

# Exhibit No. 33

**Exhibit No:** \_\_\_\_\_  
**Issue:** Ultrasonic Meters  
**Witness:** James Rieske  
**Type of Exhibit:** Surebuttal Testimony  
**Sponsoring Party:** Spire Missouri Inc.  
**Case No.:** GR-2021-0108  
**Date Testimony Prepared:** July 14, 2021

**SPIRE MISSOURI INC.**

**CASE NO. GR-2021-0108**

**SURREBUTTAL TESTIMONY**

**OF**

**JAMES RIESKE**

**JULY 14, 2021**

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**SCHEDULES:**

**Schedule JAR-SR-1 Spire Rate Case June Technical Conference - AMI Presentation**

**Schedule JAR-SR-2 2025 Termination Letter from Landis & Gyr**

1 **REBUTTAL TESTIMONY OF JAMES RIESKE**

2 **I. INTRODUCTION**

3 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

4 A. My name is James Andrew Rieske, and my business address is 700 Market Street, Saint  
5 Louis, MO 63101.

6 **Q. WHAT IS YOUR PRESENT POSITION?**

7 A. I am currently Director, Measurement for Spire Missouri Inc. (“Spire”).

8 **Q. ARE YOU THE SAME JAMES RIESKE THAT PREVIOUSLY FILED**  
9 **REBUTTAL TESTIMONY IN THIS PROCEEDING ON JUNE 17, 2021?**

10 A. Yes, I am.

11 **II. PURPOSE OF TESTIMONY**

12 **Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?**

13 A. I will respond to the Rebuttal Testimony of Staff witness J. Luebbert and in part to OPC  
14 witness Geoff Marke, both of whom recommend that the Company’s investments in  
15 advanced ultrasonic metering technology (“AMI”) be disallowed from Spire’s rates and  
16 rate base. Staff recommends excluding the amount recorded for smart meters while Staff  
17 continues to investigate the decision to install the smarter meters and justification of the  
18 cost. OPC’s position is that (1) AMI investments made by Spire are not prudent or  
19 necessary to provide safe and reliable service, (2) that no benefits would inure to  
20 customers from AMI technology without an accompanying network, (3) that AMI  
21 investments lead to stranded costs for diaphragm meters that are not fully depreciated,  
22 (4) that diaphragm meter technology is not obsolete, (5) that AMI investments are not  
23 cost effective, (6) that gas AMI investments do not deliver benefits comparable to  
24 electric AMI investment, such as time of use rates, and (7) Spire’s sole motivation in

1 investing in AMI is to build out rate base and increase its own profitability. Many of  
2 OPC's arguments I addressed in my Rebuttal Testimony, so they will not be  
3 restated herein.

4 **Q. HOW IS YOUR SURREBUTTAL TESTIMONY ORGANIZED?**

5 A. I respond first to the assertions of Staff that Spire has not adequately justified, supported,  
6 and documented the new metering investments. Subsequently I will correct certain  
7 mischaracterizations contained in Mr. Luebbert's Rebuttal Testimony.

8 **III. ULTRASONIC METERS**

9 **Q. THE CRUX OF STAFF'S ARGUMENT AGAINST THE INCLUSION OF AMI**  
10 **INVESTMENTS APPEARS TO BE FOCUSED UPON STAFF'S BELIEF THAT**  
11 **SPIRE HAS NOT ADEQUATELY PROVIDED JUSTIFICATION AND**  
12 **DOCUMENTATION IN SUPPORT OF THESE INVESTMENTS. FOR**  
13 **EXAMPLE, AT PAGE 2 OF STAFF WITNESS LUEBBERT'S REBUTTAL**  
14 **TESTIMONY HE NOTES THAT SPIRE MISSOURI "HAS NOT SUPPORTED**  
15 **THE INCLUSION OF THE INVESMENTS IN REPLACING EXISTING**  
16 **INFRASTRUCTURE WITH NEW METERS AND THE ASSOCIATED**  
17 **CAPITAL COSTS." LATER IN LUEBBERT'S REBUTTAL AT P. 4 IT IS**  
18 **NOTED THAT "IT IS UNKNOWN TO WHAT EXTENT SPIRE WILL**  
19 **ADDRESS ALL OF THE CONCERNS RAISED TO DATE" OR WHETHER**  
20 **SUPPORTING DOCUMENTATION WILL BE PROVIDED. WILL YOU**  
21 **PLEASE ADDRESS THE TIMING CONSIDERATIONS RELEVANT TO**  
22 **STAFF'S COMMENTS ON SUPPORTING DOCUMENTATION?**

1 A. Staff is critical of the amount of information provided in Spire’s direct case as filed in  
2 December of 2020. However, the rate case was filed and in progress as we began using  
3 the ultrasonic meter. All the installations in this test period were for Missouri West and  
4 the use of the meter was consistent with historical meter replacement and installation  
5 practices. After Spire began installing the meter and recognizing the considerable  
6 benefit, we began to consider how we could accelerate the deployment. The  
7 acceleration began in Missouri West in February 2021 and we have not yet began  
8 deployment in Missouri East. Installation and use of the new meters was evolving as  
9 the case progressed, and continues to evolve. It was not our intention to not discuss  
10 new metering technology in our direct case, it was simply that the process evolved  
11 while the case was in progress and did not seem to be a significant factor in the  
12 Company’s expenses during the test period of this case.

13 **Q. AT PAGES 3-4 OF HIS REBUTTAL, STAFF WITNESS LUEBBERT**  
14 **DISCUSSES THE ADDITIONAL CONTEXT SPIRE PROVIDED AT THE**  
15 **JUNE 9 TECHNICAL CONFERENCE REGARDING THE APPROACH SPIRE**  
16 **IS EMPLOYING TO REPLACE EXISTING METERING INFRASTRUCTURE.**  
17 **STAFF SUGGESTS THAT SPIRE HAS NOT PROVIDED VERIFICATION**  
18 **AND SUPPORTING DOCUMENTATION FOR THE INFORMATION**  
19 **DISCUSSED AT THE TECHNICAL CONFERENCE. HOW DO YOU**  
20 **RESPOND?**

21 A. The presentation I made at the technical conference is attached to my testimony as  
22 Schedule JAR-SR-1. As I noted above, Spire accelerated the deployment of the new  
23 metering technology in Spire West after seeing significant benefits after this case was

1 filed. However, as discussed with Staff during the technical conference, Spire began  
2 studying the current meter equipment, meter reading, and billing processes in the fall of  
3 2018. As the technical expert for Spire on metering, the detailed studies and analysis  
4 that have been performed for the last three years have overwhelmingly convinced me  
5 that this technology will eliminate significant expense and inefficiency in our current  
6 processes and provide capability that will meet the future needs of our customers. What  
7 makes this so important is that this meter incorporates safety features to prevent  
8 catastrophic events that can occur on the customer piping, which has never been  
9 available to Spire in any device that exists on our distribution system. Having spent  
10 years as an incident investigator and preparing incident reports, this is one of the most  
11 significant safety devices Spire has been able to provide. Throughout my career, Staff  
12 has demonstrated an unwavering commitment to customer safety, including many new  
13 mandates designed to reduce the risk of harm to customers. I am stunned to see such  
14 a simple, effective safety device being questioned because of an additional \$25 per  
15 meter cost.

