

**COMMONWEALTH OF KENTUCKY**

**BEFORE THE PUBLIC SERVICE COMMISSION**

**In the Matter of:**

**ELECTRONIC APPLICATION OF )  
SOUTHEAST DAVIESS COUNTY )  
WATER DISTRICT FOR A DEVIATION ) CASE NO. 2020-00138  
FROM METER TESTING )  
REQUIREMENTS OF 807 KAR 5:066, )  
SECTION 16(1) )**

**VERIFIED APPLICATION**

Pursuant to 807 KAR 5:001, Section 14 and 807 KAR 5:066, Section 18, Southeast Daviess County Water District (“Southeast Daviess District”) hereby applies to the Kentucky Public Service Commission (“Commission”) for a deviation from the requirements of 807 KAR 5:066, Section 16(1) regarding the frequency of testing its 5/8- x 3/4-inch Sensus SRII meters. In support of its application, Southeast Daviess District states:

1. The full name and post office address of Southeast Daviess District is: Southeast Daviess County Water District, 3400 Bittel Road, Owensboro, Kentucky 42301. Its email address is whigdon@oolwireless.net.
2. Southeast Daviess District is not a corporation, limited liability company, or limited partnership. It has no articles of incorporation or partnership agreements.

3. Southeast Daviess District is a water district organized pursuant to KRS Chapter 74.

4. Southeast Daviess District is engaged in the distribution and sale of water in Daviess County, Kentucky. As of December 31, 2019, Southeast Daviess District served approximately 7,599 customers (7,091 residential customers, 383 commercial customers, 116 multiple family dwellings, and 9 irrigation customers).<sup>1</sup>

5. Pursuant to 807 KAR 5:001, Section 4(8), copies of all orders, pleadings, and other communications related to this proceeding should be directed to:<sup>2</sup>

William Higdon, Manager  
Southeast Daviess County Water District  
3400 Bittel Road  
Owensboro, KY 42301  
(270) 685-5594  
whigdon@oolwireless.net

Mary Ellen Wimberly  
Stoll Keenon Ogden PLLC  
2100 Southeast Vine Street, Ste 2100  
Lexington, KY 40507-1801  
(859) 231-3047  
Fax: (859) 246-3647  
maryellen.wimberly@skofirm.com

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<sup>1</sup> Annual Report of Southeast Daviess County Water District to the Public Service Commission of the Commonwealth of Kentucky for the Calendar Year Ended December 31, 2019 (“2019 Annual Report”) at Ref Page 27.

<sup>2</sup> On April 22, 2020 Southeast Daviess District filed with the Commission notice of its election of use of electronic filing procedures pursuant to 807 KAR 5:001, Section 8.

Damon R. Talley  
Stoll Keenon Ogden PLLC  
P.O. Box 150  
Hodgenville, KY 42748-0150  
(270) 358-3187  
damon.talley@skofirm.com

6. 807 KAR 5:066, Section 16(1) requires that water utilities periodically test their 5/8- x 3/4-inch water meters so that no meter remains in service without testing for a period longer than 10 years.

**Southeast Daviess District's Sample Meter Testing Plan**

7. In this Application, Southeast Daviess District seeks a deviation from 807 KAR 5:066, Section 16(1) to allow Southeast Daviess District's 5/8- x 3/4-inch Sensus meters to remain in service for a period of 15 years. Pursuant to Southeast Daviess District's Sample Meter Testing Plan ("Plan"), attached as **Exhibit 1**, Southeast Daviess District proposes to test annually a representative sample of its Sensus SRII meters that have been in service at least 10 years to ensure that all Sensus SRII meters within their respective age groups meet the accuracy requirements set forth in 807 KAR 5:066, Section 15. Southeast Daviess District will not allow meters to remain in service for longer than 10 years without testing until receiving a deviation from the Commission.

8. The Commission recently granted in Case Nos. 2019-00115<sup>3</sup> and 2016-00432<sup>4</sup> deviations from 807 KAR 5:066, Section 16(1) to allow water utilities' 5/8- x 3/4-inch meters to remain in service without testing for a period of 15 years. Southeast Daviess District's Plan follows the same statistical sampling and analytical methodologies that were reviewed and accepted by the Commission in those cases.

9. Under the Plan, Southeast Daviess District will test each Sensus SRII meter at three different flow rates: a maximum flow rate of 15 gallons per minute (“gpm”); an intermediate flow rate of 2 gpm; and a minimum flow rate of 1/4 gpm. These flow rates are specified by 807 KAR 5:066, Section 15(2). The acceptability of the maximum, intermediate, and minimum flow rates will be determined using statistical methods described in *American National Standard Institute ANSI/ASQ Z1.9-2003 (R2013) (Sampling Procedures and Tables for Inspection by Variables for Percent Nonconforming)* (hereinafter referred to as the “ANSI Standard”).<sup>5</sup> The

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<sup>3</sup> *In the Matter of: Electronic Application of Grayson County Water District for a Deviation from the Meter Testing Requirements of 807 KAR 5:066, Section 16(1)*, Case No. 2019-00115, Order (Ky. PSC Apr. 28, 2020).

<sup>4</sup> *In the Matter of: 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)*, Case No. 2016-00432, Order (Ky. PSC Mar. 22, 2018).

<sup>5</sup> In addition to approving the use of the ANSI Standard in Case Nos. 2019-00115 and 2016-00432, the Commission has approved the use of the ANSI Standard for electric and gas utilities conducting sample meter testing. See, e.g., *In the Matter of: Application of Farmers Rural Electric Cooperative for Adoption of a Sample Meter Testing Program*, Case No. 2013-00186, Order (Ky. PSC Aug. 8, 2014); *In the Matter of: Application of Kenergy Corp. for Approval of Sample Meter Testing Plan*, Case No. 2010-00034, Order (Ky. PSC May 14, 2010).

size of the sample will be determined by the ANSI Standard. Sampled meters will be randomly selected by a computerized process.

10. Southeast Daviess District sample tested its 10-year-old Sensus SRII meters (those installed in 2010) in 2020 and reports those findings in Appendix A to its Plan. If the Commission grants Southeast Daviess District a deviation in 2020, Southeast Daviess District will conduct sample testing pursuant to its Plan on the following schedule:

**Year 1 (2020):** Sample test the 10-year-old Sensus meters (those installed in 2010).

**Year 2 (2021):** Sample test the 11-year-old Sensus meters (those installed in 2010); sample test the 10-year-old Sensus meters (those installed in 2011).

**Year 3 (2022):** Sample test the 12-year-old Sensus meters (those installed in 2010); sample test the 11-year-old Sensus meters (those installed in 2011); sample test the 10-year-old Sensus meters (those installed in 2012).

**Year 4 (2023):** Sample test the 13-year-old Sensus meters (those installed in 2010); sample test the 12-year-old Sensus meters (those installed in 2011); sample test the 11-year-old Sensus meters (those installed in 2012); sample test the 10-year-old Sensus meters (those installed in 2013).

**Year 5 (2024):** Sample test the 14-year-old Sensus meters (those installed in 2010); sample test the 13-year-old Sensus meters (those installed in 2011); sample test the 12-year-old Sensus meters (those installed in 2012); sample test the 11-year-old Sensus meters (those installed in 2013); sample test the 10-year-old Sensus meters (those installed in 2014).

**Year 5 (2025):** Sample test the 15-year-old Sensus meters (those installed in 2010); sample test the 14-year-old Sensus meters (those installed in 2011); sample test the 13-year-old Sensus meters (those installed in 2012); sample test the 12-year-old Sensus meters (those installed in 2013); sample test the 11-year-old Sensus meters (those installed in 2014); sample test the 10-year-old Sensus meters (those installed in 2015).

11. Southeast Daviess District will annually file with the Commission the sample test results. After the first group of meters reaches 15 years of age, Southeast Daviess District will evaluate the data and request that the Commission: (1) extend the sample meter testing plan; (2) allow Southeast Daviess District to replace meters on a 15-year cycle; or (3) approve another appropriate course of action.

12. Southeast Daviess District's Board of Commissioners accepted the Plan, subject to the approval of the Plan by the Commission, on April 28, 2020. The Resolution is attached as **Exhibit 2**.

**Deviation from 807 KAR 5:066, Section 16(1)**

13. 807 KAR 5:066, Section 18 authorizes the Commission to permit deviations from 807 KAR 5:066 when good cause is shown. Southeast Daviess District requests a deviation from 807 KAR 5:066, Section 16(1) to permit Southeast Daviess District to test its 5/8- x 3/4-inch Sensus SRII meters in accordance with its Plan. Good cause for a deviation exists in the present case for the following reasons:

(a) In 2020, Southeast Daviess District sample tested its 10-year-old 5/8- x 3/4-inch Sensus SRII meters installed in 2010. The results of these tests, which are shown in Appendix A to the Plan, show that the meters of this age group remain remarkably accurate at 10 years of age.

(b) The use of statistical sample testing in Southeast Daviess District's Plan results in significant cost savings for Southeast Daviess District. Granting the requested deviation will ensure that Southeast Daviess District immediately receives the cost benefits associated with sample meter testing. As shown on Appendix B to its Plan, Southeast Daviess District estimates that it will save \$180,768 in labor and testing costs over the course of the Plan if the Commission grants this deviation and Southeast Daviess District is able to sample test its Sensus SRII 5/8- x 3/4-inch until they reach 15 years of age. Southeast Daviess District customers will benefit from these savings.

