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BEFORE

THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Vectren)
Energy Delivery of Ohio, Inc. for Authority)
To Amend Its Filed Tariffs to Increase the) Case No. 07-1080-GA-AIR
Rates and Charges for Gas Service and)
Related Matters.)

In the Matter of the Application of Vectren)
Energy Delivery of Ohio, Inc. for Approval) Case No. 07-1081-GA-ALT
Of an Alternative Rate Plan for a Distribution)
Replacement Rider to Recover the Costs of)
A Program for the Accelerated Replacement)
Of Cast Iron Mains and Bare Steel Mains)
And Service Lines, a Sales Reconciliation)
Rider to Collect Differences between Actual)
And Approved Revenues, and Inclusion in)
Operating Expense of the Costs of Certain)
System Reliability Programs.)

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DIRECT TESTIMONY OF
JAMES M. FRANCIS
ON BEHALF OF
VECTREN ENERGY DELIVERY OF OHIO, INC.

- ☐ Management policies, practices, and organization
☒ Operating income
☐ Rate base
☐ Allocations
☐ Rate of return
☐ Rates and tariffs
☒ Other -ARP DRR and specified
Alt Reg Exhibits

December 4, 2007

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JAMES M. FRANCIS

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DIRECT TESTIMONY OF JAMES M. FRANCIS

INTRODUCTION

1 **Q. Please state your name, business address and occupation.**

2
3 A. My name is James M. Francis. My address is One Vectren Square, Evansville,
4 Indiana, and I am Director of Engineering & Asset Management for Vectren Utility
5 Holdings, Inc. ("VUHI"), the parent company of Vectren Energy Delivery of Ohio,
6 Inc. ("VEDO" or "the Company").

7

8 **Q. What are your duties in your present position?**

9

10 A. I have responsibility for engineering and technical support for VEDO utility
11 operations. My specific responsibilities include System Design and Planning,
12 Engineering Systems Support, Corrosion Control, Project Engineering,
13 Compliance, Standards, Land Services, Asset Management, Pipeline Integrity
14 Management, and Capital Planning and Management. Additionally, I am
15 responsible for identifying and implementing many of VEDO's asset management
16 programs.

17

18 **Q. Please describe your work experience.**

19

20 A. I have been employed by VUHI since April 8, 2004 when I became the Director of
21 Technical Services. My title has subsequently been changed to Director of
22 Engineering & Asset Management. Prior to my current position, I was employed
23 with VEDO since the purchase of the gas assets of the Dayton Power & Light
24 Company in 2000. Most recently, I was the Regional Manager of the Troy
25 Operating Region with responsibility for field operations. I also held other positions
26 at VEDO including Planning Manager and Measurement Supervisor. Prior to my
27 employment with Vectren, I was an employee of Dayton Power & Light beginning
28 in 1991, serving as a Project Engineer, System Planner and Measurement
29 Supervisor.

30

1 **Q. What is your educational background?**

2

3 A. I received a Bachelor of Science in mechanical engineering from the University of
4 Dayton in 1993. I received a Masters in Business Administration from The Ohio
5 State University in 2000.

6

7 **Q. Are you involved in any gas industry association activities?**

8

9 A. Yes. I am active in the American Gas Association's ("AGA") Operating Section. I
10 am currently a member of the AGA's Distribution and Transmission Engineering
11 Committee. I am also a member of two Indiana Energy Association committees. I
12 am an active member of the Distribution Integrity Management Steering Group
13 ("DIMSG") which is coordinated through the AGA.

14

15 **Q. Have you previously testified before this Commission?**

16

17 A. No.

18

19 **PURPOSE OF TESTIMONY**

20

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

22

23 A. The purpose of my testimony is to support the portions of the Alt Reg Exhibits A
24 and B that address the Distribution Replacement Rider (DRR). My testimony will
25 also address the need for additional staffing and training in engineering as well as
26 additional training and human resource requirements pursuant to proposed
27 measurement programs. Finally, I am also responsible for the DRR-related
28 discussion in the Statement Required by Section 4901:1-19-05(C)(3), O.A.C.

29 First, I will provide an explanation of VEDO's proposed accelerated bare steel and
30 cast iron pipeline replacement program ("Program"). The explanation includes: (a)
31 a general history on the use of bare steel and cast iron mains in the natural gas
32 utility industry and discussion of VEDO's current situation; (b) comparative data
33 between VEDO and industry peers regarding the amount of remaining bare steel
34 and cast iron pipelines as well as pipeline condition based information such as
35 leak performance; and, (c) information on recent industry practices relative to

1 similar replacement programs. Additionally, I will identify the capital requirements
2 for the Program and will discuss the benefits accrued by Program implementation.
3 Finally, I will discuss generally how VEDO will manage the Program.

4 Second, I will describe VEDO's proposals germane to service lines, including
5 ownership of customer-owned service lines upon replacement and new
6 installation, as well as assumption of responsibility for maintenance of all service
7 lines. My discussion will address the impact of service ownership on both VEDO
8 and VEDO's customers. I will also discuss the rational relationship between
9 service line ownership and the Program.

10 Third, I will address the riser inventory project undertaken pursuant to PUCO Case
11 No. 05-0463-GA-COI. My discussion will detail the costs associated with the
12 project to date and the estimated completion costs. I will discuss the results of the
13 project and describe its relationship with both the proposed Program and VEDO's
14 proposal for service line ownership.

15 Fourth, I will discuss additional human resource requirements in engineering and
16 related additional expenses associated with the training and development of the
17 engineering staff.

18 Fifth, I will discuss inspection and maintenance programs concerning VEDO's
19 measurement equipment and the additional human resources required to manage
20 the workload associated with these programs.

21
22 **Q. What Exhibits are attached to your testimony?**

23
24 **A.** The following exhibits are attached to my testimony:

- 25 • Exhibit JMF-1- VEDO Distribution Pipeline Mileage by Material Type
- 26 • Exhibit JMF-2- Annual Report Distribution Main Mileage Summary
- 27 • Exhibit JMF-3-Main Leakage Rates
- 28 • Exhibit JMF-4- Leakage Rate Comparisons
- 29 • Exhibit JMF-5-Bare Steel and Cast Iron Leak Repairs by Hazard and by Class
- 30 • Exhibit JMF-6-VEDO Estimated Capital Requirements
- 31 • Exhibit JMF-7-Independent Review of Cast Iron and Bare Steel Pipe
- 32 Replacement Program
- 33 • Exhibit JMF-8- VEDO Potential Maintenance Expense Reduction
- 34 • Exhibit JMF-9 – VEDO Service Riser Inventory Project Status Report

1

2 **Q. How is your testimony organized?**

3

4 A. My testimony is organized in five sections:

5 I. Bare Steel and Cast Iron Replacement Program

6 II. Service Line Ownership Proposal

7 III. Service Riser Inventory Investigation Project

8 IV. Engineering Staff Additions and Training

9 V. Measurement Programs

10

11 **BARE STEEL AND CAST IRON REPLACEMENT PROGRAM**

12

13 **Q. Please provide a historical overview of the use of bare steel and cast iron**
14 **mains in the natural gas utility industry within the United States.**

15

16 A. When natural gas distribution systems originated in the 1800's, the majority of the
17 pipelines were constructed of cast iron. In the 1920's, local distribution companies
18 ("LDCs") transitioned to using bare steel pipelines because of the superior joining
19 methods through welding, although there were other methods of joining such as
20 coupling and screw fittings. During the Great Depression and World War II, LDCs
21 reverted to using cast iron distribution mains more often when steel supplies
22 became scarce and as steel transmission pipelines began their expanse across
23 the continental United States. Installation of new cast iron mains generally ceased
24 after the 1940's when steel pipelines became the material of choice from the
25 1950's into the 1970's, until the introduction of plastic pipelines. In the 1950's
26 transitioning from bare steel pipelines to coated steel pipelines began to occur,
27 although bare steel was allowed for use until 1971. In 1971, the Department of
28 Transportation ("DOT") introduced the original minimum safety standards, Title 49
29 Code of Federal Regulations Part 192, stipulating the materials approved for use
30 in natural gas transmission and distribution systems. The regulations eliminated
31 cast iron and bare steel mains and fittings from the approved materials list for
32 construction of new distribution systems.

1

2 **Q. Please describe how the use of different pipe materials evolved in the VEDO**
3 **system.**

4

5 A. VEDO's predecessor companies used different pipe materials in their distribution
6 systems. Throughout the territory, cast iron mains were used to distribute gas to
7 its first customers throughout the late 1800's and early 1900's. Cast iron mains
8 were the distribution pipe of choice into the 1920's and were installed through the
9 1940's. Bare steel mains were introduced into what is now the VEDO system in
10 the late 1910's with a significant increase in usage in the 1920's. Bare steel was
11 used extensively in the 1940's through the early 1950's when installation
12 transitioned to wrapped coating on steel mains.

13

14 **Q. Currently, what percentage of VEDO's distribution mains is bare steel and**
15 **cast iron?**

16

17 A. As of the end of 2006, VEDO had a total of 5,183 miles of distribution main. As of
18 the end of 2006, there were 534 (10.3%) miles of bare steel and 174 (3.4%) miles
19 of cast iron mains throughout the VEDO territory. These pipelines serve
20 customers within the more urban and heavily populated areas of the numerous
21 cities served by VEDO, with the majority in the Dayton metropolitan area.

22

23 **Q. At what rate is VEDO currently replacing its bare steel and cast iron mains**
24 **and how does this rate compare to others in the industry?**

25

26 A. During the past five years VEDO has replaced an average of nearly 9 miles of
27 bare steel and 1.5 miles of cast iron main annually. Exhibit JMF-1 shows in detail
28 how VEDO's bare steel and cast iron mains inventory has changed since 2000.
29 This replacement rate, if continued, would result in the replacement of the
30 remaining bare steel and cast iron mains in about 70 years or an annual
31 replacement rate of 1.5%. This compares to the four year industry average bare
32 steel and cast iron replacement rate of 3.7%, as reported annually to the DOT.
33 Exhibit JMF-2 provides a summary of the industry data derived from the annual
34 DOT reports of all natural gas utilities in the United States.

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Q. How does VEDO's gas distribution system compare to those of other gas utilities?

A. As of 2006, the national industry average percentage of bare steel mileage to total mileage is 4.3%, compared to 16.3% for Ohio utility averages, and 10.3% of the VEDO system. The national industry average percentage of cast iron mileage to total mileage is 3.0%, compared to 1.8% of Ohio utility averages and 3.4% of the VEDO system. This includes all entities who report information to the DOT. Exhibit JMF-2 provides a comparison of VEDO to the industry and Ohio utility averages.

Q. What operational issues result from continued use of bare steel and cast iron mains?

A. Cast iron mains have more failure modes for leaks as compared to other pipe materials. Cast iron pipe sections are joined together using couplings or bell and spigot joints, increasing the pipe's susceptibility to pulling apart or separating at the joints given outside forces such as tree roots, excavation activity around the main, freeze/thaw cycles, and simple decay of the compression fitting material over time in the bell and spigot joints. Cast iron mains have neither coating nor utilize cathodic protection systems, and are therefore prone to corrosion in the form of graphitization. The manufacturing process used to create cast iron pipe produced a brittle material that is susceptible to circumferential and longitudinal fractures. Elevated natural gas system pressures also contribute to greater hoop stresses on the interior diameter of the cast iron mains leading to fractures at weak points in the pipe walls. The brittleness and susceptibility to cracking of the cast iron material make it more difficult to maintain than steel or plastic pipe materials, making repair or replacement sometimes very challenging and costly. Extra care is needed particularly during excavation and backfill to avoid unintended damage. Cast iron mains are particularly susceptible to damage when there is active construction work nearby. This susceptibility becomes a particular problem when road construction occurs. A road construction crew may damage a cast iron pipeline by simply working around it, and a utility may not discover that a leak has

1 occurred until well after the work has been completed. VEDO and contractor
2 crews hired by VEDO are very aware of the special precautions, such as support
3 and blocking, that are necessary to protect the integrity of a cast iron main while
4 working around it with heavy equipment. VEDO generally experiences cast iron
5 failures in the form of leaks at unknown stubs, hub leaks, low operating pressures
6 and cracking which result in low operating pressures and/or water infiltration.
7 Bare steel provided some benefit over cast iron in that it allowed for a more
8 permanent joining method of welding, when utilized. Alternative joining methods
9 for mains, such as threaded or compression coupled connections, were also used
10 because of the time and cost savings in the installation process since the skilled
11 labor of a welder was not required. However, because these pipelines do not have
12 coating and are not cathodically protected, corrosion on these pipe systems has
13 become a problem over time. In addition to the corrosion driven leakage, material
14 failures as a result of aging and the absence of coating or cathodic protection have
15 led to a significant amount of leakage. These failures occur on various
16 components of the system such as service tees, valves, couplings, and bell and
17 spigot joints. Corrosion, material defects and aging failures account for
18 approximately 94% of VEDO's below ground bare steel and cast iron leaks
19 repaired since 2003.

20
21 **Q. Is there a difference in the operational performance of bare steel and cast**
22 **iron mains when compared to protected steel or plastic mains?**

23
24 **A.** Yes. Bare steel and cast iron mains have significantly higher leakage rates than
25 do protected steel and plastic mains. This increased incidence of leakage results
26 in higher operating and maintenance expenses, greater line losses and safety and
27 reliability risks. VEDO's 2006 leakage rate, which VEDO defines as the number of
28 main leaks repaired per mile of main, caused by corrosion, material defects, or
29 other, for the various material types is as follows: Bare Steel – 0.35, Cast Iron –
30 0.25, Protected Steel – 0.04, and Plastic – < 0.01. Exhibit JMF-3 charts the
31 leakage rate for VEDO from 2003 through 2006. Additionally, the bare steel leak
32 rate would increase to 0.86 if the service line leaks were included.

33 The repaired leakage information is only one indicator of operational performance.
34 New leaks found each year either contribute to the number of leaks repaired or are

1 managed as active, open leaks. Throughout 2006, VEDO identified 898 new
2 leaks, 539 of which are estimated to be on a bare steel main or service line or a
3 cast iron main. Additionally, VEDO typically monitors a level of minor, non-
4 threatening leaks and manages those through standard industry leak management
5 practices. At the end of 2006, VEDO had 1,723 active, open leaks remaining in its
6 system. It is estimated that at least 1,033 of these leaks are located on bare steel
7 or cast iron infrastructure. Often for a specific leak, particularly if the cause is
8 corrosion, the severity of the leakage will change over time and progress from a
9 minor leak, a class 3 leak, to a leak in need of repair, either a class 2 or class 1
10 leak. As shown above, about 60% of all leaks are occurring on about 14% of
11 VEDO's system.

12
13 **Q. Does the increased likelihood of leakage on a bare steel or cast iron main**
14 **create potentially serious issues for VEDO and its customers?**

15
16 A. When considering only those leaks repaired since 2003 that are directly
17 attributable to bare steel or cast iron mains, 13% of those leaks were identified as
18 being hazardous to public or employee safety, requiring immediate repair. Exhibit
19 JMF-5 provides a count of the leaks repaired by hazard type. Approximately
20 another 45% of the repaired leaks were under hard surface and thus are prone to
21 migration into buildings or sewer systems, which can be problematic. To date,
22 VEDO has not had any serious personal injury or property damage incidents
23 related to such pipes. However, as these pipes age, the leakage rates will only
24 continue to worsen. As VEDO gradually replaces these pipes over time, many
25 miles of pipe remain that drive higher maintenance costs, and pose a threat to
26 reliable service and public safety. Ultimately, the bare steel and cast iron mains
27 must be replaced by better materials and technology. Recognizing this situation,
28 VEDO has conducted an analysis of its system, considered current industry
29 practice, reviewed recent DOT initiatives in terms of integrity improvements, and
30 designed a replacement program that will cost effectively address this issue and
31 provide customers with better, more reliable service.

32
33 **Q. Have other utilities implemented or proposed similar replacement**
34 **programs?**

1

2 A. Yes. In a recent American Gas Foundation study on the integrity of natural gas
3 distribution systems, 17 of 23 companies surveyed have a formal program for the
4 replacement of bare steel, cast iron and/or even some types of plastic pipe. The
5 study concluded that there has been an increase in the number of proactive
6 replacement programs in the gas industry. Specifically, within the state of Ohio,
7 Duke Energy has had a successful accelerated main replacement program for
8 several years.

9

10 Q. **How does VEDO propose to structure its Program?**

11

12 A. VEDO is proposing to replace all of its remaining bare steel and cast iron
13 infrastructure over a 20 year period. While the Program will target the poorest
14 performing mains or those pipe segments identified as being the highest risk when
15 possible, VEDO will in general plan the replacement to optimize the capital spend,
16 minimize the inconvenience to customers and communities served while improving
17 the reliability and safety of its systems. The Program will generally target the
18 replacement of larger sections of main which will allow for an increase in system
19 operating pressures while minimizing material costs. When possible, VEDO will
20 coordinate construction activities with public improvement projects to minimize
21 inconveniences to property owners as well as to take advantage of synergies
22 gained through less surface restoration. Additionally, the Program will attempt to
23 optimize the use of contract resources which will minimize construction costs. In
24 order to enhance economic efficiencies and in view of the propensity for customer
25 service line integrity issues to surface upon main replacement, the Program also
26 assumes that any existing metallic service connected to a bare steel or cast iron
27 main will be replaced from the main through the meter setting. This would include
28 that portion of the service line that is currently owned by the VEDO customer.

29

30 Q. **Why is VEDO proposing a 20 year replacement program, rather than a**
31 **shorter Program period?**

32

33 A. The 20 year program was developed when considering distribution system
34 replacement needs throughout VUHI, not only the VEDO system. Vectren has

1 proposed a similar program for its Indiana utilities. In total, the planned annual
2 mileage to be replaced across Vectren service territories is approximately 90
3 miles. Additionally, there are a number of other utilities in the Midwest, including
4 Duke Energy Ohio, who have in place a significant replacement program that will
5 constrain construction resource availability for some time. The 20 year program
6 reflects the amount of resources VEDO believes would be reasonably available to
7 implement and execute the Program. However, VEDO would consider shortening
8 the length of the Program if resources were to become available. This may be
9 more likely to occur as the Duke Energy Ohio program is completed near 2015.

10
11 **Q. What is the capital requirement associated with VEDO's Program?**

12
13 A. The expected Program cost is approximately \$337,500,000, or an annual capital
14 requirement of approximately \$16,875,000 over a 20 year period. Exhibit JMF-6
15 details the expected annual and total capital requirement including a breakdown of
16 the estimated main and service line replacement costs. Program costs are based
17 on historical costs per mile of main replaced (\$45.00 per foot) and per service
18 replacement during the last four years on projects throughout Vectren's territories.
19 The costs may vary from year to year depending on the project sizes and changes
20 in the availability and cost of labor, equipment and materials over the next 20
21 years. Based on potential economies of scale that may result from larger planned
22 replacement projects completed as part of this Program, it is possible that VEDO's
23 costs may be less than these estimates. Also included in the program is the
24 protection of 357 miles of currently unprotected coated steel systems. It is
25 possible for VEDO to install cathodic protection on these systems at an average
26 cost of \$0.50 per foot of main. VEDO has successfully used this approach in parts
27 of its system, improving the performance of those pipe segments.

28
29 **Q. What has VEDO done to determine that the proposed Program is prudent?**

30
31 A. VEDO has had discussions with industry peers from Duke Energy Ohio,
32 AmerenUE, and the American Gas Association to identify and study similarly
33 purposed programs as well as to identify pertinent information that would help
34 substantiate VEDO's Program. Research into recently performed studies, such as

1 the American Gas Foundation's study on the integrity of natural gas distribution
2 systems, as well as VEDO's participation in the industry organizations assisting in
3 the development of forthcoming Distribution Integrity Management rules, has
4 provided VEDO with considerable supportive information. VEDO also engaged
5 Stone & Webster Management Consultants Inc., a division of the Shaw Group
6 ("Stone & Webster"), to perform an independent review of VEDO's distribution
7 system and performance history. Stone & Webster used VEDO's existing pipeline
8 data and performance history to complete a review of the Program. Stone &
9 Webster provided analysis and observations of trends that are occurring in the
10 industry and provided some comparative analysis of VEDO's system against the
11 industry in general.

12
13 **Q. How did VEDO choose Stone & Webster to perform this study?**

14
15 A. Based on Stone & Webster's knowledge of the industry, its practical experience in
16 performing such an analysis (Stone & Webster completed a similar analysis of the
17 Duke Energy Ohio system for its accelerated replacement program in the late
18 1990's), as well as its understanding of the issues associated with bare steel and
19 cast iron mains, VEDO concluded that Stone & Webster was best suited to
20 complete the analysis.

21
22 **Q. What conclusion did Stone & Webster reach as a result of its independent**
23 **analysis of VEDO's distribution system?**

24
25 A. After reviewing VEDO's pipeline data and leak history, as well as conducting
26 industry research and drawing on their extensive experience and knowledge of the
27 issues that generally exist with bare steel and cast iron mains, Stone & Webster
28 recommended that VEDO pursue the Program. Specifically its conclusions point
29 to many of the issues created by bare steel and cast iron mains, of which the
30 significant differences in leakage rates when compared to protected steel and
31 plastic mains is a significant factor supporting an expedited replacement program.
32 While a relatively small portion of the distribution system infrastructure, bare steel
33 and cast iron accounted for 48% of the total leakage repairs on pipe segments
34 included in their study. Exhibit JMF-7 is the Stone & Webster report.

1 **A. Program Benefits**

2
3 **Q. Why does VEDO believe it is prudent to pursue the Program at this time?**

4
5 A. There are numerous benefits to the Program beyond the replacement of VEDO's
6 most aged assets. First, the Program will replace the pipes that contribute most to
7 system leaks. The resulting benefits to service reliability and safety are clear.
8 Second, from a workforce efficiency standpoint, replacing this pipe based on a
9 planned schedule versus smaller projects to remediate leaks will be beneficial,
10 especially as VEDO addresses the loss of more experienced employees
11 associated with its aging workforce as is discussed in Witness Doty's testimony.
12 VEDO also expects benefits relative to the optimization of its capital spending.
13 This Program to replace leak prone materials will also improve customer
14 satisfaction as leaks and outages are avoided. Once underway, as VEDO retires
15 leaking pipes the Company will be able to reduce maintenance expenses. Over
16 time, VEDO expects the Program to contribute, on a relative basis, to a lower level
17 of lost and unaccounted for gas. As the Program will be extensive, VEDO also
18 believes that there will be long term benefits to those communities impacted by the
19 replacements. Finally, there will be benefits associated with improving this part of
20 the system as the anticipated Federal Distribution Integrity Management Program
21 ("DIMP") requirements become effective.

22
23 **Q. How does VEDO believe this Program will impact its workforce?**

24
25 A. Like many utilities in the industry, VEDO currently faces the challenges of an aging
26 workforce. Work associated with poor conditioned mains is typically very
27 demanding. An aging workforce is much more challenged to complete this work
28 without injury. However, this work is also typically more complex than when
29 working with other materials, such as plastic, and requires seasoned skills and
30 knowledge. By replacing the mains that cause much of the unscheduled activities,
31 such as leak repairs, VEDO will eliminate the primary sources of this work and
32 thus have the opportunity to redirect its internal resources to other activities. And,
33 as VEDO's experienced workforce exits and new employees are hired, the

1 reduction in the variety of materials to be maintained will simplify future job
2 requirements, which should favorably impact training needs.

3
4 **Q. How will the Program allow VEDO to improve its use of financial capital?**

5
6 **A.** Whether VEDO pursues this Program or continues with its current rate of
7 replacement, all of these mains and services will eventually be replaced. The
8 current rate and cost of replacement is a result of the combination of planned
9 replacement projects and unplanned projects. Generally, the unplanned
10 replacement projects are short segments to complete specific leak repairs. These
11 shorter projects (less than 300 feet) are more costly per foot of main installed than
12 larger-scale projects. The blend of planned and unplanned projects yields a fairly
13 consistent overall average installed cost per foot which was used as the basis for
14 establishing the Program costs. The Program will reduce (in number) and
15 eventually eliminate the shorter unplanned replacement projects and will minimize
16 VEDO's longer term capital needs. The Program presents a tremendous
17 opportunity for improved capital utilization for a number of reasons. By increasing
18 the average size of the projects, VEDO will improve its average installed cost per
19 foot of main to replace the bare steel and cast iron facilities. VEDO's contract
20 resources will be able to generate some economies of scale which will allow
21 VEDO to see reduced installation costs versus what it typically sees today as a
22 result of smaller replacement projects. Most of the bare steel and cast iron mains
23 are operating at a standard operating pressure of approximately 1/4 pounds per
24 square inch ("psi"). The lower operating pressures require main sizes to be larger
25 than if designed to operate at elevated pressures, which is typical of newer
26 distribution systems. The larger projects will enable VEDO to install smaller
27 diameter mains, which are less costly from both a material and labor perspective,
28 and allow VEDO to operate the distribution systems at higher pressures, which in
29 turn will reduce the material costs associated with service line installation and
30 replacements for the same reasons. While VEDO has estimated the Program
31 costs at historical average costs for similar work, VEDO expects efficiencies to be
32 offset to some extent by future increases in the cost of labor and materials or any
33 location challenges that are presented when working in a more urban setting. Of
34 course, absent the proposed Program, cost increases will impact the cost of

1 replacements even more since VEDO will perform such replacement of the pipe
2 over a longer time period.

3
4 **Q. Will the additional capital invested under the Program produce additional**
5 **revenue?**

6
7 A. No. The affected mains are typically in older, well established areas of the
8 communities VEDO serves which are essentially saturated with customers,
9 typically allowing no room for additional customers. Individual customer decisions
10 to replace existing electric appliances with natural gas are always a possibility, but
11 in and of itself, the Program is not expected to produce incremental customers or
12 load.

13
14 **Q. How will VEDO's customers benefit from this Program?**

15
16 A. It is not uncommon for customers who are served by bare steel or cast iron mains
17 that operate at lower pressures (and are therefore susceptible to leakage and
18 water infiltration problems) to experience outages or call VEDO to investigate a
19 gas odor, which drives a significant amount of meter order work. This type of work
20 requires interaction of our customers with our contact center, requires customers
21 to be at home and available for our service technicians to assess the problem, and
22 generally causes disruption to their daily routines. By eliminating the cause of
23 many of these events and by increasing system operating pressures, we will be
24 able to reduce the number of asset condition related orders such as outside leak
25 calls and no gas calls, and thus reduce the inconveniences to the customer.
26 Additionally, by not having to work to repair the source of the problem, such as a
27 leak repair, our customers will not be impacted by crews digging in their streets
28 and yards.

29
30 **Q. How will the Program improve public safety?**

31
32 A. Any time there is substantial leakage there exists the possibility of an incident.
33 Our leakage information from 2003 through 2006 indicates that 58% of the total
34 leaks on the bare steel and cast iron mains resulted in a potentially hazardous

1 condition. This means that gas was found in a confined space, migrating into
2 sewers or within or near building walls, or the gas main resided under a hard
3 surface, such as a road, and the most likely escape path could place gas near an
4 occupied building. Additionally, 55% of all of the bare steel and cast iron leaks
5 repaired in that same timeframe required immediate repair (class 1) or repair
6 within 6 months of discovery (class 2). Exhibit JMF-5 provides a breakdown of the
7 hazard and class of the bare steel and cast iron leaks repaired. This analysis only
8 considered below ground leaks. The replacement of bare steel service lines will
9 also result in a reduction of above ground leaks. The above ground meter
10 settings, including the bare steel or unprotected coated steel risers, were installed
11 at the same time as the services. These assets, too, are much more susceptible
12 to leakage due to corrosion or aged equipment and material than are new
13 installations. The replacement of these mains and services would eliminate a
14 considerable portion of VEDO's total leakage. This is not only a benefit to public
15 safety, but also to the safety of VEDO's employees and contractors.

16 Another positive impact to public safety will result from the materials used for new
17 construction. Plastic mains will be primarily used for new installations. Plastic
18 mains allow VEDO to more easily isolate a damaged area and minimize the
19 magnitude of customer outages. Additionally, all replaced customer service line
20 installations will include an excess flow valve. This is a device that will shut off the
21 flow of gas automatically if a service line is severed and experiences a significant
22 loss of gas. This reduces the amount of gas that would be lost and unaccounted
23 for but also minimizes the amount of gas released, thus reducing the likelihood of
24 an incident.

25 There is an additional aspect of safety that is not associated with leakage. There
26 will be less leak repair activity thus reducing the possibility of damage to property
27 as well as potential personal injury to people working or playing near a
28 construction site. VEDO does not typically experience safety incidents during its
29 construction activity, but because of the peculiar nature of leak repair work, it does
30 pose a threat to public safety. Such threats are dramatically reduced when
31 construction can be planned well in advance, as the Program contemplates.

