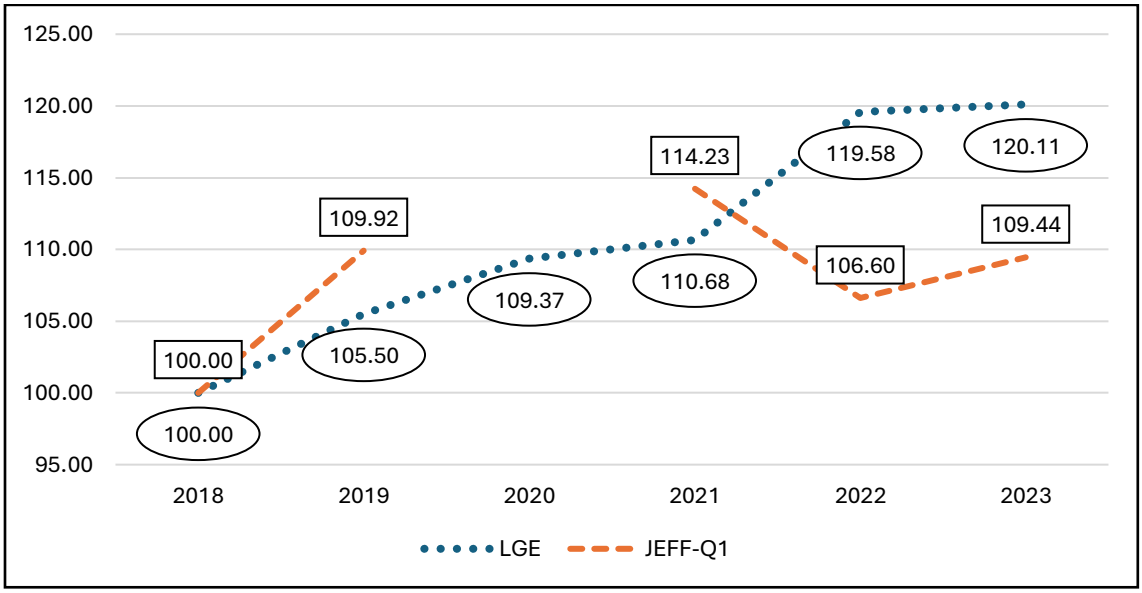
A. In this section of my testimony, I examine the change in LGE/KU rates over time and compare those rate changes to the changes in the incomes of low-income customers over the same time period. I examine rates from two years prior to COVID (2018) through 2023.[2] Census data for 2024 has not yet been published. For purposes here, I define "low-income" to be the average income of the First Quintile (Q1) of income.[3] I determined the average residential revenue per kWh for each utility by dividing the total

[2] U.S. Census Bureau, American Community Survey (ACS) 5-year estimates are used. The Census Bureau did not publish data for 2020 given difficulties in collecting data during that COVID year.

[3] The Census Bureau rank orders all households for each jurisdiction from lowest income to highest income. It then divides that ranking into five equal parts, each part of which is called a "quintile." The one-fifth of households with the lowest income are in the First Quintile (Q1) (sometimes known as the "Bottom Quintile") while the one-fifth of households with the highest incomes are the Fifth Quintile (sometimes known as the "Top Quintile").

residential revenue reported by each Company to the Energy Information Administration (Form 861) by the total residential sales. To compare the change in Q1 incomes to the change in LGE/KU rates, I assigned 2018 a base case value of 100. The changes from that base case value represent the rate by which the values increased or decreased. I compare the changes in LGE rates to Q1 incomes for Jefferson County, while I compare the changes in KU rates to Q1 incomes for Kentucky as a whole.

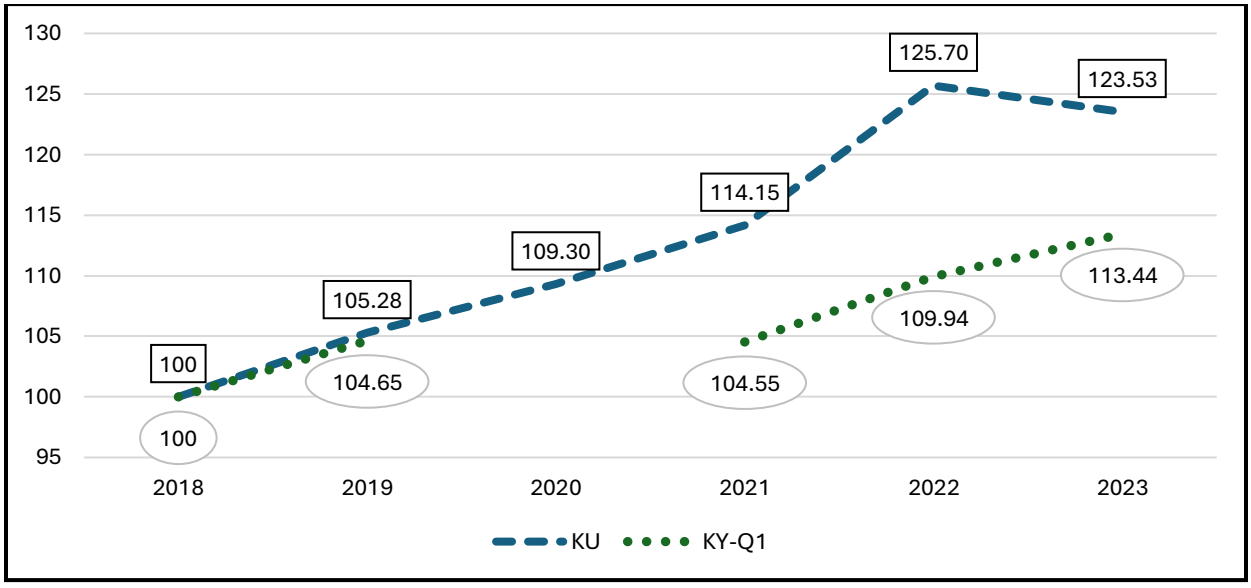
Figure 1. Changes in LGE Electric Rates Compared to Changes in Q1 Incomes (2018 – 2023)



The data in the Figure above shows that increases in LGE electric rates have outstripped increases in Q1 incomes over this five year period (2018 – 2023). While LGE electric rates increased 20.1% during this period, Q1 incomes in Jefferson County increased only 9.4% during the same time period. While KU rates increased by 23.5% over the five year period, Q1 incomes in Kentucky increased by only 13.4% (Figure 2). Indeed, the data shows that while rates for LGE and KU increased each year relative to the immediately preceding year, it cannot be assumed that incomes will correspondingly increase. In Jefferson County, for example, average Q1 incomes peaked at $14,090 in

2021, but declined to $13,149 in 2022 and remained below that peak (at $13,500) in 2023. For Kentucky, average Q1 incomes remained virtually identical in 2019 ($11,367) and 2021 ($11,356).

Figure 2. Changes in KU Electric Rates Compared to Changes in Q1 Incomes (2018 – 2023)



LGE gas prices show an even greater discrepancy. Using the annual natural gas statistics published by the Commission for "large natural gas distribution utilities,"[4] I find that while Jefferson County Q1 incomes grew by 9.4% from 2018 through 2023, LGE natural gas prices increased by 58.8%. LGE prices then declined in 2024 for an increase from 2018 of only 36.2%. Income data for 2024 is not available. Even comparing LGE gas prices to changes in income through 2023, however, I find that gas prices grew four times faster than Jefferson County's average Q1 income.

[4] *Available at* https://psc.ky.gov/WebNet/ListLibrary/STAT.

Q. IS THERE ANY FINAL WAY YOU HAVE EXAMINED THE AFFORDABILITY OF LGE/KU BILLS OVER TIME?

A. Yes. In this discussion, I examine KU and LGE bills from 2018 through 2023 as reported by the Commission in its Annual Report Statistics.[5] I then compare these average annual bills to the average First Quintile Income (explained above) for Jefferson County for LGE and to the average First Quintile Income for Kentucky for KU. The data is set forth in Table 1 below. For each annual bill, by year, I determined what income would be required for that bill to represent an affordable burden (4% for electricity; 2% for natural gas). I compare the income required for bills to be affordable to the actual Q1 income to determine to what extent, if any, there is a deficit (i.e., Q1 incomes are insufficiently high for bills to be affordable).[6]

The Table shows that, for LGE electric bills, the income deficit significantly increased through 2022 (from $18,814 to $21,392), before ticking down in 2023. Even then, the 2023 income deficit ($18,371) was higher in 2023 than it was in either 2019 ($17,910) or 2021 ($17,810). For LGE gas, the income deficit between actual Q1 income and that income required to experience an affordable natural gas bill grew by nearly $7,000 from 2018 through 2023. Even if an LGE customer had a sufficient income to experience an affordable natural gas bill in 2018, in other words, that customer's income

[5] Available at https://psc.ky.gov/WebNet/ListLibrary/STAT. The average annual bill was derived by dividing the total residential revenue reported by the Commission by the total number of residential customers.

[6] Because of data collection limitations associated with the novel Coronavirus health pandemic, the Census Bureau did not report data in 2020. Census data for 2024 has not yet been publicly released.

would have needed to grow by nearly $7,000 more than it did (from $22,847 to $29,640) in order for the LGE gas bill to have remained affordable.

For KU electric bills, Q1 incomes would have needed to grow by nearly $6,000 more than they actually did (from $24,640 to $30,442) in order for a KU bill to have remained affordable in 2022. As with LGE, KU electric bills ticked down in 2023 and, accordingly, so, too, did the Q1 income deficit.

For both utilities, the comparison of what a bill at an affordable percentage of income would be and the actual average annual bills shows the degree to which actual bills remain substantially above an affordable level.

Table 1. Income Deficit Needed to Achieve an Affordable Burden (LGE/KU Electric and LGE Gas Bills) (2018 – 2023)

LGE Electric	Total Annual Bill	Q1 Incomes: Jefferson County	Income at 4% Burden	Q1 Deficit at 4%	Affordable Bill at 4%
2018	$1,245.95	$12,335	$31,149	$18,814	$493.40
2019	$1,258.77	$13,559	$31,469	$17,910	$542.36
2020	$1,253.54	NA	$31,339	NA	NA
2021	$1,276.02	$14,090	$31,900	$17,810	$563.60
2022	$1,381.65	$13,149	$34,541	$21,392	$525.96
2023	$1,274.84	$13,500	$31,871	$18,371	$540.00
KU Electric	Total Annual Bill	Q1 Incomes: KY	Income at 4% Burden	Q1 Deficit at 4%	Affordable Bill at 4%
2018	$1,420.07	$10,862	$35,502	$24,640	$434.48
2019	$1,429.16	$11,367	$35,729	$24,362	$454.68
2020	$1,442.66	NA	$36,067	NA	NA
2021	$1,499.06	$11,356	$37,476	$26,120	$454.24
2022	$1,695.36	$11,942	$42,384	$30,442	$477.68
2023	$1,487.49	$12,322	$37,187	$24,865	$492.88
LGE Gas	Total Annual Bill	Q1 Incomes: Jefferson County	Income at 2% Burden	Q1 Deficit at 2%	Affordable Bill at 2%
2018	$703.63	$12,335	$35,182	$22,847	$246.70
2019	$708.54	$13,559	$35,427	$21,868	$271.18
2020	$706.69	NA	$35,334	NA	NA
2021	$765.56	$14,090	$38,278	$24,188	$281.80
2022	$1,009.89	$13,149	$50,495	$37,346	$262.98
2023	$862.80	$13,500	$43,140	$29,640	$270.00

Q. WHAT DO YOU CONCLUDE?

A. I find that both LGE and KU prices have been increasing at rates faster than the incomes of low-income customers in their respective service territories. To the extent that there is an affordability problem facing these utilities, which I find below is true, that problem has been growing more and more substantial over time.

B. The Affordability of LGE/KU Bills to Low-Income Customers.

Q. PLEASE EXPLAIN THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY.

A. In this section of my testimony, I examine the affordability of LGE/KU gas and electricity bills to low-income customers given existing and proposed rates.

Q. WHY IS IT IMPORTANT TO CONSIDER THE AFFORDABILITY OF BILLS IN A RATE PROCEEDING SUCH AS THIS?

A. Consideration of affordability is a critical task to undertake within the structure of a utility rate case. As bills become increasingly unaffordable, the payment difficulties of those customers who face unaffordability become increasingly substantial as well. I will demonstrate below how and where this conclusion has been documented time and again. One impact of the unaffordability is its impact on the operating costs (e.g., collection costs, working capital, uncollectibles) that are then passed through to other ratepayers. In addition, much of utility ratemaking involves a balancing of investor interests and customer interests. Establishing a return on equity, for example, is fundamentally predicated on balancing customer and investor interests. It is necessary for the Commission to understand the customer interests in order to appropriately balance them against the competing investor interests.

I note that the most fundamental response to unaffordability in the LGE/KU service territories is to minimize the rate increases, if any, approved in this proceeding. Through such a minimization strategy, the Commission will address affordability for all customers, not merely for those who apply for (and are found eligible to receive) such assistance. Carefully balancing competing customer and investor interests in setting a

return on equity, as noted above, while carefully reviewing the Company's proposed capital expenditures, and denying rate recovery for expenditures that are either unnecessary, not used and useful, or that are otherwise inappropriately proposed to be charged to ratepayers, is the first step (but only the first step) in addressing unaffordable bills.

Q. PLEASE EXPLAIN THE METHODOLOGY YOU USE TO CALCULATE THE AFFORDABILITY OF LGE/KU RATES TO LOW-INCOME HOUSEHOLDS.

A. I begin to calculate affordability by using the electricity and natural gas bills used by LGE/KU in presenting their filing for a rate hike to the Commission. I used the current and proposed rates identified by LGE and by KU in their respective "Customer Notice of Rate Adjustment" submitted with their filings, along with the average gas and electric usage for each utility in that Notice. The rates and bills I use for each company are set forth in the Table below. I further used the average use presented by each utility in their respective Notice. I finally checked my resulting bill increase against the estimated bill increase presented by each utility to ensure that they were the same.

Table 2. Current and Proposed Rates (and corresponding bill impacts)

		Rates		Bills		Change
LGE Electric	Avg Use	Existing	Proposed	Existing	Proposed	
Basic charge	365	$0.45	$0.52	$164.25	$189.8	
Energy charge	866	$0.10838	$0.11867	$1,126.285	$1,233.219	
Total				$1,290.53	$1,423.02	$11.04
		Rates		Bills		
LGE Gas	Avg Use	Existing	Proposed	Existing	Proposed	
Basic charge	365	$0.65	$0.81	$237.25	$295.65	
Energy charge	52	$1.04164	$1.1624	$649.9834	$725.3376	
Total				$887.23	$1,020.99	$11.15
		Rates		Bills		Change
KU Electric	Avg Use	Existing	Proposed	Existing	Proposed	
Basic charge	365	$0.53	$0.64	$193.45	$233.6	
Energy charge	1,085	$0.10533	$0.11897	$1,371.397	$1,548.989	
Total				$1,564.85	$1,782.59	$18.15

Q. HOW DO YOU DEFINE AN AFFORDABLE BURDEN?

A. For purposes here, I define "affordability" to be a total home energy burden of 6%. The 6% burden has been the standard most frequently relied upon by policymakers with respect to affordable home energy.[7] The 6% burden has been frequently adopted,[8]

[7] Throughout my testimony, unless I explicitly note to the contrary, the terms "home energy burdens" and "energy bill burdens" are intended to be used interchangeably.

[8] Six percent is based on the recognition that total shelter costs are generally deemed to be unaffordable to the extent that they exceed 30% of income. Moreover, utility costs tend to equal 20% of total shelter costs. A multiplication of those two data points (20% times 30%) yields the 6% figure. *See e.g.*, American Council for an Energy Efficiency Economy, *Understanding Energy Affordability*, at fn2, available at https://aceee.org/sites/default/files/energy-affordability.pdf

including in the states of Washington,[9] New Hampshire,[10] New York,[11] New Jersey,[12] and Illinois.[13] In addition, the Pennsylvania PUC has capped home energy burdens for households with annual income at or below 50% of Poverty Level at 6% of income.[14] Most recently, the Connecticut Public Utilities Regulatory Authority (PURA) held that a 6% burden for total home energy costs was the appropriate definition of affordability.[15] Non-governmental organizations have also widely adopted this affordability measure.[16] Having defined an affordable ***total*** home energy burden as being equal to 6%, that burden needs to be allocated between natural gas bills and electric bills. I allocate the 6% burden as 4% for electricity and 2% for natural gas.

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[9] WASH ADMIN. CODE § 194-40-030 (2021) ("'Energy assistance need' means the amount of assistance necessary to achieve an energy burden equal to six percent for utility customers").

[10] New Hampshire Pub. Utils. Comm'n, Dkt. No. DE 06-079, Order No. 24,664, 3–4 (Sept. 1, 2006). ("[T]he current [Electric Assistance Program] was designed with the goal of making electricity affordable at 4 % of gross household income for non-electric heat customers (and at 6% of income for households with electric heat).").

[11] New York Pub. Serv. Comm'n, Case 14-M-0565, *Order Adopting Low Income Program Modifications and Directing Utility Filings*, 7–48 (effective May 20, 2016) (favoring a 6% energy burden level because it appears to be a widely accepted limit for utility payments, including in New Jersey and Ohio; and also reflected by EIA data).

[12] New Jersey Dep't of Community. Affairs, *Universal Service Fund (USF)*, https://nj.gov/dca/dhcr/faq/index.shtml, "Who is Eligible for USF). ("You must also spend more than 2% of your income for electric service or more than 2% of your income for natural gas service. If you heat your home with electricity, you must spend more than 4% of your income on electricity." The discount provided to customers is based on the difference between their annual utility bill (after LIHEAP is applied) and the required percentage of household income.).

[13] 305 ILL. COMP. STAT. 20/18(c)(2) (2022) (Illinois administers a percentage of income plan (PIP) that charges customers a maximum of 6% of their income for gas and electric service.).

[14] Pa. Pub. Util. Comm'n, Docket M-2019-3012599, *Final Policy Statement and Order*, 29–31 (Nov. 05, 2019).

[15] Conn. Pub. Util. Reg. Auth., Dkt. No. 17-12-03RE11, *Decision*, 2 (Oct. 19, 2022).

[16] *See e.g.*, Am. Council for an Energy-Efficient Economy, *Understanding Energy Affordability*, *available at* https://aceee.org/sites/default/files/energy-affordability.pdf; Sierra Club, *Calculate Your Energy Burden*, *available at* https://www.sierraclub.org/energy-burden-calculator

Q. HAVE YOU EXAMINED BILL BURDENS FOR LGE AND KU LOW-INCOME CUSTOMERS AT EXISTING AND PROPOSED RATES?

A. Yes. I have calculated bill burdens for LGE gas and electric customers, as well as for KU electric customers, at both the rates which currently exist and those rates which have been proposed in this proceeding.[17] I disaggregate incomes into various ranges of income up to $50,000. I use $50,000 since that is the income level at which LGE gas bills, and KU electric bills, appear to fall above the affordable level at proposed rates. The income ranges I use are those which are reported by the Census Bureau in its American Community Survey.[18] The data is set forth in Table 3 below.

As that Table shows, LGE electric bills at the rates proposed in this proceeding become unaffordable for households with income between $35,000 (burden of 4.4%) and $40,000 (burden of 3.8%). KU electric bills are unaffordable up to an income of between $45,000 and $50,000. LGE gas bills at the rates proposed in this proceeding remain above the affordable 2% threshold even at an income of $50,000 per year.

[17] *See* CUSTOMER NOTICE OF RATE ADJUSTMENT in each docket. Rates are calculated by multiplying the Basic Service Charge per day by 365, and the usage charge by the average usage by 12.

[18] ACS, Table B19001.

Table 3. LGE/KU Bill Burdens by Income at Existing and Proposed Rates (shading simply to improve readability)

		LGE-Electric Bills		LGE Gas Bills		KU Electric Bills	
	Income Mid-Point	Existing Rates	Proposed Rates	Existing Rates	Proposed Rates	Existing Rates	Proposed Rates
Income Range		$1,291	$1,423	$887	$1,021	$1,564.85	$1,782.59
Less than $10,000	$5,000	25.8%	28.5%	17.7%	20.4%	31.3%	35.7%
$10,000 - $14,999	$12,500	10.3%	11.4%	7.1%	8.2%	12.5%	14.3%
$15,000 - $19,999	$17,500	7.4%	8.1%	5.1%	5.8%	8.9%	10.2%
$20,000- $24,999	$22,500	5.7%	6.3%	3.9%	4.5%	7.0%	7.9%
$25,000 - $29,999	$27,500	4.7%	5.2%	3.2%	3.7%	5.7%	6.5%
$30,000 - $34,999	$32,500	4.0%	4.4%	2.7%	3.1%	4.8%	5.5%
$35,000 - $39,999	$37,500	3.4%	3.8%	2.4%	2.7%	4.2%	4.8%
$40,000 - $44,999	$42,500	3.0%	3.3%	2.1%	2.4%	3.7%	4.2%
$45,000 - $49,999	$47,500	2.7%	3.0%	1.9%	2.1%	3.3%	3.8%

It is not simply the income below which bills become unaffordable that is significant, however. When I examine the lower income levels, the depth of unaffordability (i.e., the extent to which bills exceed an affordable burden) becomes particularly substantial. For LGE electric bills, for example, bills impose twice the affordability burden (8.1%) even at an annual income of $20,000, while bills range from nearly three to more than seven times (11.4%, 28.5%) the affordable burden when income falls to $15,000 or below. KU electric bills impose twice the affordability burden if incomes are at $25,000 (7.9%), and nearly nine times the affordability burden (35.7%) when income is less than $10,000.

Q. WHY ARE THESE BURDENS AT DIFFERENT INCOME RANGES IMPORTANT FOR PURPOSES OF ASSESSING AFFORDABILITY?

A. Frequently, when utilities assess affordability, they purport to assess affordability at or below a prescribed income level. Their actual analysis, however, only considers the

income *at* the identified income level, while seeming to forget those households who fall within the "or below" part of the income. In contrast, my discussion considers households at or below $50,000. In the zip codes identified by KU as comprising its service territory, 41.7% of all households have income at or below $50,000.

