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LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
AND LOUISVILLE/JEFFERSON COUNTY METRO GOVERNMENT
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1. Refer to the Direct Testimony of Richard Bunch (Bunch Testimony), page 11, line 1 through page 12, line 2, which discusses whether Kentucky Utilities Company (KU) and Louisville Gas and Electric Company (LG&E) (jointly KU/LG&E) comply with manufacturer recommendations when choosing LED luminaires to replace HID fixtures. Explain whether a municipality would be able to choose a different LED luminaire that more aligns with manufacturer recommendations. If not confirmed, explain.

RESPONSE: The Companies state in testimony and exhibits that their HID-LED conversions are “recommended.” It is not clear to what extent the Companies invite or encourage customers to request changes.

In Bunch’s experience, customers seldom have the technical expertise and time to meaningfully review technical standards that utilities apply in conversion projects. They defer to the greater expertise of utility staff. Customers generally review costs and payback estimates for conversion projects but do not feel qualified to review technical standards. Therefore, it is critical that the utility should either adhere to manufacturer standards, or develop their own, well-documented standards. The Companies, in this case, have presented no evidence or argument as to why they diverge from manufacturer recommendations.

If the Commission orders, or the Companies adopt, Bunch’s recommendation that the Companies cease maintaining HID fixtures with economical LED equivalents, and instead convert them to LED during maintenance visits, then the conversions will

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presumably take place without any advance check-off from the customers. In that case it becomes even more important that the Companies use technically sound conversion standards.

Bunch continues to recommend that the Commission order the Companies either to adhere to manufacturer conversion recommendations or develop and document their own technical standards.

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2. Refer to the Bunch Testimony, page 15, lines 4–6. Provide documented support that maintenance visits for HID fixtures are more frequent than LED maintenance visits.

RESPONSE: **Bunch has no reason to doubt the substantial projected maintenance savings shown in the Companies' response to LFUCG-1-5, pages 76-81. These projections appear to me to be consistent with savings realized by avoiding re-lamping visits to HID fixtures, which in most cases are necessary every six years. LED luminaires, in contrast, should need no component replacements until they have been in service at least 100,000 hours (25 years).**

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3. Refer to the Bunch Testimony, page 29, lines 3–6, which states that customers are dissatisfied with respect to streetlight outages. Explain what this statement is based on and whether customers only refers to LFUCG and Louisville Metro or if it includes other customers.

RESPONSE: The dissatisfied customers that Bunch referred to in his direct testimony are Louisville Metro and LFUCG. The statement is based on extensive conversations with and documentation from their representatives, the substance of which is represented in Bunch's direct testimony.

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4. Refer to the Bunch Testimony, pages 33–34.
 - a. Provide the other utilities for which Mr. Bunch based his assumptions.
 - b. Provide any published reports that support Mr. Bunch's outage assumptions.

RESPONSE:

- a. **DTE Energy and Consumers Energy, both serving the lower peninsula of Michigan.**
- b. **Please see previously filed Bunch Exhibits 3 and 4 for DTE, and Exhibit Bunch 14 for outage data reported by Consumers Energy.**

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5. Refer to the Bunch Testimony, pages 38–39. Provided any documented studies for the state of Kentucky supporting the assertion that outages occur long before they are reported.

RESPONSE: Bunch is not aware of any such studies specific to the state of Kentucky. The testimony is supported by the peer-reviewed academic study Bunch provided as Exhibit 6. The study examined how long it took for the public to report streetlight outages using the municipality's 311 system, similar to the 311 systems used in Kentucky.

It is difficult to prove how long an outage started before it was reported, without intentionally allowing outages to go unaddressed, as in the Boston study, to see how long it takes for the public to report them. However, patrol-and-fix activities, by taking a snapshot of the operating condition of a subset of lights at a given moment, offer a useful contrast to the pace of outage reporting by the public.

DTE Energy, cited in Bunch's direct testimony, found that in 2020 and 2021 the average outage rate identified by its patrol-and-fix practice was 4.1% and 4.0%, respectively. These percentages can be interpreted as a snapshot of the average percentage of lights out at any given time. With much fewer LEDs in service, and older lights in general, it is likely that KU/LG&E have a higher instantaneous outage rate, but for the purpose of conservative comparison Bunch assumes the same rate as DTE. 4% of

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KU/LG&E's fleet would be 10,455 lights out of service at any given time. We also know that KU/LG&E reported an average of 31,620 outage per year (including patrol-and-fix), for a maximum rate of 86.6 publicly reported outages per day. This rate is a maximum because the raw numbers include KU/LG&E's patrol-and-fix outage numbers in addition to public reports. We can then ask how long it would take KU/LG&E customers to report 10,455 "instantaneous" outages at a rate of 86.6 reports per day. The answer is 121 days, or an average time between outage onset and report of 60.5 days: two months. While Bunch makes generous assumptions that likely underestimate the reporting delay, even if the actual reporting delay in Kentucky is half that for DTE territory in Michigan, it is far longer than the 2-3 days the Companies say it takes them to respond to a reported outage. This supports Bunch's contention that focusing on time of response to outage reports is akin to focusing on the tip of the iceberg, and misses the much larger problem lying beneath – the much greater period of time between actual outage onset and the utility being notified.