32
33 **Q. Will the Program have any impact on unaccounted for gas?**
34

1 A. Over time VEDO would expect to see its unaccounted for gas percentage improve,
2 but the impact is difficult to quantify. Any time VEDO can reduce leakage, VEDO
3 will reduce unaccounted for gas volumes. However, since the volume of gas lost
4 with any given leak is not known and the lost gas is impossible to measure, the
5 benefit derived from a reduction in unaccounted for gas is intuitive. Over time, any
6 reduction in unaccounted for gas will translate to gas cost savings for sales
7 customers and will reduce volumes retained from gas transportation customers as
8 well.

9
10 **Q. Given the amount of additional replacement work, how will VEDO work with**
11 **the impacted communities to make this effort less disruptive and of benefit**
12 **to its customers in these communities?**

13
14 A. The Program will admittedly have a near-term impact on the communities VEDO
15 serves because there will be more significant construction activity. However,
16 because VEDO will have more comprehensive long range replacement plans and
17 will have identified opportunities to remove our pipelines from under the streets,
18 VEDO will be able to better coordinate its replacement strategy with the affected
19 cities. This will improve the cities' abilities to plan for pavement restoration and
20 sidewalk replacements. Too often, a city will repave a road only to have a utility
21 dig into it to gain access to its cables, wires or pipes. As much as practicable,
22 VEDO will place its facilities in locations that will eliminate these disturbances in
23 the future. VEDO's actions will further improve its positive relationships with the
24 communities it serves. In the long term, VEDO anticipates that the Program will
25 result in reduced costs to the cities as well as to VEDO. Further, rather than deal
26 with many unscheduled leak repairs at various locations with less advance notice
27 to customers and the communities, VEDO will have the opportunity to coordinate
28 the plans and engage in larger more focused projects, expecting that it will not
29 need to return to fix leaks, absent third party damage to the new pipe.

30
31 **Q. With the Program benefits you describe, can you quantify any potential**
32 **reduction in maintenance expenses?**

33

1 A. I can provide an approximation of costs that VEDO has historically incurred as a
2 result of work associated with the bare steel and cast iron mains and services and
3 will use this as a basis to determine the potential future cost reductions. I arrived
4 at this estimate by investigating VEDO's more recent maintenance expenses and
5 work activities. These activities were tied to the associated costs and summed to
6 generate a total potential cost reduction. The total expected reduction in annual
7 maintenance expenses, once all bare steel and cast iron pipelines have been
8 replaced, is approximately \$1,277,000. Exhibit JMF-8 provides a breakdown of
9 this estimate. VEDO assumes that these savings will be realized linearly
10 throughout the 20 year replacement period, and will continue to be realized for
11 many years thereafter.

12

13 **Q. Does VEDO require cost recovery to complete the accelerated project?**

14

15 A. Yes. Recently, "in the ordinary course of business," approximately 22% of VEDO's
16 annual \$12 million capital budget has been spent to gradually replace these types
17 of pipelines. Because that activity does not generate revenue, this already
18 represents a drain on the Company's financial resources. To engage in this
19 proposed accelerated program and devote such a significant portion of the capital
20 budget to replacement, VEDO must have cost recovery. Thus, the issue is, do the
21 benefits of removal in half the time or less justify approval of the cost recovery
22 mechanism? To engage in an accelerated replacement program without cost
23 recovery, VEDO would dedicate 55% of a \$31 million capital budget to this effort.
24 That is simply too significant a burden to place on the utility for a program that
25 produces no revenue. VEDO Witness Scott E. Albertson discusses other gas
26 utilities who have received approval for accelerated replacement program cost
27 recovery outside of base rate cases, including several with mechanisms much like
28 the DRR.

29

30 **B. Distribution Integrity**

31

32 **Q. Presently the Pipeline and Hazardous Materials Safety Administration**
33 **("PHMSA") is pursuing the implementation of DIMP. Could you provide a**
34 **brief summary of DIMP?**

1
2 A. DIMP is a program intended to heighten the integrity of a company's distribution
3 pipeline system. VEDO already has an integrity management program in place for
4 its transmission pipelines as required by existing federal pipeline safety standards.
5 However this program addresses only a very small portion of its total pipeline
6 system. Based upon a report generated by a joint work/study group comprised of
7 representatives of the stakeholder public, the gas distribution pipeline industry,
8 state pipeline safety organizations, and PHMSA, DIMP appears to be generally
9 targeting four areas: (a) risk assessment and mitigation; (b) leak management; (c)
10 damage prevention; and, (d) excess flow valves. Risk assessment is a process by
11 which a utility must know its system in detail, identifying the threats to the system,
12 and mitigating those threats. It is expected that the rule will require operators to
13 implement a consistent process to evaluate their systems and component
14 performance (such as bare steel and cast iron mains, risers, and service lines) and
15 implement improvement or risk mitigation programs as necessary. Aged assets,
16 such as cast iron mains and bare steel mains and services arguably pose a higher
17 risk and thus will require some mitigation measure. Mitigation activities could
18 come in many forms, some of which are likely to be incremental maintenance
19 activities such as additional leak surveys, patrols, communications or a number of
20 others, including replacement. Leak management is being standardized across
21 the industry so that the classification process is consistent and comparative
22 analysis and performance measures can be derived and used to monitor system
23 improvements relative to leakage. Implementing an expanded damage prevention
24 program will likely be a primary prevention and mitigation measure. This will
25 increase required communication and education efforts to a number of target
26 audiences. DIMP is also likely to include more integration of VEDO's work
27 processes, particularly with its locating activities, as VEDO will have more timely
28 identification of potential threats and will need to react appropriately to minimize
29 risk to our pipelines. Finally, the recent Pipeline Safety Reauthorization Act of
30 2006 requires that all operators install excess flow valves, which was originally
31 assumed to be a DIMP risk mitigation measure. VEDO already installs these
32 valves on new services, but the Program will expand the use of these to existing
33 customers on the pipelines and services being replaced.
34

1 **Q. How do you see DIMP impacting VEDO?**

2

3 A. DIMP will result in additional required O&M activities regardless of the type and
4 condition of a utility's assets. However, it is expected that a significant amount of
5 additional requirements will be highly dependent on the types of assets, condition
6 of those assets and the identified threats. Most of the risk mitigation measures are
7 O&M activities, such as additional leak surveys, patrols, job site inspections and
8 others. One potential mitigation measure could well be an accelerated bare steel
9 and cast iron replacement program. It is likely that because of the age and typical
10 performance of bare steel and cast iron mains in the industry, these facilities will
11 drive more additional O&M activities than will protected steel or plastic mains. As
12 such, a replacement program may be the most appropriate risk mitigation
13 measure. It is fair to assume that some Program expenses will be required under
14 DIMP, and still other DIMP related costs can be avoided if the Program is pursued
15 diligently.

16

17 **Q. Do you have any expectation of the costs of DIMP?**

18

19 A. It is too early in the development of a DIMP program for VEDO to understand the
20 financial impact. However, approximately 96% of VEDO's pipeline mileage will be
21 impacted by DIMP and as such it is highly likely that DIMP will drive significant
22 additional costs. Prudent capital improvements, such as those contemplated in
23 the Program, will not only enable VEDO to comply with the DIMP requirements,
24 but also minimize future maintenance costs. Therefore, apart from the
25 maintenance cost savings estimated above, there is an aspect of avoided costs
26 related to DIMP that adds to the benefits of the Program.

27

28 **Q. Do you have any expectation as to when the DIMP rules will go into effect?**

29

30 A. PHMSA is currently working toward finalizing and submitting a notice of proposed
31 rulemaking ("NOPR"). It is expected that the NOPR will be issued by December,
32 2007 and a final rule will be in place in the fourth quarter of 2008. It is presently
33 estimated that operators will be given 12 to 18 months to develop and implement a

1 DIMP plan. This is based on information obtained through participation in the
2 DIMSG.

3
4 **SERVICE LINE OWNERSHIP PROPOSAL**

5
6 **Q. Does VEDO have a proposal in regard to customer service line ownership?**

7
8 **A.** Yes.

9
10 **Q. Who currently owns the service line?**

11
12 **A.** In VEDO's service territory, VEDO owns and maintains the portion of the service
13 line from the main to the property line where the curb valve resides. The customer
14 owns and is responsible for maintaining the portion of the service line from the
15 curb valve through the outlet of the meter setting. Parenthetically, in contrast, in
16 Vectren's Indiana service territory, Vectren's Indiana utilities own the entire service
17 line from the main through the outlet of the meter setting.

18
19 **Q. What does VEDO propose regarding ownership of the service line?**

20
21 **A.** VEDO proposes to assume ownership of the entire service line, including the
22 portion from the curb valve at the property line through the outlet of the meter
23 setting. VEDO proposes to take ownership of these service lines whenever a new
24 service line is installed or whenever VEDO replaces an existing service line.

25
26 **Q. What are the benefits to VEDO's customers if VEDO assumes ownership of
27 service lines?**

28
29 **A.** Customers would derive several benefits from VEDO's assumption of ownership of
30 the service lines. First, customers would incur no out-of-pocket expenses for
31 service line installation or replacement. VEDO would capitalize this investment as
32 it does today for the portion of the service line it currently owns (main to property
33 line). The customer would no longer be responsible for repairs if a problem or leak
34 is identified. This is particularly beneficial to a low income customer. Many of

VEDO's low income customers reside in areas of the Company's system that are currently supplied by bare steel or cast iron mains and bare steel services. Approximately 5700 of VEDO's customers, who currently qualify for the PIPP program, would be impacted. Currently, as VEDO replaces a main and the company owned service, it also pressure tests the customer owned service line to ensure system integrity. A majority of these service lines typically fail the pressure test; and, thus, the customer is required to replace the portion of the service line owned by the customer in order to maintain service. As VEDO implements the Program, all of the remaining bare steel services are targeted for replacement. In addition to the financial benefit, VEDO expects that assuming ownership would increase customer satisfaction since repairs would be made by VEDO, without burdening the customer to be involved other than for access to their premises to relight appliances. An example of enhanced customer satisfaction can be illustrated by VEDO's riser inventory investigation project. As riser leaks are identified, the Company has been replacing the leaking risers. The general perception of those customers who had a leaking riser is that they appreciated the company making the repairs in a timely manner and that they were not burdened with the expense of repair.

Q. What are the benefits to the Company if VEDO assumes ownership of service lines?

A. With the proposed bare steel and cast iron replacement Program, VEDO will touch approximately 84,000 services or approximately 26% of its total customer population. Ownership of the service lines will allow VEDO to replace services from the main through the meter setting, where necessary and do so in a more efficient and cost effective manner. As VEDO replaces mains and service lines under the Program, as discussed previously the current process involves pressure testing the customer-owned portion of the service line before service is re-established. And as previously discussed, the majority of those customer-owned services will fail that pressure test, requiring replacement. VEDO expects to touch approximately 25,000 bare steel and 37,000 unprotected coated steel service lines with the Program. The incremental cost to VEDO to install and pressure test the entire service line can be offset by the avoided cost of the pressure tests of the

1 customer-owned service lines. Also, the overall cost per foot to install the entire
2 service line is expected to be less than for just that portion from the main to the
3 property line. The result is a more economically efficient installation overall, one
4 that certainly benefits the affected customer inasmuch as the cost of replacement
5 of the customer's portion is avoided.

6 Service Line Ownership will also allow VEDO to better plan and schedule work
7 associated with new installations and replacements, since it would control the
8 entire work process. Presently, VEDO schedules are influenced by the schedules
9 of customers and plumbers and often VEDO is subject to same day order
10 changes, delays, and additional trips. Better scheduling and management of the
11 entire work process will improve VEDO's capital utilization.

12 As discussed previously, the implementation of programs under DIMP will have an
13 impact on VEDO and its customers. Assuming ownership of the entire service line
14 will help clarify responsibilities and solidify integrity improvement requirements that
15 result from the performance of VEDO's assets and provide VEDO with options as
16 to the type of mitigation strategies it will employ (i.e. capital replacements or
17 incremental maintenance or inspection programs).

18 In addition to the pending DIMP regulations, there is also movement by PHMSA to
19 expand the current Operator Qualification ("OQ") requirements to include new
20 construction processes. The current OQ rules require a significant amount of work
21 by VEDO to manage the qualified plumber list. It is a daily activity to monitor
22 certification expiration dates, add new plumbers, remove plumbers, and report the
23 most current qualification list to VEDO's field personnel. Currently, there are
24 approximately 190 different plumbing companies who are fully operator qualified.
25 Most of these companies have multiple employees who require qualification.
26 Expansion of the OQ requirements will place an additional burden on both VEDO
27 and the plumbers. VEDO's construction personnel and contractor personnel will
28 have to be OQ qualified regardless of service line ownership. It is VEDO's
29 preference to have VEDO company or contract personnel perform all service line
30 work. VEDO can better control and manage the qualification process as well as
31 the execution of, and compliance with, Company construction standards.

32
33 **Q. Does VEDO have a proposal with respect to repair of service lines which will**
34 **continue to be owned by the customer?**

1

2 A. Yes, VEDO proposes to assume maintenance responsibilities prospectively for all
3 service lines (company and customer-owned). Customers will benefit from VEDO's
4 assumption of repair responsibilities because they will avoid out-of-pocket
5 expenses, secure immediate reparation without consideration of affordability, avoid
6 the need to identify and secure qualified repair technicians, and experience greater
7 general customer satisfaction. VEDO benefits from the assumption of
8 responsibility because of (a) the resulting administrative ease in no longer having
9 to assure that reparations are performed by qualified technicians, (b) enhanced
10 efficiency in terms of planning, scheduling, and coordinating work requirements,
11 (c) enabling an immediate decision to repair or replace a service line, and (d)
12 proactively performing reparations in a manner consistent with anticipated DIMP
13 requirements.

14

15 **Q. Are there additional costs that VEDO will incur as a result of assuming**
16 **maintenance responsibility for all service lines?**

17

18 A. Yes. Currently, when a leak occurs on a customer owned facility, the repair is
19 referred to a plumber. Many of these instances would result in a service line or
20 major component replacement. With VEDO assuming ownership of the service
21 line, many of these repairs would be made through a capital replacement.
22 However, minor leak and equipment repairs will continue to occur and any repair
23 of this nature would be expensed if VEDO owns the entire service line. VEDO
24 estimates that it would incur annual costs of approximately \$215,000 for minor leak
25 repair work as well as approximately \$80,000 for work associated with facility
26 damages. VEDO used historical costs from its Vectren Indiana North territory,
27 where it owns service lines, to develop this cost estimate..

28

29 **SERVICE RISER INVENTORY INVESTIGATION PROJECT**

30

31 **Q. Please describe the Riser Inventory Project?**

32

33 A. In April, 2005, the PUCO initiated a statewide investigation of natural gas service
34 risers within the four major Ohio LDC's to gain information on the cause of riser

1 failures, the number of failures over a period of time, and the quantity of riser
2 types. Each LDC shared the laboratory testing costs for failure analysis. The
3 removal of risers for failure analysis and testing concluded in April, 2006.
4 However, the PUCO order continues to require the LDC's to track and report any
5 service riser replacements.

6 On November 24, 2006, PUCO Staff filed its Report based on the findings of Akron
7 Rubber and Development Laboratory's tests and the conclusions and
8 recommendations submitted by the University of Akron. The general
9 recommendations from the report were as follows: 1) Design-A type risers if
10 installed improperly are susceptible to failure; 2) operators should continue to track
11 and report on riser failures; 3) operators should conduct an inventory of their
12 system to identify specific risers; 4) operators should incorporate new construction
13 into their operator qualification programs; and 5) failure investigation should cover
14 customer owned facilities.

15 At the request of PUCO Chairman Alan Schriber in a letter dated January 2, 2007,
16 VEDO began conducting an inventory of the customer owned riser population, as
17 recommended by the report. It is estimated that VEDO has approximately 217,000
18 risers in its system. VEDO developed a list of attributes that it wished to collect
19 during the inventory process, a procedure for leak surveying the riser and meter
20 setting, and protocol for responding when a leak is found. The actual inventory
21 began in March and is expected to be completed in December 2007.

22
23 **Q. What is the status of the project as of September 30, 2007?**

24
25 **A.** Through September 30, 2007, VEDO has surveyed 155,188 premises and has
26 inventoried 124,755 risers.

27
28 **Q. What is the cost of the project as of September 30, 2007 and what is the**
29 **estimated project cost?**

30
31 **A.** The cost of the project through the end of September is \$1,311,835. This includes
32 the cost for the inventory, any replacement costs associated with leaking risers,
33 and the cost of the original study. The total project cost is expected to be
34 approximately \$1,830,000 when completed. VEDO Witness M. Susan Hardwick

describes the recovery of the project costs, which are included on Schedule C-3.13.

Q. What are the results of the project?

A. Of the 124,755 risers inventoried to date, 30% are Design-A type risers, 56% are steel risers and the remaining 14% are Design-B type risers. VEDO has identified 120 riser leaks during the inventory project. Each of the leaks found was on a steel riser. Each of these risers was promptly replaced by VEDO. Exhibit JMF-9 provides a summary of the project status through September 30, 2007.

Q. Please provide a summary of the results of all of riser leaks reported to the PUCO in 2007, through September 30, 2007.

A. To date, VEDO has removed 196 risers. Of those 34 were Design-A type risers. Of those leaks, 14 occurred during a period of severe cold weather in February. There were 157 leaks on steel risers, of which 120 were found during the riser inventory project. This represents 0.15% of the total riser population inventoried to date. Comparatively, in 2006 there were a total of 48 risers replaced due to leakage which represents 0.02% of the total riser population. The primary difference and increase in riser replacements in 2007 is attributable to the riser inventory project, which included a focused, thorough leak survey. Any riser with a leak on it was replaced, regardless of the leak's classification.

Q. How does VEDO propose to manage risers going forward?

A. VEDO proposes to use a risk based approach to evaluate riser performance and identify any preventive or mitigation measures necessary which may include replacement, additional surveys, or some other measure. With the pending DIMP regulation, this approach is consistent with the process that is proposed in the draft guidance (know your infrastructure, assess threats, mitigate threats, and monitor performance). VEDO will have completed the riser inventory (know your infrastructure) by the end of 2007 and will be implementing a geographical information system near the end of this year which will allow VEDO to evaluate

1 riser failures to determine if there are geographic, age, operating pressure, or
2 some other characteristic that supports a mitigation plan to address any identified
3 threats. At this time, the results of VEDO's riser investigation do not support a
4 wholesale replacement program. However, a risk approach could support a
5 focused replacement effort or additional O&M activities, if the evaluation of the
6 data supported such an effort.

7
8 **Q. Can you categorically summarize those costs for which VEDO is seeking**
9 **recovery through the DRR?**

10
11 A. VEDO is seeking to recover (a) the return on and of annual costs incurred under
12 its twenty (20) year program for the accelerated replacement and retirement of
13 cast iron mains and bare steel mains and service lines, (b) a return on and of costs
14 incurred for individual riser replacements arising from VEDO's investigation of the
15 installation, use, and performance of natural gas service risers, (c) the incremental
16 costs attributable to assuming ownership of service lines installed or replaced by
17 VEDO, and (d) the incremental cost of assuming maintenance responsibility for all
18 service lines. Witness Albertson discusses DRR cost recovery in more detail.

19
ENGINEERING STAFF ADDITIONS AND TRAINING

20 **Q. Are there new Engineering hires included in this proceeding?**

21
22 A. Yes. VEDO intends to hire four additional engineering personnel during the test
23 year, which are included within Schedule C-3.13, Line 7. This will include a
24 Compliance Engineer, Encroachment Engineer, Engineering Application Support
25 Supervisor and a Program/Project Manager.

26
27 **Q. Why are these new Engineering hires required at this time?**

28
29 A. The Compliance Engineer will be responsible for monitoring and responding to any
30 work associated with DOT, PUCO or company code compliance standards. This
31 position will be intimately involved with VEDO's engineering and operating
32 personnel as well as contract personnel to ensure compliance with standards.

1 This has become increasingly more critical as the amount of additional regulation
2 has increased tremendously in the past few years with the addition of such
3 programs as Operator Qualification, Public Awareness and Transmission Pipeline
4 Integrity Management. This activity will continue for the near future as DIMP
5 evolves. Vectren is in the process of expanding its Compliance department to
6 implement a quality assurance group, in which this position will reside. The
7 Compliance Engineer will conduct field and program audits and recommend and
8 help implement quality improvements to our programs, procedures and processes.
9 The Encroachment Engineer's role is to provide a single point of contact,
10 responsible for the protection of VEDO's pipelines. This individual will evaluate
11 encroachments identified by field personnel and determine the best course of
12 action to remediate these encroachments before they become a problem. A
13 focused effort to protect VEDO's easements will help protect VEDO's pipelines
14 from damage. Third party damage in particular is a leading cause of serious
15 incident in the natural gas industry. This position will work with VEDO's Public
16 Awareness Coordinator, Integrity Management department, and local engineering
17 personnel to establish policies, programs and practices to maintain the integrity of
18 its pipeline systems as well as provide a proactive response to those entities
19 potentially encroaching on VEDO's facilities.

20 The Engineering Application Support Supervisor will supervise the staff
21 responsible for the maintenance and upkeep of the numerous engineering
22 systems used in Energy Delivery by VEDO. Activities include ensuring the
23 applications are working correctly, the data used in these applications is
24 maintained and available to support Vectren's business processes, and
25 responding to user issues in a timely manner. The major applications supported
26 by this position include the Geographic Information System, compliance system,
27 work and asset management system, design application, and numerous other
28 applications and systems used throughout Energy Delivery. This position is also
29 responsible for the implementation of new applications or improvements to existing
30 applications. As VEDO prepares for Distribution Integrity Management
31 requirements, this position will perform a critical role in ensuring the applications
32 are available to support VEDO's daily business processes.

33 The Program/Project Manager will be responsible for providing project
34 management skills and expertise to a variety of VEDO projects. Examples of such

1 projects would be the bare steel and cast iron replacement Program, DIMP
2 program development, AMR implementation, GIS expansion or any other
3 significant endeavor needing rigorous project management processes. With the
4 proposed Program and the pending DIMP regulations, there are a number of
5 current applications for this position.
6

7 **Q. What is the operating expense associated with the four engineering**
8 **positions described above?**

9 **R.**

10 **A.** The annual operating expense of the positions are as follows:

11 Compliance Engineer	\$96,720
12 Encroachment Engineer	\$16,474
13 Engineer Applications Support Supervisor	\$14,407
14 Program/Project Manager	\$2,321

15 These expenses are cited on WPC-3.12, page 2, Lines 16-19. To capture the
16 annual operating expense of these positions in the test year, an adjustment of
17 \$75,788 is required.
18

19 **Q. Is there training cost for the Engineering hires that VEDO is seeking to**
20 **recover in this proceeding?**

21
22 **A.** Yes. As VEDO brings new engineering staff into the organization there are
23 significant engineering training needs for these positions that must be provided
24 through external resources. As an example, the Compliance Engineer will need to
25 have a thorough understanding of the code requirements and may get this training
26 through TSI. Additionally, they should have a solid understanding of such things
27 as design and construction of new distribution facilities and may receive this
28 training at the Gas Technology Institute. The Application Support Supervisor will
29 need to be trained on each of the applications that relevant staff supports. Many
30 of these applications are complex and require multiple levels of training to fully
31 understand and support the users of the application. Other positions will require a
32 similar training and development program specific to their job requirements.
33

1 Q. Will these courses all be completed within one year's time the Engineering
2 hire starting the training?

3

4 A. No. This training will occur over several years.

5

6 Q. Is the Vectren training center capable of providing this training?

7

8 A. The training center can provide some of the basic industry and operational
9 training; and any new engineering hires would be expected to attend some of
10 these courses as well. However, they are neither the experts, nor do they have
11 the curriculum, to fully train the engineering staff. VEDO does not hire enough
12 engineers at one time to warrant having an internal engineering training program.

13

14 Q. What are the costs associated with this additional training of the four hires?

15

16 A. The annual cost for this training is \$9,200 and is cited in WPC-3.12, page 2, Line
17 4. To capture the annual cost in the test year, an adjustment of \$5,367 is required

18

19 Q. Are the costs associated with this additional engineering training you have
20 described a reasonable and necessary expense?

21

22 A. Yes. This training is necessary to develop the proficiency of these Engineering
23 hires. The training will also allow these required skills to be developed quickly.
24 The skills and knowledge they will receive through the completion of these courses
25 are foundational for the engineering staff.

26

27 **MEASUREMENT PROGRAMS**

28

29 Q. Has VEDO included expanded measurement related programs in the test
30 year?

31

32 A. Yes. This would include expanding performing inspections and calibrations of
33 additional compensating instruments, and removing and testing additional meters
34 as part of its random sampling program. Additionally, to manage the existing

1 workforce and the additional work activities, VEDO will fill a vacant position,
2 Supervisor of Measurement, during the test year.

3
4 **Q. Please describe the Compensating Instrument Inspection Program and why**
5 **VEDO feels this is necessary to proceed at this time.**

6
7 A. VEDO has active in its system 433 pressure or pressure and temperature
8 compensating instruments that are not currently a part of an annual inspection and
9 calibration cycle. These particular 433 instruments are generally older technology
10 that VEDO has begun to replace with newer instruments. However, the
11 replacement of these instruments will be done over the next 5 years. In 2007,
12 VEDO has inspected 89 of these instruments and estimates that it will inspect an
13 additional 21 by the end of the year. There are 323 instruments that will not have
14 been inspected and calibrated in 2007. During the previous inspection and
15 calibration of these 323 instruments, approximately 18% of them were out of
16 tolerance greater than 3%. Three percent is the acceptable tolerance for meter
17 accuracy on aged, active meters as defined in the Ohio Administrative Code
18 4933.09. Additionally of the 89 instruments inspected in 2007, 16 of those were
19 out of tolerance by an amount greater than 3%. When an instrument is found to
20 be out of tolerance, it is either repaired or replaced and a billing adjustment is
21 made to correctly reflect the actual usage. VEDO proposes to implement an
22 annual inspection and calibration of the entire population of this instrument type
23 (433) with the expectation that only 323 will require inspection and calibration
24 within a given year since VEDO will be replacing approximately one-quarter of
25 them each year until they have been removed. Going forward after that point,
26 VEDO will be inspecting all 433 annually.

27
28 **Q. Why has VEDO not already implemented this program fully?**

29
30 A. There have been a number of competing priorities over the past few years that
31 have drained the available resource pool. In 2006, VEDO added two
32 measurement technicians, recognizing that there would be a significant number of
33 additional instruments added to its system as a result of the growth in the
34 customer choice programs, particularly the expansion of the gas transportation

1 opportunities. However, VEDO also lost a very experienced technician to
2 retirement. Much of 2005 and 2006 was spent installing the new gas
3 transportation instrumentation as well as now having to inspect and calibrate these
4 instruments semi-annually. This effort more than doubled the number of electronic
5 gas transportation instruments. Additionally, the new measurement technicians
6 had no instrumentation experience and have had to be trained on all of their job
7 duties. This is not a skill that is obtained easily and thus requires great hands-on
8 experience before technicians are fully capable of evaluating instrument
9 performance and making necessary repairs. Finally, there are very limited
10 contract resources available that have first hand knowledge of these particular
11 instruments.

12
13 **Q. What are the incremental costs associated with the Compensating**
14 **Instrument Inspection Program?**

15
16 A. The annual cost of this program is \$156,745 and is cited in WPC-3.14, Line 20. To
17 capture the annual cost in the test year, an adjustment of \$75,442 is required.

18
19 **Q. Please describe the Meter Random Sample Testing Program and why VEDO**
20 **feels this is necessary to proceed at this time?**

21
22 A. Annually, VEDO removes a small portion of its residential meter population which
23 has been in service for longer than 15 years. The purpose of this testing program
24 is to verify that the meter groups currently installed in the field are performing
25 within certain tolerance limits (+/- 3%). If VEDO identifies a group of meters in
26 which a high percentage of the sample population is performing out of tolerance,
27 that group would be targeted for replacement. VEDO estimates that its typical
28 annual random sample test size should be approximately 3,700 meters. However,
29 in 2007, VEDO expects to fall short of the intended amount by approximately
30 1,800 meters.

31
32 **Q. Why has VEDO not removed all 3,700 meters and how does it plan to**
33 **complete the work?**
34

1 A. VEDO started the random sampling program in mid-2007. VEDO generally works
2 these removals in with VEDO's typical workload; however these order types are
3 generally not the highest priority. As such, they will often get rearranged and
4 moved to a later date. As VEDO approaches the end of the year, with the coming
5 of the cold weather, VEDO will see a significant increase in the number of turn on
6 orders which will further increase the challenges of getting these orders scheduled.
7 Additionally, because of the high number of working households, access to relight
8 appliances is limited during normal business hours and often requires special
9 arrangements. VEDO proposes to contract to complete the remaining removals.

