COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

ELECTRONIC APPLICATION OF KENTUCKY-AMERICAN WATER COMPANY FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR INSTALLATION OF ADVANCED METERING INFRASTRUCTURE	**)**	**CASE NO. 2025-00240**

DIRECT TESTIMONY OF KRISTA E. CITRON, PE, MBA

July 11, 2025

INTRODUCTION

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

A. My name is Krista Citron. I am a Senior Manager, Operational Performance for American Water Works Service Company, Inc. ("AWWSC"). My business address is 2300 Richmond Road, Lexington, Kentucky 40502.

Q. Have you previously filed testimony at the Kentucky Public Service Commission ("Commission")?

A. Yes. I filed written testimony before the Kentucky Public Service Commission (the "Commission") in Case No. 2021-00090, Case No. 2021-00376, Case No. 2022-00032, Case No. 2022-00328, and Case No. 2023-00030, which were all Kentucky-American Water Company ("KAWC") Qualified Infrastructure Program ("QIP") cases; as well as the KAWC General Rate Case No. 2023-00191. I also provided hearing testimony at the Commission in the June 2, 2021 hearing for QIP Case No. 2021-00090 and in the KAWC General Rate Case No. 2023-00191.

Q. Please state your educational and professional background.

A. I earned my Bachelor of Science in Civil Engineering from Vanderbilt University in Nashville, Tennessee in 2007 and my Master of Science, also in Civil Engineering, from the University of Kentucky in Lexington, Kentucky in 2008. I obtained a Master of Business Administration from Western Kentucky University in 2022. I am a registered Professional Engineer in the states of Kentucky and Tennessee.

In January 2024 I accepted a position with AWWSC as a Senior Business Performance Analyst, overseeing the American Water states of Kentucky, Missouri, and later Tennessee. In October 2024, I was promoted to Senior Manager, Operational Performance, supervising a team of four Senior Business Performance Analysts. I was employed as a Project Manager Engineer/Senior Project Engineer by KAWC from 2017 to 2024, where I oversaw large capital Infrastructure Projects ("IPs"), Recurring Projects ("RPs"), engineering planning studies, and the implementation and first four years of KAW's QIP.

Prior to that, I worked at CDP Engineers in Lexington, Kentucky for 8 years as a Project Engineer, overseeing municipal water, wastewater, and stormwater improvement projects. I also worked with CDP's transportation group on roadway design projects and served as a construction inspector for municipal utility projects. I am an active member of the Kentucky Society of Professional Engineers ("KSPE") and the KY/TN section of the American Water Works Association ("AWWA").

Q. What are your current employment responsibilities?

A. My duties as Senior Manager, Operational Performance include the development and tracking of company-wide Operations metrics, supporting six American Water states and five Centers of Excellence/functions, and overseeing Operations performance action plans. I also support select performance and data analysis processes/studies.

Q. What is the purpose of your direct testimony in this proceeding?

A. The purpose of my testimony is to introduce and support the Cost Benefit Analysis included in the Company's application for a Certificate of Public Convenience and Necessity ("CPCN") for Advanced Metering Infrastructure ("AMI").

Q. Please identify the analysis you are sponsoring and for which you will be providing testimony.

A. Attached to the Application as Exhibit A is a comprehensive document, titled Kentucky-American Water Advanced Metering Infrastructure Plan, which supports KAWC's request for a CPCN for AMI. I am responsible for the Cost Benefit Analysis ("CBA") portion of that Exhibit.

COST BENEFIT ANALYSIS

Q. Did you prepare the Cost Benefit Analysis ("CBA")?

A. I did.

Q. What kind of information did you gather for the CBA?

To prepare the CBA, I collected information on a variety of topics. These included information on KAWC's metering equipment, labor workforce, service orders, and fleet.

- Metering equipment: The Company's installed meter inventory was obtained as of March 12, 2025, with details on meter size, location, brand, and endpoint type. For the purposes of the CBA, only meters 2" and smaller were examined, as these are the meters replaced periodically when testing is required. Current prices for metering equipment and meter installation were also obtained.

- Labor: Current meter reading employee counts, recent service order volumes & times, recent historic wages for meter readers and field service representatives ("FSRs") as well as recent historic labor-related costs and overhead factors were all obtained. Average wages, wage growth rates, and overhead factors were assessed. Details are shown in Figure 19 of Exhibit A.

- Data on the Company's fleet, especially light trucks (used by meter readers and Field Service Representatives ("FSR")), including quantity of vehicles, net book value, average mileage and average miles per gallon. Details are shown in Figure 20 of Exhibit A.