(c) Granting a deviation will not erode any protection for Southeast Daviess District customers or limit the Commission's ability to ensure accurate billing for utility service. Under the Plan, Southeast Daviess District will annually update the Commission with the results of the sample testing. These updates will provide the Commission the ability to actively monitor the results of the sample testing and address any results showing inaccuracies. Unlike meters that are tested after 10 years of service and then not subject to further testing for another 10 years,

Southeast Daviess District will subject the Sensus meters in each age group that is 10 years or older to annual sample testing to ensure their accuracy.

(d) Sensus has represented that its 5/8- x 3/4-inch meters will remain accurate for 15 years. This warranty is strong evidence that the meters will remain accurate for at least 15 years. The warranty is attached as **Exhibit 3**. Under the Plan and Southeast Daviess District's current request, the meters will not remain in service longer than 15 years without further Commission approval.

(e) The Plan is consistent with the plans the Commission reviewed in Case Nos. 2019-00115 and 2016-00432, and incorporates modifications the Commission made in those cases.

(f) The Commission has explained that a reason for its testing requirements is to reduce revenue loss to the utility<sup>6</sup> and recently reiterated the importance of low line loss in Case Nos. 2019-00115<sup>7</sup> and 2016-00432.<sup>8</sup> Southeast Daviess District has a positive history of a low percentage of line loss. In 2019, Southeast Daviess District's total unaccounted for line loss was 8.09%.<sup>9</sup>

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<sup>6</sup> *In the Matter of: 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*, Case No. 2011-00220, Order at 7-8 (Ky. PSC Mar. 5, 2013) (citing *In the Matter of: The Application of Kentucky-American Water Company for a Deviation Pursuant to 807 KAR 5:066, Section 15(3), Regarding Meter Testing*, Case No. 92-526, Order at 1 (Ky. PSC Dec. 28, 1992)).

<sup>7</sup> *In the Matter of: Electronic Application of Grayson County Water District for a Deviation from the Meter Testing Requirements of 807 KAR 5:066, Section 16(1)*, Case No. 2019-00115, Order (Ky. PSC Apr. 28, 2020).

<sup>8</sup> *In the Matter of: 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)*, Case No. 2016-00432, Order at 11-12 (Ky. PSC Mar. 22, 2018).

<sup>9</sup> Annual Report of Southeast Daviess County Water District to the Public Service Commission of the Commonwealth of Kentucky for the Calendar Year Ended December 31, 2019 ("2019 Annual Report") at Ref Page 30.



Furthermore, approval of the Plan would ensure the Commission can monitor the accuracy of the meters more closely than it would under the regulation.<sup>10</sup> Unlike meters that are tested after 10 years of service and then not subject to further testing for another 10 years, Southeast Daviess District will subject the Sensus meters in each age group that is 10 years or older to annual sample testing to ensure their accuracy. Granting this deviation will not lead to a revenue loss to the utility; instead, the deviation will allow Southeast Daviess District to achieve significant cost savings.

14. Southeast Daviess District respectfully requests that the Commission rule on this Application for Deviation by October 1, 2020, to ensure that Southeast Daviess District has ample time to remove and test all 10-year-old meters in 2020 if the Application is denied.

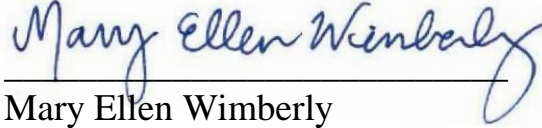
**WHEREFORE**, Southeast Daviess County Water District requests that the Commission grant it a deviation from 807 KAR 5:066, Section 16(1) such that over the next five years Southeast Daviess County Water District may conduct sample testing on its 5/8- x 3/4-inch Sensus SRII meters that have been in service for 10 years or longer in lieu of testing each Sensus SRII meter after it has been in service 10 years.

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<sup>10</sup> Southeast Daviess District will sample test meters each year after the meters reach 10 years of age. Under the testing requirements proscribed by the regulation, Southeast Daviess District could test the meters at 10 years of age, return the meters to service if the meters are accurate, and then use the meters without testing for another 10 years.

Dated: June 8, 2020

Respectfully submitted,



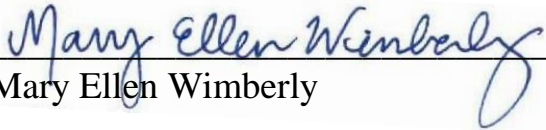
Mary Ellen Wimberly  
Stoll Keenon Ogden PLLC  
300 Southeast Vine Street, Suite 2100  
Lexington, Kentucky 40507-1801  
Telephone: (859) 231-3047  
Fax: (859) 246-3647  
maryellen.wimberly.skofirm.com

Damon R. Talley  
Stoll Keenon Ogden PLLC  
P.O. Box 150  
Hodgenville, KY 42748-0150  
Telephone: (270) 358-3187  
Fax: (270) 358-9560  
damon.talley@skofirm.com

*Counsel for Southeast Daviess County  
Water District*

## CERTIFICATE OF SERVICE

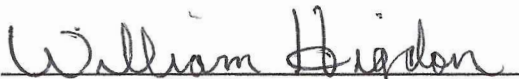
In accordance with 807 KAR 5:001 Section 8(7) and the Commission's March 16, 2020 Order in Case No. 2020-00085, this is to certify that Southeast Daviess County Water District's electronic filing was transmitted to the Commission on June 8, 2020; that there are currently no parties that the Commission has excused from participation by electronic means in this proceeding; and that a physical copy of the filing will be submitted to the Commission once the State of Emergency has ceased.

  
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Mary Ellen Wimberly

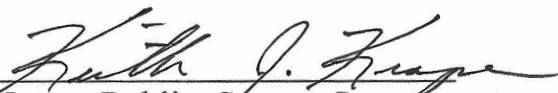
COMMONWEALTH OF KENTUCKY )  
 ) SS  
COUNTY OF DAVIESS )

The undersigned, William Higdon, being duly sworn, deposes and states that he is the Manager of Southeast Daviess County Water District, the Applicant in the above proceeding; that he has read this Application and has noted its contents; that the same is true of his own knowledge, except as to those matters which are therein stated on information or belief, and as to those matters, he believes same to be true.

IN TESTIMONY WHEREOF, witness the signature of the undersigned on this 5<sup>th</sup> day of June, 2020.

  
William Higdon, Manager  
Southeast Daviess County Water District

Subscribed and sworn to before me, a Notary Public in and for said County and State, by William Higdon, in his capacity as Manager of Southeast Daviess County Water District, on this 5<sup>th</sup> day of June, 2020.

  
Notary Public, State at Large

Notary ID: KYNP 2940

My Commission expires:  
2-11-2024

# **EXHIBIT 1**

**SAMPLE METER TESTING PLAN**  
**FOR**  
**SOUTHEAST DAVIESS COUNTY WATER DISTRICT**  
**5/8- x 3/4-INCH SENSUS METERS**

Southeast Daviess County Water District  
Owensboro, KY

April 28, 2020

# **SAMPLE METER TESTING PLAN**

## **SECTION 1.0 INTRODUCTION**

Southeast Daviess County Water District (“Southeast Daviess District”) is a water utility located in Daviess County, Kentucky. Pursuant to 807 KAR 5:066, Section 16(1), Southeast Daviess District currently removes all meters after 10 years of service, tests all meters, and then re-installs the meters that still meet the accuracy limits set forth in 807 KAR 5:066, Section 15(2)(a). If a meter does not meet the accuracy limits, it is replaced with a new meter. New meters are tested for accuracy by the manufacturer before being placed into service.

Southeast Daviess District requests a deviation from the testing frequency requirements of 807 KAR 5:066, Section 16(1), to implement sample testing of 5/8- x 3/4-inch Sensus meters 10-15 years of age in accordance with this Sample Meter Testing Plan (the “Plan”). Statistical sample testing permits conclusions to be reached concerning an entire group of meters after testing a small, but statistically significant, percentage of the group’s total number. By adopting this Plan, Southeast Daviess District will maintain accurate meters and significantly reduce the costs associated with testing all meters on a 10-year cycle.

Southeast Daviess District is only seeking a deviation from 807 KAR 5:066, Section 16(1) to implement sample testing and extend the service life of its 5/8- x 3/4-inch Sensus meters that have reached 10-15 years of age as set forth in the Plan.

## **SECTION 2.0 RULES AND REGULATIONS**

807 KAR 5:066, Section 15(2) requires “[a]ll new meters, and any meter removed from service for any cause . . . be tested for accuracy as specified herein prior to being placed in service.” The regulation includes a table with accuracy limits for maximum, intermediate, and minimum flow rates. For maximum and intermediate rates, the accuracy limit is 98.5-101.5 percent. At a minimum flow rate, the accuracy limit is 95-101 percent for new and rebuilt meters. Repaired meters must meet a minimum flow rate accuracy limit of 90. The Commission has allowed extensions of meter testing periods based on test results that judged minimum flow rates at a limit of 90 percent.<sup>1</sup> Under 807 KAR 5:066, Section 16(1), 5/8- x 3/4-inch meters may not remain in service without testing for longer than 10 years.

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<sup>1</sup> *In the Matter of: 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)*, Case No. 2016-00432, Order (Ky. PSC Mar. 22, 2018); *In*

Southeast Daviess District requests a deviation from 807 KAR 5:066, Section 16(1) to implement sample testing of its 5/8- x 3/4-inch Sensus meters and allow those meters to remain in service for 15 years. The Plan will ensure meter accuracy by annually sample testing each meter age group that is 10 years old or greater for at least the first five years of sample testing. Granting the requested deviation will ensure the accuracy of Southeast Daviess District’s meters while significantly reducing costs.