Figure 3. Percent of Households with Annual Income <$50,000 by Income (KU Counties)

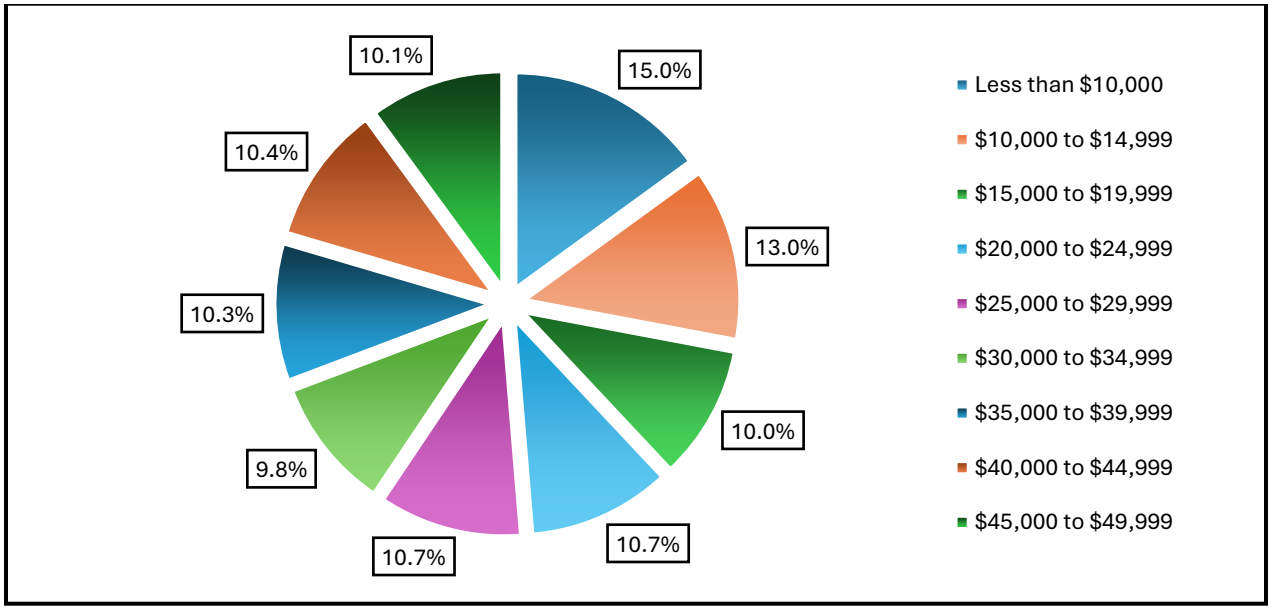

Figure 3, however, documents the extent to which households with income at or below $50,000 fall *below* that maximum income level. The Figure shows, for example, that nearly three-of-ten (28%) of all households with income at or below $50,000 in fact have income below $15,000. Nearly four-of-ten (38%) of households with income less than $50,000 in fact have income below $20,000. The energy burdens imposed by KU and LGE bills at these income levels are significantly above an affordable burden.

Q. WHAT DO YOU CONCLUDE?

A. I find that KU and LGE both have significant bill affordability problems facing their low-income customers. Not only should this unaffordability be considered in

assessing issues such as an appropriate return on equity and rate design, the specific remedies which I recommend below should be adopted to address the issue both from the perspective of delivering reasonably adequate service to the low-income customers and from the perspective of delivering least-cost service to all customers of the two utilities.

C. The Affordability of LGE/KU Bills to More Moderate-Income Customers.

Q. PLEASE EXPLAIN THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY.

A. In this section of my testimony, I examine how the unaffordability of bills is increasingly affecting more moderate income households. Unaffordability is no longer the exclusive province of "low-income" customers. There can be little question that even Kentucky residents with more moderate incomes are having difficulties in paying their home energy bills in today's economic environment. The data shows that bill unaffordability is manifested by the stress imposed by increasing prices, by the actions which households take when they receive unaffordable bills, and by the extent to which households cannot and do not pay their bills on time, if at all.

Q. WHAT DATA HAVE YOU EXAMINED FOR LGE/KU CUSTOMERS?

A. The difficulties have been documented through a variety of publicly available information. Perhaps most up-to-date is the data periodically published through the Census Household Pulse Survey (HPS). While the HPS does not provide data specific to utility service territories, it does provide information specific to Kentucky. At the time I write this Testimony, the most recent HPS data collection was for the period August 20, 2024 through September 16, 2024.

The most recent HPS results for Kentucky show that 69% of households with income less than $25,000 had a very difficult or somewhat difficult time in paying their usual household expenses in the last seven days. While this is substantially higher than the results for more moderate income households, those moderate income households were also having difficulties. From roughly 25% to 30% of Kentucky households with income between $100,000 and $200,000 had either a "somewhat difficult" or "very difficult" time paying their usual household expenses in the study period (August 20 – September 16, 2024). Difficulties in bill payment did not largely disappear until annual income in Kentucky exceeded $200,000.

Table 4. Difficulty in Paying Usual Household Expenses in the Last Seven Days (August 20, 2024–September 16, 2024) (Kentucky)[19]

	Not at all difficult	A little difficult	Somewhat difficult	Very difficult
Less than $25,000	12.1%	18.7%	26.7%	42.5%
$25,000–$34,999	19.2%	10.8%	38.9%	31.0%
$35,000–$49,999	20.0%	35.1%	22.1%	22.8%
$50,000–$74,999	27.2%	27.7%	26.7%	18.3%
$75,000–$99,999	33.2%	31.4%	19.8%	15.5%
$100,000–$149,999	45.4%	26.7%	23.8%	4.2%
$150,000–$199,999	48.8%	24.3%	6.6%	20.3%
$200,000 and above	80.2%	18.1%	0.0%	1.6%

Similar results are found in the Kentucky data reported for the "level of stress" caused by price increases in recent months. As shown in the Table below, substantially

[19] U.S. Census Bureau, Phase 4.2 Cycle 09 Household Pulse Survey: August 20–September 16, Spending Tables, Table 1. Difficulty Paying usual Household Expenses in the Last 7 Days, by Select Characteristics, *available at* https://www.census.gov/data/tables/2024/demo/hhp/cycle09.html (last accessed January 7, 2025).

more than 80% of all Kentucky households with income less than $35,000 found prices increases at the time to be either "moderately stressful" or "very stressful." When incomes reached more moderate levels, although more households found price increases to be "not at all stressful" were noticeably higher than for low-income households, nonetheless, even at these income levels, more than 70% of households with income between $75,000 and $150,000 found price increases to be "very stressful" or "moderately stressful."

Table 5. Level of stress caused by the increase in prices in the last two months (Kentucky) Census Household Pulse Survey, Cycle 09

	Very stressful	Moderately stressful	A little stressful	Not at all stressful	Total
Less than $25,000	71.3%	15.9	7.9%	1.2%	94.5%
$25,000 - $34,999	73.0%	11.4%	14.3%	1.2%	100.0%
$35,000 - $49,999	61.1%	14.0%	23.9%	0.0%	100.0%
$50,000 - $74,999	52.6%	25.5%	20.5%	1.4%	100.0%
$75,000 - $99,999	48.4%	30.0%	14.7%	5.8%	100.0%
$100,000 - $149,999	42.3%	30.0%	24.8%	3.0%	99.7%
$150,000 - $199,999	41.3%	15.9%	29.2%	13.7%	100.0%
$200,000 and above	13.9%	19.2%	48.1%	18.8%	100.0%

The Table above shows that more than 40% of Kentucky households with income between $100,000 and $200,000 found price increases in the last two months to be "very stressful."

Q. HOW DOES THIS DATA RELATE TO DIFFICULTIES IN PAYING UTILITY BILLS SUCH AS HOME ELECTRIC SERVICE?

A. The economic difficulties facing moderate income households directly translate into difficulties in the ability of moderate-income Kentucky households to pay their home

energy bills. The HPS reports that between 10% and 15% of households with income between $75,000 and $150,000 reported a need to reduce or forego expenses for "basic household necessities" in order to pay their energy bills in "almost every month" or in "some months." Conversely, only 70% to 75% of households in this income range reported that they "never" had to reduce or forgo expenditures for basic household necessities in order to pay their home energy bills. In Kentucky, even with incomes between $150,000 and $200,000, nearly twenty percent of households reported their need to reduce or forego expenses for basic household necessities in order to pay an energy bill in "almost every month" or in "some months."

Table 6. Household reduced or forwent expenses for basic household necessities, such as medicine or food, in order to pay an energy bill (Kentucky)
Census Household Pulse Survey, Cycle 09

	Almost every month	Some months	1 or 2 months	Never	Total
Less than $25,000	18.3%	36.7%	10.5%	34.4%	100%
$25,000 - $34,999	19.1%	21.2%	2.6%	57.1%	100%
$35,000 - $49,999	7.4%	22.2%	11.2%	53.5%	94%
$50,000 - $74,999	5.4%	14.2%	7.4%	72.9%	100%
$75,000 - $99,999	15.3%	8.5%	8.1%	68.1%	100%
$100,000 - $149,999	9.9%	4.4%	9.9%	75.5%	100%
$150,000 - $199,999	5.1%	14.8%	4.8%	75.3%	100%
$200,000 and above	0.0%	1.6%	2.3%	96.1%	100%

Even those numbers, however, do not tell the entire story. In many instances, the payment difficulties of these moderate income households can also be seen in their reported inability to pay their energy bill, or to pay "the full bill amount" of their home energy bills. Only 90% of households with income between $100,000 and $200,000

reported that they were "never" unable to pay an energy bill, or unable to pay the full bill amount" of a home energy bill. This inability represents a lesser inability to pay (e.g., roughly half of households with income less than $20,000 reporting "never" unable to pay their home energy bills or to pay their full home energy bill), but a noticeably greater inability to pay than households with income greater than $200,000 (98.4% reporting "never" being unable to pay their home energy bill, or to pay their full home energy bill). The Kentucky HPS data documents that nearly one-quarter (24.7%) of Kentucky households with income between $75,000 and $100,000 reported that they were "unable to pay an energy bill or unable to pay the full amount" in "one or two months", "some months", or "almost every month."

Table 7. Household was unable to pay an energy bill or unable to pay the full bill amount (Kentucky) Census Household Pulse Survey, Cycle 09

	Almost every month	Some months	1 or 2 months	Never	Total
Less than $25,000	25.9%	17.2%	9.2%	47.7%	100%
$25,000 - $34,999	6.9%	16.2%	10.3%	66.6%	100%
$35,000 - $49,999	3.1%	16.4%	14.0%	66.5%	100%
$50,000 - $74,999	0.0%	8.4%	5.7%	85.9%	100%
$75,000 - $99,999	4.6%	8.6%	11.5%	75.4%	100%
$100,000 - $149,999	3.6%	3.6%	1.6%	91.2%	100%
$150,000 - $199,999	0.0%	10.0%	2.3%	87.8%	100%
$200,000 and above	0.0%	0.0%	1.6%	98.4%	100%

Q. WHAT DO YOU EXAMINE NEXT?

A. The utility payment problems facing Kentucky's more moderate income can be attributed, at least in part, to the fact that these income levels do not provide sufficient

income to allow households to comfortably meet their basic needs. The income needed to meet basic household needs is measured by Kentucky's "self-sufficiency standard" (SSS).[20] The SSS varies by county, by household size, and by household composition. Within each county, for example, a three-person household consisting of an adult with two infants would have a different self-sufficiency income than a three-person household with two adults and a school age child. To illustrate, I have selected fourteen (14) different counties served by LGE/KU[21] and examined the SSS for a three-person household with three different household compositions (one-adult, two infants; one adult, two school-age; one adult, one infant, one school-age).[22] The data is set forth in Table 8 below.

[20] Brolliar (2023). Technical Brief The Self-Sufficiency Standard 2023 Update, https://selfsufficiencystandard.org/wp-content/uploads/2023/09/SSS2023_UpdatedTechnicalBrief.pdf.

[21] Data available at https://selfsufficiencystandard.org/Kentucky/. I selected the 13 KU counties with the largest populations, along with Jefferson County.

[22] Overall, the SSS sets forth income levels for households with 719 different sizes and composition.

Table 8. 2023 Self-Sufficiency Standard (SSS) In Dollars and FPL Percent for Selected LGE/KU Counties and 3-Person Households with Selected Compositions

Counties	100% FPL (2023)[23]	1 Adult / 2 Infant		1 Adult / 2 Pre-School		1 Adult / 2 School-Age	
		SSS	As % FPL	SSS	As % FPL	SSS	As % FPL
Campbell	$24,860	$68,452.56	275%	$66,197.15	266%	$68,391.33	275%
Christian	$24,860	$54,146.43	218%	$54,523.49	219%	$54,054.92	217%
Daviess	$24,860	$53,799.72	216%	$53,808.91	216%	$53,053.45	213%
Fayette	$24,860	$64,581.96	260%	$63,495.99	255%	$62,861.02	253%
Franklin	$24,860	$56,631.68	228%	$56,899.57	229%	$56,422.22	227%
Hardin	$24,860	$55,538.55	223%	$55,795.67	224%	$55,223.39	222%
Jefferson	$24,860	$66,413.19	267%	$65,640.21	264%	$60,634.90	244%
Jessamine	$24,860	$60,248.25	242%	$59,142.68	238%	$58,335.14	235%
Laurel	$24,860	$48,361.23	195%	$47,369.34	191%	$48,908.97	197%
Madison	$24,860	$53,493.53	215%	$53,858.84	217%	$53,286.72	214%
McCracken	$24,860	$58,198.05	234%	$57,080.73	230%	$56,169.64	226%
Nelson	$24,860	$55,351.08	223%	$55,622.89	224%	$55,180.05	222%
Pulaski	$24,860	$49,333.99	198%	$48,357.00	195%	$50,028.04	201%
Scott	$24,860	$65,602.09	264%	$63,332.97	255%	$65,406.34	263%

The data shows that, in the 42 scenarios examined (14 counties x 3 household compositions per county), SSS incomes fall between 200% and 250% FPL 26 times. SSS incomes fall above 250% FPL in an additional eleven (11) instances. They fall below 200% of FPL in only five (5) instances. These are all instances where a minor or temporary economic disruption to the household might result in such households having

[23] Since the most recent Self-Sufficiency Standard for Kentucky is set forth in 2023 dollars, I use the 2023 Federal Poverty Level for comparison purposes.

difficulties in making an LGE/KU payment. And, once behind, their incomes are sufficiently low that it would be difficult to catch-up without external assistance.

D. The Inability to Rely Solely on Federal Energy Assistance to Address Affordability.

Q. DOESN'T THE FEDERAL LIHEAP PROGRAM PROTECT LOW- AND MODERATE-INCOME CONSUMERS AGAINST THE UNAFFORDABILITY OF HOME ENERGY THAT YOU IDENTIFY ABOVE?

A. No. This is true for several reasons. As an initial matter, it is simply not reasonable to assume that we can rely on the federal Low-Income Home Energy Assistance Program (LIHEAP) continuing to exist at current funding levels or at all. There are three current threats to LIHEAP.

First, in April 2025, the President eliminated the Division of Energy Assistance, the office within the U.S. Department of Health and Human Services (HHS) that oversees LIHEAP, and fired the entire staff.[24] Even if LIHEAP is funded, in other words, with limited staff to oversee LIHEAP and disburse funds, LIHEAP is facing unprecedented uncertainty. States are expected to run their programs with no federal training or guidance and delays in funding that make it difficult to plan for the program.

Second, LIHEAP funding is, at best, uncertain. While a Senate committee voted to fund LIHEAP in July 2025, the President's FY2026 budget submitted to Congress

[24] Arthur Allen, *Trump HHS Eliminates Office That Sets Poverty Levels Tied to Benefits for at Least 80 Million People*, CBS News (Apr. 11, 2025), https://www.cbsnews.com/news/trump-hhs-poverty-levels-medicaid-benefits/.

proposed to completely eliminate the program. As of August, the House of Representatives has not yet taken action and is in recess until September.[25]

Third, in addition to the threat to LIHEAP, the President's FY2026 budget also calls for the complete elimination of the Community Services Block Grant ("CSBG") program.[26] Local community action agencies ("CAAs") rely upon CSBG to fund the administration of energy assistance through LIHEAP. Even if LIHEAP is funded, the elimination of CSBG would severely limit, if not effectively eliminate, the ability of CAAs to deliver such assistance.[27] The Central Kentucky Community Action Council, for example, described CSBG as the "backbone of the Community Action ecosystem. . ." It described advocating for CSBG as "advocating for the resources that rely on its support, including programs like [the] Low Income Home Energy Assistance Program (LIHEAP). . ."[28] Community Action Kentucky asserts that CSBG is the "foundation" of its ability to deliver services throughout the state and that "CSBG funding is essential to [the] mission" of the CAAs. It is, in other words, not merely funding cuts to LIHEAP that threaten future participation in energy assistance programs.

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[25] National Energy Assistance Directors Association (NEADA) (August 2025). LIHEAP Still Here, but Threats Loom, *available at* https://neada.org/press/liheap-under-threat/.

[26] National Council on Nonprofits (May 2, 2025). President Trump Proposes to Slash Funding for Domestic Programs in FY2026, *available at* https://www.councilofnonprofits.org/articles/president-trump-proposes-slash-funding-domestic-programs-fy2026.

[27] National Association of Housing and Redevelopment Officials, *FY 2026 Budget Proposes Devastating Cuts to Housing and Community Development, Block Granting Rental-Assistance to States*, *available at* https://www.nahro.org/news/fy-2026-budget-proposes-devastating-cuts-to-housing-and-community-development-block-granting-rental-assistance-to-states/; *see*, Libby Perl (January 23, 2018). Community Services Block Grants (CSBG): Background and Funding, Congressional Research Service, *available at* https://www.warnock.senate.gov/wp-content/uploads/2021/05/08-Community-Services-Block-Grants-CSBG.pdf for more on CBSG generally.

[28] https://www.capky.org/2025-conference/

Q. DO YOU HAVE AN ADDITIONAL CONCERN ABOUT ANY RELIANCE ON LIHEAP AS AN AFFORDABILITY RESOURCE?

A. Yes. Not only is LIHEAP funding inadequate to address unaffordability, but there have also been changes in the program which make it less available as an affordability resource.

Q. WHAT CHANGES HAVE OCCURRED?

A. There have been substantial changes in LIHEAP in Kentucky since 2001. As the Table below shows, while the number of LIHEAP-eligible households has significantly increased since 2001, the number of actual LIHEAP participants has remained virtually constant. Using state eligibility standards, the number of income eligible households declined by more than 40,000 households from 2011 (470,949) to 2024 (430,119). At the same time, the number of households actually receiving LIHEAP benefits (of any type) declined from 171,218 in 2011 to only 117,373 in 2024. Indeed, the number of LIHEAP recipients in 2024 was the lowest participation rate in Kentucky since 2016 (2024 participation of 117,373 vs. 2016 participation of 118,148). Since 2013, the proportion of eligible households actually receiving LIHEAP benefits in Kentucky has not exceeded 25%.

Table 9. Changes in LIHEAP Over Time (2011 – 2023) (Kentucky)[29]

	LIHEAP Income Eligible Population (state)	No. of LIHEAP Recipients: All	Pct of Income-Eligible Participating
2011	470,949	171,218	30.015%
2013	407,123	130,418	23.431%
2015	413,962	125,580	22.409%
2016	410,919	118,148	21.108%
2020	382,603	129,790	24.484%
2021[30]	446,062	131,438	24.722%
2022	419,508	121,263	23.447%
2023	343,696	119,407	24.111%
2024	430,119	117,373	23.781%

At the same time these changes in LIHEAP participation were occurring in Kentucky, the LIHEAP program was making changes in its use of its federal funding. The percentage of total funding devoted both to "assistance" in general, and to heating assistance in particular, has declined since 2001. In addition, in recent years, there has been a substantive change in the use of LIHEAP funds. Table 10 shows that the Kentucky LIHEAP program has in recent years chosen to begin to allocate funding for cooling assistance while historically it has not. Corresponding to years with increased cooling assistance has been a noticeable decline in heating assistance. In addition, there is substantial fluctuation in the use of Kentucky LIHEAP funds for crisis assistance,

[29] LIHEAP Custom Reports, *available at* https://liheappm.acf.gov/datawarehouse/custom_reports

[30] 2021 data may well be non-representative due to COVID. Not only would the number of applicants decrease due to the economic shutdown, but there were significant federal funds appropriated for COVID emergency-relief, thus making the total percentages devoted to assistance and to heating assistance temporarily decline.

ranging from a low of 29.60% of total LIHEAP funds devoted to crisis in 2021 to a high of 67.8% in 2022 and 68.74% in 2011.

Table 10. Changes in LIHEAP Over Time (2011 – 2023) (Kentucky)[31]

	Percent of Assistance Funds Allocated to Heating Assistance	Percent of Assistance Funds Allocated to Cooling Assistance	Percent of Assistance Funds Allocated to Any Crisis Assistance
2011	31.27%	0%	68.74%
2013	40.72%	0%	48.47%
2015	39.55%	0%	48.90%
2016	29.60%	0%	62.59%
2020	0%	41.33%	46.61%
2021[32]	19.02%	44.28%	29.60%
2022	11.62%	7.88%	67.89%
2023	19.79%	34.62%	36.89%
2024	37.30%	10.61%	38.99%

My discussion here is not intended in any fashion to criticize the choices which the Kentucky LIHEAP program makes with respect to how it uses its limited federal funding. The conclusion I draw is simply that the LIHEAP program *does* have choices. In some years, the program may choose to use its funding to prevent disconnections or to restore service through Crisis grants. In other years, it may choose to use its funding for winter heating assistance, while in yet other years, it may choose to use its funding for summer cooling assistance. Even if Congress appropriates funding for LIHEAP, and assuming the Administration allows those appropriated dollars to be used for the

[31] LIHEAP Custom Reports, *available at* https://liheappm.acf.gov/datawarehouse/custom_reports

[32] 2021 data may well be non-representative due to COVID. Not only would the number of applicants decrease due to the economic shutdown, but there were significant federal funds appropriated for COVID emergency-relief, thus making the total percentages devoted to assistance and to heating assistance temporarily decline.

purposes for which they are intended, it simply cannot be assumed that LIHEAP will be available on a consistent and continuing basis to help address LGE/KU bill affordability assistance.