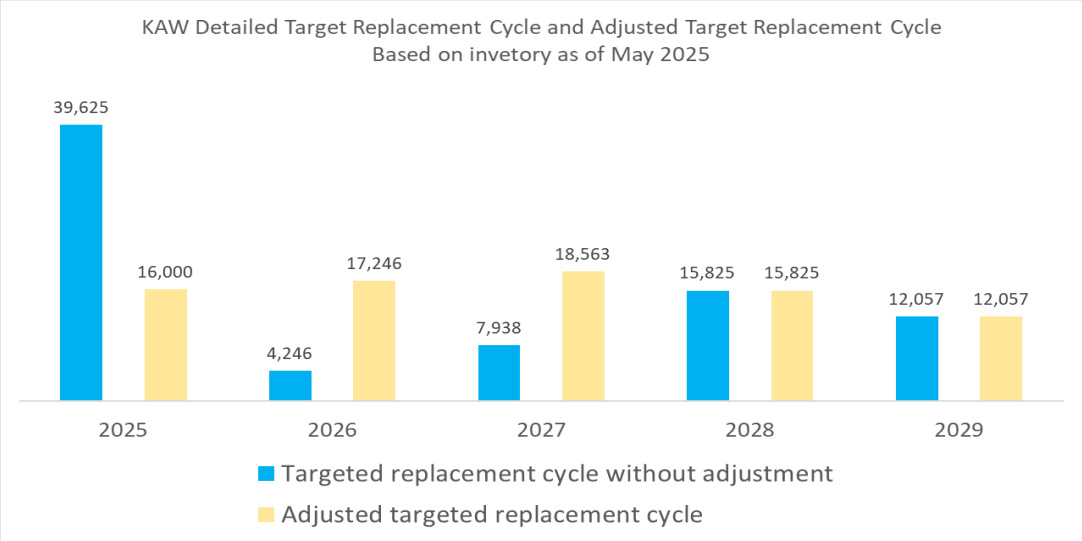
- Material and installation labor pricing: Current material prices were obtained for meters, AMI endpoints, AMR endpoints and lids. Growth rates for the cost of goods were assessed based on the Bureau of Labor Statistics Consumer Price Index for all goods, using a 10-year compound annual growth rate ("CAGR"), ending with the period December 2024, which equaled 2.6%. All starting prices are shown in Figure 17 of Exhibit A.

Q. How did you assess the meter and endpoint replacement quantities and timing for the model?

A. I assessed the quantities and timing by examining the records and through collaboration with the engineering and operations teams.

First, the meter inventory was compared with the Company's targeted cycle for scheduled meter replacement. For just under 98% of the meters examined (the 5/8" and 1" meters), the target is a 10-year cycle. For the remaining 2% of meters (the 1.5" and 2"), a replacement was targeted within 4 years for the purposes of the analysis. In 2023 and 2024, KAWC completed over 47,000 meter replacements using AMR technology. As of January 2025, there were just over 35,000 meters due for periodic meter replacement this year, with an additional 4,000 coming due in 2026.

Based on guidance from the operations teams, this quantity of meter replacement in a single year was deemed to be infeasible, and those meter replacements have been spread out into 2025-2027. Additionally, adjustments were made for additional 5/8" meter replacement work still expected in those years. The quantities before and after adjustment are shown in the chart below. The adjusted quantities were used in the CBA.



Q. How did you determine the lid replacement quantities for the CBA model?

A. Based on consultation with operations, new lids were presumed to be required for AMI meter installations, so one lid is included for each meter in the first replacement cycle.[1] For Automated Meter Reading ("AMR") installations, new lids were expected to be required when Mueller (Hersey) brand meters were being replaced. There are approximately 20,000 of these meters currently installed, and they are expected to be

[1] For the purposes of cost / benefit modeling, a conservative assumption is made that lids are replaced 1 to 1 with applicable meter replacements. In reality, many meter pits in Kentucky are dual set, meaning there are two meters in one pit. In these instances, only one lid would need to be purchased.

replaced in 2025-2026, so for AMR scenarios, these investments are accounted for. Charts that compare modeled meter and lid replacements, in thousands, can be found in Figures 15 and 16 in Exhibit A.