10
11 **Q. What are the costs associated with the additional meter sample tests?**

12
13 A. The annual cost for this program is \$194,830 and is cited in WPC-3.14, Line 21
14 and is cited in WPC-3.14, Line 21. To capture the annual cost in the test year, an
15 adjustment of \$53,608 is required.

16
17 **Q. Does VEDO need to hire a supervisor to manage the additional workload?**

18
19 A. In early 2007 the measurement supervisor position was vacated by a transfer of
20 that employee to another position within the company. For some period of time
21 through the first half of the year, that employee provided some basic supervision to
22 the VEDO measurement staff on a temporary basis until his current job duties
23 would no longer allow for such an arrangement. The replacement of the
24 supervisor is necessary to not only manage the additional workload proposed
25 previously, but to also manage the entire workload that is already being completed
26 by the measurement department.

27
28 **Q. What are the costs associated with the addition of a supervisor?**

29
30 A. The annual cost for this program is \$105,704 and is cited in WPC-3.14, Line 19.
31 To capture the annual cost in the test year, an adjustment of \$61,728 is required.

32
33 **Q. Is VEDO willing to make commitments to its customers related to the System**
34 **Integrity and Reliability proposals which are addressed by your testimony**

1 **even though they contemplate no deviation from the ratemaking**
2 **fundamentals found in Section 4909.15, Revised Code?**

3
4 A. Yes. As described in the Statement Required by Section 4901:1-19-05(C)(3),
5 O.A.C., Alt Reg Exhibit A describes the operational and financial need as well as
6 the Company and customer benefits for the various components of VEDO's
7 Alternative Regulation proposals. There are commitments to customers implicit in
8 VEDO's proposals. As described in the Alt Reg filing requirements and above,
9 these include the improvement of the safety and reliability of service and
10 consequent maintenance savings attributable to reduced maintenance costs
11 resulting from the implementation of the Program.

12
13 **Q. Does this conclude your testimony?**

14
15 A. Yes.

VECTREN OHIO
Distribution Pipeline Mileage
by Material Type

Year	Cast Iron	Galv. Iron	Carbon Steel	Plastic	Total
2000	590	186	2762	1386	4924
2001	578	181	2763	1446	4968
2002	568	178	2765	1497	5008
2003	556	176	2767	1542	5041
2004	544	174	2770	1604	5092
2005	539	174	2773	1662	5148
2006	534	174	2762	1712	5183

ANNUAL REPORT DISTRIBUTION MAIN MILEAGE SUMMARY

Industry Averages

DOT INDUSTRY DATA					
Total Bare Steel	61664	56315	57336	54578	52668
Total Cast Iron	42025	41091	40600	39770	36987
Total Main Mileage	1136732	1107363	1154571	1134427	1212696

Replacement Rates						
Total Bare Steel		9.5%	-1.8%	5.1%	3.6%	4.1%
Total Cast Iron		2.3%	1.2%	2.1%	7.5%	3.3%
Total Main Mileage		2.7%	-4.1%	1.8%	-6.5%	-1.5%
Total Bare Steel & Cast Iron		6.5%	-0.5%	3.8%	5.2%	3.7%

Percent Replacement					
Total Bare Steel		5.1%	5.0%	4.8%	4.3%
Total Cast Iron		3.7%	3.5%	3.5%	3.0%

Ohio Utility Averages

DOT INDUSTRY DATA					
Total Bare Steel	12219	11743	11612	11559	11692
Total Cast Iron	1692	1538	1494	1390	1290
Total Main Mileage	67137	69338	69381	70824	71904

Replacement Rates		2002				
Total Bare Steel		4.1%	1.1%	0.5%	-1.1%	1.1%
Total Cast Iron		10.0%	2.9%	7.5%	7.8%	7.0%
Total Main Mileage		2.6%	2.6%	-4.3%	5.4%	1.6%
Total Bare Steel & Cast Iron		4.7%	1.3%	1.2%	-0.3%	1.8%

Percent Replacement					
Total Bare Steel		16.9%	16.7%	16.3%	16.3%
Total Cast Iron		2.2%	2.2%	2.0%	1.8%

Vectren Ohio Averages

VECTREN OHIO DATA					
Total Bare Steel	568	556	544	539	534
Total Cast Iron	178	176	174	174	174
Total Main Mileage	5009	5041	5092	5148	5182

Replacement Rates						
Total Bare Steel		2.2%	2.2%	0.9%	0.9%	1.6%
Total Cast Iron		1.1%	1.1%	0.0%	0.0%	0.6%
Total Main Mileage		2.6%	2.6%	-4.3%	5.4%	1.6%
Total Bare Steel & Cast Iron		1.9%	1.9%	0.7%	0.7%	1.3%

Percent Replacement					
Total Bare Steel		11.0%	10.7%	10.5%	10.3%
Total Cast Iron		3.5%	3.4%	3.4%	3.4%

**Main Leakage Rates
Main Leaks Caused by
Corrosion, Material & Welds, Natural Forces & Other**

Main Leaks Reported	2003	2004	2005	2006
Bare Steel	164	172	133	186
Cast Iron	37	49	46	44
Coated Steel	92	132	90	118
Plastic	8	24	10	7

Miles of Main	2003	2004	2005	2006
Bare Steel	556	544	539	534
Cast Iron	176	174	174	174
Coated Steel	2767	2770	2773	2762
Plastic	1542	1604	1662	1712

Leak Rate	2003	2004	2005	2006
Bare Steel	0.29	0.32	0.25	0.35
Cast Iron	0.21	0.28	0.26	0.25
Coated Steel	0.03	0.05	0.03	0.04
Plastic	0.01	0.01	0.01	0.00

Leakage Rate Comparisons

Industry Averages

Leak Rates

Leak Rate Calculations	2003	2004	2005	2006
Corrosion Leaks/Mile BS	2.39	2.62	2.55	1.95
(Corr+Matl+NatForce+Other)/Mile BS & CI	3.57	3.36	3.34	2.98
Total Leaks/Total Mileage	0.48	0.46	0.45	0.41

Ohio Utility Averages

Leak Rates

Leak Rate Calculations	2003	2004	2005	2006
Corrosion Leaks/Mile BS	1.62	1.88	1.75	1.76
(Corr+Matl+NatForce+Other)/Mile BS & CI	5.30	2.61	2.30	2.39
Total Leaks/Total Mileage	0.49	0.60	0.55	0.55

Vectren Ohio Averages

Leak Rates

Leak Rate Calculations	2003	2004	2005	2006
Corrosion Leaks/Mile BS	3.07	2.30	1.77	1.72
(Corr+Matl+NatForce+Other)/Mile BS & CI	2.95	2.70	1.78	1.91
Total Leaks/Total Mileage	0.42	0.54	0.40	0.42

* Source data from Annual DOT Report forms PHMSA 7100.1.1

**Bare Steel & Cast Iron Leak Repairs
by Leak Hazard**

As Found Hazard	2003	2004	2005	2006	Total	% Total
CONFINED SPACE (VAULT, PIT)	1	1	3	0	5	0%
INSIDE BUILDING	2	2	0	1	5	0%
MANHOLE, CATCH BASIN, SEWER, ETC.	19	29	27	29	104	5%
NEAR BUILDING WALL	26	43	32	12	113	5%
PAVING TO BUILDING WALL	8	13	27	5	53	3%
IN ROADWAY	217	293	219	206	935	45%
Minimal to No Hazard	219	197	157	304	877	42%
Total BS&CI Leaks Repaired	492	578	465	557	2092	100%

of Hazardous Leaks represents 13% of BS & CI Leaks Repaired from 2003 through 2006

**Bare Steel & Cast Iron Leak Repairs
by Leak Class**

Leak Classification	2003	2004	2005	2006	Total	% Total
Class 1	42	45	33	30	150	7%
Class 2	243	271	264	222	1000	48%
Class 3	207	262	168	305	942	45%
Total BS&CI Leaks Repaired	492	578	465	557	2092	

Vectren Ohio Estimated Capital Requirements

			Replacement Cost	Capital Requirements
MILES OF DISTRIBUTION MAIN	Mileage	Footage	\$45/foot	20 Year
Unprotected Bare Steel	487	2571360	\$ 115,711,200	\$ 5,785,560
Unprotected Coated Steel **	357	1884960	\$ 942,480	\$ 47,124
Protected Bare Steel	47	248160	\$ 11,167,200	\$ 558,360
Cast Iron	174	918720	\$ 41,342,400	\$ 2,067,120
Ductile Iron	0	0	\$ -	\$ -
Galvanized	1	5280	\$ 237,600	\$ 11,880
TOTAL DISTRIBUTION MAIN	1066	5628480	\$ 169,400,880	\$ 8,470,044
			Replacement Cost	Capital Requirements
NUMBER OF SERVICES	Count		\$2400/Service	20 Year
Unprotected Bare Steel	25327		\$ 60,784,800	\$ 3,039,240
Unprotected Coated Steel	37257		\$ 89,416,800	\$ 4,470,840
Protected Bare Steel	2847		\$ 6,832,800	\$ 341,640
Galvanized	65		\$ 156,000	\$ 7,800
Copper	0		\$ -	\$ -
Service Tie-Overs (\$600 EA)	18213		\$ 10,927,800	\$ 546,390
TOTAL SERVICES	83709		\$ 168,118,200	\$ 8,405,910
Total Replacement Cost			\$ 337,519,080	\$ 16,875,954

* Replacement Costs assumed to be in present Dollars

* Cost Averages arrived at from historical averages

** Program includes cathodically protecting unprotected coated steel systems

Independent Review of Cast Iron and Bare Steel Pipe Replacement Program

Submitted to



VECTREN
Vectren Energy Delivery

OCTOBER 12, 2007

Shaw Stone & Webster Management Consultants, Inc.

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1 EXECUTIVE SUMMARY

1.1 Introduction

Stone & Webster Management Consultants, Inc. ("Stone & Webster Consultants") was selected by Vectren Energy Delivery ("Vectren") to provide engineering consulting expertise and services in analyzing the need for replacing the aged bare steel and cast iron mains and services. Vectren is an energy holding company headquartered in Evansville, Indiana. Through its wholly owned subsidiary, Vectren Utility Holdings, Inc. it holds three operating utilities, Vectren Energy Delivery of Indiana - North ("VEDI-N") (formerly Indiana Gas), Vectren Energy Delivery of Indiana - South ("Vectren South" or "VEDI-S") (includes the customers of former Hoosier Gas Corp and Southern Indiana Gas and Electric Company ("SIGECO")), and Vectren Energy Delivery of Ohio ("VEDO") (the former natural gas assets of Dayton Power and Light Company). The focus of this report is on Vectren's wholly owned subsidiary, VEDO.

VEDO provides energy delivery services to approximately 318,000 gas customers located in west central Ohio. As part of its distribution system, VEDO has continued to rely upon some 661 miles of gas mains, which are comprised of bare steel ("BS") and cast iron ("CI") material dating back to the early 1900s. The aged BS and CI piping components continue to be the predominant source of gas leaks on the distribution system. Either corrosion of the pipe or failing couplings are the main problems found to result in leaks. As practiced by most natural gas distribution companies, efforts have been undertaken to replace these problem causing and potentially dangerous system components with updated piping material. The replacement program currently in-place by VEDO is an informal program that is more opportunistic than proactive, resulting in investments of about \$2.1 million per year, which includes the replacement of BS services. Using this approach, VEDO will only very gradually replace the old piping over time.

To mitigate the risks for future leak events and to approach the replacement program in a more deliberate, economic and accelerated manner, Vectren engaged Stone & Webster Consultants to review its asset information, leak and system performance history in order to provide an independent assessment on the need for a proposed BS and CI accelerated replacement program. This report documents the results of our review and analysis.

1.2 Analysis

The purpose of our analyses was to statistically analyze and summarize the historical leak records and evaluate the condition of the existing BS and CI piping to qualify the need for the expedient prioritized replacement of the degrading BS and CI mains and services. The data required for the study of the BS and CI mains and services was provided by VEDO and the Department of Transportation ("DOT").

1.3 Findings and Considerations

Considering that the linear footage of BS and CI mains represents only 9.4% and 3.4%, respectively, of the VEDO system mains, and that these mains contributed to 48% of the system repaired leaks from 2000 to 2006, it is apparent that attention must be given to this portion of the system in order to improve upon the safe and efficient operation. When comparing BS and CI to other system mains comprised of coated steel and plastic, the leak numbers dramatically show how problematic the older piping material is. For the period from 2000 to 2006, for every 100 miles of BS and CI mains there were six times as many leaks than found on every 100 miles of coated steel and plastic mains. The numbers indicate that the

replacement of a relatively small percentage of the system can have an inordinately large impact on the number of system leaks and thus the overall system safety and the resources consumed by the leaks.

Our review found a total of 25,327 BS services on the VEDO system in operation in 2006. This number of BS services represents 7.9% of the total system services, contributing to roughly 22.6% of the system-wide service leaks repaired during the time period from 2000 to 2006. Over the same time period 7,785 BS services, approximately 24%, had been replaced contributing to a slight reduction in the number of BS service leaks. However the relative proportion of BS service leaks to BS services on the system remains the same suggesting the continued need for a program to replace them. A program to replace the BS services should continue to include a program to cathodically protect the coated-unprotected services on VEDO to reduce the sizeable leakage numbers.

Stone & Webster Consultants also reviewed leak data for VEDO from the DOT Office of Pipeline Safety ("OPS"). Based on our findings we conclude that the current opportunistic replacement program at VEDO is generally not keeping pace with the increasing rate of leaks.

While it is important to immediately focus on the most problematic and risk prone BS and CI piping components, a plan should be progressed that addresses all BS and CI, as the aging mains and services continue to degrade, presenting an ongoing burden to the system. Such a plan should consider the service areas most at risk with an accelerated BS and CI replacement program. Risk is defined as the probability of a threat, in this case a gas leak, combined with the consequence of a gas leak. In areas of high consequence the risk is heightened and therefore demands accelerated attention. VEDO has recognized the urgent need to replace the remaining BS and CI components of its distribution system. By planning to implement an expedited replacement program, similar to other utilities, VEDO is operating proactively in the elimination of problematic system components.

Based on our experience with other utilities experiencing like problems with BS and CI, Stone & Webster Consultants recommends the implementation of an expedited BS and CI main and services replacement program.

2 INTRODUCTION

To deliver natural gas to its customers VEDO has remaining in its distribution system some 661 miles of gas mains which are comprised of BS and CI material, some dating back to the early 1900s. VEDO used CI for its mains during its early development until the 1940s. BS was introduced into use in the 1910s and 1920s, with much heavier use starting in the 1930s. A transition to using only BS mains occurred during the 1940s when CI was discontinued for new installations. The installation of these unprotected pipe systems was practiced until the 1950s, when coated steel pipe was introduced into the system. In the late 1960s plastic pipe began to be used as the natural gas distribution piping of choice. Current replacement practices for old metallic distribution mains use plastic pipe and epoxy coated cathodically protected steel pipe with less sensitivity to age degradation.

BS and CI mains on the distribution system range in size from 1.0 to 16.0 inches. Gas pressure on some points of the distribution system is as high as 130 psig while the majority of the system operates at standard pressure of less than 20 psig. The aged CI mains with their bell and spigot coupling, and the bare steel mains, mechanically coupled or with threaded/welded joints, have been the predominant source of gas leaks on the distribution system. The corrosion of the pipe and/or failing couplings are the primary contributors of integrity compromise that have resulted in leaks.

Similarly with the service lines on VEDO we found that approximately 25,000 BS services are currently in use, ranging from 0.75 to 2.0 inches in diameter. Depending on the customer to whom the service line is connected, the pressure utilization ranges from 7" w.c. to 110 psig. BS services were installed as early as 1900 and were discontinued as a medium for gas conduit in the 1950s when replaced by coated steel piping. There are no CI services on the VEDO system.

Natural gas leaks are treated as serious events with potential elevated consequences as these older metallic mains continue to degrade. Depending on the gas escape rate, a leak may often require reporting to the DOT. The decision to repair or replace a leaking main involves the consideration of many variables. Vectren uses their Optimain program to assist the engineering personnel in making the determination of whether to repair or replace a segment of main piping.

Recognizing the potential for continuing deterioration of the BS and CI components of the system, VEDO and its predecessor companies began to follow varied replacement practices in the 1970s. The predecessor company, Dayton Power & Light, followed an informal, opportunistic replacement strategy and elected to replace mains as needed. A formal program was not devised to identify and/or remove the most leak vulnerable pipe. Replacement generally proceeded under the following guidelines:

- mains in need of immediate replacement from active and prominent leakage.
- general convenience and opportunity to replace mains as a result of necessary pressure upgrades or where relocation was required for a municipality's street replacements.
- replacement in areas where high water tables were causing problems
- periodic planned replacement where conditions suggested replacement as the prudent course of action.

Presently, VEDO's replacement program is a combination of planned replacement projects with need-based replacement projects. Generally, from the year 2002 through 2006, the annual average cost related

to BS and CI main replacement program was \$1,197,000, with additional dollars spent on service replacement amounting to approximately \$900,000 per year. Approximately 35% of the projects completed over this timeframe were planned replacement projects, while the remainder were done so out of necessity or opportunity. We have found no feature in the replacement program that includes the assessment of risk, a critical aspect in any integrity management program for pipeline distribution and transmission companies.

Vectren engaged Stone & Webster Consultants to review the leak history of VEDO and perform statistical analyses to evaluate the leak rate severity and service integrity of the BS and CI mains and services. This undertaking is intended to ultimately implement measures, if necessary, to mitigate the threat of future leak events by identifying the need to adopt a replacement program more deliberate, scientific and economic in execution.

3 VEDO DATA

The data utilized in our analyses was provided by Vectren from their Gas Compliance System, which contains the leak and repair history for the BS and CI components. The pipe facility data is stored in Vectren's Gas Facility Information Database. Additional data for our review was taken from the data bases of the DOT.

The pipeline segment data used for the analysis was extracted from the Gas Compliance System indicating that the VEDO natural gas distribution network is comprised of 5,183 miles of mains, which includes 487 miles of BS mains and 174 miles of CI mains. Additionally, roughly 25,000 of BS services were included in our analysis of VEDO. Vectren has records of installed CI and BS mains dating to the early 1900s. The transition to wrapped steel mains was made in the mid 1950s. The leak data available for our analysis is listed below.

- Pipe Segment Length – the length of pipe segment, which can be an arbitrary assignment made up of multiple pipe joints or simply a valve, regulator or replaced pipe section. Segments lengths vary from one foot to thousands of feet. This data is not a factor causative of leaks, and is used only in the segment data base.
- Pipe Material Type – either BS or CI, for this study
- Pipe Burial Depth – the measure of feet below the surface at which the pipe is buried
- Coverage Type – the type of coverage at the surface over the pipe, including grass, gravel, asphalt or concrete.
- Pressure – the maximum pressure at which the pipe is operated
- Risk Class – the classification related to the population density housed within the structures up to 100 feet from the distribution line. This parameter is used in consideration outside of the regression analysis.
- Pipe Diameter – the nominal diameter of the pipe in inches.
- Joint Type – the mechanism by which piping is joined. Joints include bell and spigot, mechanical, threaded or welded.
- Leak Cause – only leaks that are caused by corrosion or joint failure were considered
- Year of Installation – A range of installation years in which the pipe was installed.

4 APPROACH TO IDENTIFYING THE NEED FOR A BS AND CI REPLACEMENT PROGRAM

Our approach to identifying the need for a formal BS and CI replacement program is a matter of collecting, sorting and analyzing the data and drawing conclusions. Through analyzing the data provided by VEDO and the DOT, and by comparison to replacement programs of similar utilities, meaningful conclusions can often be formulated. Ongoing practice to prevent and mitigate the risks associated with BS and CI mains/services, should be among the top priorities of VEDO.

Stone & Webster Consultants assessed the characteristics of the BS and CI segments of the system to identify the level of continuing threat to the aged unprotected metal components and consequently the need for an accelerated replacement program. Stone & Webster Consultants recommends that the results of this assessment be utilized by VEDO in their planning for a BS/CI Main/Services Replacement Program. Directly inspecting the condition of distribution piping in-situ cannot be carried out in the great majority of cases, so most information about the condition of mains and services is derived from data collected when repairing, replacing or surveying pipe segments. Evaluating the condition, remaining life and the serviceability of underground utility assets is a challenging and a difficult task. Unlike aboveground assets that are available for direct inspection, underground assets remain hidden from view. There are only bits of information that are available for the evaluator to glean and peer into the asset conditions. Therefore, Stone & Webster Consultants based its assessment on experience with other utilities, and our knowledge on causative leak conditions, in addition to the trending of leak and repair data in statistical review.

Data available on gas distribution systems can vary significantly both in quality and quantity depending on the utility. The data must be carefully evaluated and assessed before using it in analyses. Often assumptions are necessary to fill in the missing pieces of data. As in any analytical exercise, the assessment/evaluation of the distribution system remains based on the quantity and quality of data. This data is subjected to statistical analysis techniques in order to make inferences on the whole of the system.

Data reported by VEDO to the DOT, the recent history of VEDO gas mains inventory, is shown in Table 1 and Figure 1, below.

The data confirms that plastic pipe has been used to meet the system growth and replacement needs. Replacing BS and CI with plastic pipe is occurring at a marginal rate and the proportion of the system comprised of BS and CI remains near 13%. This is illustrated in the pie chart, Figure 1, below.

Table 1

Vectren - Ohio Miles of Mains						
Year	Bare Steel	Cast Iron	Protected Steel	Plastic	Total	% BS/CI
2000	543	186	2,810	1,386	4,925	14.8%
2001	531	181	2,811	1,446	4,969	14.3%
2002	521	178	2,813	1,497	5,009	14.0%
2003	509	176	2,815	1,542	5,042	13.6%
2004	497	174	2,818	1,604	5,093	13.2%
2005	482	174	2,821	1,662	5,149	12.9%
2006	487	174	2,810	1,712	5,183	12.8%

Figure 1

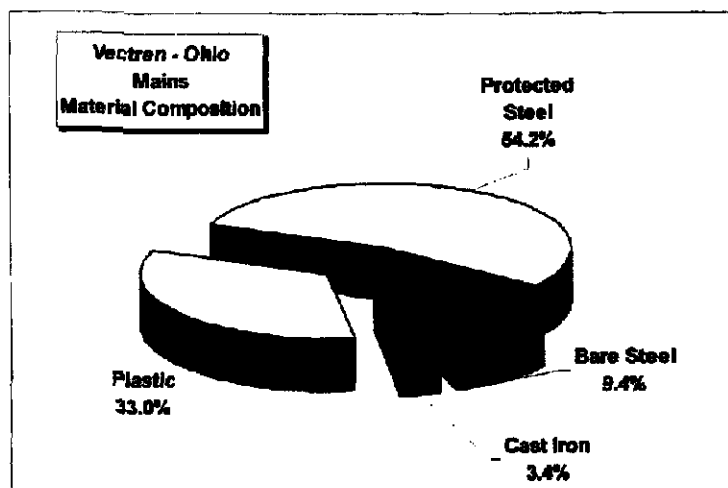


Table 2 and accompanying Figure 2, below, highlight the history of the mains and services leaks due to corrosion, material defects, welds or other causes (the latter category used for leaks that are not formally categorized) on the VEDO system, as reported to the DOT. The data shows a general decline in service leaks, which is indicative of repairs and replacement. Leaks on the system mains, however show a general rising trend.

Table 2

VEDO - Mains & Services Leaks Repaired Corrosion, Mat'l or Weld, & Other			
	Mains	Services	Total
2000	192	1,148	1,340
2001	364	1,116	1,480
2002	250	1,592	1,842
2003	586	1,525	2,111
2004	652	1,267	1,919
2005	402	856	1,258
2006	424	907	1,331

Figure 2
Gas Leaks for all Mains and Services
from Corrosion, Material or Weld, & Other Causes

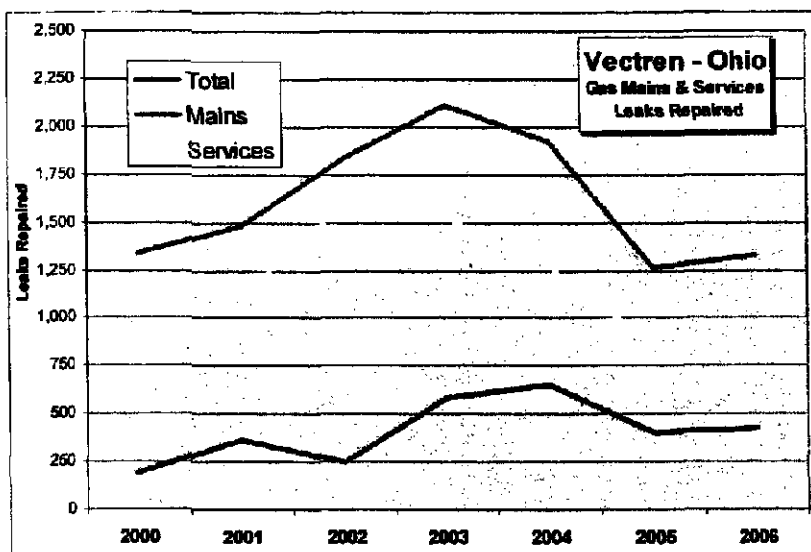
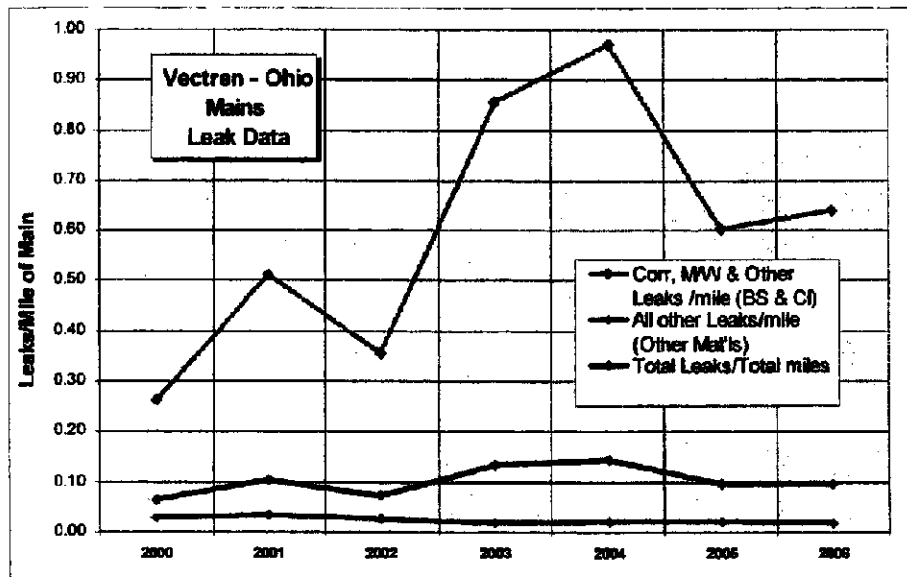


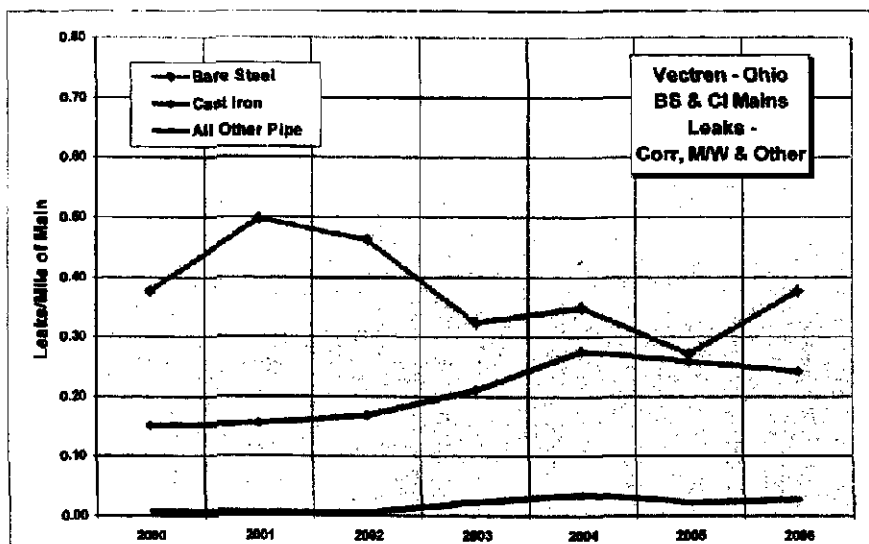
Figure 3 displays the data reported to the DOT for VEDO's leaks on the mains classified by cause. Over the time period from 2000 to 2006, it is evident that leaks due to corrosion, material defects, welds, and other are increasing as a trend. Leaks of this type are mostly found on BS and CI mains, and therefore indicative of leak-prone BS and CI mains. In comparison, the leaks due to all other causes have been in a gradual and steady decline, indicative of the available measures and materials in use as mains other than BS and CI.