### **SECTION 3.0 PROCEDURE**

Southeast Daviess District’s statistical sample meter testing for maximum, intermediate, and minimum flow rates will follow *American National Standard Institute ANSI/ASQ Z1.9-2003 (R2013) (Sampling Procedures and Tables for Inspection by Variables for Percent Nonconforming)* (hereinafter referred to as the “ANSI Standard”). Like the water utility in Case No. 2016-00432, Southeast Daviess District uses the ANSI Standard Double Specification Limit method to determine acceptance of the meters at maximum and intermediate flow rates and the ANSI Standard Single Specification Limit method with lessened scrutiny to test meters at minimum flow rates.

The size of the sample will be determined by the ANSI Standard. Southeast Daviess District will use an Excel spreadsheet, its billing system, or another computerized process to randomly select meters for testing.

The **Acceptance Quality Limit (“AQL”)** is defined as the quality level that is the worst tolerable product average when a continuing series of lots is submitted for acceptance sampling. This value is selected by the utility as recognition of the level of errors that are acceptable and is derived from **Table A-1**. For maximum and intermediate flow rates, Southeast Daviess District will use an **AQL of 2.5**, as has

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*the Matter of: 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, Case No. 2011-00220, Application at Appendix A (Ky. PSC June 28, 2011), 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); In the Matter of: Kentucky-American Water Company’s Request for Permission to Deviate from 807 KAR 5:066, Section 16(1), Case No. 2009-00253, Order at 6 (Ky. PSC Oct. 5, 2011).*



been previously approved by the Commission.<sup>2</sup> For minimum flow rates, Southeast Daviess District will use an **AQL of 10.0**.<sup>3</sup>

*Table A-1*  
AQL Conversion Table

For specified AOL values falling within these ranges			Use this AQL value
-	to	0.109	0.10
0.110	to	0.164	0.15
0.165	to	0.279	0.25
0.280	to	0.439	0.40
0.440	to	0.669	0.65
0.700	to	1.09	1.0
1.10	to	1.64	1.5
1.65	to	2.79	2.5
2.80	to	4.39	4.0
4.40	to	6.99	6.5
7.00	to	10.9	10.0

Under the ANSI Standard, the sample size is determined by the inspection level and lot size. Part A7 of the ANSI Standard states that Inspection Level II shall generally be used. Part A7.1 notes that Inspection Level I may be specified when less discrimination is needed. Like the water utility in Case No. 2016-00432, Southeast Daviess District will use **Inspection Level II** to test the maximum and intermediate flow rates and **Inspection Level I** to test the minimum flow rates. Lessened scrutiny

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<sup>2</sup> See, e.g., *In the Matter of: 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)*, Case No. 2016-00432, Order (Ky. PSC Mar. 22, 2018); *In the Matter of: Application of Farmers Rural Electric Cooperative for Adoption of a Sample Meter Testing Program*, Case No. 2013-00186, Order at 4 (Ky. PSC Aug. 8, 2014); *In the Matter of: Application of Kenergy Corp. for Approval of Sample Meter Testing Plan*, Case No. 2010-00034, Order (Ky. PSC May 14, 2010); *In the Matter of: Application of Grayson Rural Electric Cooperative Corporation for a Deviation from 807 KAR 5:041, Section 15(3), Sample Master Meter Testing Program*, Case No. 2009-00103, Order (Ky. PSC Sept. 25, 2009); *In the Matter of: Application of Salt River Electric Cooperative Corporation to Adopt a Sample Meter Testing Program*, Case No. 2005-00536, Order (Ky. PSC Feb. 6, 2006); *In the Matter of: Application of Fleming-Mason Energy Cooperative for Approval to Adopt a Sample Meter Testing Plan*, Case No. 2004-00173, Order (Ky. PSC Aug. 25, 2004); *In the Matter of: The Application of Louisville Gas and Electric Company for Approval of a Permanent Statistical Meter Sampling Plan*, Case No. 2000-278 (Ky. PSC Nov. 7, 2001); *In the Matter of: The Application of Columbia Gas of Kentucky, Inc. for Authority to Implement a Permanent Statistical meter Sampling Plan for Residential, Industrial and Commercial Class meters and for Authority to Deviate from 807 KAR 5:006, Section 25(5)(b)*, Case No. 2000-429 (Ky. PSC Feb. 26, 2001).

<sup>3</sup> The use of an AQL of 10.0 for minimum flow rates was approved by the Commission in Case No. 2016-00432.

is appropriate for minimum flow rates because of the very small amounts of water used at low flow rates.

Using the inspection level and lot size, **Table A-2** provides the Sample Size Code Letter that is referenced in **Table B-3** and **Table B-4**. For the maximum and intermediate flow rates, the **AQL** and **Table B-3** are then used to determine the sample size for the lot. For the minimum flow rates, the **AQL** and **Table B-4** are then used to determine the sample size for the lot.

For the maximum and intermediate flow rates, the upper and lower accuracy limits of 807 KAR 5:066, Section 15(2) require the use of the **Double Specification Limit** method as outlined in the ANSI Standard. For each lot, calculations will be based on the Double Specification Limit Variability Unknown-Standard Deviation Method. **Example B-3** in the ANSI Standard demonstrates this calculation method when the same AQL value is used for the upper and lower limit.

For the minimum flow rates, the single lower accuracy limit of 807 KAR 5:066, Section 15(2) necessitates the use of the **Single Specification Limit** method as outlined in the ANSI Standard. The calculation will be based on the Single Specification Limit-Form 2 Variability Unknown-Standard Deviation Method. **Example B-2** in the ANSI Standard demonstrates this calculation method.

[Table A-2 is shown on next page]

*Table A-2<sup>1</sup>*  
**Sample Size Code Letters<sup>2</sup>**

Lot Size	Inspection Levels				
	Special S3 S4		General I II III		
2 to 8	B	B	B	B	C
9 to 15	B	B	B	B	D
16 to 25	B	B	B	C	E
26 to 50	B	B	C	D	F
51 to 90	B	B	D	E	G
91 to 150	B	C	E	F	H
151 to 280	B	D	F	G	I
281 to 400	C	E	G	H	J
401 to 500	C	E	G	I	J
501 to 1,200	D	F	H	J	K
1,201 to 3,200	E	G	I	K	L
3,201 to 10,000	F	H	J	L	M
10,001 to 35,000	G	I	K	M	N
35,001 to 150,000	H	J	L	N	P
150,001 to 500,000	H	K	M	P	P
500,001 and over	H	K	N	P	P

<sup>1</sup>The theory governing inspection by variables depends on the properties of the normal distribution and, therefore, this method of inspection is only applicable when there is reason to believe that the frequency distribution is normal.

<sup>2</sup>Sample size code letters given in body of table are applicable when the indicated inspection levels are to be used.

**Table B-3** Standard Deviation Method  
**Master Table for Normal and Tightened Inspection for Plans Based on Variability Unknown**  
**(Double Specification Limit and Form 2—Single Specification Limit)**

Sample Size Code Letter	Sample Size	Acceptance Quality Limits (normal inspection)											
		T	.10	.15	.25	.40	.65	1.00	1.50	2.50	4.00	6.50	10.00
		M	M	M	M	M	M	M	M	M	M	M	M
B	3	↓	↓	↓	↓	↓	↓	↓	↓	7.59	18.86	26.94	33.69
C	4	↓	↓	↓	↓	↓	↓	1.49	5.46	10.88	16.41	22.84	29.43
D	5	↓	↓	↓	↓	0.041	1.34	3.33	5.82	9.80	14.37	20.19	26.55
E	7	↓	0.005	0.087	0.421	1.05	2.13	3.54	5.34	8.40	12.19	17.34	23.30
F	10	0.077	0.179	0.349	0.714	1.27	2.14	3.27	4.72	7.26	10.53	15.17	20.73
G	15	0.186	0.311	0.491	0.839	1.33	2.09	3.06	4.32	6.55	9.48	13.74	18.97
H	20	0.228	0.356	0.531	0.864	1.33	2.03	2.93	4.10	6.18	8.95	13.01	18.07
I	25	0.250	0.378	0.551	0.874	1.32	2.00	2.86	3.97	5.98	8.65	12.60	17.55
J	35	0.253	0.373	0.534	0.833	1.24	1.87	2.66	3.70	5.58	8.11	11.89	16.67
K	50	0.243	0.355	0.503	0.778	1.16	1.73	2.47	3.44	5.21	7.61	11.23	15.87
L	75	0.225	0.326	0.461	0.711	1.06	1.59	2.27	3.17	4.83	7.10	10.58	15.07
M	100	0.218	0.315	0.444	0.684	1.02	1.52	2.18	3.06	4.67	6.88	10.29	14.71
N	150	0.202	0.292	0.412	0.636	0.946	1.42	2.05	2.88	4.42	6.56	9.86	14.18
P	200	0.204	0.294	0.414	0.637	0.945	1.42	2.04	2.86	4.39	6.52	9.80	14.11
		.10	.15	.25	.40	.65	1.00	1.50	2.50	4.00	6.50	10.00	
Acceptance Quality Limits (tightened inspection)													

**Table B-4** Standard Deviation Method  
**Master Table for Reduced Inspection for Plans Based on Variability Unknown**  
**(Double Specification Limit and Form 2—Single Specification Limit)**

