PSC DR 3-1:

Refer to Water Service Kentucky's response to Commission Staff's Second Request for Information (Staff's Second Request), Item 2. The Commission's past precedent regarding the issue of Allowance for Funds Used During Construction (AFUDC) is to calculate AFUDC by using the requested/allowed WCC and to include the calculated AFUDC in the utilities Operating Revenues. Provide the calculation of Water Service Kentucky's AFUDC using its requested WCC and the impact including AFUDC in forecasted Operating Revenue would have on its requested revenue requirement. Provide Water Service Kentucky's calculations in an Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

Response: The Company disagrees that proper ratemaking requires inclusion of AFUDC in Operating Revenues. The Company's position is supported by the following factors:

1) As stated in response to SDR 2-2, NARUC Uniform System of Accounts places AFUDC in account 420 within the Other Income and Deductions category, which is non-utility income treatment (i.e., not Operating Revenues, which comprise NARUC account 400, sub-accounts 460 to 474. This strongly implies NARUC does not believe AFUDC should be treated as Operating Revenues.
2) AFUDC is a bookkeeping accrual entry reflecting non-cash activity, and is recovered in future cash flows once capitalized with the funded assets. If AFUDC is treated as Operating Revenues (which are cash activity), customers will be receiving a cash benefit for the Company's non-cash activity. This would represent an unconstitutional taking of Company property, per *Commonwealth ex rel. Stephens v. S. Cent. Bell Tel. Co.*, 545 S.W.2d 927, 930-31 (Ky. 1976) and *Duquesne Light Co. v. Barasch*, 488 U.S. 299, 308

(1989) ("If the rate does not afford sufficient compensation, the State has taken the use of utility property without paying just compensation and so violated the Fifth and Fourteenth Amendments.")

a. AFUDC non-cash accruals are generated from CWIP activity. As such, if AFUDC is included in Operating Revenues as cash activity, CWIP must be included in rate base, in order to generate cash activity for the Company which will match the AFUDC treatment. If it is determined that CWIP should not be included in rate base, then it must be likewise determined that AFUDC is not included for ratemaking, to align the cash/non-cash activity of the Company and to be consistent with the Matching Principle of utility ratemaking. Again, the Company's position is that both CWIP and AFUDC be excluded from ratemaking.

3) For research supporting the Company's position, please see the below references:

a. See Federal Comptroller General's report on CWIP, page 34: "As an accepted practice, during the construction period the utility reports AFUDC as current income. AFUDC does not represent cash income in the current period but, rather, cash income after construction is completed. For ratemaking purposes, however, AFUDC is not treated as an income item, and therefore, it is not viewed as revenue available to meet current revenue requirements." https://www.gao.gov/assets/emd-80-75.pdf

b. See Public Utility Research Center report, page 8: "Income from operations is cash income, paid in cash by ratepayers, and it is available to pay interest or dividends, or for reinvestment. AFUDC income is not cash. It is simply a

bookkeeping entry, and it cannot be used to meet interest or dividend payments. Since AFUDC income cannot be paid out, it must therefore be retained and, thus, it may be regarded as a type of forced savings."
https://bear.warrington.ufl.edu/centers/purc/docs//papers/8111_Brigham_The_Treatment_of.pdf

4) The Company maintains that the AFUDC estimated for accrual in the Forecast Period (and, likewise, CWIP) is not representative of its normalized, annual activity, and thus should not be included in ratemaking at the level estimated, if inclusion is recommended.

Notwithstanding the above comments, please see attached PSC DR 3-01 - Exhibits 10-20-28 - Schedule A - Rate Base Components Updated 8.26.22.xlsx (which updates the response provided in AG DR 1-072) and PSC DR 3-01 Exhibits 27-28-29 and Subparts - Rev Reqt 2022 WSCKY 08.31.22xlsx (which updates the comparable file provided in response to PSC DR 1-49). Please note that these files also include CWIP for the Forecast Period in rate base, as discussed above.

Witness: James Kilbane

PSC DR 3-2:

Refer to Water Service Kentucky's response to Staff's Second Request, Item 7. Explain whether Water Service Kentucky made an adjustment to the forecasted test year to remove expenses associated with the termination of the wastewater service for Clinton.

Response:

Water Service Kentucky made adjustments to remove items for the Forecast Period. However, there was some cost identified as erroneously remaining in the Forecast Period upon submission that was mentioned in the responses to AG DR 1-094 and AG DR 1-095. WSCK recognizes that these costs should not have been included in the current filing and recommends their removal.

Witness: James Kilbane

PSC DR 3-3:

Refer to Water Service Kentucky's response to Staff's Second Request, Item 9 and 9.a.

a. For each year, the variance has been more than the budget. Provide a thorough explanation and documentation to support why annual increases are larger than those budgeted for each year.

b. For each year the President and Senior Vice President received a bonus, confirm that the annual bonuses paid to the President and Senior Vice President are not included in Water Service Kentucky's pro forma Salaries and Wages expense. If the bonuses are included, identify the amounts and include a detailed explanation as to why Water Service Kentucky should be allowed to recover the payment of the bonuses in its base water rates.

Response:

a. The Company generally budgets a 3% wage increase each year for each employee. The Company has updated PSC DR 2-09 Historical increases – Confidential to show an explanation for each year and employee. Please see attached Excel file PSC DR 3-03 Historical increases – Confidential for these updates. Larger increases than budgeted occurred because an employee was promoted or moved to a new position through reorganization. Many merit increases that were larger than the 3% estimate were made in order to be competitive with the local job markets and were used to retain and compensate fairly the Company's employees.

b. Please see Excel file PSC_DR_1-49_Exhibit_18-32-29_-_Schedule_B_-_SW-PR_Taxes-Benefits_REDACTED_UPDATED_8.16.2022.xlsx tab "2023 test year." The cell U41 lists the EIP payout that is included (as updated in this file) in the Forecast Period pro-forma salaries and

wages expense. With the recent change of personnel, it only be the Senior Vice President's EIP is included in the pro-forma.

The Company notes the total cash compensation for the Senior Vice President is at 81% of the maker midpoint according to table V of the Wage and Benefit Study_Final_Revised.

With regard to the value of "variable pay" practices, please see below:

Variable pay is a mechanism used to pay employees for performance (usually their performance and company and business unit performance). Variable pay needs to be earned every year – it is "at-risk" pay, since the employee is at-risk of not earning the variable pay if expectations or goals are not met.

Research has shown that such programs incentivize individuals to drive positive results, have economic advantages, and help with recruitment, retention, motivation, and communication of essential priorities such as safety in the workplace[1]. The wide acceptance of variable pay as a feature in total compensation packages – in general industry but also specifically for utilities – validates the view that at-risk pay reinforces performance expectations. Research has long supported that incentive pay programs directly increase employee performance[2].

The Company offers variable pay for many reasons:

[1] Robert Greene, Variable Pay: How to Manage it Effectively, (Society of Human Resource Management, Apr. 2003)
[2] International Society of Performance Improvement, Incentives, Motivation and Workplace Performance: Research and Best Practices (Spring 2002). https://theirf.org/am-site/media/2incentives-motivation-and-workplace-performance-research-and-best-practices.pdf

Economics

One of the most significant advantages of variable pay is the transfer of a portion of the employee's fixed costs, in the form of salary, to a variable cost to be earned if the employee and the company achieve desired results. Converting what would otherwise be fixed costs into variable costs provides significant benefits because if the individual employee and/or company cannot sustain positive performance, variable pay can be reduced or even eliminated. Conversely, if the company were to shift all compensation to base pay, it would likely have to set base pay above the market levels in order to provide total compensation that would be competitive to attract and retain talented employees. This compensation philosophy would run counter to the company's goal of managing its costs while providing quality service to its customers.

Recruitment and Retention

For WSCK to attract the highly skilled workforce required to maintain safe and reliable service, it needs to offer competitive compensation. Retention of talent is improved with variable pay programs as there is clear communication of expectations for employees. In essence, employees know where to focus their efforts by identifying exactly which achievements are rewarded.

Motivation and Business Goals

The motivational potential of variable pay is more robust than other forms of compensation. If the company sets goals that are beneficial to its customers - as Corix does – then the benefits are clear to customers. Corix has five (5) strategic drivers to which variable pay is tied: Customers and Stakeholders, Operational and Service Excellence, People and Culture, Financial Performance, and Strategic Initiatives. Measurement of these strategic drivers is at both the Corporate and Business Unit Levels.

When the Corporate score and Business Unit score are combined with the employee's Personal Performance score in the variable pay formula, the result captures the overall impact of the employee's performance.

Communication

Variable pay is one of the most vital signals an organization can send to its management team about what it values and deems essential for the success of the company. Through the process of setting strategic objectives for the Company, its Business Units, and individual employees, the targets and goals for the year are clear, understood, and appropriately prioritized.

Variable pay is a common component of compensation packages because it incentivizes good performance and ties a portion of compensation to an employee's ability to achieve positive results that benefit the company's stakeholders in the near and long-term, including its customers. As World at Work notes from its 2021 Incentive Pay Practices: Privately Held Companies survey, variable pay is part of most companies' compensation packages in the U.S.[3] Specifically, long-term incentive plans such as that offered by Corix are an expected and necessary component of modern compensation plans.

Witness: James Kilbane / Seth Whitney

[3] https://worldatwork.org/media/CDN/resources/surveys/2021_Incentive%20Pay%20Practices-Privately%20Held.pdf

PSC DR 3-4:

Refer to Water Service Kentucky's response to Staff's Second Request, Item 11. Provide an itemized list of the Project Fusion implementation and Support Costs that Water Service Kentucky is requesting to be treated as a regulatory asset. Include the date each item in the list was incurred.

Response: Please see attachment in response to AG DR 1-034, AG DR 1-034 – Fusion Reg Asset Detail.xlsx.

Witness: James Kilbane

PSC DR 3-5:

Refer to Water Service Kentucky's response to Staff's Second Request, Item 18.c. In response to Item 18.c. the list of projects based upon the replacement or upgrades, only one project, the Queensbury Heights Project is listed at a cost of $54,548. Refer to the Application, Exhibit 10. For the forecasted test year, $236,528 is budgeted for general replacement and upgrades. Provide support as to how Water Service Kentucky expects to spend over ten times more in the forecasted test year for ongoing replacement or upgrades to its system.

Response: It is unclear to the Company how "spend over ten times more in the forecasted test year" in this question is derived.

