

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF SOUTHEAST)	
DAVISS COUNTY WATER DISTRICT FOR A)	CASE NO.
DEVIATION FROM METER TESTING)	2020-00138
REQUIREMENTS)	

ORDER

On June 8, 2020, Southeast Daviess County Water District (Southeast Daviess District) filed an application, pursuant to 807 KAR 5:001, Section 14, and 807 KAR 5:066, Section 18, with the Commission seeking a deviation from the meter testing requirements of 807 KAR 5:066, Section 16(1), regarding the frequency of testing its 5/8-inch x 3/4-inch Sensus SR11 meters.¹ Southeast Daviess District responded to two rounds of discovery,² and amended its application on August 6, 2020, to reflect more accurate cost savings than those estimated in the original application.³ No party sought intervention in this proceeding and on August 31, 2020, Southeast Daviess District filed a request that the Commission issue a decision on the existing record without a hearing.⁴ The record is complete and the matter stands ready for decision.

¹ Application at 1.

² Response to Staff's First Request (filed July 28, 2020); Response to Staff's Second Request (filed Aug. 28, 2020).

³ Amended Application at 1.

⁴ Statement for a Decision on the Record (filed Aug. 31, 2020).

BACKGROUND

Southeast Daviess District seeks the Commission's approval for a sample meter testing plan (Sample Testing Plan) regarding its 5/8-inch x 3/4-inch Sensus SRII meters. Southeast Daviess District proposes to allow its 5/8-inch x 3/4-inch Sensus SRII meters to remain in service for 15 years without individually testing the meters, as required by 807 KAR 5:066, Section 16(1). Southeast Daviess District instead proposes to test only a randomly selected sample of these meters after they have been in service for ten years, and to continue testing the same randomly selected sample of each group of meters for five years.⁵ For example, in 2020 Southeast Daviess District tested a randomly selected sample of 35⁶ of the 1,162⁷ 5/8-inch x 3/4-inch Sensus SSRII meters Southeast Daviess District originally placed into service in 2010.⁸ Southeast Daviess District estimates it will save \$138,720 in labor and testing costs over six years, from 2020 through 2025, by sample testing its 5/8-inch x 3/4-inch Sensus SRII meters rather than individually testing them.⁹

If the Commission approves the Sample Testing Plan, Southeast Daviess District will test the same sample of meters again in 2021 and will also randomly select a sample of the meters it originally placed into service in 2011 and test that sample as well. This process of randomly selecting a sample of meters placed into service in a given year, and

⁵ Application, Exhibit 1. Sample Meter Testing Plan for Southeast Daviess County Water District 5/8-inch x 3/4-inch Sensus Meters at 1–7.

⁶ Sample Testing Plan, Appendix B

⁷ Sample Testing Plan, Section 3.0.

⁸ Application at 4–5.

⁹ Amended Application, Appendix B at B-2.

testing those meters, along with the samples selected in prior years, will continue through 2025. Southeast Daviess District will annually file the sample test results with the Commission.¹⁰ After the first group of sample-tested meters reaches 15 years of age, Southeast Daviess District indicates that it will evaluate the data from the sample testing and request that the Commission (1) extend the Sample Testing Plan; (2) allow Southeast Daviess District to replace meters on a 15-year cycle; or (3) approve another appropriate course of action.¹¹

Southeast Daviess District's Sample Testing Plan is based, in part, on the sample-testing procedures set forth by the American National Standard Institute, *ANSI/ASQ Z1.9-2003 (2013) (ANSI/ASQ Standards)*.¹² Southeast Daviess District indicates that it is only requesting a deviation from periodic testing for its 5/8-inch x 3/4-inch Sensus SR11 meters,¹³ which make up the bulk of its 5/8-inch x 3/4-inch meters.¹⁴ As discussed above, under the Sample Testing Plan, Southeast Daviess District would assign those meters to lots based on the year they were placed in service and would test samples from each lot in the meters' tenth through fifteenth years of service to assess the performance of the lots as a whole in each year.¹⁵ Southeast Daviess District will use "an Excel spreadsheet, its billing system, or another computerized process to randomly select meters for testing"

¹⁰ Application at 5.

¹¹ Application at 5–6.

¹² Sample Testing Plan, Section 3.0.

¹³ *Id.*, Application at 1.

¹⁴ Response to Staff's First Request (filed Aug. 28, 2020), Item 7.