Figure 3
Leaks per Mile from Unprotected Gas Mains



VEDO recorded leaks due to corrosion, material defects, welds and other are presented on a unitized basis in Figure 4 for the system mains categorized as three types: the unprotected BS, CI, and all other mains. Note that both BS and CI mains contribute considerably greater to similar leaks than all other pipe on the system. It is clear from Figure 4, that BS and CI remain a problematic component of the system when compared to protected pipe.

Figure 4
Gas Main Leaks - Bare Steel & Cast Iron
Comparison to Other Mains



As represented in Figure 4, while varying from year to year, the leaks per mile on BS and CI are currently (in 2006) 13.8 times and 8.9 times, respectively, more frequent than leaks found on other pipe. These figures are more dramatic when compared against the low leak rate of 0.005, for all plastic piping and predominantly occurring on plastic services. The leaks per mile on BS and CI are currently (in 2006) 80.5 times and 50.2 times, respectively, more frequent than leaks found on all system-wide plastic. Plastic piping will most likely be the replacement material of choice.

5 FINDINGS AND CONSIDERATIONS

Many utilities nationwide and internationally have and continue to recognize the need for the replacement of ageing unprotected metallic system mains. As found on other systems, VEDO is experiencing a moderate percentage of leaks from its BS and CI mains as they continue to fail, predominantly due to corrosion. From 2000 to 2006 fully 48% of the leaks repaired on VEDO's system were on BS and CI mains, which represent only 9.4% and 3.4%, respectively, of mains in place. Additionally, as these mains age, they continue to corrode and degrade and represent an ever increasing threat, and thus risk, to the system.

The contribution to leaks by BS and CI on the VEDO distribution system becomes more apparent when compared to coated steel and plastic mains on the system. From 2000 to 2006, BS has contributed 41 leaks per 100 miles of BS mains, while CI has burdened the system with 23 leaks per 100 miles of CI mains. In comparison, protected coated steel and plastic pipe have contributed only six leaks per 100 miles. Given the significant differences in operational performance history, the expeditious replacement of the remaining BS and CI mains would substantially improve the safety and integrity of the VEDO system.

A recent study prepared for the American Gas Foundation titled "Safety Performance and Integrity of the Natural Gas Distribution Infrastructure" found that of the distribution companies surveyed, 65% have a planned replacement program for their CI mains and 74% have a planned replacement program for their BS mains system. The operators of these companies have identified higher risk segments of their distribution infrastructure in their BS and CI mains and are taking prevention and mitigation measures to insure the safety and integrity of their systems. In our telephone survey of distribution companies implementing BS and CI replacement programs, we have found those engaged in such to include Missouri Gas Energy, CenterPoint Energy Arkla, Northern Utilities, Inc., New York State Electric and Gas Corp., Rochester Gas and Electric Corp., Elizabethtown Gas, and Atlanta Gas Light Company, to name a few.

Our experience with other utilities in the area of BS and CI replacement programs has provided much insight into the importance other utilities and regulatory agencies place on the need to upgrade distribution systems. BS and CI replacement programs have resulted in significant reduction of corrosion related leaks. Over the four years since Stone & Webster Consultants completed the recommended replacement program for Duke Energy Ohio (formerly CINERGY), their leak rate due to corrosion has declined by 44 percent (as per DOT OPS information). In the case of VEDO, it is plain to see, that the replacement of just 12.8% of the system mains can result in the elimination of 48% of the system leaks. The elimination of 48% of the system leaks has a tremendous impact on the improvement in safety, system integrity and operating economics. Stone & Webster Consultants recommends the implementation of an accelerated BS and CI mains replacement program.



VEDO Potential Maintenance Expense Reduction

Meter Order Management

Outside Leaks	3419	3185	2972	3267
Investigate Gas Emergency	757	1111	972	938
No Gas	2186	2289	1495	2046
Water in Service	202	41	33	91
Total	6637	6626	5472	6342
% Allocated to BS/CI Facilities	48%	48%	48%	48%
Orders applicable to BS/CI	3186	3180	2627	3044

Total Meter Orders	112445	141871	138422	138512
Meter Order Mgmt Actuals	\$ 3,055,637	\$ 3,339,814	\$ 3,370,612	\$ 3,316,841
Average Cost per Order	27.17	23.54	24.35	23.86
Average cost per Asset Condition based Order	54.35	47.08	48.70	47.89
* Leak investigation order average approximately 2x's longer than average meter order				

Orders Applicable to BS/CI x Average Order Cost per Asset Condition based Order	\$ 173,143	\$ 148,888	\$ 164,881	\$ 125,792
				\$ 150,921

Leak Repair & Management

Service Leak Repair Actuals	\$ -	\$ -	\$ -	\$ 113,562
% of Service BS/CI Leak Repairs	58%	49%	56%	33%
Service O&M Expenses attributable to BS/CI	\$ -	\$ -	\$ -	\$ 37,346

Total Main Leak Repair Actuals	\$ 1,435,656	\$ 1,823,822	\$ 2,183,541	\$ 1,737,241
Cost Associated with Soft Surface Repairs	\$ 646,045	\$ 820,720	\$ 982,593	\$ 781,758
% of Soft Surface Repairs on BS/CI Main Leaks	58%	44%	45%	53%
Cost Associated with Hard Surface Repairs	\$ 789,611	\$ 1,003,102	\$ 1,200,948	\$ 955,483
% of Hard Surface Repairs on BS/CI Main Leaks	74%	69%	76%	73%
Main O&M Expenses attributable to BS/CI	\$ 945,282	\$ 1,060,823	\$ 1,354,336	\$ 1,117,910

Total Main Leak Reduction Opportunity	\$ 945,282	\$ 1,060,823	\$ 1,354,336	\$ 1,166,266
				\$ 1,126,374

TOTAL POTENTIAL MAINTENANCE SAVINGS	\$ 1,118,425	\$ 1,200,480	\$ 1,509,227	\$ 1,281,049
* Expected Annual Savings reflects savings incurred when all releases has been replaced.				
* Work units and costs generated from historical actuals				

**Vectren Ohio
Service Riser Inventory Project
Status Report
September 2007**

	Number	Percentage
Total Premises Visited	155188	
No Access	4438	2.86%
No Riser	25995	16.75%
Total Risers Identified	124755	80.39%

Summary by Riser Type

Riser Types	Classification	Number	Percentage
Bare Steel	Steel	809	0.65%
Copper	Steel	1	0.00%
Central Plastic	Design-B	278	0.22%
Coated Steel	Steel	69192	55.46%
Continental	Design-B	246	0.20%
Normac	Design-A	33505	26.86%
Perfection w/o Adaptor	Design-A	2396	1.92%
Perfection w Adaptor	Design-B	15660	12.55%
Rob Roy	Design-A	1847	1.48%
RW Lyall	Design-B	172	0.14%
Thin Wall Steel	Steel	60	0.05%
Uponor	Design-B	589	0.47%
Total		124755	

Summary by Classification

	Number	Percentage
Steel	70062	56%
Design-A	37748	30%
Design-B	16945	14%

BEFORE

THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Vectren)
Energy Delivery of Ohio, Inc. for Authority)
To Amend Its Filed Tariffs to Increase the) Case No. 07-1080-GA-AIR
Rates and Charges for Gas Service and)
Related Matters.)

In the Matter of the Application of Vectren)
Energy Delivery of Ohio, Inc. for Approval) Case No. 07-1081-GA-ALT
Of an Alternative Rate Plan for a Distribution)
Replacement Rider to Recover the Costs of)
A Program for the Accelerated Replacement)
Of Cast Iron Mains and Bare Steel Mains)
And Service Lines, a Sales Reconciliation)
Rider to Collect Differences between Actual)
And Approved Revenues, and Inclusion in)
Operating Expense of the Costs of Certain)
System Reliability Programs.)

**DIRECT TESTIMONY OF
SCOTT E. ALBERTSON
ON BEHALF OF
VECTREN ENERGY DELIVERY OF OHIO, INC.**

☐ Management policies, practices, and organization
☐ Operating income
☐ Rate base
☐ Allocations
☐ Rate of return
☒ Rates and tariffs
☒ Other – ARP DRR and specified
Alt. Reg. Exhibits

December 4, 2007

BEFORE

THE PUBLIC UTILITIES COMMISSION OF OHIO

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Operating Expense of the Costs of Certain)
System Reliability Programs.)

SCOTT E. ALBERTSON

INDEX

Summary of the testimony addressing an overview of the Company's proposed Distribution Replacement Rider.

DESCRIPTION OF <u>TESTIMONY</u>	TESTIMONY <u>PAGES</u>
Introduction of Witness	1-2
Purpose of Testimony	2
Description of Distribution Replacement Rider	3-8
Determination of Customer Charges	8-13
Customer Commitments	13-14

DIRECT TESTIMONY OF SCOTT E. ALBERTSON

Q. Please state your name and business address.

A. Scott E. Albertson, One Vectren Square, Evansville, Indiana 47708.

Q. What position do you hold with Applicant Vectren Energy Delivery of Ohio, Inc. ("VEDO" or "the Company")?

A. I am Director of Regulatory Affairs for Vectren Utility Holdings, Inc. ("VUHI"), the immediate parent company of VEDO. I hold the same position with two other utility subsidiaries of VUHI—Southern Indiana Gas and Electric Company ("Vectren South") and Indiana Gas Company, Inc. d/b/a/Vectren Energy Delivery of Indiana ("Vectren North").

Q. Please describe your educational background.

A. I received a Bachelor of Science degree in mechanical engineering from Rose-Hulman Institute of Technology in 1984.

Q. Are you a Registered Professional Engineer?

A. Yes. I have been a professional engineer in Indiana since 1990 (registration number 900464).

Q. Please describe your professional experience.

A. I have over 23 years experience in the utility industry, primarily in the operations and engineering areas. I began my career with Ohio Valley Gas Corporation in a project engineering position. I have worked at VUHI and its predecessor companies since 1987 in a variety of positions including Operations Staff

1 Manager, Assistant Chief Engineer, Director of Engineering Projects, and Director
2 of Engineering. Prior to assuming my current role in 2004, I was Director of
3 Technical Services with responsibility for engineering and technical support for all
4 VUHI utility operations.

5
6 **Q. What are your present duties and responsibilities as Director of Regulatory**
7 **Affairs?**

8 A. I have responsibility for the regulatory matters of the regulated utilities within
9 VUHI, including proceedings before the Indiana and Ohio utility regulatory
10 commissions.

11
12 **Q. Have you previously testified before this Commission?**

13 A. Yes. I filed testimony in Case No. 04-220-GA-GCR and 05-220-GA-GCR on
14 VEDO's Financial and Uncollectible Expense Audits. I have also testified on
15 several occasions before the Indiana Utility Regulatory Commission.

16
17 **Q. What is the purpose of your testimony in this proceeding?**

18 A. My testimony in this proceeding addresses VEDO's proposal to establish a
19 regulatory mechanism to recover (1) capital investments associated with a
20 program to accelerate the replacement of cast iron mains and bare steel mains
21 and service lines in the VEDO distribution system, (2) individual riser
22 replacements arising from VEDO's PUCO-initiated investigation of the installation,
23 use, and performance of natural gas service risers, (3) the incremental cost of
24 assuming ownership of service lines replaced under this program, and (4) the
25 incremental cost of assuming maintenance responsibility for all service lines. I am

1 responsible for the portions of Alt. Reg. Exhibits A and B which are relevant to the
2 issues discussed in my testimony. Also, I share responsibility for the Statement of
3 Commitments Required by Section 4901:1-19-05(C)(3), O.A.C.
4

5 **Q. What exhibits are attached to your testimony?**

6 A. The following exhibits which have been prepared by me or under my supervision
7 are attached to my testimony:

8 SEA-Exhibit 1 – "Distribution Replacement Rider – Filing Schedules"

9 SEA-Exhibit 2 – "Distribution Replacement Rider – Estimated Margin Increases by
10 Rate Schedule"

11 SEA-Exhibit 3 – "Distribution Replacement Rider – Estimated Residential
12 Customer Bill Impacts"

13 SEA-Exhibit 4 – "Accelerated Main Replacement Programs – Cost Recovery
14 Outside of Full Rate Case"

15
16 **Q. What is VEDO's proposal regarding recovery of capital costs associated**
17 **with the accelerated replacement and retirement of cast iron mains and bare**
18 **steel mains and service lines as described in the Alt Reg Exhibits in VEDO's**
19 **Application?**

20 A. VEDO is requesting approval of a Distribution Replacement Rider ("DRR") to track
21 these capital costs. VEDO will make annual filings with the Public Utilities
22 Commission of Ohio ("PUCO" or "Commission") to recover a return on and of
23 these investments in infrastructure replacement projects until such time as they
24 are included in base rates.
25

1 **Q. Does VEDO propose to recover any other costs through the DRR?**

2 A. Yes. The PUCO initiated an investigation of the installation, use and performance
3 of natural gas service risers in Case No. 05-0463-GA-COI. The Company also
4 proposes to recover the costs associated with replacement of individual risers as
5 determined in, and required by the results of, that investigation. Finally, as
6 discussed by Witness James M. Francis, VEDO proposes to assume ownership
7 of the portion of service lines which are currently customer-owned (i.e. the
8 property line-to-meter portion, including the riser) upon replacement and to
9 assume maintenance responsibility prospectively for all service lines (Company-
10 and customer-owned). VEDO proposes to recover the incremental costs of
11 assuming these responsibilities related to service lines in the DRR.

12

13 **Q. Why is VEDO proposing a recovery mechanism for its investment in**
14 **replacement of these mains and service lines?**

15 A. As is more fully described by Mr. Francis, the accelerated bare steel and cast iron
16 pipeline replacement program ("the Program") involves sizable, incremental
17 investments in non-revenue producing plant that will provide a number of benefits,
18 including a reduction of future maintenance expenses, planned (as opposed to
19 unplanned) service interruptions, and an enhancement to public safety. Because
20 the Program requires investments beyond VEDO's normal annual capital
21 investment in system replacement, timely recovery of these investments is critical.
22 Absent this mechanism, the Company cannot feasibly engage in this heightened
23 level of investment and financially withstand the regulatory lag that would
24 accompany traditional base rate treatment/recovery of investments of this
25 magnitude.

1

2 **Q. Will any other types of main be replaced under the Program?**

3 A. Short segments of newer main (coated steel or plastic) that have been installed
4 previously within the cast iron or bare steel system to repair main leaks where
5 other leak repair methods could not be employed will also be replaced under the
6 Program. VEDO believes it will be more cost effective to replace entire blocks of
7 main (relocating the main where possible to minimize future street repair costs)
8 rather than incur substantially higher construction costs to connect new main to
9 these short segments. The Company believes it will be more economically
10 efficient to retire short segments of newer pipe previously installed as a leak
11 repair measure than to salvage those segments during replacement of cast iron
12 and bare steel mains. Therefore, VEDO will retire these short main segments
13 under the Program. If the newer short main segment to be retired was capitalized
14 when installed, VEDO will recognize a reduction in depreciation expenses and
15 property taxes associated with the retirement of these assets in the DRR revenue
16 requirement, as discussed below.

17

18 **Q. Please describe the recovery mechanism VEDO proposes.**

19 A. VEDO will determine the annual revenue requirement associated with Program
20 costs, riser replacement costs and incremental service line responsibility costs,
21 adjusted for maintenance savings attributable to the Program (as discussed by
22 Mr. Francis and described below) and recover that revenue requirement via the
23 DRR.

24

25 **Q. What is VEDO's proposal for submitting its annual construction plans to the**

1 **Commission?**

2 A. VEDO proposes to submit its annual construction plans under the Program so
3 that the Commission may become familiar with the projects contemplated for the
4 coming year. As the DRR process gets underway, VEDO will submit its
5 construction plan for the applicable portion of 2008 and all of 2009 at least 90
6 days prior to commencement of the Program. For 2010 and beyond, VEDO
7 proposes to submit its construction plans on May 1 of the preceding year. In this
8 manner, the Commission can be apprised of progress on the replacement of this
9 old infrastructure and provide further input on VEDO's conduct of the Program.

10
11 **Q. When, and how frequently, will the DRR filings be made?**

12 A. DRR filings will be made annually by May 1 of each year, and will reflect activity
13 for the most recent calendar year. At the same time, as described above, the
14 Company's construction plan for the next calendar year will be submitted to the
15 Commission. VEDO proposes that the DRR become effective on September 1 of
16 each year.

17
18 **Q. What information will be included in the annual DRR filings?**

19 A. VEDO will report to the Commission the following information for the previous
20 calendar year:

- 21 1) Investment in infrastructure replacement under the Program,
22 2) Pipe mileage replaced (by type),
23 3) Revenue requirement (including reconciliation of revenue requirement
24 recovery for a prior period), and
25 4) Derivation of rates for the prospective recovery period (September 1

through August 31).

Q. How will the maintenance savings attributable to the Program be reflected in the determination of the revenue requirement in the annual DRR filings?

A. As described by Mr. Francis, VEDO expects its annual maintenance expenses to be reduced by about \$1,277,000 per year once the Program is completed. The total maintenance savings, when allocated to the existing 709 miles of cast iron and bare steel main in the Company's distribution system, equates to approximately \$1800 per mile. VEDO will reduce the revenue requirement in each annual DRR filing by \$1800 per cumulative total mile of cast iron and bare steel main replaced since the inception of the Program.

Q. Can you provide an example?

A. Yes. Suppose during the first year of the Program, a total of 35 miles of cast iron and bare steel mains are replaced. In the DRR filing for the first year, the revenue requirement would be reduced by \$63,000 (\$1800 times 35 miles replaced). Suppose then that in the second year of the Program, another 35 miles of cast iron and bare steel mains are replaced. In the DRR filing for the second year, the revenue requirement would be reduced by \$126,000 (\$1800 times 70, the cumulative total mileage replaced). In this manner, beneficial replacement of this infrastructure occurs, and cost savings are immediately passed on to customers.

Q. How will the Program costs be allocated to the various Rate Schedules?

A. Program costs will be allocated to the Rate Schedules based on the distribution mains/service lines allocation in VEDO's most recent cost of service study.

VEDO Witness Kerry A. Heid sponsors the cost of service study in this proceeding. VEDO proposes to allocate the \$1800 per cumulative mile of main replaced between mains and services.

Q. Please describe how the DRR charges to customers will be determined.

A. The pro forma filing schedules for the DRR, including those schedules to be sponsored by VEDO's accounting witness in DRR proceedings, are shown in SEA-Exhibit 1. The schedules as shown are for illustrative purposes only.

Page 1 of 14 is the proposed DRR tariff sheet. Page 2 of 14 lists the rate schedule distribution mains and service lines allocation factors determined in the most recent base rate proceeding (the percentages shown are those proposed in this proceeding), which, collectively, is the proposed basis for cost recovery under the DRR. Page 3 of 14 shows the derivation of the DRR by rate schedule. The rate schedule allocation factors from page 2 of 14 are multiplied by the total revenue requirement (from pages 13 and 14 of 14) to determine the allocated revenue requirement by rate schedule. For residential (Rates 310 and 315), small general service (Group 1 customers under Rates 320 and 325 (hereinafter referred to as "Group 1 Customers")) and Rate 341 customers, the allocated revenue requirement for each rate schedule is then divided by the number of customers in each rate schedule, and then divided by 12, to determine the DRR charge applicable to customers in each rate schedule. For larger customers (Group 2 and Group 3 customers under Rates 320 and 325, and all customers receiving service under Rates 330, 345 and 360), the allocated revenue requirement for each rate schedule is divided by the projected annual throughput

1 for each rate schedule to determine the DRR charge per Ccf applicable to each
2 rate schedule. Page 4 of 14 shows how the general service customer revenue
3 requirement allocation is determined. Due to the similarity in facilities required to
4 serve Group 1 Customers and those required to serve residential customers,
5 VEDO proposes a DRR charge to Group 1 Customers equal to the DRR charge
6 applicable to residential customers. The residential DRR charge (shown as \$0.69
7 per month on Page 3 of 14) is multiplied by the number of Group 1 Customers,
8 with that result multiplied by 12 to determine the annual DRR revenue
9 requirement recovered from Group 1 Customers. As shown on Page 4 of 14, the
10 Group 1 Customer revenue requirement is then deducted from the total revenue
11 requirement allocated to Rates 320 and 325, with the result allocated to Group 2
12 and Group 3 customers volumetrically.

13
14 Page 5 of 14 shows the impact of the proposed DRR on customers' bills. Pages
15 6 through 10 of 14 show the methodology for reconciling the recovery of the
16 revenue requirement for prior periods and determining the appropriate adjustment
17 to the revenue requirement. The reconciliation methodology is as follows:

18
19 In each annual filing, VEDO will file RATES Schedule 5, as shown on Page
20 6 of 14. The purpose of this schedule is to identify the recoveries applicable
21 to the periods September through December and January through August
22 during the twelve months the DRR is in effect.

23
24 In the second annual filing, VEDO will file a second page under RATES
25 Schedule 5, as shown on Page 8 of 14. The purpose of this schedule is to

1 determine the revenue requirement recovery variance applicable to the
2 effective period (in this example, September through December) in order to
3 make an adjustment to the revenue requirement. As shown on Page 8 of 14
4 for illustrative purposes, the variance to be determined in the second annual
5 filing is applicable only to four months, recognizing that the DRR will have
6 taken effect in September of the prior year.

7
8 In the third and subsequent annual filings, VEDO will continue to file Pages
9 1 and 2 of Schedule 5 (shown as Pages 9 of 14 and 10 of 14). As illustrated
10 on Page 10 of 14, the variance is computed as the difference between
11 actual and approved recoveries from the first annual filing (as determined on
12 Page 6 of 14 and shown on line 15) for the period January through August,
13 and the difference between actual and approved recoveries from the second
14 annual filing (as determined on Page 7 of 14 and shown on line 16). Any
15 variance identified on line 18 will be allocated as an adjustment to the mains
16 and service lines revenue requirement calculation (ACCOUNTING Schedule
17 3A and 3B, line 12, shown on Page 13 and 14 of 14) based on the overall
18 allocation of the total revenue requirement from the most recent DRR filing.

19
20 VEDO proposes to allocate DRR variances to the mains and service lines
21 revenue requirement calculation on the same percentage basis determined
22 in the most recent approved DRR filing. For example, as illustrated on page
23 13 and 14 of 14 of SEA-Exhibit 1, the mains and service lines revenue
24 requirements are \$1,444,304 and \$1,777,810 (without Gross Receipts

Excise Taxes), respectively¹. In this scenario, the mains revenue requirement represents 44.82% of the total revenue requirement. Therefore, in the next DRR filing, 44.82% of the DRR variance would be allocated to the mains revenue requirement, and the remainder (55.18%) would be allocated to the service lines revenue requirement. VEDO proposes to use this methodology to allocate annual DRR variances prospectively.

VEDO Witness M. Susan Hardwick describes the accounting methodology illustrated in the remaining (ACCOUNTING) schedules shown in SEA-Exhibit 1 in her direct testimony.

Q. What is the expected margin impact of the Program on customers?

A. The estimated margin impact on all customers to which the proposed DRR is applicable is shown on SEA-Exhibit 2, and is based on the estimated costs associated with the Program as described by Mr. Francis. These same margin impacts are also shown in Alt. Reg. Exhibit A, Attachment 1.

Q. What is the expected impact of the Program on residential customers' bills?

A. The estimated residential customer bill impacts are shown on SEA-Exhibit 3, and are also based on the estimated costs associated with the Program as described

¹ DRR charges will be subject to VEDO's Gross Receipts Excise Tax ("GRET") Rider. Revenue requirement calculations and resulting bill impacts as shown in SEA-Exhibits 1, 2 and 3 have been modified to include the impact of GRET.

1 by Mr. Francis. These same residential bill impacts are also shown in Alt. Reg.
2 Exhibit A, Attachment 1.

3

4 **Q. Will the DRR be subject to VEDO's Gross Receipts Excise Tax ("GRET")**
5 **Rider?**

6 A. Yes. The margin and bill impacts shown in SEA-Exhibit 2 and SEA-Exhibit 3
7 include the impact of GRET.

8

9 **Q. How will the DRR be determined after orders in subsequent VEDO base rate**
10 **proceedings are approved by the Commission?**

11 A. Investments under the Program will be included in base rates at the time VEDO
12 files subsequent requests for changes to its base rates. Once Orders in
13 subsequent base rate proceedings are approved, Program dollars included in
14 base rates will be removed from the DRR.

15

16 **Q. Are similar recovery mechanisms, for similar programs, in place in other**
17 **jurisdictions?**

18 A. Yes. Gas utilities in a number of jurisdictions, including Duke Energy in Ohio,
19 have recognized the need to focus more attention on this issue, and have
20 received approval from their respective regulatory commissions to accelerate
21 replacement of similar aging infrastructure and to implement a mechanism to
22 recover these costs outside of a base rate proceeding. Other utilities recover
23 these costs under "rate stabilization", a rate design mechanism that, in addition to
24 decoupling a utility's profits from its gas throughput, adjusts rates to meet pre-
25 established revenue and return targets via expedited revenue requirement and

1 cost of service studies. Finally, utilities in the state of Texas have the opportunity
2 under legislation to apply for approval to recover these types of costs under a Gas
3 Reliability Infrastructure Program ("GRIP") approved in 2003 by the Texas
4 legislature. Such utilities and their various recovery mechanisms, of which VEDO
5 is aware, are listed in SEA-Exhibit 4.

6
7 **Q. In addition to the Company's proposal to assume ownership of service lines**
8 **replaced under the Program, is VEDO also proposing to own newly installed**
9 **service lines?**

10 A. Yes. As discussed by Mr. Francis, VEDO is proposing to install and own newly
11 constructed service lines as of the date that proposal is approved by the
12 Commission.

13
14 **Q. Is VEDO proposing to recover under the DRR any costs associated with the**
15 **installation of new service lines?**

16 A. No.

17
18 **Q. Is VEDO willing to make commitments to its customers related to the**
19 **System Integrity and Reliability proposals which are addressed by your**
20 **testimony even though they contemplate no deviation from the ratemaking**
21 **fundamentals found in Section 4909.15, Revised Code?**

22 A. Yes. As described in the Statement Required by Section 4901:1-19-05(C)(3),
23 O.A.C., Alt. Reg. Exhibit A describes the operational and financial need as well as
24 the Company and customer benefits for the various components of VEDO's
25 Alternative Rate Plan. There are commitments to customers implicit in VEDO's

1 proposals. As described in the Alternative Rate Plan filing requirements and
2 above, these include the improvement of the safety and reliability of service and
3 consequent maintenance savings attributable to reduced maintenance costs
4 resulting from the implementation of the Program.

5

6 **Q. Does this conclude your direct testimony?**

7 **A. Yes, at this time.**

DISTRIBUTION REPLACEMENT RIDER ("DRR")

FILING SCHEDULES

(ILLUSTRATIVE)

RATES Schedule 1

VECTREN ENERGY DELIVERY OF OHIO, INC.
Tariff for Gas Service
P.U.C.O. No. 3

Sheet No. 38
Original Page 1 of 1

DISTRIBUTION REPLACEMENT RIDER

APPLICABILITY

The Distribution Replacement Rider (DRR) is applicable to any Customer served under the Rate Schedules identified below.

- Rate 310 - Residential Sales Service
- Rate 315 - Residential Transportation Service
- Rate 320 - General Sales Service
- Rate 325 - General Transportation Service
- Rate 330 - Large General Sales Service
- Rate 341 - Dual Fuel Sales Service
- Rate 345 - Large General Transportation Service
- Rate 360 - Large Volume Transportation Service

DESCRIPTION

All applicable Customers shall be assessed either (a) a monthly charge in addition to the Customer Charge component of their applicable Rate Schedule, or (b) a volumetric charge applicable to each Ccf of metered gas usage each month, that will enable Company to recover (1) the return on and of annual costs incurred under a twenty (20) year program for the accelerated replacement and retirement of cast iron mains and bare steel mains and service lines, (2) individual riser replacements arising from Company's investigation of the installation, use, and performance of natural gas service risers, (3) the incremental costs attributable to assuming ownership of service lines installed or replaced by Company, and (4) the incremental cost of assuming maintenance responsibility for all service lines.

The DRR will be updated annually, in order to reflect the impact on Company's revenue requirement of net plant additions and other applicable, incremental costs, as offset by maintenance expense reductions attributable to the replacement program. Actual costs and actual recoveries are reconciled annually, with any under or over recovery being recovered or returned over the next twelve month period.