Sample Size Code Letter	Sample Size	Acceptance Quality Limits										
		.10	.15	.25	.40	.65	1.00	1.50	2.50	4.00	6.50	10.00
		M	M	M	M	M	M	M	M	M	M	M
B	3	↓	↓	↓	↓	↓	↓	7.59	18.86	26.94	33.69	40.47
C	3	↓	↓	↓	↓	↓	↓	7.59	18.86	26.94	33.69	40.47
D	3	↓	↓	↓	↓	↓	↓	7.59	18.86	26.94	33.69	40.47
E	3	↓	↓	↓	↓	↓	↓	7.59	18.86	26.94	33.69	40.47
F	4	↓	↓	↓	↓	1.49	5.46	10.88	16.41	22.84	29.43	36.79
G	5	↓	↓	0.041	1.34	3.33	5.82	9.80	14.37	20.19	26.55	33.94
H	7	0.087	0.421	1.06	2.13	3.54	5.34	8.40	12.19	17.34	23.30	30.50
I	10	0.349	0.714	1.27	2.14	3.27	4.72	7.26	10.53	15.17	20.73	27.65
J	15	0.491	0.839	1.33	2.09	3.06	4.32	6.55	9.48	13.74	18.97	25.63
K	20	0.531	0.864	1.33	2.03	2.93	4.10	6.18	8.95	13.01	18.07	24.58
L	25	0.551	0.874	1.32	2.00	2.86	3.97	5.98	8.65	12.60	17.55	23.97
M	30	0.567	0.885	1.32	1.98	2.82	3.91	5.87	8.48	12.37	17.25	23.61
N	50	0.503	0.778	1.16	1.73	2.47	3.44	5.21	7.61	11.23	15.87	21.99
P	75	0.461	0.711	1.06	1.59	2.27	3.17	4.83	7.10	10.58	15.07	21.05

In 2020, Southeast Daviess District had 1,162 10-year-old Sensus SRII 5/8- x 3/4-inch meters in service. For the maximum and intermediate flow rates, Table A-2 specifies a sample size code letter of “J” for samples of that size. Using the sample size code letter and an AQL of 2.5, Table B-3 shows that a sample size of 35 and an acceptability criterion of 5.58 should be used for maximum and intermediate flow rates. For the minimum flow rates, Table A-2 specifies a sample size code letter of “H” for samples of that size. Using the sample size code letter and an AQL of 10.0, Table B-4 shows that a sample size of 7 and an acceptability criterion of 30.50 should be used for minimum flow rates.

Inspection lots will consist of 5/8- x 3/4-inch Sensus meters of a certain age. All of Southeast Daviess District’s meters that will be tested throughout the duration of the Plan are Sensus SRII meters. In 2020, Southeast Daviess District sample tested its 10-year-old Sensus SRII meters (those installed in 2010).

If the Commission grants Southeast Daviess District a deviation in 2020, Southeast Daviess District will conduct sample testing pursuant to this Plan on the following schedule: In Year 1, the 10-year-old meters (those installed in 2010) were sample tested. In Year 2, the 10- and 11-year-old meters (those installed in 2010 and 2011) will be sample tested. In Year 3, the 10-, 11-, and 12-year-old meters (those installed in 2010, 2011, and 2012) will be sample tested. This process will continue until the first group of meters reaches 15 years of age.

Randomly selected meters from each lot will be tested by a Commission-certified technician using Southeast Daviess District’s Commission-certified meter test bench. If a randomly selected meter has been vandalized or tampered with, that meter will be replaced by another random 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.

The sampled meters will be tested under three different flow rates: a maximum flow rate of 15 gallons per minute (“gpm”), an intermediate flow rate of 2 gpm, and a minimum flow rate of 1/4 gpm. Any tested meter that does not meet all of the flow rate standards in 807 KAR 5:066, Section 15 will be removed from service.

At all flow rates, meter acceptance will be determined using the ANSI Standard methods described in this Plan. 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 six 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. If a deviate sub-group of meters cannot be identified to improve the control group's accuracy, Southeast Daviess District will test and remove the entire control group of meters within 12 months of the group's failure to meet the applicable governing standard.

#### **SECTION 4.0 FUTURE PLANS AND REPORTING PROCEDURES**

This Plan seeks to verify that meters left in place beyond 10 years are accurate and to determine an appropriate meter life. Because Sensus represents that Southeast Daviess District's meters remain accurate for 15 years,<sup>4</sup> the Commission approved a 15-year meter life in Case No. 2016-00432, and studies indicate that meter performance remains largely accurate until meters reach 15 years of age,<sup>5</sup> Southeast Daviess District seeks to first extend its meters' service life to 15 years. After obtaining data on the accuracy of these meters after 15 years of use, it may request the Commission consider further extensions of the meters' service life.

Southeast Daviess District will submit an annual report to the Commission detailing the test results. The report will include the sample test results for each year and detail whether each sample was accepted at each flow rate using the ANSI Standard. The report will also include any abnormal meter results that were not used in determining the acceptability of the sample, along with an explanation of why the particular meter result was discarded. Finally, the report will include information that the Commission in Case No. 2016-00432 required the applicant to provide annually.

#### **SECTION 5.0 COST SAVINGS AND CONCLUSION**

A substantial reduction in cost will be achieved by implementing the Plan. By **sample** testing the Sensus meters that reach 10 years of age instead of testing **all** Sensus meters that reach 10 years of age, Southeast Daviess District will save at least

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<sup>4</sup> See Sensus Warranty in Exhibit 1.

<sup>5</sup> See Forester University, "Meter Accuracy Over Time," in Exhibit 2.

**\$180,768.**<sup>6</sup> These savings are conservative. The calculations assume that all meter changeouts and testing work are performed by in-house employees. By utilizing sample testing, all the work can be performed by current employees. If, on the other hand, all meters must be tested, Southeast Daviess District will have to revert to its former practice of utilizing an outside contractor to retrieve the meters to be tested and to re-install the meters following testing. This will result in an additional cost of \$25 per meter for each meter tested.

Confidence in the accuracy of the meters is an additional benefit of the Plan. Currently, Southeast Daviess District tests all meters after 10 years of age and then, if accurate, re-installs the meters. Theoretically, under Commission regulations, the meters could remain in use for another 10 years **without** being tested. While the Sensus meters are guaranteed to be accurate for 15 years, the accuracy after 15 years is unknown. Under the Plan, Southeast Daviess District will continue to sample test the meters each year to ensure their accuracy.

Southeast Daviess District customers will benefit from these savings. In Case No. 2016-00432, the Commission found cost savings calculated in the same manner to be credible. The Franklin Circuit Court has found the savings associated with meter sampling plans important. In reversing Case No. 2011-00220, the Court gave greater weight to cost savings over accuracy when there was no negative effect to customers.<sup>7</sup>

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<sup>6</sup> The calculation of savings in labor and testing costs is calculated on pages B-1 and B-2 of Appendix B. The savings were calculated by subtracting the total sample testing cost of the Plan from the cost of removing and testing the 10-year-old meters that would otherwise be removed during the five-year period of Southeast Daviess District's Plan.

<sup>7</sup> *Warren County Water District, et al. v. Commonwealth of Kentucky, Public Service Commission*, Civil Action No. 13-CI-401 (Ky. Franklin Cir. Ct. 2014). This case reversed Case No. 2011-00220 and allowed the utilities to test meters on a 21-year cycle because savings were greater than lost revenue, even though the meters were not within 807 KAR 5:066, Section 15(2)'s accuracy limits at 21 years. The court relied on KRS 278.210(4), which provides: "If a utility demonstrates through sample testing that no statistically significant number of its meters over-register above" the 2% margin of error in KRS 278.210(3), "the meter testing frequency shall be that which is determined by the utility to be cost effective."

# **APPENDICES A & B**

**2020**

**METER ACCURACY TEST RESULTS FOR 10-YEAR-OLD METERS**

**SAMPLE TESTED BY**

**SOUTHEAST DAVIESS COUNTY WATER DISTRICT**



## APPENDIX A-1

### Test Results of 2010 Sample Meters - Year 10

Serial No.	Maximum	Intermediate	Minimum	Total Water Flow	Testing Date
68661585	100.4	101.0		633,229	2/13/2020
68661593	100.2	101.0	98.0	592,170	2/13/2020
68661623	100.3	101.0		539,619	2/18/2020
68661626	100.6	101.0		588,849	2/13/2020
68661638	99.7	101.0		100,111	2/18/2020
68661646	100.3	101.0		488,447	2/13/2020
68661659	100.6	101.0	98.0	457,532	2/18/2020
68661679	100.4	101.0	97.0	416,574	2/18/2020
68957712	100.2	101.0		95,796	2/18/2020
68957715	100.4	99.0		339,308	2/13/2020
68957730	100.0	101.0	95.0	315,822	2/18/2020
68957742	100.6	101.0		355,329	2/18/2020
68957752	99.9	101.0		322,494	2/18/2020
68957762	100.3	101.0		594,132	2/18/2020
68957790	100.4	101.0	93.0	504,414	2/18/2020
68957813	100.7	101.0		326,235	2/13/2020
68957838	99.9	101.0		791,876	2/18/2020
68957847	99.9	101.0		201,002	2/18/2020
68957856	100.1	101.0		542,971	2/13/2020
68957937	99.8	101.0		77,759	2/18/2020
68957953	100.0	101.0		342,228	2/13/2020
68957978	100.3	101.0	99.0	425,815	2/18/2020
68957988	100.5	101.0		760,968	2/18/2020
68957997	100.6	101.0		285,365	2/18/2020
68958004	99.7	101.0		239,448	2/18/2020
68958028	100.3	101.0		440,221	2/18/2020
68958069	100.4	101.0		591,078	2/18/2020
68958131	100.4	101.0		561,798	2/18/2020
68958368	100.1	101.0	100.0	394,204	2/13/2020
68958369	99.8	101.0		108,279	2/13/2020
68958387	100.3	101.0		309,512	3/11/2020
68958397	100.1	101.0		474,067	2/18/2020
68958412	100.1	101.0		252,564	2/18/2020
68958439	100.3	101.0		420,560	3/11/2020
69314576	100.2	101.0		286,868	3/11/2020