¹⁵ Sample Testing Plan, Section 3.0.

from each lot.¹⁶ The sample size for each lot will be established pursuant to the ANSI/ASQ Standards based on the method of inspection used, the Acceptance Quality Limit (AQL), and the Inspection Level (as those terms are used in that standard).¹⁷

In its Sample Testing Plan, Southeast Daviess District proposes testing the maximum and intermediate flow rates of its meters using the Double Specification Limit Variability Unknown-Standard Deviation Method (DSL Method) set forth in the ANSI/ASQ Standards with an AQL of 2.5 and Inspection Level II.¹⁸ It proposes testing the low flow rate of Southeast Daviess District's meters using the Single Specification Limit Variability Unknown Standard Deviation Method (SSL Method) with an AQL of 10 and Inspection Level I.¹⁹

Southeast Daviess District asserts that the DSL Method it proposes using to test the high and intermediate flow rate is not the appropriate method to test the low flow rate, because 807 KAR 5:066, Section 15(2), provides for both upper and lower accuracy limits for maximum and intermediate flow rates, while the single lower accuracy limit for minimum flow rates necessitates the use of the SSL Method.²⁰ However, as Southeast Daviess District notes in its Sample Testing Plan, Section 2.0, Rules and Regulations, 807 KAR 5:066, Section 15(2)(a), provides for both upper and lower accuracy limits at

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ Sample Testing Plan, Section 3.0.

¹⁹ *Id.*

²⁰ Response to Staff's Second Request (filed Aug. 28, 2020), Item 11. Sample Testing Plan, Section 3.0.

minimum flow rate for both new and rebuilt meters.²¹ The accuracy limit Southeast Daviess District proposes to use at minimum flows in its Sample Testing Plan is the accuracy limit for repaired meters.²² Southeast Daviess District acknowledges the meters it plans to subject to sample testing were new when they were installed.²³ Further Southeast Daviess District acknowledges it does not repair meters and place them back into service.²⁴ Therefore, Southeast Daviess District has no meters in its system for which the 90 percent accuracy limit at minimum flow is appropriate under 807 KAR 5:066, Section 15(2)(a).

Southeast Daviess District also states that a lower level of scrutiny is appropriate for testing the accuracy of meters at a low flow rate because very small amounts of water are used at low flow rates.²⁵ Southeast Daviess District relies on the Commission's decisions in other proceedings²⁶ in which the Commission has approved extending the testing periods of meters based on test results that judged minimum flow rates at an

²¹ 807 KAR 5:066, Section 15(2)(a), specifies that the accuracy limits for new and rebuilt 5/8- x 3/4-Inch meters are 95 percent (lower limit) and 101 percent (upper limit).

²² 807 KAR 5:066, Section 15(2)(a), specifies that the accuracy limit for a repaired 5/8- x 3/4-Inch meter is 90 percent.

²³ Response to Staff's Second Request (filed Aug. 28, 2020), Item 10.

²⁴ Response to Staff's Second Request (filed Aug. 28, 2020), Item 7.

²⁵ Sample Testing Plan, Section 3.0.

²⁶ Sample Testing Plan, Section 2.0, citing: Case No. 2016-00432, *Electronic Application of Hardin County Water District No. 2 for a Declaratory Order That Sample Testing Satisfies the Testing Requirements of 807 KAR 5:066, Section 16(1) or, in the Alternative, for an Order Granting a Deviation from 807 KAR 5:066, Section 16(1)* (Ky. PSC Mar. 22, 2018); Case No. 2011-00220, *Joint Application of Warren County Water District, Simpson County Water District, and Butler County Water System, Inc., for a Deviation from Approved Meter Testing Program* (filed June 28, 2011) Application at Appendix A, *overruled on other grounds by Warren County Water District, et al. v. Commonwealth of Kentucky, Public Service Commission*, Civil Action No. 13-CI-401 (Ky. Franklin Cir. Ct. 2014); Case No. 2009-00253, *In the Matter of: Kentucky-American Water Company's Request for Permission to Deviate from 807 KAR 5:066, Section 16(1)* (Ky. PSC Oct. 5, 2011) at 6.