The research Bunch cite, and the grounded estimate he derived above, illustrate that relying on the public to tell the utility when its equipment is not working is highly ineffective and deprives customers of a substantial amount of lighting service they are paying for. In Bunch's direct testimony, he cites the benefits of networked lighting controls as a cost-effective method for the utility to monitor and maintain equipment itself. Networked controls are much more expensive to retrofit to LED luminaires, so it is

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imperative to integrate them with LEDs being installed today. Thus, he recommends that the Commission order the Companies to propose a networked lighting tariff with its next general rate case. The Commission should also order the Companies to compare the costs and benefits of networked controls to instituting patrol-and-fix at least four times per year per light.

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6. Refer to the Bunch Testimony, page 40, lines 16–22, which states that the Commission should impose standards for timely restoration and for bill credits that hold KU/LG&E accountable for quick reaction to reported outages and establish incentives to prevent outages altogether through the use of reliable equipment, preventive maintenance, and to identify outages quickly. Provide detailed examples of such standards and incentives and identify any utilities that are subject to similar standards and incentives.

RESPONSE: The most common restoration standard of which Bunch is aware gives the utility thirty days, or a full billing cycle, to restore service after an outage complaint is entered and before bill credits are applied.

The Michigan PSC-approved unmetered lighting tariff of Consumers Energy, which serves the lower peninsula of Michigan outside of the Detroit metro area, reads, in part:

The Company shall replace or repair, at its own cost, Company-Owned Unmetered LED Lighting equipment that is out of service. If, for some reason, the Company is not able to make such restoration within one full billing month from the date the outage is first reported to the Company, the Company shall provide a credit to the customer's bill for unmetered lighting service. The credit shall be applied to the customer's bill beginning with the second full billing month after the outage is reported.

Outages caused by factors beyond the Company's reasonable control as provided for in Rules C1.1, Character of Service, and C3., Emergency Electrical Procedures, of the Company's Electric Rate Schedule are not covered by this policy. Such outages would

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be handled consistent with the particular circumstances and no credit would be made for such outages.¹

While inclusion of these provisions in the tariff is preferable to including them in customer contracts, Bunch does not offer the Consumers tariff language is an example for KU/LG&E to emulate. When metered electricity customers experience on outage, they do not pay for service. There is no principled reason that street light customers should be treated differently and pay for service they do not receive, there is only the practical matter of identifying when outages start and end. Networked technology can resolve that information gap, or if not adopted the Companies can institute more frequent patrol-and-fix practices.

Transferring primary responsibility for monitoring and maintaining the utility's equipment from the customer back to the utility, and establishing financial consequences for service outages, is the fairest and most straightforward way to ensure that the Companies buy reliable equipment, monitor and maintain it well, and respond quickly when failures occur.

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¹ Exhibit Bunch 18, Consumers Energy GUL lighting tariff excerpt

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7. Refer to the Bunch Testimony, page 41, lines 4–8, which states that KU/LG&E could use a sample from a given area to represent the operating condition of all their street lights and adjust the entire bill based on that sample and that customers should be able to submit their own audit figures that KU/LG&E could accept or challenge by conducting their own audit.

a. Explain whether it is likely that street lighting in certain areas could be more reliable than other areas.

b. Explain how KU/LG&E would be able to determine or estimate how long streetlights have not been operating to determine the appropriate adjustment to the bill.

c. Indicate whether the customer should be responsible for an audit conducted by KU/LG&E if they did not accept the customer's audit figures.

d. Identify any utilities that adjust street lighting bills for outages and explain how they determine the appropriate adjustment amount.

RESPONSE:

a) **It is likely that street lighting in certain areas could be more reliable than in other areas. Significant independent variables affecting reliability will include vintage of equipment, luminaire technology, exposure to extreme weather or vegetation and local reliability of the electric distribution system. This potential variability is why proper sampling would be important to establish a credible instantaneous outage rate. However, this sampling challenge also highlights one reason why use of networked technology is a**

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much better solution for monitoring and maintaining equipment. The next-best solution is for the utility to institute system-wide patrol-and-fix practices several times per year, as assessing the whole lighting fleet obviates the need for careful sampling.

One way or another, customers who pay for lighting service should not have to pay for service they do not receive and should not bear primary responsibility for monitoring the Companies' equipment and phoning in status reports. The system is unfair to customers, unrealistic in its expectations and vastly less effective than readily available alternatives. If the Companies do not wish to invest in networked technology to have constant real-time monitoring of their streetlight fleets, then they should implement frequent field monitoring practices per Bunch's suggestion.

b) Using this method, it is not necessary to determine how long any given outage lasts. The bill credit is based on the number of lights found not to be working at a moment in time, and assumes that same number, though not the exact same fixtures, will be in an outage condition until the next sample is taken.

