

**SOUTHERN INDIANA GAS AND ELECTRIC COMPANY
d/b/a VECTREN ENERGY DELIVERY OF INDIANA, INC.
(VECTREN SOUTH)**

IURC CAUSE NO. 44910

**DIRECT TESTIMONY
OF
DANIEL C. BUGHER, SR.
VICE-PRESIDENT, CUSTOMER EXPERIENCE**

ON

ADVANCED METERING INFRASTRUCTURE

**SPONSORING PETITIONER'S EXHIBIT NO. 4,
ATTACHMENTS DCB-1**

DIRECT TESTIMONY OF DANIEL C. BUGHER, SR.

1 **I. INTRODUCTION**

2

3 **Q. Please state your name and business address.**

4 A. My name is Daniel C. Bugher, Sr., and my business address is One Vectren Square,
5 211 N.W. Riverside Drive, Evansville, Indiana 47708.

6

7 **Q. By whom are you employed and in what capacity?**

8 A. I am Vice President of Customer Experience for Vectren Utility Holdings, Inc. ("VUHI"),
9 the immediate parent company of Southern Indiana Gas and Electric Company, d/b/a
10 Vectren Energy Delivery of Indiana, Inc. ("Vectren South" or "Company"). I hold the
11 same position with VUHI's two other subsidiaries – Indiana Gas Company, Inc. d/b/a
12 Vectren Energy Delivery of Indiana, Inc. ("Vectren North"), and Vectren Energy Delivery
13 of Ohio, Inc. ("VEDO").

14

15 **Q. Please describe your educational background.**

16 A. I earned a Bachelor of Arts degree in 1985 at Butler University with dual majors in
17 Computer Science and Business Administration. I earned a Masters of Business
18 Administration from University of Southern Indiana in 2003.

19

20 **Q. Please describe your professional experience.**

21 A. I have been employed with VUHI or its predecessor companies since 1998 in a variety of
22 positions. I joined Vectren North in 1998 as Director of Application Systems leading the
23 post cutover support for a new customer information system and supported all the
24 legacy systems including the Y2K conversion. As Vectren Corporation was formed in
25 2000, I helped lead the technology integration team as the Director of Applications and
26 Program Management Office for all major systems that Vectren would utilize. In 2003, I
27 was promoted to Vice President, Information Technology and in 2007 added an
28 additional operations responsibility and was named Vice President, Information
29 Technology & Customer Service. In 2010, I was appointed by the CEO for a new role as
30 Vice President, Performance Management where I developed and led a series of
31 initiatives to expand capabilities throughout the corporation focused on performance

1 accountability and continuous improvement. The Strategic Sourcing and Fleet & Facility
2 services functions were added to my role in 2013. Effective June 1, 2015, I was named
3 Vice President, Customer Experience where I oversee VUHI's operational services to
4 provide meter reading, billing, revenue analysis, remittance, credit & collections and
5 customer service to all of VUHI's customers.
6

7 Prior to joining Vectren, I was employed by IBM Corporation from 1985 to 1998. At
8 IBM, I held various positions beginning as a Systems Engineer and progressing to
9 several roles concluding with leadership roles in IBM's national healthcare industry team
10 with a particular focus on integrating new (then) Internet technologies into the
11 information management strategies of large healthcare insurance and health
12 management organizations.
13

14 **Q. What are your present duties?**

15 A. I have primary responsibility for the strategic planning, resource planning and
16 operational leadership of VUHI's customer experience initiatives and outcomes.
17 Customer experience functions include meter reading; billing; bill print/mail/electronic
18 presentation; remittance in all forms; customer relations and complaint management;
19 credit policy; revenue and risk analysis; bill collection services; customer meter related
20 service orders (re-read, transfer of service, disconnections, reconnection upon payment,
21 etc.); and the full range of people-based and technology-based approaches to providing
22 customer service.
23

24 **Q. Have you previously testified before the Indiana Utility Regulatory Commission**
25 **("Commission")?**

26 A. Yes. I have provided written testimony before the Commission in Cause No. 44430.
27

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

29 A. The purpose of my testimony is to give an overview of Advanced Metering Infrastructure
30 ("AMI") technology and discuss how Vectren South will implement the AMI project and
31 the timeline for deployment. I will also discuss how AMI will modernize the electric
32 system and the way in which Vectren South provides service to its customers.