16 Spire has recently provided compelling evidence of the expense and inefficiency of our  
17 current metering technology in response to recent data requests from the parties on this  
18 issue. This is information that has informed our decisions as we have rapidly evolved  
19 our strategy. I personally have been involved in several conversations with Staff about  
20 the strategy Spire was developing and have provided written updates since the fall of  
21 2020. While I appreciate that some members of Staff have not yet seen this information,  
22 I would also point out that no one has asked for this detail until very recently.

1 **Q. STAFF CLAIMS AT PAGE 4 OF LUEBBERT’S REBUTTAL TESTIMONY**  
2 **THAT SPIRE HAS PROVIDED LIMITED JUSTIFICATION FOR THE**  
3 **INVESTMENT IN REPLACING EXISTING METERING INFRASTRUCTURE**  
4 **WITH NEW TECHNOLOGY. WHAT JUSTIFICATION CAN YOU PROVIDE**  
5 **FOR THIS INVESTMENT?**

6 A. I took over the role of Measurement Director for Spire in June 2018. At this time, Spire  
7 had a utility affiliate outside of Missouri that had no AMR technology. An RFP project  
8 was underway to evaluate moving to an AMI solution to improve meter reading  
9 efficiency and effectiveness in that region. While this project was being evaluated, I  
10 began a process of studying the metering practices across all of Spire’s regions. This  
11 study lasted for approximately a year, and the results were remarkably similar across all  
12 of Spire. This study resulted in the development of metrics that measure the timeliness,  
13 accuracy, and effort to gather customer billing reads. These metrics are provided as a  
14 backdrop to support the findings summarized below.

- 15 • The Missouri meter population was aging, and 725,750 meters were over 10 years old  
16 and eligible for meter sampling in Missouri at the beginning of calendar year 2018.  
17 Diaphragm meter accuracy is prone to drifting over time and overall meter testing  
18 accuracy was continuing to decline, particularly in Missouri West. In calendar year  
19 2018, 95% of the sample meter population was testing below 90% accurate in this  
20 region.



## Sample Results Analysis – MO West

### 2018 Sample Program

Historical analysis was not available – anchored back to 2016

Sample Rate	Accuracy Rate	Baseline from 2016			Sample Req	Calendar Year 2018 - 54% Complete			
		Groups	Population	% of Pop		Groups	Population	% of Pop	Sample Req
Statistical	>89%	15	261019	79.3%	2390	5	14896	4.5%	408
7%	85% - 89%	1	399	0.1%	28	2	49486	15.0%	3978
8%	80% - 84%	2	874	0.3%	70	2	88962	27.0%	8881
9%	75% - 79%	1	26	0.0%	2	2	12638	3.8%	1138
10%	70% - 74%	1	38943	11.8%	3894	3	108097	32.8%	10810
15%	60% - 69%	0	0	0.0%	0	4	54337	16.5%	8482
20%	<59%	3	28067	8.5%	5613	2	874	0.3%	175
<b>Total</b>		<b>23</b>	<b>329328</b>	<b>100.0%</b>	<b>11997</b>		<b>329290</b>	<b>100.0%</b>	<b>33872</b>



- 1 •
- 2 • The use of a variety of meter types and sizes over the years had created a meter
- 3 population of over 100 unique combinations of meter and network modules in service
- 4 in Missouri. A network module has a unique connection to each meter type and this
- 5 resulted in Spire being required to maintain and distribute inventory and supply
- 6 equipment to install and program every possible combination. This created added
- 7 expense and inefficiency in the process of sustaining AMR equipment.
- 8 • It was common to replace a network module on a meter due to battery issues,
- 9 malfunction, or age. Every module must be programmed accurately to the specific meter
- 10 index and the record of the exchange must be accurately and timely updated to the billing
- 11 system. It was common to discover programming errors or exchange data that had not
- 12 been properly updated. Both issues led to consistent customer billing disruptions.

- 1 • The network modules were replaced on meters without corresponding meter age  
2 information. It was common for a network module to be replaced and then within a  
3 short period of time the meter would be exchanged on a subsequent visit for the meter  
4 sampling program.
- 5 • The mechanical components in the operation of the meter diaphragm, meter index, and  
6 network module were prone to frequent breakage. During calendar year 2019, 9,333  
7 meters were replaced because they quit accurately registering usage across Spire  
8 Missouri.
- 9 • Below are metrics that represent the field activities completed to read, repair, maintain  
10 or replace customer meter equipment. In Calendar Year 2020, Spire completed 148,310  
11 field activities on customer premises for this purpose. Below is a summary of these  
12 field activities by year since 2017.

<b>Spire Mo East</b>	Field Activities Completed by Type				
Field Activity Type	2017	2018	2019	2020	2021 (YTD)
Meter Repair	21046	19517	18651	22085	7112
Meter Exchange	24485	30508	28542	24287	8524
Meter Read / Investigation	3539	4686	4031	2862	1801
Module Repair / Replacement	23041	26708	26987	22346	15429
Total	72111	81419	78211	71580	32866
<b>Spire Mo West</b>	Field Activities Completed by Type				
Field Activity Type	2017	2018	2019	2020	2021 (YTD)
Meter Repair	18397	13790	9297	8835	2909
Meter Exchange	18984	27412	20290	19856	22318
Meter Read / Investigation	50170	49078	48781	43353	29178
Module Repair / Replacement	65482	68450	13994	4686	161
Total	153033	158730	92362	76730	54566

- 1       • Despite completing 148,310 field activities to repair meters in calendar year 2020,  
2       40,986 customer bills were estimated because a billing read was not available.
- 3       • It has been common for as many as 40,000 bill reads each month in Missouri to be  
4       flagged as suspect and require review. This is due to the combination of two factors:
- 5             1. Aging meter equipment has frequently operated erratically making the billing  
6             process be increasingly suspicious of reads that differ from “normal.”
- 7             2. Evaluating reads provided once a month makes it extremely difficult to profile  
8             what is “normal.”

9       As the Measurement Director for Spire, the facts gathered during this study made it clear  
10       that the current diaphragm metering equipment was failing our customers. These  
11       performance metrics support my characterization of the existing equipment as obsolete.  
12       I began to look at ways that we could simplify, standardize, and modernize our meter  
13       equipment.

14   **Q. PLEASE EXPLAIN HOW THE ULTRASONIC METERING TECHNOLOGY**  
15   **SIMPLIFIES, STANDARDIZES, AND MODERNIZES SPIRE’S METERING**  
16   **EQUIPMENT?**

17   A. Each of the concerns I discuss above are addressed by the features discussed below, and  
18       all of the following benefits come with the installation of the meter with no network. A  
19       single meter type could replace over 100 unique combinations of meter and module  
20       configurations.