The Company's capital investment budget categorizes activities that are over $50,000 and/or will take multiple months to complete as "projects". For capital investment activities that do not meet these criteria, they are not treated as or considered "projects". As noted in the Direct Testimony of Colby Wilson, these activities include "replacing and/or upgrading [the Company's] existing assets on a recurring basis. Examples of these improvements are service line replacements, hydrant replacements, pump rehabs or replacement, and other various equipment replacements for components at the end of their useful life."

Please see below the breakdown of the Company's capital investment for 2019, 2020, 2021. Please note the Queensbury Heights project was mistyped in the prior response - the correct amount is $65,548.

Capital Investment by Year	2019	2020	2021
Recurring Construction	145,858	226,315	129,304
Projects/Identified Activities:			
Queensbury Heights Waterline	4,329	61,219	
160' Trans. Main Replacement		21,023	
Clinton Tank Rehab			113,840
Backhoe for Middlesboro			58,961
Backhoe for Clinton			58,790
Total	150,188	308,557	360,894

Witness: James Kilbane / Colby Wilson

PSC DR 3-6:

Refer to Water Service Kentucky's response to Staff's Second Request, Item 19a, the 2022 AMR/AMI Cost-Benefit Analysis.

a. Provide copies of the workpapers used by Water Service Kentucky used to develop its Cost-Benefit Analysis in an Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

b. On page 3 of the Cost-Benefit Analysis is the statement that Water Service Kentucky based its Net Present Values on a 20-year term life, and a two percent inflation rate.

i. Given that the inflation rate for calendar year 2021 was 7 percent and the inflation rate for the 12 months ended July 31, 2022, was 8.5 percent, explain why Water Service Kentucky's proposed two percent inflation rate is appropriate.

ii. Provide the Net Present Value discount rate used by Water Service Kentucky and provide a detailed explanation of how the discount rate was selected.

iii. Explain why it would not be appropriate to use either Water Service Kentucky's requested weighted average cost of capital or projected cost of debt.

c. Refer to Exhibit H, Labor Savings. The analysis states that staff will transition from meter reading to other work activities such as collections, field maintenance, and data analysis. Explain who performs these activities currently and if those positions will be eliminated.

d. Refer to Exhibit I, Carbon Footprint Reduction. Provide support for the gallons used, the annual cost reduction of $4,416, the annual reduction in vehicle maintenance and annual reduction in vehicle replacement.

e. Refer to Exhibit J, Revenue Gained form Meter Accuracy. Provide support that the current meters are inaccurate to the point that 3 percent of annual revenue is lost.

Response:

Please see responses on PDF file PSC DR 3-06 Response from Vaughn & Melton and pdf file PSC DR 3-06 Revised report.

Witness: Vaughn and Melton Engineering

AMR/AMI Study

Date:8/29/22

Response to review comments:

A. All the information provided by Water Service Kentucky is attached for your information (Refer to Exhibit R1).
B. We have revised the cost-benefit study to reflect some of the review comments/suggestions. The net outcome from such revisions is no different from the original version. Refer to the revised copy attached and to the various responses below with regards to specific review questions:

Bi. The revised study was analyzed with an average inflation rate of 5%. Using an 8.5% inflation rate for the next 20 years would not be realistic and therefore it was not further considered. Such a high rate is an anomaly based on the recent historical records.

Bii. A discount rate of 2% was used by the revised study. Our studies normally utilize the federal discount rate as reported by the Feds for the corresponding year. See literature attached (Refer to Exhibit R2). This is the rate we are instructed to use by USDA when we prepare similar NPW analysis.

Biii. Our cost-benefit procedures for AMR-AMI studies follow a standard engineering method utilized by us and other engineering firms. Our services were provided based on the referenced analysis method. If another way is preferred by the Client, we need to have more information so we can price/conduct our work accordingly.

C. No positions will be eliminated from such an undertaking. All personnel involved will be transitioned to work in another department/or position once the project replacement is completed.
D. The information utilized like gallons of gas per year, cost for mileage, car maintenance fees, etc., are all included/referenced in Exhibit I.
E. A brand new flow meter will have a 1-2 % error according to the manufacturer's literature attached (Refer to Exhibit R3). Using a 3% error for an "aged" flowmeter is considered a very conservative rate for the purposes of this study. Such a statement emphasizes the importance/validity of this undertake!!

Exh. 6 R1

Georgiou, Marios

From: Colby C. Wilson <Colby.Wilson@wscky.com>
Sent: Friday, May 13, 2022 9:55 AM
To: Corey Napier
Cc: Mitch Brunsma; Marios Georgiou
Subject: RE: AMI study

Corey,
Our projected revenue for 2022 is 3,323,343
We have a conventional meter reading system in Middlesboro, but we have a full AMR system in Clinton.
We have around 1000 that are Neptune that would be retro fitted. The remaining, approximately 6000 would be total replacer
The average usage of the system is around 30 Million a month.
We do not track the age. We are compliant with our test of 10% every year. That's the only thing we track.
Yes Neptune was our parent companies choice, after the cost studies.

From: Corey Napier <mcnapier@VaughnMelton.com>
Sent: Friday, May 13, 2022 9:15 AM
To: Colby C. Wilson <Colby.Wilson@wscky.com>
Cc: Mitch Brunsma <mlbrunsma@VaughnMelton.com>; Marios Georgiou <msgeorgiou@VaughnMelton.com>
Subject: AMI study

Colby,
We've derived a few questions for you to answer for the AMI study, see below.

What is the annual revenue from water sales?
Are all of your current meters conventional or does your system have some AMR's?
Are the existing water meters to be replaced with new AMR/AMI type or can the existing meter units be upgraded?
What is the typical water usage of the system per month or year?
How old are the existing water meters (avg age)?
Are you using a monthly billing frequency? If not, at what frequency?
Shall we use Neptune as a reference/basis of evaluation?

Exhibit R1-cont.

COREY NAPIER, PE (KY,TN,VA,NC,GA) | OFFICE LEADER
PO BOX1425 | 109 S. 24TH ST. | MIDDLESBORO, KY 40965
O: 606.248.6600 | F: 606.248.0372 | www.vaughnmelton.com

RESPECTFUL. ADAPTABLE. DETERMINED. FEARLESS. FAITHFUL.

Disclaimer

Exh. 6 of R1 - cont.

Georgiou, Marios

From: Corey Napier
Sent: Friday, May 13, 2022 1:06 PM
To: Mitch Brunsma; Marios Georgiou
Subject: FW: Meter Information
Attachments: NTG-ProCoder)R900i.pdf; NTG-MACH 10.pdf; NTG-MACH 10 INTERMEDIATE.pdf; NTG-MACH

From: Colby C. Wilson <Colby.Wilson@wscky.com>
Sent: Friday, May 13, 2022 12:25:45 PM
To: James Kilbane <James.Kilbane@clevelandthermal.com>
Subject: Fwd: Meter Information

Get Outlook for Android

From: Bill Howell <BHowell@necowater.com>
Sent: Friday, May 13, 2022 12:22:56 PM
To: Colby C. Wilson <Colby.Wilson@wscky.com>
Subject: Meter Information

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize t content is safe.

Colby,
Here is the price list below and I attached all the product sheets for all the different models. Please let me know if you need an Thanks!

Product Name		UNIT PRICE
5/8x3/4" MACH Ultrasonic R900i AMI Meter		$259.26

Exhibit R1-Cont.

5/8x3/4" T-10 R900i AMI Meter		$194.12
1" MACH Ultrasonic R900i AMI Meter		$291.36
1" T-10 R900i AMI Meter		$367.96
1.5" MACH Ultrasonic R900i AMI Meter		$710.55
2" MACH Ultrasonic R900i AMI Meter		$753.09
3" MACH 17" Length AMI METER		$2,568.61
4 FLG 20 LEN ULTRA/MACH R900I RADIO GAL		$2,592.59
6 FLG 24 LEN ULTRA/MACH R900i RADIO GAL		$3,950.62
8 FLG 20 LEN ULTRASONIC R900i GAL		$6,172.84

Bill Howell
Kentucky Sales Manager

email: BHowell@necowater.com
Mobile: 502.424.5429
11082 Southland Road
Cincinnati, OH 45240
Web: www.necowater.com

Technical Resources

- Conservation Practice Standards
- Ecological Sciences
- Natural Resources Assessment
- Data, Maps & Analysis
- Tools & Applications
- Field Office Technical Guide (FOTG)
- Engineering
- Economics
  - Costs
  - Data & Analysis
  - State Resources
  - References
  - Prices and Indexes
  - Tools
- Environmental Markets & Conservation Finance

Discount Rates for Federal Water Projects| NRCS Economics

Everything but Water Resource Projects should use OMB Circular No. A-94, Discount Rates For Cost-Effectiveness, Lease Purchase, and Related Analyses for analysis involving federal funding, or the appropriate commercial discount (interest) rate for non-federal analysis. The 2022 OMB rate is 2.1% for all non-PL-566 watershed cost and benefit analysis based traditionally on the 10-year nominal T-bill rate for most NRCS work.

Here is a Quick spreadsheet of the most common indexes and discount rates updated Monthly

Fiscal Year	BBC - A-47[1]	SD 97	WRC1968	Principles & Standards	WRDA 1974 Section 80(a)	OMB Circular No. A-94, 10-year Nominal Rate
				Principles & Standards (PDF, 3.79 MB)	WRDA 1974 Section 80(a)	For Non-Watershed Work
1957	2.500%					
1958	2.500%					
1959	2.500%					
1960	2.500%					
1961	2.625%					
1962		2.625%				
1963		2.875%				
1964		3.000%				
1965		3.125%				
1966		3.125%				
1967		3.125%				
1968		3.250%				
1969		3.250%	4.625%			
1970			4.875%			
1971			5.125%			
1972			5.375%			
1973			5.500%			
1974			5.625%	6.875%	5.625%	
1975					5.875%	
1976					6.125%	
1977					6.375%	
1978					6.625%	
1979					6.875%	9.0%
1980					7.125%	10.6%
1981					7.375%	12.2%
1982					7.625%	13.3%
1983					7.875%	10.2%
1984					8.125%	10.3%

Exh. bit R2-Cont.