## APPENDIX A-2

### ANSI Standard for Maximum Flow

1	Sample Size: n	35
2	Sum of Measurements	3507.8
3	Sum of Squared Measurements	351564.2
4	Correction Factor (CF)	351561.7
5	Corrected Sum of Squares (SS)	2.481714
6	Variance (V)	0.072992
7	Estimate of Lot Standard Deviation	0.27017
8	Sample Mean	100.2229
9	Upper Specification Limit	101.5
10	Lower Specification Limit	98.5
11	Quality Index: QU (upper)	4.72719
12	Quality Index: QL (lower)	6.376947
ANSI Standard Table B-5 used to derive values below		
13	Est. of Lot Percent NcF above Upper	0.000%
14	Est. of Lot Percent NcF below Lower	0.000%
15	Total Est. Percent NcF in Lot (P)	0.000%
16	Max. Allowable Percent NcF (M)	5.580%
17	Acceptability Criterion (to accept, P<M)	<b>Accepted</b>

## APPENDIX A-3

### ANSI Standard for Intermediate Flow

1	Sample Size: n	35
2	Sum of Measurements	3533
3	Sum of Squared Measurements	356635
4	Correction Factor (CF)	356631.1
5	Corrected Sum of Squares (SS)	3.885714
6	Variance (V)	0.114286
7	Estimate of Lot Standard Deviation	0.338062
8	Sample Mean	100.9429
9	Upper Specification Limit	101.5
10	Lower Specification Limit	98.5
11	Quality Index: QU (upper)	1.648051
12	Quality Index: QL (lower)	7.226069
ANSI Standard Table B-5 used to derive values below		
13	Est. of Lot Percent NcF above Upper	4.720%
14	Est. of Lot Percent NcF below Lower	0.000%
15	Total Est. Percent NcF in Lot (P)	4.720%
16	Max. Allowable Percent NcF (M)	5.580%
17	Acceptability Criterion (to accept, P<M)	<b>Accepted</b>

## APPENDIX A-4

### ANSI Standard for Minimum Flow

1	Sample Size: n	7
2	Sum of Measurements	680
3	Sum of Squared Measurements	66092
4	Correction Factor (CF)	66057.143
5	Corrected Sum of Squares (SS)	34.857143
6	Variance (V)	5.8095238
7	Estimate of Lot Standard Deviation	2.4102954
8	Sample Mean	97.142857
9	Lower Specification Limit	90
10	Quality Index: QL (lower)	2.9634779
ANSI Standard Table B-5 used to derive values below		
11	Est. of Lot Percent NcF (P)	0.000%
12	Max. Allowable Percent NcF (M)	30.500%
13	Acceptability Criterion (to accept, P<M)	<b>Accepted</b>

## APPENDIX B

<b>Sample Testing Costs of Southeast Daviess District's Sample Meter Testing Plan</b>									
Year of Installation of Meters to be Sample Tested									
	2010	2011	2012	2013	2014	2015	Total Meters Tested	Cost of Sample Testing	Yearly Cost of Sample Meter Testing
2020	35						35	\$48.00	\$1,680.00
2021	35	50					85	\$48.00	\$4,080.00
2022	35	50	35				120	\$48.00	\$5,760.00
2023	35	50	35	35			155	\$48.00	\$7,440.00
2024	35	50	35	35	5		160	\$48.00	\$7,680.00
2025	35	50	35	35	5	15	175	\$48.00	\$8,400.00
<b>TOTAL Sample Testing Cost</b>									<b>\$35,040.00</b>

1. The horizontal axis of the chart shows the year of installation of meters to be sample tested.
2. The vertical axis shows the year of sample testing.
3. The numbers in the chart are the number of meters of each age group that will be sample tested each year.
4. Sample size is determined using the ANSI Standard Inspection Level II and Table A-2 and Table B-3.
5. The cost of sample testing includes the field staff, truck, and testing cost.

<b>Costs for Southeast Daviess District to Test All 10-Year-Old Meters</b>			
	10-year-old Meters <sup>8</sup>	Cost to Test Meter	Total Cost to Test Meters
2020	1162	\$48	\$55,776
2021	1318	\$48	\$63,264
2022	1161	\$48	\$55,728
2023	697	\$48	\$33,456
2024	31	\$48	\$1,488
2025	127	\$48	\$6,096
<b>TOTAL Cost to Test All 10-Year-Old Meters</b>			<b>\$215,808</b>

<b>Savings Over Southeast Daviess District's Plan</b>	
TOTAL Cost to Test All 10-Year Meters	\$215,808
- TOTAL Sample Testing Cost	\$35,040
TOTAL Savings	<b>\$180,768</b>

<sup>8</sup> The number of 10-year-old meters each year is approximate. Southeast Daviess District's software provider, United Systems, has projected a June 2020 release date for the system update. At that time, Southeast Daviess District can provide exact numbers, but does not foresee a large variation from the approximate numbers provided here.

# **EXHIBIT 1**

# Sensus Limited Warranty

**1. General Product Coverage.** Unless otherwise provided herein, Sensus USA Inc. ("Sensus") warrants its products and parts to be free from defects in material and workmanship for one (1) year from the date of Sensus shipment and as set forth below. All products are sold to customer ("Customer") pursuant to Sensus' Terms of Sale, available at: [sensus.com/TC](http://sensus.com/TC) ("Terms of Sale").

**2. SR II® and accuSTREAM™ 5/8", 3/4" & 1" Meters** are warranted to perform to new meter accuracy level set forth in the SR II and accuSTREAM Data Sheets available at [sensus.com](http://sensus.com) for five (5) years from the date of Sensus shipment or until the registration shown below, whichever occurs first. Sensus further warrants that the SR II and accuSTREAM meters will perform to at least AWWA Repaired Meter Accuracy Standards for fifteen (15) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

	New Meter Accuracy	Repair Meter Accuracy
5/8" SR II Meter and accuSTREAM Meter	500,000 gallons	1,500,000 gallons
3/4" SR II Meter and accuSTREAM Meter	750,000 gallons	2,250,000 gallons
1" SR II Meter and accuSTREAM Meter	1,000,000 gallons	3,000,000 gallons

**3. ally® Meters** that register water flow are warranted to perform to the accuracy level set forth in the ally Data Sheet available at [sensus.com](http://sensus.com) for fifteen (15) years from the Date of Installation, but no longer than sixteen (16) years from date of manufacture, not including the meter's sensors, valve, and gear motor, which are warranted under different terms described below. As used herein, "Date of Installation" means the date after which the ally Meter has been out of empty pipe for seven (7) consecutive days, as those days are measured by the ally Meter and stored in the meter's nonvolatile memory.

**4. iPERL® Meters** that register water flow are warranted to perform to the accuracy levels set forth in the iPERL Data Sheet available at [sensus.com](http://sensus.com) for twenty (20) years from the date of Sensus shipment. The iPERL System Component warranty does not include the external housing.

**5. SR II maincases** are warranted to be free from defects in material and workmanship for twenty-five (25) years from the date of Sensus shipment. accuSTREAM maincases will be free from defects in material and workmanship for fifteen (15) years from the date of Sensus shipment.

**6. Sensus OMNI™ Meters and Propeller Meters** are warranted to perform to as set forth in OMNI and Propeller data sheets for one (1) year from the date of Sensus shipment.

**7. Sensus accuMAG™ and Hydroverse™ Meters** are warranted to be free from defects in material and workmanship, under normal use and service, for 18 months from the date of Sensus shipment or 12 months from startup, whichever occurs first.

**8. Sensus Registers** are warranted to be free from defects in material and workmanship from the date of Sensus shipment for the periods stated below or until the applicable registration for AWWA Repaired Meter Accuracy Standards, as set forth above, are surpassed, whichever occurs first:

5/8" thru 1" SR II, accuSTREAM Standard Registers	25 years
5/8" thru 1" SR II, accuSTREAM Encoder Registers	10 years
All HSPU, IMP Contactor, R.E.R. Elec. ROFI	1 year
Standard and Encoder Registers for Propeller Meters	1 year
OMNI and OMNI+ Registers with Battery	10 years

**9. Sensus Electric and Gas Meters** are warranted pursuant to the General Limited Warranty available at [sensus.com/TC](http://sensus.com/TC).

**10. Batteries, iPERL System Components, AMR and FlexNet® Communication Network AMI Interface Devices** are warranted to be free from defects in material and workmanship from the date of Sensus shipment for the period stated below:

Electronic TouchPad	10 years
Act-Pak® Remote Monitoring Instruments	1 year
Gas SmartPoint® Modules and Batteries	20 years <sup>1</sup>
6500 series Hand-Held Device	2 years
Vehicle Gateway Base Station (VGB) and other AMR Equipment	1 year
EasyLink Reader	1 Year
CPTP100	20 Years <sup>2</sup>
FlexNet Base Station (including the R100NA and M400 products)	1 year
RM4160	1 Year
iPERL System Battery and iPERL System Components	20 years <sup>3</sup>

<sup>1</sup> Sensus will repair or replace non-performing Gas SmartPoint Modules (configured to the factory setting of six transmissions per day under normal system operation of up to one demand read to each SmartPoint Module per month and up to five firmware downloads during the life of the product) and batteries.

<sup>2</sup> Sensus will repair or replace non-performing CPTP100 modules (configured at factory setting of four transmissions per day under normal system operations of up to one demand read per month and up to five firmware downloads during the life of the product) and batteries.