- 21       • The meter uses ultrasonic measurement technology, which is 20 times more accurate  
22       than diaphragm technology, and the accuracy does not degrade over time.

- 1       • The ultrasonic meter has no moving parts, which greatly improves the reliability of the  
2       meter.
- 3       • The ultrasonic meter has an integrated network module which makes the meter one unit  
4       and eliminates the disparate vintages of meter and module.
- 5       • The integrated module is programmed at production to the meter and eliminates the  
6       programming accuracy of the meter to the module by Spire technicians.
- 7       • The ultrasonic meter measures usage in real-time and has a built-in internal shut-off  
8       valve. This allows for the following safety benefits described in the information  
9       provided at the technical conference.
  - 10           ○ Auto shut-off for high flow on the customer system.
  - 11           ○ Remote shut-off when hazardous condition is reported or discovered in the  
12           customer premise.
  - 13           ○ Auto shut-off if the meter reaches a temperature of 176 degrees.
  - 14           ○ Auto shut-off for high inlet pressure is coming in the next generation.

15       The decision to use the ultrasonic meter was a meter equipment decision that provides  
16       increased efficiency and savings to our customers right now at an incremental cost of  
17       just \$25 per unit. That equates to about \$1.35 a year for customers to get the benefit of  
18       accuracy and enhanced safety measures. When evaluating the facts documented above,  
19       this decision was obvious without yet having a final plan for when or how Spire was  
20       going to deploy an AMI network, and is based solely on the benefits of the meter  
21       installed in AMR mode with no network. This evaluation and decision is typical of  
22       equipment decisions that are made at Spire every day to better serve our customers. The  
23       Company does not typically share the details of those decisions with Staff in the context

1 of day-to-day operations. But the benefits of deploying the ultrasonic meter have been  
2 so obvious that we have accelerated the rate at which we replace meters. That has been  
3 a recent development and Spire agrees that more extensive conversations with Staff are  
4 warranted as this strategy evolves.

5 **Q. AT P. 5 OF LUEBBERT’S REBUTTAL, STAFF CHALLENGES SPIRE’S**  
6 **CLAIM THAT CURRENT DIAPHRAGM METERING TECHNOLOGY IS**  
7 **OBSOLETE, AND STATES THAT SPIRE PROVIDED NO DOCUMENTATION**  
8 **IN SUPPORT OF ITS CLAIM THAT SPIRE’S CURRENT VENDOR WILL**  
9 **DISCONTINUE MANUFACTURING THE METER IN 2021. IS THIS**  
10 **ACCURATE?**

11 A. Schedule JAR-R2, attached to my Rebuttal Testimony, is an Itron Product Information  
12 Letter received by Spire in September 2020 that contains the “end of life” announcement  
13 for METRIS and I-250 gas meters. This letter supports Spire’s assertion that as of  
14 March 30, 2021, Itron will end production of all METRIS gas meters, and effective  
15 December 31, 2021, Itron will end production of all I-250 gas meters. This letter should  
16 make it readily apparent that the cessation of production of residential diaphragm meters  
17 is a true indicator of product obsolescence. As a utility provider, Spire must start  
18 planning and making business decisions years in advance to provide safe, reliable, and  
19 affordable natural gas. As I discussed at the June 9 technical conference, the diaphragm  
20 meter is an aged mechanical device that is rendered obsolete by the capability provided  
21 in the ultrasonic meter. Just because someone continues to make a VCR does not mean  
22 it is prudent to continue to buy it. Fundamentally, the ultrasonic meter provides a clear  
23 and simple safety device in the auto shutoff valve that is not available in diaphragm

1 metering. The value of this device is so compelling as to render existing meter  
2 technology obsolete. In my experience managing gas safety issues, I cannot imagine  
3 the case being made that Spire should not deploy this technology because the meter that  
4 is already there is not old enough. The upgrade in meter capabilities with the ultrasonic  
5 meter is clear and compelling.

6 **Q. STAFF ALSO TAKES ISSUE WITH SPIRE’S RESPONSE TO STAFF DATA**  
7 **REQUEST 0293, NOTING CONCERN WITH SPIRE’S STATEMENT THAT**  
8 **WHEN A METER IS OFF AND CUSTOMER SERVICE NEEDS TO BE RE-**  
9 **ESTABLISHED, THE METER IS REPLACED REGARDLESS OF AGE.**  
10 **(Luebbert Rebuttal, pg. 5.) STAFF PLACES SIGNIFICANT WEIGHT ON**  
11 **THE POTENTIAL FOR STRANDED INVESTMENT. IS STRANDED**  
12 **INVESTMENT A CONCERN IN YOUR OPINION?**

13 A. No. Frankly, I do not understand the continued dialogue about stranded assets as a part  
14 of the spend included in this rate case. In its direct case, Spire included \$4,419,631 in  
15 Account 381.100 Smart Meters and \$919,416 in account 382.100 Smart Meter  
16 Installations for Spire West through December 31, 2020. The spend in this rate case is  
17 for metering installed substantially in the same way it has always been installed using  
18 the previous generation diaphragm metering. Stranding assets did not happen much  
19 differently than it has for the last 20 years in the expenses in this rate case. I agree that  
20 going forward Spire and interested parties need to continue to discuss how to handle  
21 stranding metering assets by a more aggressive upgrade program and Spire is gathering  
22 more data to have that discussion.

1 **Q. STAFF CHALLENGES SPIRE’S STATEMENT THAT IT WILL NEED TO**  
2 **CHANGE ALL METERING EQUIPMENT IN SPIRE EAST BY APRIL 2025**  
3 **BECAUSE ITS CURRENT CONTRACT WITH LANDIS & GYR ENDS AT**  
4 **THAT TIME. (Luebbert Rebuttal, pg. 5-6.) STAFF SUGGESTS THAT SPIRE**  
5 **HAS NOT PROVIDED DOCUMENTATION INDICATING THAT**  
6 **EXISTING METER DEVICES WILL NOT BE USABLE BEYOND THAT**  
7 **DATE. WHAT IS YOUR RESPONSE?**

8 A. The Missouri East Landis & Gyr system will be shut down on April 1, 2025, as  
9 stipulated by the contract. Attached as Schedule JAR-SR-2 is a letter of notification  
10 of termination of meter reading services from Landis & Gyr at the end of the current  
11 contract, April 1, 2025. The Company has asked Landis & Gyr whether it would  
12 consider extending the contract beyond that time, but Landis & Gyr has refused to do  
13 so.