Q. DO YOU HAVE ANY FINAL CONCERN ABOUT LIHEAP?

A. Yes. My experience has taught that, particularly given the low participation rates of low-income customers in LIHEAP, there is frequently a desire to increase that participation rate. There is an unstated assumption behind this desire that if additional outreach could increase LIHEAP participation, there would be a corresponding increase in the amount of federal assistance that would be applied against low-income accounts.

That unstated assumption, however, is wrong. LIHEAP is what is known as a federal "block grant" program. Under a block grant program, states are allocated a prescribed amount of a federal appropriation. Each state's LIHEAP block grant allocation is based on a complex federal formula.[33] That formula does not take into account LIHEAP participation rates in a particular state. When a state's LIHEAP block grant funding is exhausted, the state must stop distributing further LIHEAP benefits. Increasing LIHEAP participation by enhanced outreach, in other words, would result in the same Kentucky LIHEAP allocation being distributed over more participants. As a result, the State would need to either reduce the average grant per participant, or terminate additional enrollment earlier than it might otherwise have planned. Under

[33] The LIHEAP statute provides for two types of program funding: regular funds—sometimes referred to as block grant funds—and emergency contingency funds. Regular funds are allotted to states on the basis of the LIHEAP statutory formula, which was enacted as part of the Human Services Reauthorization Act of 1984 (P.L. 98-558). The formula section is codified at 42 U.S.C. §8623.

either scenario, total LIHEAP dollars received by Kentucky low-income customers would not expand.

My caution, therefore, is not to assume that enhanced LIHEAP outreach will necessarily result in increased LIHEAP funding being delivered to LGE/KU customers. Enhanced outreach will certainly not result in an increase in LIHEAP funding for low-income customers. Providing assistance to low- and moderate-income customers, therefore, must find innovative ways to generate or access new dollars or new ways to reduce bills.

Q. WHAT DO YOU CONCLUDE?

A. The federal energy assistance program, called LIHEAP, presents substantial uncertainties if considered as a primary mechanism for addressing the unaffordability of LGE/KU bills to low- and moderate-income households. Presently, while a U.S. Senate committee has voted to continue funding LIHEAP, the President's budget has proposed to eliminate the program in its entirety. Even if funded at the same levels it has been funded in the past, however, LIHEAP's status as a "block grant" program creates inherent limitations on its ability to fund an increasing need for affordability assistance. While there is a need for LGE/KU to adopt a low-income rate affordability program, as I explain in more detail below, initiatives such an Arrearage Management Program, and the promotion of time-of-use rates, can help fill this gap.

Part 2. The Impact of Unaffordability on Low-Income Payment Patterns.

Q. PLEASE EXPLAIN THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY.

A. In this section of my testimony, I examine the impacts which low-income payment difficulties have on the financial operations of LGE/KU and, by extension, on the remaining customers of the utilities.

A. The Problem.

Q. HAVE YOU HAD AN OPPORTUNITY TO EXAMINE THE IMPACTS OF RATES ON THE BILL PAYMENT PATTERNS OF LOW-INCOME LGE/KU CUSTOMERS?

A. Yes. Since LGE/KU state that the Companies do not know the income of their customers, it is not possible to engage in a direct examination of the payment patterns of identified low-income customers. LGE/KU states that the way low-income customers are identified is by whether those customers have received "one paid pledge" in the current calendar year.[34] As I have discussed elsewhere, however, LIHEAP serves a small fraction of the total customer base. Moreover, KU has identified only 27,000 "low-income"

[34] Response of Kentucky Utilities Company to Kentuckians for the Commonwealth, Kentucky Solar Energy Society, and Mountain Association 's Initial Request for Information Dated July 3, 2025, Response to Question 1.3 (Jul. 16, 2025) ("KU JI 1-3") ("The Company does not maintain income data for its customers. The Company defines a "low-income" customer as an account that has received at least one paid pledge during a calendar year."). Although references to KU responses are provided throughout parallel responses are generally made in the LGE docket, for example Response of Louisville Gas and Electric Company to Kentuckians for the Commonwealth, Kentucky Solar Energy Society, and Metropolitan Housing Coalition Initial Request for Information Dated July 3, 2025, Response to Question 1.3 (Jul. 16, 2022) ("LGE JI 1-3")..

customers, 6% of its total customer base.[35] That identified low-income population is substantially less than what might be expected given that 26% of the population in LGE/KY zip codes live with annual income less than 150% FPL and 36% live with income less than 200% FPL.

Q. PLEASE EXPLAIN HOW YOU HAVE EXAMINED THE PAYMENT PATTERNS OF LOW-INCOME CUSTOMERS.

A. Rather than examining payment patterns on an individual customer basis, I examine such patterns on a geographic basis. I do this by looking at three different populations: (1) the zip codes with annual Q1 incomes (explained above) less than $10,000 (Quintile-Based Set); (2) the zip codes with 60% or more of their population living with income at or below 200% of Federal Poverty Level (Poverty-Based Set); and (3) the zip codes with 45% or more of their households living with an annual income of less than $30,000 (Income-Based Set). While these three sets of sample zip codes may provide somewhat different results, one purpose of using all three is to allow me to examine both the similarities and the differences. Having identified the zip codes by the income characteristics, I matched those zip codes with payment pattern data by zip code provided by KU in response to discovery.[36] I compare each set of low-income zip codes to the remaining zip codes in the KU service territory. I compare data for two time periods: (1) the full 24 months of data provided by KU; and (2) the complete year of 2024 data.

[35] KU JI 1-2 and 1-3.

[36] KU JI 1-47.

This assessment leads me to the conclusion that low-income customers are more likely to have payment difficulties than are non-low-income customers in the KU service territory. This conclusion, of course, is consistent with the data developed through the Census Bureau's Household Pulse Survey (HPS) which I discuss in more detail above. That statewide HPS data accurately describes the circumstances facing LGE/KU customers in particular.

Q. WHAT DID YOUR ASSESSMENT OF KU DATA FIND?

A. My assessment of KU data in the manner which I describe above supports the following findings:

First, I find that KU pursues a disproportionate number of collection interventions in the low-income zip codes which I examined. In my analysis, I started with the determination that the zip codes in the Quintile-Based Set represent 18.2% of all KU customers; the zip codes in the Poverty-Based Set represent 4.3% of all KU customers; and the zip codes in the Income-Based Set represent 5.7% of all KU customers.

Second, an examination of collection activities reveals that KY engages in a disproportionate number of collection activities in all three low-income zip code sets. For all three low-income sets, the percent of collection activities is greater than the percentage of underlying customers:

- While zip codes in the Income-Based Set have 5.7% of all customers, they had 6.9% of all nonpayment disconnection notices and 7.8% of all nonpayment disconnections over the 24 month period (7.7% in 2s024).

- While the zip codes in the Poverty-Based Set have 4.3% of all KU customers, they had 5.2% of all disconnect notices (over the 24 month period), and 5.9% of all nonpayment disconnections (5.8% in 2024).

- While the zip codes in the Quintile-Based Set have 18.2% of all KU customers, they had 20.2% of all disconnection notice (over the 24 month period), and 21.8% of all nonpayment disconnections (22.1% in 2024).

Third, KU moves to the disconnection of service more quickly in the low-income zip code sets than it does in higher income zip codes. The data shows that:

- While zip codes in the Income-Based Set receive 8.3 disconnect notices for each nonpayment disconnection actually performed, in the higher income zip codes, KU issues 9.5 disconnect notices over the 24 month period (in 2024, the difference being 9.2 notices per disconnection in the low-income zip codes versus 10.3 in the higher income zip codes);

- While zip codes in the Poverty-Based Set received 8.3 notices for each actual disconnection performed (over 24 months), higher income zip codes received 9.4 notices (the difference being 9.2 and 10.3 in 2024);

- While zip codes in the Quintile-Based Set received 8.7 notices per disconnection (over 24 months), higher income zip received 9.6 notices (the comparison in 2024 being 9.4 for Quintile-Based Zip to 10.5 for higher income zips).

Fourth, KU is more likely to use nonpayment disconnections to collect revenue than deferred payment arrangements in lower income zip codes. The data shows that:

- While KU engaged in 38 service disconnections for every 100 new deferred payment arrangements the Company entered into in the Income-Based Set, it pursued only 32 disconnections for every 100 payment arrangements in the higher income zip codes (over the 24 month period). (For 2024, the total number of disconnections per 100 payment arrangements was 34 and 32 for low-income and non-low-income zip codes respectively).

- For the Poverty-Based Set, the ratios were closer, but nonetheless, KU still disconnected more accounts in the low-income zip codes than in the higher income zip codes over the full 24 month period (38 disconnections for every 100 payment arrangements in the Poverty-Based Set versus 36 disconnections in the non-low-income zip codes).

Finally, the offer of payment arrangements disproportionately leads to defaults in the low-income zip codes. Again, while the Income-Based Set represents 5.7% of all KU customers, those zip codes represented 8.4% of all defaulted deferred payment arrangements (both over the 24 month period and in 2024). While the Poverty-Based Set represented 4.3% of all KU customers, those low-income zip codes represented 6.4% of all defaulted payment arrangements. While the zip codes in the Quintile-Based Set represent 18.2% of all customers, those zip codes represented 22% of all defaulted payment arrangements.

Q. WHY IS THIS DATA ON UNAFFORDABILITY AND PAYMENT DIFFICULTIES SIGNIFICANT FOR THIS RATE PROCEEDING?

A. The data I present in my discussion above is of particular importance in a rate proceeding. The need to pursue substantial, and disproportionate, collection interventions directed toward low-income customers, while achieving less success from those interventions, has rate implications for the Companies and their customers. The arrearage balances of customers unable to pay not only impose the risk of bad debt write-offs and collection expenses, but they impose substantial working capital expense as well. Since working capital is a capital expense, there will be an equity return associated with it. And, the equity return will necessarily have a tax impact associated with it. The rate impacts of unaffordability, therefore, are higher than the direct expense impacts. Addressing unaffordability will, in other words, not only generate benefits to low-income customers, but will also generate positive impacts to all other ratepayers as well.

B. Proposed Responses.

Q. PLEASE EXPLAIN A REASONABLE RESPONSE BY LGE/KU TO THE PROBLEM YOU IDENTIFY ABOVE.

A. I recommend adoption of a pilot outreach program directed toward expanding participation in low-income energy assistance programs. I make this recommendation, notwithstanding my testimony above about the inability to rely primarily on LIHEAP to address affordability problems for LGE/KU. I make the recommendation because expanding LIHEAP can be expected to benefit the LGE/KU low-income customer base under my recommendations below, even if LIHEAP funding does not correspondingly increase. I have recommended tying the Arrearage Management Program (AMP) and Time-of-Day (TOD) initiatives to LIHEAP participation. Accordingly, increasing such participation would benefit low-income customers by opening a door to new programs even if the dollars delivered through LIHEAP, itself, do not increase.

Q. DO YOU HAVE A PRIMARY RECOMMENDATION WITH RESPECT TO ACCESSING NEW DOLLARS OR GENERATING NEW WAYS TO REDUCE LOW-INCOME BILLS?

A. Yes. The efficacy of seeking to improve access to new and innovative programs that would assist low-income customers, such as the TOD initiative discussed below, as well as the AMP, depends on the ability of LGE/KU to effectively reach low-income customers. The goal of such outreach is to provide "effective knowledge." Effective knowledge is a term-of-art which refers to: (1) communicating the existence of the program; (2) communicating the benefits/advantages of program participation; and (3) communicating the means of accessing program participation. Knowing "about" a

program, for example, without knowing how to access that program, is not "effective knowledge."

There are numerous impediments to effective outreach promoting participation in LGE/KU programs. Recent research addresses the impact that consumer "trust" (or lack thereof) in utilities has on the willingness of such consumers to participate in utility programs. In that study, Przepiorka and Horne reported that:

> . . .previous research suggests that consumers' trust in utilities is generally low. . .We corroborate that people in the United States have little trust in utilities and this lack of trust is negatively associated with consumer willingness to be involved in utility programs.[37]

It is intended to be neither pejorative nor disrespectful to acknowledge that many customers do not trust their local utility. This recent academic research lends credence to the concerns about utility trust. The Przepiorka and Horne article reports that:

> [W]hen consumers trust a utility, they are more likely to believe its assertions and to expect that utility programs will help them, rather than benefit the utility at their expense. Therefore, the more that consumers view a utility as trustworthy, the more willing they will be to participate in utility programs that promise a benefit for them.[38]

Q. WHAT DO YOU RECOMMEND AS A REMEDY?

A. In responding to that question, let me first provide the empirical basis for my recommendation. I will next present my specific recommendation. Overall, the most

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[37] Przepiorka and Horne (2020). "How Can Consumer Trust in Energy Utilities be Increased? The Effectiveness of Prosocial, Proenvironmental, and Service-Oriented Investments as Signals of Trustworthiness," Organization & Environment, Vol. 33(2)): 262 – 284, *available at* https://www.researchgate.net/publication/328201088_How_Can_Consumer_Trust_in_Energy_Utilities_be_Increased_The_Effectiveness_of_Prosocial_Proenvironmental_and_Service-Oriented_Investments_as_Signals_of_Trustworthiness.

[38] *Id.*

effective way to address this lack of trust of utilities, in low- and moderate-income communities in particular, is through the use of "community messengers." Using community members as a mechanism to identify and engage hard-to-reach populations has repeatedly been found to be among the most effective mechanisms to use in serving hard-to-reach populations.

Substantial research supports this conclusion. One population that is frequently difficult to identify, let alone engage, involves the aged, particularly those facing medical difficulties. In response, the Medicare-Medicaid Coordination Office ("MMCO"), along with the Centers for Medicare and Medicaid Services ("CMS"), initiated a specific program toward hard-to-reach individuals.[39] Based on a focus group with representatives from seven health plans in California, Massachusetts, Ohio, and Virginia that "have experience locating and engaging Medicare-Medicaid enrollees," CMS specifically recommended "hir[ing] staff from the community for outreach and navigation. Individuals from the community likely have existing connections with local health and social service organizations, as well as knowledge about how to find and connect with community members."

Another study, funded by Blue Shield of California and performed by the Institute of Medicine ("IOM"), undertook a comprehensive review of evaluations from organizations across the nation that focused on "enrollment of hard-to-reach populations" for the

[39] Resources for Integrated Care (Sept. 2015). Hard-to-reach populations: Innovative Strategies to Engage Isolated Individuals with Behavioral Health Need.

ACA.[40] One purpose of the IOM study was to create "a conceptual model" that incorporated the successful strategies and approaches. The lessons reported by IOM included the observation that "community partnerships were also an important resource for enrollment efforts to reach hard-to-reach populations. Partnerships with longstanding and trusted community organizations provided access to hard-to-reach communities and served as trusted sources of information and trusted spaces for enrollment to occur." The need to rely on "trusted sources" cannot be overstated based on the IOM report. The IOM evaluation stated:

> The need to create trust among consumers is the foundation upon which successful strategies rest. First and foremost, it is essential to identify community partners who are trusted resources in the population at which enrollment efforts are aimed. All of the interviewees said that the most important and successful method in reaching their intended audiences was approaching consumers through a trusted source; such an approach could occur either through their own organization, if it was a community-based trusted source, or through a partnership with groups and individuals who were trusted in the community. Although every community has different trusted sources, each community organization and coalition interviewed highlighted that identifying and working with trusted sources is key to a successful outreach and enrollment process.

Trusted sources varied by community and culture. They included advocacy groups, social services and community support groups, faith-based groups, and federally qualified health centers. Although different, these trusted community partners had all been active in the communities prior to the enrollment process and were either already aware of or

[40] Parker, et al. Successfully Engaging Hard-to-Reach Populations in Health Insurance: A Focus on Outreach, Sign Up and Retention, and Use. Institute of Medicine, Roundtable on Health Literacy, Collaborative on Health Literacy and Access, Health Care Coverage, and Care, Washington D.C.

uniquely positioned to identify population-specific challenges and sensitive issues in the targeted populations.

One important step in designing outreach is to "identify who the trusted advisors are in the various communities of interest—that is, who do people in these communities turn to for advice about what is correct information and what to do with it," IOM found. Groups focusing on Latino communities found that community health workers were "neutral and trusted advisors," whereas "African American and rural communities often saw their faith leaders as trusted advisors," and "Immigrant communities with limited English proficiency often relied on neighbors and friends for information." In some instances, particular industries "have heavy representation in hard-to-reach communities. For example, some efforts were aimed at leaders of taxicab drivers or beauty and nail salon owners as trusted advisors to help engage specific populations." These "trusted advisors" are necessary because "in addition to profound financial challenges, many also do not trust the system to advocate for them or to help them successfully navigate complex content and tasks."

Q. GIVEN THIS RESEARCH FOUNDATION FOR YOUR RECOMMENDATION, WHAT SPECIFICALLY DO YOU RECOMMEND LGE/KU DO IN THIS PROCEEDING?

A. I recommend that LGE/KU engage in a two-year pilot project that focuses on enlisting community-based organizations in the provision of outreach for the Company's time-of-day rates initiative in particular. The pilot project should be funded at a level of $200,000 annually for two years. The $200,000 should be distributed through a competitive bid process, through which community partners would commit to serve

specific communities (e.g., rural, Black, Hispanic, aged, families with children). Through such a competitive bid process, LGE/KU could incorporate its desired outcomes along with periodic performance measurement.

In sum, if AMP and TOD eligibility is tied to current participation in LIHEAP, federal efforts to reduce, if not eliminate, LIHEAP will result in a corresponding reduction in the availability of those programs. My recommended outreach program, however, does not assume an expansion of LIHEAP funding to serve additional LIHEAP recipients. Instead, the outreach programs would use LIHEAP eligibility to further extend bill reduction efforts that are being delivered without need for federal funding. Using outreach to expand LIHEAP eligibility in the way I describe would mean that the AMP and TOD eligibility based on such eligibility could be structured so as to insulate the AMP and TOD programs against ongoing federal efforts to reduce, if not eviscerate, federal LIHEAP funding.

Q. IS THERE A SECOND RESPONSE THAT YOU RECOMMEND BE ADOPTED?

A. Yes. I recommend that the LGE/KU policy to exempt low-income customers from being charged late payment fees should be expanded to additional low-income customers. The existing policy, according to KU, is that:

> Residential Customers who receive a pledge for or notice of low income energy assistance from an authorized agency will not be assessed or required to pay a late payment charge for the bill for which the pledge or notice is received, nor

will they be assessed or required to pay a late payment charge in any of the eleven (11) months following receipt of such pledge or notice.[41]

I recommend that this policy be modified to exempt a customer from the late payment charge if the customer has received an energy assistance grant from an "authorized agency" within the current or immediately preceding two LIHEAP program years. The incomes of low-income households do not vary year-to-year sufficient to make them income-ineligible for energy assistance. If a customer receives energy assistance in the 2024-2025 program year, in other words, it is likely that customer has been in low-income status for the prior two years. Moreover, a customer should be exempted from being charged a late payment charge if they document participation in a public assistance program with income eligibility that is consistent with LIHEAP eligibility.

Q. WHAT IS THE RATIONALE FOR EXEMPTING LOW-INCOME CUSTOMERS FROM BEING CHARGED A LATE PAYMENT FEE?

A. When a customer does not pay a bill because they cannot afford to pay the bill, it makes little sense to respond to that nonpayment by *increasing* the bill even further. The Company's current practice is that, given that a bill is due on Day 16 after being rendered, the late payment charge is automatically imposed on any unpaid balance on Day 17.[42] The late fee is imposed *before* a disconnect notice is generated.[43] Accordingly, no printing or mailing costs have yet been incurred at the time the late fee is imposed.

[41] KU JI 1-30.e.

[42] KU JI 1-20.

[43] *Id.*

Moreover, the late fees are imposed even though KU concedes that "The Company does not have any studies that assess the extent to which late payment charges reduce residential bad debt."[44] In addition, KU concedes that "The Company does not have any studies that assess the extent to which late payment charges reduce residential arrears."[45] Finally, KU concedes that "The Company does not have any studies that assess the extent to which late payment charges accelerate residential payments."[46] For example, LGE/KU has never undertaken an analysis of what percentage of payments are made by what date;[47] accordingly, it cannot assess whether customers are prompted to make payments on a day sufficiently early to avoid having a late charge imposed.

Q. IS THERE A FINAL BASIS FOR EXPANDING THE EXEMPTION OF LOW-INCOME CUSTOMERS FROM LATE PAYMENT CHARGES?

A. Yes. Without such an exemption, low-income customers end up paying higher income customers for a payment option that is disproportionately unavailable to them. When customers take service under Budget Billing, and accordingly carry a bill balance, they are not charged an interest rate on the bill balance. KU admits that it does not even track the number of Budget Billing customers who carry a bill balance on a monthly basis,[48] let alone the average bill balance that is carried.[49] Nor does KU know the number

[44] KU JI 1-60.a., b., & d.

[45] KU JI 1-61.a., b., & d.

[46] KU JI 1-62.a., b., & d.

[47] KU JI 1-21; LGE JI 1-22.

[48] KU JI 1-42.h..