DISTRIBUTION REPLACEMENT RIDER CHARGE

The charges for the respective Rate Schedules are:

<u>Rate Schedule</u>	<u>\$ Per Month</u>	<u>\$ Per Ccf</u>
310, Residential Sales	\$0.89	
315, Residential Transportation	\$0.89	
320, General Sales (Group 1)	\$0.69	
320, General Sales (Group 2 and 3)		\$0.00516
325, General Transportation (Group 1)	\$0.69	
325, General Transportation (Group 2 and 3)		\$0.00516
330, Large General Sales		\$0.00243
341, Dual Fuel Sales	\$4.60	
345, Large General Transportation		\$0.00243
360, Large Volume Transportation		\$0.00205

Filed pursuant to the Finding and Order dated _____ in Case No. _____ of the Public
Utilities Commission of Ohio.

Issued: _____ Issued by: Jerrold L. Ulrey, Vice President Effective: _____

RATES Schedule 2

**VECTREN ENERGY DELIVERY OF OHIO
DISTRIBUTION REPLACEMENT RIDER
RATE SCHEDULE ALLOCATION FACTORS**

<u>Rate Schedule</u>	<u>Description</u>	<u>Mains Allocation Factors (a) (%)</u>	<u>Service Line Allocation Factors (b) (%)</u>
310/315	Residential Sales / Transportation	61.480%	85.184%
320/325	General Sales / Transportation	23.390%	14.180%
330/345	Large General Sales / Transportation	6.140%	0.439%
341	Dual Fuel	0.005%	0.002%
360	Large Volume Transportation	8.986%	0.194%
Total		<u>100.000%</u>	<u>100.000%</u>

(a) Total Component of Mains Allocation Factor as proposed in Case No. 07-1080-GA-AIR

(b) Total Service Lines Allocation Factor as proposed in Case No. 07-1080-GA-AIR

RATES Schedule 3

**VECTREN ENERGY DELIVERY OF OHIO
DISTRIBUTION REPLACEMENT RIDER
DERIVATION OF RATES**

<u>Rate Schedule</u>	<u>Mains Allocated DRR Revenue Requirement (a)</u>	<u>Services Allocated DRR Revenue Requirement (a)</u>	<u>(A) Total DRR Revenue Requirement</u>	<u>(B) Customer Count (b)</u>	<u>Proposed DRR per Customer Per Month (A)/(B)/12</u>	<u>(C) Annual Volumes (b)</u>	<u>Proposed DRR per Ccf (A)/(C)</u>
310/315	\$887,951	\$1,514,408	\$2,402,359	289,222	\$0.69		
320/325	\$337,816	\$252,099	\$589,915				
Group 1			\$131,070 (c)	15,780	\$0.69		
Group 2 & 3			\$458,844 (c)			88,917,449	\$0.00516
330/345	\$88,683	\$7,807	\$96,490			39,741,762	\$0.00243
341	\$66	\$40	\$106	2	\$4.60		
360	<u>\$129,789</u>	<u>\$3,456</u>	<u>\$133,245</u>			65,010,310	\$0.00205
Total	<u>\$1,444,304</u>	<u>\$1,777,810</u>	<u>\$3,222,113</u>				

(a) Reflects total revenue requirement multiplied by allocation factors.

(b) Witness KAH, Exhibit No. WPE-3.2a Revenue Proof (adjusted for Rate Schedule 360 migration)

(c) From RATES Schedule 3a

RATES Schedule 3a

**VECTREN ENERGY DELIVERY OF OHIO
DISTRIBUTION REPLACEMENT RIDER
ALLOCATION OF REVENUE REQUIREMENT - RATES 320 AND 325**

<u>Line</u>	<u>Description</u>	<u>Amount</u>		<u>Source</u>
1	Proposed DRR - Rate 310/315	\$0.69	Per Month	RATES Schedule 3
2	Proposed DRR - Rate 320/325 - Group 1	\$0.69	Per Month	Line [1]
3	Customer Count - Group 1	<u>15,780</u>		RATES Schedule 3
4	Revenue Requirement - Group 1 (1)	\$131,070		Line [2] x Line [3] x 12
5	Revenue Requirement - Total 320/325	<u>\$589,915</u>		RATES Schedule 3
6	Revenue Requirement - Group 2 & 3 (1)	<u><u>\$458,844</u></u>		Line [5] - Line [4]

Notes:
(1) to RATES Schedule 3

RATES Schedule 4

**VECTREN ENERGY DELIVERY OF OHIO
DISTRIBUTION REPLACEMENT RIDER
BILL IMPACTS**

<u>Rate Schedule</u>	<u>(A) Present Revenue (a)</u>	<u>(B) Previous DRR Revenue Amount</u>	<u>(C) Current DRR Revenue Amount (c)</u>	<u>(D) Incremental DRR Revenue Amount (C)-(B)</u>	<u>(E) % Increase (D)/(A)</u>	
310	\$246,361,134	\$0	\$1,851,009	\$1,851,009	0.75%	
315	\$20,767,513	\$0	\$551,350	\$551,350	2.65%	(b)
320	\$107,183,682	\$0	\$463,265	\$463,265	0.43%	
325	\$6,029,154	\$0	\$126,649	\$126,649	2.10%	(b)
330	\$4,701,749	\$0	\$10,213	\$10,213	0.22%	
345	\$4,203,843	\$0	\$86,277	\$86,277	2.05%	(b)
341	\$25,593	\$0	\$106	\$106	0.41%	
360	<u>\$6,112,792</u>	<u>\$0</u>	<u>\$133,245</u>	<u>\$133,245</u>	2.18%	(b)
Total	\$395,385,460	\$0	\$3,222,113	\$3,222,113	0.81%	

(a) Witness KAH, Exhibit No. WPE-3.2a Revenue Proof at Proposed Rates

(b) Does not include gas costs.

(c) From RATES Schedule 3, and shown by individual Rate Schedule.

**VECTREN ENERGY DELIVERY OF OHIO
DISTRIBUTION REPLACEMENT RIDER
DETERMINATION OF APPROVED RECOVERIES
(FIRST ANNUAL FILING)**

Line	(A) Month	(B) Allocation Factor (1)	(C) Approved Recoveries (2)
1	September-08	6.78%	\$218,312
2	October-08	8.15%	\$262,511
3	November-08	9.34%	\$301,006
4	December-08	10.16%	\$327,284
5	Subtotal (To RATES Schedule 5 Line 16) (SEA-1, p.8 of 14)		\$1,109,113
6	January-09	9.85%	\$317,393
7	February-09	10.84%	\$349,187
8	March-09	9.71%	\$312,907
9	April-09	8.50%	\$273,932
10	May-09	7.19%	\$231,775
11	June-09	6.60%	\$212,783
12	July-09	6.16%	\$198,326
13	August-09	6.73%	\$216,696
14	Subtotal (To RATES Schedule 5 Line 15) (SEA-1, p.10 of 14)		\$2,113,000

(1) Monthly volumes, as a percentage of annual volumes as per 2008 Budget.

(2) Allocation Factor in Column B times Revenue Requirement from ACCOUNTING Schedule 3a and 3b.

**VECTREN ENERGY DELIVERY OF OHIO
DISTRIBUTION REPLACEMENT RIDER
DETERMINATION OF APPROVED RECOVERIES
(SECOND ANNUAL FILING)**

Line	(A) Month	(B) Allocation Factor (1)	(C) Approved Recoveries (2)
1	September-09	6.78%	\$218,312
2	October-09	8.15%	\$262,511
3	November-09	9.34%	\$301,006
4	December-09	10.16%	\$327,284
5	Subtotal (To RATES Schedule 5 Line 16) (SEA-1, p. 10 of 14)		\$1,109,113
6	January-10	9.85%	\$317,393
7	February-10	10.84%	\$349,187
8	March-10	9.71%	\$312,907
9	April-10	8.50%	\$273,932
10	May-10	7.19%	\$231,775
11	June-10	6.60%	\$212,783
12	July-10	6.16%	\$198,326
13	August-10	6.73%	\$216,696
14	Subtotal (To RATES Schedule 5 Line 15)		\$2,113,000

(1) Monthly volumes, as a percentage of annual volumes as per 2008 Budget.

(2) Allocation Factor in Column B times Revenue Requirement from ACCOUNTING Schedule 3a and 3b.

**VECTREN ENERGY DELIVERY OF OHIO
DISTRIBUTION REPLACEMENT RIDER
REVENUE REQUIREMENT RECONCILIATION
(SECOND ANNUAL FILING)**

Line	(A) Period	(B) Approved Recoveries	(C) Actual Recoveries	(D) Variance Under/(Over) Recovery
15	---	---	---	---
16	9/1/2008-12/31/2008	\$1,109,113	\$1,109,113	\$0
17	Total	\$1,109,113	\$1,109,113	\$0
18	Adjustment To Be Allocated			\$0
		Approved Revenue Requirement from Most Recent DRR Filing	% of Total Line 19 & 20 / Line 21	Allocation of Variance (C) x Line 18
19	Mains	\$1,444,304	44.82%	\$0
20	Services	\$1,777,810	55.18%	\$0
21	Total	\$3,222,113	100.00%	
22	Variance - Mains Allocation (To ACCOUNTING Schedule 3a)			\$0
23	Variance - Service Lines Allocation (To ACCOUNTING Schedule 3b)			\$0

**VECTREN ENERGY DELIVERY OF OHIO
DISTRIBUTION REPLACEMENT RIDER
DETERMINATION OF APPROVED RECOVERIES
(THIRD AND SUBSEQUENT ANNUAL FILINGS)**

Line	(A) Month	(B) Allocation Factor (1)	(C) Approved Recoveries (2)
1	September-10	8.78%	\$218,312
2	October-10	8.15%	\$262,511
3	November-10	9.34%	\$301,006
4	December-10	10.16%	\$327,284
5	Subtotal (To RATES Schedule 5 Line 16)		<u>\$1,109,113</u>
6	January-11	9.85%	\$317,393
7	February-11	10.84%	\$349,187
8	March-11	9.71%	\$312,907
9	April-11	8.50%	\$273,932
10	May-11	7.19%	\$231,775
11	June-11	6.60%	\$212,783
12	July-11	6.16%	\$198,326
13	August-11	6.73%	\$216,696
14	Subtotal (To RATES Schedule 5 Line 15)		<u>\$2,113,000</u>

(1) Monthly volumes, as a percentage of annual volumes as per 2008 Budget.

(2) Allocation Factor in Column B times Revenue Requirement from ACCOUNTING Schedule 3a and 3b.

RATES Schedule 5
Page 2 of 2

**VECTREN ENERGY DELIVERY OF OHIO
DISTRIBUTION REPLACEMENT RIDER
REVENUE REQUIREMENT RECONCILIATION
(THIRD AND SUBSEQUENT ANNUAL FILINGS)**

Line	(A) Period	(B) Approved Recoveries	(C) Actual Recoveries	(D) Variance Under/(Over) Recovery
15	1/1/2009-8/31/2009	\$2,113,000	\$2,113,000	\$0
16	9/1/2009-12/31/2009	\$1,109,113	\$1,109,113	\$0
17	Total	\$3,222,113	\$3,222,113	\$0
18	Adjustment To Be Allocated			\$0
		Approved Revenue Requirement from Most Recent DRR Filing	% of Total Line 19 & 20 / Line 21	Allocation of Variance (C) x Line 18
19	Mains	\$1,514,738	44.82%	\$0
20	Services	\$1,864,508	55.18%	\$0
21	Total	\$3,379,246	100.00%	
22	Variance - Mains Allocation (To ACCOUNTING Schedule 3a)			\$0
23	Variance - Service Lines Allocation (To ACCOUNTING Schedule 3b)			\$0

ACCOUNTING Schedule 1

**VECTREN ENERGY DELIVERY OF OHIO
DISTRIBUTION REPLACEMENT RIDER
DERIVATION OF AFUDC RATES**

SEPTEMBER 1, 2008 THROUGH SEPTEMBER 30, 2008 (1)

<u>Line</u>		<u>Amount</u>	<u>Capitalization Ratios (%)</u>	<u>Cost Rate Percentage (%)</u>
1	Average Short-Term Debt & Computation of Allowance Text	S \$17,448,000		
2	Short-Term Interest			s 5.77%
3	Long-Term Debt	D \$108,232,000	54.99%	d 6.80%
4	Preferred Stock	P \$0	0.00%	p 0.00%
5	Common Equity	C <u>\$88,597,000</u>	<u>45.01%</u>	c 10.60%
6	Total Capitalization (3) + (4) + (5)	T \$196,829,000	100.00%	
7	Average CWIP Balance	W \$5,700,000		
8	Gross Rate for Borrowed Funds: $s(S/W) + d(D/T)(1 - S/W)$			9.96%
9	Rate for Other Funds: $(1 - S/W) * [p(P/T) + c(C/T)]$			<u>-9.83%</u>
10	Combined Rate (8) + (9)			0.12%

(1) AFUDC calculations will be shown for each month applicable to the DRR filing.

ACCOUNTING Schedule 2

**VECTREN ENERGY DELIVERY OF OHIO
DISTRIBUTION REPLACEMENT RIDER
SUMMARY OF DRR PROJECT COSTS**

Line	Capital Project Components	(A) Actual Completed Cost	Costs Incurred Through (DATE)		
			(B) Prior Period Balance	(C) Activity	(D) Current Period Balance
1	Cast Iron Mains	\$4,861,805	\$0	\$4,861,805	\$4,861,805
2	Bare Steel Mains	\$3,608,239	\$0	\$3,608,239	\$3,608,239
3	Bare Steel Services	\$8,405,910	\$0	\$8,405,910	\$8,405,910
4	Total	\$16,875,954	\$0	\$16,875,954	\$16,875,954
5	Less Accumulated Depreciation				\$421,899
6	Net Plant				\$16,454,055

ACCOUNTING Schedule 3a

**VECTREN ENERGY DELIVERY OF OHIO
DISTRIBUTION REPLACEMENT RIDER
ANNUAL REVENUE REQUIREMENT - MAINS**

<u>Line</u>	<u>Revenue Requirement:</u>	
1	Construction Costs	\$8,470,044
2	Less: Accumulated Depreciation	<u>(\$211,751)</u>
3	Net Construction Costs	\$8,258,293
4	Cost of Capital	<u>9.36%</u>
5	Return Amount	\$772,976
6	Income Tax Factor	<u>0.5385</u>
7	Income Tax (Gross)	<u>\$416,218</u>
8	Revenue Requirement	\$1,189,194
9	Property Tax Requirement	\$99,223
10	Depreciation	\$211,751
11	Maintenance Savings	(\$55,865)
12	Variance	<u>\$0</u>
13	Total Revenue Requirement - Mains	<u>(To RATES Schedule 3)</u> <u><u>\$1,444,304</u></u>

ACCOUNTING Schedule 3b

**VECTREN ENERGY DELIVERY OF OHIO
DISTRIBUTION REPLACEMENT RIDER
ANNUAL REVENUE REQUIREMENT - SERVICE LINES**

<u>Line</u>	<u>Revenue Requirement:</u>	
1	Construction Costs	\$8,405,910
2	Less: Accumulated Depreciation	<u>(\$210,148)</u>
3	Net Construction Costs	\$8,195,762
4	Cost of Capital	<u>9.36%</u>
5	Return Amount	\$767,123
6	Income Tax Factor	<u>0.5385</u>
7	Income Tax (Gross)	<u>\$413,066</u>
8	Revenue Requirement	\$1,180,190
9	Property Tax Requirement	\$98,472
10	Depreciation	\$210,148
11	Incremental O&M	\$297,000
12	Maintenance Savings	(\$8,000)
13	Variance	<u>\$0</u>
14	Total Revenue Requirement - Service Lines (To RATES Schedule 3)	<u><u>\$1,777,810</u></u>

DISTRIBUTION REPLACEMENT RIDER
Estimated Margin Increases by Rate Schedule *

Year	1	2	3	4	5	6	7	8	9	10
Revenue Requirement	\$3,379,246	\$6,689,460	\$9,930,641	\$13,102,790	\$16,205,906	\$19,239,990	\$22,205,041	\$25,101,060	\$27,928,046	\$30,685,999
Rate Schedule:										
310/315	2.54%	5.04%	7.48%	9.87%	12.21%	14.50%	16.74%	18.92%	21.06%	23.14%
320/325	1.92%	3.80%	5.64%	7.45%	9.21%	10.93%	12.61%	14.25%	15.84%	17.40%
330/345	2.02%	3.99%	5.91%	7.79%	9.62%	11.41%	13.16%	14.85%	16.51%	18.11%
341	2.67%	5.28%	7.84%	10.34%	12.79%	15.18%	17.51%	19.78%	22.00%	24.16%
360	2.29%	4.52%	6.70%	8.83%	10.91%	12.94%	14.91%	16.83%	18.70%	20.52%
Year	11	12	13	14	15	16	17	18	19	20
Revenue Requirement	\$33,374,921	\$35,994,809	\$38,545,865	\$41,027,489	\$43,440,280	\$45,784,038	\$48,058,764	\$50,284,458	\$52,401,119	\$54,488,747
Rate Schedule:										
310/315	25.18%	27.16%	29.09%	30.97%	32.80%	34.58%	36.30%	37.98%	39.60%	41.18%
320/325	18.92%	20.40%	21.84%	23.24%	24.59%	25.91%	27.19%	28.42%	29.62%	30.78%
330/345	19.68%	21.19%	22.66%	24.09%	25.47%	26.80%	28.09%	29.34%	30.54%	31.69%
341	26.26%	28.31%	30.30%	32.24%	34.12%	35.94%	37.70%	39.41%	41.08%	42.66%
360	22.29%	24.00%	25.66%	27.27%	28.83%	30.33%	31.79%	33.19%	34.54%	35.84%

*Includes impact of GRET

DISTRIBUTION REPLACEMENT RIDER
Estimated Residential Customer Bill Impacts *

Year	1	2	3	4	5	6	7	8	9	10
Rate 310/315 Revenue Requirement	\$2,519,515	\$4,988,437	\$7,408,769	\$9,774,508	\$12,091,656	\$14,359,213	\$16,574,177	\$18,739,550	\$20,854,332	\$22,918,522
Annual Dollars - Bill Impact	\$8.71	\$17.25	\$25.61	\$33.80	\$41.81	\$49.84	\$57.31	\$64.79	\$72.10	\$79.24
Year	11	12	13	14	15	16	17	18	19	20
Rate 310/315 Revenue Requirement	\$24,932,120	\$26,895,126	\$28,807,541	\$30,669,365	\$32,480,596	\$34,241,238	\$35,951,285	\$37,610,741	\$39,219,606	\$40,777,880
Annual Dollars - Bill Impact	\$86.20	\$92.99	\$99.60	\$106.04	\$112.30	\$118.39	\$124.30	\$130.04	\$135.60	\$140.99

*Includes impact of GRET

**VECTREN ENERGY DELIVERY OF OHIO
CASE NOS. 07-1080-GA-AIR AND 07-1081-GA-ALT
ACCELERATED INFRASTRUCTURE REPLACEMENT PROGRAMS
COST RECOVERY OUTSIDE OF FULL RATE CASE**

Company	State	Status	Start Date
Alagasco (1)	Alabama	Approved	1990
Mobile Gas (1)	Alabama	Approved	2002
CenterPoint Energy	Arkansas	Approved	2001
Atlanta Gas Light	Georgia	Approved	1998
Duke Energy	Kentucky	Approved	2002
Atmos (1)	Louisiana	Approved	1999
CenterPoint Arkla (1)	Louisiana	Approved	2004
Northern Utilities	Maine	Approved	2005
CenterPoint Minnegasco (1)	Minnesota	Approved	2005
Atmos (1)	Mississippi	Approved	2005
Laclede Gas	Missouri	Approved	1990
Missouri Gas Energy	Missouri	Approved	2006
Montana-Dakota Utilities (1)	Montana	Approved	2005
Northern Utilities	New Hampshire	Completed	1992
Elizabethtown Gas	New Jersey	Approved	2006
Duke Energy	Ohio	Approved	2002
CenterPoint Arkla (1)	Oklahoma	Approved	2004
Northwest Natural	Oregon	Approved	2004
Piedmont Gas (1)	South Carolina	Approved	2005
South Carolina Electric & Gas (1)	South Carolina	Approved	2005
Nashville Gas	Tennessee	Completed	1991
Atmos Energy (2)	Texas	Approved	2003
CenterPoint Energy (2)	Texas	Approved	2003
Oneok (2)	Texas	Approved	2003
Roanoke Gas	Virginia	Approved	1999
Washington Gas (1)	Virginia	Approved	2007

Notes:

(1) Recovery via Rate/Earnings Stabilization mechanism, which adjusts rates annually to meet pre-established revenue and return targets, and utilizes expedited revenue requirement and cost of service studies.

(2) Recovery via Gas Reliability Infrastructure Program ("GRIP"), which allows natural gas utilities the opportunity to include in their rate base annually approved capital costs incurred in the prior calendar year. Utilities that enter the program are required to file a complete rate case once every five years.

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Vectren)	
Energy Delivery of Ohio, Inc. for Authority)	
To Amend Its Filed Tariffs to Increase the	)	Case No. 07-1080-GA-AIR
Rates and Charges for Gas Service and)	
Related Matters.)	

In the Matter of the Application of Vectren)	
Energy Delivery of Ohio, Inc. for Approval	)	Case No. 07-1081-GA-ALT
Of an Alternative Rate Plan for a Distribution)	
Replacement Rider to Recover the Costs of)	
A Program for the Accelerated Replacement)	
Of Cast Iron Mains and Bare Steel Mains)	
And Service Lines, a Sales Reconciliation)	
Rider to Collect Differences between Actual)	
And Approved Revenues, and Inclusion in)	
Operating Expense of the Costs of Certain)	
System Reliability Programs.)	

**DIRECT TESTIMONY
OF DANIEL G. BERRY
ON BEHALF OF
VECTREN ENERGY DELIVERY OF OHIO, INC.**

☐ Management policies, practices, and organization
☒ Operating income
☐ Rate base
☐ Allocations
☐ Rate of return
☐ Rates and tariffs
☒ Other – ARP-System Integrity and Reliability Programs

December 4, 2007

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Vectren)	
Energy Delivery of Ohio, Inc. for Authority)	
To Amend Its Filed Tariffs to Increase the	)	Case No. 07-1080-GA-AIR
Rates and Charges for Gas Service and)	
Related Matters.)	

In the Matter of the Application of Vectren)	
Energy Delivery of Ohio, Inc. for Approval	)	Case No. 07-1081-GA-ALT
Of an Alternative Rate Plan for a Distribution)	
Replacement Rider to Recover the Costs of)	
A Program for the Accelerated Replacement)	
Of Cast Iron Mains and Bare Steel Mains)	
And Service Lines, a Sales Reconciliation)	
Rider to Collect Differences between Actual)	
And Approved Revenues, and Inclusion in)	
Operating Expense of the Costs of Certain)	
System Reliability Programs.)	

DANIEL G. BERRY

INDEX

DESCRIPTION OF TESTIMONY	TESTIMONY PAGES
Introduction of Witness	1-3
System Integrity and Reliability Program	3-5
Other Distribution Maintenance Programs	
Regulator Station Maintenance	5-9
Right of Way Maintenance	10-11
Automated Crew Call-Out	11-13
Ohio Gas Minimum Service Standards	13-15
Propane Air Facilities	15-17

DIRECT TESTIMONY OF DANIEL G. BERRY

Q. Please state your name, business address, and occupation.

A. My name is Daniel G. Berry. My business address is 6500 Clio Road, Centerville, Ohio 45459. I am the President and General Manager for Vectren Energy Delivery of Ohio, Inc. ("VEDO") which includes the gas operations for the VEDO service territory.

Q. What are your duties in your present position?

A. As President of VEDO, I have overall responsibility for the operation and maintenance of VEDO gas transmission and distribution systems.

Q. How long have you been employed by VEDO?

A. My career in the utility industry began in 1991 with Dayton Power & Light (DP&L) where I was employed until Vectren purchased the gas assets from DP&L in 2000. I have been employed by VEDO since 2000. While working in the utility industry, I have served in engineering, operations and management roles. I am a member of the American Gas Association (AGA) and am a member and participant of the Distribution Construction and Maintenance Committee of the AGA.

Outside of my VEDO responsibilities, I serve on the Miami Valley Fair Housing Center's Board of Directors and the Board of Trustees of the United States Air and Trade Show. I am also a member of the Dayton Business Committee, Miami Valley Regional Planning Commission and University of Dayton President's Corporate Executive Council.

Q. What is your educational background?

A. I have a Bachelor of Science degree in Mechanical Engineering from Ohio State University and a Master of Arts degree in Management from Antioch University McGregor. I am a registered professional engineer in the State of Ohio.

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Q. Have you previously testified before this Commission?

A. No.

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

A. The purpose of my testimony is to support various schedules in this proceeding that pertain to adjustments to operating income. These schedules are related to VEDO's maintenance and operating programs, improvements to regulator station maintenance programs, pipeline inspection programs, and VEDO's pipeline right-of-way clearance program. I will also discuss an improved automated crew call-out program, maintenance and training programs relating to VEDO's gas storage facilities and steps necessary to ensure the security of these facilities. Finally, I will describe how the implementation of the Public Service Commission of Ohio's (PUCO) minimum gas service standards (MGSS) impacts VEDO's operations.

Q. What areas of VEDO's rate application are you responsible for in this proceeding?

A. I am responsible for the explanation of certain adjustments contained within the PUCO's Standard Filing Requirements (SFR). Specifically, I am responsible for the adjustments on Lines 1, 2, 4, and 5 of Schedule C-3.12 which were prepared by me or under my direction and supervision.

Specifically, the adjustments on Schedule C-3.12 I am responsible for cover the following topics:

- Line 1 – Gas Distribution System Maintenance Program
- Line 2 – Right-of-Way ("ROW") Clearance Program
- Line 4 – Other Distribution Maintenance Programs
- Line 5 – Propane Air Facilities

VEDO Witness William S. Doty is responsible for Lines 3, 6, and 7 of Schedule C-3.12.

Additionally, I am responsible for the portions of Alternative Rate Plan, Alt. Reg. Exhibits A and B relevant to the System Integrity and Reliability Programs for which I am sponsoring testimony which are companion exhibits to the "C" Schedules identified herein. Finally I share responsibility for the Statement Required by Section 4901:1-19-05(C)(3) addressing to commitments related to VEDO's alternative regulation proposals.

Q. Please describe Schedule C-3.12.

A. Schedule C-3.12 is an adjustment to test year operating income to annualize expenses associated with operational programs and employee additions to support these programs.

Q. With respect to VEDO's System Integrity and Reliability Program Alternative Rate Plan proposal, does the proposal seek forms of rate setting alternative to that found in section 4909.15 of the Revised Code?

A. No. The Plan seeks annualization of budgeted test year expenses and is filed as an alternative regulation proposal to emphasize the importance of the safety and maintenance-related activities funded by these expenses and to recognize that these Programs are in a ramp up phase during the test year. It does not represent a deviation from traditional ratemaking. Because the Programs being implemented in the test year are dependent in terms of timing of expenditures, on both weather and the availability of internal and external labor resources, the request for alternative regulation recognizes the need for support and recovery of costs that may not completely fall neatly within traditional ratemaking.

I.

SYSTEM INTEGRITY AND RELIABILITY PROGRAM

(Gas Distribution System Maintenance and Right-of-Way Clearance Programs)

1 **Q. Please explain the adjustments in Schedule C-3.12, Lines 1 and 2.**

2

3 A. The adjustments in Schedule C-3.12, Lines 1 and 2 reflect the revisions that are
4 necessary to operating income to reflect known and measurable changes in the
5 test year as a result of VEDO's System Integrity and Reliability Program
6 ("Program") which is comprised of several individual programs. These include:
7 Gas Distribution System Maintenance Program, Right-of-Way ("ROW") Clearance
8 Program, and an Aging Workforce Program. My testimony provides a description
9 of the first two Programs. VEDO Witness William S. Doty provides a description of
10 the Aging Workforce Program. These Programs are also described in detail in
11 Applicant's Standard Filing Requirements for Alternative Rate Plan Proposal,
12 Exhibits A and B as filed with the Commission on November 20, 2007.

13

14 **Q. Please provide background on what VEDO has been doing to improve,**
15 **maintain and enhance operations and maintenance activities.**

16

17 A. Historically, VEDO has undertaken a multifaceted approach toward maintaining
18 and improving the integrity and reliability of its gas system. This approach has
19 included organizational enhancements focused on bringing specific skill sets into
20 key processes and positions in gas engineering and gas dispatching. There have
21 also been key capital investments in both distribution and transmission
22 infrastructure and a move toward greater emphasis on preventative maintenance
23 programs.

24

25 VEDO's efforts in gas operations and maintenance have been focused and
26 diligent. However, after engaging in a self critical process to find any gaps in its
27 processes and determine how VEDO can provide better service, the Company
28 concluded that certain operational practices can be improved. This conclusion
29 results in modifications to existing programs, the expansion of the scope of certain
30 programs, and the implementation of new programs.