14 **Q. STAFF ALSO STATES THAT SPIRE’S RESPONSE TO STAFF DR 0295.3**  
15 **INDICATES THAT REPLACING THE AMR DEVICE ON EXISTING**  
16 **DIAPHRAGM METERS WOULD COST LESS THAN FULL METER**  
17 **REPLACEMENT WITH A NEW ULTRASONIC METER. STAFF CLAIMS**  
18 **THAT THIS COST DISPARITY WARRANTS ADDITIONAL JUSTIFICATION**  
19 **TO PROCEED WITH REPLACING EXISTING METERS REGARDLESS OF**  
20 **THE AGE OF THE METER. (Luebbert Rebuttal, pg. 6.) WHAT ARE THE**  
21 **CONSEQUENCES OF A RETROFIT OF THIS TYPE?**

22 A. Staff has noted its concern with the stranding of assets several times. Now, Mr.  
23 Luebbert is proposing that Spire retro-fit modules to hundreds of thousands of

1 replacement-eligible meters. Under this plan, Spire would install a new module on  
2 existing diaphragm meters with the deliberate intent to strand these new assets. This  
3 would result in 30,000 to 40,000 meters with new network devices being subsequently  
4 replaced with a new meter each year to satisfy the Commission-mandated meter  
5 sampling requirements. These replacements are required because the diaphragm meter  
6 we installed the module on has a long history of degrading in accuracy over time. This  
7 would also require a second visit by a Spire employee to the property each time and  
8 replacing a virtually new network device. By Staff's logic, stranding assets is not  
9 acceptable when we have a compelling new device with enhanced safety capability, but  
10 is perfectly fine for Spire to instead install new module equipment that provides no  
11 safety enhancements and will also result in stranding of assets? I fail to understand the  
12 logic of this. Staff's suggestion would also result in higher O&M expense by requiring  
13 an unnecessary second visit by a Spire employee or contractor providing these services.

14 **Q. IN DISCUSSING COSTS PER ULTRASONIC METER AND COSTS PER**  
15 **ULTRASONIC METER INSTALLATION ON PP. 6-7 OF LUEBERT'S**  
16 **REBUTTAL, STAFF STATES THAT IT HAS ISSUED DATA REQUESTS TO**  
17 **SPIRE REGARDING ALLEGED DISCREPANCIES IN COSTS BOOKED TO**  
18 **FERC SUBACCOUNTS VERSUS THE ACTUAL COSTS OF INSTALLATION.**  
19 **IS THERE IN FACT A DISCREPANCY?**

20 A. No. What appears to be a discrepancy in the costs is due to very simple accounting  
21 principles. A meter is not purchased at the time of install. The Company purchases  
22 meters such that 3 to 6 months of inventory is available. This ensures that employees  
23 have the necessary equipment when they need it. Each year, the number of meters the



1 Company uses increases after the first of the year due to capacity to perform meter-  
2 sampling exchanges. The costs booked to this account during this period represent  
3 meter purchases in excess of what was installed as the inventory was being increased in  
4 advance of the start of the year.

5 Further, the estimated cost to perform a meter install is \$107. However, each installation  
6 is not a standalone event that requires this amount of labor. If a meter is already off due  
7 to other work and a new meter is installed at the time of restoration of service, there is  
8 little or no labor charge to the meter work because little or no additional labor was  
9 required to install it. This is at the heart of the Company's opportunity-based approach  
10 targeting meters that can be replaced with little or no additional labor. In some cases  
11 there is little or no incremental labor involved in a meter replacement, and in some cases  
12 a dedicated meter exchange job costs approximately \$107. The blend of work  
13 performed during this period made the average labor cost approximately \$58.37 for the  
14 ultrasonic meter replacements that have already occurred. This demonstrates the value  
15 of opportunity-based upgrades and shows that, during this period, the Company was  
16 able to perform exchanges at nearly half the cost of a standalone exchange. What  
17 remains true, however, is that if we schedule a meter exchange the approximate cost of  
18 the labor to perform it is \$107.

19 **Q. AT PAGE 7 OF LUEBBERT'S REBUTTAL, STAFF CRITICIZES SPIRE FOR**  
20 **NOT PROVIDING AN ESTIMATE FOR THE ADDITIONAL COSTS**  
21 **RELATED TO AMI TECHNOLOGY OR A TIMEFRAME FOR EXPECTED**  
22 **EXPENDITURES. WHAT WAS SPIRE'S RATIONALE FOR NOT**  
23 **PROVIDING AN ESTIMATE OR TIMELINE?**

1 A. In response to Staff data request 0293, Spire stated that “The overall capabilities and  
2 timing of delivering those capabilities will dictate the deployment timing and  
3 expenditures”. The overall design of the system simply has not developed far enough to  
4 provide such estimates at this time.” Staff also noted that in a separate response to OPC  
5 data request 2064, Spire Missouri went on to state that, “The scope and extent of the  
6 software required will be dictated by the network hardware that is deployed. The  
7 network strategy and design is still being studied and the projected cost cannot yet be  
8 provided.”

9 Mr. Luebbert appears to conflate an overall AMI deployment strategy with a metering  
10 equipment decision. Again, Spire has decided to use next generation ultrasonic meter  
11 equipment that provides compelling benefits to customers, without AMI capabilities.  
12 That decision stands on its own. The overall AMI deployment strategy is still being  
13 studied and developed and, as such, the decisions necessary to fully define the cost and  
14 effort have not yet been made. When Spire has a plan with sufficient detail to understand  
15 all the costs and all the resulting benefits, we will plan our next steps. This information  
16 will be shared with Staff and OPC as we plan that step. The Company anticipates  
17 completing this analysis over the next year and looks forward to a robust conversation  
18 around the benefits of continuing to move our services into the future.

19 **Q. STAFF FURTHER CLAIMS AT PAGE 7 OF LUEBBERT’S REBUTTAL THAT**  
20 **SPIRE PROVIDED STAFF WITH ANALYSIS REGARDING PLANS TO**  
21 **INSTALL NEW DEVICES THAT WERE NOT SUPPORTED WITH**  
22 **SUBSTANTIAL DOCUMENTATION, AND STAFF LISTS SEVERAL**  
23 **“DISCLAIMERS” THAT STAFF ALLEGES CREATE DOUBT AS TO THE**

1           **ACCURACY AND RELIABILITY OF THE ESTIMATES. DO YOU AGREE**  
2           **WITH STAFF’S ANALYSIS?**

3    A.    No, I do not. The analysis provided to Staff represents typical estimates used to model  
4           the high-level financial impact of a large-scale program like this. This kind of estimate  
5           requires synthesis of thousands of individual transactions into units that create the  
6           budget level impact of a program of this scale and duration. It is essential in the  
7           transparency of the estimate to call out assumptions that were made to build the estimate.  
8           The tactical execution of the program cannot be built until the high-level directional  
9           impact of the overall program has been established, which also allows identification of  
10          factors that could negatively or positively impact program results. That is what this  
11          model does. The use of the model clearly identified that an ultrasonic meter upgrade  
12          program yielded the best results for our customers.