Sensus® Electronic Register+™	20 years <sup>4</sup>
Sensus® Smart Gateway Sensor Interface	1 year <sup>5</sup>
SmartPoint® 510M/520M/515M/512M Modules and Batteries	20 years <sup>3</sup>

**11. ally® Meter Batteries and Components, including SmartPoint 510M/520M Modules** are warranted to be free from defects in material and workmanship from the Date of Installation, as defined in Section 3, for the period stated below:

Batteries	15 years <sup>6</sup>
Sensors	5 years
Valve & Gear Motor	5 years <sup>7</sup>
SmartPoint 510M/520M Modules and Batteries in service w/ally	15 years <sup>6</sup>

<sup>3</sup> Sensus will repair or replace non-performing:

- iPERL System Batteries, and/or the iPERL System flowtube, the flow sensing and data processing assemblies, and the register ("iPERL System Components") with hourly reads,
- SmartPoint 510M/520M/515M/512M-PLS Modules (configured to the factory setting of six transmissions per day under normal system operation of up to one demand read to each SmartPoint Module per month and up to five firmware downloads during the life of the product) and batteries, unless the SmartPoint 510M/520M Module is ever paired with an ally Meter, which event immediately amends the warranty terms to those described in Section 11;

at no cost for the first fifteen (15) years from the date of Sensus shipment, and for the remaining five (5) years at a prorated percentage, applied towards the published list price in effect for the year the product is accepted by Sensus under the warranty conditions according to the following schedule:

Years	Replacement Price
1 – 15	0%
16	30%
17	40%
18	50%
19	60%
20	70%
>20	100%

<sup>4</sup> Sensus will repair or replace non-performing Sensus Electronic Register+ with hourly reads for the first ten (10) years from the date of Sensus shipment, and for the remaining ten (10) years, at a prorated percentage, applied towards the published list price in effect for the year product is accepted by Sensus under warranty conditions according to the following schedule:

Years	Replacement Price	Years	Replacement Price
1 – 10	0%	16	55%
11	30%	17	60%
12	35%	18	65%
13	40%	19	70%
14	45%	20	75%
15	50%	>20	100%

<sup>5</sup> Sensus® Smart Gateway Sensor Interface warranty valid only for analog Meter Sample Rates of four times per hour with a Standard Transmit Rate of hourly or greater for the analog channel(s).

<sup>6</sup> If applicable, any SmartPoint 510M/520M Modules ever paired with an ally Meter are warranted with the following limitations:

- When configured to the default installation setting of six transmissions of metrology and pressure per day and one update of temperature per day, the SmartPoint is warranted to perform up to five (5) firmware upgrades for the SmartPoint Module and up to five (5) firmware upgrades for the ally Meter;
- 2500 Operational Commands, where "Operational Commands" include on demand reads (such as consumption, pressure, temperature), an ally valve command, or a configuration command; and
- 15 Diagnostic Commands, which includes two-way communications tests and installations

for the first ten (10) years from Date of Installation at no cost. For the remaining five (5) years, Customer will pay the reduced Replacement Price of the then-current list price in effect at the time the product is accepted for return in accordance with the following schedule:

Years	Replacement Price	Years	Replacement Price
1 – 10	0%	14	65%
11	35%	15	75%
12	45%	>15	100%
13	55%		

<sup>7</sup> Notwithstanding the foregoing, valve and gear motor components of ally Meters are not warranted beyond two thousand (2000) Valve State Operations, even if the warranty period provided herein has not yet expired. As used herein, "Valve State Operations" means adjustments of the Meter to open, close, or reduce flow.



**12. iPERL and ally Connectors and Cables** are warranted to be free from defects in materials and workmanship, under normal use and service, for ten (10) years from the date of Sensus shipment. Nicor or Itron connectors included with a Sensus product are warranted according to the terms for Third-Party Devices in Section 13.

**13. Third-Party Devices** are warranted to be free from defects in materials and workmanship, under normal use and service, for one (1) year from the date of Sensus shipment. As used in this Sensus Limited Warranty, "Third Party Devices" means any product, device, or component part used with a Sensus product that is manufactured or sold by any party that is not Sensus. Failure of a Third Party Device which subsequently causes failure to a Sensus device shall be the responsibility of the manufacturer of the Third Party Device.

**14. Software.** Software supplied and/or licensed by Sensus is supported according to the terms of the applicable software license or usage agreement. Sensus warrants that any network and monitoring services shall be performed in a professional and workmanlike manner.

**15. Return.** Sensus' obligation, and Customer's exclusive remedy, under this Sensus Limited Warranty is, at Sensus' option, to either (i) repair or replace the product, provided the Customer (a) returns the product to the location designated by Sensus within the warranty period; and (b) prepays the freight costs both to and from such location; or (ii) deliver replacement components to the Customer, provided the Customer installs, at its cost, such components in or on the product (as instructed by Sensus), provided, that if Sensus requests, the Customer (a) returns the product to the location designated by Sensus within the warranty period; and (b) prepays the freight costs both to and from such location. In all cases, if Customer does not return the product within the time period designated by Sensus, Sensus will invoice, and Customer will pay within thirty days of the invoice date, for the cost of the replacement product and/or components.

The return of products for warranty claims must follow Sensus' Returned Materials Authorization (RMA) procedures. Water meter returns must include documentation of the Customer's test results. Test results must be obtained according to AWWA standards and must specify the meter serial number. The test results will not be valid if the meter is found to contain foreign materials. If Customer chooses not to test a Sensus water meter prior to returning it to Sensus, Sensus will repair or replace the meter, at Sensus' option, after the meter has been tested by Sensus. The Customer will be charged Sensus' then current testing fee. All product must be returned in accordance with the RMA process. For all returns, Sensus reserves the right to request meter reading records by serial number to validate warranty claims.

For products that have become discontinued or obsolete ("Obsolete Product"), Sensus may, at its discretion, replace such Obsolete Product with a different product model ("New Product"), provided that the New Product has substantially similar features as the Obsolete Product. The New Product shall be warranted as set forth in this Sensus Limited Warranty.

THIS SECTION 15 SETS FORTH CUSTOMER'S SOLE REMEDY FOR THE FAILURE OF THE PRODUCTS, SERVICES OR LICENSED SOFTWARE TO CONFORM TO THEIR RESPECTIVE WARRANTIES.

**16. Warranty Exceptions and No Implied Warranties.** This Sensus Limited Warranty does not include costs for removal or installation of products, or costs for replacement labor or materials, which are the responsibility of the Customer. The warranties in this Sensus Limited Warranty do not apply to and Sensus has no liability for goods that have been: installed improperly or in non-recommended installations; installed to a socket that is not functional, or is not in safe operating condition, or is damaged, or is in need of repair; tampered with; modified or repaired with parts or assemblies not certified in writing by Sensus, including without limitation, communication parts and assemblies; improperly modified or repaired (including as a result of modifications required by Sensus); converted; altered; damaged; read by equipment not approved by Sensus; for water meters, used with substances other than water, used with non-potable water, or used with water that contains dirt, debris, deposits, or other impurities; subjected to misuse, improper storage, improper care, improper maintenance, or improper periodic testing (collectively, "Exceptions"). If Sensus identifies any Exceptions during examination, troubleshooting or performing any type of support on behalf of Customer, then Customer shall pay for and/or reimburse Sensus for all expenses incurred by Sensus in examining, troubleshooting, performing support activities, repairing or replacing any Equipment that satisfies any of the Exceptions defined above. The above warranties do not apply in the event of Force Majeure, as defined in the Terms of Sale.

**THE WARRANTIES SET FORTH IN THIS SENSUS LIMITED WARRANTY ARE THE ONLY WARRANTIES GIVEN WITH RESPECT TO THE GOODS, SOFTWARE, SOFTWARE LICENSES AND SERVICES SOLD OR OTHERWISE PROVIDED BY SENSUS. SENSUS EXPRESSLY DISCLAIMS ANY AND ALL OTHER REPRESENTATIONS, WARRANTIES, CONDITIONS, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE, REGARDING ANY MATTER IN CONNECTION WITH THIS SENSUS LIMITED WARRANTY OR WITH THE TERMS OF SALE, INCLUDING WITHOUT LIMITATION, WARRANTIES AS TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, NON-INFRINGEMENT AND TITLE.**

**SENSUS ASSUMES NO LIABILITY FOR COSTS OR EXPENSES ASSOCIATED WITH LOST REVENUE OR WITH THE REMOVAL OR INSTALLATION OF EQUIPMENT. THE FOREGOING REMEDIES ARE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES FOR THE FAILURE OF EQUIPMENT, LICENSED SOFTWARE OR SOFTWARE SERVICES, AND OTHER SERVICES TO CONFORM TO THEIR RESPECTIVE WARRANTIES.**

**17. Limitation of Liability.** SENSUS' AGGREGATE LIABILITY IN ANY AND ALL CAUSES OF ACTION ARISING UNDER, OUT OF OR IN RELATION TO THIS AGREEMENT, ITS NEGOTIATION, PERFORMANCE, BREACH OR TERMINATION