31

32 **Q. Please describe how VEDO assessed current utility industry practices**
33 **related to maintenance and reliability improvement programs.**

34

1 A. In addition to staying abreast of industry strategies via utility conferences and
2 American Gas Association (AGA) committee networking, VEDO hosted a series of
3 industry consultants and solution providers to offer presentations and discussion
4 on engagements underway across the industry. This six month process was then
5 followed by a number of utility site visits where key VEDO operations management
6 team personnel visited their peers at utilities that appeared to have further
7 advanced their own preventative maintenance strategies. The combined results of
8 these efforts solidified and corroborated VEDO's transition towards an increased
9 preventative and proactive operations and maintenance approach, with the first
10 phase being the development and proposed implementation of the maintenance
11 programs described herein.

12
13 **Q. Why does VEDO believe it is important to enhance its current maintenance**
14 **program and practices?**

15
16 A. The assessment revealed that, like many utilities within Ohio and around the
17 country, VEDO is increasingly sensitive to the age of its facilities. Operating
18 philosophies and practices with respect to aging equipment and infrastructure and
19 personnel need to be more structured, proactive and prevention focused. Going
20 forward, periodic maintenance will be used to better manage aging facilities.

21
22 **Gas Distribution Maintenance Program (Regulator Station Maintenance,**
23 **Commercial and Industrial Regulator Stations, Regulator Station Vaults, Curb Box**
24 **Maintenance Programs)**

25
26 **Q. Please provide a brief overview of VEDO's gas system and service territory.**

27
28 A. VEDO is largely comprised of many independent gas distribution systems serving
29 customers throughout much of the western and central part of Ohio. The utility
30 transmits and distributes natural gas to approximately 315,000 residential,
31 commercial, and industrial customers in 17 counties. VEDO also has its own
32 propane production facilities. Most of VEDO's assets were acquired by Vectren
33 Corporation from The Dayton Power and Light Company in 2000. Many of the
34 communities served by VEDO are small to medium sized towns located

1 throughout the territory. VEDO operates and maintains approximately 5,466 miles
2 of transmission and distribution pipelines, 1,736 regulator stations, 384 regulator
3 station vaults, and, as mentioned, approximately 315,000 customer services. My
4 testimony sets forth programs designed to systematically address needs
5 throughout the system. These programs include: Regulator Station Maintenance,
6 Pipeline Inspection, Right-of-Way Maintenance, and Automated Call-Out
7 Programs.

8
9 **Q: On page 20 of the Applicant's Alternative Rate Plan, Alt. Reg. Exhibit A, it**
10 **states, "VEDO operates and maintains approximately 5,409 miles of**
11 **transmission and distribution pipelines [. . .]." Is this a correct number?**
12

13 **A:** The number of 5,409 miles is outdated. As reported to the Department of
14 Transportation, VEDO currently operates and maintains 5,466 miles of
15 transmission and distribution pipelines.
16

17 **Q. What is VEDO's overall objective in implementing these preventative**
18 **programs?**
19

20 **A.** Every one of these programs will accomplish at least one of the following
21 purposes: (1) preservation of existing facilities through greater maintenance; (2)
22 enhanced reliability through activities that reduce the likelihood of facility failures;
23 and/or (3) improved public and employee safety.
24

25 **Q. Please describe VEDO's proposed regulator station maintenance activities.**
26

27 **A.** A regulator station is generally designed to provide pressure and flow control from
28 a high pressure pipeline or main into a lower pressure pipeline or main. In
29 functional terms, a regulator station reduces gas pressure in conjunction with
30 distributing gas flow in a manner that meets downstream customer demand. As
31 such, regulator stations are critical assets to the safe movement of natural gas
32 throughout the transmission and distribution systems.
33

1 Based on many factors, such as frequency of operation and maintenance
2 functions, historical operating experience, location, security requirements and size,
3 regulator stations may be fenced and need to have the ground covered with rock.
4 Over time, the fencing and rocked grounds are exposed to weather and normal
5 wear and tear from equipment, traffic, and workers. Therefore, maintenance must
6 be performed to ensure facility performance as well as continued access and
7 security. A review of VEDO's current regulator stations indicates there are
8 approximately 444 regulator stations with rock and/or fence which total 24,538
9 lineal feet of fencing and 553,111 square feet of surface area requiring rock.

10
11 VEDO is implementing more formal preventative maintenance programs
12 associated with rock and fence maintenance at its regulator stations. The rock
13 maintenance program includes a scheduled approach to repair erosion, fill holes,
14 protect pipe, and ensure adequate coverage. The fence maintenance program
15 utilizes a similar approach to repair damaged mesh, paint, and repair any other
16 structural problems.

17
18 In addition to fencing and rock maintenance at regulator station facilities, VEDO is
19 also implementing a formal program for the maintenance and repair of buildings
20 within regulator stations which would include repairs to the roofs, gutters, doors,
21 asphalt and other general building maintenance. VEDO operates 198 stations with
22 facilities that need this type of routine maintenance. These stations vary in size
23 and the decision to install buildings is typically driven by the need for noise control,
24 weather conditions, or security issues. These programs place greater emphasis
25 on planned preventative maintenance which the need for significant expenditures
26 over time should minimize maintenance.

27
28 **Q. Will VEDO perform any other type of regulator station maintenance**
29 **activities?**

30
31 **A.** Yes. VEDO is establishing a program to inspect and remediate its commercial and
32 industrial (C&I) regulator stations as well as a program to inspect and remediate
33 our regulator station vaults. In addition, VEDO proposes establishing a curb box
34 maintenance program.

1 Q. Please describe these programs.

2

3 A. In addition to the 1,736 distribution system regulators, VEDO maintains
4 approximately 4,041 C&I customer regulator stations. While generally designed
5 and built to withstand all types of weather, the regulator station assembly is subject
6 to atmospheric corrosion associated with prevailing weather conditions. In some
7 cases, nearby commercial and/or industrial processes may worsen the effect by
8 introducing airborne contaminants that can result in an even greater corrosive
9 environment. While these regulators serve one customer load, the load and
10 pressure requirements are similar in application to the distribution system
11 regulators. Inspections will identify and remediate conditions of the C&I regulator
12 stations such as inlet/outlet pressure, pressure relief device, safeguards, control
13 lines, vent caps, and pipe supports.

14

15 Because regulator stations require significant initial capital investment, painting the
16 entire assembly is prudent to provide effective corrosion control in order to ensure
17 the asset is in service through its expected life.

18

19 VEDO also is establishing a preventative maintenance program associated with
20 underground regulator vaults. VEDO has 384 underground regulator vaults in the
21 distribution system. These vaults are often in traffic areas and degrade due to age,
22 vibration and moisture. To preserve the useful life and defer capital costs of
23 relocating the regulator station aboveground, a five year cycle of inspection and
24 remediation is planned. Inspections will identify and remediate conditions of the
25 vault such as security, entrance way, ceiling, wall sides, floor, seals around pipe
26 entrance/exit, venting, drainage, and susceptibility to flooding.

27

28 VEDO's pressure regulating stations, including C&I regulating stations, regulator
29 vaults and curb boxes are critical assets to the gas distribution system. These
30 activities place greater emphasis on planned preventative maintenance of these
31 facilities and reduce future maintenance costs.

32

33 Throughout VEDO's territory, there are approximately 100,600 customers with
34 indoor meters. All of these customers have curb boxes which are devices that rest

1 on top of the customer service curb valve and provide above ground access to the
2 valve. These valves are used for activating and deactivating service and are
3 important for emergency shutoff. This program will provide for verification of the
4 curb box location and ensure valve access. Ensuring valve access can mean
5 relocating the valve/curb box, repairing damaged curb boxes, and/or protecting
6 existing curb boxes. VEDO implementing this program for all 100,600 indoor
7 meters where maintaining curb valve access is more critical. VEDO will conduct
8 this program on a ten year cycle.
9

10 **Q. What is the cost associated with these programs?**
11

12 A. All of these programs will be performed on a five year cycle except for the curb box
13 maintenance program which will be a ten year cycle. The total annual cost of the
14 regulator station maintenance is \$304,104 and the adjustment requested to
15 annualize this expense in the test year is \$202,736. This is reflected on Page 1,
16 Lines 4 and 5 of WPC-3.12.
17

18 VEDO has 4,041 commercial and industrial regulator stations. The average cost
19 to inspect and remediate a single regulator station is \$730. The annual cost of this
20 program is \$589,986. The annualized adjustment requested in this case is
21 \$368,740, as noted on Page 1, Line 6 of WPC-3.12.
22

23 VEDO currently has 384 regulator station vaults and piping. The annual cost of
24 the program is \$68,736 and the annualized adjustment requested is \$45,824, as
25 noted on Page 1, Line 7 of WPC-3.12.
26

27 The annual cost associated with the curb box maintenance program is \$251,653.
28 The annualized adjustment requested in this case is \$176,157, as noted on Page
29 1, Line 8 of WPC-3.12.
30

31 As reflected on Schedule C-3.12, Line 1, the total adjustment associated with
32 these distribution maintenance programs is \$793,457.
33

34 **Right-of-Way Maintenance**

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Q: Please explain the adjustments in Schedule C-3.12 Line 2.

A: Schedule C-3.12, Line 2 reflects an adjustment of \$542,849 to annualize the test period expense for VEDO's right-of-way maintenance programs. VEDO is implementing a right-of-way maintenance program similar to its current practices under its transmission integrity management program. The program consists of identifying pipelines, both non-integrity management transmission pipe and distribution pipe that reside within a utility defined or obtained easement that is not maintained regularly by the property owner, and after researching the easement boundaries, clearing any heavy growth within these areas and maintaining any previously cleared areas through an annual mowing and spraying program.

The program will be separated into a non-integrity management transmission right-of-way maintenance program and a distribution right-of-way maintenance program.

Q. Why is a right-of-way maintenance program necessary?

A. A right-of-way maintenance program is necessary because it allows VEDO to more efficiently maintain its facilities, enhance safety by providing easier access in case of an emergency, makes the identification of leakage easier, increases the reliability of service through more efficient surveys, patrols and supports public awareness requirements through better pipeline identification.

Q. What is the cost for the distribution pipeline right-of-way maintenance program?

A. VEDO has 5,183 miles of gas distribution pipelines throughout its territory. A majority of these pipelines reside within an existing road right-of-way or on a maintained residential or commercial property. VEDO estimates based on operational experience that only 5% (259 miles) of its total distribution pipeline facilities will require annual right-of-way maintenance. VEDO's right-of-way maintenance is being implemented on a 10 year maintenance cycle. Maintenance activities and associated costs will consist of clearing and maintaining rights-of-

1 way, researching, documenting and mapping easements, surveying boundaries,
2 installing concrete right-of-way edge markers, and spraying. The annual right-of-
3 way maintenance cost for the gas distribution pipelines will be \$393,126. The
4 adjustment required to reflect implementation of this program and annualize the
5 test year expense is \$224,643, as noted on Page 1, Line 11 of WPC-3.12.

6
7 **Q. What is the cost for the non-integrity management transmission pipeline**
8 **right-of-way maintenance program?**

9
10 A. VEDO has 226.5 miles of gas transmission pipelines that are not included in the
11 integrity management program. These pipelines are not within a high
12 consequence area (HCA) and therefore do not require the assessments that are a
13 part of the integrity management program and, as such, have not undergone the
14 same level of right-of-way maintenance. Because these pipelines are not in
15 HCA's, they are almost entirely in rural, less maintained areas. VEDO is using a
16 10 year maintenance cycle on these transmission pipelines. To maintain the
17 transmission pipelines not covered by the integrity management program will
18 require an annual cost increase of \$721,215. The adjustment amount required to
19 implement this program and annualize the test year expense is \$318,205, as noted
20 on Page 1, Line 10 of WPC-3.12.

21
22 **Q. On page 3 of the Applicant's Alternative Rate Plan, Alt. Reg. Exhibit A, it**
23 **states, "As of the end of 2006, VEDO had in service a total of 5,182 miles of**
24 **distribution main." Is this a correct number?**

25
26 A. As reported to the Department of Transportation, VEDO currently has in service
27 5,183 miles of gas distribution pipelines.

28
29 **Q: Please explain the adjustments in Schedule C-3.12, Line 4.**

30
31 A. The adjustments in Schedule C-3.12, Line 4 totaling \$402,298 reflect the revisions
32 necessary to adjust operating income base revenue to reflect known changes in
33 the test year as a result of VEDO's new automated crew call out program and the

1 impact of Ohio's Minimum Gas Service Standards("MGSS") and aerial pipeline
2 patrols related to the Gas Distribution and Maintenance Program.

3
4 **Q. Please describe VEDO's current crew call-out process.**

5
6 A. Currently, the processes around emergency crew callout are time consuming and
7 manually intensive. Administrators in the field offices are responsible for updating
8 and prioritizing call rosters as well as ensuring that these rosters are
9 communicated to the appropriate on-call personnel on a weekly or bi-weekly
10 interval. In the event of an emergency, all calls are manually generated until the
11 appropriate crews are assembled.

12
13 **Q. Please describe VEDO's new automated crew call-out program.**

14
15 A. The automated emergency crew callout system automatically calls in crews in a
16 manner that is consistent with bargaining unit agreements and allows the crews to
17 be mobilized much faster than the current manual call process. It has greater
18 accuracy, can track response history, and allows calls to be placed to crew
19 members simultaneously. In addition to the automated callout system, VEDO is
20 proposing to add an after-hour Supervisor to provide supervision to VEDO field
21 employees working second and third shifts, as well as weekends and holidays.

22
23 **Q. What customer and company benefits will be achieved as a result of this**
24 **program?**

25
26 A. By automating this process and providing after hours supervision, VEDO will be
27 able to achieve the following objectives:

- 28 • Reduce time required to dispatch emergency response crew(s)
- 29 • Improve overtime response rates for after-hour emergencies
- 30 • Decrease grievances associated with after-hour emergency call outs
- 31 • Provide management with reports to continually improve the process

32
33 **Q. What are the costs associated with this program?**
34

1 A. VEDO's share of the total annual Vectren company-wide cost of the automated
2 crew call-out program is \$15,000, which consists of annual technology
3 maintenance fees and contractual user fees. The annual cost of adding the after-
4 hour Supervisor is \$83,070. The annualized expense adjustment for these two
5 program components is \$57,208, as noted on Page 1, Lines 17 and 18 of WPC-
6 3.12.

7
8 **Q: Have the PUCO's MGSS rules had an impact on VEDO's operations?**

9
10 A: Yes. On January 18, 2006, the PUCO issued an Opinion and Order adopting
11 MGSS rules. These rules, and in particular, Rule 4901:1-13-05, Minimum Service
12 Levels, have had a significant cost impact on VEDO.

13
14 **Q: In what way do the MGSS rules impact VEDO's costs?**

15
16 A: Essentially, there are two primary ways the MGSS rules add costs to our business.
17 Rule 4901:1-13-05 requires LDCs to provide customers with an expected arrival
18 time window of four hours or less for all appointments requiring the customer to be
19 present. On a calendar monthly basis, each LDC must complete 95% of the
20 scheduled appointments with its customers. Because of this new requirement,
21 VEDO is forced to create planned service routes that are more inefficient. This is
22 true for both initially planned routes and mini-optimizations (mini-optimizations are
23 smaller scheduling adjustments made periodically throughout a workday to try to
24 maximize VEDO's resources). Also, because it is difficult for service technicians to
25 be "exactly" on schedule relative to the scheduling plan (i.e. when a service
26 technician arrives on a jobsite, the actual work is more than expected and the job
27 takes longer than estimated) manual dispatching intervention is often required to
28 ensure that the closest technician arrives in a manner that satisfies the four hour
29 appointment requirement. The net impact is an increase in VEDO's dispatching
30 and field costs.

31
32 Two dispatchers were hired in 2006 to compensate for the increased scheduling
33 workload. These two additional employees are in the 2007 budget and therefore,
34 this cost is already covered by the Test Year. To calculate the cost impact to the

1 initial planning of routes and increase in field costs, VEDO compared actual
2 budget costs in March through June of 2006 when there were no MGSS rules with
3 an expected budget for the same time period in 2007. These months were chosen
4 to factor-out the impact of the bad weather in February 2007.

5
6 **Q: Using this method of analysis, what is the impact of the new MGSS rules?**

7
8 A: The total annual impact to VEDO as a result of the MGSS rules implementation
9 was \$632,686.

10
11 **Q: How exactly was this number calculated?**

12
13 A: DGB-Exhibits 1, 2, and 3 provide a step-by-step explanation of how this figure was
14 calculated. DGB-Exhibit 1 demonstrates how the 2007 expected budget without
15 MGSS was created using standard inflation rates of 3.5% for labor and 2.5% for all
16 other factors. DGB-Exhibit 2, demonstrates how an average percent increase to
17 the cost per order was calculated using the March through June 2006 and 2007
18 numbers. This percentage increase is attributable to the new MGSS rules.
19 Finally, DGB-Exhibit 3 shows the month-by-month impact of the new MGSS rules
20 by multiplying the 2007 monthly budget numbers by the percent increase.

21
22 **Q: Is the \$632,686 MGSS impact figure cited above the actual test year amount**
23 **experienced by VEDO?**

24
25 A: No. The new MGSS rule impact for three months in 2007 (June, July, and August)
26 was captured in the test year. Consequently, no adjustment for those three
27 months is required. As reflected in DGB-Exhibit 3, these figures for June, July,
28 and August 2007 were \$60,599, \$59,067 and \$62,533 respectively.

29
30 **Q: What is the amount included in operating expenses as a result of the new**
31 **MGSS rules?**

32
33 A: The adjustment amount requested to annualize this expense is \$338,032, as noted
34 on Page 1, Line 19 of WPC-3.12.

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Q. Please describe the additional pipeline inspection activities VEDO will perform to protect the condition of its facilities.

A. Consistent with good utility practices, VEDO will also implement a routine practice of flyover inspections for its gas transmission system. Flyover inspections would be conducted for approximately 283 miles of natural gas transmission pipelines and 23 miles of propane transmission pipelines. Flyover inspections permit visual evaluation of right-of-way conditions. These inspections assist in evaluating development, construction and other public activities adjacent to our lines that must be assessed as part of our pipeline safety programs. The lay-out of these pipelines is geographically dispersed and requires over six hours of in-flight time in order to cover the pipelines to review them for encroachments, third party activity near a pipeline, vegetation or environmental changes and other facility-related inspections. The patrol will be done twice a year.

Q: What is the amount included in operating expenses as a result of the aerial pipeline patrols?

A: The incremental cost to annualize expense for the two aerial patrols per year is \$7,059, as noted on Page 1, Line 20 of WPC-3.12.

Q: Please explain the adjustments in Schedule C-3.12, Line 5.

A: VEDO is engaging in maintenance programs relating to its propane plant facilities by adding four programs. These programs include: Propane Air Training Program; Security Improvements; Breaker and Transformer Inspection Program; and Propane Storage Painting Program. Only two of these Programs, Propane Air Training and Security Improvements, have associated expenses.

Q. Please describe the Propane Training Program.

A. VEDO is expanding the existing general propane training activities to incorporate plant specific operational guidelines, with hands-on training for potential operators.

1 It is prudent to plan for in-depth training of new operators since many of our
2 current operators, with 25-35 years operational experience, qualify for retirement
3 and their departure will introduce a largely untrained workforce to operate our
4 propane facilities. VEDO proposes to hire an industry expert to document our
5 existing operational process, benchmark against general industry practices and
6 guidelines, and train all of the propane operators on the operational processes
7 tailored for each propane plant. This training may also benefit experienced
8 operators, as new, more efficient, operational procedures are identified. The cost
9 to develop the initial training is \$3,500 which will be amortized over four years.
10 The cost for the vendor to conduct the training annually will be \$6,000. The total
11 adjustment required to annualize this amount in the test period is \$3,438, as noted
12 on Page 1, Line 22 of WPC-3.12.

13
14 **Q: Please describe the necessary security improvements you mentioned.**

15
16 A: VEDO expects to incur some new security expenses to comply with the
17 Department of Homeland Security's Final Rule establishing anti-terrorism
18 standards for chemical facilities (DHS CFAT rule). The effective date of the rule
19 was June 8, 2007; however, Appendix A's "Chemical of Interest List" has not yet
20 been finalized. Propane is on the list and VEDO fully expects our bulk storage to
21 exceed the threshold limits in which case additional security measures will be
22 required. A "Top Screen" assessment will have to be performed at each propane
23 facility and submitted to the DHS through their Chemical Security Assessment
24 Tool. A Security Vulnerability Assessment (SVA) may have to be conducted at
25 each propane storage site to determine its risk level. It will require an asset
26 characterization, a threat assessment, a security vulnerability analysis, a risk
27 assessment, and a countermeasures analysis. VEDO conservatively estimates
28 the cost to comply with DHS's new rule at \$15,000 annually as noted on Page 1,
29 Line 23 of WPC-3.12.

30
31 **Q. What is the total expense adjustment related to these Propane Air Storage**
32 **Facility Programs?**

1 A. As previously mentioned, of the Programs involving VEDO's propane air facilities,
2 only two have increased expenses. The total additional expense is \$18,438 as
3 reflected on Line 5 of Schedule C-3.12.
4

5 **Q. Is VEDO willing to make commitments to its customers related to the System**
6 **Integrity and Reliability proposals for which you are responsible even**
7 **though they contemplate no deviation from the ratemaking fundamentals**
8 **found in Section 4909.15, Revised Code?**
9

10 A. Yes. As described in the Statement Required by Section 4901:1-19-05(C)(3),
11 O.A.C., VEDO's System Integrity and Reliability Program proposal will fund
12 infrastructure maintenance activities that will preserve the useful life of facilities,
13 improve reliability and assist in meeting anticipated compliance requirements
14 associated with evolving distribution system integrity and maintenance rules, and
15 permit proactive effort to avoid adverse impacts arising from the nationally-
16 recognized impending deficiency in a competent workforce.
17

18 **Q. Does this complete your testimony?**
19

20 A. Yes, it does.
21
22

	<u>2006 Actual</u>	<u>2007 Budget</u>	<u>Percent Increase</u>
Mar-06			
Contract	54,448	55,809	2.50%
Direct Labor	109,901	113,748	3.50%
Direct Material	2,254	2,310	2.50%
Employee Benefits	0	0	
Indirect	496	508	2.50%
Labor Loadings	64,842	63,699	
Other Expenses	2,194	2,249	2.50%
Vehicle Usages	32,875	33,697	2.50%
	267,010	272,020	
Apr-06			
Contract	40,860	41,882	2.50%
Direct Labor	90,255	93,414	3.50%
Direct Material	3,921	4,019	2.50%
Employee Benefits	0	0	
Indirect	863	885	2.50%
Labor Loadings	53,252	52,312	
Other Expenses	-754	-773	2.50%
Vehicle Usages	29,961	30,710	2.50%
	218,368	222,448	
May-06			
Contract	46,323	47,481	2.50%
Direct Labor	99,078	102,546	3.50%
Direct Material	5,624	5,765	2.50%
Employee Benefits	48	0	
Indirect	1,237	1,268	2.50%
Labor Loadings	58,476	57,426	
Other Expenses	259	265	2.50%
Vehicle Usages	30,365	31,124	2.50%
	241,410	245,875	
Jun-06			
Contract	39,638	40,629	2.50%
Direct Labor	88,698	91,802	3.50%
Direct Material	5,733	5,876	2.50%
Employee Benefits	-48	0	
Indirect	1,269	1,301	2.50%
Labor Loadings	52,314	51,409	
Other Expenses	371	380	2.50%
Vehicle Usages	39,569	40,558	2.50%
	227,544	231,956	

2006 w/ Targeted Order Volume				
Order Count	2006	Reduction	2007	2007 Budget
March	18,783	17,844	15,712	17,844
April	14,625	13,894	13,810	13,894
May	16,267	15,454	14,478	15,454
June	15,983	15,184	14,609	15,184
	65,658	62,375	58,609	62,375
Total Cost	2006	2006 Inflated	2007	2007 Budget
March	\$267,009	\$272,020	\$285,977	\$221,284
April	\$218,358	\$222,448	\$253,917	\$218,791
May	\$241,409	\$245,875	\$281,269	\$228,273
June	\$227,545	\$231,956	\$242,193	\$208,102
	\$954,321	\$972,299	\$1,063,356	\$876,450
Cost/Order	2006	2006 Inflated	2007	2007 Budget
March	\$14.22	\$15.24	\$18.20	\$12.40
April	\$14.93	\$16.01	\$18.39	\$15.75
May	\$14.84	\$15.91	\$19.43	\$14.77
June	\$14.24	\$15.28	\$16.58	\$13.71
2007 Expected w/o MGSS		\$15.59		
2007 Actual w MGSS		\$18.14		
Difference		\$2.56		
% Difference from Expected		16.39%		
2007 Budget w/o MGSS		\$14.05		
% Difference from Budget		29.12%		

**Vectren Energy Delivery Of Ohio
Minimum Gas Service Standards**

	2007 Budget	2008 Budget	MGSS Impact		C Total	D Actual 2007 Results	C - D Expected Increase Above Actual Results
31-Jan-07	\$233,015	\$238,840	\$62,028	A	\$300,868	\$280,839	
28-Feb-07	\$205,522	\$210,661	\$54,710	A	\$265,371	\$390,674	
31-Mar-07	\$221,264	\$226,816	\$58,906	A	\$285,722	\$285,977	
30-Apr-07	\$218,791	\$224,261	\$58,242	A	\$282,503	\$253,916	
31-May-07	\$228,273	\$233,980	\$60,766	A	\$294,746	\$281,269	
30-Jun-07	\$208,102		\$60,599		\$268,701	\$242,193	\$26,508 B
31-Jul-07	\$202,840		\$59,067		\$261,907	\$256,167	\$5,740 B
31-Aug-07	\$214,741		\$62,533		\$277,274	\$230,448	\$46,826 B
30-Sep-07	\$184,414		\$53,701	B	\$238,115		
31-Oct-07	\$263,257		\$76,661	B	\$339,918		
30-Nov-07	\$250,549		\$72,960	B	\$323,509		
31-Dec-07	\$191,062		\$55,637	B	\$246,699		
	\$2,621,850		\$735,812		\$3,385,334	\$2,221,483	
Exclude June-August*			\$553,613				

* Actual results for June-August are captured in the test year; therefore, pro forma will not be required for this three month period.

I of A	Test Year	\$ 294,654
I of B	Pro Forma	\$ 338,032

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Vectren)	
Energy Delivery of Ohio, Inc. for Authority)	
To Amend Its Filed Tariffs to Increase the	)	Case No. 07-1080-GA-AIR
Rates and Charges for Gas Service and)	
Related Matters.)	

In the Matter of the Application of Vectren)	
Energy Delivery of Ohio, Inc. for Approval	)	Case No. 07-1081-GA-ALT
Of an Alternative Rate Plan for a Distribution)	
Replacement Rider to Recover the Costs of)	
A Program for the Accelerated Replacement)	
Of Cast Iron Mains and Bare Steel Mains)	
And Service Lines, a Sales Reconciliation)	
Rider to Collect Differences between Actual)	
And Approved Revenues, and Inclusion in)	
Operating Expense of the Costs of Certain)	
System Reliability Programs.)	

**DIRECT TESTIMONY
OF WILLIAM S. DOTY
ON BEHALF OF
VECTREN ENERGY DELIVERY OF OHIO, INC.**

☐ Management policies, practices, and organization
☒ Operating income
☐ Rate base
☐ Allocations
☐ Rate of return
☐ Rates and tariffs
☒ Other -ARP-Aging Workforce

December 4, 2007

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

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Rider to Collect Differences between Actual)	
And Approved Revenues, and Inclusion in)	
Operating Expense of the Costs of Certain)	
System Reliability Programs.)	

WILLIAM S. DOTY

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DIRECT TESTIMONY OF WILLIAM S. DOTY

1 **Q. Please state your name, business address, and occupation.**

2

3 A. My name is William S. Doty. My business address is One Vectren Square,
4 Evansville, Indiana 47708. I am the Executive Vice President of Utility Operations
5 for Vectren Corporation ("Vectren"), which is the ultimate corporate parent of
6 Vectren Energy Delivery of Ohio, Inc. ("VEDO" or "Company").

7

8 **Q. What are your duties in your present position?**

9

10 A. As Executive Vice President, I have overall responsibility for the operation of
11 VEDO facilities and the provision of utility service for our customers.

12

13 **Q. How long have you been employed by Vectren?**

14

15 A. I have been employed by Vectren since the March 31, 2000 merger of Indiana
16 Energy, Inc. and SIGCORP, Inc. into Vectren. My career in the utility industry
17 began in 1993 with Southern Indiana Gas and Electric Company ("SIGECO" or
18 Vectren South), which was the principal subsidiary of SIGCORP, Inc. prior to the
19 Vectren merger. Since that time, and prior to my current role, I held a variety of
20 positions including Director of Gas Operations, Vice President of Energy Delivery,
21 and Senior Vice President of Customer Relationship Management. Prior to joining
22 SIGECO, I was employed for 16 years with ALCOA and 2 years with Ford Motor
23 Company. At those companies, I had various responsibilities in operations
24 management, maintenance, engineering, and product development.