accuracy limit of 90 percent as evidence that the accuracy limit of 90 percent is appropriate when testing a 5/8-inch x 3/4-inch meter at minimum flow.²⁷ As stated above a 90 percent accuracy limit is appropriate for **repaired** 5/8-inch x 3/4-inch meters under 807 KAR 5:066, Section 15(2)(a). A 90 percent accuracy limit is also prescribed for repaired 5/8-inch x 3/4-inch meters by the American Water Works Association (AWWA).²⁸ The AWWA meter accuracy standards for 5/8-inch x 3/4-inch meters are currently identical to the accuracy standards in Commission regulations.²⁹ When testing meters at the maximum and intermediate flow rates, the AWWA and 807 KAR 5:066, Section 15(2)(a) both prescribe the same accuracy limits for all meters (new, repaired, and rebuilt), it is only when testing a repaired meter at minimum flow rates that the AWWA and 807 KAR 5:066, Section 15(2)(a) prescribe the 90 percent accuracy limit.³⁰

The Commission notes that the meters for which Southeast Daviess District proposes sample testing are warranted to meet the AWWA standards for **repaired** meters for 15 years or until registering 1,500,000 gallons whichever occurs first.³¹ Because, as stated above, Southeast Daviess District has no repaired meters in the group of meters it proposes to sample test, the deviation sought by Southeast Daviess District is a deviation from mandatory testing for all 5/8-inch x 3/4-inch SRII meters after ten years

²⁷ *Id.*, Response to Staff's First Request (filed July 24, 2020) Items 10j and 10k.

²⁸ See Response to Staff's First Request (filed July 24, 2020) Item 3, and Exhibit 3-1 at 4.

²⁹ See Response to Staff's First Request, Exhibit 3-1 at 4 (a table displaying the AWWA standard); 807 KAR 5:066, Section 15(2)(a) (incorporating a table that is identical to the AWWA standard in relevant part).

³⁰ Response to Staff's First Request (filed July 24, 2020) Exhibit 3-1 at 4.

³¹ Application at 7 and Exhibit 3; Sample Meter Testing Plan, Section 4.0.

of service,³² and a deviation from the accuracy limit for Southeast Daviess District's SRII meters, which were new when placed into service, when testing at minimum flow.³³ Southeast Daviess District's request is essentially to sample test their 5/8-inch x 3/4-inch SRII meters, and to apply the accuracy standards to which the meters are warranted.

DISCUSSION

Pursuant to 807 KAR 5:066, Section 16(1), a utility is required to periodically test all 5/8-inch x 3/4-inch meters such that no meter shall remain in service without a test for more than ten years. The Commission may grant a deviation from the periodic testing requirements pursuant to 807 KAR 5:066, Section 18, which states that "for good cause shown, the commission may permit deviations from this administrative regulation." The party requesting the deviation bears the burden of proving that good cause exists for granting a deviation.³⁴ Southeast Daviess District maintains that good cause exists for a deviation as requested for the following reasons:

1. In 2020, Southeast Daviess District sample tested its ten-year-old 5/8-inch x 3/4-inch SRII meters installed in 2010. Southeast Daviess District maintains that the results of these tests show that the meters of this age group remain remarkably accurate after ten years of service.³⁵

³² 807 KAR 5:066, Section 16(1).

³³ 807 KAR 5:066, Section 15(2)(a).

³⁴ *Energy Regulatory Comm'n v. Kentucky Power Co.*, 605 S.W.2d 46, 50 (Ky. App. 1980) ("Applicants before an administrative agency have the burden of proof.").

³⁵ Application at 6. See also Sample Testing Plan, Appendix A (test results of sample meters placed into service in 2010 reveal that all of the meters tested in 2020 performed at the accuracy levels for new, rebuilt or repaired meters for all flow levels, including minimum flow).

2. The use of sample testing in Southeast Daviess District results in significant cost savings for Southeast Daviess District.³⁶ Southeast Daviess District argues granting the requested deviation will ensure that Southeast Davies District immediately receives the cost benefits associated with sample meter testing.

3. Southeast Daviess District's Sample Testing Plan calls for Southeast Daviess District to annually update the Commission with the results of the sample testing, therefore, Southeast Daviess District argues granting a deviation will not erode any protection for Southeast Daviess District's customers or limit the Commission's ability to ensure accurate billing for utility service.³⁷

4. The manufacturer's warranty of the 5/8-inch x 3/4-inch Sensus SR11 meters is strong evidence that the meters will remain accurate for at least 15 years.³⁸ Under the Sample Testing Plan the meters will not remain in service longer than 15 years without Commission approval.