1985		8.375%	11.0%
1986		8.625%	8.9%
1987		8.875%	6.7%
1988		8.625%	8.0%
1989		8.875%	8.3%
1990		8.875%	7.7%
1991		8.750%	7.5%
1992		8.500%	7.0%
1993		8.250%	6.7%
1994		8.000%	5.7%
1995		7.750%	7.9%
1996		7.625%	5.6%
1997		7.375%	6.1%
1998		7.125%	5.9%
1999		6.875%	4.9%
2000		6.625%	6.1%
2001		6.375%	5.4%
2002		6.125%	5.1%
2003		5.875%	4.2%
2004	Federal Register (PDF, 45.5 KB)	5.625%	4.6%
2005		5.375%	4.6%
2006		5.125%	5.0%
2007	Treasury Annual Interest Rate Certification	4.875%	5.0%
2008	Treasury Annual Interest Rate Certification	4.875%	4.6%
2009	Treasury Annual Interest Rate Certification (limited to 1/4% annual change)	4.625%	4.2%
2010	Treasury Annual Interest Rate Certification	4.375%	3.9%
2011	Treasury Annual Interest Rate Certification	4.125%	3.0%
2012	Treasury Annual Interest Rate Certification	4.000%	2.8%
2013	Treasury Annual Interest Rate Certification	3.75%	2.0%
2014	Treasury Annual Interest Rate Certification	3.50%	3.0%
2015	Treasury Annual Interest	3.375%	2.8%

Exh. bit RZ - Cont.

	Rate Certification		
2016	Treasury Annual Interest Rate Certification	3.125%	2.9%
2017	Treasury Annual Interest Rate Certification	2.875%	2.1%
2018	Treasury Annual Interest Rate Certification	2.75%	2.8%
2019	Treasury Annual Interest Rate Certification	2.875%	3.4%
2020	Treasury Annual Interest Rate Certification	2.75%	2.0%
2021	Treasury Annual Interest Rate Certification	2.50%	0.8%
2022	Treasury Annual Interest Rate Certification	2.25%	2.1%

Title	Effective Date	Expired Date
[1] Budget Bureau Circular A-47	December 31, 1952	May 15, 1962
[2] Senate Document 97	May 15, 1962	December 24, 1968
[3] Water Resources Council	December 24, 1968	October 25, 1973
[4] Principles and Standards (3.79 MB)	October 25, 1973	March 07, 1974
[5] Water Resource Development Act of 1974, Section 80	March 07, 1974	present
NRCS National Bulletin 200-17-1 ECN - Normalized Prices and Discount Rate for FY 2018 Water Resources Planning and Evaluation	December 1, 2016	present

Exhibit R3

Be Confident with Sustained Accuracy Over Time

Neptune® MACH 10® Ultrasonic Meter

The MACH 10® ultrasonic water meter features solid state metrology with no degradation of accuracy over time. Combined with a corrosion-resistant, lead-free, high-copper alloy maincase, the MACH 10 is built to withstand demanding service conditions and deliver sustained accuracy over the life of the meter.

- Sizes ⅝", ¾", and 1"
- Extended low-flow range and accuracy
- No maintenance
- Accuracy sustained over meter life
- Advanced ultrasonic technology
- MACH 10®)R900*i*™ features interleaved messages to support AMR, AMI, and the open-standards LoRaWAN™ AMI network simultaneously
- Supports Neptune Network-as-a-Service (NaaS) managed AMI service

NEPTUNE
TECHNOLOGY GROUP

#winyourday

Exhibit R3-Cont.

Specifications

AWWA C715 Compliant

NSF/ANSI 61 Certified

UL327B Certified (¾", 1")

Application

- Cold water measurement of flow in residential potable, combination potable and fire service, and reclaim/secondary water applications.

Maximum Operating Water Pressure

- 175 psi

Operating Water Temperature Range

- +33°F to +122°F (+0.5°C to +50°C)

Options

Sizes

- ⅝", ⅝" x ¾"
- ¾", ¾" x 1"
- 1", 1" x 1¼"

Units of Measure

- U.S. gallons, Imperial gallons, cubic feet, cubic metres

Meter Options

- Potable water
- Reclaim water
- Residential fire service (combo or standalone meter service lines)

Environmental Conditions

- Operating temperature: +14°F to +149°F (-10°C to +65°C)
- Storage temperature: -40°F to +158°F (-40°C to +70°C)

Warranty

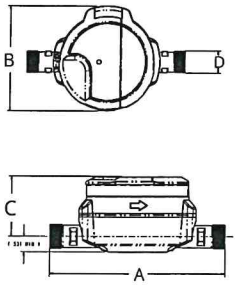
- Neptune provides a limited warranty with respect to its MACH 10 residential line of ultrasonic meters for performance, materials, and workmanship.

System Compatibility

- Available in MACH 10)R900*i* and MACH 10)TC configurations for an integrated radio solution.

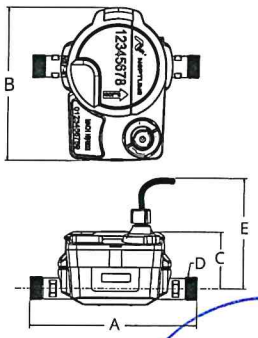
MACH 10® Dimensions

Meter Size	A	B	C	D NPSM
⅝"	7½"	4⅞"	2½"	¾" - 14
⅝" x ¾"	7½"	4⅞"	2½"	1" - 11½
¾"	9"	4⅞"	2⁹⁄₁₆"	1" - 11½
¾" SL	7½"	4⅞"	2⁹⁄₁₆"	1" - 11½
¾" x 1"	9"	4⅞"	2⁹⁄₁₆"	1¼" - 11½
1"	10¾"	4⅞"	2¹¹⁄₁₆"	1¼" - 11½
1" x 1¼"	10¾"	4⅞"	2¹¹⁄₁₆"	1½" - 11½



MACH 10®)R900i™ DIMENSIONS

Meter Size	A	B	C	D NPSM	E
⅝"	7½"	6¾"	2½"	¾" - 14	5⅞"
⅝" x ¾"	7½"	6¾"	2½"	1" - 11½	5⅞"
¾"	9"	6¾"	2⁹⁄₁₆"	1" - 11½	5¹⁵⁄₁₆"
¾" SL	7½"	6¾"	2⁹⁄₁₆"	1" - 11½	5¹⁵⁄₁₆"
¾" x 1"	9"	6¾"	2⁹⁄₁₆"	1¼" - 11½	5¹⁵⁄₁₆"
1"	10¾"	6¾"	2¹¹⁄₁₆"	1¼" - 11½	6¹⁄₁₆"
1" x 1¼"	10¾"	6¾"	2¹¹⁄₁₆"	1½" - 11½	6¹⁄₁₆"



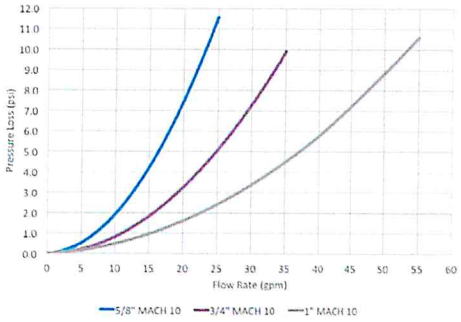
Operating Characteristics

Meter Size	Normal Operating Range @ 100% Accuracy (+/- 1.5%)	AWWA C715 Standard Type 1	Extended Low Flow @ 100% Accuracy (+/- 3%)
⅝"	0.10 to 25 U.S. gpm 0.02 to 4.55 m³/h	0.2 to 20 U.S. gpm 0.23 to 4.5 m³/h	0.05 U.S. gpm 0.01 m³/h
¾"	0.10 to 35 U.S. gpm 0.02 to 6.82 m³/h	0.5 to 30 U.S. gpm 0.45 to 6.8 m³/h	0.05 U.S. gpm 0.01 m³/h
1"	0.40 to 55 U.S. gpm 0.11 to 11.36 m³/h	0.75 to 50 U.S. gpm 0.75 to 11.4 m³/h	0.25 U.S. gpm 0.03 m³/h

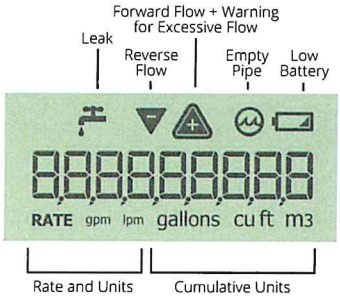
Registration

High Resolution (8-digit reading)	
0.1	U.S. Gallons
0.1	Imperial Gallons
0.01	Cubic Feet
0.001	Cubic Metres

Pressure Loss



LCD DISPLAY



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Neptune Technology Group
1600 Alabama Highway 229
Tallassee, AL 36078
800-633-8754 f 334-283-7293

Exh. 6 IT R3-cont.

Superior Accuracy. Zero Maintenance.

Neptune® MACH 10® Ultrasonic Meter

The MACH 10® ultrasonic water meter features solid state ultrasonic technology including a factory-calibrated, replaceable unitized measuring element (UME) with no degradation of accuracy over time. Combined with a corrosion-resistant, lead free, high-copper alloy maincase, the MACH 10 is built to withstand demanding service conditions and deliver sustained accuracy over the life of the meter.

- Sizes 3" through 12"
- Extended low-flow range for superior leak detection
- Accuracy sustained over meter life
- Can be installed in both horizontal and vertical applications
- Open flow path design with low pressure loss
- Advanced ultrasonic technology with easily replaceable UME design
- Lead free, high-copper alloy maincase
- UL Listed and FM Approved (standard)
- Available in standard turbine and compound lay lengths
- No maintenance

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Exhibit R3-Cont

Specifications

AWWA C715 Compliant

NSF/ANSI 61 Certified

UL Listed/FM Approved (Standard)

Maximum Operating Water Pressure

- 175 psi

Operating Water Temperature Range

- +33°F to +122°F (+0.5°C to +50°C)

Environmental Conditions

- Operating temperature: +14°F to +149°F (-10°C to +65°C)
- Storage temperature: -40°F to +158°F (-40°C to +70°C)

Applications

- Potable water
- Fire service
- Reclaim water

Warranty

- Neptune provides a limited warranty for performance, materials, and workmanship. See warranty statement for details.

System Compatibility

- Compatible with Neptune R900® System. Also available as MACH 10®)R900*i*™ for an integrated radio solution and MACH 10®)TC for Sensus Touch Coupler compatibility.