25

26 **Q. What is your educational background?**

27

28 A. I received a Bachelor of Science degree in mechanical engineering from
29 Rensselaer Polytechnic Institute in 1972 and a master's degree in civil engineering
30 and urban planning from the University of Michigan in 1976. I am a registered
31 professional engineer in Pennsylvania.

32

1 Q. Have you previously testified before this commission?

2

3 A. No.

4

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

6

7 A. The purpose of my testimony is to support various schedules in this proceeding
8 that pertain to adjustments to test year operating income. These schedules
9 concern the challenges VEDO faces with its aging workforce. I describe our
10 proactive efforts for dealing with this aging infrastructure and aging workforce
11 phenomenon and the resulting costs. Related testimony by VEDO Witness Daniel
12 G. Berry describes VEDO's proposal to improve the gas distribution system
13 through proactive preventative maintenance programs. These programs
14 combined with the existing transmission pipeline integrity program, and the
15 potential for a similar distribution integrity program, increase the training
16 requirements of the workforce. I will discuss additional expenditures for gas
17 training programs designed to develop our less experienced workforce to meet
18 these requirements and provide refresher training for more experienced
19 employees where required.

20

21 I will also discuss our Safety Education Program and several incremental
22 employee positions affiliated with VEDO's safety efforts. Finally, I will describe
23 other increased operating costs driven by labor and/or material increases such as
24 meter reading costs.

25

26 Q. What areas of VEDO's rate application are you responsible for in this
27 proceeding?

28

29 A. I am responsible for the explanation of certain schedules contained within the
30 Commission's Standard Filing Requirements (SFR). Specifically, I am responsible
31 for the adjustments on Lines 4, 6 and 7 of Schedule C-3.12 and Lines 2 and 3 of
32 Schedule C-3.14 which were all prepared by me or under my direction and
33 supervision.

34

1 Specifically, the adjustments I am responsible for cover the following topics:

2 Schedule C-3.12

3 Line 3 – Aging Workforce Program

4 Line 6 – Training

5 Line 7 – Employee Additions

7 Schedule C-3.14

8 Line 2 – Safety Education Program

9 Line 3 – Meter Reading

11 As background, VEDO Witness Daniel G. Berry is responsible for Lines 1, 2, 4,
12 and 5 of Schedule C-3.12. Similarly, VEDO Witnesses Douglas A. Karl and
13 Ronald B. Keeping are responsible for Line 1 and James M. Francis is responsible
14 for Line 4 of Schedule C-3.14.

16 I am also responsible for the portions of Applicant's Alternative Rate Plan, Exhibits
17 A and B which are relevant to the Aging Work Force proposal discussed in my
18 testimony. Finally, I share responsibility for the Statement Required by Section
19 4901:1-19-05(C)(3).

21 **VEDO'S AGING WORKFORCE**

23 **Q. Please explain the adjustments in Schedule C-3.12, Line3.**

25 **A. Schedule C-3.12, Line 3 reflects the adjustments that are necessary to test year**
26 **operating income to reflect known and measurable changes in the test year as a**
27 **result of VEDO's aging workforce challenge. Vectren is implementing a Program**
28 **that brings on new employees in advance of retirements so that they can begin the**
29 **up to four year apprenticeship training and be prepared to fill the role of employees**
30 **retiring with decades of utility experience. The facts, grounds, elements, transition**
31 **plans, rationale, and justification for the Program are also described in detail in**
32 **Applicant's Standard Filing Requirements for Alternative Rate Plan, Exhibits A and**
33 **B.**

1 Q. With respect to VEDO's Alternative Rate Plan, does the proposal seek
2 alternative forms of rate setting than that found in section 4909.15 of the
3 Revised Code?
4

5 A. My testimony relates specifically to VEDO's plan to address its aging workforce by
6 hiring and training a number of apprentices in advance of anticipated retirements
7 in order to have trained personnel available to replace the experienced retirees.
8 Witness Berry's testimony supports the other adjustments related to enhanced
9 maintenance programs. While the costs to hire and train these new apprentices
10 have been embedded in the test year as we anticipate the wave of retirements in
11 field positions in 2008 and we implement the plan I describe below, it is difficult to
12 exactly predict the hiring schedule which will depend upon finding suitable hires
13 and the timing of retirements. Thus, while the proposal represents traditional
14 ratemaking in terms of recovery of a budgeted expense, we have also filed the
15 proposal on a contingent basis as a form of alternative rate setting to allow for
16 complete and appropriate cost recovery in the event the timing of such costs does
17 not match the anticipated test year timing. This seems very appropriate given the
18 well documented nature of this challenge which is facing the country and, based
19 on reported demographics, the utility industry in particular, and which a prudent
20 company should not ignore.
21

22 Q. Does VEDO have any significant changes occurring in its workforce?
23

24 A. Yes. The changes occurring at VEDO mirror what is happening across the
25 country. Nationally, as baby boomers reach retirement age, a large number of
26 long time skilled and experienced employees are preparing to retire over the next
27 fifteen years. This is reflective of a generally aging workforce. The sheer
28 magnitude of the anticipated retirements has drawn great attention to the issue
29 and as a result, a heightened level of human resource planning has commenced
30 as companies are focusing on their recruiting and training programs to ensure that
31 business productivity will not suffer. VEDO is keenly aware of this potentially
32 critical business problem, and has engaged in a planning process, inclusive of
33 senior management, to enable the Company to address the issue before it
34 threatens the reliability of the service VEDO provides its customers.

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Q. Have you personally been involved in this planning effort?

A. Yes. I am the executive sponsor of a team consisting of operations and human resources personnel who have devoted significant time to setting out the dimensions of the problem as it pertains directly to VEDO, and have made recommendations to management on how to timely respond to the aging of our workforce.

Q. Does the utility industry face the same dilemma as its counterparts in other industries?

A. Yes. According to Bureau of Labor statistics, over 30% of the existing utility workforce will be eligible for retirement over the next 5 years, and by 2012 there may be 10,000 more utility jobs than available workers. A number of such studies indicate that the looming percentage of retirements in the utility industry makes the issue even more acute than in other industries.

As VEDO has approached this issue, it has collected and referred to a great deal of data being reviewed by the industry. A recent article, entitled, "Brain Drain: Our Graying Utilities," cited data that "the median age for workers in the utility sector (including telecom) is 3.3 years higher than the national average, with nearly half of the utility workforce currently over the age of 45." An Energybiz Magazine article (November/December 2004, by Arthur O'Donnell) states that some are referring to this situation as a "demographic time bomb," and Dominion Resources has labeled the phenomenon "The Wave" as it braces to face the fact that 45% of its workers will be eligible to retire by 2012. Exacerbating the situation is the time line involved in training new replacement employees.

The American Public Power Association (APPA) surveyed its members and produced a report on the aging workforce defining this as the "new challenge to its members." The findings were that half the companies project the potential loss of somewhere between 21-50% of their workforce over the next five years. The companies indicated that knowledge loss would be the single greatest problem

1 resulting from the retirements, with finding replacements also a great challenge.
2 The APPA outlined steps for its members to take to address the retirement
3 onslaught, including identifying gaps in terms of ongoing productivity needs and
4 investing in training resources. The emphasis is to be proactive in order to
5 commence the necessary development of a new workforce before the wave of
6 retirements hit.

7
8 The aging workforce issue facing the energy sector is a challenge which has also
9 been realized by Congress. At a recent hearing, the Senate Energy and Natural
10 Resources Committee was presented with a recent survey by the Center for
11 Energy and Workforce Development which found that the electric and natural gas
12 industries could lose between 40% and 50% of their generation, transmission and
13 distribution employees within the next five years. The survey indicated more than
14 45% of the half million utility employees in the nation are over the age of 48, and
15 more than 25% are over the age of 53. Evidence was also presented at the
16 hearing on the North American Electric Reliability Corporation's (NERC) 2007
17 Survey of Reliability Issues, where it found that utility users, owners and operators
18 ranked aging workforce and lack of skilled workers as the foremost cause of
19 reliability risk. All of this led Ranking Member Pete Domenici, R-N.M., to warn that
20 such a turnover rate in the energy industry could have a devastating impact on the
21 economy and that workforce shortages could cause significant delays in the
22 delivery of energy.

23
24 Several other regulatory commissions have recognized the importance of the
25 aging workforce issue for public utilities. Please see VEDO's Alternative Rate
26 Plan, Alt. Reg. Exhibit A for a description of these commissions' actions on the
27 aging workforce issue.

28
29 **Q. What specific steps has the utility industry begun to take to address the**
30 **aging workforce issue?**

31
32 **A.** Approaches will differ by company, but core strategies have focused on hiring now
33 in areas that will experience significant attrition in order to commence training and
34 knowledge transfer, and beefing up current training efforts. There is also a general

recognition that the available labor pool is finite and competition for the new workforce could be significant as all industries face replacement needs. At the hearing before the Senate Energy and Natural Resources Committee previously mentioned, the Committee was also presented with testimony from leading industry experts that the aging workforce challenge is confounded by the challenge of raising awareness that good-paying job opportunities exist in the energy sector. Thus, utilities must not only figure out how to train, but also recruit, the future workforce. In so doing, competition with contractors for skilled labor could become fierce.

Preparation includes figuring out how to recruit and train the future workforce. For example, the Midwest Independent System Operator or "MISO" has established relationships with colleges to begin developing skilled workers, and First Energy has partnered with five universities to create degree programs for future line and substation crews. (Energybiz Magazine, p. 24).

Q. Does VEDO have workforce aging issues similar to the rest of the utility industry?

A. Yes. Over the next 12 years retirements are expected to impact the VEDO workforce as follows:

	2007-2010		2011-2014		2015-2018		12 Year Cumulative		
	Potential Retirements	%	Potential Retirements	%	Potential Retirements	%	Potential Retirements	12/31/2006 Employment	%
Bargaining Unit	43	26.2%	27	16.5%	26	15.9%	96	164	58.5%
Non-Bargaining Unit	52	7.3%	63	8.8%	79	11.0%	194	717	27.1%
ED - VEDO Assigned	9	31.0%	3	10.3%	1	3.4%	13	29	44.8%
ED - VEDO Allocated	14	10.9%	18	14.0%	20	15.5%	52	129	40.3%
Corporate	14	6.1%	19	8.2%	22	9.5%	55	231	23.8%
Customer Support	15	4.6%	23	7.0%	36	11.0%	74	328	22.6%
Total VEDO	95	10.8%	90	10.2%	105	11.9%	290	881	32.9%

This table suggests that over 58% of VEDO's current bargaining unit workforce will retire by the year 2018. This estimate assumes that potential retirements will occur, on average, when employees reach age 62. (At VEDO, actual eligibility for retirement with benefits occurs at age 55). VEDO's actual experience in 2007 indicates an average retirement age of 61.2. Thus, the large number of

1 retirements predicted is consistent with recent actual retirements. As described
2 hereafter, the wave of retirements will pose particularly serious challenges in
3 certain areas of the bargaining workforce where trained workers are essential to
4 providing reliable gas services to VEDO's customers.
5

6 **Q. How certain are you that these workers will retire in the numbers and time**
7 **frames you describe?**
8

9 A. The age of the employees is a fact known with certainty. The eligible retirement
10 age and the historical average age of retirement for VEDO employees are again
11 facts known with certainty. Therefore, I conclude that the tables shown herein and
12 the conclusion that this is a critical problem for VEDO and its customers is very
13 real.
14

15 **Q. Can VEDO do anything now to prepare for this inevitable loss of experienced**
16 **workers?**
17

18 A. Yes, VEDO must take action now to avoid a future shortage of skilled employees.
19 For VEDO, an approach of waiting to hire replacement workers as employees
20 actually retire would leave us unable to maintain work levels necessary to maintain
21 customer service expectations because of the lengthy required apprenticeship
22 training process new bargaining unit employees must complete. Rather, VEDO
23 must implement a plan that brings on new employees in advance of retirements so
24 that they can begin the up to four year apprenticeship training and be prepared to
25 fill the role of employees retiring with decades of utility experience.
26

27 **Q. Has VEDO developed a plan to effectively manage the impact of the aging**
28 **workforce problem so sufficient resources remain available to maintain**
29 **reliable service?**
30

31 A. Yes. Several years ago VEDO realized that this was a growing problem. In 2005
32 Vectren management established a "Workforce Planning Team" ("Team")
33 comprised of representatives from the Human Resources and Operations

1 Departments. The Team began by breaking the problem into four major
2 components:

3 Workforce Strategy – Determine the workforce requirements to achieve our
4 business objectives and establish plans outlining how these workforce
5 requirements will be met.

6 Workforce Planning – Analyze business requirements and plan the workforce to
7 develop and maintain skills/competencies required to meet Vectren's objectives.

8 Training Development – Establish training priorities and evaluate program
9 effectiveness relative to developing skills and competencies.

10 Knowledge Capture – Identify tools and methods used to capture the knowledge
11 and experience of the workforce.

12
13 **Q. What progress has the Team made since its formation?**

14
15 A. The Team determined that a critical need exists to hire significant numbers of new
16 apprenticeship employees in the near term in order to have sufficient skilled
17 employees in later years.

18
19 As background, in 2005 the focus of the Workforce Strategy effort was on building
20 alliances with Midwest universities to provide critical training at a reasonable cost.
21 Work also included the establishment of an intern program. The Workforce
22 Planning effort upgraded bargaining unit hiring standards, and built succession
23 plans below the manager level. The Training Development effort included
24 collaboration with local community colleges regarding annual training grants,
25 evaluation of a variety of training proposals, and enhancement of in-house training
26 programs. The Knowledge Capture effort included initiation of contacts with AGA
27 and MEA to begin a benchmarking program. Additionally, the Team began
28 prioritizing and capturing knowledge in VEDO and Vectren Energy Delivery.

29
30 In 2006, the Workforce Strategy effort began focusing on identifying competition
31 for its workforce and determining what VEDO must do to stay ahead of the
32 competition. The Workforce Planning effort gathered data related to historical
33 average retirement dates, existing employee potential retirement dates, and
34 specific critical skill gaps by classification. Additionally, it established plans for

1 dealing with potential skill gaps. The Training Development effort continued to
2 identify effective and low cost training alliances, and began identifying and
3 improving internal training process opportunities. The Knowledge Capture effort
4 focused on developing a process for the identification, capture, and
5 communication of knowledge retention needs.

6
7 The Team then reviewed each job classification to determine how retirements
8 would impact performance. It became apparent that in many areas, the
9 retirements could be managed over time without significant incremental effort, but
10 that in certain areas, the turnover in the next 5-10 years would impact performance
11 absent incremental effort.

12
13 **Q. Has the Team developed replacement strategies for both bargaining and**
14 **non-bargaining employees?**

15
16 A. Yes. Generally, the Team has focused on improved processes for recruiting,
17 training and employee development. While key non-bargaining employees will be
18 lost to retirement and the approach to replacing such employees will be critical, it
19 will be more individualized in nature. As such, the Team identified the need to
20 focus on and aggressively hire a group of bargaining unit replacements for two
21 reasons. First, the exposure in numbers of employees the Company is at risk of
22 losing is much higher. Second, VEDO has recognized that the years of training
23 required to move employees from the apprentice level to a fully productive
24 journeyman level in various job classifications is well defined.

25
26 **Q. What bargaining unit employee classifications will retirements impact at**
27 **VEDO?**

28
29 A. The adjustment I propose will address the aging workforce issues for bargaining
30 unit employees in the Regulation Specialist, Instrument Repairman and Service
31 Technician positions. The Service Technician responds to the direct customer
32 inquiries received through our contact center and interfaces directly with
33 customers. Service Technicians perform many important field activities which
34 provide great general experience. Once that experience is gained these

1 employees often move into other roles like Regulation Specialist and Instrument
2 Repairman. VEDO's strategy recognizes that a retirement in the Regulation
3 Specialist or Instrument Repairman positions is typically filled from employees in
4 the Service Technician classification. It is in these two job classifications that we
5 expect the near term effect of retirements to be most noticeable. Because
6 vacancies will most likely be filled from the Service Technician positions, the Aging
7 Workforce adjustment includes costs to hire the replacement employees in this
8 category, reduced by the average salaries of the expected Regulation Specialist,
9 Instrument Repairman and Service Technician retirements in the same time
10 period.

11
12 **Q. Could you describe the process associated with filling the openings within**
13 **these three job classifications with qualified employees?**

14
15 **A.** Yes. The specific skills required to become qualified to perform these job
16 functions must be developed through an apprenticeship program. These
17 apprenticeship programs typically take four years to complete. This lag-time
18 between hiring and completion of the apprenticeship program means that the
19 productivity of each new hire rises gradually over this period, both due to time
20 dedicated to training activities and the natural learning curve. These
21 apprenticeship programs are designed with competency checkpoints every 6
22 months.

23
24 **Q. Please describe the apprenticeship program more fully.**

25
26 **A.** The apprentice program is a four year long combination of classroom, laboratory
27 and field training. Over the course of the program the apprentice will learn,
28 practice and then demonstrate actual application of the appropriate skills. This is
29 done under the observation and tutelage of professional trainers and senior
30 employees. The program covers the major skills required to carry out the day-to-
31 day responsibilities of service, construction, operation and maintenance of a gas
32 distribution system. In addition to the physical skill training, other key areas such
33 as the attributes of natural gas, work safety, customer service, company policy,
34 and equipment operation are all interwoven in the program.

1
2 The main elements are taught at the Company's training center or other locations
3 where classroom and controlled laboratory conditions are available. Teaching the
4 actual field work is completed in the apprentice's home area using local senior
5 employees as their mentors and field trainers. The classroom work is grouped in
6 sections and when the candidates successfully complete the session, they return
7 to their home base to gain the actual field experience in the trained areas. Typical
8 apprentices spend four years in this program before graduating to a qualified
9 journeyman type job classification.
10

11 **Q. Please further discuss the job functions performed by these VEDO employee**
12 **classifications.**
13

14 A. Service Technicians are trained in all aspects of delivering natural gas to
15 customers and primarily work with gas infrastructure on the customer premise.
16 Normally working alone, the employee will perform a variety of service orders
17 (reconnects, disconnects, transfers, etc.), investigations and billing tasks (re-reads,
18 meter replacements, etc.) which include gas service surveying, meter installation,
19 as well as maintenance of services to and on the customer's premises. As
20 employees complete the structured training, on the job training, meet regulatory
21 requirements (OQ, OSHA, CDL), and other qualifications they will be able to
22 progress through four job levels (I, II, III, and Senior) within the Service Technician
23 classification.
24

25 Regulation Specialists and T&D Operators (older title for the Regulation Specialist
26 employee classification) can perform many of the functions of the Service
27 Technician position plus other gas distribution functions including installing gas
28 mains and services, performing routine repairs and maintenance on steel, cast
29 iron, and plastic pipe, pinpointing of gas leaks, repair of leaks, installation and
30 operation of gas valves and regulators, corrosion diagnostic tests, and residential
31 & commercial meter installation. As employees complete the structured training
32 and directed on the job training necessary, meet regulatory requirements (OQ,
33 OSHA, CDL), and other qualifications they will be able to progress through four job
34 levels (I, II, III, and Senior) within the Regulation Specialist classification.

Instrument Repairman make inspections, tests, adjustments, checks, calibrations, and repairs on all recording and non-recording instruments, meters, gauges, test instruments and other associated equipment. As employees complete the structured training and directed on the job training necessary the Instrument Repairman will be able to progress through two job levels (A & B).

Q. How many future retirements are expected within the identified positions?

A. The VEDO bargaining unit work force had 164 positions at the end of 2006 which includes the following job classifications:

<u>Job Classification</u>	<u># of Employees</u>
Service Technician (Type I, II, III, or Senior)	34
Regulation Specialist (Type I, II, III, Senior, and T&D Operator)	29
<u>Instrument Repairman (Type A or B)</u>	<u>5</u>
Total	68

Using a projected retirement age of 62 years VEDO expects to lose 38 of these employees over the next 12 years (3 four year apprenticeship cycles). Thus, in a 12 year planning period, we will lose 56% of this workforce. Just focusing on the number of retirements that will occur over one apprenticeship period (2007-2010) indicates that VEDO will lose 14 employees.

WSD-Exhibit 1 is a table showing the number of active bargaining unit employees in the Service Technician, Regulation Specialist and Instrument Repairman eligible for retirement in the years 2007-2018. In all, over the planning horizon we can get a picture of what the company faces:

<u>Service Technician, Regulation Specialist, and Instrument Repairman</u>	
<u>Retirements</u>	<u># Retiring</u>
2007-2010	14
2011-2014	15

1	2015-2018	9
2	Total over 12 Years	38

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Q. How does VEDO plan to manage the staffing requirements of these positions given the large amount of future retirements?

A. VEDO's plan is to stage hiring to train groups of new employees at the beginning of an apprenticeship training period as opposed to waiting for the retirement to occur. This means there would be 14 replacements hired in 2008, 15 replacements hired in 2012, and 9 replacements hired in 2016. By hiring all replacements needed at the beginning of a particular apprenticeship period, the apprentices will be near the point where they are fully trained at the time the anticipated retirements occur.

Q. Are there other reasons why the additional employees must be added even in absence of the retirements?

A. Yes. VEDO anticipates challenges in maintaining its necessary workforce in the future due to two related but separate issues. First, we anticipate an overall worker shortage as the effects of the retiring baby boomers are increasingly felt in the labor market. It is generally agreed upon by experts in the labor market that such shortages will occur and may significantly compromise VEDO's ability to hire employees when they are needed. Second, the numbers of future workers electing to pursue the utility craft trades are even more reduced than the overall constrained future labor pool. We anticipate a very competitive market in the future for these positions. VEDO does not want to risk compromises in customer service and safe field operations due to worker shortages in the future and believe we should proactively hire these needed replacements now so they will be fully trained and in place as fully productive employees as they are needed.

Q. Is VEDO's current training program capable of handling this influx of new hires?

1 A. No. In conjunction with hiring the next generation of workers, VEDO must
2 anticipate their training needs and increase our resources to assure the
3 apprenticeship program yields well trained, skilled employees. VEDO's
4 apprenticeship program will be improved including the refinement of training
5 methods built around progression measures and on the job training requirements.
6 Focus will also be placed on ensuring that the program aligns with performance
7 evaluations necessary to meet mandated Operator Qualification activities. Train-
8 the-trainer sessions will incorporate experts required to educate and train the
9 apprentices on critical equipment and system operation. These positions will
10 provide face-t- face training, performance evaluations and status oversight, while
11 ensuring a consistent approach throughout VEDO. This will improve employee
12 education, consistency of performance and the level of training needed to replace
13 our experienced retirees.

14
15 **Q. What is the impact of the aging workforce adjustment for VEDO operations?**

16
17 A. Utilizing the four year planning approach previously discussed, VEDO plans to add
18 fourteen apprentices at the beginning of the first apprentice period. WPC-3.12
19 Line 14 shows these new employees result in additional annual labor costs of
20 \$785,256. This is based on properly loaded contractual bargaining unit rates with
21 90% charged to O&M.

22
23 Incorporated into Line 3 of Schedule C-3.12, and as noted on Page 1, Line 13 of
24 WPC-3.12, is an offset to that annual amount of \$(475,333) reflecting a reduction
25 in labor costs due to the anticipated retirements over the four year planning period.

26
27 Also included in this program are costs for two Engineering Co-op Students to
28 provide cost effective engineering expertise to VEDO and also identify excellent
29 prospective engineering employees in the future. The cost associated with the
30 Engineering Cooperative is \$2,336 and is noted on Page 1, Line 15 of WPC-3.12.
31 The total annual cost for the program items noted above is \$312,259 of which
32 \$128,042 is captured in the test period. This requires an adjustment of \$184,217
33 which is reflected on Schedule C-3.12, Line 3.

34

1 **Q. What are the foreseeable consequences if you fail to fill these VEDO**
2 **positions?**

3
4 A. These positions are front-line positions that interface directly with the gas system
5 and provide critical operational and maintenance functions that are essential for
6 good system performance. They provide essential emergency support and
7 customer service. It is my judgment, and a reasonable conclusion, that customer
8 service levels will decline if effective knowledge transfer and skills development do
9 not keep pace with the anticipated retirements within these key front-line positions.
10 The areas most affected by these employees are system leak response and repair
11 and new business gas service connections. These tasks directly affect reliable
12 and timely customer service.

13
14 **Q. Is VEDO willing to make commitments to its customers related to the System**
15 **Integrity and Reliability (Aging Workforce Program) proposals for which you**
16 **are responsible even though they contemplate no deviation from the**
17 **ratemaking fundamentals found in Section 4909.15, Revised Code?**

18
19 A. Yes. As described in the Statement Required by Section 4901:1-19-05(C)(3),
20 O.A.C., VEDO's System Integrity and Reliability (Aging Workforce Program)
21 proposal will fund infrastructure maintenance activities that will preserve the useful
22 life of facilities, improve reliability and assist in meeting anticipated compliance
23 requirements associated with evolving distribution system integrity and
24 maintenance rules, and permit proactive effort to avoid adverse impacts arising
25 from the nationally-recognized impending deficiency in a competent workforce.

26 **Q. Please explain the adjustments in Schedule C-3.12, Line 6.**
27

28 A. In addition to the apprenticeship training program associated with the Aging
29 Workforce Program (Schedule C-3.12, Line 3), VEDO is implementing several
30 other training programs. These include: Engineer Training, Gas Employee
31 Refresher Training, SCBA Equipment (O&M Costs), and Safety Training. The
32 Engineer Training Program is described by VEDO Witness James M. Francis in

1 his testimony. My testimony below will describe the Gas Employee Refresher
2 Training, the SCBA Equipment, and the Safety Training Programs.

3
4 **Q. Please describe the Gas Employee Refresher Training Program.**

5
6 **A.** The Gas Employee Refresher Training Program is for existing field employees.
7 This Program has two components. First, it will ensure that all employees are
8 current on safety training related to equipment utilized by VEDO employees in the
9 field. This includes trenchers, backhoes, instrumentation, squeeze-off tools
10 (hydraulic and non-hydraulic), boring equipment, large diameter tapping and
11 stopping equipment, vacuum excavators, large diameter fusion machines, cast
12 iron cutters and crackers, and other types of new equipment used in the field.
13 The gas employee refresher training will also ensure all employees are up to date
14 and aware of current procedures to safely address emergency situations such as
15 the odor of gas, actual gas leaks, building fires, accidents involving gas meters,
16 severed underground gas lines, and other situations of risk of fire or explosion
17 from natural gas.

18
19 **Q. How does this training benefit the employees and VEDO's customers?**

20
21 **A.** The employees will receive more frequent and recurring training in activities such
22 as evacuating the area, assessing area risk, determining the nature and location of
23 risk, coordinating contact and action with other company representatives and
24 emergency responders, preservation of the scene, and other actions to protect the
25 public safety. This will include recurring updated training on emergency
26 procedures. The emphasis will be on customer and employee safety in situations
27 of emergency response. We believe that our employees and the public will benefit
28 from greater repetition and enhancement of these programs.

29
30 **Q. Is the Gas Employee Refresher Training you have described a reasonable
31 and necessary expense?**

32
33 **A.** Yes. This training is necessary to increase our employees' understanding and
34 compliance with procedures and safety requirements relating to use of field

1 equipment and emergency field operations. Safe and effective response to
2 emergencies requires employees to go beyond mere compliance with procedures
3 and make effective judgments and interpretations regarding circumstances they
4 face. This additional training is important to developing the skills to make
5 appropriate decisions in emergencies and reduce the risk of customer and
6 employee injuries.

7
8 **Q. Please describe the SCBA Equipment Training Program.**

9
10 A. VEDO is incurring additional costs associated with training, fitting and medical
11 qualification costs associated with the use of required Self-Contained Breathing
12 Apparatus (SCBA) Equipment. These costs are incremental because VEDO
13 currently administers the SCBA program on a voluntary basis and this does not
14 provide predictable coverage of all employees. Therefore, the SCBA Program is
15 being expanded and applied to all eligible employees within the VEDO divisions.
16 Some of the equipment currently being utilized is no longer supported by the
17 manufacturer. VEDO plans to replace this equipment with new supported units.
18 Additionally, VEDO plans to order enough new units to properly equip all eligible
19 employees. All of this is incremental to the dollars spent in the Test Year.

20
21 **Q. Is the change to the SCBA Program driven by a change in policy?**

22
23 A. The Department of Transportation Pipeline Safety Regulations (192.605) require
24 the Operator to take adequate precautions in excavated trenches to protect
25 personnel from the hazards of unsafe accumulations of vapor or gas, and making
26 available when needed at the excavation, emergency rescue equipment, including
27 a breathing apparatus and, a rescue harness and line.