5. Southeast Daviess District maintains its Sample Testing Plan is consistent with the plans the Commission reviewed in Case Nos. 2019-00115 and 2016-00432 and incorporates the modifications the Commission made in those cases.³⁹

³⁶ Application at 6. See also Amended Application, Appendix B (Southeast Daviess District estimates that it will save \$138,720 during the period of 2020 through 2025 if sample testing is implemented as proposed.) (\$170,016 cost to test all ten year-old meters in 2020 through 2025, \$31,296 cost to sample test meters according to Southeast Daviess Sample Testing Plan \$170,016 - \$31,296 = \$138, 720).

³⁷ Application at 6. See also Sample Meter Testing Plan, Section 4.0.

³⁸ Application at 7. See also Application, Exhibit 3.

³⁹ Application at 8.

6. Southeast Daviess District argues its plan ensures the Commission's ability to more closely monitor the accuracy of Southeast Daviess District's meters than the Commission would be able to do under the regulation.⁴⁰

Based on the information currently in the record, the Commission does find that Southeast Daviess District's claims of cost saving are credible.⁴¹ Specifically, Southeast Daviess District will experience, on average, an annual cost savings of \$23,120 based on labor and other costs associated with meter testing.⁴² Thus, the Commission finds that Southeast Daviess District's plan is likely to result in cost savings. However, cost savings, while important, are not dispositive of whether Southeast Daviess District has shown good cause for the deviation requested because the inspection obligation in 807 KAR 5:066, Section 16(1), is intended, among other things, to protect customers from being overcharged by inaccurate meters and to ensure that customers are charged fairly.⁴³ In response to those concerns, Southeast Daviess District argues that its proposed deviation provides adequate assurances as to the accuracy of meters because all of its 5/8-inch x 3/4-inch Sensus SR11 meters have a 15-year warranty as to their accuracy, the

⁴⁰ Application at 8 (Southeast Daviess District notes that under the regulation meters are individually tested after ten years in service, and, if accurate upon such testing, are then returned to service without being subject to further testing for another ten years.)

⁴¹ Unlike the utility in Case No. 2019-00115, Southeast Daviess District makes no argument that it will save money by virtue of delaying the replacement of its meters.

⁴² \$138,720 total savings divided by 6 years of the Sample Testing Plan.

⁴³ See Case No. 2011-00220, *Joint Application of Warren County Water District, Simpson County Water District, and Butler County Water System, Inc. for a Deviation from Approved Meter Testing Program* (Ky. PSC Mar. 5, 2013), Order at 7 (Warren County Water Sample Testing Order, Case No. 2011-00220) (noting the various reasons for sample testing, including the need to accurately charge customers). See also KRS 278.210(4) (which allows a utility to obtain a deviation if sample testing reveals costs savings and that "no statistically significant number of its meters over-register").

Commission has previously granted similar deviations, and the accuracy of the meters will be monitored, at least in part, pursuant to the Sample Testing Plan.⁴⁴

The Commission notes that in applying for its deviation, Southeast Daviess District did not address the potential effects on revenue of keeping the meters in place for 15 as opposed to ten years without individual testing. Potential revenue losses from keeping older meters in service are important, particularly in matters involving a nonprofit utility because a decrease in revenue from water loss through defective meters or otherwise is ultimately borne by the consumer in the form of higher rates. Southeast Daviess District's unaccounted for water loss in 2019 was 8.09 percent, well below the 15 percent maximum allowable for rate-making purposes. In addition Southeast Daviess District has a history of keeping unaccounted for water loss low.⁴⁵ Moreover, Southeast Daviess District's sample testing plan, as discussed in more detail herein, should allow it and the Commission to monitor meter accuracy and, therefore, any potential revenue loss as the meters age. Nevertheless, in the event Southeast Daviess District later seeks a deviation pursuant to KRS 278.210, or any further extension of the meters' service life it should be prepared to discuss any revenue loss, and as discussed below, justify the use of the lower 90 percent accuracy limit when testing its meters at minimum flow.

Southeast Daviess District did provide evidence that its 5/8-inch x 3/4-inch Sensus SR11 meters are warranted to meet AWWA meter accuracy standards for repaired matters

⁴⁴ Application at 6–8. See Application, Exhibit 3 (providing meter warranties).