Q. How did you determine the method for calculating benefits?

A. Before discussing labor benefits, it's important to note that the Company is measuring the financial benefit of reduced demand for certain kinds of labor. This measured benefit does not necessarily equate to a reduced workforce because it is expected that resources can be redeployed to other high value work, such as achieving meter reading and other service orders targets in the near term, accommodating the demands of a growing customer base in the long term, and on a continual basis, seeking operational and customer service improvements.

That said, based on consultation with the operations team, assumptions were made that the demand for full-time meter reading positions would eventually go away, once AMI was fully implemented. So, the full meter reading benefit is based on the eventual elimination of the current seven full time meter reading positions. Because the program will follow a periodic replacement schedule, as opposed to targeting certain routes for replacement, the meter reading benefits are not modeled to begin until the system would be almost fully converted to AMI, beginning in year 11 (2036).

The operations team was likewise consulted to assess potential improvements to service order demand based on new technology. KAWC anticipates that it will see significantly reduced demand for service orders that are solely related to obtaining a meter reading (such as when customers are moving into or out of a premise, or to confirm or reattempt a read

for billing purposes). KAWC also expects that AMI can reduce the frequency of consecutive estimate type orders, given the increased opportunities to obtain a read prior to the close of the billing window. Finally, KAWC also expects reductions in the generation of field service orders aimed at investigating reads, consumption patterns, problems with meters, checking for leaks, and examining zero usage incidences, given the opportunities to complete this work without a truck roll. Unlike meter reading benefits, which KAWC expects may require nearly complete AMI saturation of meter reading routes to be achieved, field service work benefits are expected to increase in real time, with every meter installed. Consequently, these benefits increase in the CBA model in line with the increases in AMI enabled meters.

Q. What other key cost drivers were used for calculating the CBA?

A. Other cost drivers include the property tax rate, the pre-tax rate of return on the investment, the gross ups for uncollectibles and utility regulatory assessment fees, and the pace at which the cost of the investment is recognized over time (depreciation). A property tax rate of 1.48% was used on the balance of net plant. This is designed to align with the Company's forecasted property tax expense rate in this proceeding. The pre-tax rate of return used in the CBA is based on the capital structure and rates of return authorized in KAWC's last rate case (52.26% common equity ratio, 9.7% cost of equity, 47.74% debt and preferred stock ratio, at a composite 4.70% rate.) Income tax rates for gross up were assumed to be 21% for federal tax and 5% for state tax. Lastly, uncollectible expense and utility regulatory assessment fees were calculated using a 0.622% rate, which was authorized in KAWC's last rate case. For recognizing the cost of the investment over time, a 10% depreciation rate was used for the CBA, in order to match the costs of the investment over

time with the benefits generated by the investment. To avoid undue refinement, this rate was applied to the entire capital investment, and no breakout was made to allocate portions of investment to cost of removal (which does not depreciate) vs. Utility Plant in Service ("UPIS").

Q. Are there other methodologies that are noteworthy and relevant to the calculation of the CBA?

A. A few additional notes can be made about the CBA calculation. A half year or averaging principle was used for calculating annual costs and benefits in the model. Depreciation expense was calculated in net of presumed retired property, which is generally consistent in all scenarios for the first 10 years, except for the retirement of lids, and which after the first 10 years is based on the value of the first 10 years' investment. Deferred taxes are calculated based on life vs. book depreciation and are included in the rate base. Rate base values reflect starting balances of UPIS and accumulated depreciation for meter infrastructure and are common to all scenarios, thus they do not produce differences in the findings.

Q. Nominal dollars are sometimes described in Exhibit A. Can you explain this?

A. Yes. All calculations were made in nominal dollars. This means that the future prices for labor and materials do reflect inflation over time. The figures represent the actual expected cost or benefits in future periods, at prices and wages that are higher than today's. This can be helpful to see the expected cost benefit relationship at any given point in time.

Q. Net present value is also sometimes described in Exhibit A. Can you explain this?

A. Yes. "Net Present Value" or "NPV" is a method of attempting to determine the value of a future sum of money to an investor today. It involves discounting future cash flows based on an assumed rate of expected return.

In this case, we are using a utility customer type view of costs and benefits, by spreading the cost of the investment over time and recognizing annual expense-type benefits as they would occur (much like would happen in a revenue requirement calculation). To derive an NPV, each year's net costs and benefits to customers are discounted using the utilities' proposed rate of return, to arrive at 2026 present value. This makes early costs and benefits more impactful and later costs and benefits less impactful.