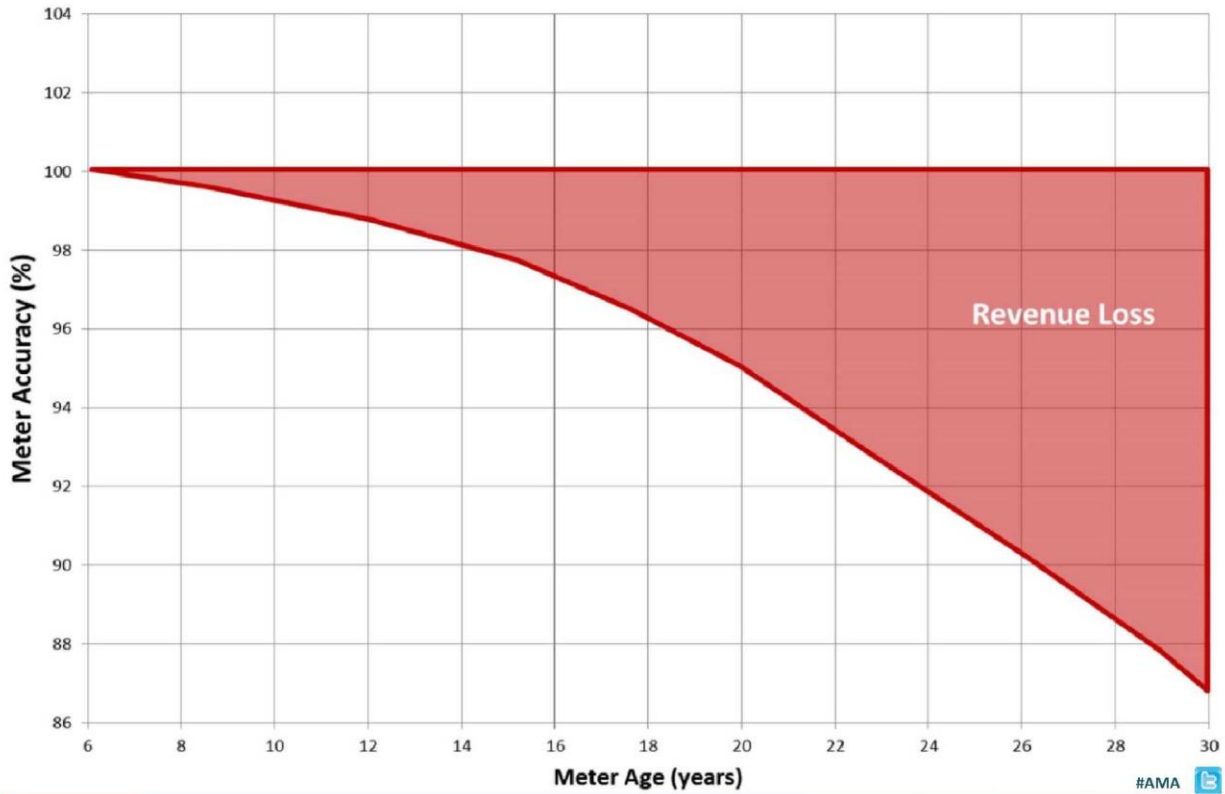
(COLLECTIVELY "CAUSES OF ACTION") SHALL NOT EXCEED THE TOTAL AMOUNT PAID BY CUSTOMER TO SENSUS UNDER THIS AGREEMENT. THIS IS SO WHETHER THE CAUSES OF ACTION ARE IN TORT, INCLUDING, WITHOUT LIMITATION, NEGLIGENCE OR STRICT LIABILITY, IN CONTRACT, UNDER STATUTE OR OTHERWISE.

AS A SEPARATE AND INDEPENDENT LIMITATION ON LIABILITY, SENSUS' LIABILITY SHALL BE LIMITED TO DIRECT DAMAGES. SENSUS SHALL NOT BE LIABLE FOR: (I) ANY INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES; NOR (II) ANY REVENUE OR PROFITS LOST BY CUSTOMER OR ITS AFFILIATES FROM ANY END USER(S), IRRESPECTIVE OF WHETHER SUCH LOST REVENUE OR PROFITS IS CATEGORIZED AS DIRECT DAMAGES OR OTHERWISE; NOR (III) ANY IN/OUT COSTS; NOR (IV) MANUAL METER READ COSTS AND EXPENSES; NOR (V) DAMAGES ARISING FROM MAINCASE OR BOTTOM PLATE BREAKAGE CAUSED BY FREEZING TEMPERATURES, WATER HAMMER CONDITIONS, OR EXCESSIVE WATER PRESSURE. "IN/OUT COSTS" MEANS ANY COSTS AND EXPENSES INCURRED BY CUSTOMER IN TRANSPORTING GOODS BETWEEN ITS WAREHOUSE AND ITS END USER'S PREMISES AND ANY COSTS AND EXPENSES INCURRED BY CUSTOMER IN INSTALLING, UNINSTALLING AND REMOVING GOODS. "END USER" MEANS ANY END USER OF ELECTRICITY/WATER/GAS THAT PAYS CUSTOMER FOR THE CONSUMPTION OF ELECTRICITY/WATER/GAS, AS APPLICABLE.

The limitations on liability set forth in this Agreement are fundamental inducements to Sensus entering into this Agreement. They apply unconditionally and in all respects. They are to be interpreted broadly so as to give Sensus the maximum protection permitted under law.

# EXHIBIT 2<sup>9</sup>

## Meter Accuracy Over Time



Implementing an Advanced Metering Analytics (AMA) Managed

Morrice Blackwell & Jason Wilson

<sup>9</sup> *Implementing an Advanced Metering Analytics (AMA) Managed Solution*, Forester University (May 2016), available at <http://www.foresteruniversity.com/ProductDetails.aspx?ProductID=2063>.

# **EXHIBIT 2**

**RESOLUTION NO. 2020-04-01**

**A RESOLUTION OF THE BOARD OF COMMISSIONERS OF  
SOUTHEAST DAVIESS COUNTY WATER DISTRICT  
AUTHORIZING A SAMPLE METER TESTING PLAN AND  
APPLICATION TO THE KENTUCKY PUBLIC SERVICE  
COMMISSION FOR APPROVAL OF THE SAMPLE METER  
TESTING PLAN**

**WHEREAS**, the regulations of the Public Service Commission (the “Commission”) require the testing of all 5/8- x 3/4-inch water meters every ten years;

**WHEREAS**, the Commission approved the use of a statistical process to sample test a water utility’s 5/8- x 3/4-inch water meters as set forth in a Sample Meter Testing Plan in Case No. 2016-00432;

**WHEREAS**, the Sensus 5/8- x 3/4-inch water meters are warrantied to remain accurate for at least 15 years;

**WHEREAS**, to extend the lives of its 5/8- x 3/4-inch water meters and reduce costs, Southeast Daviess County Water District proposes to develop a Sample Meter Testing Plan and request approval for the Sample Meter Testing Plan from the Commission;

**WHEREAS**, Southeast Daviess County Water District has engaged the services of Stoll Keenon Ogden PLLC to develop the Sample Meter Testing Plan and to prepare the Application for approval of the Sample Meter Testing Plan; and

**WHEREAS**, Stoll Keenon Ogden PLLC has developed a proposed Sample Meter Testing Plan for consideration by the Board of Commissioners;

**NOW, THEREFORE, IT IS HEREBY RESOLVED BY THE BOARD OF COMMISSIONERS OF SOUTHEAST DAVIESS COUNTY WATER DISTRICT AS FOLLOWS:**

**Section 1.** The facts, recitals, and statements contained in the foregoing preamble of this Resolution are true and correct and are hereby affirmed and incorporated as a part of this Resolution.

**Section 2.** The Board of Commissioners hereby accepts the Sample Meter Testing Plan developed by Stoll Keenon Ogden PLLC, subject to approval of the Plan by the Commission.


**Section 3.** The Chairman and General Manager are authorized and directed to take any and all actions necessary to execute and submit an Application to the Commission seeking approval of the Sample Meter Testing Plan so it can be implemented.

**Section 4.** This Resolution shall take effect upon its adoption.

**Adopted by the Board of Commissioners of Southeast Daviess County Water District at a meeting held on April 28, 2020, signed by the Chairman, and attested by the Secretary.**

  
\_\_\_\_\_  
**Christina V. O'Bryan, Chairman**

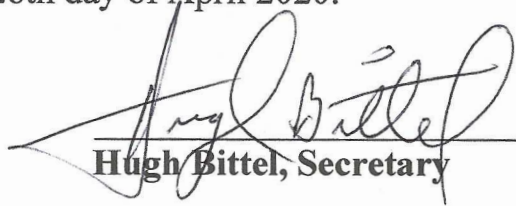
**ATTEST:**

  
\_\_\_\_\_  
**Hugh Bittel, Secretary**

**CERTIFICATION**

The undersigned Secretary of Southeast Daviess County Water District (the "District") does hereby certify that the foregoing is a true copy of a Resolution duly adopted by the District's Board of Commissioners at a meeting properly held on April 28, 2020, signed by the Chairman of the Board of Commissioners, attested by the Secretary of the Board of Commissioners, and is now in full force and effect.

WITNESS my hand this 28th day of April 2020.

  
\_\_\_\_\_  
**Hugh Bittel, Secretary**

# **EXHIBIT 3**

# Sensus Limited Warranty

**1. General Product Coverage.** Unless otherwise provided herein, Sensus USA Inc. ("Sensus") warrants its products and parts to be free from defects in material and workmanship for one (1) year from the date of Sensus shipment and as set forth below. All products are sold to customer ("Customer") pursuant to Sensus' Terms of Sale, available at: [sensus.com/TC](http://sensus.com/TC) ("Terms of Sale").

**2. SR II® and accuSTREAM™ 5/8", 3/4" & 1" Meters** are warranted to perform to new meter accuracy level set forth in the SR II and accuSTREAM Data Sheets available at [sensus.com](http://sensus.com) for five (5) years from the date of Sensus shipment or until the registration shown below, whichever occurs first. Sensus further warrants that the SR II and accuSTREAM meters will perform to at least AWWA Repaired Meter Accuracy Standards for fifteen (15) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

	New Meter Accuracy	Repair Meter Accuracy
5/8" SR II Meter and accuSTREAM Meter	500,000 gallons	1,500,000 gallons
3/4" SR II Meter and accuSTREAM Meter	750,000 gallons	2,250,000 gallons
1" SR II Meter and accuSTREAM Meter	1,000,000 gallons	3,000,000 gallons

**3. ally® Meters** that register water flow are warranted to perform to the accuracy level set forth in the ally Data Sheet available at [sensus.com](http://sensus.com) for fifteen (15) years from the Date of Installation, but no longer than sixteen (16) years from date of manufacture, not including the meter's sensors, valve, and gear motor, which are warranted under different terms described below. As used herein, "Date of Installation" means the date after which the ally Meter has been out of empty pipe for seven (7) consecutive days, as those days are measured by the ally Meter and stored in the meter's nonvolatile memory.