13   **Q.    MR. LUEBBERT STATES THAT “SPIRE MISSOURI SHOULD HAVE**  
14           **PROVIDED JUSTIFICATION FOR REPLACING EXISTING ASSETS WITH**  
15           **NEW TECHNOLOGY WHICH INCLUDES FULLY SUPPORTED COST**  
16           **BENEFIT ANALYSES ESPECIALLY IN AN INSTANCE WHEN THE**  
17           **EXISTING ASSETS ARE BEING REPLACED REGARDLESS OF AGE**  
18           **WHICH INCREASES THE POSSIBILITY OF SUBSTANTIAL STRANDED**  
19           **ASSETS.” (Luebbert Rebuttal, pg. 8.) WILL YOU PLEASE RESTATE YOUR**  
20           **POSITION REGARDING THE POTENTIAL FOR “STRANDED**  
21           **ASSETS” AS A RESULT OF SPIRE’S METER REPLACEMENTS?**

22    A.    Again, the investment included in this filing did not represent a replacement program  
23           that stranded assets. Looking forward, Staff is seeing stranded assets as a future issue

1 and the Company agrees that a further discussion is warranted on that issue. However,  
2 stranded assets are not an issue that has occurred in the expenses involved in this case,  
3 and should therefore not be a factor in disallowing any of these expenses. The  
4 Company recognizes that this may become an issue during the period these rates are in  
5 effect, and looks forward to having further discussions with the parties on this matter  
6 prior to its next general rate case.

7 **Q. STAFF'S ULTIMATE RECOMMENDATION IS THAT THE AMOUNTS**  
8 **SPIRE BOOKED TO FERC SUBACCOUNTS NOT BE INCLUDED IN OR**  
9 **RECOVERED IN RATES DUE TO SPIRE'S LACK OF SUPPORT PROVIDED**  
10 **TO DATE. HOW DO YOU RESPOND?**

11 A. The \$4,419,631 at issue in this proceeding is the same meter spend that Spire would  
12 have incurred using the previous diaphragm meter technology during this period except  
13 for the ultrasonic meter cost of an additional \$25 per unit. It appears Staff is under the  
14 impression that no meters needed to be installed during the test period, which is not  
15 correct. The Company must install and replace meters every day. Rather, the Company  
16 selected a new metering device, with improved technology to deliver safety, accuracy  
17 and reliability benefits to customers, at an incremental cost of \$25. Based upon my  
18 years of interaction with the Gas Safety Staff, I cannot comprehend the idea that we would  
19 deny these kinds of benefits over a \$25 cost disparity.

20 **Q. TURNING TO OTHER ISSUES IN MR. LUEBBERT'S REBUTTAL, HE**  
21 **DESCRIBES SPIRE'S EXISTING METERING INFRASTRUCTURE. IS STAFF**  
22 **WITNESS LUEBBERT'S DESCRIPTION OF SPIRE'S EXISTING METERING**  
23 **INFRASTRUCTURE AN ACCURATE CHARACTERIZATION?**

1 A. No, not entirely. Staff witness Luebbert states that “the existing metering infrastructure  
2 consists of diaphragm meters paired with Automated Meter Reading (“AMR”) devices.  
3 AMR devices allow for one-way communication from the meter to the utility.”  
4 (Luebbert Rebuttal, pg. 2.)

5 **Q. WHAT ISSUES DO YOU SEE WITH STAFF’S CHARACTERIZATION?**

6 A. Staff’s depiction of current metering infrastructure is overly simplistic and fails to  
7 capture the numerous types of diaphragm meters utilized by both Spire East and Spire  
8 West, the unique programming and retrofitting required for each individual type of  
9 diaphragm meters, and the significant hardware and software limitations that create  
10 inefficiencies and threaten the accuracy and inconsistency of the Company’s bill reads.

11 **Q. PLEASE EXPLAIN THE CURRENT STATE OF SPIRE’S METERING**  
12 **INFRASTRUCTURE FOR SPIRE EAST.**

13 A. Spire’s current meter infrastructure consists of 18 different types of diaphragm meters  
14 in Missouri East. Each meter type is retrofitted to an L&G AMR that is uniquely  
15 connected based on the manufacturer and which must be programmed to the unique  
16 index of the meter. The Landis & Gyr AMR devices are at the end of their useful life,  
17 and of a type and model that will not be supported by Landis & Gyr beginning April 1,  
18 2025. As a result, Spire will not be able to collect reads from any of these meters after  
19 April 1, 2025 and each of these meters must be upgraded with a new module or meter  
20 by that date. Moreover, many of the diaphragm meters themselves are up to 35 years  
21 old, and 16 of the 18 types used in Spire East are no longer used for meter installation  
22 or replacement.

1 **Q. PLEASE EXPLAIN THE CURRENT STATE OF SPIRE’S METERING**  
2 **INFRASTRUCTURE FOR SPIRE WEST.**

3 A. In Spire West, there 12 different types of diaphragm meters that are retrofitted to Itron  
4 ERT (“Encoder Receiver Transmitter”) modules. Again, each module is specific to the  
5 meter manufacturer and must be programmed uniquely to each meter index. The  
6 current ERT modules are a blend of several generations of module technology. The  
7 40G ERTs are obsolete and have been replaced to the point that they exist on less than  
8 1% of Missouri West meters. The 100G ERTs are an improvement but are still woefully  
9 behind in ERT technology. This becomes problematic because over 90% of Spire  
10 Missouri West meters have a 100G ERT. This means that current meter reading software  
11 and hardware is limited in capability when trying to read these modules. 500G ERT  
12 technology is the current standard, and the ultrasonic meters or ERTs modules installed  
13 in Missouri West are 500G. As I indicated in my Rebuttal Testimony at pp. 15-16, to  
14 date ultrasonic meters have only been installed in Spire West to date.

15 **Q. WHAT ARE THE EFFICIENCY AND ACCURACY LIMITATIONS OF**  
16 **HAVING MULTIPLE TYPES OF METERS AND MODULES?**

17 A. The current diaphragm meter technology requires the Company to sustain equipment  
18 for 30 unique meter combinations. This includes replacement inventory, as well as  
19 hardware and software to install and program the modules. In each region, the Company  
20 has been constantly replacing broken or obsolete modules and then replacing broken or  
21 obsolete meters. This has been an increasingly inefficient and costly set of processes to  
22 maintain the consistency and accuracy of our customer bill reads.

1 Q. STAFF WITNESS LUEBBERT STATES AT P. 2 OF HIS REBUTTAL  
2 TESTIMONY THAT SPIRE MISSOURI HAS BEGUN INSTALLATION OF  
3 NEW ULTRASONIC METERS THAT HAVE INTEGRATED NETWORK  
4 DEVICES, WHICH WOULD ALLOW SPIRE TO FULLY IMPLEMENT AMI  
5 IN THE FUTURE. IS STAFF PLACING UNNECESSARY EMPHASIS ON THE  
6 USE OF FUTURE NETWORK AND AMI CAPABILITIES AND DE-  
7 EMPHASIZING EXISTING BENEFITS?