1
2 Additional and detailed explanation of the AMI project costs and solution benefits are
3 included within the testimony of Vectren South Witness Andrew Lewis Trump.
4

5 **Q. Are you sponsoring any exhibits in this proceeding?**

6 A. Yes. I am sponsoring the following exhibit in this proceeding:

- 7 • Petitioner's Exhibit No. 4, Attachment DCB-1: Proposed Deployment Schedule.
8
9

10 **II. OVERVIEW OF AMI**
11

12 **Q. What is AMI?**

13 A. AMI is short for Advanced Metering Infrastructure and is the framework for two-way
14 communication of energy data and electric systems operations between advanced
15 meters and the utility's management systems. These management systems span billing,
16 customer service, outage, and distribution management. AMI enables the utility to collect
17 information from the meter regarding near real-time energy usage. The utility can then
18 use the data collected from the meter to ultimately improve customer service and more
19 efficiently and reliably operate its electric distribution system. Components of the AMI
20 infrastructure include the metering hardware, secured telecommunications, and an AMI
21 management control system also called an AMI head-end controller or system.
22

23 **Q. How does AMI work?**

24 A. One of the main components of AMI is the advanced meters. Advanced meters, unlike
25 traditional meters, are able to store data such as voltage, peak energy demand, and
26 watt-hour energy usage over intervals of time. The advanced meters are enabled with a
27 secure two-way communications function to send data over a "mesh" network. The
28 mesh network utilizes each advanced meter in the system as a signal repeater, enabling
29 meters to utilize nearby meters creating multiple paths to send information to a collector
30 unit. Collector units are distributed around the service territory and connect via a high
31 bandwidth network typically consisting of a combination of utility-owned fiber optic and
32 secured cellular technology. The meters have a near-constant connection to the

1 technology infrastructure which allows for active operational management of distribution
2 assets. The integration of meter activity with other software systems improves how
3 Vectren South tracks meter events, performs billing functions, provides service and
4 engages customers with information about their detailed energy use. Additionally, in the
5 event that a meter loses electric connectivity, it retains an ability to send alerts across
6 the mesh network informing the utility's system that this meter is part of an outage. Upon
7 performing restoration, the utility can remotely verify the status of all affected meters.
8 These and other types of energy and power quality data are sent on a near continuous
9 basis to help Vectren South manage its system.

10
11 **Q. Is AMI considered a new technology?**

12 A. No, AMI is now considered a proven and mainstream technology and is used by many
13 utilities nationwide. Meters with communications capability have evolved over thirty plus
14 years, and AMI specifically dates back to over ten years ago when large scale AMI
15 projects began being deployed across the US for residential customers. AMI growth has
16 been noted by the US Department of Energy, which estimated 65 million smart meters
17 representing over 50% of US households were installed in the US by the end of 2015
18 (US Department of Energy, 2014 Smart Grid Report, page 4¹). In addition, the Edison
19 Foundation's Institute for Electric Innovation states there will be 90 million smart meters
20 installed in the US by 2020 (IEI report, October 2016, page 2²).

21
22 In states surrounding Indiana, AMI is now installed or underway by many companies; in
23 Indiana: Duke Energy Indiana and IPL; in Illinois: Ameren and Commonwealth Edison; in
24 Michigan: Consumers Energy and DTE; in Ohio: Duke Energy Ohio, AEP, and First
25 Energy; in Kentucky: Kenergy.

26
27 The AMI technology that Vectren South has tentatively selected for its project is provided
28 by a market leader and is the same AMI technology that Duke Indiana has been

¹ <http://energy.gov/sites/prod/files/2014/08/f18/SmartGrid-SystemReport2014.pdf>

²

<http://www.edisonfoundation.net/iei/publications/Documents/Final%20Electric%20Company%20Smart%20Meter%20Deployments-%20Foundation%20for%20A%20Smart%20Energy%20Grid.pdf>

1 installing in its Indiana service area since 2016 and for which Duke has completed over
2 700,000 installations in its North and South Carolina service areas.
3

4 **Q. What experience does Vectren South have with this type of technology?**

5 A. Vectren South, in conjunction with its sister companies, has significant meter
6 deployment experience with its recent large scale Automated Meter Reading ("AMR")
7 project. AMR is a distribution modernization targeted to gas meters and was approved
8 in 2014 by the Commission as part of Vectren North's gas transmission, distribution and
9 storage system improvement plan (Cause 44429). Vectren North began deploying AMR
10 to its gas-only customers in Indiana and Ohio in 2015 and successfully deployed
11 upgrades to the meters and performed replacements as necessary to over 700,000
12 customer locations. Our Indiana gas-only service territory was essentially completed in
13 2016 and our Ohio service area is scheduled to be completed in 2017. These projects
14 have helped Vectren South understand complexities associated with advanced metering
15 communications technology, customer communication activities and customer service
16 engagement, field deployment planning, and rapid changes required in the back office to
17 manage customer accounts and optimize field services as the metering solutions
18 change.
19