Operating Characteristics

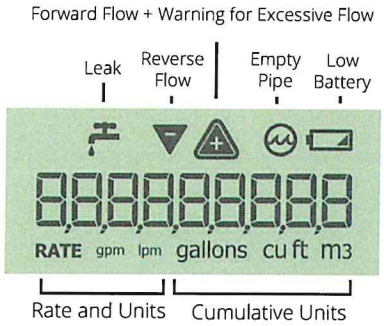
Meter Size	Extended Low Flow @ 100% Accuracy (+/- 3.0%)	Normal Operating Range @ 100% Accuracy (+/- 1.5%)	Safe Maximum Operating Capacity	
			Normal Operation (Non Fire Service)	Fire Service
3"	0.50 U.S. gpm	0.75 to 500 U.S. gpm	500 U.S. gpm	420 U.S. gpm
4"	0.75 U.S. gpm	1.5 to 1250 U.S. gpm	1250 U.S. gpm	1100 U.S. gpm
6"	1.0 U.S. gpm	2.0 to 2000 U.S. gpm	2000 U.S. gpm	1800 U.S. gpm
8"	4.0 U.S. gpm	6.0 to 4000 U.S. gpm	4000 U.S. gpm	4000 U.S. gpm
10"	6.0 U.S. gpm	10.0 to 6500 U.S. gpm	6500 U.S. gpm	6500 U.S. gpm
12"	8.0 U.S. gpm	12.0 to 8000 U.S. gpm	8000 U.S. gpm	8000 U.S. gpm

Registration

High Resolution (8-digit reading)		3"	4"	6" - 12"
1	U.S. Gallons	√	√	
10	U.S. Gallons			√
0.1	Cubic Feet	√	√	
1	Cubic Feet			√
0.01	Cubic Metres	√	√	
0.1	Cubic Metres			√

LCD Display

9-digit display for extra resolution on manual reads.

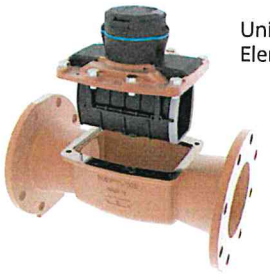


Dimensions

Meter Size	Length	Height	Weight
3"	12"	9½"	39 lbs
	17"	9½"	42 lbs
4"	14"	11"	51 lbs
	20"	11"	57 lbs
6"	18"	12¾"	79 lbs
	24"	12¾"	91 lbs
8"	20"	15 ⅜"	160 lbs
10"	26"	17 ⁹⁄₁₀"	264 lbs
12"	19 ⁷⁄₁₀"	20"	292 lbs

Available Units of Measure

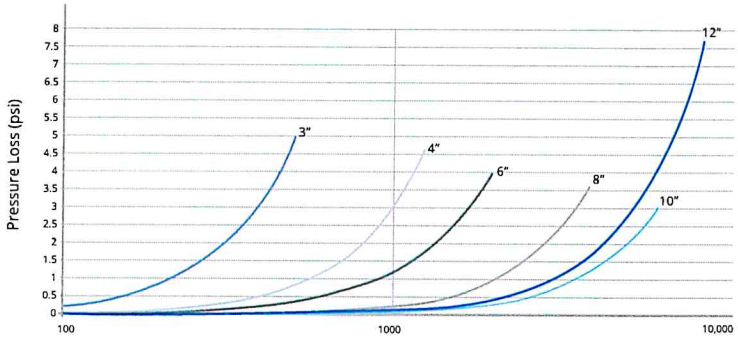
Consumption	Rate
Gallons	GPM
Cubic Feet	GPM
Cubic Metres	LPM



Unitized Measuring Element (UME)

Pressure Loss

This chart shows typical meter performance. Individual results may vary.



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Exh. bit R3 - cont.

Be Confident with Sustained Accuracy Over Time

Neptune® MACH 10® Ultrasonic Meter

The MACH 10® ultrasonic water meter features solid state metrology with no degradation of accuracy over time. Combined with a corrosion-resistant, lead-free, high-copper alloy maincase, the MACH 10 is built to withstand demanding service conditions and deliver sustained accuracy over the life of the meter.

- Sizes 1½ " and 2"
- Extended low-flow range and accuracy
- No maintenance
- Accuracy sustained over meter life
- Advanced ultrasonic technology
- MACH10®)R900*i*™ features interleaved messages to support AMR, AMI and the open-standards LoRaWAN™ AMI network simultaneously
- Supports Neptune Network-as-a-Service (NaaS) managed AMI service

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Exhibit R3 - Cont.

Specifications

AWWA C715 Compliant

NSF/ANSI 61 Certified

UL 327B Certified

Application

- Cold water measurement of flow in potable and reclaim/secondary water applications.

Maximum Operating Water Pressure

- 175 psi

Operating Water Temperature Range

- +33°F to +122°F (+0.5°C to +50°C)

Options

Sizes

- 1½"
- 2"

Units of Measure

- U.S. gallons, Imperial gallons, cubic feet, cubic metres

Meter Options

- Potable water
- Reclaim water

Environmental Conditions

- Operating temperature: +14°F to +149°F (-10°C to +65°C)
- Storage temperature: -40°F to +158°F (-40°C to +70°C)

Warranty

- Neptune provides a limited warranty with respect to its MACH 10 line of ultrasonic meters for performance, materials, and workmanship.

System Compatibility

- Available in MACH 10)R900*i* and MACH 10®)TC configurations for an integrated radio solution.

Operating Characteristics

Meter Size	Normal Operating Range @ 100% Accuracy (+/- 1.5%)	Safe Maximum Operating Capacity	Extended Low Flow @ 100% Accuracy (+/- 3.0%)
1½"	0.80 to 125 U.S. gpm	125 U.S. gpm	0.30 U.S. gpm
2"	1.50 to 160 U.S. gpm	160 U.S. gpm	0.50 U.S. gpm

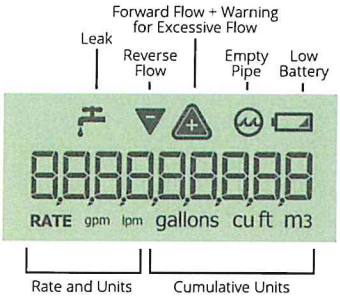
Dimensions

Meter Size	Length	Height	Flanges
1½"	10"	6¼"	Oval
	13"	6¼"	Oval
	12⅝"	6¼"	Internal Thread
	12⅝"	6¼"	External Thread
2"	10"	6½"	Oval
	15¼"	6½"	Oval
	17"	6½"	Oval
	15¼"	6½"	Internal Thread
	15¼"	6½"	External Thread

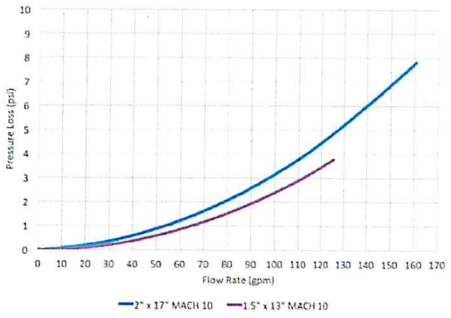
Registration

High Resolution (8-digit reading)		1½"	2"
1	U.S. Gallons	√	√
1	Imperial Gallons	√	√
0.1	Cubic Feet	√	√
0.01	Cubic Metres	√	√

LCD Display



Pressure Loss



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2022 AMR/AMI COST-BENEFIT ANALYSIS

FOR THE
WATER SERVICE CORPORATION OF KENTUCKY

AUGUST 2022
REVISED

- Prepared By -

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V&M Project No. 012254-00

This study is being conducted to evaluate the automatic meter reading/advanced meter infrastructure (AMR/AMI) technology for the areas of Middlesboro and Clinton in Eastern Kentucky by Water Service Corporation of Kentucky. The study begins by providing a basic explanation of the available technologies and concludes with a realistic cost-benefit analysis scenario.

Section 1- Technology Update:

1. Conventional Meter Reading

Description:

A meter reader walks to the location of a water meter and reads/records the totalized reading from the flowmeter display. The information is recorded in a notebook or computer and then taken back to the central office for recording, analysis, and billing purposes. The frequency of manual reads may be monthly, bi-monthly, or quarterly.

Main Suppliers: Neptune, Sensus, Badger, Mueller, others.

Advantages:

Basic water meter service that works in all environmental settings.

Proven technology.

Minimum number of equipment to install and maintain.

Lowest installation cost.

Typical Setup:

A water meter with a flowmeter display is placed inside a meter box or building at each residence/establishment.

2. Automatic Meter Reading (AMR)

Description:

It is the communication technology used by water utilities to automatically collect water consumption information and data from a water meter endpoint near the water meter installation. An external data receiver device (via walking or driving) is needed to receive and transfer the data to a central database for billing, troubleshooting, and analyzing purposes.

Information/data can be collected via Touch technology (wand/probe and handheld computer) or Radio Frequency technology (radio, handheld/walk-by, mobile/drive-by)

Main Suppliers: Sensus, Neptune, Badger, others.

Advantages:

No need to manually read the flowmeter display.

Billing is prepared using calculated values instead of estimates.

More efficient and accurate collection of data.

Reduced unknow personnel trespassing on someone's property.

Lowers meter reading costs to the provider.

Technology can be easily upgraded to include more advanced features and network services such as the AMI service option described below.

Typical Setup:

A water meter with a flowmeter display is placed inside a meter box at each residence/establishment. An encoder register translates water usage info into electronic data and places the information on an endpoint for transfer of data. A meter reader must walk or drive by to collect the system information. The data is then manually taken to a central database for processing.

3. Advanced Meter Infrastructure (AMI)

Description:

AMI systems are an advancement of the AMR technology. It is an integrated system of water meters, communication networks and data management systems that enables two-way communications between water meter endpoints and utilities. This technology uses "smart meters" to remotely collect data based on a customizable program logic. The metering devices here can be controlled remotely to capture, store, and transmit information to the main computer. AMI systems/services can be operated/provided by the Water Utility company or via a third-party provider.

Information/data is sent to utilities via a fixed network: AMR hosting (internet/web-based service using data acquisition software), radio frequency technology, satellite transmitters, Wi-Fi, and powerline communications.

Main Suppliers: Neptune AMI Services, Sensus AMI Services, Mueller AMI Services, others.

Advantages:

Better customer service.

Daily status information from each meter. No need for manual reads.

Customers can monitor their water consumption and/or set automatic notifications.

Instantaneous reading/billing when property is sold or tenant moves out.

More information available to answer customer/billing questions.

Reduction in field service calls and avoid adding staff when customer base is increased.