8 A. Yes. The superior uses and benefits of the ultrasonic meter are not dependent upon its  
9 network or AMI capabilities. This meter was selected for next-generation metering  
10 based on the capabilities it provides at the time of installation, without a network and  
11 operating in AMR mode. The day an ultrasonic meter is installed without an AMI  
12 network, in AMR mode, it provides the following capabilities that do not exist with a  
13 diaphragm meter. The benefits below are substantial and provide unique safety features  
14 that do not exist today.

- 15 • Auto-shut for high flow and temperature.
- 16 • Remote shut-off using handheld device in the event of an emergency at the customer  
17 premise.
- 18 • Increased accuracy of 0.1% versus 2.0% that does not degrade over time.
- 19 • Improved reliability due to no moving parts in the meter.
- 20 • Reduced size, which increases installation flexibility and provides improved customer  
21 aesthetics.

22 These capabilities make the ultrasonic meter far superior to the diaphragm meter, even  
23 if a network is never installed. These benefits, combined with the elimination of the

1 many inefficient processes around sustaining 30 different meter combinations, make the  
2 move to the ultrasonic meter an obvious choice for the benefit of Spire's customers.  
3 Staff appears to be focused on future development of AMI network over existing  
4 benefits of ultrasonic metering device technology.

5 **Q. HAS SPIRE CONSIDERED THE POTENTIAL FUTURE BENEFITS OF**  
6 **NETWORK AND AMI CAPABILITIES?**

7 A. Yes, of course. The Company did evaluate future capabilities to confirm that this meter  
8 will also provide the future capability to leverage the improvements an AMI network  
9 could provide. However, the Company is still studying an overall AMI network and the  
10 capabilities it will provide to Spire customers. This study will evaluate the full cost and  
11 effort to deploy this technology and the benefits this capability will provide currently  
12 and to meet the future needs of Spire customers. Spire will present those findings and  
13 the supporting detail to Staff when that study has been completed. Notably, any costs  
14 associated with network and AMI capabilities are not at issue in this current proceeding.

15 **Q. STAFF WITNESS LUEBBERT'S REBUTTAL AT P. 3 NOTES THAT MOVING**  
16 **TO AMI TECHNOLOGY WILL REQUIRE ADDITIONAL CAPITAL COSTS.**  
17 **IS STAFF ONCE AGAIN FOCUSING INAPPROPRIATELY ON AMI**  
18 **NETWORK CAPABILITIES?**

19 A. Yes. Again, Spire is not installing this meter because it needs an AMI network to make  
20 it useful. The ultrasonic meter provides significant benefit without a network. The  
21 Company is not currently proposing an AMI network and is still studying the  
22 implementation cost and benefits of such a network. However, there is no doubt that  
23 the ultrasonic meter provides capabilities in AMR mode that cannot be achieved with a



1 diaphragm meter attached to a network module. Other technology for full AMI  
2 capability will be considered in its own study that evaluates the cost and effort against  
3 the benefits of the capability it might deliver.

4 **Q. ON PAGE 3 OF HER REBUTTAL TESTIMONY, STAFF WITNESS EUBANKS**  
5 **NOTES THAT SPIRE IS NOT CURRENTLY NOTIFYING CUSTOMERS PRIOR**  
6 **TO INSTALLATION OF AN ULTRASONIC METER AT THEIR PREMISES. DO**  
7 **YOU VIEW PRIOR NOTICE AS PRACTICAL?**

8 A. Yes, but only in some cases. Most meter replacements are performed on an opportunistic  
9 basis, when other work is already being performed at the customer premises. Work plans  
10 for these locations are not developed until the night before the work is to take place, making  
11 advanced notice impractical. For customer-requested work, appointments are typically  
12 booked within a few days of the service visit, again making advanced notice difficult.  
13 However, the Company is open to provided additional information about ultrasonic meter  
14 replacements to customers when replacements are part of planned work, such as a  
15 scheduled main replacement project.

16 **IV. CONCLUSION**

17 **Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?**

18 A. Yes, it does.



# New metering technology coming to the communities we serve

Ultrasonic meter customer benefits



# Spire's commitment to service and safety

For more than 160 years, we've been finding new and better ways to serve our customers. And the advanced metering infrastructure (AMI) project provides endless opportunities for us to continue that legacy well into the future.

# Diaphragm vs Ultrasonic Meter



# Benefits of Ultrasonic Meters

Existing diaphragm meter technology is obsolete and is difficult to sustain supply. Diaphragm meter manufacturers have notified Spire that they will stop being manufactured in the near future.

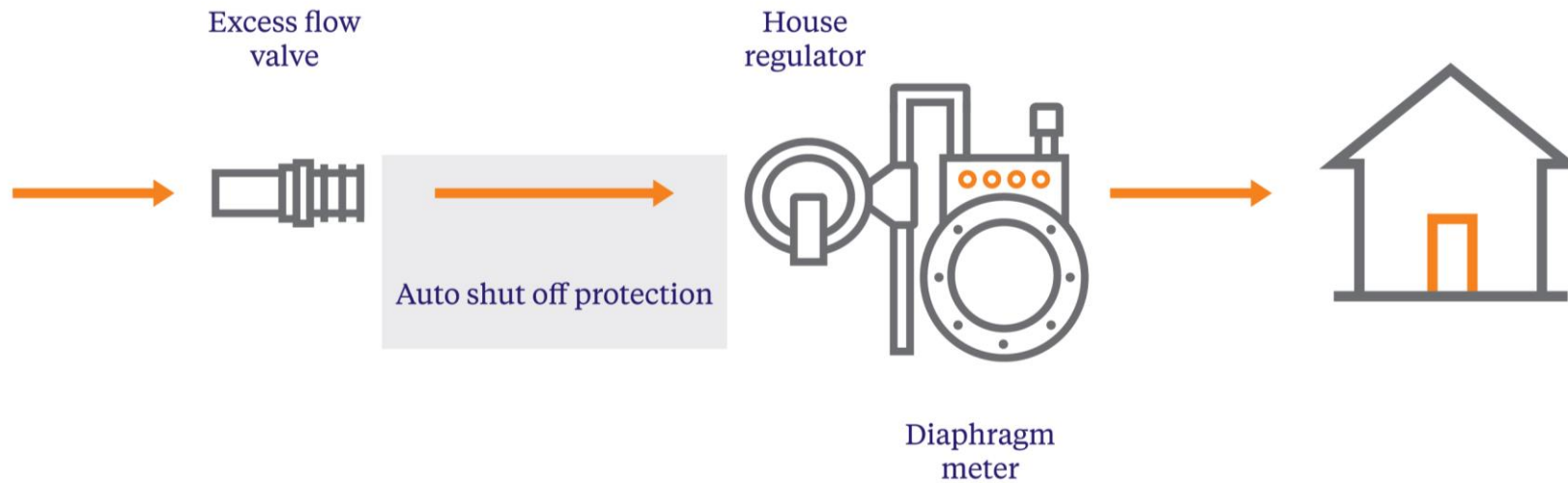
Customers will **immediately** realize all of these benefits **when the ultrasonic meter is installed.**