⁴⁵ *Annual Report of Southeast Daviess County Water District for the Year ended December 31, 2016*, at 56 (water loss percentage of 11.04); *Annual Report of Southeast Daviess County Water District for the Year ended December 31, 2017*, at 56 (water loss percentage 14.25); *Annual Report of Southeast Daviess County Water District for the Year ended December 31, 2018*, at 57 (water loss percentage 10.51); Response to Staff's Second Request (filed Aug. 28, 2020), Exhibit 5 (reporting a water loss percentage of 8.93 for Jan. 2020 through July 2020).

for 15 years from the date of shipment or the registration of 1,500,000 gallons whichever occurs first.⁴⁶ As discussed above, AWWA meter accuracy standards for 5/8-inch x 3/4-inch meters are currently identical to the accuracy standards in Commission regulations.⁴⁷ Both standards impose an accuracy limit of 98.5 to 101.5 percent for all 5/8-inch x 3/4-inch meters at the maximum and intermediate flow rates; an accuracy limit of 95 to 101 percent for new and rebuilt 5/8-inch x 3/4-inch meters at the minimum flow rate; and an accuracy limit of 90 percent for repaired 5/8-inch x 3/4-inch meters at the minimum flow rate.⁴⁸ Thus, Southeast Daviess District's 5/8-inch x 3/4-inch meters are warranted to meet the Commission's accuracy standards for all meters at maximum and intermediate flows and for repaired meters at low flow for approximately 15 years. Although none of the meters Southeast Daviess District proposes to subject to sample testing would be considered a "repaired meter" as that term is defined in 807 KAR 5:066, Section 15(2)(a), the Commission notes that the accuracy limit of 90 percent for 5/8-inch x 3/4-inch meters at minimum flow was used by Kentucky-American Water Company (Kentucky-American) in conducting its pilot study for sample testing meters older than ten years as approved in Case No.1996-00569,⁴⁹ and has been the standard adopted in other sample testing plans authorized by the Commission for several years.⁵⁰ However, the Commission,

⁴⁶ Application, Exhibit 3.

⁴⁷ See 807 KAR 5:066, Section 15(2)(a) (incorporating a table that is identical to the AWWA standard in relevant part).

⁴⁸ 807 KAR 5:066, Section 15(2)(a); Response to Staff's First Request (filed July 24, 2020), Exhibit 3-1 at 4.

⁴⁹ Case No. 1996-00569, *The Application of Kentucky-American Water Company for Permission to Deviate from the Requirements of 807 KAR 5:066, Section 16(1) of the Commission's Rules* (Ky. PSC Sept. 30, 1997).

⁵⁰ Case No, 2016-00432, *Electronic Application of Hardin County Water District No. 2 for a Declaratory Order That Sample Testing Satisfies the Testing Requirements of 807 KAR 5:066, Section*

although it approved Kentucky-American's and similar sample testing plans, has made no finding that applying a 90 percent accuracy limit when testing meters at minimum flow ensures that Southeast Daviess District's or the other utilities with similar sample testing plans, customers are charged fairly or identify under-registering meters adequately enough to prevent revenue loss caused by unaccounted for water loss. Therefore, as stated above, the Commission expects Southeast Daviess District and any other similarly situated utility to address the issue of revenue loss and to justify the use of a 90 percent accuracy limit for low flow testing in any future filing seeking an extension of the meters' service life or a deviation pursuant to KRS 278.210.

Southeast Daviess District's requested deviation is further supported, in part, by sample tests performed by Warren County Water District, Simpson County Water District, Butler County Water System, Inc., and Kentucky-American. The Commission granted those utilities a deviation from 807 KAR 5:066, Section 16(1), allowing them to keep their 5/8-inch x 3/4-inch meters or 5/8-inch meters, depending on the utility, in place for 15 years without any testing based on sample tests showing that the meters remained accurate for that period.⁵¹ While those tests are not conclusive as to the performance of Southeast Daviess District's meters, because they involved different systems and meters

16(1) or, in the Alternative, for an Order Granting a Deviation from 807 KAR 5:066, Section 16(1) (Ky. PSC Mar. 22, 2018); Case No. 2019-00115, *Electronic Application of Grayson County Water District for a Deviation from Meter Testing Requirements of 807 KAR 5:066, Section 16(1)* (Ky. PSC Apr. 28, 2020); Case No. 2009-00253, *In the Matter of: Kentucky-American Water Company's Request for Permission to Deviate from 807 KAR 5:066, Section 16(1)* (Ky. PSC Oct. 5, 2011).