20 **Q. Please discuss Vectren South's aspirations in terms of its AMI system benefit
21 opportunities.**

22 A. Vectren South's managers and executives guided the benefit evaluation process by
23 recognizing that the AMI system is an important electric distribution system asset that
24 will help Vectren South improve the safety, reliability, and performance of the electric
25 distribution grid while modernizing it for the future. A key contributing characteristic and
26 foundation of Vectren South's AMI benefit aspirations is the value the system will provide
27 in helping customers use energy in a more informed way, with greater choice and
28 insight, and with a higher degree of service convenience. AMI is seen by Vectren South
29 as an essential tool in enabling these changes and capabilities. Corresponding to this
30 customer-oriented focus and priority is the need to create a broad swath of service- and
31 reliability-oriented business and engineering process changes that improve Vectren
32 South's customer service capabilities and service reliability. In turn, this means a

1 commitment by Vectren South to explore a broad set of organizational changes and
2 impacts, supporting Vectren South's customers both directly and indirectly, in nearly
3 every area of its business. These areas include: metering, system billing, field meter
4 services, customer call center, revenue management, revenue protection, load research,
5 outage management, energy conservation/demand side management, distribution
6 engineering, and strategic planning.

7
8 **Q. Did Vectren South conduct a cost benefit evaluation?**

9 A. Yes, Vectren South conducted an extensive cost benefit evaluation throughout 2016. A
10 discussion of many benefit areas is described below, followed by a summary of the AMI
11 project costs. The evaluation was performed and aided by the expert assistance of
12 Black & Veatch consultants. Witness Trump's testimony provides a detailed explanation
13 of Vectren South's AMI cost benefit evaluation.

14
15 **Q. How does AMI improve meter reading?**

16 A. The AMI system provides the means to automate the meter reading function at Vectren
17 South. Through AMI, Vectren South will be able to routinely collect nearly 99% of its
18 monthly billing reads. The system is designed to capture multiple reads from each meter
19 every day. It will be able to routinely collect "off cycle" billing reads that are required for
20 many events such as when a customer moves out of a premises and closes the account.
21 Today, Vectren South performs its meter reading using a manual based meter reading
22 force, principally made up of contract employees. The monthly performance level
23 fluctuates, and has ranged from 92% to 95% over the past several years. This means
24 that some customers receive bills based on estimates instead of bills based on actual
25 reads. As noted with AMI, estimated reads will be virtually eliminated. Additionally, as
26 the AMI system is installed and improves the metering and billing processes, the
27 contractor and other meter reading costs will be reduced. This will save operation and
28 maintenance ("O&M") expense, and some capital expense over time.

29
30 **Q. How does AMI improve field services?**

31 A. Vectren South's field services group performs a large quantity of field trips to the meter
32 for varying purposes such as connecting and disconnecting the meter service and

1 providing power to the customer premises. By way of a remotely controlled switch inside
2 each single-phase electric meter, the AMI system will give Vectren South the ability to
3 reduce these field trips. Even in those circumstances where Vectren South must visit
4 the customer's location to shut off the power, Vectren South can save costs because the
5 remotely controlled switch can help make the trip a shorter one.
6

7 **Q. How does AMI improve billing activities?**

8 A. Vectren South handles billing exceptions and performs estimates due to the lack of
9 actual data or because obtained data is questionable. The AMI system will improve the
10 overall yield of quality data available to the back office systems for processing,
11 approximately commensurate with the level of improvement in the meter reading
12 operation, as noted earlier. This higher yield of quality information will reduce the
13 amount of handling and estimation that is performed within the system billing group, and
14 this will reduce some cost. Equally important to these savings, the AMI system, once
15 integrated with the Meter Data Management ("MDM") and customer service and billing
16 systems, will permit Vectren South billing professionals to real-time check the meter over
17 the AMI network to gather billing determinants. Additionally, the AMI system will
18 generate metering information on intervals such as hourly, 15 minute and 5 minute; and
19 this data will be stored within the MDM system. These are just examples of how the AMI
20 system will create data stores and provide new tools to help Vectren South resolve
21 billing questions.
22