Saves utility the expense/labor of periodic/multiple trips to each physical location to read the meter.

Expedited dispute resolution from claims such as leaks, theft, on inaccuracies in reporting.

Saves vehicles expenses.

Billing is prepared on real time information instead of estimates or calculated values.

More efficient and accurate collection and transfer of data.

Improved billing practices.

Flexible billing and schedule cycles.

Environmentally sensitive since it reduces water consumption and prevents water abuse/leaks.

Primary tool in future growth.

Increased efficiency and potential profit for providers.

Counteracts the inaccuracies of aging technology.

Reduced reliance on personnel.

Always accessible record keeping.

Accurate/instantaneous data analysis provides informed forecasting and decision making.

Typical Setup:

A water meter with a flowmeter display and encoder register is placed inside the meter box or building. A remote transmitter is placed inside or outside the meter box at each residence/establishment to collect and transfer information on demand or on a preset schedule.

Section 2- Cost-Benefit Analysis for the AMR/AMI installation project:

The cost-benefit analysis is prepared by estimating the various capital and operating costs associated with such a project. In a similar manner, the various cost benefits are also estimated and ultimately compared to the project costs. Assessment figures were based on available information provided by the Water Service Corporation of Kentucky and based on some noted assumptions for planning purposes.

The list of the project costs is summarized in Table 1 and described below.

Net Present Values are calculated based on a 20 year term life, average inflation rate of 5%, and an average 2% discount rate.

The proposed project involves the complete replacement of approximately 6,467 water meters in the referenced areas.

Table 1. Summary of Estimated Lifecycle Costs for Project.

Cost Category	Net Present Value	Cost
Capital Project Cost	$ 2,134,110	$ 2,134,110
Project Management Fee	$ 64,023	$ 64,023
System Integration	$ 21,341	$ 21,341
Salvage Value	$ (21,000)	$ (21,000)
Meter and MIU Maintenance	$ 107,929	$ 160,370
Integration Post-Production Support	$ 118,722	$ 176,407
Monthly Billing Operation Cost	$ 118,722	$ 176,407
20-Year Lifecycle Cost	$ 2,543,847	$ 2,711,658

Capital Project Cost For the AMR/AMI Project: This is the total cost for the new meters, meter interface units (MIU), installation fees, network configuration, software, customer web portal, data hosting, and 10% contingency. Refer to Appendix A, Exhibit A.

Project Management: This is a project management contract cost for the firm overseeing the AMI installation/implementation. Refer to Appendix A, Exhibit B.

System Integration: This is the IT cost to integrate the AMI system to the existing IT water system. Refer to Appendix A, Exhibit C.

Salvage Value: This is the estimated credit the Utility will receive from the Contractor for the salvage value of the meters being replaced. Refer to Appendix A, Table A-1.

Meter and MIU Maintenance Costs: These are the annual meter and MIU maintenance costs once the system is installed. This cost typically includes battery replacements and miscellaneous units that will fail year to year. Refer to Appendix A, Exhibit D.

Integration Post-Production Support: Annual operating cost to support the system integration between AMI and the current Utility water system. Refer to Appendix A, Exhibit E.

Monthly Billing Operating Cost: This is the increase in operating costs for the bill production, postage, and related costs. Refer to Appendix A, Exhibit F.

The list of the benefit costs is summarized in Table 2, and described below:

Table 2. Summary of Estimated Benefits for Project.

Benefit Cost	Net Present Value	Cost
Savings from Meter Turnover	$ 1,305,687	$ 1,940,100
Labor Savings	$ 270,245	$ 401,553
Carbon Footprint Savings	$ 323,119	$ 480,118
Revenue Gain from Meter Accuracy	$ 2,174,158	$ 3,230,548
Total Benefits	$ 4,073,209	$ 6,052,319

Savings of Normal Meter Turnover: Savings from normal meter turnover/replacement the Utility is already performing by staff. Refer to Appendix B, Exhibit G.

Labor Savings: Labor savings from the staff having to work less on tasks related to conventional meter reading. It is expected that all the meter reading positions will likely be eliminated. The existing staff will be re-assigned to new meter mechanic positions and/or data analysis. Refer to Appendix B, Exhibit H.

Carbon Footprint Reduction: Cost savings from the reduction in truck rolls associated with meter reading activities and an estimated 22,080 fewer miles driven per year. Refer to Appendix B, Exhibit I.

Revenue Gain from Meter Accuracy: Improved registers and meters can increase meter accuracy when comparted to aged technology and under-registered meters. A 3% accuracy improvement will be considered here. Refer to Appendix B, Exhibit J.

The payback period for this investment is 11 years. Refer to Appendix B, Exhibit K.

Table 3. Summary of AMR/AMI Project Economics

Present Value Cost	$2,543,847
Present Value Benefit	$4,073,209
Net Present Value	$4,073,209-2,543,847= 1,529,362
Payback Period	11 years
Benefit/Cost Ratio	1.60

Section 3- Intangible Benefits

There are also several unquantified, intangible benefits that justify the AMR/AMI project. These benefits provide a positive outcome for which an economic value (in dollars) cannot be easily estimated. These benefits cover good public relations, resource conservation, regulatory compliance, business improvement, and resource protection.

Improved Customer Service:

Customers will have access to more information concerning their water usage.

Timely Leak Detection:

With the ability to detect large leaks in a timelier manner, field personnel can be dispatched to investigate and shut off water service to mitigate water loss and property damage.

Monthly Billing:

Monthly billing is normally utilized to provide more timely information to customers. Online billing payment may also be considered/utilized.

Claims Resolution and Billing Disputes:

Availability of water usage data on a more frequent basis will assist in the resolution of claims with the customer's property. Having time-stamped usage data will allow cross referencing with events in the water system. In addition, leak adjustments can be validated better using archived water usage data from the AMR/AMI meters.

Personnel Safety:

Minimizing driving reduces accidents and exposure to inherent dangers of working in narrow roads as meter readers get in and out of their vehicles, particularly during inclement weather. It also reduces their exposure to poison plants, insect stings and reptiles. A reduction in workers' compensation claims is also expected. As a result, the Utility's insurance premiums will be favorably affected.

Environmental Impact and Greenhouse Gas Reduction:

The Utility can potentially reduce its carbon footprint by decreasing use of fossil fuel. The AMR/AMI project is expected to lead to improved water conservation, which in turn reduces the energy used to pump water to customers.

Section 4- Conclusions

The benefits of the AMR/AMI project were found to significantly outweigh the cost due to:

- **Net Present Value Benefit-** The estimated net present value benefit is $1,529,362 over the 20-year period.
- **Addressing obsolete infrastructure and Aging Systems**- Many meters across the system are at or beyond their useful life, with consumption going unmetered due to the decreased accuracy of the older meters.
- **Operational Efficiency Gains-** With the AMR/AMI project, approximately 90% of the current truck rolls related to meter reads will no longer be needed, saving significant labor, while improving customer service and billing. Such efficiency will be possible by redeploying water meter reading services to other utility operations.
- **Payback Period**- Based on this analysis, the project will pay for itself in approximately 11 years, well ahead of the system's lifecycle estimate of 20 years.

APPENDIX A

Exhibit A:

Capital Project Cost Calculations

Average 5/8" AMR/AMI Cost per Meter = $ 300 per unit

Number of Customers = 6,467

Estimated Project Cost = $300 /unit x 6,467 customers =	$ 1,940,100
Contingency @10% to allow for larger size water meters in the system	$ 194,010
Estimated Total Cost=	**$ 2,134,110**
NPV of Project Cost =	**$ 2,134,110**

Exhibit B:

Project Management Contract Cost:

Project Management Cost will be assumed at the rate of 3%

Estimated Project Cost = $2,134,110

Estimated Project Management Cost = $ 2,134,110 x 0.03 =	**$ 64,023**
NPV of Project Management Cost =	**$ 64,023**

Exhibit C:

System Integration Cost:

System Integration Cost will be assumed at the rate of 1%

Estimated Project Cost = $2,134,110

Estimated Project Management Cost = $ 2,134,110 x 0.01 =	**$ 21,341**
NPV of System Integration Cost =	**$ 21,341**

Table A-1
Cost-Benefit Analysis.
Salvage of Old Meters
Date: 5/12/ 2022

Meter Size	Type	Count	Weight per Meter (lbs.)	Salvage Value @$1 per pound
5/8"	Displacement	6300	3	$ 18,900.00
3/4"	Displacement	90	3	$ 270.00
1"	Displacement	40	5	$ 200.00
1.5"	Displacement	7	10	$ 70.00
2"	Displacement	11	15	$ 165.00
3"	Compound	6	31	$ 186.00
4"	Compound	3	40	$ 120.00
6"	Compound	6	77	$ 462.00
8"	Compound	4	65	$ 260.00
10"	Compound		210	0
Total		6467		$ 20,633.00
Total NPV Cost				

Notes:
The existing bronze water meters typically have a salvage value for recycling meters which keeps them out of the waste stream and is normally provided as credit by the Contractor. The salvage value is carried on the cost side side as a negative cost.

Exhibit D:

Meter and MIU Maintenance Cost:

MIU Maintenance Cost = $0. No battery replacement needed.

Meter Maintenance Cost = $ 0. Assume this cost will remain the same for conventional or AMR type meters.

Assume 0.25% failure of meter, wiring and MIUs per year. Therefore, Additional Maintenance Cost = 0.0025 x 6,467 x $300/unit replacement = $ 4,850

20 year lifecycle Meter and MIU Maintenance Cost = $4,850 @ 5% inflations for 20 years =

= 4,850 (33.066) = $ 160,370

NPV of Meter and MIU Maintenance Cost = 160,370 (0.673) = $107,929

Exhibit E:

Integration Post-Production Support Cost:

The post-production fee to address changes in the AMI system configuration will be calculated based on a 0.25% of the capital cost per year. Such fees include but not limited to component upgrades, system patch, configuration changes, etc. Therefore the Integration/Support Cost = 0.0025 x 2,134,110 = $5,335 per year.

20 Year Lifecycle Integration Post-Production Cost = $ 5,335, at 5% inflation rate for 20 years =

$5,335 (33.066) =		**$ 176,407**
NPV of Integration Post-Production Support Cost =	**$176,407 (0.6730) =**	**$ 118,722**

Exhibit F:

Monthly Billing Operating Cost:

The monthly billing preparation cost will likely remain as is during the AMI implementation project. A 0.25% cost increase per year will be assumed due to the electronic payment processing services.