[49] KU JI 1-42.j.

of customers who have a bill balance at the end of a year,[50] let alone the average bill balance at the end of the year.[51]

The fact that Budget Billing customers can carry an interest-free bill balance is important because low-income households, due to their inability-to-pay, are disproportionately excluded from Budget Billing. KU states that "Any arrearages must be paid ***before*** a customer can enter a budget billing plan. Customers are only able to roll their current bill balance into a budget billing plan." (emphasis added)[52] Given that as established in detail above, low-income customers are disproportionately in arrears, the fact is that the presence of those arrears will keep those customers off of Budget Billing. As a result, low-income customers end up paying to provide the interest-free loan to Budget Billing customers through a program which, because of their inability-to-pay, they are excluded from. At the same time, KU continues to charge a non-cost-based late payment fee on those low-income customers. If a Budget Billing customer carries a balance of $100 a month as a bill balance through the cold weather months, they do so interest free. If a low-income customer carries the same balance of $100 a month as an arrearage through the cold weather months, they are charged a monthly late payment charge.

[50] KU JI 1-42.m.

[51] KU JI 1-42.n.

[52] KU JI 1-45.

Q. DO YOU REACH ANY OTHER CONCLUSION ABOUT THE MISCELLANEOUS FEES IMPOSED ON LOW-INCOME CUSTOMERS?

A. Yes. For much the same reason that late charges have been waived for low-income customers in the first instance, fees related to the disconnection and reconnection of service should be waived for low-income customers as well. Imposing such fees generates several adverse impacts to the utilities as utilities. First, imposing such fees serves as an impediment to low-income customers reconnecting to the system after a nonpayment disconnection. For the same reasons that late payment charges lack a rational basis in this respect, disconnection/reconnection fees lack a rational basis as well. When a low-income customer has difficulty in paying their bill for current service, as has been documented in detail above, it is not reasonable to respond to that inability-to-pay by *increasing* the bill even further. Second, to the extent that an additional fee does serve as an impediment to the reconnection of service, the utility loses not only the customer payment toward the past due balances that served as the basis for the disconnection, but loses any revenue it would have collected by having the customer back on the system and using service. Third, given the extremely limited resources to pay utility bills, even if a customer pays the disconnection/reconnection fee, that payment will divert available resources to the payment of the fee and away from the payment of future bills. This is true whether the fee payment is made out-of-pocket from household resources, or from funds made available through a public or private assistance program. Whether or not a disconnection / reconnection fee has a cost basis, in other words, it makes financial sense to the utility not to impose such fees on low-income customers.

Q. WHAT DO YOU CONCLUDE?

A. I reached three conclusions. First, the definition of "low-income" for purposes of exempting a customer from being charged a late payment fee should be expanded. Rather than limiting the definition to someone who has received an energy assistance grant in the prior eleven months, customers should be exempt from such charges if they have received an energy assistance grant in the current or immediately preceding two LIHEAP program years or can show that they are eligible to receive LIHEAP benefits (whether or not they actually receive such assistance). Second, the LGE/KU late payment charge is not cost-justified. While KU uses the cost of printing and mailing a disconnection notice as the basis for its cost justification, it subsequently admits that it imposes a late payment charge ***prior*** to printing and mailing such a notice. The late fee is imposed, in other words, ***before*** any costs are incurred and whether or not any costs are incurred. KU does even purport to use its late payment charge as a means to reduce bad debt, to reduce arrearages, or to accelerate payments. The proposal above is not to change the underlying structure of the late fee. The proposal is simply that if a customer does not make a bill payment because they cannot afford that payment, it makes no sense to respond to that inability-to-pay by ***increasing*** the bill even further. Finally, I conclude and recommend that for much the same reasons that late payment charges have been waived with which to begin, disconnection and reconnection charges should be waived for low-income customers as well.

Q. DO YOU HAVE A THIRD RECOMMENDATION FOR HOW LGE/KU SHOULD DELIVER BENEFITS TO LOW-INCOME CUSTOMERS?

A. Yes. I recommend an expansion of the availability of the LGE/KU Time-of-Day rates to deliver financial benefits to low-income customers. LGE/KU have identical tariffs for "Residential Time-of-Day Energy Service." Both tariffs provide:

> Available as an option to Customers otherwise served under Rate RS.
> 1. Service under this rate schedule is limited to a maximum of five hundred (500) Customers taking service on Rates RTOD-Energy and RTOD-Demand combined that are eligible for Rate RS. Company will accept Customers on a first-come-first-served basis.

The significance of this tariff for purposes here is two-fold: (1) the tariff is "limited to a maximum of five hundred (500) customers," and (2) the "Company will accept Customers on a first-come-first-served basis." I recommend that each of these two elements be modified in the manner I describe below.[53]

I recommend that LGE/KU review the accounts of each of the Company's customers receiving energy assistance benefits through one of the programs which LGE/KU use to establish low-income status (see, Table 13, supra). Through this review, LGE/KU should identify energy assistance recipients on basic residential service who, by mining hourly data for those recipients, would receive a bill savings of no less than $50 through a switch to each Company's TOD rates based on the customer's current usage

[53] I do not recommend any modification to LGE/KU's limitation stating that "Customers on Residential Time-of-Day rates or other rates that require a Demand reading are not eligible." (KU JI 1-40).

levels. Using this minimum savings would limit the impacts of volatility of small changes in usage affecting savings.

Upon a finding of projected savings of $50 or more, LGE/KU should switch the energy assistance recipient to the TOD rate, while providing those customers with an opportunity, prior to the switch, to opt-out of the switch should they choose to do so. The optimal rate should be guaranteed for the customers that were switched. After a customer is on the new rate for 12 months, the rate switch should be compared to the basic residential tariffed rate. If the comparison proves it would have been better for the customer to remain on the basic residential rate, LGE/KU should switch the customer back to that rate and refund the difference (this review and refund would only occur for the first year).

A Wisconsin utility, Wisconsin Power and Light (WPL) uses such a program to benefit its low-income customers. Experience with the WPL switch of energy assistance recipients in the manner I recommend above, WPL found that fewer than 10% of the energy assistance recipients chose to opt out of the switch. Moreover, WPL reported that after a year, about 97 percent of customers projected to achieve savings through WPL's data modeling did in fact realize savings. Moreover, WPL found, customers could have achieved greater savings if they were willing and able to adjust usage patterns during lower rate periods.

Q. WHAT ADVANTAGE DOES THIS PROPOSED REMEDY OFFER TO LOW-INCOME CUSTOMERS AND TO LGE/KU?

A. LGE/KU states that "The Company does not maintain income data for its customers."[54] However, LGE/KU *would* know which of its customers are enrolled in LIHEAP (or any of the other energy assistance programs), as qualified individuals must specifically apply for and be found eligible for those benefits.

Q. IS THERE AN INTENDED SYNERGY BETWEEN THE RECOMMENDATIONS YOU MAKE IN THIS PROCEEDING?

A. Yes. There are strong synergies that flow throughout my testimony. The TOD initiative which I propose will deliver real dollars of benefits to low-income customers to offset, at least in part, the adverse financial impacts of the substantial increases in rates over time which I discuss in detail above. The TOD initiative will deliver benefits independently of the funding of federal energy assistance (or the CSBG services which help deliver those energy assistance benefits). The low-income outreach program will help expand the population of energy assistance recipients which would serve as the foundation for moving low-income customers to TOD rates irrespective of federal energy assistance funding. Both the outreach program, and the TOD initiative, would yield the result of not only benefitting low-income customers, but also benefitting all customers by reducing the future costs of the AMP. And, finally, each of the recommendations I make will deliver financial benefits to low-income customers while at no point introducing the

[54] KU JI 1-3 and 1-4.

question of whether there exists a non-cost-based "subsidy" being provided to low-income customers.

Q. IS THERE AN ADDITIONAL STEP THAT LGE/KU SHOULD TAKE TO MAXIMIZE ITS ABILITY TO DELIVER LOW-INCOME ASSISTANCE?

A. LGE/KU operate in a vacuum of knowledge about their low-income customers. Indeed, the Companies stated that it could not even *estimate* the number of its customers with income at or below 150% of FPL since "it does not maintain customers' annual income levels."[55] KU stated that "The Company does not have a business reason to maintain data in regard to the socio-economic status of the customer." It thus has no knowledge about the relationship of socio-economic status and bad debt, or the relationship between socio-economic status and arrears.[56] While it substantially and routinely relies on collection activities such as nonpayment disconnections, late payment charges, and deferred payment arrangements, as a means to collect money, it has never established, or even considered, the extent to which, or even whether, those activities reduce residential bad debt, [57] reduce residential arrears,[58] or accelerate residential payments.[59] Despite its high failure rate for payment arrangements, it has never studied, or even considered, *why* customers do not successfully complete payment

[55] KU JI 1-6.

[56] KU JI 1-74(relationship of socio-economic status and bad debt); KU JI 1-75(relationship of socio-economic status and arrears), .

[57] KU JI 1-60

[58] KU JI 1-61.

[59] KU JI 1-62.

arrangements.[60] It has never considered *why* customers do not contact the utility in response to shutoff notices,[61] let alone studied or considered the effectiveness of shutoff notices as a method of communicating with its customers in arrears.[62] It has never developed a study or report which: (1) characterizes patterns of nonpayment; (2) identifies the characteristics of nonpayers; (3) identifies predictors of nonpayment; (4) identifies strategies to reduce nonpayment; or (5) identifies early indicators of nonpayment.[63]

The Commission should direct the utilities to remedy this complete lack of knowledge about its low-income customers. I recommend that, in consultation with the Joint Intervenors and other interested stakeholders, the Companies be directed to retain an independent firm to prepare, by no later than December 31, 2026, a customer segmentation study that examines the factors I identify above, disaggregated by socio-economic status: (1) patterns of nonpayment; (2) characteristics of nonpayers; (3) predictors of nonpayment; (4) strategies to reduce nonpayment; or (5) early indicators of nonpayment.

Such a study would be used not merely to help evaluate the need for and effectiveness of credit and collection practices, but would inform programs such as

[60] KU JI 1-58.

[61] KU JI 1-56.

[62] KU JI 1-57.

[63] KU JI 1-52.

affordability assistance, clean energy investments, energy efficiency investments, and energy assistance outreach.

C. Implications of Payment Difficulties for the LGE/KU Pre-Payment Meter Proposal.

Q. PLEASE DESCRIBE THE PREPAYMENT METER PROPOSAL ADVANCED BY LGE/KU.

A. My understanding of the prepayment meter program proposed by LGE/KU is based on the testimony of witness Shannon Montgomery. She explains that the prepayment meters proposed by the Companies would require "customers to deposit funds in advance to pay for energy as it is used."[64] Witness Montgomery explains further that:

> The prepay program is available to all residential customers not on GS, RTOD-E, RTOD-D, GTOD-E, or GTOD-D. Gas-only customers are ineligible for the program. Eligible customers must have email and text capability, an AMI meter, and not possess a past due balance greater than $250. Customers already participating in budget billing, flex pay, net metering, or auto pay programs, along with those with a medical alert, disconnection moratorium, or special rider cannot (sic) participate.[65]

Q. SHOULD THE PREPAYMENT METER PROPOSAL BE APPROVED?

A. No. The prepayment meter program requested by LGE/KU should be disapproved. Several reasons support this conclusion. First, the data discussed in detail above unquestionably supports the conclusion that using prepayment meters will

[64] Direct Testimony of Shannon L. Montgomery Vice President, Customer Services on Behalf of Kentucky Utilities Company and Louisville Gas and Electric Company, at 25 (May 30, 2025) ("Montgomery Direct").

[65] *Id.*, at 26.

disproportionately adversely affect low income consumers. All of the data, whether on a statewide basis or on a utility-specific basis, supports the conclusion that inability-to-pay resides primarily within the low-income population. In addition, the data I discuss above supports the conclusion that payment difficulties are increasingly reaching into more moderate income households.

Second, a prepayment meter does not match a customer's income or cash flow. Given the substantial seasonal variability in KU bills, requiring customers to prepay for their service in order to retain service would thus impose a substantial hardship. Table 11 below shows KU's median bill, median usage, and median arrears by month for the most recent 24 months available.[66] As can be seen, the usage ranged from a low of 650 kWh (November 2024) to a high of more than twice that amount (1,356 kWh in January 2025). Accordingly, the median bills similarly ranged from a low of $89 (November 2024) to a high of nearly twice that amount ($169 in January 2025). The median arrears tracked the median bills by month.

[66] KU could only provide median arrears for the time period starting October 2023, so 24 months were not available.

Table 11. KU Median Usage, Median Bill, Median Arrearage for Most Recent 24 Months (shading only to improve readability)

Billing Period	Median Usage[67]	Median Bill[68]	Median Arrears[69]
2023/06	807	$108	NA
2023/07	961	$122	NA
2023/08	1,043	$129	NA
2023/09	975	$123	NA
2023/10	690	$92	$124
2023/11	689	$91	$106
2023/12	964	$121	$110
2024/01	1,291	$157	$138
2024/02	1,157	$144	$164
2024/03	856	$116	$150
2024/04	765	$100	$128
2024/05	729	$100	$115
2024/06	873	$115	$113
2024/07	1,132	$147	$126
2024/08	1,063	$133	$139
2024/09	979	$123	$134
2024/10	702	$94	$124
2024/11	650	$89	$107
2024/12	1,046	$131	$109
2025/01	1,356	$169	$142
2025/02	1,305	$163	$175
2025/03	1,058	$135	$174
2025/04	741	$98	$151
2025/05	671	$90	$116

The data can be seen pictorially in the Figure below. What Figure 4 makes clear is the dangers associated with requiring prepayment of utility bills. Over the 24-month

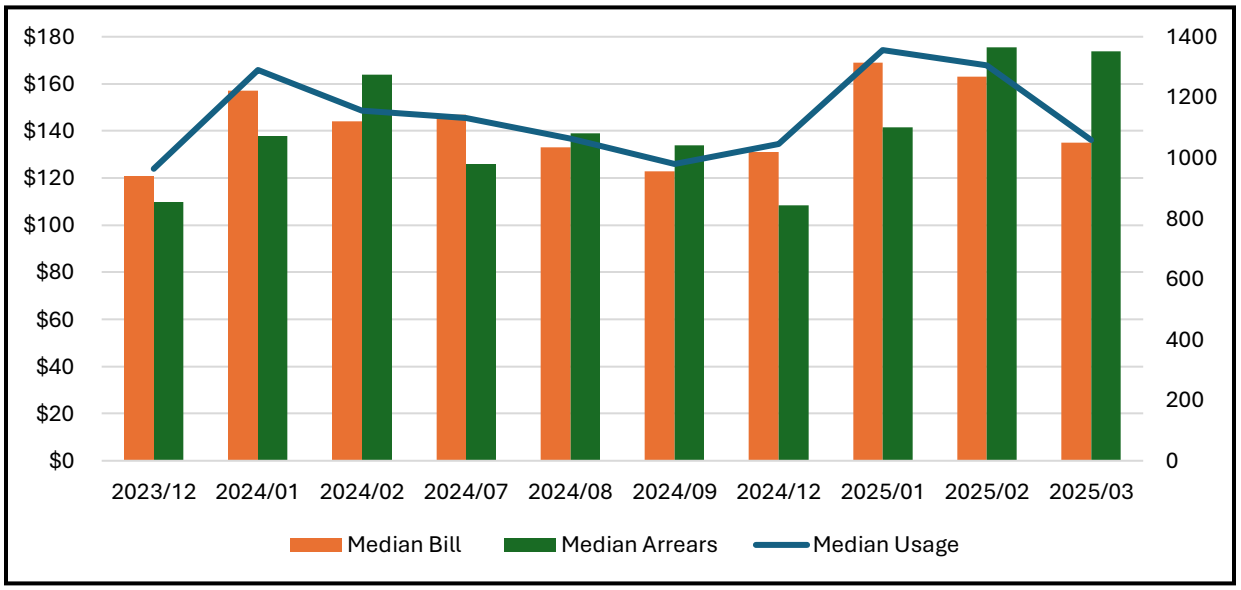
[67] KU JI 1-7, attachment.

[68] KU JI 1-12, attachment.

[69] KU JI 1-13, attachment.

period, there are three noticeable spikes in usage, bills and arrears. The two highest spikes occur in the winter heating season of both 2023 and 2024. Colder weather January and February 2025, in particular, resulted in a corresponding spike in bills. A third spike in usage (and bills), even though lower, is evident in the middle of the hot weather season (July/August) of 2024. The degree to which the median arrears track the median bills show that in the KU service territory, there is at least a substantial systemwide inability-to-pay these higher seasonal bills on a regular basis, let alone to prepay these high seasonal bills.

Figure 4. KU Median Arrears, Median Bill, Median Usage (most recent 24 months)



Third, the assertion by the Companies that prepayment meters will allow customers to better control their energy consumption ignores the inability of low-income customers to engage in such energy-saving behavior. It is easy to create the image of people turning off lights, turning down thermostats, and taking other affirmative steps to control consumption by behavioral changes. In addition, it may be easy to create the image of a vast savings potential that would arise if low-income households only turned

off "wasteful" appliances. However, it is not the number of new appliances, but rather the age, condition and energy efficiency of basic appliances, as well as the age, condition and efficiency of the housing structure itself, that drives low-income consumption levels.

Even aside from their very lack of income impeding, if not totally preventing, investments in usage reduction strategies, low-income customers in Kentucky tend to be renters. Only 43.8% of the 133,722 households with annual income below $20,000 in the KU zip codes, for example, are homeowners, while the remaining 56.2% are renters. The disproportionate number of low-income households who are renters in KU zip codes is set forth in the Table below. The impediment is not simply the “split incentive” where landlords do not make investments when the bills savings flow to the tenants, but also the lack of authority by tenants to authorize modifications to energy-consuming systems (what is called “dominion interest”).

The Table below presents the distribution of owners and renters by income (for households with income less than $25,000. The Table shows, for example, that while 6.8% of all renters in the KU zip codes have annual income less than $5,000, only 2.5% of all homeowners have income that low. The Table shows that while 10.1% of all renters in the KU zip codes have annual income between $10,000 and $14,999, only 3.2% of homeowners have income that low. Over all income ranges less than $25,000, the percentage of renters with annual incomes in these low income ranges is consistently higher than the percentage of homeowners in these ranges.

Table 12. Percentage of Total Households Disaggregated by Homeowner/Renter Status by Income Below $25,000 (KU zip codes)

	Owner[70]	Renter
Total Number of Households	574,406	269,725
<$5,000	2.5%	6.8%
$5,000 - $9,999	1.5%	4.3%
$10,000 - $14,999	3.2%	10.1%
$15,000 - $19,999	3.0%	6.6%
$20,000 - $24,999	3.3%	6.9%

Q. DO YOU HAVE ANY FINAL OBSERVATION ABOUT THE COMPANY'S PREPAYMENT METER PROPOSAL?

A. Yes. One adverse impact of prepayment meters involves the extent to which customers will self-disconnect their utility service by failing to purchase additional energy when that energy becomes unaffordable. In this circumstance, the disconnection of service is not avoided, but rather merely "hidden" from regulatory and public oversight. A self-disconnection occurs when, rather than having a utility disconnect service for nonpayment, a consumer's meter runs out of money and, because the consumer lacks the necessary resources, the consumer fails to purchase additional energy to keep the meter operating. As a result, the flow of electricity into the housing unit stops.

The concern in this regard appears to be well founded. Great Britain has more than four million customers who use prepayment meters. A 2022 study provided to the Great Britain House of Commons defined a "self-disconnection" as "when a consumer with a prepayment meter does not have enough money to top-up their meter and their meter cuts

[70] The percentages do not add to 100% because the percentages are of the *total* number of homeowners and the *total* number of renters. Only data for households with income less than $25,000 is included in the Table.

out, or when they do not realize that credit on the meter."[71] This study found that in 2020, 4.3 million residents had prepayment meters in Great Britain.[72] The study cited an OFGEM (the regulatory body in Great Britain) as stating:

> . . .1 in 7 customers self-disconnected during 2019, and more recent data from Citizens Advice shows these numbers could be higher. Evidence shows that around half of those who are self-disconnecting appear to experience a negative impact. This could be a physical impact such as living in a cold home and/or emotional impact which includes financial distress. Some groups will generally be more affected than others such as households including children and/or the elderly.[73]

The House of Common study reported that "The number of people Citizens Advice had seen in 2022 (up to October) who were unable to top up their [prepayment meter] was more than for the whole of the previous five years combined."[74]

Q. ARE THERE REGULATORY PROBLEMS WITH THE IMPLEMENTATION OF PREPAYMENT METERS?

A. Yes. There are several regulatory problems with the implementation of prepayment meters. First, any prepayment meter program that is adopted by state regulators should be accompanied by discounts provided to participants in the program. A prepayment meter program not accompanied by discounts should not be approved. Discounts accompanying prepayment meters are justified on two different grounds. On

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[71] Alex Adcock, et al., *Self-disconnection of prepayment meters* at 8 (Dec. 14, 2022), *available at* https://researchbriefings.files.parliament.uk/documents/CDP-2022-0236/CDP-2022-0236.pdf.

[72] *Id.* at 3, *citing* Ofgem (October 19, 2020). Decision – Decision on self-disconnection and self-rationing, at page 6.

[73] *Id.* (internal notes omitted).

[74] *Id.* at 3.

the one hand, prepayment meter customers impose fewer costs on a utility system, which limited costs should be reflected in lower rates. If nothing else, in addition to contributing to credit and collection expenses, by definition, customers using prepayment meters would impose fewer working capital expenses.

On the other hand, prepayment meters constitute a "lesser" service that should, accordingly, be accompanied by a lesser charge. There is no question but that a company using prepayment meters will impose a stricter payment requirement, and less payment flexibility, on customers using prepayment meters than it does on its customers using traditional billing. Traditional billing does not result in the immediate pursuit of collections if a bill is not paid. All public utilities operate under what is called a "treatment amount." Under the treatment amount, the utility will undertake no collection activity until an arrears reaches a certain size or age (or a combination of the two). The difference between the median arrears carried by customers[75] and the average arrears at the time of disconnection,[76] demonstrates that LGE/KU utilize such a treatment amount as well.

This payment flexibility is lost under the prepayment meter initiative. When the meter runs dry, service is discontinued. With prepayment meters, in other words, the option is never provided to the customer to manage his or her money to address household necessities. When the meter runs dry, a payment must be made irrespective of

[75] KU JI 1-13.