23 **Q. How does AMI improve customer call center operations?**

24 A. Vectren South's customer care call center operations will be significantly affected by the
25 new tools and capabilities offered through AMI. Call center representatives will have
26 access to hourly and daily metering information, and information related to power quality
27 events, such as outages, meter removal alarms and voltage alarms. When customers
28 call to inquire about bill quality and usage, the Vectren South call center representative
29 will have access to a much greater amount of higher quality data that can be used to
30 address the customer's inquiries. The call center representatives will also emerge as
31 key agents of change as they help educate Vectren South's customers about self-
32 managing their usage patterns and energy choices. In this way, call center roles may

1 change over time in emphasis, with questions around metering and bill quality
2 decreasing, being replaced by other kinds of advanced inquiries. Near term, Vectren
3 South plans on leveraging the integrated AMI outage management capabilities to help
4 reduce call handling times involved with customers aiming to restore their power. The
5 remote switch capabilities of AMI can also be leveraged in new ways to be developed
6 over time that will permit customers to self-manage their own reconnection event, such
7 as after clearing a past balance, through automated call routines, which will greatly
8 improve customer service.

9
10 **Q. How does AMI affect load research?**

11 A. Vectren South's estimate of benefits is based on an assumed modest expansion of its
12 energy load research capabilities by a few hundred meters. Vectren South believes this
13 is a reasonable and conservatively stated benefit because over time the customer
14 classes will become increasingly fragmented with the growth of distributed energy
15 resources ("DER"), and potentially new rate classes, or new options such as pre-
16 payment programs. While load research benefits are financially monetized in this way,
17 this understates the tremendous impact that AMI will have on load research functions.
18 AMI, coupled with MDM data store capabilities, will provide Vectren South access to a
19 vast store of cost-efficiently gathered hourly and sub-hourly interval data from which to
20 draw on for purposes of conducting load research. Replicating this capability in any
21 other cost-effective way is impossible, as a practical matter, and therefore hard to value.

22
23 **Q. How does AMI improve revenue management?**

24 A. Vectren South plans on using the AMI system capabilities to improve its handling of
25 accounts and customers finding themselves delayed in their payments to Vectren South.
26 First, Vectren South estimates that it will reduce the occurrence of gross write-offs and
27 the resulting bad debt because of the fact that with AMI, the revenue management team
28 will be able to get the disconnection field orders processed in a faster time frame.
29 Importantly, this benefit does not assume any change to current business rules for
30 handling these account circumstances. Rather, Vectren South anticipates that it will be
31 able to process disconnects sooner, and this will reduce total bad debt expense.
32 Vectren South expects that it will be able to reduce the total charges that customers

1 accrue prior to their reconnection. Today, customers must make a deposit and clear
2 their outstanding balance before they can get reconnected. With the AMI system
3 capabilities, Vectren South expects that these balances will be reduced by more timely
4 and efficient account management actions, and therefore, total customer charges will be
5 reduced.

6
7 **Q. How does AMI improve revenue protection activities?**

8 A. Vectren South anticipates using the AMI system's load aggregation data coupled with
9 meter-specific alarm features that better tracks and quickly identifies energy diversion
10 and theft circumstances. Vectren South estimates that its losses from energy diversion,
11 for which it can take action on, may be reduced approximately 10 million kWh / year.
12 These losses reflect conservative assumptions compared to other utilities that have
13 pursued AMI. Combining the AMI meter data with analytic tools will improve Vectren
14 South's investigation capabilities into theft and tamper circumstances, providing
15 improved outcomes for field investigation efforts. As these circumstances are identified
16 and remediated, all customers will benefit through lower charges associated with line
17 losses.

18
19 **Q. How does AMI improve outage management activities?**

20 A. Vectren South plans to integrate AMI outage data into its Outage Management System
21 ("OMS"). The AMI system provides both alert messages when an outage occurs and
22 notification of power restoration at the conclusion of the outage. Vectren South has
23 estimated two benefits related to outage management. First, when customers call to
24 report an outage, which is unrelated to major storm events, Vectren South's distribution
25 operation technicians can remotely check the power status of the AMI electric meter
26 before performing a field call. Often, the causes of these "single lights out" events are
27 on the customer side of the meter and are not Vectren South's responsibility. With AMI
28 tools, unnecessary trips can be identified upfront and avoided, and operating costs can
29 be saved. The second area of OMS-related benefits occurs during major storm events.
30 The AMI outage signals help isolate the locations of the outage, and this provides a
31 marginal improvement over today's OMS capabilities. The more material effect is on the
32 restoration side of the outage. As individual premises are reconnected to the grid, the