Bill printing and Postage will remain the same.

Bill Production will remain the same.

Therefore, estimated billing operating cost = 0.0025 x $2,134,110 = $ 5,335/year

20 Year Lifecycle Monthly Billing Operating Cost = $ 5,335 per year at 5% inflation rate for 20 years =

$ 5,335 (33.066) = $176,407

NPV of Monthly Billing Operating Cost = $176,405 (0.6730) = $ 118,722

APPENDIX B

Exhibit G:

Savings from normal meter turnover:

The savings will come from the deferred cost of the on-going meter replacement program, which will be superseded by the AMI replacement program. The replacement program targets 10% units every year.

Number of replacements in 20 years = 2

Assume Conventional Water Meter replacement at $100.

Assume Unit Installation Labor at $70.

Therefore total cost for meter replacement = $100 + $70 = $ 170/unit.

Annual Replacements Cost = $170/unit x 6,467 x 0.1 = $109, 939

Therefore, 20 year lifecycle replacement cost = 6,467 water meters x $170 per meter replacement x 2

= $ 1,940,100

NPV of Savings from Normal Meter Turnover Cost = $1,940,100(0.6730)= $ 1,305,687

Exhibit H:

Labor Savings:

The two current meter reading positions will remain during the AMI implementation. The staff will transition from meter reading to other work activities such as collections, field maintenance, and data analysis.

Savings will be derived from reduction in travel costs.

Annual Reduction in Water Meter Readings= 12 months x 23 days/month x 40 miles/day x $0.55/mile x 2 staff = $12,144

20 Year Lifecycle Labor Savings Cost = $ 12,144 at 5 % inflation rate for 20 years =

=12,144(33.O66)= $401,553

NPV of Labor Savings Cost = $401,553 (0.6730)= $ 270,245

Exhibit I:

Carbon Footprint Reduction:

Assume both trucks will be eliminated from the meter reading department.

Estimated reduction in gallons of fuel from 2 vehicles =	1,104 gallons
Annual Cost Reduction = 1,104 gallons x$4/gallon =	$4,416
Annual Reduction in Vehicle Maintenance from 2 Vehicles (routine service, oil change, tires)=	$4,000
Annual Reduction in vehicle replacement from 2 vehicles (assume 2 cars will be replaced in 20 Years=	
= 2 cars x $50,000 per car =$100,000 per year/20 years =	$5,000
Expected annual savings benefit =	$ 14,520
Total 20-year lifecycle Benefit= 20 years at 5% inflation x $14,520 =	
=$14,520 (33.066)=	**$ 480,118**
NPV of Carbon Footprint Reduction Cost = $480,118 (0.6730)	**$323,119**

Exhibit J:

Revenue Gain From Meter Accuracy:

Assume a conservative 3% gained revenue from improved accuracy.

Consumption based revenue FY 2022= $3,323,343

Expected annual revenue gain = $ 3,323,343 x 0.03 = $ 97,700

Total 20-year lifecycle Benefit= 20 years at 5% inflation rate x $ 97,700=

= 97,700 (33.066) = $ 3,230,548

NPV of Revenue Gained from Meter Accuracy = $3,230,548 (0.6730)= $2,174,158

Exhibit K:

Estimate Payback Period:

Payback Period = Project Cost/Annual Revenue

Estimated Annual Revenue from Savings/Benefits=

Savings from Meter Turnover	= $109,939
Labor Savings	= $12,144
Carbon Footprint	= $ 14,520
Revenue Gained from Meter Accuracy	= $97,700
Total Annual Savings/Revenue	= $234,303

Payback Period = $2,543,847/$234,303 = 10.86 years

PSC DR 3-7:

Refer to Water Service Kentucky's response to Staff's Second Request, Item 19.d.

a. Regarding the misread meters,

(1) Explain how over 7300 meters were misread in 2021.

(2) Explain whether the same meters are misread month to month.

b. Regarding the reread meters

(1) Explain why the number of reread meters doubled between 2020 and 2021.

(2) Explain whether the same meters are reread month to month.

(3) Explain what initiates a reason to reread a meter.

Response: a. (1) WSCK only had 1 meter reader reading meters during 2021. This led to higher than normal misreads due to human error.

(2) Yes, with some of the more dangerous areas of WSCK's service area these meters are more difficult to access.

b. (1) During the pandemic for the safety of our employees, WSCK limited contact between employees causing it to be more difficult for two technicians to be able to accompany each other to meter locations, thus leaving only one technician to do manual reading alone. Since the conclusion of 2021, WSCK now has 2 technicians dedicated reading meters manually.

(2) WSCK's customers often block meters with vehicles, fence around meters, construct flower beds over meter, as well as house dogs around meter box locations. In these types of situations, a technician will "skip" the meter reading until the reread is issued to assure other technicians are available to assist.

(3) Rereads commonly occur when an initial read is considered "out of line" which may mean the technician keyed in an extra digit or forgot a digit. A reread will also occur if a customer disputes the water usage due to an unknown leak. Another common reason for a reread to occur is if the technician is unable to access the meter location while at the initial location. This can be caused by the meter being blocked by a vehicle, fence, aggressive animal, or other hazards.

Witness: Colby Wilson

PSC DR 3-8:

Refer to Water Service Kentucky's response to Staff's Second Request, Item 19.e.

a. Provide an itemized schedule comparing the AMI bids in an Excel spreadsheet format with all formulas, columns, and rows unprotected and fully accessible.

b. Provide a list of the pro and cons of each AMI system listed in Water Service Kentucky's response to Item 6.a. above.

Response: Please see attachment PSC DR 3-08 Vendor Selection Evaluation – Confidential.

Witness: Seth Whitney

PSC DR 3-9:

Refer to Water Service Kentucky's response to Staff's Second Request, Item 19.h.

a. Confirm that Water Service of Kentucky is proposing to depreciate each component of its proposed AMI system over a 44.44-year meter depreciation life.

b. If Water Service of Kentucky's response to Item 6.a. above is no, provide the depreciation life for each component of the AMI system separately. Include documentation to support the depreciation life for each AMI component.

Response:

a. WSCK is proposing to use its approved depreciation rate for meters.

b. Not Applicable, see above.

Witness:

James Kilbane

PSC DR 3-10:

Refer to Water Service Kentucky's response to Staff's Second Request, Item 19.i. Confirm Water Service Kentucky proposes to recover the remaining net book balance of $251,420 for the meter assets over the remaining depreciable lives of the meters.

Response: Confirmed.

Witness: James Kilbane

PSC DR 3-11:

Refer to Water Service's response to Staff's Second Request, Item 25b-25c. Since Water Service just established a new debt rate of 3.07523 percent, explain why this rate should not be used in the risk premium models as opposed to 4.85 percent as the expected cost of debt.

Response: As noted in response to PSC DR 2-25a, the new debt issuance uses a variable rate for a 27-month term, so is technically long-term debt (maturity date of over 12 months) but should not be used as an input in risk premium models. The interest rate used in a risk premium model should be prospective in nature (i.e., projected) as the cost of capital and ratemaking are prospective, and match the long-term nature of the assets. Since the term of the loan is 27-months and the assumed useful life of WSCK's assets are approximately 32 years (1/3.12% composite depreciation rate), the loan's term is not comparable to the life of the assets and therefore should not be used.

Witness: Dylan D'Ascendis

PSC DR 3-12:

Refer to Water Service's response to Staff's Second Request, Item 26.

a. Since S&P 500 (500 companies) is a truncated representation of Value line's larger market representation (1,700 companies), explain why this is a valid representation of the market.

b. Explain whether the S&P 500 calculations should not be given less weight than the Value line market calculations in ROE calculations.

Response:

a. Please refer to Mr. D'Ascendis' response to PSC DR 2-26, part a.

b. As described in Mr. D'Ascendis' response to PSC DR 2-26, part a, the S&P 500 is commonly used as a proxy for the entire market by investors, as the index components cover all sectors of the market. Additionally, the SBBI-2022 market return is based on S&P 500 returns. Finally, Bloomberg beta's "default" setting uses the S&P 500 as the market proxy for its calculations.

To Mr. D'Ascendis' knowledge, while he believes that the Value Line Summary & Index market return expectation is relevant to the cost of capital, the return on the Value Line universe of stocks is not published anywhere other than Value Line, and no commonly used beta coefficients (including Value Line) are calculated using the Value Line universe's return data.

Witness: Dylan D'Ascendis

PSC DR 3-13:

Refer to Water Service's response to Staff's Second Request, Item 26. Bloomberg betas values are two-year calculations based on a truncated market representation that "may more readily reflect significant changes in risk that occur over a short period of time than a beta coefficient calculated over a five-year horizon" based on a larger market representation.

a. Explain whether Bloomberg beta values should be given less weight in ROE calculations than the Value Line five-year beta values.

b. Explain whether there are other sources of beta values readily available to investors for consideration, such as Yahoo! Finance, and if so, why these should not be considered in addition to the Value Line and Bloomberg beta values.

Response:

a. Bloomberg and *Value Line* beta values should be considered equally for cost of capital purposes. Bloomberg is a primary investment information platform for institutional investors as well as security analysts and *Value Line* is a primary information platform and publication for individual investors. As such, both represent the entirety of the market and should be weighted equally.

b. Mr. D'Ascendis does not believe that there are other readily available beta values that should be considered by investors besides Bloomberg and *Value Line*. The Commission's example of Yahoo! Finance betas are not suitable for cost of capital purposes as they are unadjusted, or "raw" betas, which are not forward-looking and are calculated on a monthly, instead of weekly, basis, which does not adequately reflect changes in market data.

1. Unadjusted Betas

Betas are measured using an Ordinary Least Squares ("OLS") regression, in which the dependent variable is the return of the subject security, and the independent variable is the return on the market as measured by a given index (*Value Line*, for example, uses the New York Stock Exchange Index). Beta is represented by the slope term of the regression estimates. Intuitively, beta measures the change in the subject company's returns relative to the change in the market return.