[76] KU JI 1-47.n.

other household financial necessities or service is effectively terminated. This requirement is not placed on other customers.

To be cost-effective, the Company will limit its service termination process to arrears of much greater age and magnitude. Not all residential customers in arrears have their service disconnected. Not all customers receiving a disconnect notice have their service disconnected (even if no payment is made). In contrast, customers on prepayment meters will receive no such dispensation.

Prepayment meters impose substantial limitations on a customer's decisions regarding bill payments. Prepayment meters do not allow a customer to make short-term budget decisions on whether to delay payment of one bill in order to meet other household necessities. The data provided by KU on its own aging of arrears shows that the vast majority of its arrears do not represent a risk of loss to the company. Few 30-day arrears become 60-day arrears. And even fewer 60-day arrears become 90-day arrears. In those instances, a customer's service is not placed in jeopardy under traditional billing.

With prepayment meters, however, the option is never provided to the customer to manage his or her money to address household necessities. When the meter runs dry, a payment must be made irrespective of other household financial necessities or service is effectively terminated. This requirement is not placed on other customers. This lack of flexibility is a particular problem for low-income and low wage customers. Low-income and low wage customers live at or below the line of economic viability. Even at the low wage jobs (setting aside the low-income population for a moment), if the ten year old automobile needs a new muffler, or if the four-year old child gets sick (requiring the

parent to miss two or three days of work), there is no financial cushion. Under traditional billing, these customers do not place their energy service in jeopardy because of a broken refrigerator or a childhood illness. Under the prepayment meter, they do.

Charging lower rates to customers using prepayment meters has nothing to do with charging below-cost rates.

Q. IS THERE AN ADDITIONAL REGULATORY PROBLEM WITH PREPAYMENT METERS?

A. Yes. At common law, public utilities may not discontinue service until after giving notice in accordance with the terms of the contract between the consumer and the utility. It may be true that LGE/KU have the right under its contract to shut off the supply of utility service to compel payment of amounts already due. It is equally true, however, that a utility may not do so until after giving notice in accordance with the terms of the contract. Thus, it may be argued that a utility's common law right to terminate service to enforce payment is conditional upon its duty to notify the consumer of its intention to do so prior to exercising that right.

After the relation of a regular customer is established, the customer having made his outlays in the premises, and, in view of the loss, inconvenience, discomfort, and maybe hazard to health, involved in a sudden discontinuance of service without warning, the general laws touching the reasonableness of rules, or discontinuance without rules, on the part of a public utility, are not the same as applied to many forms of contract, wherein a breach on the part of one clothes the other with a right to terminate immediately. Indeed, a contract by a public utility with its customer is an agreement to furnish service

for an indefinite period of time. An implied term of such a contract is that service will not be suddenly terminated without reasonable notice. Even if the consumer has the right to contest the service disconnection, that consumer still has the right to receive prior notice. Regardless of whether a customer has a right to contest the discontinuance of service, they certainly have a right to know that service was being discontinued to enable them to protect themselves from the very damages that did occur.

While I do not propose that public utilities are insurers or guarantors of the safety of persons or their property, I do assert that there is a duty on the part of LGE/KU to protect its customers from foreseeable damage from failure of electrical service.

Q. IS THERE A FINAL REGULATORY PROBLEM THAT YOU WISH TO ADDRESS?

A. Yes. The use of prepayment meters would eliminate important regulatory safeguards protecting consumers against the unnecessary or unreasonable termination of service. In Minnesota, for example, Otter Tail Power Company implemented a prepayment meter program without seeking variances from a variety of shutoff protections promulgated by the PUC. Indeed, the commission noted that in implementing the program, the "company emphasize[[d] that the validity of the information gained from the project depended in large part on the customer's understanding the finality of their situation, i.e., that they must pay 'on delivery' and that when that 'delivery' is used up, they will be 'out of' electricity without further notice."

The Minnesota PUC then found that Otter Tail Power's prepayment meter program violated the following shutoff protections: (1) permissible reasons for

disconnecting service; (2) disconnect notice requirements; (3) required premise visit; (4) emergency reasons to suspend disconnections; (5) information provided in billing; and (6) declaration of inability to pay and cold weather protections.

In each instance above, the preshutoff duty of the public utility extends beyond making available an opportunity for the customer to pay his or her bill. A public utility's duties are, of course, defined by Commission regulation. Those duties might require a reasonable time within which to apply for fuel assistance; an opportunity to pay an arrears over an extended period of time; and an opportunity to prevent disconnections due to a medical emergency. In addition, consumers are entitled to reasonable notice of these rights and remedies before the utility terminates service. Finally, irrespective of the right of a consumer to dispute the service disconnection, the consumer has a right to written pretermination notice.

Q. HOW DOES THE COMPANY RESPOND TO THESE REGULATORY PROBLEMS?

A. LGE/KU witness Shannon Montgomery asserts that the prepay meter program proposed by the Companies does not violate any notice provision. She argues:

> [T]he Companies believe the Commission's notice requirements are met and even exceeded when prepay customers self-disconnect by allowing their meters to lapse because prepay customers have constant feedback available for their account balance. Prepay customers will also receive low-funds notifications at pre-determined trigger levels or at trigger levels of their choosing. However, if the Commission disagrees and finds that the electronic notice proposed does not meet the regulation's requirement that that the notice be in the form of a "writing," the Companies request a deviation from the regulation.[77]

[77] Montgomery Direct at 28.

Importantly, this testimony of witness Montgomery acknowledges the possibility of the Companies' customers experiencing hidden disconnections. The testimony of witness Montgomery, however, does not address many, if not most, of the regulatory problems posed by the proposed prepayment program. I conclude that the prepayment meters proposed by witness Montgomery do not meet the pre-disconnection notice requirements imposed on the Company, or the other regulatory requirements I discuss above. The Commission should so find, and the Companies' request for a deviation from the Commission's regulations should be denied.

Part 3. LGE/KU Should be Directed to Implement an Arrearage Management Program (AMP).

Q. PLEASE EXPLAIN THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY.

A. In this section of my testimony, I recommend that LGE/KU be directed to implement a means-tested Arrearage Management Program (AMP). Through such an AMP, not only will the Companies address their non-collection of long-term arrears, they will improve their collection of future bills for current service as well.

A. The Recommended Structure of a LGE/KU AMP.

Q. PLEASE EXPLAIN THE DOCTRINE SUPPORTING ADOPTION OF AN AMP.

A. An arrearage management program is designed to reduce pre-program arrears over an extended period of time in exchange for a customer's continuing payment of bills for current service. Through an AMP, a customer earns credits toward his or her preprogram arrears over a period of time, so long as the customer remains on the

program. By the end of the time period, the household's preprogram arrears will be reduced to $0.

The objectives of an arrearage management program include:

- To reduce bills for income-qualified customers to a level where they are sustainably payable without imposing undue hardships on the customer's household. Sustainable payments made without undue hardship involve payments made from current household resources without placing utility bill payment in undue competition with payments for other household necessities and without requiring the household to take undue coping actions.

- To reduce bills for income-qualified customers to a level where they are sustainably payable as reflected in month-to-month payment patterns to the utility. Payment patterns include the extent to which bill payments are complete, timely, regular, and unprompted (*i.e.*, made without collection intervention by the billing utility).

- To reduce bills for income-qualified customers to a level where the billing utility receives a tangible improvement in bill collectability with quantifiable reductions in utility expenses associated with collection expenses, working capital, uncollectibles, and related enhanced or preserved revenue streams.

Q. HOW SHOULD AN LGE/KU AMP BE STRUCTURED?

A. While some utilities simply forgive all bill balances brought into an overall bill discount program at the time the program begins, most utilities provide arrearage management over an extended period of time. An LGE/KU program should forgive arrears in a pro rata fashion over a 24-month period. Arrearage credits are earned on a monthly basis. The AMP is directed toward customers who have an outstanding arrears of $180 or more at the time they enroll in the program.

Q. IS THE FORGIVENESS OF ARREARS MADE DEPENDENT ON FULL AND TIMELY PAYMENT OF FUTURE BILLS?

A. Not entirely. While at first blush, it may seem desirable to make the grant of credits toward preprogram arrears contingent upon full and timely payment of current bills,[78] there are both policy and operational reasons *not* to do this.

- First, there are the operational issues. To implement such a contingent credit, LGE/KU would need to develop an information system process that determines, on a monthly basis, whether the full bill has been paid. Depending on the answer to that inquiry, different bills will be generated by the utility (either one reflecting an arrears credit or one not reflecting such a credit).

- Second, from a policy perspective, program administrators have learned that the best "incentive" for making full and timely payments is to have customers taking service pursuant to the AMP be subject to the same credit and collection processes as all other customers. In addition, creating layer upon layer of "incentives" for payments clouds the fundamental underlying proposition. That proposition posits that, in recognition of the underlying unaffordable burden posed by utility bills at standard residential rates, the customer is allowed to take service under a process which allows them to get out from under their arrears in exchange for future bill payment.

Accordingly, arrearage management credits should be granted for each full and timely payment made by a participant in the income-based discount. *In addition*, in the event an arrearage management credit is not provided because of a missed or incomplete payment in a particular month, that credit should be provided retroactively as soon as the discount recipient brings their account current. The objective of such a policy is to prompt customers to continue to make *some* payment on their bills even if they cannot afford to

[78] When universal service programs were first designed, there was a tendency to think of credits toward preprogram arrearages as an "incentive" for low-income customers to make their current bill payments on a full and timely basis. That belief has since been largely abandoned.

make a full and timely payment. A partial payment, which is subsequently later completed is a better payment outcome for both the utility and the customer than for no payment to be made at all.

Q. PLEASE EXPLAIN WHO WOULD BE ELIGIBLE TO PARTICIPATE IN AN AMP?

A. LGE/KU should make the AMP available not only to a customer who has an unpaid balance but remains on the system, but also to a customer who has had service previously disconnected for nonpayment. The objective of the overall program is to address pre-existing arrearages in a way that generates a stream of revenue to LGE/KU and generates offsetting cost savings such as the reduction in working capital through the reduction of pre-existing arrearages. Whether those arrears are associated with a customer who has had service disconnected for nonpayment, or a customer whose service remains active, does not affect the ability of the income-based discount program to achieve those objectives.

In sum, late and/or incomplete payments do not result in a loss of arrearage management credits so long as those payments are later cured. Continuing nonpayment under the proposed AMP will place the program participant in the same collection process as would be faced by any other customer in a similar situation. If a customer has their service disconnected for nonpayment, they remain a program participant. Once reconnected, and prior past-due balances brought current, the customer continues to earn arrearage forgiveness credits.

Q. HOW WOULD CUSTOMERS ENTER THE PROPOSED AMP?

A. I recommend that LGE/KU adopt the same enrollment process that was adopted by WPL (and approved by the Wisconsin PSC) for that Company's AMP. Under the WPL program, customers who meet the minimum arrearage requirements are automatically enrolled in the AMP subject to an opt-out provision should they choose not to participate. Customers are enrolled if they have received benefits from either the federal Low-Income Home Energy Assistance Program (LIHEAP) or the state's Wisconsin Home Energy Assistance Program (WHEAP) in the current program year. Due to uncertainties in federal funding –as I describe in detail above—a proposal is currently pending to enroll customers who have received LIHEAP and/or WHEAP in this program year or either of the two immediately preceding program years. In addition, WPL has proposed –which proposal is currently pending before the Wisconsin PSC— that AMP benefits be available to participants in a wider range of energy assistance program (e.g., weatherization, hardship funds).

Given that LGE/KU use the receipt of a variety of energy assistance programs to identify their low-income customers,[79] there would be a number of doors through which a customer could enter the AMP.[80] LGE/KU need not know the dollar income of any particular customer in order to participate in AMP. If the Companies know that the

[79] KU JI 1-3, 1-4, and 1-92.

[80] The participation numbers presented in this Table are not necessarily unduplicated number. A customer could have participated in more than one program.

customer has participated in, or received benefits through, one of the programs that they currently track, they would also know the customer is eligible for AMP.

Table 13. A count of the customers receiving assistance from each program by assistance program

Year	Assistance Program	No. of Recipients
2023	LIHEAP	20,148
2023	LIHEAP Crisis	13,035
2023	HEA	3,588
2023	WinterCare	2,513
2023	WeCare	1,780
2023	Fixed and Limited Income Extension (FLEX)	18,879
2024	LIHEAP	18,991
2024	LIHEAP Crisis	13,021
2024	HEA	3,851
2024	WinterCare	3,020
2024	WeCare	498
2024	FLEX	19,375

Q. IS THERE A FINAL ELEMENT TO THE STRUCTURE OF AN AMP?

A. Yes. Income-qualified customers taking service under the AMP should make a monthly copayment toward preprogram arrears. In this fashion, customers with minimum levels of payment troubles will not receive credits toward their arrears. In addition, in this fashion, universal service customers will bear some responsibility for their preprogram debt.[81] A copayment of $7.50 per month is deemed to be reasonable.

[81] However, some utilities have decided that the cost of developing a billing capacity for the customer copayment is not merited by the amount of revenue produced by the copayment process. These utilities provide credits toward 100% of the preprogram arrears.

This program component, of course, has implications for who is "eligible" to participate in the AMP. A $7.50/month copayment over 24 months is a $180 customer payment. Accordingly, only customers with a pre-program arrearage balance exceeding $180 would be eligible to earn arrearage forgiveness. Moreover, based on data provided by KU, it is clear that an arrearage of $180 would exceed the maximum median monthly arrears in any given month within the most recent 24 months for which data is available.[82]

Q. PLEASE SUMMARIZE THE AMP YOU PROPOSE FOR LGE/KU.

A. In sum, the following components of a recommended AMP for LGE/KU are recommended:

- Arrears are to be retired through *pro rata* credits over a two-year period, with 1/24th of the pre-existing balance forgiven for each complete payment;
- Customers are to make minimum, but meaningful, copayments toward their arrears ($7.50/month);
- One implication of a $7.50/month copayment is that only customers with a pre-existing arrearage balance exceeding $180 will be eligible to receive arrearage forgiveness.
- No pre-condition is established for participation in the arrearage management program component. The arrearage management program should be made available both to customers who are active and to customers who have had service disconnected and are currently off-system;
- Arrearage management credits are to be made for each full and timely payment made toward a current bill. *In addition*, retroactive credits should be made in the instance of a missed or incomplete payment when participant bill balances are brought current;

[82] See, Table 11, *supra*.

- The appropriate response to continuing nonpayment is to place the program participant in the same collection process as any other residential customer; and

- Program participants are not removed from the program as a consequence of nonpayment. Instead, program participants are subject to the same collection interventions as any other residential customer would be subject to.

Q. HOW DO YOU PROPOSE LGE/KU RECOVER THE COSTS OF YOUR PROPOSED AMP?

A. I recommend that LGE/KU collect the costs of its AMP through a reconcilable surcharge. The surcharge would reconcile actual expenditures on an annual basis to the projected expenditures. Under-payments and over-payments are rolled into the surcharge in the next fiscal year.

I recommend a reconcilable surcharge because it will be difficult to project with accuracy what the costs of the AMP are a year in advance. The costs of the program are driven by a number of factors that may change from year-to-year. Those factors include not merely the number of program participants in a given year, but also the level of arrears subject to forgiveness and the degree to which AMP participants make complete payments. Program costs may also be driven by the cost of fuel. If either natural gas or electric rates go up or down, the costs of the program will likely mirror those increases or decreases. In order to assure that LGE/KU recovers the costs of its program, but only the costs of its program, I recommend cost recovery through a reconcilable surcharge.

B. The Regulatory Basis for Adopting a LGE/KU AMP.

Q. DOES ADOPTION OF AN AMP HAVE A SOUND BASIS IN TRADITIONAL REGULATORY PRINCIPLES?

A. Yes. An arrearage management program component is necessary to help get low-income customers "even" so they have a chance at future success in making payments. It makes no difference to have *current* bills be affordable if the household is subject to service termination for *past due* bills incurred before the program began (known as preprogram arrears). In addition, it makes no sense to have *current* bills be affordable if the *total* bill is unaffordable due to payment obligations required to retire past arrears.

In addition to these impacts to customers, an arrearage management program can be expected to help LGE/KU utilities generate revenue and to control costs. This reference to the need to generate revenue and minimize costs is not simply to minimize credit and collection costs. Imposing an obligation on customers to retire the entirety of pre-discount balances, when customers do not have the ability to do so, will not only place the collection of those balances in jeopardy, it will also place the ability of customers who would otherwise be able to maintain future payments in jeopardy of having service disconnected. The result will be to deny LGE/KU future revenue that it need not have lost.

Q. CAN YOU ILLUSTRATE?

A. Yes. First, consider what Wisconsin Electric Power Company (WEPCO) reported with respect to its arrearage forgiveness program (called the Low-Income Forgiveness Tool, LIFT). In the Wisconsin Staff Memorandum examining the reasonableness of

WEPCO's request to make LIFT a permanent program,[83] the Wisconsin PSC Staff observed that the Joint Applicants have found that "the LIFT program has resulted in the collection of over $13 million in customers payments of arrears balance that likely would not have been recovered and would have become bad debt."[84] According to the PSC Staff, the Joint Applicants stated that "they believe 100 percent of the LIFT 'pre-program arrears' would been written off over time without the implementation of the LIFT program."[85] In presenting its LIFT proposal, WEPCO stated in relevant part that "The payment data reviewed while preparing this response illustrates that the average annual customer payments received per account over a four year period (3 years prior to LIFT being implemented and the first year that LIFT was implemented) was (*sic*) never sufficient to cover the customer's annual current energy consumption charges, let alone enough to reduce arrears."

In addition, in 2024, I was hired by the New Hampshire state energy office to assess the impacts of the AMP, called "New Start," implemented by Eversource Utilities in that state. The impacts of New Start on low-income payment patterns are shown in the Figures below.

The percentage of New Start accounts in arrears was found to be declining over time. One reason for that result is that New Start customers are increasingly paying a higher portion of their bill each month. The "payment coverage ratio" is a simple ratio,

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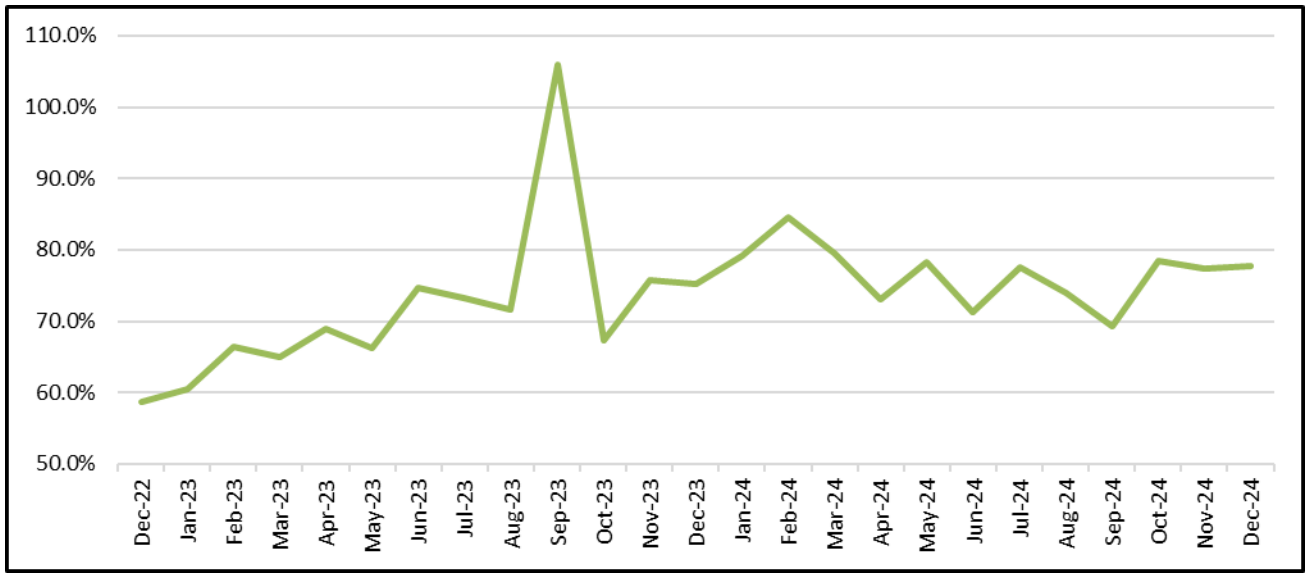
[83] WI PSC Docket 5-TU-100, Staff Report (November 20, 2023), *available at* https://apps.psc.wi.gov/ERF/ERFview/viewdoc.aspx?docid=485457.
[84] *Id.* at 20.
[85] *Id.* at 21.

with the *dollars of bills* placed in the denominator and the *dollars of payments* placed in the numerator. Figure 5 below (using New Hampshire data) shows the New Start Payment Coverage Ratio by month for December 2022 through December 2024. Even setting aside the unexplained result in September 2023 (payment coverage ratio of 106%), the increase in the proportion of current bills being paid by New Start participants is evident. While New Start participants paid only 60% of their current bill in December 2022, by 2024, the New Start payment coverage ratio was consistently over 75%, with the ratio leveling out near 80% in the last three months of 2024.