1 AMI meter sends signals to the system allowing the utility to determine where power is
2 on and where it remains off. This eliminates speculation and helps improve the field
3 force productivity in restoring the system, since the utility can determine the most
4 productive ways to dispatch the field crews to resolve the outage. To improve customer
5 engagement, Vectren South will enhance its outage management process so customers
6 can be given the choice to have text-based alerts and updates sent to them to report the
7 status of their meter and the restoration.
8

9 **Q. How does AMI improve distribution system engineering activities?**

10 A. The AMI system provides a number of tools, data, and capabilities to assist Vectren
11 South distribution engineers. First, the AMI interval and power quality data can help
12 improve circuit models. The information can also be used to determine the location of
13 power quality problems running from secondary transformers to the meter service. The
14 AMI meters can also provide voltage interval data and other power quality data, like
15 harmonics. This information can help diagnose what is occurring on a circuit, and help
16 Vectren South restore and/or improve the power quality to its customers. Today,
17 Vectren South often has to deploy recording voltage meters and other measurement
18 devices in the field to investigate these circumstances. Some of these field trips and
19 costs will be reduced with AMI.
20

21 **Q. Why is a benefit included related to Conservation Voltage Reduction (“CVR”)?**

22 A. Vectren South has embarked on installing CVR capability at one substation, and current
23 plans are to expand this to four by 2026. Moreover, long term, Vectren South believes
24 that CVR is cost beneficial at perhaps half of our 86 distribution substations, based on a
25 variety of factors including load. Vectren South can operate CVR without AMI; however,
26 the voltage data available through AMI will improve the performance of the CVR system
27 and permit the operators to achieve, on average, an additional 0.5-volt reduction across
28 the circuits. Vectren South has evaluated the value of this additional 0.5-volt reduction,
29 and it is included in the AMI cost and benefit evaluation. While it does not create a large
30 financial impact to the AMI benefit estimate at this time, should the CVR program be
31 expanded beyond these four substations, there is opportunity for additional benefits for
32 customers due to AMI metering data.

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Q. Does the AMI System help Vectren South run the electric distribution system more reliably?

A. The AMI system has a fundamental role in helping Vectren South run the electric system more reliably. First, the AMI interval-metering data permits Vectren South to see with great fidelity the load patterns over all circuits and substations, and allows our engineers to monitor how these load patterns are changing based on customer demographics and other drivers of usage pattern shifts. AMI also helps Vectren South reduce incidental losses, such as those associated with energy loss and diversion, thus improving the efficiency of the grid. AMI's power quality tools enable improved asset management across a range of distribution assets including secondary transformers and capacitors. AMI also improves the effectiveness of CVR, by improving circuit models and allowing operators to better tune CVR performance. AMI's support for outage management provides operators with improved diagnostic data about the performance of the distribution system under all conditions. AMI will also support Vectren South's ability to expand existing or put in place new rate designs or programs, which in turn can influence how the grid is utilized. The two-way measurement (inflow and outflow) capabilities of AMI, coupled with power quality data, will enable Vectren South to integrate new distributed energy resources more confidently, safely and cost effectively as the role of these resources changes over time. Collectively, the AMI system provides a powerful set of tools and capabilities that sharpen the ability of our engineers and planners to make cost efficient, cost effective, and wise choices on how best to deploy capital and other resources to sustain the reliability of the electrical distribution grid.

Q. Please discuss how AMI will improve customer engagement.

A. AMI will greatly improve Vectren South's ability to connect our customers to their energy use, which will then enable customers to make choices through good, reliable, easy to access and use information, thus leading to better and more informed choices, lower bills, lower use, and enhanced perceptions on behalf of the customers regarding Vectren South's role in helping to achieve these outcomes. Vectren South will upgrade its web site to include tools allowing customers to set personal thresholds of energy use, which is translated to a monthly bill amount. This tool will pro-actively advise the customer

1 mid-cycle of their billing period if they are approaching that threshold based on actual
2 data coming from frequent AMI reads and the most recent forecasted weather for that
3 billing period.