The resulting beta is considered "raw", or unadjusted. Unadjusted betas are historical in nature as they use historical market data. Blume studied the stability of beta over time and found that "[n]o economic variable including the beta coefficient is constant over time."[4] Consistent with that finding, Blume observed a tendency of raw betas to change gradually over time. Blume further stated:

> …there is obviously some tendency for the estimated values of the risk parameter [beta] to change gradually over time. This tendency is most pronounced in the lowest risk portfolios, for which the estimated risk in the second period is invariably higher than that estimated in the first period. There is some tendency for the high risk portfolios to have lower estimated risk coefficients in the second period than in those estimated in the first. Therefore, the estimated values of the risk coefficients in one period are biased assessments of the future values, and furthermore the values of the risk coefficients as measured by the estimates of β_1 tend to regress towards the means with this tendency stronger for the lower risk portfolios than the higher risk portfolios. (emphasis added)[5]

Blume proposed a correction for this tendency, also known as "regression bias", which is inherent in the calculation of all betas. He stated:

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[4] *Marshal E. Blume, On the Assessment of Risk, The Journal of Finance, Vol. XXVI, No. 1, March 1971.*
[5] *Marshal E. Blume, On the Assessment of Risk, The Journal of Finance, Vol. XXVI, No. 1, March 1971.*

> In so far as the rate of regression towards the mean is stationary over time, one can in principle correct for this tendency in forming one's assessments.
>
> * * *
>
> For individual securities as well as portfolios of two or more securities, the assessments adjusted for the historical rate of regression are more accurate than the unadjusted or naïve assessments. Thus, an improvement in the accuracy of one's assessments of risk can be obtained by adjusting for the historical rate of regression even though the rate of regression over time is not strictly stationary.[6]

Based on Blume's results, the typical adjustment is calculated based upon an approximate of the following formula:

$$\beta_{adjusted} = 0.35 + .67x\beta_{raw\ (unadjusted)}$$

This adjustment transforms the historical unadjusted beta into an expectational value, consistent with the expectational nature of the cost of capital.

As noted by Morin:

> Several authors have investigated the regression tendency of beta and generally reached similar conclusions [as Blume]. High-beta portfolios have tended to decline over time toward unity, while low-beta portfolios have tended to increase over time toward unity…He demonstrated that the Value Line adjustment procedure anticipated differences between past and future betas.[7]

Morin further notes:

> A comprehensive study of beta measurement methodology by Kryzanowski and Jalilvand (1983) concludes that raw unadjusted beta (OLS beta) is one of the poorest beta predictors, and is outperformed by the Blume-style Bayesian beta approach. Gombola and Kahl (1990) examine the time-series properties of utility betas and find strong support

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6 Marshal E. Blume, *On the Assessment of Risk*, The Journal of Finance, Vol. XXVI, No. 1, March 1971.

7 Roger A. Morin, Modern Regulatory Finance, PUR Books, 2021 at 81. ("Morin")

> for the application of adjustment procedures such as the Value Line and Bloomberg procedures.
>
> ***
>
> Because of this observed regressive tendency, a company's raw unadjusted beta is not the appropriate measure of market risk to use. Current stock prices reflect expected risk, that is, expected beta, rather than historical risk or historical beta. Historical betas, whether raw or adjusted, are only surrogates for expected beta. The best of the two surrogates is adjusted beta.[8]

Morin also provides economic and statistical justification for using adjusted betas to estimate the cost of equity for utilities. Relative to economic justification, he states:

> Adjusted betas compensate for the tendency of regulated utilities to be extra interest-sensitive relative to industrials.(footnote omitted) In the same way that bondholders get compensated for inflation through an inflation premium in the interest rate, utility shareholders receive compensation for inflation through an inflation premium in the allowed rate of return. Thus, utility company returns are sensitive to fluctuations in interest rates. Conventional betas do not capture this extra sensitivity to interest rates. This is because the market index typically used in estimating betas is a stock-only index, such as the S&P 500. A focus on stocks alone distorts the betas of regulated companies. The true risk of regulated utilities relative to other companies is understated because when interest rates change, the stocks of regulated companies react in the same way as bonds do. A nominal interest rate on the face value of a bond offers the same pattern of future cash flows as a nominal return applied on a book value rate base. Empirical studies of utility returns confirm that betas are higher when calculated in a way that captures interest rate sensitivity. *The use of adjusted betas compensates for the interest sensitivity of regulated companies.* (*italics added for emphasis)*[9]

Relative to statistical justification, Morin states:

> There is a statistical justification for the use of adjusted betas as well. High-estimated betas will tend to have positive error (overestimated) and low-estimated betas will tend to have negative error (underestimated).

---

8 Morin, *at 81-82.*

9 Morin, *at 82.*

> Therefore, it is necessary to squash the estimated betas in toward 1.00. One way to accomplish this is by measuring the extent to which estimated betas tend to regress toward the mean over time. As a result of this beta drift, several commercial beta producers adjust their forecasted betas toward 1.00 in an effort to improve their forecasts. This adjustment, which is commonly performed by investment services such as Value Line, and Bloomberg, uses the formula:
>
> $$\beta_{adjusted} = 1.0 + a(\beta_{raw} - 1.0) \quad (4-3)$$
>
> where "a" is an estimate of the extent to which estimated betas regress toward the mean based on past data. Value Line and Bloomberg betas are adjusted for their long-term tendency to regress toward 1.0 by giving approximately 66% weight to the measured beta and approximately 34% weight to the prior value of 1.0 for each stock, that is, a = 0.66 in the above equation:
>
> $$\beta_{\text{adjusted}} = 1.0 + 0.66\,(\beta_{\text{raw}} - 1.0)$$
>
> $$= 0.33 + 0.66\,\beta_{\text{raw}} \quad (4\text{-}4)$$ [10]

Many commercial sources, including *Value Line* and Bloomberg, provide adjusted betas. Given the commercial use and acceptance of adjusted betas they are the proper measure of systematic risk in the CAPM.

2. **Monthly Betas**

Betas calculated using weekly returns incorporate more observable market data than betas that use monthly returns. Weekly return betas are calculated using significantly more observations (260 weekly observations compared to 60 monthly observations for a five-year measurement period) which reduces the likelihood of measurement error. The lower number of observations of monthly returns may particularly be an issue for companies with relatively high dividend yields, such as the proxy companies, due to dividend-related price behavior. Because the value of a stock just prior to its dividend

[10] Morin, *at 82-83.*

payment date is equal to the sum of the expected dividend, plus the going concern value of the business, following the ex-dividend date (the date on which a stockholder becomes entitled to the announced dividend) the value of the stock will adjust downward to reflect only the going concern value. That price behavior may skew the calculation of both the relative volatility of market returns and the correlation of market returns which determine betas.

Given Both *Value Line* and Bloomberg calculate betas based on weekly returns. Other sources, such as Zacks and Yahoo! Finance, calculate betas assuming monthly returns. As discussed previously, it is appropriate to use weekly data as opposed to monthly data because monthly data give less weight to market movements experienced in shorter time periods, thereby dampening volatility for the market index and the subject stock, although possibly not to the same degree for each.

To assess the difference in results, I calculated betas for a proxy group consisting of seven companies using both monthly and weekly return data from May 2000 through May 2022. The proxy group consists of: AWR, AWK, CWT, WTRG, MSEX, SJW, and YORW. The results shown in Charts 1 and 2, below, confirm that monthly betas do not capture the full extent of the risk faced by equity investors.

Chart 1: Calculated Monthly Betas for the Proxy Group[11]

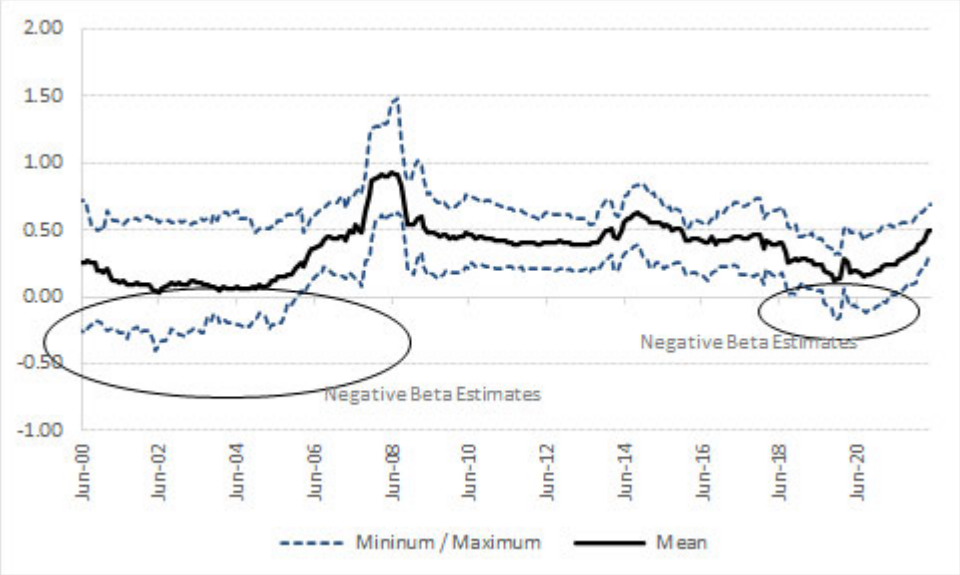
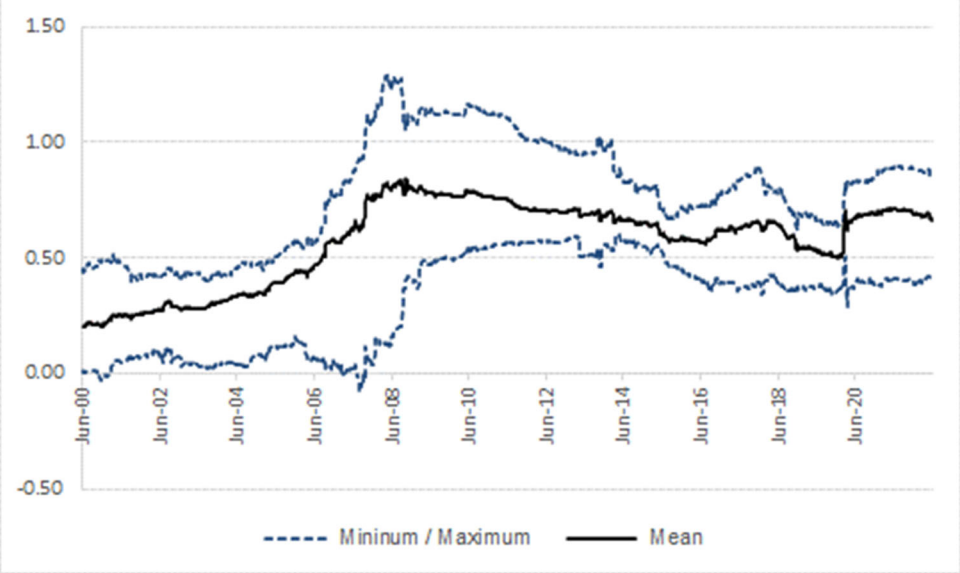


Chart 2: Calculated Weekly Betas for the Proxy Group[12]



11 Source S&P Global Market Intelligence.
12 Source S&P Global Market Intelligence.

It also is clear from Charts 1 and 2 that a greater number of negative betas are observed when monthly returns are assumed. Taken at face value, a negative beta implies a cost of equity less than the risk-free rate of return. That prospect is highly unlikely, especially when other proxy companies did not have contemporaneously negative betas. Given the practical implications of negative betas, the use of weekly data provides more plausible results and ROE estimates.