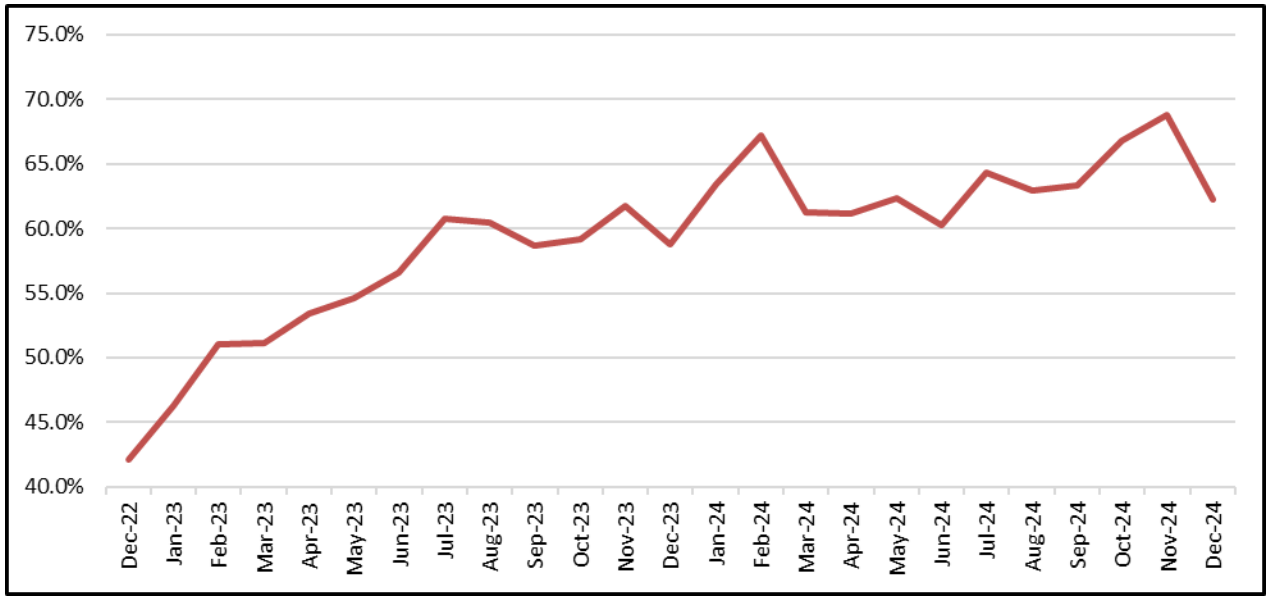
Figure 5. New Start Payment Coverage Ratio



Finally, similar to the Payment Coverage Ratio, the New Start Payments-to-Bills Ratio has seen a steady increase since the inception of the program. The Figure below shows that while New Start participants were making roughly 40 payments in response to each 100 bills that Eversource issued to them when they entered the program, by January 2024, the Ratio had increased to more than 60 payments for each 100 bills, and by July 2024, the ratio had increased to 65 payments for each 100 bills. There has, in other

words, been more than a 50% increase in the rate at which New Start recipients make payments in response to each bill they receive from Eversource.

Figure 6. New Start Payments-to-Bills Ratio



In short, as with the Wisconsin utilities, the Eversource AMP in New Hampshire resulted in significant improvements in bill payment patterns for the low-income customers. Similar results would be expected for LGE/KU.

C. The Empirical Basis for a LGE/KU AMP.

Q. HAVE YOU HAD AN OPPORTUNITY TO ASSESS THE EMPIRICAL BASIS FOR ADOPTING AN AMP BY LGE/KU?

A. Yes. The data provided by KU allows several conclusions to be drawn. First, it is unquestioned that LGE/KU bases its reserve for uncollectibles (sometimes referred to as write-offs or bad debt) based on the age of its arrears. According to the Company:

> The estimated monthly charge off amount is then assigned to each aging bucket utilizing a waterfall approach to determine the monthly charge off percentages for each aging bucket. The monthly charge off percentages for each aging

bucket are then applied to the current period's receivable and accrued revenue balances, by aging bucket, in order to determine the bad debt reserve.[86]

Based on this, I examined the aging buckets for KU arrears. The aging buckets were provided both for the dollars of arrears,[87] and for accounts in arrears.[88] The aging of accounts in arrears is presented in the Table below. It becomes clear from this data that once an account has an arrears of 90 or more days old, the likelihood that that account will remain in arrears increases significantly. Even the accounts that no longer appear in the aging report, however, are not necessarily collected. They may instead simply have had service terminated and no longer appear in the aging report.

In the Table below, I have highlighted two series of aging buckets to illustrate the decreasing collections over time. In each older aging bucket, the percentage of the accounts in arrears from the prior month declines.

[86] KU JI 1-27, attachment at 1.

[87] KU JI 1-28, attachment.

[88] KU JI 1-29, attachment.

Table 14. Aging of Accounts in Arrears (October 2023 – June 2025)

-	Oct 2023	Nov 2023	Dec 2023	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024
0-30	344,112	338,823	348,281	339,137	365,892	348,998	335,257	331,550	370,122	345,417	340,090
31-60	54,591	52,565	54,239	51,491	51,051	55,818	52,647	52,167	51,139	51,539	51,611
61-90	14,880	16,737	15,903	16,290	13,399	14,651	15,987	15,755	16,197	14,198	13,466
91-120	7,249	7,841	7,837	7,846	6,498	6,129	7,132	8,331	7,756	7,816	6,561
121-365	6,407	6,892	7,405	7,238	6,533	6,283	6,145	6,841	7,069	6,742	6,582
365+	3,529	3,530	3,551	3,552	3,658	3,570	3,597	3,586	3,883	3,919	3,923

-	Sep 2024	Oct 2024	Nov 2024	Dec 2024	Jan 2025	Feb 2025	Mar 2025	Apr 2025	May 2025	Jun 2025
0-30	358,702	331,200	356,606	360,541	348,105	365,353	362,540	348,143	345,947	364,824
31-60	52,836	48,764	55,743	54,581	58,033	52,878	55,565	48,842	51,795	50,193
61-90	14,281	13,365	15,410	17,043	14,901	14,912	15,947	16,800	16,262	14,905
91-120	7,241	7,089	7,819	8,561	9,341	7,687	7,128	7,951	8,734	8,038
121-365	6,235	7,138	7,540	7,966	8,279	7,840	6,946	6,746	7,559	7,424
365+	3,995	3,465	3,467	3,467	3,449	3,476	3,501	3,516	3,652	4,085

Q. HOW DO DEFERRED PAYMENT ARRANGEMENTS AFFECT THE AGING OF ARREARS?

A. KY/LGE cannot reasonably argue that retaining arrears on customer accounts will allow them to be collected through deferred payment arrangements rather than having them forgiven through an AMP as I propose above. While there is no question that LGE/KU collects some money through deferred payment arrangements, the Companies lose far more money to defaulted payment arrangements than they collect. According to Company data, in the twelve months October 2023 through September 2024, while KU collected $4,415,016 through deferred payment agreements, it lost $11,833,106. In the twelve months ending December 2024, the Company collected $4,572,913 through payment agreements, but lost $12,011,148 in defaulted plans. In the twelve months

ending June 2025, the Company collected $5,034,209 through payment agreements, but lost $12,781,622.[89] These are not extended agreements. According to KU, the average length of payment agreements newly entered into over this 20-month period (October 2023 through May 2025) ranged from a low of 1.0 month to a high of 1.1 months (seemingly deferring payments for only one month).[90] Even given these short payment extensions, for every 100 payment extensions that were successfully completed by KU customers, from 39 to 60 defaulted.[91]

Q. WHAT RETURN WOULD LGE/KU RECEIVE THROUGH AN AMP?

A. LGE/KU will receive an almost immediate return on its investment in an AMP. By definition, customers who qualify for an AMP are customers who are not making payments to retire their unpaid balances, let alone making payments toward their bills for current service. LGE/KU will receive a positive return on its AMP for the same reasons a utility such as Wisconsin Electric Power Company (WEC) found that it receives a positive turn on its AMP discussed above (called the Low-Income Forgiveness Tool, or LIFT). WEC has previously stated that customers who became LIFT participants were, prior to their participation in LIFT, not paying their entire bill for current service. In approving WEC's AMP, the Wisconsin Commission specifically cited the factual representation by WEC that "the LIFT program has resulted in the collection of over $13 million in customer payments of arrears balances that likely would not have been

[89] KU JI 1-36, attachment.

[90] *Id.*

[91] *Id.*

recovered – and otherwise would have become bad debt expense – without the LIFT program."[92] WEC told the Commission Staff that:

> the LIFT program provided benefits to the program participants while being cost neutral to the non-participating customer base. The payment data reviewed while preparing this response illustrates that the average annual customer payments received per account over a four year period (3 years prior to LIFT being implemented and the first year that LIFT was implemented year) was never sufficient to cover the customer's annual current energy consumption charges, let alone enough to reduce arrears.[93]

For LGE/KU to generate a positive return the payments the Companies would receive through the AMP over 24 months would need to equal more than one-half of the arrears which LGE/KU would forgive over that same time period.

The LGE/KU AMP I recommend is designed to generate this positive return. According to KU, it loses far more dollars than it collects through its deferred payment arrangements. Data on the Company's defaulted payment arrangements is set forth in the Table below. Under the AMP, the AMP credit is not provided (i.e., the AMP cost is not incurred) unless and until the AMP copayment has been made. Accordingly, the losses which LGE/KU is incurring through its payment arrangements will be avoided.

[92]. WI PSC Docket 5-TU-100, Joint Application at 1-2 (Mar. 1, 2023).

[93] WI PSC Docket 5-TU-100, WEC Response to Staff Data Request 2-PSC-KM-24 & Attachment,.

Table 15. Average Dollars Per Account Collected and Defaulted on KU Payment Arrangements

Year/Month	Average Dollars Collected	Average Dollars Defaulted	Year/Month	Average Dollars Collected	Average Dollars Defaulted
2023/10	$63.44	$158	2024/08	$54.10	$170
2023/11	$49.20	$161	2024/09	$74.22	$176
2023/12	$49.93	$137	2024/10	$71.29	$175
2024/01	$48.33	$149	2024/11	$59.37	$167
2024/02	$60.42	$180	2024/12	$59.05	$147
2024/03	$99.04	$224	2025/01	$49.65	$149
2024/04	$83.24	$224	2025/02	$66.79	$202
2024/05	$70.40	$193	2025/03	$112.13	$247
2024/06	$72.80	$161	2025/04	$112.26	$264
2024/07	$55.41	$157	2025/05	$93.65	$231

Q. WILL THE GAIN GENERATED BY A LGE/KU AMP BE EVEN GREATER THAN YOU IDENTIFY IMMEDIATELY ABOVE?

A. Yes. Under LGE/KU's current payment system, the Companies post customer payments toward unpaid arrearage balances before posting payments against bills for current service. There is nothing controversial in that observation. The Companies readily engaged in the following exchange:

> Please provide a detailed description of how payments by customers on deferred payment plans are applied to a customer's account when those payments exceed the bill for current service plus the payment plan installment. For example, is the amount of the excess payment applied to the next monthly bill or are those payments applied to the last due payment plan installment?
>
> A-1.37. *The payment will pay the installment plan, then the current bill with the same due date. Any overpayment is then applied to the next open and due receivable.* Receivables are paid by the oldest age and the due date of the

receivable. If there is still credit left over, it will be credited to the subsequent invoice.[94]

Since the arrears get retired ***first***, to the extent that LGE/KU customers default on their payment plan, LGE/KU not only loses the missed arrearage payment, but also fails to collect the bill for current service in the month of default. In contrast, under the AMP, unless the bill for current service (plus the AMP copayment) has been paid in full, no AMP credit is provided (and thus no program cost is incurred).

Q. CAN'T LGE/KU SIMPLY RENEGOTIATE AND EXTEND A DEFAULTED PAYMENT ARRANGEMENT?

A. LGE/KU *could* renegotiate or extend a defaulted payment arrangement, but the Companies do ***not*** do so. LGE/KU state that once a payment arrangement is defaulted, additional payment arrangements are no longer available. LGE/KU states quite explicitly that it "is the Company's policy to not renegotiate DPAs."[95]

Q. WHAT DO YOU CONCLUDE BASED UPON YOUR ABOVE DISCUSSION?

A. Going forward, providing an opportunity for customers to make complete payments for current service, and providing an arrearage repayment program, are interrelated. People do not make separate payments for their bill for current service and for their arrearages. Rather people make a payment toward their total bill. From a payment perspective, therefore, it makes no difference whether that total payment is

[94] KU JI 1-37 (emphasis added).

[95] KU JI 1-36.

unpayable due to the bill for current service or unpayable due to a pre-existing arrearage. In the absence of an arrearage management program, pre-existing arrearages will represent a substantial contributor to the inability of low-income customers to pay their LGE/KU utility bills for current service and to retain service.

Accordingly, based on the above, I conclude that the Commission should direct LGE/KU to adopt the AMP recommended above.

Part 4. How LGE/KU Clean Energy Strategies Affect Low-Income Customers.

Q. PLEASE EXPLAIN THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. In this section of my testimony, I examine how the Company's clean energy strategies will affect low-income customers. In identifying these impacts, I do not assert that those clean energy strategies should not occur or should be abandoned. Indeed, moving to a clean energy economy is essential for both the natural gas and utility industries in today's world. Nonetheless, as we move into a clean energy future, it is essential that low-income households will not be left behind. I recommend reasonable actions below that will both advance overall clean energy needs and help ensure that low-income households are able to effectively participate in clean energy strategies.

A. The Problem.

Q. PLEASE EXPLAIN YOUR CONCERNS ABOUT RESIDENTIAL ROOFTOP SOLAR INSTALLATIONS .

A. Low-income households are not the households who are investing in rooftop solar installations. Households who are having difficulty paying their current energy bills, and

who are making the trade-offs between basic household necessities and the payment of utility bills, as I documented through the Census Pulse Household Survey above, simply do not have the available resources to invest in a rooftop solar installation. Moreover, as I document above, low-income households disproportionately are renters, lacking the dominion interest (i.e., authority) to make decisions as to whether a solar installation should be pursued even if through some means they could generate sufficient household resources to make the investment.

The disproportionality of solar installations is not a theoretical concern in the LGE/KU service territory. A distribution of solar installations for the 40 KU zip codes with the highest Median Household Incomes (MHI) and the 40 zip codes with the lowest MHI is set forth in the Table below. As can be seen, the 40 zip codes with the highest MHIs have an average MHI of $81,086, and installed 375 (44.6%) of the solar facilities.[96] In contrast, the 40 zip codes with the lowest MHIs have an average income of only $32,509 and installed fewer than 4% of the solar facilities.

Table 16. Distribution of Rooftop Solar Installations by Income and Zip Code

	40 Zip Codes with Highest MHI	40 Zip Codes with Lowest MHIs
Avg income	$81,086	$32,509
Sum Solar	375	31
Pct solar	44.6%	3.7%

It is clear from the data presented above that the solar investments are being made primarily in higher income zip codes. Lower income customers are the ones being left

[96] KU JI 1-78, attachment.

behind. Accordingly, as part of their solarization programs, LGE/KU should be directed by the Commission to work with stakeholders to develop a ten-year solarization plan directed toward low-income households. This Ten Year Plan can and should incorporate existing efforts and identify the specific role of the utilities in supporting and advancing those efforts. The Ten Year Plan should document the Companies' efforts to collaborate with state and community-based organizations to target low-income participants with the highest energy use using braided utility dollars, state and federal funding, and other community resources for investments in clean energy measures.

For example, Metropolitan Housing Coalition (MHC)'s and Kentuckians For The Commonwealth (KFTC)'s partnership with Louisville Metro's Office of Sustainability is working on energy efficiency and DER (e.g. rooftop solar) on multi-family, affordable housing units through a pilot with a local nonprofit developer to see if this can be done affordably.[97] The purpose of the pilot is to develop a feasible model to do so. Moreover, at the heart of the CLEAP[98] and BuildingsUp[99] programs is an examination of how programs can be created for tenants in multi-family, affordable housing units so that such housing will benefit from DER installed by a developer/property owner. In addition, even though most renters cannot partake in rooftop solar, they could greatly benefit from community solar projects, or even Virtual Power Plant (VPPs). A VPP managed by

[97] Louisville Metro Government, *Office of Sustainability receives $400,000 to advance energy efficiency in affordable housing* (Oct. 25, 2023), *available at* https://louisvilleky.gov/news/office-sustainability-receives-400000-advance-energy-efficiency-affordable-housing; Thomas Bowen, National Renewable Energy Laboratory, *Louisville Communities LEAP Engagement: Improving Energy Efficiency in Affordable Housing* (Dec. 08, 2023), *available at* https://docs.nrel.gov/docs/fy24osti/88331.pdf.

[98] The U.S. Department of Energy's Community Local Energy Action Program. See generally, https://www.energy.gov/sites/default/files/2021-09/Communities%20LEAP%20Fact%20Sheet%20final.pdf

[99] The U.S. Department of Energy's Buildings Upgrade Prize (Buildings UP). See generally, https://www.energy.gov/eere/buildings/buildings-upgrade-prize-buildings

LGE/KU would integrate effectively with the TOD program discussed previously, to provide additional financial benefits to low-income participants who host VPP resources while on TOD rates.

I recommend that the Ten-Year Plan be filed with the Commission no later than December 31, 2026, and be updated biannually thereafter using objective metrics developed with the stakeholders to measure the success of the Plan in serving low-income households.

Q. PLEASE EXPLAIN YOUR CONCERNS ABOUT THE IMPACTS OF EV CHARGING THAT THE COMPANY DESCRIBED IN THIS PROCEEDING.

A. I have a number of concerns. I am generally supportive of equitable electrification initiatives. I am cognizant that there has been a movement to encourage EV adoption, both nationwide and within the State.

I am concerned, however, that low-income households are not equitably able to access EVs and transportation electrification, and will therefore be unable to realize the benefits from the Company's support and promotion of EVs. In my experience, purchasing an EV is not an affordable or feasible option for the average low income household. A family of three at 150% FPL makes just $53,300 per year. At this income level, families struggle to afford public transit options, let alone afford to purchase and maintain an EV. The Kelly Blue Book estimate of the average transactional price nationwide of new EVs in April 2024 was $55,689.[100]

[100] Valdes (August 15, 2025). *How Much Are Electric Cars*?,Kelly Blue Book, *available at* https://www.kbb.com/car-advice/how-much-electric-car-cost.

As a practical matter, the Company's low-income customers are unlikely to see any direct benefit from the Company's programs to promote the electrification of transportation. Low-income customers are most often unable to access rebates due to insurmountable upfront costs related to EV, and associated make-ready requirements. I note, too, that the Company's support programs focused on residential customers do not provide any detail about how braiding and staking of federal and state funding assistance and opportunities may be leveraged to address the affordability gaps for consumers, or to help reduce the cost to ratepayers. It is essential that initiatives aimed at transportation electrification provide a clear and direct benefit to low-income customers that promote sustainable community growth and stability – especially when low income consumers are expected to share in the cost.

B. Proposed Mitigation Measures.

Q. WHAT DO YOU RECOMMEND AS A REASONABLE RESPONSE?

A. In addition to developing a Ten Year Solarization Plan to reach low-income households, I have recommended three responses in my testimony above: (1) a low-income outreach program; (2) an AMP; and (3) a low-income TOD initiative. I urge that these responses are reasonable in their own right. However, when measured against the adverse impacts that low-income customers are bearing that I discuss in this section, the reasonableness of those proposals becomes even more evident.

Q. DO YOU HAVE A SPECIFIC RECOMMENDATION REGARDING TRANSPORTATION ELECTRIFICATION?

A. Yes. With low-income consumers having significant barriers to personal EV adoptions, it is essential that transportation electrification initiatives focus on public and

fleet transportation in low income and environmental justice communities. As discussed, low-income and historically disadvantaged communities face disproportionate and steep barriers to transportation electrification adoption. Furthermore, low-income communities and communities of color have traditionally faced substantially higher costs for transportation, and are more likely to live in close proximity to mass transportation hubs and high volume transportation. Fleet transportation initiatives help to ensure that low-income households and their communities can realize benefits from transportation electrification initiatives, and work to dismantle the historical barriers to transportation electrification faced by these communities. Overall, therefore, modifications to the Company's support of transportation electrification must be made to ensure that low-income consumers and their communities can realize meaningful and direct benefits from these initiatives. This is particularly important as all customers, including low-income customers, will share in the responsibility of shouldering the costs of these initiatives.

Accordingly, while clearly all households share in the environmental benefits of the electrification of transportation, due to the steep upfront costs of EV ownership, low-income customers are not able to meaningfully and equitably participate in the current EV market and to receive the direct benefits of EV ownership. Accordingly, I recommend that the Company explicitly track the costs of its promotion of transportation electrification. I further recommend that the Company be required to develop, and present to the Commission for approval, a program of fleet and public transportation incentives to entities situated in or that primarily service Environmental Justice (EJ) communities.[101]

[101] This could be of particular benefit to the Transit Authority of River City, which has recently projected a budget deficit of $30 million by mid-2026 if major changes are not made. https://www.courier-

Developing a program directed toward EJ communities would help address historical inequities in access to advanced energy technology, and better ensure that low-income customers are able to derive some benefit from these initiatives.

Part 5. Using Performance-Based Ratemaking to Address the Impacts of Unaffordability on LGE/KU System Costs.

Q. PLEASE EXPLAIN THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY.

A. In this section of my testimony, I build on my discussion above demonstrating how the failure to acknowledge and to address the unaffordability of LGE/KU rates will have the impact of increasing total costs that are incurred by the Company. As the Company's costs increase, LGE/KU will need to seek higher rates to cover those costs. Accordingly, failing to address unaffordability will have the impact of increasing rates which LGE/KU will seek to impose on all customers. I propose that the Commission adopt a Performance-Based Ratemaking system to use to address this problem.

Q. DO YOU HAVE REASON TO BELIEVE THAT LGE/KU HAS NEVER ADDRESSED THE ISSUE OF UNAFFORDABLE BILLS AT THE CORPORATE LEVEL?

A. Yes. The Company has never addressed how to respond to the unaffordability of service to low- and moderate-income customers at the corporate level. For example, the LGE/KU was asked to provide:

journal.com/story/news/local/2025/01/26/tarc-2025-redesign-big-cuts-or-new-funding-needed-due-to-fiscal-cliff/76740213007/.

- Each presentation or other set of materials to the company Board of Directors regarding low-income energy issues;

- Each holding company Board of Directors agenda identifying low-income issues as a separately-stated agenda item;

- Each set of presentation or other set of materials distributed to the holding company Board of Directors as part of the agenda item;

- Each Company Board agenda identifying customer service and/or credit and collection issues as a separately stated agenda item;

- Each presentation to the Company Board of Directors regarding customer service and/or credit and collection issues;

- Each set of written materials regarding customer service and/or credit and collection issues distributed as part of the agenda item.