4
5 **Q. What is the level of certainty with these benefits?**

6 A. Vectren South's business case for AMI is presented within a twenty year model.
7 Because we took a conservative approach to including and calculating benefits, we
8 believe we established a high degree of confidence to the level of benefits shown. We
9 focused our benefits research on application to the current and near-term planned
10 operational environment. For that reason, we believe this benefit set is realistic and
11 achievable as operating experience is gained following the project completion and
12 through to the conclusion of the seven-year period of Vectren South's proposed
13 transmission and distribution system improvement plan (the "TDSIC Plan"). At the
14 conclusion of the TDSIC Plan, Vectren South's system will be modernized and enabled
15 with leading AMI capabilities for customers and the usage of those capabilities will be
16 contributing to the identified benefit areas.

17
18 **Q. Does AMI support capabilities beyond what Vectren South has monetized in its
19 business case?**

20 A. While the AMI platform supports Vectren South's current objectives for improving
21 customer experience and maintaining excellent reliability, the platform will also enable
22 and is a prerequisite for future capabilities. That's because in order to implement certain
23 programs and applications such as innovative rate design, time varying structures, pre-
24 pay options, enhanced conservation management, and advanced distributed energy
25 resource management, Vectren South will require the additional information and
26 functionality that AMI supports.

27
28 **Q. Why isn't Vectren South proposing to make future capabilities available now?**

29 A. While AMI is a pre-requisite for additional capabilities, further understanding of market
30 requirements and regulatory support would be necessary to advance these in
31 Indiana. As other states have learned in implementing these capabilities, these changes
32 are very impactful to customers and their relationship with their utility. Therefore,

1 Vectren believes the approach for determining requirements for future capabilities
2 requires thoughtful deliberation and collaboration among Indiana's electric utilities and
3 customer constituents, likely with pilot programs, leading to appropriate regulatory
4 action.

5
6 Some states have implemented time varying rates as a means to incent customers to
7 modify usage behavior and further reduce peak period energy demand. This is a
8 significant change and takes time to educate and engage customers to participate. A
9 pre-pay program must balance the resulting energy reduction from frequent voluntary
10 turn-offs with the prevalent volumetric rate recovery designs. Likewise, current proposed
11 distributed energy legislation before Indiana's legislature may modify how private solar
12 customers are compensated for the energy they provide. Today, Vectren South's
13 meters only provide a monthly net read. Some jurisdictions are moving to advanced
14 distributed energy resource management with requirements to track the timing of both
15 consumption and generation and compensating the customer for the market price at the
16 time the customer delivered the energy. Such requirements demand an AMI solution.

17
18 The deployment of AMI will enable Vectren to participate in future capabilities which
19 would be additive to the benefits of near term capabilities as described herein.

20
21
22 **III. COSTS**

23
24 **Q. Please explain the costs associated with the AMI project.**

25 A. The costs over 20 years associated with Vectren South's AMI project total approximately
26 \$78 million, \$39 million of which Vectren South is seeking to include in the TDSIC Plan.
27 These costs occur in the AMI "build period" and include: advanced meters;
28 telecommunication assets; head-end equipment that manages the AMI meters; and field
29 deployment and program management that is directly associated with the meter assets.
30 A break-down of these costs is included within Vectren South Witness Trump's
31 Petitioner's Exhibit No. 5.

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IV. TDSIC STATUTE

Q. Please explain how AMI furthers the goals of Senate Bill 560³ (the “TDSIC Statute”).

A. The TDSIC Statute allows for eligible transmission, distribution, and storage system improvements undertaken for purposes of safety, reliability, system modernization or economic development. The specific components of Vectren South’s AMI project that are filed for TDSIC recovery are eligible distribution assets. The AMI project is being undertaken to enable improvements and benefits for system reliability and system modernization producing tangible benefits in system reliability, customer service, operating efficiency and energy management. The AMI infrastructure is a modernization to the distribution system and its assets, providing near term benefits and a foundation for future programs and services. The AMI costs included in the TDSIC Plan are not included within Vectren South’s current electric rate base.

Q. How does AMI further public convenience and necessity?

- A. AMI will enable Vectren South to accomplish for customers:
- Improved customer/field service options and customer conveniences, such as timely disconnection and reconnection flexibility, improved responsiveness to energy use inquiries, billing and customer-care functions;
 - Improved quality of customer bills;
 - Improved customer access to their specific energy detail to aid their planning and conservation efforts;
 - Improved timeliness and accuracy in addressing power outages and assisting customers with potential power quality problems on either side of the meter;
 - Improved cost performance of meter reading, reducing field service orders, and streamlining back office processes in areas of metering, power quality investigations, outage management, billing and contact center;

³ Indiana Code Chapter 8-1-39 (“TDSIC Statute”).