⁵¹ See Case No. 2011-00220, *Joint Application of Warren County Water District, Simpson County Water District, and Butler County Water System, Inc. for a Deviation from Approved Meter Testing Program*, (Ky. PSC Mar. 5, 2013) (allowing meters to remain in place without periodic testing for 15 years as opposed to the 21 years requested, in part, because sample testing showed "that a significant number of the meters sampled begin to fall below the repaired meter accuracy requirements after 15 years of service"); Case No. 2009-00253, *Kentucky-American Water Company's Request for Permission to Deviate from 807 KAR 5:066, Section 16(1)* (Ky. PSC Oct. 5, 2011).

manufactured at an earlier time than the meters Southeast Daviess District seeks to subject to sample testing, they do provide some general evidence as to the accuracy of modern 5/8-inch x 3/4-inch meters after 15 years of service. Thus, those tests provide some support for the position that Southeast Daviess District's meters can be expected to perform within the accuracy standards established by 807 KAR 5:066, Section 15(2)(a), for 15 years, but they do not establish that Southeast Daviess District's specific meters will remain accurate on its system.

Southeast Daviess District proposed the Sample Testing Plan to provide further assurance that its 5/8-inch x 3/4-inch Sensus SR11 meters will perform within the accuracy standards. While there are some potential issues with Southeast Daviess District's Sample Testing Plan as discussed below, the Commission does find that it will provide some basis for monitoring the performance of the meters for which a deviation is being granted. Further, if an inspection lot fails a sample test, Southeast Daviess District proposes to remove the lot from service unless a subgroup can be identified within the lot in which case the subgroup will be removed from service.⁵² Thus, the Commission finds that granting Southeast Daviess District a deviation from 807 KAR 5:066, Section 16(1), to allow it to keep its Sensus SR11 meters in-service for 15 years with sample testing, using the accuracy limits Southeast Daviess District proposes, and implementing the annual reporting procedures as provided in the Sample Testing Plan, is likely to provide Southeast Daviess District with valuable information concerning the useful service life of its Sensus SR11 meters and to provide sufficient safeguards against undetected meter

⁵² Sample Testing Plan, Section 3.0.

failures. Therefore, the Commission finds that Southeast Daviess District's request for a deviation should be granted.

The Commission notes that its decision to grant the deviation requested is based on all of the facts and circumstances in this case. The Commission is making no determination regarding whether Southeast Daviess District's Sample Testing Plan is "based on established scientific, engineering, and economic methods" necessary to justify a deviation pursuant to KRS 278.210(4). In fact, there are some questions as to whether the Sample Testing Plan would satisfy the requirements for obtaining a deviation pursuant to KRS 278.210(4).⁵³

The ANSI/ASQ Standards at section A7.2 require that all samples from a particular lot be selected "without regard to their quality."⁵⁴ Southeast Daviess District stated that it would satisfy this requirement by using a random, computerized process to select the meters to be tested from a particular lot beginning when that lot reached ten years in service. Southeast Daviess District then stated that:

If a randomly selected meter has been vandalized or tampered with, that meter will be replaced by another random

⁵³ Southeast Daviess District relies on its use of the ANSI/ASQ Standard and the Commission's previous approval of plans using the standard to demonstrate the effectiveness of the Sample Testing Plan. However, the ANSI/ASQ Standard does not address every situation. For instance, the ANSI/ASQ Standard does not anticipate sample testing the same lot multiple times over several years. See Response to Staff's First Request (filed July 24, 2020), Item 10d. As discussed in more detail below, doing so raises the possibility that meters would be selected from a lot based on performance. Further, the ANSI/ASQ Standard does not assign an AQL, which generally represents the average number of a lot that may fail to meet a particular specification, but rather indicates that the AQL should be specified by the parties, because the standard was designed to measure quality in a production setting and, therefore, anticipated that there would be a manufacturer and a purchaser to establish an AQL. See ANSI/ASQ Standard A1.1-A2.6. Southeast Daviess District did not present testimony that the manner in which it handled or will handle issues not addressed by the ANSI/ASQ Standard would result in statistically accurate results.