**4. iPERL® Meters** that register water flow are warranted to perform to the accuracy levels set forth in the iPERL Data Sheet available at [sensus.com](http://sensus.com) for twenty (20) years from the date of Sensus shipment. The iPERL System Component warranty does not include the external housing.

**5. SR II maincases** are warranted to be free from defects in material and workmanship for twenty-five (25) years from the date of Sensus shipment. accuSTREAM maincases will be free from defects in material and workmanship for fifteen (15) years from the date of Sensus shipment.

**6. Sensus OMNI™ Meters and Propeller Meters** are warranted to perform to as set forth in OMNI and Propeller data sheets for one (1) year from the date of Sensus shipment.

**7. Sensus accuMAG™ and Hydroverse™ Meters** are warranted to be free from defects in material and workmanship, under normal use and service, for 18 months from the date of Sensus shipment or 12 months from startup, whichever occurs first.

**8. Sensus Registers** are warranted to be free from defects in material and workmanship from the date of Sensus shipment for the periods stated below or until the applicable registration for AWWA Repaired Meter Accuracy Standards, as set forth above, are surpassed, whichever occurs first:

5/8" thru 1" SR II, accuSTREAM Standard Registers	25 years
5/8" thru 1" SR II, accuSTREAM Encoder Registers	10 years
All HSPU, IMP Contactor, R.E.R. Elec. ROFI	1 year
Standard and Encoder Registers for Propeller Meters	1 year
OMNI and OMNI+ Registers with Battery	10 years

**9. Sensus Electric and Gas Meters** are warranted pursuant to the General Limited Warranty available at [sensus.com/TC](http://sensus.com/TC).

**10. Batteries, iPERL System Components, AMR and FlexNet® Communication Network AMI Interface Devices** are warranted to be free from defects in material and workmanship from the date of Sensus shipment for the period stated below:

Electronic TouchPad	10 years
Act-Pak® Remote Monitoring Instruments	1 year
Gas SmartPoint® Modules and Batteries	20 years <sup>1</sup>
6500 series Hand-Held Device	2 years
Vehicle Gateway Base Station (VGB) and other AMR Equipment	1 year
EasyLink Reader	1 Year
CPTP100	20 Years <sup>2</sup>
FlexNet Base Station (including the R100NA and M400 products)	1 year
RM4160	1 Year
iPERL System Battery and iPERL System Components	20 years <sup>3</sup>

<sup>1</sup> Sensus will repair or replace non-performing Gas SmartPoint Modules (configured to the factory setting of six transmissions per day under normal system operation of up to one demand read to each SmartPoint Module per month and up to five firmware downloads during the life of the product) and batteries.

<sup>2</sup> Sensus will repair or replace non-performing CPTP100 modules (configured at factory setting of four transmissions per day under normal system operations of up to one demand read per month and up to five firmware downloads during the life of the product) and batteries.

Sensus® Electronic Register+™	20 years <sup>4</sup>
Sensus® Smart Gateway Sensor Interface	1 year <sup>5</sup>
SmartPoint® 510M/520M/515M/512M Modules and Batteries	20 years <sup>3</sup>

**11. ally® Meter Batteries and Components, including SmartPoint 510M/520M Modules** are warranted to be free from defects in material and workmanship from the Date of Installation, as defined in Section 3, for the period stated below:

Batteries	15 years <sup>6</sup>
Sensors	5 years
Valve & Gear Motor	5 years <sup>7</sup>
SmartPoint 510M/520M Modules and Batteries in service w/ally	15 years <sup>6</sup>

<sup>3</sup> Sensus will repair or replace non-performing:

- iPERL System Batteries, and/or the iPERL System flowtube, the flow sensing and data processing assemblies, and the register ("iPERL System Components") with hourly reads,
- SmartPoint 510M/520M/515M/512M-PLS Modules (configured to the factory setting of six transmissions per day under normal system operation of up to one demand read to each SmartPoint Module per month and up to five firmware downloads during the life of the product) and batteries, unless the SmartPoint 510M/520M Module is ever paired with an ally Meter, which event immediately amends the warranty terms to those described in Section 11;

at no cost for the first fifteen (15) years from the date of Sensus shipment, and for the remaining five (5) years at a prorated percentage, applied towards the published list price in effect for the year the product is accepted by Sensus under the warranty conditions according to the following schedule:

Years	Replacement Price
1 – 15	0%
16	30%
17	40%
18	50%
19	60%
20	70%
>20	100%

<sup>4</sup> Sensus will repair or replace non-performing Sensus Electronic Register+ with hourly reads for the first ten (10) years from the date of Sensus shipment, and for the remaining ten (10) years, at a prorated percentage, applied towards the published list price in effect for the year product is accepted by Sensus under warranty conditions according to the following schedule:

Years	Replacement Price	Years	Replacement Price
1 – 10	0%	16	55%
11	30%	17	60%
12	35%	18	65%
13	40%	19	70%
14	45%	20	75%
15	50%	>20	100%

<sup>5</sup> Sensus® Smart Gateway Sensor Interface warranty valid only for analog Meter Sample Rates of four times per hour with a Standard Transmit Rate of hourly or greater for the analog channel(s).

<sup>6</sup> If applicable, any SmartPoint 510M/520M Modules ever paired with an ally Meter are warranted with the following limitations:

- When configured to the default installation setting of six transmissions of metrology and pressure per day and one update of temperature per day, the SmartPoint is warranted to perform up to five (5) firmware upgrades for the SmartPoint Module and up to five (5) firmware upgrades for the ally Meter;
- 2500 Operational Commands, where "Operational Commands" include on demand reads (such as consumption, pressure, temperature), an ally valve command, or a configuration command; and
- 15 Diagnostic Commands, which includes two-way communications tests and installations

for the first ten (10) years from Date of Installation at no cost. For the remaining five (5) years, Customer will pay the reduced Replacement Price of the then-current list price in effect at the time the product is accepted for return in accordance with the following schedule:

Years	Replacement Price	Years	Replacement Price
1 – 10	0%	14	65%
11	35%	15	75%
12	45%	>15	100%
13	55%		

<sup>7</sup> Notwithstanding the foregoing, valve and gear motor components of ally Meters are not warranted beyond two thousand (2000) Valve State Operations, even if the warranty period provided herein has not yet expired. As used herein, "Valve State Operations" means adjustments of the Meter to open, close, or reduce flow.



**12. iPERL and ally Connectors and Cables** are warranted to be free from defects in materials and workmanship, under normal use and service, for ten (10) years from the date of Sensus shipment. Nicor or Itron connectors included with a Sensus product are warranted according to the terms for Third-Party Devices in Section 13.

**13. Third-Party Devices** are warranted to be free from defects in materials and workmanship, under normal use and service, for one (1) year from the date of Sensus shipment. As used in this Sensus Limited Warranty, "Third Party Devices" means any product, device, or component part used with a Sensus product that is manufactured or sold by any party that is not Sensus. Failure of a Third Party Device which subsequently causes failure to a Sensus device shall be the responsibility of the manufacturer of the Third Party Device.

**14. Software.** Software supplied and/or licensed by Sensus is supported according to the terms of the applicable software license or usage agreement. Sensus warrants that any network and monitoring services shall be performed in a professional and workmanlike manner.

**15. Return.** Sensus' obligation, and Customer's exclusive remedy, under this Sensus Limited Warranty is, at Sensus' option, to either (i) repair or replace the product, provided the Customer (a) returns the product to the location designated by Sensus within the warranty period; and (b) prepays the freight costs both to and from such location; or (ii) deliver replacement components to the Customer, provided the Customer installs, at its cost, such components in or on the product (as instructed by Sensus), provided, that if Sensus requests, the Customer (a) returns the product to the location designated by Sensus within the warranty period; and (b) prepays the freight costs both to and from such location. In all cases, if Customer does not return the product within the time period designated by Sensus, Sensus will invoice, and Customer will pay within thirty days of the invoice date, for the cost of the replacement product and/or components.

The return of products for warranty claims must follow Sensus' Returned Materials Authorization (RMA) procedures. Water meter returns must include documentation of the Customer's test results. Test results must be obtained according to AWWA standards and must specify the meter serial number. The test results will not be valid if the meter is found to contain foreign materials. If Customer chooses not to test a Sensus water meter prior to returning it to Sensus, Sensus will repair or replace the meter, at Sensus' option, after the meter has been tested by Sensus. The Customer will be charged Sensus' then current testing fee. All product must be returned in accordance with the RMA process. For all returns, Sensus reserves the right to request meter reading records by serial number to validate warranty claims.

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**THE WARRANTIES SET FORTH IN THIS SENSUS LIMITED WARRANTY ARE THE ONLY WARRANTIES GIVEN WITH RESPECT TO THE GOODS, SOFTWARE, SOFTWARE LICENSES AND SERVICES SOLD OR OTHERWISE PROVIDED BY SENSUS. SENSUS EXPRESSLY DISCLAIMS ANY AND ALL OTHER REPRESENTATIONS, WARRANTIES, CONDITIONS, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE, REGARDING ANY MATTER IN CONNECTION WITH THIS SENSUS LIMITED WARRANTY OR WITH THE TERMS OF SALE, INCLUDING WITHOUT LIMITATION, WARRANTIES AS TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, NON-INFRINGEMENT AND TITLE.**

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