- Safety
- Accuracy
- Reliability
- Availability
- Size



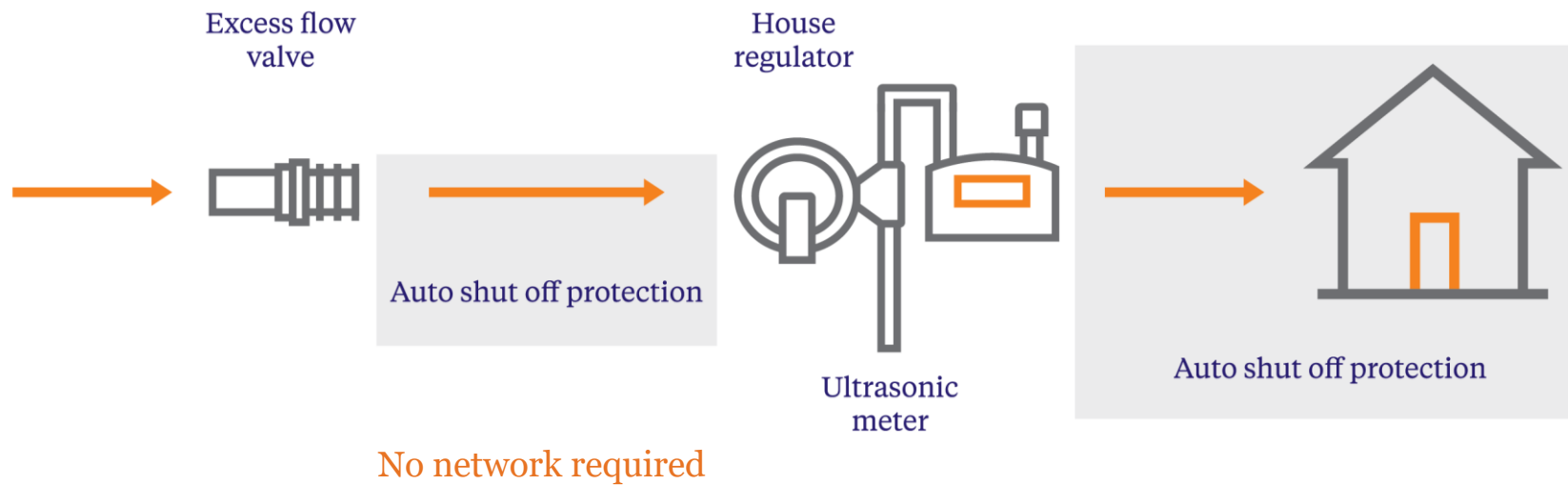
## Current customer safety

Currently, the **auto shut off protection** provided by an excess flow valve and a **diaphragm meter** is **limited** to the piping between the excess flow valve and the house regulator.



## Enhanced customer safety

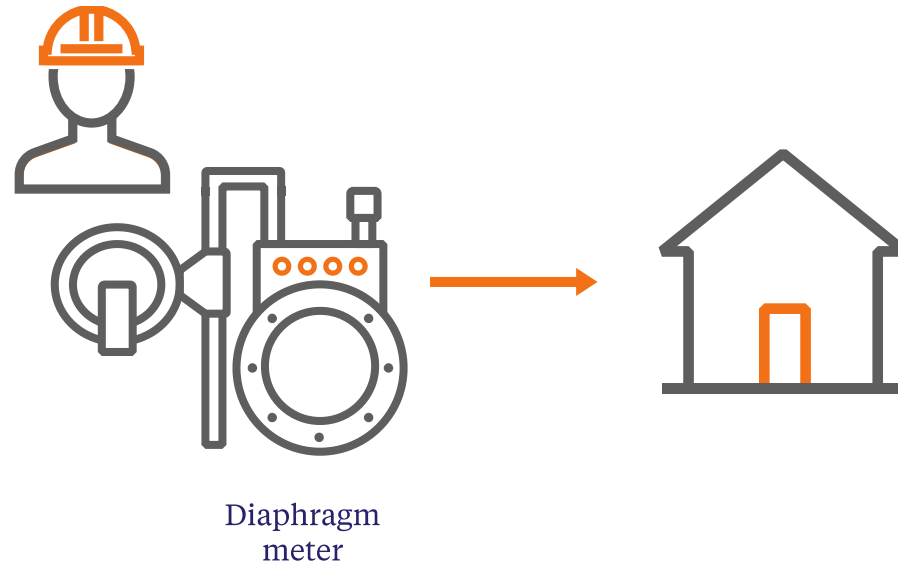
Beyond the initial auto shut off protection—limited to the piping between the excess flow valve and the house regulator—an **ultrasonic meter** uses advanced technology to activate **additional auto shut off** capabilities including all piping in the customer's home.





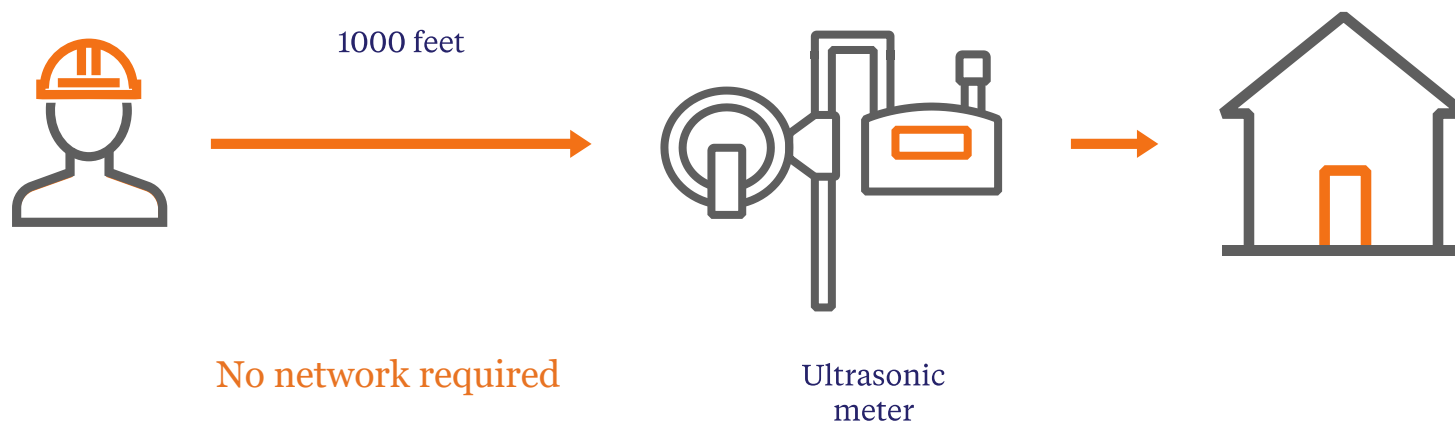
## Current employee and customer safety

Currently, if a customer with a **diaphragm meter system** experiences a slower gas leak—a leak lacking the pressure to activate the auto shut off capability—a **field service technician must be at the meter to manually shut off the gas.**



## Enhanced employee and customer safety

Ultrasonic meters provide enhanced safety for employees and customers by allowing a field service technician to shut off a customer's gas from a distance when slower gas leaks don't activate the auto shut off capabilities.