⁵⁴ Pursuant to ANSI/ASQ Standard, A5.1.1 a lot "shall, as far as is practicable, consist of units of product of a single type, grade, class, size, or composition manufactured under essentially the same conditions." Here, a "lot" is the total number of Sensus SR11 meters placed into service by Southeast Daviess District in a given year.

selection. Similarly, if a randomly selected meter has suffered a mechanical or other failure that is not equally likely to occur at the same or a similar rate in the lot as a whole, it will be removed and replaced by another random selection. In its annual meter testing reports to the Commission, Southeast Daviess District will report any vandalized, tampered, or failed meter that was replaced and explain why it was not used to determine the acceptability of the sample. . . .

If the sample is not accepted under the ANSI Standard and a poorly performing sub-group can be identified for separation from the original control group, the deviate sub-group will be removed from service within 6 months. If, by removal of a specific sub-group of meters, Southeast Daviess District can demonstrate that the original control group of meters now meets the applicability standard, the remaining meters in the original control group shall remain in service.⁵⁵

The Commission observes that the exclusion of meters from a sample group or from a lot simply because, upon testing, they were found to have suffered a failure or been damaged will result in the selection of meters based on quality. For instance, if Southeast Daviess District were to replace a meter in a sample group for testing in 2021 after sample testing in 2020 revealed that it was not measuring properly, then the results would be skewed in favor of finding that meters remain accurate because a meter that had tested as inaccurate would be replaced by a randomly selected meter that may or may not be accurate.⁵⁶ Similarly, although the effect would not be as great, if Southeast

⁵⁵ Sample Testing Plan, Section 3.0.

⁵⁶ As an example, if 33% of meters fail to register accurately after ten years of service, then one would expect 10 out of 30 meters to test as inaccurate if you tested the meters after ten years of service. If those ten meters were then removed from the sample group and replaced with ten randomly selected meters from the lot, then about three (33%) of those replacement meters would test as inaccurate on average, which would change the tested rate of inaccuracy to about 10% despite an actual rate of inaccuracy of 33%. If those three meters were then removed from the sample group and replaced with three randomly selected meters, then one of those meters (again 33%) on average would test as inaccurate, which would change the tested rate of inaccuracy to about 3% despite an actual rate of inaccuracy at 33%. While this is an example that does not account for numerous variables, it illustrates how replacing samples that fail to measure accurately from a lot will artificially inflate the tested accuracy of the meters overtime, because it results in selection based on quality.

Daviess District randomly selected sample groups from a lot each year, but removed meters that failed to meet the accuracy standards upon testing, as it would be required to do, then the percentage of meters in the lot that would fail the test would be reduced such that when the sample group was selected the following year the chance that failing meters would be selected would be artificially reduced, unless Southeast Daviess District continued to account for the meter that was removed in a statistically appropriate manner. Thus, the Commission finds that a meter randomly selected for testing should not be excluded from a sample group or the inspection lot as proposed by Southeast Daviess District and should be accounted for in a statistically appropriate manner even if removed from service unless Southeast Daviess District can establish that the damage or failure was or would have been identified within a reasonable period in the ordinary course of business even if the meter had not been selected for sample testing.

The Commission also notes that based on the AQL and inspection level proposed by Southeast Daviess District for testing meters that the ANSI/ASQ Standard would require Southeast Daviess District to test substantially fewer meters at low flow than at high and intermediate flow. For instance, in 2020 Southeast Daviess District had 1,162 Sensus SR11 meters in a lot. Applying the ANSI/ASQ Standard as it proposes to apply it in its Sample Testing Plan, Southeast Daviess District was required to test 35 meters at high and intermediate flow, but would only be required to test 7 meters at low flow.⁵⁷ Southeast Daviess District estimates that it will take one additional hour to test every meter pulled for high and intermediate flow tests at low flow as well.⁵⁸ In addition,

⁵⁷ Sample Testing Plan, Section 3.0.

Southeast Daviess District estimates testing all meters pulled for high and intermediate flow at low flow as well will require 30 additional gallons of water.⁵⁹ The Commission finds that obtaining the additional information regarding the performance of the meters at such minimal expense would be cost beneficial for evaluating the performance of the meters. Thus, the Commission finds that Southeast Daviess District should test all meters pulled for high and intermediate testing at low flow.