- 1 • Better planning for distribution system enhancements, circuit analysis, and
2 management of energy use patterns, quality problems and usage of distributed
3 energy; and
- 4 • Improved safety in performing outage work, reducing vehicle travel, reduced service
5 visits, improving how energy is routed, identifying and managing new sources of
6 energy such as solar PV to avoid hazards for workers and customers.

7
8 All of the aforementioned improvements work to further the public convenience and
9 necessity of Vectren South's customers.

10
11
12 **V. DEPLOYMENT AND CUSTOMER CARE**

13
14 **Q. Please describe Vectren South's plan for deployment of AMI.**

15 A. Vectren South has defined a "build period" for implementing the AMI system beginning in
16 2017 to deploy approximately 250,000 meters between electric and gas customers.
17 Only costs pertaining to our electric customers will be recovered through Vectren
18 South's Transmission and Distribution System Improvement Charge ("TDSIC"). During
19 the build period, approximately 153,000 AMI electric meters will be installed. In addition,
20 there are approximately 97,000 upgrades or replacements necessary for the gas meters
21 to utilize the AMI network for our customers who have both gas and electric service.
22 Vectren South will complete AMI network design in 2017 while also beginning the
23 integration of the AMI head-end system with the MDM system, and the MDM system
24 integration to the billing and outage management systems. After the detailed network
25 design is finalized and network equipment is installed in the field, and once the systems
26 integration is completed, there will be an initial deployment phase during which
27 approximately 2,000 AMI meters will be installed. After the initial meters have been
28 installed, the initial deployment will be assessed to verify the integration of the meters
29 with Vectren South's systems and to determine if any improvements are needed for the
30 meter installation procedures and customer communications. Broad based deployment
31 will continue into 2019 with an objective for field deployment to be completed in summer

1 2019. Petitioner's Exhibit No. 4, Attachment DCB-1 summarizes the anticipated
2 deployment.

3
4 Installation of the meters will be conducted by a vendor chosen through a competitive
5 process. The AMI functions will be phased in with an immediate focus on network based
6 meter reading. Additional functions that will quickly follow this capability will be the
7 remote reconnect/disconnect capability, outage management integration, customer
8 access to their detailed energy use, and granular energy use data integrated with
9 systems management tools. By 2020, the AMI system will have transitioned from the
10 project team to the on-going support teams who will continue to build on functionality.

11
12 **Q. Please describe the customer engagement process for deployment of AMI.**

13 A. Vectren South's customer engagement process is designed to provide timely notice to
14 its customers in order to ensure that customers are aware of their advanced meter
15 installation. It will also give customers the opportunity to learn and ask questions about
16 what AMI means for them. The communications for the AMI project will include press
17 releases to targeted deployment areas one to two months in advance. This and all
18 public communications material will be aligned with more detailed product and project
19 information and frequently asked questions located on Vectren South's website,
20 Vectren.com, and of course made available to customers who call our contact center.
21 We will include bill messaging on statements to customers on several months of their
22 bills, and via proactive calls and emails as the project moves closer to specific
23 customers' implementation dates. Because AMI involves an electric meter change
24 (resulting in a short duration outage), personal communications will be attempted to
25 ensure awareness of that outage. This will be performed via a combination of door
26 hangers and outbound calls timed close to and preceding the activity. Deployment
27 teams include as part of their standard procedure an action to personally engage the
28 customer at their site if they are present, to advise customers prior to the actual
29 installation.

30
31 Vectren South's process also includes communications with elected officials and local
32 police and fire officials. We have found this helps address questions they receive from

1 their constituents and ensures that they are aware of the project purpose and the
2 specific details of contractor crews working in their neighborhoods and are aware of
3 whom to contact at Vectren South should any concerns arise.
4