# Hazard Prevention Without a Network

- **Internal shut-off valve**
  - Shuts off on detection of 500 cubic foot/hour flow rate for approximately 10 seconds, providing automatic protection against explosion from open customer fuel runs
- **Temperature sensor**
  - Activates on detection of external temperatures of 176° F or greater
  - Decreases severity and duration of fires
- **Remote shut-off** from 1000 feet away
  - Reduces risk of harm to first responders
- **Pressure sensor**
  - On low pressure systems, prevents overpressurized gas from reaching customers on low pressure systems (can prevent Merrimack Valley incidents)



# Accurate & Reliable

- Ultrasonic meter reads are **20 times more accurate** than diaphragm meters (+/- 0.1% vs. +/- 2%)
- Reliability
  - Moving parts in diaphragm meter typically cause degradation of accuracy due to wear/moisture
  - Ultrasonic meters eliminate device wear, mechanical failure and billing errors



## Available & Cost-Effective Protection

- EFV installation: **\$1,500** cost to customer to install
  - Little incentive to switch
- New ultrasonic installation: only **\$25** more than comparable diaphragm
- Availability
  - Metal components in diaphragm meters are increasing in cost and decreasing in availability
  - Our primary supplier is discontinuing manufacture of residential or small commercial diaphragm meters in 2021
  - The switch to ultrasonic metering is nearing completion in Europe, and is beginning throughout the U.S.



# Ultrasonic Meter Transition

Ultrasonic meters are installed when:

- A meter is scheduled for replacement
- The meter is sample eligible and it can be replaced when the customer service is already interrupted
- Meter is replaced as part of main or service replacement project
- New installations
- Over 60% of Missouri meters are more than 10 years old, and must be replaced per Commission rules (20 CSR 4240-10.030(19)).



Diaphragm vs. Smart Meter

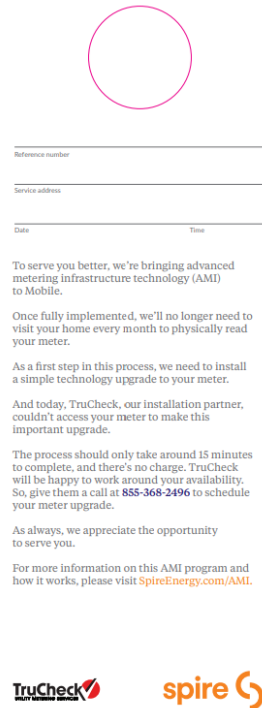


# Planned customer communications

## Door tags



A vertical door tag with a dark grey background. At the top is a white circle. Below it, the text reads: "Sorry we missed you" in a large white font, followed by "We need your help to complete an important upgrade to your natural gas meter" in a smaller white font. At the bottom, there are logos for TruCheck and spire, and a small reference number "01049-TC-0320".



A vertical postcard with a white background. At the top is a white circle. Below it are three horizontal lines for "Reference number", "Service address", and "Date" with "Time" written below the date line. The main text reads: "To serve you better, we're bringing advanced metering infrastructure technology (AMI) to Mobile. Once fully implemented, we'll no longer need to visit your home every month to physically read your meter. As a first step in this process, we need to install a simple technology upgrade to your meter. And today, TruCheck, our installation partner, couldn't access your meter to make this important upgrade. The process should only take around 15 minutes to complete, and there's no charge. TruCheck will be happy to work around your availability. So, give them a call at 855-368-2496 to schedule your meter upgrade. As always, we appreciate the opportunity to serve you. For more information on this AMI program and how it works, please visit [SpireEnergy.com/AMI](http://SpireEnergy.com/AMI)." At the bottom are logos for TruCheck and spire.

## Postcards

### New technology coming to a meter near you

At Spire, we're always looking for ways to serve you better. That's why we're bringing advanced metering infrastructure (AMI) to Mobile.

#### What's next?

The first step in bringing you the benefits of this new technology is a simple upgrade to your existing natural gas meter.

To help complete the installations, we've partnered with TruCheck. All TruCheck contractors will have a Spire logo displayed on their vehicles and will carry "Spire Contractor" identification.

If your meter is outside and easily accessible, there's nothing you need to do. You might not even notice the work is being done. If we do need your help, we'll let you know.

#### What you can expect in the future

We'll be working on the upgrades to the natural gas meters in your community over the coming months. Once the technology has been fully implemented, you'll no longer need to have a meter reader make monthly visits to physically read your meter—it will be read remotely.

If you have any questions, you can access more information online at [SpireEnergy.com/AMI](http://SpireEnergy.com/AMI) or call us at 800-292-4008.

We're excited for this opportunity to serve you even better.



2828 Dauphin Street  
Mobile, AL 36606

Address line 1  
Address line 2  
Address line 3  
Address line 4



# Network Benefits

- Currently Studying Network Technology Options
- Access to Detailed Daily and Hourly Usage Information
  - Energy usage and efficiency analysis
  - Take control of usage and savings
- Company Benefits
  - Ability to deploy AI and analyze system wide usage patterns
  - Accurately model load profiles, peak day, and peak hour requirements
- Additional Safety Benefits:
  - Quicker reaction to potentially hazardous situations
  - Ability to shut meters down remotely from our office
  - Potential for automation





Patrick Robinson  
Vice President - Measurement  
Spire Energy  
700 Market St  
Saint Louis, MO 63101

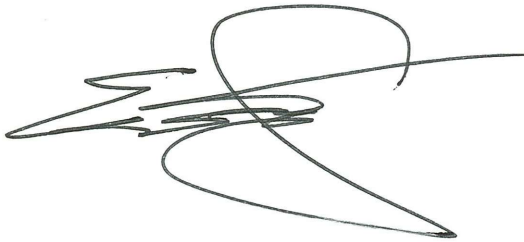
RE: Automated Meter Reading Services Agreement Termination

Spire Missouri Inc., f/k/a Laclede Gas Company, («Company») and Landis+Gyr entered into that certain Automated Meter Reading Services Agreement, dated March 11, 2005, as amended from time to time («Agreement»).

Pursuant to Section 6 of that certain Amendment to Automated Meter Reading Services Agreement dated July 1, 2017 ("Amendment") this letter operates as Landis+Gyr's written notice to Company that the Agreement will not renew at the end of the Term ending on March 31, 2025. As such, the Agreement will have an effective termination date of April 1, 2025.

If you have any questions, please reach out to Andrew Frech, Key Accounts Director, at (312) 415-2892 or [andrew.frech@landisgyr.com](mailto:andrew.frech@landisgyr.com)

Sincerely,

A handwritten signature in black ink, appearing to be 'Eric Seiter', with a large, sweeping flourish extending to the right.

Eric Seiter  
Vice President - Customer Delivery  
Landis+Gyr