The Commission expects Southeast Daviess District to submit an annual report to the Commission each year, as indicated in its plan, detailing the test results for each year, including details regarding each meter tested and the relevant data necessary for the Commission to perform the calculations detailed in ANSI/ASQ Standards, an explanation of whether each sample was accepted at each flow rate using the relevant ANSI/ASQ Standards, and an explanation of any abnormal meter results that were not used in determining the acceptability of the sample. The Commission further expects that a meter randomly selected for testing will not be excluded from a sample group or the inspection lot after suffering a testing failure or damage and will be accounted for in a statistically appropriate manner even if removed from service unless Southeast Daviess District can establish that the damage or failure was or would have been identified within a reasonable period in the ordinary course of business even if the meter had not been selected for sample testing. Finally, the Commission expects that if a particular meter is excluded from or replaced in a lot or sample group for any reason, Southeast Daviess District will

⁵⁸ Response to Staff's Second Request (filed Aug. 28, 2020), Item 12 (indicating this will cost approximately \$31 in additional labor costs).

⁵⁹ *Id.*

provide a detailed explanation of the basis for removing or excluding the meter from the lot or sample group.⁶⁰

IT IS THEREFORE ORDERED that:

1. Southeast Daviess District's application for a deviation from 807 KAR 5:066, Section 16(1), is granted.

2. Southeast Daviess District shall not be required to test its 5/8-inch x 3/4-inch Sensus SR11 meters pursuant to 807 KAR 5:066, Section 16(1), subject to the conditions set forth herein.

3. Southeast Daviess District shall sample test its 5/8-inch x 3/4-inch meters for which a deviation was granted herein, pursuant to its Sample Testing Plan, as modified by the Commission herein.

4. Southeast Daviess District shall submit annual reports of its sample testing detailing the results of the sample testing for that year, including:

a. The serial number, manufacturer, and model/form/type of each meter tested;

b. The date that each meter was tested;

c. The total water flow through the meter from the date it was placed in service through the date of sample testing as recorded at the time of testing;

d. An Excel spreadsheet, with formulas intact, containing the raw data collected from each meter tested and showing the calculations detailed in the ANSI/ASQ

⁶⁰ The level of detail necessary would depend on the explanation for the exclusion from or replacement of the meter in the sample group. For instance, if a vandal were to cause significant and apparent damage to a meter that would have been identified regardless of whether it was individually tested, then Southeast Daviess District may easily explain why such failure is not representative of the lot as a whole.

Standards on which Southeast Daviess District relied on when conducting and analyzing its sample testing;

e. The results of Southeast Daviess District's calculations and an explanation of whether each sample was passed at each flow rate using the relevant ANSI/ASQ Standards;

f. An explanation of any abnormal meter results that were excluded or otherwise not used in determining whether a sample passed;

g. A detailed explanation, as discussed above, of the basis for excluding a meter or group of meters from a sample group or replacing them, including the test results at each flow level for the excluded meter;

h. The total number of meters in a particular lot in service at the time Southeast Daviess District performed the sample testing; and

i. Any other information Southeast Daviess District has deemed relevant and necessary to review the accuracy of the meters tested.

5. Documents filed pursuant to paragraph 4 of this Order shall contain a reference to this case number and shall be stored in the post-case correspondence of this case.

6. Southeast Daviess District shall replace every meter in a lot after 15 years of service, but not before sample testing is completed for the lot that year.

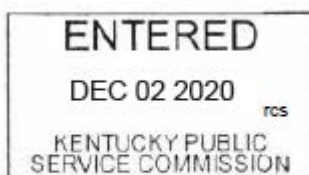
7. Southeast Daviess District may abandon its Sample Testing Plan and return to periodic testing of meters as prescribed by 807 KAR 5:066, Section 16(1), at its discretion, but if it does so, it must notify the Commission in writing.

8. Southeast Daviess District shall continue sample-testing meter lots pursuant to the Sample Testing Plan as approved herein for meters in their tenth through fifteenth year of service until the Commission orders otherwise, unless Southeast Daviess District chooses to abandon the Sample Testing Plan altogether, or for a particular lot, and returns to periodic testing of meters as prescribed by 807 KAR 5:066, Section 16(1). If Southeast Daviess District contends a change in the Sample Testing Plan or deviation granted herein is justified, it shall request and obtain the approval of the Commission before implementing that or any other change, unless it returns to periodic testing as described above.

9. Southeast Daviess District shall continue to comply with any other relevant regulations pertaining to its meters, including the quarterly reporting requirements in 807 KAR 5:006, subject to any deviation previously granted by the Commission.

10. This matter is closed and removed from the Commission's docket.

By the Commission



ATTEST:



Deputy Executive Director

Case No. 2020-00138

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