Q. **How did you summarize the information?**

A. Information was summarized for each technology type, by brand of product, and by average cost by technology type. An average price is helpful in the CBA for two reasons. First, American Water is not seeking approval of a project, but rather a long-term switch in technology as it performs routine meter and endpoint replacement. On an ongoing basis, the Company will be evaluating suppliers for performance and cost efficiency and may change brands over time as information changes, to support prudent investment. Second, this analysis compares the 2025 cost of products and applies only inflation to change these over time, implying that the differences between the cost of various products will remain constant for decades. In a marketplace with two direct competitors, it seems unlikely that significant differences in cost would persist indefinitely.

Q. What were the findings of the financial analysis?

A. There are several findings:

1) AMI is generally more capital intensive, especially in early years when lids are required, relative to the AMR / Existing Tech solution.

2) AMI creates benefits relative to the current state for KAWC operations, whereas AMR / Existing Tech is the current state for KAWC and isn't anticipated to produce any additional operational or customer service benefits.

3) When costs and benefits are netted, AMI becomes the least cost solution after year 13, once AMI meter reading benefits begin in full. It is modeled to remain least costly in the years that follow. This can be seen in Figure 21 of Exhibit A.

4) When costs and benefits are netted in the first 10 years, AMR / Existing Tech is least cost, followed by AMI. This can be seen in Figure 21 of Exhibit A.

5) On a net present value basis, AMR / Existing Tech has the lowest cost net of benefits, followed by AMI. These can be seen in Figure 23 of Exhibit A. On a net present value basis, the difference between AMI and AMR / Existing Tech is $3.6million over the course of 20 years, or approximately $180,000 / year. This has a limited customer impact while providing significant benefits to customers, as discussed by Company witnesses Burton and Sensabaugh. For context, this is just over $1.29 per customer per year (roughly $0.11 per month for an average residential bill).

Q. Do these findings fully capture all of the potential benefits of AMI?

A. No. The CBA focuses on the largest and most measurable financial benefits related to utility operations (meter-reading labor, field service labor and vehicle costs). Other expected AMI benefits not measured in the CBA include:

- Reduced call handling costs, given increased customer access to usage data through online tools;
- Identification of hidden customer-side leaks or plumbing failures more rapidly, which should reduce costs associated with:
    - production expenses (e.g. chemicals and fuel & power)
    - leak adjustments
    - high bills
    - property damage from burst pipes;
- Reduced greenhouse gas emissions due to fewer truck rolls and less water production; and
- Increased employee and public safety, which has more value than can be adequately expressed in dollars and cents.

Q. Should cost net of benefits be the only consideration in the CPCN?

A. No. Consistent with previous Kentucky Public Service Commission findings, selection of a proposal that ultimately costs more than an alternative does not necessarily result in

wasteful duplication,[2] and this is especially true when the "next to least cost" alternative is only marginally more expensive than that alternative.

Q. What is your recommendation?

A. The findings of the CBA support the approval of the CPCN. The cost-benefit relationship offered by AMI delivers a solution that is among the least cost of the reasonable alternatives in the long term. And beyond the benefits measured in the CBA, AMI unlocks the potential for a variety of additional customer service, safety, operational, and financial benefits.

There is a demonstrated need, as by definition KAWC will install AMI-capable metering equipment only when metering equipment replacement is already necessary (due to either failure or length of service renewal.) There is no wasteful duplication, as AMI will replace existing meters no longer deemed appropriate to provide service to customers. There has been a thorough evaluation of alternatives through a Request for Information ("RFI"), request for proposal ("RFP") and cost benefit analysis ("CBA") process. While KAWC meets the CPCN criteria on this basis, unlike other AMI deployments in the state, KAWC is not planning a standalone project to deploy AMI but is rather electing to transition technologies through the normal course of business and can thus be distinguished from previous AMI appeals brought before the PSC. For all of these reasons, my recommendation is that the CPCN be approved.

[2] September 22, 2021 order in Case No. 2021-00095, page 4.

Q. Does this conclude your direct testimony?

A. Yes.

VERIFICATION

COMMONWEALTH OF KENTUCKY)
) SS:
COUNTY OF FAYETTE)

The undersigned, Krista Citron, being duly sworn, deposes and says that she is Senior Manager, Operational Performance of American Water Works Service Company, Inc., that she has personal knowledge of the matters set forth in the accompanying testimony for which she is identified as the responsible witness, and that the answers contained therein are true and correct to the best of her information, knowledge and belief.

Krista Citron

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 7th day of July, 2025.

Molly McCleese Van Over
Notary Public

My Commission Expires:

July 31, 2029

Notary ID: KYNP26988