5 **Q. Does Vectren South propose an opt-out provision for customers?**

6 A. A handful of Vectren North gas customers expressed concerns during our AMR projects
7 about having radio frequency ("RF") transmitters added to their meter. Vectren South is
8 also aware that other utilities, as part of their AMI project deployment, experienced some
9 customers who have expressed concerns regarding AMI. Generally, the concerns
10 expressed relate to RF exposure or the potential that data will be inappropriately utilized.
11 We believe that the AMI system is safe, secure and the underlying technology is built
12 and regulated by appropriate state and federal agencies. RF levels from AMI meters are
13 less than devices commonly used such as microwave ovens and cell phones. AMI
14 meters operate far less frequently during the day than a cell phone, and the meter is
15 typically a much greater distance away from a person as compared to a cell phone. We
16 do not find reasons why approved meters should not be allowed to be installed on
17 Vectren South owned meter housings anywhere in Vectren South's service area. The
18 modernization of meters is occurring across the US and this technology is an accepted
19 standard for how energy service will be efficiently provided. Several utilities have
20 implemented opt-out provisions to include an upfront cost and an ongoing recurring
21 monthly cost to appropriately address all costs caused by such action. Various
22 provisions are in place where upfront costs billed to customers who choose to opt-out
23 are often greater than \$100, and monthly recurring costs can exceed \$10. Vectren South
24 is not proposing such charges in this proceeding, but may decide to propose cost-based
25 charges in a future rate case. In the period before such costs are implemented, we are
26 proposing that all customers that opt-out be required to go on budget billing with an
27 annual read to minimize our costs of reading meters each month. During the project
28 and afterwards, even if an opt-out cost provision is in place, we believe it is important to
29 require that the customer allow the AMI meter asset to be installed and for it to be
30 enabled with power line carrier (a non-RF communication method). Our objective is to
31 maintain a cost-effective metering operation over time and avoid the maintenance of
32 separate meter asset systems and minimize unnecessary truck rolls.

1
2 **Q. Was a customer survey conducted regarding AMI features?**
3 A. Yes. A customer survey was performed on Vectren South's behalf by a research firm in
4 October 2016, and it focused on AMI technology awareness and interest. The survey
5 testing was conducted at a 95% confidence level with 350 participants.

6
7 **Q. Please discuss the customer feedback received from the survey.**
8 A. Vectren South learned that general awareness of AMI and its capabilities is low among
9 its customers. Customer education will be a major component to our customer
10 engagement process, which will be developed as the project moves closer to
11 deployment phase. We learned that the AMI concept was well received and its features
12 were attractive to a majority of customers once the benefits were explained to
13 customers. The majority of customers surveyed appreciate the new features and access
14 to information and greater control of their energy management. Vectren South learned
15 that targeted messaging will be important to drive positive reaction and adoption to AMI
16 features. The highest appeal and likelihood for participation were two features related to
17 outage detection and notification and improving bill accuracy. We also learned that all
18 AMI features were generally more appealing to customers under age 45. For example,
19 younger customers tend to move more often and attribute more value, as do lower
20 income customers, to choosing their bill date or having near real-time remote connection
21 of their meter rather than waiting on an appointment. Vectren South learned it will be
22 important to communicate frequently to educate customers about new capabilities that
23 help them gain more awareness and control of their energy service and how they can
24 utilize new capabilities. For example, the survey showed that some customers believed
25 the AMI system would automatically contact them for outages and status even when
26 they didn't want that, or that energy use detail might be used by Vectren South to cap or
27 control their use. These mistaken assumptions demonstrate the importance of effective
28 and frequent communications with customers since AMI presents such a leap forward in
29 capability.

30
31
32 **VI. CONCLUSION**

1

2 **Q. Does this conclude your testimony?**

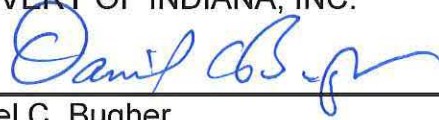
3 A. Yes.

VERIFICATION

I, Daniel C. Bugher, Vice President of Customer Experience for Vectren Utility Holdings, Inc., under penalty of perjury, affirm that the foregoing representations are true and correct to the best of my knowledge, information and belief.

SOUTHERN INDIANA GAS AND ELECTRIC
COMPANY D/B/A VECTREN ENERGY
DELIVERY OF INDIANA, INC.

By:



Daniel C. Bugher

Vice President, Customer Experience

Dated: February 22, 2017

Proposed Deployment Schedule

Milestone	Project Action
March – April 2017	Network Design Planning
March – December 2017	AMI head-end & MDM installation and integration
April – July 2017	End point installer selection and install planning
August - September 2017	Network deployment
August - December 2017	Customer communications & engagement planning
1H 2018	Initial field deployment followed by mass deployment
3Q 2018	AMI integration with outage
4Q 2018	AMI integration with customer portal
Summer 2019	Mass deployment completed

Deployment Milestones

Milestone	Cumulative - includes electric & gas AMI
2Q 2018	2,000 – 4,000 (1-2%)
3Q 2018	10,000 (4 -5%)
4Q 2018	50,000 (20%)
1Q 2019	150,000 (60%)
Summer 2019	250,000 (100%)