Witness: Dylan D'Ascendis

PSC DR 3-14:

Refer to Water Service Kentucky's response to Staff's Second Request, Item 28. The current 30-year treasury rate inherently embodies investor's expectations of inflation and other future conditions, and that rate is required to induce investors to lend money for that length of time versus a shorter length of time. Explain why this should not be given at least equal weight to forecasted rates.

Response:

While Mr. D'Ascendis agrees with the Commission's statement that current market prices reflect all relevant publicly available information, including forecasts, it is still the current market price. As discussed in Mr. D'Ascendis' response to PSC DR 2-28, the cost of capital and ratemaking are expectational in nature, which necessitates estimation of expected levels of interest rates. Because current rates only truly reflect the rate that investors require at one moment in time, they do not accurately capture the rate an investor will require over the life of the assets in which the capital is invested. The Commission's assumption implies that market prices and interest rates will be static going forward (future interest rates will equal current interest rates), which is not realistic.

Witness: Dylan D'Ascendis

PSC DR 3-15:

Refer to Water Service Kentucky's response to Staff's Second Request, Item 30. Provide updated support for the returned check charge.

Response:

Please see PSC DR 3-15 WSCK_Nonrecurring_Charge_Justification below.

Witness: James Kilbane

NONRECURRING CHARGE COST JUSTIFICATION

Type of Charge:__ Non-Sufficient Funds “NSF” Charge_____

1. Field Expense:

    A. Materials (Itemize)

    _____ $_____
    _____ _____
    _____ _____

    B. Labor (Time and Wage)

    _____ _____

    Total Field Expense **$**_____

2. Clerical and Office Expense

    A. Supplies $_____

    B. Labor _____

    Total Clerical and Office Expense **$**_____

3. Miscellaneous Expense

    A. Transportation $_____

    B. Other (Itemize)

    ___Chase NSF Fee_____ $ ___15.00__
    _____ _____
    _____ _____

    Total Miscellaneous Expense **$**_____

Total Non-Recurring Charge Expense **$____15.00__**

From: Todd Osterloh
To: Todd Osterloh
Subject: Returned Check Fee
Date: Thursday, September 1, 2022 4:56:27 PM
Attachments: image001.png
image002.png

From: Vignati, Cameron <cameron.vignati@chase.com>
Sent: Thursday, September 1, 2022 10:28 AM
To: Jared McNamee <Jared.McNamee@corix.com>; Ebel, Amy L <amy.l.ebel@chase.com>
Cc: Nicole Osborne <Nicole.Osborne@corix.com>
Subject: RE: NSF [202209010007588]

Hello Jared,

The $50 fee is for Non-Sufficient Funds. This means if your account is overdrawn you are charged $50.

Please see screenshot below from recent analysis statement

Negative Collected Bal Fee	1	61.7400
Daily Overdraft Occurrence Fee	3	50.0000
Account Maintenance	3	50.0000

The fee for a returned check is $15.00. Please see statement from January that references this

Depository Services		
Check Deposited-On US	6	.2000
Check Deposited-Transit	36	.2700
Return Item	1	15.0000
Remote Deposit Capture Maint	1	50.0000

If you have further questions regarding your pricing structure I have added Amy Ebel.

Thanks,

Cameron Vignati

Looking to track an electronic payment status? Get it faster by visiting Payment Tracker.

We aim to exceed your expectations. Tell us how we are doing @ better together.

Cameron Vignati | Client Service Associate | Commercial Client Service | Commercial Banking | **Chase** | T: 602 221 3456 | F: 844 659 6988 | cameron.vignati@chase.com | chase.com/commercialbanking

Alternate contact: Jeanine Maldonado | T: 602 221 1273 | jeanine.maldonado@chase.com
Alternate contact: Commercial Bank Service Center | T: 866 954 3718

PSC DR 3-16:

Refer to Water Service Kentucky's Tariff Sheet No. 20, Section 16, Turn-on Charge. In Section 16a, it states that a charge will be made to cover the expense of turning on water. Provide this charge.

Response: There is no turn-on charge, as shown on Tariff Sheet 30. The narrative description found on Tariff Sheet No. 20, Section 16a, Turn-on Charge, was authorized by the Commission prior to Case No. 2020-00160, when the Commission ordered WSCK to file new nonrecurring charges reflecting the marginal cost of each nonrecurring service.

Witness: James Kilbane

PSC DR 3-17:

Explain how Water Service Kentucky obtains equity capital. If all equity capital is obtained from the Corix parent corporation, include in the explanation a discussion on how and when the additional equity is allocated to Water Service Kentucky.

Response: WSCK does not obtain equity capital and maintains no debt on its books. Corox Regulated Utilities ("CRU"), the parent of WSCK, obtains debt and equity to support the operations of its affiliates. CRU maintains a centralized cash management system to utilize these funds. CRU's equity and debt are not allocated to the books of WSCK. WSCK has therefore used the CRU capital structure components to support its requested revenue requirement.

Witness: James Kilbane

PSC DR 3-18:

Regarding the current meters used in the Clinton service territory provide the following:

a. A history detailing the types of meters currently installed.

b. An explanation detailing how the meters are read.

c. The capabilities of the current meters regarding data collection and disconnection ability.

d. The percent nearing the end of their useful life.

e. Failure rate of current meters.

Response:

a. Currently a Badger AMR system exists in Clinton.

b. These meters are currently being read by a technician driving or walking by and the reads being sent to a mobile collector. Then, due to failing battery life for the meters, a technician then goes back to missed locations after the initial reads have been downloaded from the collector and manually reads these meters.

c. The current system only collects meter reads to an antiquated, unsupported Badger data collector. These meters have no disconnection ability.

d. All these meters have exceeded the estimated battery life.

e. Approximately 80% fail to communicate the read. They are then manually read.

Witness: Colby Wilson

PSC DR 3-19:

Regarding the current meters, used in the Middlesboro service territory provide the following:

a. A history detailing the types of meters currently installed.

b. An explanation detailing how the meters are read.

c. The capabilities of the current meters regarding data collection and disconnection ability.

d. The percent nearing the end of their useful life.

e. Failure rate of current meters.

Response: a. A combination of Badger, Neptune, and Precision meters are installed.

b. All these meters are manually read by a technician monthly.

c. All collection is manually input by a technician, and these meters have no ability for disconnection.

d. We are replacing approximately 600 meters this year due to failure. This is approximately 10% of the Middlesboro system.

e. 10% are being tested annually, with a high rate being replaced due to failure. Approximately 600 are expected to be replaced in 2022.

Witness: Colby Wilson

PSC DR 3-20:

Regarding the proposed automated metering infrastructure (AMI) project.

a. Provide any alternatives Water Service Kentucky identified in lieu of the proposed AMI system deployments.

b. Explain whether or not Water Service Kentucky evaluated retrofitting the current meters.

c. Explain whether or not the current meters are obsolete. Provide supporting documentation if they are obsolete.

d. Provide support that the proposed AMI project is the least-cost alternative.

e. Explain whether or not the vendor proposals were specific to Water Service Kentucky.

Response:

a. Alternative solutions to the proposed AMI system are an AMR system or a Conventional Manual Read system. For considerations given to each of these please see response to PSC DR 2-19a.
b. The current meters are not able to be retrofitted to the Neptune AMI System.
c. See response to PSC DR 3-18d and e and 3-19d.
d. See response to PSC DR 2-19.
e. The vendor proposals provided in PSC 2-19e were in response to Corix's RFP. This RFP was designed to find an advanced metering solution for the Corix Group of Companies, which includes WSCK.

Witness: Colby Wilson / Seth Whitney

PSC DR 3-21:

For any cost containment initiatives since the last base rate case, provide the initiative and a quantification of the savings.

Response:

Please refer to response to PSC DR 1-1b. Some of these initiatives such as cost containment are quantifiable and some items referenced are just to improve the customer experience and safety, or more efficiently utilize Company existing resources.

Witness: Seth Whitney

PSC DR 3-22:

In Case No. 2020-00160,4 Water Service Kentucky reported a Miscellaneous expense of $37,6235 for the 12-month historical period ending March 31, 2020. Water Service Kentucky's Miscellaneous expense for the forecasted test-year is $667,561, an increase over the previous rate case of $629,938, or a 1,674.34 percent increase.

a. Provide detailed explanation for the increase in forecasted Miscellaneous expense over the amount reported in Case No. 2020-00160.

b. Provide an itemized list of each item included in Water Service Kentucky's forecasted Miscellaneous expense of $667,561.

Response:

a. For 2021, the Corix CAM allocation consolidated WSC and CII corporate and support services costs, and allocations flow to 2 expense accounts - corporate and regional allocation accounts - that fall within the Miscellaneous Expense category. Previously, WSC support services costs were posted to the various expenses accounts that reflected the various services provided.

b. Please see Application Exhibit 29 Schedule C for the allocation detail and Application Exhibit 29.18 for the remainder itemized by account detail.

Witness: James Kilbane

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION OF KENTUCKY

In the Matter of:	**)**	
Electronic Application of Water Service Corporation of Kentucky for a General Adjustment in Existing Rates and a Certificate of Public Convenience and Necessity to Deploy Advanced Metering Infrastructure and Approval of Certain Regulatory Accounting Treatment	**)**	**Case No. 2022-00147**

CERTIFICATION

This is to certify that I have supervised the preparation of Water Service Corporation of Kentucky's supplemental responses to the Public Service Commission's Third Data Request and the City of Clinton's First Data Request and that the responses to both requests are true and accurate to the best of my knowledge, information, and belief after reasonable inquiry.

Date: 09/01/2022

James Kilbane
Manager of Financial Planning and Analysis
Cleveland Thermal Energy Corporation