In response to each such request, LGE/KU stated that "No applicable Company Board of Directors' agenda items, presentations or materials exist."[102] While LGE/KU holds hour long meetings every three months with community representatives,[103] the results of these discussions never reach into the management level and are never presented to management.

Indeed, LGE/KU seem to take an aggressive disinterest in defining low-income payment difficulties, let alone in seeking to develop appropriate responses.

- When asked for any study or evaluation that LGE/KU had undertaken to understand "why nonpaying residential customers do not make contact with the utility when, in response to bill nonpayment, those nonpaying customers receive a request or notice to contact the utility to avoid the disconnection of service,"

[102] KU JI 1-73b.-g.

[103] KU JI 1-73.a.

LGE/KU replied that "The Company does not have any studies that indicate why customers do not contact the Company after nonpayment communication."[104]

- When LGE/KU was asked for any documents where the Companies identified, evaluated or discussed "why residential customers do not successfully complete deferred payment plans (sometimes known as payment agreements or other similar terms) in order to avoid the disconnection of service for nonpayment," LGE/KU replied that "the Company does not have any studies that discuss why residential customers do not successfully complete deferred payment plans."[105]

Given the number of disconnection notices LGE/KU issues each month, as discussed above, along with the large percentage of defaulted payment arrangements, the failure of LGE/KU to even consider *why* customers routinely do not respond to such disconnect notices, and *why* customers are routinely not able to successfully complete their payment arrangements, is indicative of the need to create a performance based measurement system.

Q. PLEASE EXPLAIN THE NATURE AND ROLE OF CREATING "OUTCOME" METRICS BY WHICH TO MEASURE UTILITY PERFORMANCE.

A. In this section of my testimony, I recommend that the Commission adopt a series of outcome metrics to measure the Company's performance with respect to its credit and collection outcomes. Through these metrics, rather than focusing on what LGE/KU is *doing* (*i.e.*, its activities), I will focus on an assessment of what the Company is *accomplishing* (*i.e.*, its outcomes, or results).

[104] KU JI 1-56.

[105] KU JI 1-58.

Measuring "outcomes" is to be distinguished from measuring "activities." An "activity" is defined as the work performed that directly produces products or services. The "outcome" of a program is the accomplishment of program objectives attributable to program activities.

Performance measurement has been growing now for nearly 30 years in both public and private programs. Perhaps the best-known application is the federal Government Performance and Results Act of 1993. GPRA was designed to address the same conceptual issues that LGE/KU must address for its low-income energy assistance programs: to grapple with how to best improve effectiveness and service quality while limiting costs. It shifts the focus from program activities to program results.

According to GPRA, "[t]he key concepts of this performance-based management are the need to define clear agency missions, set results-oriented goals, measure progress toward achievement of those goals, and use performance information to help make decisions and strengthen accountability."[106] Utilities face the same sort of problems in measuring efficiency as do federal agencies. As James Hinchman, Acting Comptroller General observed when GPRA was first enacted, "[m]any agencies have a difficult time moving from measuring program activities to establishing results-oriented goals and performance measures."[107] Within this construct, I will focus ***not*** on measuring what

[106] Hinchman (June 1997). Managing for Results: The Statutory Framework for Improving Federal Management and Effectiveness, at 1, GAO /T-GGD/AIMD-97-144, available at https://www.govinfo.gov/content/pkg/GAOREPORTS-T-GGD-AIMD-97-144/pdf/GAOREPORTS-T-GGD-AIMD-97-144.pdf

[107] *Id.*, at 1.

LGE/KU is or is not *doing*. I will instead focus on what KU//LGE is or is not *accomplishing*.

Q. WHAT IS THE FIRST SPECIFIC METRIC THAT YOU RECOMMEND FOR LGE/KU?

A. I recommend that the first outcome metric to be used should be an increase in the enrollment of LGE/KU low-income customers in LIHEAP and in WeCare. By adopting this metric, the Company is required to take ownership in identifying the steps that are required to provide outreach to its low-income customers and to help those customers negotiate the processes required to enroll in the available assistance programs. It would be unreasonable to expect a 100% enrollment rate for identified low-income customers. There will always exist some sub-population of low-income customers who choose not to enroll in such programs. Establishing an outcome performance metric requires LGE/KU to determine what barriers exist to enrollment. Rather than seeking to micro-manage the reasonableness of each action which LGE/KU decides to adopt to address the lack of information, use of an outcome performance metric reviews the *results* of the LGE/KU activities. If those activities are not working, it remains within the province of the Company to determine what modifications need to be made in order to achieve the results (or outcomes).

More specifically, I recommend that the outcome measure to be adopted should mirror the performance metric recently adopted by the New Jersey Board of Public Utilities for that state's utilities. The metric I recommend is for LGE/KU to increase enrollment in LIHEAP by five percent (5%) in program year one (1) compared to the prior program year of October 1, 2024-September 30, 2025 ("Base Year"); three percent

(3%) in year two (2) compared to the prior program year of October 1, 2025-September 30, 2026; and two percent (2%) in year three (3) compared to the prior program year of October 1, 2026-September 30, 2027. This recommendation would increase enrollment by ten percent (10%) over a three (3)-year period.

Q. WHY SHOULD THERE BE A METRIC MEASURING THE EXPANSION OF LIHEAP PARTICIPATION GIVEN YOUR DISCUSSION OF LIHEAP'S LIMITATIONS EARLIER IN YOUR TESTIMONY?

A. As I discuss in detail above, relying on LIHEAP as a primary response to unaffordable low-income energy burdens in the LGE/KU service territory is an unreasonable strategy. As I explain, due to LIHEAP's limited –and now highly uncertain—funding, and its status as a Block Grant program, expanding LIHEAP enrollment will not result in an expansion of LIHEAP funds being directed to LGE/KU customers. However, I have proposed to expand the use of LIHEAP enrollment as the door through which low- and moderate-income customers may also access additional LGE/KU assistance. Under this approach to determining program eligibility, it is the receipt of LIHEAP that qualifies customers for additional programs. Accordingly, by expanding participation in LIHEAP, even if LIHEAP funding does not correspondingly increase, the access to additional affordability benefits will. Using this metric, therefore, will not only expand access to LIHEAP, but will expand overall access to assistance in a way that is meaningful.

Q. WHAT IS THE SECOND OUTCOME METRIC YOU PROPOSE?

A. The second outcome metric I recommend actually involves a suite of four interrelated outcomes. One primary purpose of offering low-income assistance,

identifying the customers who would qualify for that assistance, and then enrolling those identified low-income customers in the assistance programs for which they are eligible, is to improve the payment patterns of those low-income customers as bills are made affordable. While improved payment patterns are not the *exclusive* purpose of low-income bill payment assistance, they are *one* of the primary purposes of low-income assistance and protections. Given this purpose, the following outcome metrics are recommended by which to measure LGE/KU performance with respect to its low-income programs:

- A reduction by 15% each year for three years in the absolute number of defaulted residential deferred payment arrangements. For purposes of this outcome, a "defaulted payment arrangement" is a payment arrangement from which the customer has been removed for nonpayment prior to completion of all of the payments required under the payment arrangement to retire the arrears made subject to the arrangement;

- A reduction by 15% each year for three years in the absolute number of residential nonpayment disconnections;

- A reduction by 15% each year for three years in the number of residential customers who have, since April 1 of a given year, had their service disconnected for nonpayment and who, as of November 1 of that year, remain in their home with service not yet reconnected.

- A reduction by 15% each year for three years in the average monthly arrears, measured in "Bills Behind," for identified low-income customers not on agreement.

Q. WHY IS IT IMPORTANT TO CONSIDER EACH OF THESE METRICS IN COMBINATION WITH EACH OTHER?

A. It is important to consider the metrics I identify above in combination with each other in order to avoid incentivizing unwanted behavior. For example, if one only considered the rate of involuntary disconnections for nonpayment, LGE/KU could

minimize the disconnections while simply allowing arrears to accrue to ever increasing levels. In contrast, LGE/KU could minimize the level of arrears by disconnecting a high number of accounts when past-due balances were low. Similarly, the extent to which disconnections are avoided by having LGE/KU enter into deferred payment agreements is only meaningful if those payment arrangements do not frequently result in a default. If payment arrangements default, they result merely in postponing collection activity, not avoiding such activity. Accordingly, in choosing which metrics to measure, it is important to consider how each metric interacts with, and affects, each other metric.

Q. PLEASE EXPLAIN THE RATIONALE BEHIND MEASURING THESE "PAYMENT PERFORMANCE" METRICS FROM A LOW-INCOME PERSPECTIVE.

A. Offering low-income bill payment assistance is intended to improve the affordability of LGE/KU bills to low-income customers. Unless one adopts, which I do not, the belief that low-income customers systematically fail to make timely and complete payments because they choose not to do so, even if capable of doing so, improving the affordability of LGE/KU bills to low-income customers should improve the bill payment patterns of the low-income customers that have been assisted. The low-income assistance addresses the payment difficulties of low-income customers who do not pay because they cannot afford to pay. As with the other outcomes metric discussed above, the metrics I propose in this section do not involve a micro-management of the activities which LGE/KU chooses to pursue. To maximize the effectiveness of its low-income assistance in improving payment patterns, for example, LGE/KU could choose to target its outreach and enrollment to those low-income customers with the greatest

payment difficulties with which to begin. LGE/KU may choose to target its outreach and enrollment to those customers with the lowest incomes (and thus the greatest unaffordability problems). It may choose to couple payment assistance with energy efficiency investments. It may choose to couple outreach on utility-funded assistance with outreach on LIHEAP assistance. In any case, the management decisions regarding what LGE/KU will *do* should be left to the Company, with regulatory oversight limited to what those decisions are *accomplishing*. If LGE/KU decisions on activities are not generating the desired outcomes, it is left to the Company to decide what needs to be modified.

Q. WHAT SPECIFIC PENALTY DO YOU PROPOSE SHOULD THE ABOVE PERFORMANCE METRICS NOT BE ACHIEVED?

A. Failure to achieve the proposed collection outcomes shall result in sanctions determined as follows: (1) a dollar amount equivalent to 15 basis points ROE reduction for noncompliance with a single improvement goal; (2) a dollar amount equivalent to 25 basis points ROE reduction for noncompliance with multiple improvement goals. The sanction does not result in a change to LGE/KU's authorized ROE but is calculated to produce a revenue reduction that is equivalent to the specified ROE reduction. Any ROE penalty, as specified herein, would be calculated for the calendar year following a noncompliance event, whereby the specified ROE penalty will be applied to the equity rate base as approved in LGE/KU's most recent base rate case and grossed-up for income taxes (revenue requirement). Any resulting penalty amount will be deferred as a regulatory liability to be refunded to customers in LGE/KU's next base rate case.

Q. PLEASE EXPLAIN WHY THE PROPOSED PERFORMANCE-BASED OUTCOMES METRICS SHOULD BE ADOPTED IN THIS RATE PROCEEDING.

A. Achieving the outcome metrics I have identified above has a variety of impacts on the utility. First, achieving the outcome metrics has an impact on LGE/KU's cost-of-service. For example, to the extent that the needs of low-income customers are met (as measured by the recommended metrics):

- A number of business risks facing the Company are reduced. The risk of a spike in low-income nonpayment attributable to a fly-up in fuel prices is reduced. Similarly the risk of a spike in low-income nonpayment attributable to extreme weather, whether those extreme involve cold weather or hot weather, is also reduced. Reducing these risks helps enhance revenue as well as helps minimize costs.

- The rate of disconnections are reduced. Reducing the rate of disconnections not only reduces the costs associated with collection activities, but helps to preserve future revenue streams from customers who are not removed from the system.

- Both the dollar level of arrears and the age of arrears are reduced. This reduction will, by definition, reduce costs to the Company. Whether fewer dollars are in arrears, or whether dollars remain unpaid for fewer days, the Company will experience a reduced working capital requirement.

Second, by adequately meeting the needs of low-income customers, the Company improves the efficiency of its customer service operations. For example, by reducing the collection resources that are directed toward trying to collect outstanding balances from customers who are *not* going to pay, reducing the rate of low-income nonpayment disconnections allows LGE/KU to redirect those collection resources toward customers that *are* able to pay (because they can afford to pay). Moreover, the degree to which

deferred payment arrangements are successfully completed is enhanced (thus enhancing revenue and decreasing expenses).

Third, the combined impacts of reduced costs, enhanced revenues, reduced risks, and more efficient operations, can all be viewed as an opportunity cost to the Company. To the extent that the Company reduces its costs and enhances its revenues, it earns a return that would have been foregone in the absence of an adequate treatment of low-income customers (as measured by achieving the outcome metrics I recommend above).

Part 6. The Need for Expanded Low-Income Energy Efficiency Programs.

Q. PLEASE DESCRIBE THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY.

A. In this section of my testimony, I explain why LGE/KU should be directed to incorporate expanded investment in low-income energy efficiency as a part of this proceeding. Not only will expanded energy efficiency deliver distinct affordability benefits to low-income customers, but such investment will also have the impact of controlling costs that would otherwise contribute to yet future additional rate increases.

A. The Social and Financial Benefits of Low-Income Efficiency Investments.

Q. DOES THE LACK OF AFFORDABLE ELECTRICITY PRESENT A HEALTH AND SAFETY ISSUE TO THE LGE/KU SERVICE TERRITORY?

A. Yes. Innumerable studies have found that low-income households, along with persons of color, are disproportionately exposed to pollution.[108] One of every four American children – including those in Jefferson, Bullitt, and Oldham Counties - lives in an area that regularly exceeds federal ozone standards. Half the pediatric asthma population --two million children - live in these areas. African American and Latino children, however, are three to five times more likely than White children to die from asthma. While nearly 70 percent of Hispanic, and more than 60 percent of African American children live in areas that exceed the federal ozone standard, only 50 percent of White children do.[109]

Moreover climate change threatens minorities with greater health risks attributable to heat waves. By the Year 2100, extreme heat waves that historically occurred once every 20 years are predicted to occur every other year.[110] Blacks are twice as likely as Whites to die from a heat wave.[111]

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[108] James Lester (2001). Environmental Justice in the Unites States, Myths and Realities.

[109] Alice Kaswan, (2012) Domestic Climate Change Adaptation and Equity, 42 Envtl L. Rep. News & Analysis 11125.

[110] Kaswan 2012

[111] Cong. Black Caucus Found. (2004), African Americans and Climate Change: An Unequal Burden.

The unaffordability of electricity contributes to these dangers to the extent that it prevents households from being able to access adequate cooling and air conditioning for their housing. One consistent piece of advice given to people on how to avoid the adverse impacts of poor outdoor air quality is to "remain indoors."

> This advice is based on the assumption that indoor air quality is superior to outdoor air quality. But this means that people whose indoor air quality is compromised may be more susceptible to adverse health effects from indoor air than the population at large. Low-income people and African-Americans are much more likely to be exposed to, and therefore suffer the effects of poor indoor air quality than the general population. So the advice to stay indoors might be good for the majority of people but bad for a minority: the same minority that tends to suffer other disparate environmental impacts. This problem goes to the heart of why green affordable housing is a matter of environmental justice.[112]

Q. HAVE YOU HAD OCCASION TO CONSIDER THE IMPACTS OF EXTREME HEAT ON VULNERABLE POPULATIONS?

A. Yes. A recent publication by the federal LIHEAP office reports that extreme heat kills more Americans than any other weather-related event in an average year.[113] The LIHEAP office tells us that an average of approximately 700 deaths and 9,200 hospitalizations occur a year because of extreme heat.[114] In addition to the fatality risk, extreme heat can cause heat stroke and cardiovascular and respiratory disorders. These

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[112] Kevin Foy (Fall 2012). Homes is where the Health Is: The Convergency of Environmental Justice, Affordable Housing, and Green Building, 30 Pace Envtl L. Rev. 1.

[113] January Contreras, "LIHEAP and Extreme Heat: How the Low-Income Home Energy Assistance Program is assisting families with staying safe, healthy, and prepared for extreme heat events," April 22, 2022, *available at* https://www.acf.hhs.gov/blog/2022/04/liheap-and-extreme-heat (accessed June 15, 2022).

[114] *Id.*

risks are not distributed evenly; the threat of extreme heat disproportionately affects communities of color, lower-income households, older adults, young children, those in poor health, and outdoor workers.

The LIHEAP discussion is well-supported by considerable literature. Studies expect more prolonged and more extreme heat events as a result of climate change. When using different climate models, each comes to the forecast of the worsening of extreme heat events. Regions in the United States can expect to experience extreme heat events that will last 10-20 days longer than the regions have had in the past. A rise in average temperature leads to an increase in extreme heat event severity.[115] As temperature increases, extreme heat events are more likely to occur as record hot temperatures increase average temperature. Research has found that the occurrence and severity of extreme heat can become normal regional temperatures across regions. Exposure to extreme heat can lead to dehydration, heat exhaustion, heatstroke, loss of consciousness, and other medical emergencies. Heatwaves can also exacerbate pre-existing conditions such as cardiovascular disease and respiratory illnesses and have deadly consequences.[116] Youth, seniors, persons with disabilities, and persons with low socioeconomic status and living in isolation, such as the homeless population, are the most vulnerable during extreme heat events.[117]

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[115] Karishma Becha, "The Impact of Extreme Heat on Environmental Justice Communities in California: Assessing Equity in Climate Action Plans" (2020), pp. 11-12, available at https://repository.usfca.edu/capstone/1018/ (accessed June 15, 2022) (internal notes omitted).

[116] *Id.*

[117] *Id.* at 13 (internal notes omitted).

Q. IN ADDITION TO THESE HEALTH AND SAFETY ISSUES, PLEASE EXPLAIN WHY IT WOULD BENEFIT LGE/KU AND THEIR RESIDENTIAL RATEPAYERS TO PURSUE ENERGY EFFICIENCY AND CLEAN ENERGY INVESTMENTS FOR LOW-INCOME HOUSEHOLDS.

A. In my testimony above, I described in detail the relationship between low incomes and payment difficulties facing the Companies' electric customers. I further described in detail how a reduction in electricity bills through the offer of bill credits such as AMP is one strategy that has repeatedly been found to be an effective mechanism to use to improve low-income payment patterns and thus reduce costs to the utility and its ratepayers.

A reduction of bills through the implementation of usage reduction investments is as effective as a reduction in bills through bill credits. The delivery of energy efficiency investments to low-income customers not only yields resource conservation and avoided cost benefits to the Companies, but delivers a broad range of other utility cost reductions as well. Accordingly, low-income energy efficiency programs should be implemented not only as a resource efficiency measure, but also as an important tool in controlling other system-wide utility costs. Avoided costs commonly associated with low-income energy efficiency would include savings such as reduced arrears, reduced working capital, and reduced credit and collection expenses.

Q. HOW CAN ENERGY EFFICIENCY INVESTMENTS APPROPRIATELY TARGETED TO LOW-INCOME CUSTOMERS REDUCE COSTS TO THE COMPANIES?

A. My discussion here is not intended to be an exhaustive list of how energy efficiency investments targeted to low-income customers might reduce costs to Companies. Instead, this list is intended to be illustrative.

- If a low-income customer has an arrearage, the total "asked to pay" amount includes the unpaid arrears *plus* the bill for current service. To the extent that energy efficiency investments reduce the bill for current service, more of the total payment by the customer will be available to apply to the retirement of arrears. By reducing the level of arrears, not only does the Company reduce its working capital requirement, it reduces its risk of bad debt (in the event that some portion of the arrears ultimately goes unpaid).

- To the extent that a customer has been unsuccessful on a payment plan, the arrearages subject to that payment plan are placed in jeopardy of ultimate nonpayment. By reducing the asked-to-pay amount for current service, particularly on a seasonal basis, given a constant payment, the ability of a low-income customer to successfully complete a payment plan increases. As a result, the Company would reduce both its working capital requirement and its risk of loss due to bad debt.

- To the extent that the Company disconnects service to a low-income customer for nonpayment, reducing that customer's bills would make the reconnection of service more affordable. As a result, it would not only reduce its risk of loss due to bad debt, but it would also preserve its future stream of revenue from having the customer back on its system, and more likely to remain, with a more affordable bill.

Q. WHY IS WORKING CAPITAL A PARTICULARLY IMPORTANT EXPENSE REDUCTION TO CONSIDER IN ASSESSING THE IMPACT OF

APPROPRIATELY-DESIGNED, TARGETED, AND FUNDED ENERGY EFFICIENCY INVESTMENTS?

A. Working capital reductions are important to consider for several reasons.

- First, working capital reductions arise even if arrearages are not eliminated entirely. If a low-income customer carries an arrearage of $100 rather than $300, there is a working capital reduction, all else equal.

- Second, working capital reductions occur if bill payment is accelerated, even if the *total* dollars of payment over time is the same. A low-income customer with a 90-day arrears results in a lower working capital expense than a low-income customer with a 30-day arrears, all else equal.

- Third, since working capital is a capital item, working capital carries an equity return with it. The impact of reducing either the dollar level of arrears (*i.e*, increasing the completeness of payment) or the number of days before a bill is paid (*i.e.*, increasing the timeliness of payment), is more than the working capital cost reduction itself. There is a return associated with it as well.

- Fourth, there will be a tax impact associated with the equity portion of the return on working capital. As a result, every one-dollar reduction in working capital generates more than a one-dollar reduction in rates.

To the extent that an appropriately designed, targeted, and funded low-income program has the impact of reducing the number of low-income customers in arrears, the dollars of arrears which low-income customers carry, or the length of time that arrearages remain outstanding, there is a working capital reduction that redounds to the benefit of ratepayers.