For example, if 4% of sampled lights are found to be out on January 1, it is assumed that 4% of all lights will be out on any other day. Though the utility may restore service to lights identified out on a sampling date, it may reliably be assumed that other lights will go out in the meantime. The customer's bill is automatically reduced by 4% so that they are not forced to pay for service they are not receiving – exactly the billing outcome for any other electrical distribution system customer who experiences an outage. If the utility feels

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that it has improved its outage rate subsequently, it may conduct another audit at any time to reset the outage credit rate.

c) The Companies should respond to a customer audit by visiting lights the customer claims are out to service them. If the Company can document there is no valid outage claim for the fixture, the overall audited outage rate should be adjusted.

d) Both DTE Energy and Consumers Energy, operating in Michigan, will adjust street lighting bills upon customer request if the outage last longer than 30 days and the customer requests an adjustment. The amount of the credit is the amount charged for each light for each day in excess of 30 that the outage continues. In Bunch's view, the 30-day grace period for restoration far exceeds the amount of time needed to respond to the vast majority of outages. Furthermore, little accountability is established because customers must request credits although they generally do not have the data needed to support a credits request - because the reports are made to the utility – and the value of credits for each day of missed service are too small to justify the staff effort.

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8. Refer to the Bunch Testimony, page 46, lines 10–13, which states that the Commission should establish meaningful enforceable tariff provisions that create accountability for KU/LG&E to deliver reliable street lighting service, emphasize prevention over restoration, refund customer costs for outages and provide for financial penalties for repeated or prolonged outages. Provide example tariff language from other jurisdictions that contain such tariff provisions.

RESPONSE: Please refer to Bunch's response to Question 6, above.

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9. Refer to the Bunch Testimony, Exhibit Bunch 2.

a. Provide all the lighting rates that would result from the proposed allocations, assuming that the entire amount of LG&E's proposed electric rate increase were approved by the Commission. Provide this in Excel spreadsheet format with all with all formulas, columns, and rows unprotected and fully accessible.

b. Provide all the lighting rates that would result from the proposed allocations, assuming that the entire amount of KU's proposed electric rate increase were approved by the Commission. Provide this in Excel spreadsheet format with all with all formulas, columns, and rows unprotected and fully accessible.

RESPONSE:

a. **See Exhibit Bunch 19, LG&E unified lighting rates.**

The “Comparable Fixtures” worksheet starts with the Company’s proposed rates for all fixtures, then adjusts for Bunch’s recommended overall RORs for the RLS and LS rates. Bunch adjusted the full current rate for each fixture by Bunch’s recommended change in ROR. The result shows in the “ROR-adjusted fixture rate” columns for RLS and LS fixtures. A more rigorous approach would adjust only the portion of the rate that comprises return on rate base. This approach may result in slight errors in either direction

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for some fixtures but is revenue-neutral for the company and should also be close to cost-neutral for any customer that has a variety of lights installed.

After finding ROR-adjusted rates for each fixture, Bunch lays out an approach for designing and calculating the Unified Unmetered Rate he recommended on his direct testimony. To start, Bunch identifies all HID fixtures that would be cheaper if converted to their currently designated LED equivalent. He bundles together each of these HID fixtures with their cheaper LED equivalent and calculate the combined revenue for that bundle. He then divides by the total number of lamps in that bundle to get a unified monthly rate.

The “Unified rate table” show the key information that might be published with tariffs. Each subsection of the table groups each HID fixture with its LED equivalent. Many LEDs correspond to multiple HID fixtures. Although he has concerns, explained in his direct testimony, that KU may not be using appropriate HID-LED crossover equivalencies, he has not made any changes to the Company’s current equivalencies in this table.

In this scheme, any fixture (HID or LED) with a rate showing in the ‘Unified Rate’ column pays that rate, regardless of whether they have the HID or its LED equivalent installed at any given moment. Per Bunch’s testimony supporting a Unified Rate, whenever the HID needs service, the Company replaces it with the LED equivalent.

Any HID fixture with an entry in the “HID Rate” column pays that rate, because it is lower than the corresponding Unified Rate. The Company should not automatically

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convert such a fixture to HID during routine maintenance, because doing so would raise the customer's cost. The customer may ask the Company to convert the fixture to LED anyways, but will know that doing so will not save them money under current rates.

Using this system, the Company has greater freedom to implement the most efficient conversion plan without worrying about spreading conversions among customers equitably. Any automatic maintenance conversion is financially advantageous to the customer.

The Company also has a financial incentive to accelerate the pace of conversions and deploy more LEDs because the Unified Rate is higher than the LED rate would be. Whenever the Company files a new rate case, however, that rate will "true up" to reflect the updated proportion of HIDs and LEDs in each equivalency bucket. As the fleet gradually converges toward 100% LED, each Unified Rate will converge toward the LED-only cost.

In preparing this exhibit, Bunch utilized the fixture-count data for the base period provided by the Companies in response to PSC 1-56. The revenue identified in Exhibits Bunch 19 and 20 differ slightly from the Companies' revenue. This discrepancy is likely based on a difference in fixture counts.

b. Please see Exhibit Bunch 20, KU Unified Lighting Rates. Explanation of this exhibit is same as for (a) above.

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