There is a need for robust rate-payer funded energy efficiency programs directed toward low-income customers because, in the absence of such programs, low-income customers will be excluded from deriving benefits from energy efficiency investments provided through the utilities. In addition, the State will be deprived of the benefits derived from

the efficient use of energy by low-income customers. Finally, the utility (and its non-low-income customers) will be deprived of the financial benefits arising from reducing the inefficient use of energy by low-income customers and the corresponding improvement in the affordability of low-income LGE/KU bills.

B. Low-Income Investments in Energy Efficiency without External Assistance.

Q. WOULD LOW-INCOME LGE/KU CUSTOMERS BE EXCLUDED FROM INVESTING IN ENERGY EFFICIENCY IN THE ABSENCE OF A ROBUST UTILITY LOW-INCOME PROGRAM?

A. Yes. In my discussion below, I explain why low-income customers have a need for external assistance in making energy efficiency investments. Primarily, low-income households cannot generate substantial energy savings through changes in day-to-day behavior or decision-making. What is necessary, instead, is a financial investment in improving the housing infrastructure and appliances used by low-income households. Due to market barriers, that present particular investment impediments, low-income households are prevented from investing in energy efficiency. These market barriers impact low-income households differently, and more extensively, than residential households generally. These market barriers impede the availability of energy efficiency to low-income customers, even if such efficiency would be an effective, and cost-effective mechanism to use in controlling home energy costs. These market barriers prevent low-income customers from realizing the bill reductions generated by energy efficiency without outside assistance.

Q. PLEASE EXPLAIN WHAT YOU MEAN WHEN YOU DISCUSS "MARKET BARRIERS" BELOW.

A. I will engage in an extensive discussion of "market barriers" in my testimony below. For these purposes, I define a "market barrier" as a market condition which stands as an obstacle to the implementation of cost-effective energy efficiency investments. A commonly recognized "market barrier," for example, is inadequate knowledge. Consumers may not make efficiency investments because they do not understand the economics of the investment return. In particular, in my testimony below, I will further discuss "low-income market barriers."[118] These are market barriers that either uniquely, or disproportionately, impede low-income households from investing in cost-effective energy efficiency. One such low-income market barrier that I will discuss below is the lack of investment capital for low-income customers. As I will discuss, it makes no difference if an energy efficiency investment is "cost-effective" is the household has insufficient money to make the investment in the first instance.

Q. WHY IS IT IMPORTANT TO UNDERSTAND WHAT CAUSES EXCLUSION OF LOW-INCOME CUSTOMERS FROM ENERGY EFFICIENCY PROGRAMS?

A. In my testimony, I consider two types of impediments that prevent low-income investment in energy efficiency: (1) the housing-related characteristics of the people who live in the LGE/KU service territories; and (2) the cost characteristics of housing in the LGE/KU service territory. Through a review of these various housing characteristics in

[118] Throughout my testimony below, unless I note explicitly to the contrary, I will use the phrases "low-income" and "income-qualified" interchangeably.

the LGE/KU service territory, it is possible to gain insight into the need for low-income energy efficiency investments, and into the capacity of low-income residents to generate those investments without outside assistance. A review of the impediments to low-income investments also provides insights into what LGE/KU programs will be effective, or ineffective, in overcoming those impediments.

Q. IS THERE A WAY TO ASSESS THE NEED FOR INVESTMENT IN ENERGY EFFICIENCY MEASURES FOR LOW-INCOME HOUSEHOLDS?

A. Yes. As in my testimony above, I begin with the same zip codes comprising the LGE/KU electric service territory that I describe earlier in my testimony. Of those, I selected the 40 zip codes with the highest percentage of population with income at or below 200% FPL. Nearly two out of every five (39%) of housing units within those zip codes were built before 1970, the year when building codes were first adopted.[119] In contrast, fewer than 30% of the housing units in the LGE/KU service territory as a whole were built before 1970.

In addition, looking at the income characteristics of households in the LGE/KU service territory demonstrates the need for utility investments in energy efficiency. The prevalence of the *very* poor is much higher in these zip codes. While 35% of the households have income less than $20,000 in the 50 zip codes selected above, only 16% of households do in the LGE/KU service territory overall.[120] Similarly, while the average

[119] American Community Survey (5-year data), Table B25034 (2023).

[120] American Community Survey (5-year data), Table 19001 (2023).

First Quintile income[121] in the selected zip codes is $7,860,[122] the average First Quintile income is $14,227 in the LGE/KU service territory as a whole.[123] Each of these characteristics demonstrates a barrier that substantially impedes low-income households from investing in clean energy and energy efficiency measures.

Q. WHY IS AN ASSESSMENT OF THE FINANCIAL CHARACTERISTICS OF HOUSING IN THE LGE/KU SERVICE TERRITORY NECESSARY TO ASSESS THE NEED FOR LOW-INCOME EFFICIENCY INVESTMENTS?

A. As home energy prices increase as a percentage of income, low-income households have fewer available discretionary resources to invest in measures that could reduce their household energy expenditures. The discussion below examines the stress on household income by focusing on total shelter costs. Rising home energy prices are a major factor in driving overall shelter prices upwards in the LGE/KU service territory and creates a barrier to the implementation of energy efficiency measures as a strategy to control those costs. This impact is a particular problem for the lowest income households.

One impact of the high home energy bills facing low-income households in the LGE/KU service territory is the stress that such bills place on household budgets. One common principle in reviewing basic household budgets is that total shelter costs should

[121] The definition of income by quintiles was described above.

[122] Only 10 of the 40 low-income zip codes had sufficient sample size for the Census Bureau to report incomes by quintile.

[123] American Community Survey (5-year data), Table B19081 (2023).

represent no more than 30% of a household's income.[124] A household devoting more than 30% of income toward shelter costs is considered to be over-extended. The affordability of housing under federal programs such as the Low-Income Housing Tax Credit and Home Investment Partnership Program ("HOME") programs, for example, is determined by reference to the 30% shelter burden figure. In addition, programs such as the Section 8 subsidized housing program, as well as public housing, are governed by the principle that total shelter costs should not exceed 30% of income. In assessing shelter burdens under the U.S. Department of Housing and Urban Development's ("HUD") Comprehensive Housing Affordability Strategy planning process, "excess" shelter burdens are also defined as those over 30% of income.

The U.S. Census Bureau reports shelter burdens, disaggregated by rental burdens and homeowner burdens. In the LGE/KU service territory, more than 70% of all *renters* with income less than $20,000 a year have rent burdens exceeding 30% of income. Indeed, 62% of renters with income less than $20,000 have rent burdens exceeding 40% of income. By the time annual incomes increase to $20,000 – $35,000, rent burdens drop dramatically (to 38% of renters with rent burdens exceeding 40%), even though they remain high.[125]

Similar to rental burdens, which sharply decrease when income exceeds $20,000, homeowner burdens do as well. Low-income *homeowners* served by LGE/KU are

[124] "Shelter costs" include rent or mortgage payments plus all utilities (except telephones). Internet service is not considered to be a "utility."

[125] American Community Survey (5-year data), Table B25074 (2023).

somewhat, but not much, better off. In the LGE/KU service territory, 68% of homeowners with income less than $10,000 have a shelter burden of 30% or more, while 36% of homeowners with income between $20,000 and $35,000 do.[126] To the extent that shelter costs increase faster than income does, this situation will continue to get worse.

Q. HOW DO THESE TOTAL SHELTER BURDENS RELATE TO HOME ENERGY EFFICIENCY?

A. High shelter burdens relate to energy efficiency in two ways. First, the high shelter costs, themselves, present an impediment to low-income households being able to invest in energy efficiency measures. If the household struggles to meet its day-to-day bills, it does not have the discretionary income to invest in energy savings measures; even if those measures are "cost-effective" over a reasonable period of time. In addition, as home energy takes up an increasing proportion of total shelter costs, there is less money "left" to pay for the housing component of total shelter costs. As a result, households in the LGE/KU service territory are either forced into increasingly lower-priced (and presumptively lower quality) housing, or those households face ongoing bill payment problems attributable to the mismatch between household resources and household expenses. In either case, the very housing cost characteristics that cause the need to improve energy efficiency to reduce bills is also the characteristic that makes it less likely that such investments in energy efficiency can occur. This impediment to the ability of low-income households to invest in energy efficiency should be of concern to energy

[126] American Community Survey (5- year data), Table B25095 (2023).

stakeholders because it is the energy bills, themselves, that are contributing to the budget squeeze imposed by shelter costs.

Q. DOES A HOUSEHOLD'S LOW-INCOME STATUS IMPEDE THEIR ABILITY TO INVEST IN ENERGY EFFICIENCY?

A. Yes. If a household lacks the funds to invest in efficiency improvements, the cost-effectiveness of those investments—even in the medium term—becomes irrelevant. The fact that these households are *low-income* households is a factor which, unto itself, presents additional market barriers. One consequence of the income status of many LGE/KU customers involves the inability of these households to afford even cost-effective energy efficiency improvements. As might be expected, households with annual incomes at or below $10,000 or $15,000 tend to have extremely low liquidity. The payback period for any particular energy efficiency measure becomes irrelevant if the household does not have the investment capital with which to begin. I documented the significant extent of low-incomes in the LGE/KU service territories in my testimony above.

For our purposes here, the importance of these low income lies in the extent to which they impede investments in appliance replacements. It is often cost-effective for a consumer to spend more money for a more energy efficient new appliance. For example, if a less efficient refrigerator costs $600 and the more efficient refrigerator costs $800, it may well be cost-effective for the customer to pay the $200 difference to purchase the more efficient appliance. As I demonstrated in detail earlier in my testimony, however, a reliance on such purchase decisions will, by definition, exclude households that are not in the market to purchase a new appliance. It is unlikely many low-income households have recently spent $600 for a new refrigerator.

Additionally, low-income households tend to have very high implicit discount rates (also sometimes known as hurdle rates or internal rates of return). In a report for the Electric Power Research Institute, Cambridge Systematics found that the implicit discount rate for low-income households ranged up to the 80 – 90 percent level. This translates into a payback period of roughly one year. Requiring efficiency investments to be justified by a hurdle rate of 90% or more will almost entirely exclude low-income households from the energy efficiency market.

Q. WHAT DO YOU CONCLUDE AND RECOMMEND?

A. First, I conclude that low-income households face substantial market barriers which impede them from making investments in energy efficiency measures out of their own resources. If energy efficiency measures are to be pursued in low-income homes, they must be pursued through direct-install investments by third parties. They cannot and will not be pursued by low-income households in the absence of an appropriately designed, targeted, and funded LGE/KU low-income program. Given the harms to LGE/KU from ***not*** having such investments made, and the benefits to LGE/KU from pursuing such low-income investment, I conclude that LGE/KU should substantially increase its spending on low-income energy efficiency investments.

More specifically, KU/LGE reports that it has a 2025 full-year WeCare budget of $4.480 million, sufficient to provide service to 513 low-income households. The 2025 budget is functionally identical to the 2024 WeCare spending of $4.486 million, serving

513 households.[127] The Companies report that they do "not plan to file for a new DSM/EE Plan at this time."[128]

The 2024 spending on WeCare, as well as the number of households being served, fall well short of what LGE/KY committed to in their 2024-2030 Demand-Side Management and Energy Efficiency Program Plan.[129] The "projected annual participation goals" provided to the Commission in that proceeding reported an expected annual participation (for the two utilities combined) of 4,590 (not including the whole-building multifamily program component). The annual participation by year included in the LGE/KY filing I Docket 2022-0042 is set forth in the Table below.

Table 17. Income-Qualified Solutions Participation Goals (Docket 2022-0042, Exhibit JB-1, Table 3-1, page 27)

WeCare	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
LG&E	2,295	2,295	2,295	2,295	2,295	2,295	2,295	16,065
KU	2,295	2,295	2,295	2,295	2,295	2,295	2,295	16,065
Total	4,590	4,590	4,590	4,590	4,590	4,590	4,590	32.130

The total "Income-Qualified Solutions Annual Budget" presented by LGE/KU in that prior docket is set forth in the Table below.

[127] KU JI 1-151.

[128] *Id.*

[129] Case No 2022-00402, *Electronic Joint Application of Kentucky Utilities Company and Louisville Gas and Electric Company for Certificates of Public Convenience and Necessity and Site Compatibility Certificates and Approval of a Demand Side Management Plan and Approval of Fossil Fuel-Fired Generating Unit Retirements*, Direct Testimony of John Bevington Director, Business and Economic Development Kentucky Utilities Company and Louisville Gas and Electric Company, Exhibit JB-1, at 27, 29 (Dec. 15, 2022).

Table 18. Income-Qualified Solutions Participation Goals (Docket 2022-0042, Exhibit JB-1, Table 3-3, page 29)								
Program Costs ($000s)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
Administration	401	414	426	439	451	464	478	3,075
Implementation	9,268	9,418	9,423	9,427	9,432	9,437	9,442	65,847
Incentives	0	0	0	0	0	0	0	0
Miscellaneous	390	240	390	240	240	240	240	1,980
Total	10,060	10,072	10,239	10,106	10,123	10,141	10,160	70,902

Even considering the fact that the budget in the Table above includes the multi-family commitment, it is clear that LGE/KU are falling well short both of the spending and of the number of households served.

Given the need for additional low-income energy efficiency investments, and the benefits to the utility as well as to low-income customers from pursuing such investments, I recommend that, at a minimum, the Companies increase their annual WeCare spending to serve the annual number of households included in their most recent Energy Efficiency Plan (4,590). To the extent that increased outreach is required to achieve these objectives, WeCare should be incorporated into the outreach proposals I recommend above. To the extent that actual spending falls short of the budgeted expenditures, that excess budget should be rolled over into the next fiscal year.

In fact, as I establish above, 36% of the total population in the LGE/KU service territory lives with income at or below 200% of Federal Poverty Level. Applying that percentage to the total 839,686 residential customers reported by LGE/KU as of December 2024, the Companies would have more than 302,000 income-eligible households in their service territories. Even if LGE/KU served 100% of the 32,120

households the Companies identified in their 2022 docket, they would be serving a small fraction of the income-eligible population. In addition to meeting the annual production goals set forth in their 2022 filing, I recommend that within twelve months of a final order in this proceeding, working in collaboration and consultation with the Joint Intervenors and other stakeholders, LGE/KU shall file an amended WeCare plan with the Commission, with an amended budget, designed to serve no fewer than 50% of the eligible population over no more than a 15 year period.

Q. DOES YOUR DISCUSSION OF THE INABILITY OF LOW-INCOME HOUSEHOLDS TO INVEST IN ENERGY EFFICIENCY MEASURES HAVE IMPLICATIONS FOR THE PROPOSED LGE/KY RATE DESIGN?

A. Yes. The Company proposes substantial increases in the Basic Service Charge for residential customers. Both LGE and KU propose substantial increases in the Basic Service Charge for residential customers. According to LGE, it's Basic Service Charge will increase from $0.45/day to $0.52/day for electricity, and from $0.65/day to $0.81 for natural gas. [130] KU proposes to increase its Basic Service Charge from $0.53/day to $0.64/day.[131]The Companies state that they have not projected the extent to which the increases in the Basic Service Charge as proposed in this proceeding will increase the proportion of a customer's total bill constituting an irreducible charge.[132]

When the Companies increase their fixed charges, they make it even more difficult for low-income customers to improve the affordability of their bills by reducing

[130] See, Schedules M-2.3-E and M-2.3-G respectively.
[131] Schedule M-2.3.
[132] KU JI 1-9.b.

their consumption. I establish several important facts in this regard in my discussion above. First, bills are unaffordable at current rates, and will become more unaffordable given proposed rates. Second, increases in bills have consistently outstripped increases in the annual incomes of low-income customers. Third, low-income customers have a demonstrably difficult time in paying their bills. This difficulty is evidence not only by the failure to make full and timely payments, but also by the tradeoffs which low-income households are forced to make in order to make their bill payments.

In addition, I have established that the Companies low-income customers are often forced to take desperate, and dangerous, steps to reduce the home heating bills when they cannot afford to pay those bills. These impacts can be seen in Kentucky in recent data from the Household Pulse Survey discussed in detail above. The more desperate a low-income customer becomes, and thus more willing to take such dangerous actions, the more LGE/KU responds by charging ever higher bills by increasing the unavoidable fixed Basic Service Charge.

Finally, layered on top of all of the above are the market barriers that impede, if not completely prevent, low-income households from pursuing energy efficiency investments. The proposal by the Companies to increased the unavoidable Fixed Basic Service Charge exacerbates those barriers, making it ever more difficult for low-income households to address their inability-to-pay.

Based on the above, I conclude that the proposed increases in the electric and natural gas fixed Basic Service Charges are unjust and unreasonable. The proposed

increases should be denied and the fixed Basic Service Charge should be retained at their existing levels.

Q. DOES THIS COMPLETE YOUR DIRECT TESTIMONY?

A. Yes, it does.

Exhibit RDC-1
Roger Colton
Fisher, Sheehan & Colton
Public Finance and General Economics
Belmont, MA

* *

EDUCATION:

J.D. (Order of the Coif), University of Florida (1981) (licensed in Iowa)

M.A. (Regulatory Economics), McGregor School, Antioch University (1993)

B.A. Iowa State University (1975) (journalism, political science, speech)

PROFESSIONAL EXPERIENCE:

Fisher, Sheehan and Colton, Public Finance and General Economics: 1985 – present.

As a co-founder of this economics consulting partnership, Colton provides services in a variety of areas, including regulatory economics, poverty law and economics, public benefits, fair housing, community development, energy efficiency, utility law and economics (energy, telecommunications, water/sewer), government budgeting, and planning and zoning.

Colton has testified in state and federal courts in the United States and Canada, as well as before regulatory and legislative bodies in more than forty (40) states. He is particularly noted for creative program design and implementation within tight budget constraints.

PROFESSIONAL AFFILIATIONS:

Past Chair:	Belmont Zoning By-law Review Working Committee (climate change)
Member:	Board of Directors, Massachusetts Rivers Alliance
Columnist:	Belmont Citizen-Herald
Producer:	Belmont Media Center: BMC Podcast Network
Host:	Belmont Media Center: Belmont Journal
Member:	Belmont Town Meeting
Vice-chair:	Belmont Light General Manager Screening Committee
Past Chair:	Belmont Goes Solar

Coordinator: BelmontBudget.org (Belmont's Community Budget Forum)
Coordinator: Belmont Affordable Shelter Fund (BASF)
Past Chair: Belmont Solar Initiative Oversight Committee
Past Member: City of Detroit Blue Ribbon Panel on Water Affordability
Past Chair: Belmont Energy Committee
Member: Massachusetts Municipal Energy Group (Mass Municipal Association)
Past Chair: Housing Work Group, Belmont (MA) Comprehensive Planning Process
Past Chair: Board of Directors, Belmont Housing Trust, Inc.
Past Chair: Waverley Square Fire Station Re-use Study Committee (Belmont MA)
Past Member: Belmont (MA) Energy and Facilities Work Group
Past Member: Belmont (MA) Uplands Advisory Committee
Past Member: Advisory Board: Fair Housing Center of Greater Boston.
Past Chair: Fair Housing Committee, Town of Belmont (MA)
Past Member: Aggregation Advisory Committee, New York State Energy Research and Development Authority.
Past Member: Board of Directors, Vermont Energy Investment Corporation.
Past Member: Board of Directors, National Fuel Funds Network
Past Member: Board of Directors, Affordable Comfort, Inc.
Past Member: National Advisory Committee, U.S. Department of Health and Human Services, Administration for Children and Families, Performance Goals for Low-Income Home Energy Assistance.
Past Member: Editorial Advisory Board, International Library, *Public Utility Law Anthology*.
Past Member: ASHRAE Guidelines Committee, GPC-8, *Energy Cost Allocation of Comfort HVAC Systems for Multiple Occupancy Buildings*
Past Member: National Advisory Committee, U.S. Department of Housing and Urban Development, Calculation of Utility Allowances for Public Housing.
Past Member: National Advisory Board: Energy Financing Alternatives for Subsidized Housing, New York State Energy Research and Development Authority.

PROFESSIONAL ASSOCIATIONS:

National Association of Housing and Redevelopment Officials (NAHRO)
National Society of Newspaper Columnists (NSNC)
Association for Enterprise Opportunity (AEO)
Iowa State Bar Association
Energy Bar Association
Association for Institutional Thought (AFIT)
Association for Evolutionary Economics (AEE)
Society for the Study of Social Problems (SSSO)

Association for Social Economics

BOOKS

Colton, *et al.,* ***Access to Utility Service***, National Consumer Law Center: Boston (4th edition 2008).

Colton, *et al.*, ***Tenants' Rights to Utility Service***, National Consumer Law Center: Boston (1994).

Colton, ***The Regulation of Rural Electric Cooperatives***, National Consumer Law Center: Boston (1992).

BOOK CHAPTERS

Colton (2018). The equities of efficiency: distributing energy usage reduction dollars, Chapter in Energy Justice: US and International Perspectives (Edited by Raya Salter, Carmen Gonzalez and Elizabeth Ann Kronk Warner), Edward Elgar Publishing (London, England).

JOURNAL PUBLICATIONS

65 publications in industry and academic journals, primarily involving utility regulation and affordable housing. (list available upon request)

TECHNICAL REPORTS

200 technical reports for public-sector and private-sector clients (list available upon request)

JURISDICTIONS IN WHICH EXPERT WITNESS PROVIDED

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5. Rhode Island
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9. Pennsylvania
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11. Virginia
12. North Carolina
13. South Carolina
14. Florida (Federal Court)
15. Alabama
16. Mississippi
17. Tennessee
18. Kentucky
19. Ohio
20. Indiana
21. Michigan
22. Wisconsin
23. Illinois
24. Minnesota
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27. Kansas
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3. Manitoba
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VERIFICATION

The undersigned, Roger D. Colton, being first duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing testimony and that the information contained therein is true and correct to the best of his information, knowledge, and belief, after reasonable inquiry.

Subscribed and sworn to before me by Nedal Azzam this 29 day of August, 2025.

Notary Public

My commission expires: 11/01/2030

NEDAL A. AZZAM
Notary Public
Commonwealth of Massachusetts
My Commission Expires November 01, 2030