28
29 To address employee safety and compliance with applicable DOT regulations,
30 VEDO has developed a Gaseous Atmosphere Policy outlining safe work practices
31 for instances when blowing gas situations arise where employees must enter to
32 perform work. The gaseous atmosphere policy addresses flammable
33 atmospheres by requiring the wearing of fire retardant suits when entering a
34 blowing gas situation and when an oxygen deficient atmosphere exists, the

1 wearing of a supplied air system. In order to wear a supplied air system, such as a
2 Self Contained Breathing Apparatus (SCBA), employees must be medically
3 qualified, fit-tested, and trained.
4

5 The training also includes initial training to review OSHA standards, fit testing each
6 individual, and train on the properly inspecting and use of the SCBA equipment.
7 Annual refreshers are an OSHA requirement. Medical qualifications begin with
8 each employee taking an eight page medical questionnaire that is reviewed by a
9 doctor. Some answers may warrant additional medical testing such as a general
10 exam, chest X-ray, or pulmonary function test. Typically 15% to 20% of the
11 employees disqualified are disqualified for medical reasons. For those qualified,
12 the doctor will establish a 1 to 5 year review depending on the health condition and
13 age of the employee. An additional cost is incurred for special kits required for
14 employees with prescription glasses. These special kits cost an average of \$150
15 to \$200 each to make lenses that are inserted into a frame designed to fit inside
16 the SCBA mask.
17

18 **Q. Why are these costs reasonable and necessary?**
19

20 **A.** Through the course of business, occasions arise where employees are faced with
21 blowing gas situations as a result of planned work, equipment failure, human error
22 or damage to underground facilities. The ideal method for protecting employees in
23 these situations is to eliminate all hazards when possible. However, in some
24 instances it is not always viable to eliminate or shut off the gas supply and
25 employees must therefore enter the area of blowing gas to perform work. In these
26 situations there are two primary concerns regarding employee safety – flammable
27 atmospheres and oxygen deficiency.
28

29 From a public safety as well as employee safety standpoint it is imperative that
30 VEDO is able to provide a timely response to blowing gas situations. In order to
31 ensure a timely response, VEDO should train all gas operations employees in the
32 Underground Construction Technician job classifications and maintain strategically
33 placed supplied air units throughout its territory.
34

1 **Q. Are there any additional training enhancements required to existing safety**
2 **programs necessary to achieve best in class safety performance?**

3 A. Yes. VEDO is enhancing its current training requirements to existing safety
4 programs in order to achieve best in class safety performance. To do this VEDO
5 must enhance our current safety program with best in class safety training and
6 safety activities. VEDO doesn't believe that there is a magic formula to becoming
7 best in class but does believe it should concentrate on three areas. VEDO wants
8 to improve initial OSHA/DOT safety training for all newly hired employees in topics
9 like trenching/excavation, exposure to hazardous chemicals and substances.
10 VEDO must study the most physically demanding high exposure jobs and provide
11 improved equipment or processes that are ergonomically designed to reduce
12 strain and sprain injuries that occur in our aging workforce and train our employees
13 in the use of the equipment or processes. Finally, VEDO must provide more
14 safety management training to include a field safety audit program to insure safety
15 responsibility/accountability on the job site where the work is being performed.
16

17 **Q. What is the impact of these training & safety programs?**
18

19 A. The total annual cost of the Gas Employee Refresher Training Program is \$91,840
20 and requires an adjustment of \$45,920 as noted on Page 2, Line 5 of WPC-3.12.
21 The total annual cost of the SCBA Equipment Training is \$12,472 and requires an
22 adjustment of \$7,234 as noted on Page 2, Line 6 of WPC-3.12. The total cost of
23 the Safety Projects Program is \$49,000 and requires an adjustment of \$28,583 as
24 noted on Page 2, Line 7 of WPC-3.12. These amounts are included in the figure
25 identified on Schedule C-3.12, Line 6.
26

27 **Q. Please explain the adjustments in Schedule C-3.12, Line 7.**
28

29 A. In conjunction with hiring the next generation of workers, VEDO must anticipate
30 their training needs and increase our resources to assure the apprenticeship
31 program yields well trained, skilled employees. Consequently, VEDO is hiring two
32 full-time Gas Technical Trainers in direct support of the apprentice programs as
33 well as the need to have resources that will also assist in performing actual

1 refresher training and performance evaluations to existing qualified employees
2 throughout the VEDO divisions to meet mandated Operator Qualification activities.
3 These positions will provide face-to-face training, performance evaluations and
4 status oversight, while ensuring a consistent approach throughout VEDO. This will
5 improve employee education, consistency of performance and the level of training
6 needed to replace our experienced retirees. The VEDO cost for these two
7 additional trainers is \$188,760. The adjusted request associated with these two
8 positions is \$110,236. These adjustments represent a portion of the total amount
9 identified in Schedule C-3.12, Line 7 and are noted on Page 2, Line 9 of WPC-
10 3.12.

11
12 **Q. Do you have additional plans to address worker safety?**

13
14 A. Yes. VEDO plans to add a Safety and Training Employee Relations Consultant
15 and a Safety/Hygiene Consultant to enhance VEDO's existing safety programs.
16 Employee safety has always been a focal point for VEDO. In fact, the Company's
17 Safety performance is used as a measurement in the employee incentive plan.
18 Also, it is VEDO's objective to achieve best in class safety performance. Hiring
19 and deployment of these two employees will assist in accomplishing that objective.
20

21 **Q. What will be the duties of these new employees?**

22
23 A. The Safety and Training Employee Relations Consultant will support and ensure
24 regulatory compliance with safety training and safe operating procedures
25 mandated by OSHA and DOT. New hires will also receive general safety
26 orientation training from this employee.

27
28 The Safety/Hygiene Consultant will conduct field safety audits and facilitate the
29 enhancement of field worker "tailgate" training sessions which focus on use of
30 protective equipment and safe work practices. The new employee will also lead
31 safety compliance reporting, conduct audits to ensure required training is
32 completed on a comprehensive and timely basis, develop safety training materials,
33 conduct safety presentations, and act as the liaison with medical facilities in the
34 event of employee injuries and return to work physicals. The new employee will

1 also coordinate drug and alcohol testing, and determine cost effective ways VEDO
2 may reduce job induced routine physical and emotional stress on employees.

3
4 With the addition of these positions, combined with the additional training
5 described, VEDO's goal is to obtain best in class safety performance as measured
6 by OSHA recordable incidents. VEDO is also aware, through benchmarking
7 efforts that its current safety staff is lean compared to other companies. The new
8 hires and escalated training efforts will assure compliance and create a record of
9 great performance in this area.

10
11 **Q. What is the additional expense included in the operating expenses**
12 **associated with the additional safety employees?**

13
14 A. The annual expense for associated with the Safety and Training Employee
15 Relations Consultant is \$21,985 and requires an adjustment of \$12,825 as noted
16 on Page 2, Line 12 of WPC-3.12. The annual expense for associated with the
17 Safety/Hygiene Consultant is \$15,000 and requires an adjustment of \$8,750 as
18 noted on Page 2, Line 11 of WPC-3.12. These adjusted amounts represent a
19 portion of the total amount identified in Schedule C-3.12, Line 7.

20
21 **Q. Are there further incremental employee additions represented in the**
22 **adjustments in Schedule C-3.12, Line 7.**

23
24 A. Yes. A portion of this incremental expense represents employee additions to
25 improve VEDO's procurement process. Vectren currently manages approximately
26 300 contracts per year. These contracts require initial negotiations, re-
27 negotiations or in some form are being adjusted to reflect new terms. In addition
28 there are hundreds of existing contracts that must be monitored on an ongoing
29 basis. Examples of monitoring include periodically updating fixed pricing
30 agreements and auditing contract escalators to ensure increases are reflected
31 appropriately.

32
33 Vectren plans to add a Contract Administration Manager and Clerk to establish a
34 Contract Administrations group which will have the task of ensuring contracts

1 entered into by VEDO are being properly executed as per the contract preparation
2 guidelines developed by the Strategic Procurement and Legal departments.
3 According to these guidelines, all contracts entered into by VEDO are required to
4 be reviewed by numerous departments including legal, strategic sourcing, credit
5 and risk management. The Contract Administration group will ensure that
6 contracts are being properly prepared, reviewed, approved, filed and monitored.

7
8 Vectren also plans to add a Buyer to its Procurement group. To support the
9 extensive build out of the company's infrastructure over the next few years, many
10 materials and services will need to be procured, expedited and managed in order
11 to keep projects within budget and within timeline completion requirements. The
12 expediting of materials and services to ensure their timely delivery is becoming
13 more and more critical to successful project completions and the current
14 procurement staffing levels are inadequate to accommodate the need going
15 forward.

16
17 Finally, Vectren plans to add a Contract Analyst who will work within the
18 Operations Support organization of Energy Delivery and be responsible for
19 managing all Energy Delivery operational contracts. This analyst will be
20 responsible for proper completion and enforcement of contracts and will provide
21 analyses of vendor performance against the contract terms and specific
22 performance criteria. This centralized knowledge of vendor contracts will allow
23 greater uniformity with the ability to recommend contract changes favorable to the
24 company.

25
26 **Q. What is the expense included in operating expenses associated with adding**
27 **the additional positions required to support Vectren's strategic procurement**
28 **process?**

29
30 **A.** The VEDO operations allocated expense adjustment for the Contract
31 Administration Manager and Clerk is \$16,209, the Buyer is \$7,508, and the
32 Contract Analyst is \$3,822 as noted on Page 2, Lines 13-15 of WPC-3.12. The
33 total adjustment required to support the strategic procurement process totals
34 \$27,539 and is a portion of the figure represented in Schedule C-3.12, Line 7.

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Q. Please describe Schedule C-3.14.

A. Schedule C-3.14 includes adjustments for annualized expenses for programs which enhance VEDO's customer support programs. I am responsible for Lines 2 and 3 which were prepared directly by me or under my supervision.

Q. Please explain the adjustments in Schedule C-3.14, Line 2.

A. This expense is for programs aimed at educating VEDO's customers on safety awareness. It has become increasingly difficult to reach and educate VEDO's busy customers. Unfortunately VEDO sees incidents on a regular basis both in our service territory and around the country that demonstrate customers do not always understand what to do when they smell gas or encounter a gas leak in their home or business. The cost of human life or injury is difficult to measure, but VEDO must continue to grow educational opportunities to prevent serious injury, improve reliability and customer service.

Q. Please summarize the costs associated with the customer safety education program.

A. VEDO uses a variety of media to reach customers with safety messages. A new safety education program to reach schools in the counties served by VEDO accounts for \$100,000 of the total annual program cost. Included in the \$100,000 education program is a new communications specialist to administer the program. This employee is projected to earn \$40,000 annually with a VEDO allocated portion of \$11,232 as noted on Line 14 of WPC-3.14.

The remaining \$188,768 is to educate all customers through public relations and advertising about important safety messages. These costs are essential to provide VEDO customers with customer safety related information such as understand what to do when they smell gas or encounter a gas leak in their home or business. Approximately 15% of the remaining annual expense of \$188,768 is associated with public relations costs and the remaining 85% is associated with television,

1 radio, and print advertising costs. The program expense is identified on Line 13 of
2 WPC-3.14.

3

4 **Q. Are these costs reasonable and necessary expenses?**

5

6 A. Yes. These costs are essential to educate VEDO customers on safety issues.
7 These additional dollars will be dedicated to disseminating safety messages,
8 measuring results and providing year-round education.

9

10 **Q. What adjustment is required to operating expenses to capture the annual**
11 **expense of the safety education program and additional employee?**

12

13 A. The expense adjustment for the Safety Education Program is \$165,768. The
14 expense adjustment for the Communication Specialist is \$6,552. The total
15 expense adjustment which is reflected on Schedule C-3.14, Line 2 is \$172,320.

16

17 **Q. Please explain the adjustments in Schedule C-3.14, Line 3.**

18

19 A. Schedule C-3.14, Line 3 reflects an adjustment to the test period to remove
20 expenses of \$(197,754) that related to pre-test period activity as noted on Line 17
21 of WPC-3.14. In order to capture an annual level of meter reading expenses, this
22 amount should be removed. As an offset, VEDO expects annual meter reading
23 expenses to increase slightly due to the growth in the number of meters read. This
24 increase results in total annual expense of \$2,167,349, creating an adjustment of
25 \$7,941 to the test period as noted on Line 16 of WPC-3.14. The total of these two
26 items is a reduction of \$(189,813) and is shown on Schedule C-3.14, Line 3.

27

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

29

30 A. Yes.

VEDO Energy Delivery - Bargaining-Unit Workforce
Retirement Schedule Based-On Age 62

Job Classification	# of Active BU Employees as of 12/31/06	Planned Hires associated with the Aging Workforce Issue (2007-2010)	# Eligible for Retirement (Age >= 62)					
			2007 - 2010		2011 - 2014		2015 - 2018	
			# Retiring	%	# Retiring	%	# Retiring	%
Instrument Repairman A. Total - Retirements	3	1	1	33%	2	87%	0	0%
Instrument Repairman B. Total - Retirements	2	0	0	0%	2	100%	0	0%
Service Tech I. Total - Retirements	5	0	0	0%	0	0%	0	0%
Service Tech II. Total - Retirements	2	0	0	0%	0	0%	0	0%
Service Tech III. Total - Retirements	6	0	0	0%	1	17%	0	0%
Service Tech. Senior Metering Total - Retirements	21	2	2	10%	4	19%	5	29%
Specialist Regulation II Total - Retirements	1	0	0	0%	0	0%	1	100%
Specialist Regulation III Total - Retirements	25	9	9	36%	5	20%	2	8%
Specialist Regulation Senior Total - Retirements	1	1	1	100%	0	0%	0	0%
Operator T & D Total (Old Reg. Spec. III Title)	1	0	0	0%	1	100%	0	0%
Operator T & D Senior Total (Old Reg. Spec. Senior Title)	1	1	1	100%	0	0%	0	0%

Note: The highlighted Bargaining Unit Job Classifications are considered in the Aging Workforce Proforma

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Vectren)	
Energy Delivery of Ohio, Inc. for Authority)	
To Amend Its Filed Tariffs to Increase the	)	Case No. 07-1080-GA-AIR
Rates and Charges for Gas Service and)	
Related Matters.)	

In the Matter of the Application of Vectren)	
Energy Delivery of Ohio, Inc. for Approval	)	Case No. 07-1081-GA-ALT
Of an Alternative Rate Plan for a Distribution)	
Replacement Rider to Recover the Costs of)	
A Program for the Accelerated Replacement)	
Of Cast Iron Mains and Bare Steel Mains)	
And Service Lines, a Sales Reconciliation)	
Rider to Collect Differences between Actual)	
And Approved Revenues, and Inclusion in)	
Operating Expense of the Costs of Certain)	
System Reliability Programs.)	

**DIRECT TESTIMONY
OF RONALD B. KEEPING
ON BEHALF OF
VECTREN ENERGY DELIVERY OF OHIO, INC.**

<input type="checkbox"/>	Management policies, practices, and organization
<input checked="" type="checkbox"/>	Operating income
<input type="checkbox"/>	Rate base
<input type="checkbox"/>	Allocations
<input type="checkbox"/>	Rate of return
<input type="checkbox"/>	Rates and tariffs
<input type="checkbox"/>	Other

December 4, 2007

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of)	
Vectren Energy Delivery of Ohio, Inc.)	
for Authority to Amend its Filed Tariffs	)	Case No. 07-1080-GA-AIR
to Increase the Rates and Charges for)	
Gas Services and Related Matters.)	

In the Matter of the Application of)	
Vectren Energy Delivery of Ohio, Inc.)	
For Approval of an Alternative Rate)	
Plan for a Distribution Replacement	)	Case No. 07-1081-GA-ALT
Rider to Recover the Costs of a)	
Program for the Accelerated)	
Replacement of Cast Iron Mains and)	
Bare Steel Mains and Service Lines, a)	
Sales Reconciliation Rider to Collect)	
Differences between Actual and)	
Approved Revenues, and Inclusion in)	
Operating Expense of the Costs of)	
Certain System Reliability Programs.)	

RONALD B. KEEPING

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Direct Testimony of Ronald B. Keeping

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Q. Please state your name, business address and occupation.

A. My name is Ronald B. Keeping. My address is One Vectren Square, Evansville, Indiana, and I am the Director of Economic Development and Customer Research for Vectren Corporation. ("Vectren").

Q. What are your duties in your present position?

A. I am responsible for coordinating the efforts of Vectren Energy Delivery of Ohio, Inc. ("VEDO") in promoting the economic development of the VEDO service territory. I also supervise the Customer Research function for Vectren.

Q. Please describe your work experience.

A. From 1987 to 1999, I was the Manager of Area and Industrial Development for Southern Indiana Gas & Electric Company ("SIGECO"). From 1999 to 2002, I was Director of Economic Development for SIGECO and then Vectren. From 2002 to 2005, I held the position of Director of Industrial Development for Vectren. I assumed my present position in 2006.

Q. What is your educational background?

A. In 1973, I obtained a Bachelor of Arts degree in Economics from the University of Evansville. In 1978, I obtained a Master of Business Administration degree from the University of Evansville. I am a graduate of the Economic Development Institute program of the University of Oklahoma, and obtained the professional designation, Certified Economic Developer (CEcD) in 1996.

Q. Have you previously testified before this Commission?

A. No.

1 **Q. What is the purpose of your testimony?**
2
3 A. The purpose of my testimony is to support adjustments to operating income
4 related to economic development and customer research. These adjustments
5 reflect the annualization of expenses related to programs and employees added
6 during the test year.
7
8 **Q. What areas of VEDO's rate application are you responsible for in this**
9 **proceeding?**
10
11 A. I am responsible for the presentation and explanation of certain adjustments
12 contained within the Commission's Standard Filing Requirements (SFR).
13 Specifically, I am responsible for portions of Schedule C-3.14 which was prepared
14 by me or under my direction and supervision.
15
16 **Q. You have testified that you are the Director of Economic Development for**
17 **Vectren and received a Certified Economic Developer designation. What**
18 **does economic development mean and what do economic developers do?**
19
20 A. In broad terms, "Economic Development" can be defined as the development of
21 the economic wealth of a region for the well-being of its inhabitants. Economic
22 development is a sustainable increase in living standards resulting in increased
23 per capita income, better education and health. In more specific terms, as it is
24 generally understood, "economic development" refers to a set of activities whose
25 objective or result is the increase of employment and / or income in a region.
26 Professional "economic developers" are responsible for planning and carrying out
27 such job and income enhancement activities. Such activities can be very broadly
28 defined. However, in a narrow sense, and as generally understood, these activities
29 revolve around helping a community or region get prepared for economic growth,
30 and then helping that community or region attract or retain employers whose
31 payroll, local expenditures, and local tax payments will grow the economy. An
32 economic developer will work to create developable places for such new or
33 expanding employers to locate. In doing so, the economic developer must be
34 conversant in the infrastructure needs of particular employers and the means by

1 which such needs are met, and the regulatory requirements for doing so. The
2 economic developer will act as a sales person for a community or region, selling
3 prospective employers on a community or region's particular assets. The
4 economic developer will be a facilitator during the period when an employer is
5 locating in or expanding in a community or region, and as such, becomes an
6 "ombudsman", cutting red tape and helping the employer overcome obstacles. In
7 order to receive the Certified Economic Developer designation, I have received
8 training in nearly all of the foregoing subject matter.

9
10 **Q. How does VEDO participate in Ohio's economic development efforts?**

11
12 A. VEDO's Economic Development Department works with local economic
13 development agencies who, in turn, work with industrial and commercial entities
14 that are interested in starting a business, finding a new location for their business
15 or expanding their existing business. The department's objective is to participate
16 in developing a package of incentives and services that will encourage those
17 industrial and commercial entities to locate or expand in Ohio.

18
19 Our economic development efforts not only require coordinating efforts with
20 prospective businesses, economic development entities and state and local
21 government but also require coordinating technical input and evaluation of
22 Vectren's engineering, operations, rates, and legal department. These efforts are
23 very important to the financial well being of Ohio and its citizens.

24
25 **Q. Has VEDO been successful in economic development efforts?**

26
27 A. Yes. VEDO has been involved in several economic development projects in the
28 region served by VEDO.

29
30 **Q. Does VEDO have a proactive strategy for building upon and improving its
31 economic development efforts?**

32
33 A. Yes. We want to increase VEDO's economic development capabilities and
34 increase our efforts to attract new business and to retain opportunities for

1 customer expansion in Ohio. We will work to strengthen and develop new
2 alliances in Ohio and elsewhere to help retain and attract new economic
3 development opportunities. We will continually and critically re-evaluate what
4 more VEDO can do to maximize western Ohio's economic development potential.
5 VEDO will also develop a process to "prospect" for economic development
6 opportunities inside and outside of Ohio. However, to make these expanded
7 efforts a reality, VEDO needs additional personnel.

8
9 **Q. Please describe how Vectren's Economic Development Department is**
10 **currently configured.**

11
12 A. Currently VEDO's Economic Development function is overseen by a single
13 Director, whose time is devoted approximately 50 percent to economic
14 development activities. Assisting that Director is one employee, a coordinator.
15 Approximately 50 percent of this coordinator's time is also spent on economic
16 development, with the balance spent on clerical duties.

17
18 **Q. Is the current staffing of Vectren's Economic Development Department**
19 **sufficient to engage in a level of activity that achieves as much as possible**
20 **given Vectren's natural role in helping attract and retain businesses?**

21
22 A. No. The Economic Development Department needs additional resources. With
23 additional personnel, this department will be able to bring available benefits of
24 economic development to our customers and to western Ohio's economy. In
25 2005, Vectren commissioned a study by a national consulting firm, Ticknor &
26 Associates, to evaluate the staffing levels of its economic development function.
27 That study characterized Vectren's economic development efforts as having "very
28 limited direct resources", and consisting of "limited reactive tactics" and "limited
29 project involvement. The study specifically identified a need for an increased
30 economic development employee presence in Ohio.

31
32 **Q. What employees will Vectren add to its Economic Development Department?**
33

1 A. Vectren intends to hire an Economic Development Manager and an Economic
2 Development Representative during the test year. These employees will increase
3 VEDO's capabilities in the recruitment of large industrial and commercial
4 customers.

5
6 The Economic Development Manager will manage VEDO's activities which are
7 intended to improve the economic health of VEDO's western Ohio service territory.
8 In particular, the person will work to retain and expand VEDO's large customer
9 base, and to attract new large employers. He or she will develop the plans and
10 programs to carry out these objectives. They will interact with state and local
11 economic development organizations and serve as VEDO's primary contact with
12 such organizations.

13
14 The Economic Development Representative will primarily be an implementer of the
15 plans developed by the Manager. He or she will be VEDO's primary contact with
16 economic development prospects and site location consultants, and the key day-
17 to-day contact with state development agency officials. They will be expected to
18 manage leads and prospects and convert them to economic development
19 successes.

20
21 **Q. Are these new positions essential to VEDO's economic development efforts?**

22
23 A. Yes. The level of work to be done and the time commitment required mandates
24 the additional employees in economic development. Current staffing has limited
25 its efforts to take a more reactive approach. Ohio's economy has, for the past four
26 years, been characterized by higher unemployment than national averages. Only
27 much stronger success in economic development can remedy this situation. Local
28 and state efforts are generally the key to greater economic growth. However, a
29 local energy utility's economic development efforts can help to make the difference
30 between average and exemplary economic development success. Often, an
31 energy utility will act as a catalyst for outreach to economic development
32 prospects. This is a role that Vectren has performed in the past, and one which
33 new staffing would allow Vectren to do in the future.

34

1 **Q. Please describe Schedule C-3.14 Line 1.**

2

3 **A. Schedule C-3.14 Line 1, portions for which I am responsible, represents the**
4 adjustment to test year operating revenues needed to capture and annualize the
5 incremental expenses associated with the employee additions I have just
6 described.

7

8 **Q. What is the expense amount for these two positions?**

9

10 **A. As reflected on WPC-3.14 Line 8, VEDO's allocated annual cost for the Economic**
11 Development Manager is \$34,944. The amount to achieve the annual expense is
12 \$20,384. VEDO's annual allocated cost for the Economic Development
13 Representative is \$20,530, which is presented on WPC-3.14 Line 7. An
14 adjustment of \$11,976 is required to capture the annual expense of this position.

15

16 **Q. Are you responsible for other portions of Schedule C-3.14 Line 1?**

17

18 **A. Yes. The amount in Schedule C-3.14 Line 1 also includes incremental expenses**
19 for an Economic Development Program. VEDO has traditionally provided financial
20 support to economic development organizations throughout its service territory.
21 This support generally takes the form of annual membership dues, or as an
22 investment in or contribution to particular organizations. VEDO provides such
23 financial support to three county-level organizations in its service territory and to
24 four regional (multi-county) organizations.

25

26 **Q. How does financially supporting organizations in a community or region**
27 **have an impact on VEDO's economic development efforts?**

28

29 **A. The funding that we provide allows local organizations to build the county's**
30 capacity to support economic growth, while the financial support that we provide to
31 regional organizations allows them to engage in meaningful marketing activities,
32 whose objective is to attract or retain jobs, and raise personal income. These
33 organizations rely on the support of utilities such as VEDO, while VEDO relies on
34 these organizations to take the lead in growing western Ohio's economy.

1

2 **Q. How does VEDO decide which organizations to support and the level of such**
3 **support?**

4

5 A. VEDO attempts to match the financial commitment to an organization with the
6 level of benefit the organization provides to VEDO and its customers.
7 Consequently, we tend to provide more substantial support in counties where we
8 have a greater presence. Generally, we rely on the recommendations of our local
9 employees in an area to determine whether and to what extent we should support
10 an organization.

11

12 The costs of providing this financial support are increasing. First, organizations
13 that we already support have, over time, increasing need for support. Second,
14 organizations that have not received support from us before are finding their way
15 to us. It is generally difficult to justify not providing requested support to such
16 organizations when they can demonstrate that they have done a good job. While
17 we look upon this as increased opportunity for success as these organizations
18 improve their own resources, it does mean that VEDO's financial support will
19 increase as well.

20

21 **Q. What is the adjustment for this expense?**

22

23 A. VEDO's annual cost for Economic Development Program is \$36,400. The
24 expense adjustment required to annualize the Program expense is \$21,233 which
25 is represented on WPC-3.14 Line 4.

26

27 **Q. What other amounts are represented in Schedule C-3.14 Line 1 for which you**
28 **are responsible?**

29

30 A. In Schedule C-3.14 Line 1, there are also incremental expenses for additional
31 employees and customer outreach activities in VEDO's Customer Research
32 Department.

33

1 **Q. Please describe how VEDO's Customer Research Department work force is**
2 **currently configured.**

3
4 A. Currently, VEDO's Customer Research Department is overseen by a single
5 Manager. Two employees report to that Manager, and the Manager reports to me.
6

7 **Q. Please describe VEDO's customer research efforts.**

8
9 A. A major element of our customer research effort is the measurement of customer
10 satisfaction. The Customer Research Department determines the extent to which
11 customers are satisfied with the services they receive and how those services can
12 be improved. Vectren wants to continually satisfy the needs and meet the
13 expectations of our customers. To do this we must better understand our
14 customers' needs and their perception of energy services and costs.
15

16 Our primary technique for improving our understanding of our customers' needs is
17 through the use of surveys. At present, we are conducting six distinct types of
18 satisfaction surveys. Three of these are externally administered. Three are
19 administered by the use of a combination of external and internal resources. The
20 national customer satisfaction measurement company, JD Power, administers two
21 residential surveys and one business survey annually. With the assistance of an
22 external survey company, Vectren's customer research group conducts a limited
23 customer satisfaction survey (monthly), an extensive perception and transactional
24 survey (quarterly), and a "peer utility" customer satisfaction survey (annually).
25

26 Other customer related research includes conducting focus groups, and analyzing
27 the reasons causing inactive services, an area of great concern given the increase
28 in inactive residential locations.
29

30 Another element of Customer Research is assessing our position in the "market".
31 Our efforts in this area include the conducting of a competitive cost analysis
32 (among utilities), and competitive fuel analysis.
33

1 Another element of Customer Research will be determining what new products
2 and services our customers may want and benefit from. Our efforts in this area
3 have been lacking to date. We will perform this research with additional staff.
4

5 **Q. What is the expense amount for these activities?**

6
7 A. The annual expense for these activities is \$88,803. The adjustment required to
8 capture the annual expense is \$16,088, which is reflected on WPC-3.14 Line 6.
9

10 **Q. Are additional personnel needed for VEDO's Customer Research**
11 **Department?**
12

13 A. Yes. The Customer Research Department has hired a Customer Research
14 Analyst. This position will perform research and analysis duties under the direction
15 of the Manager of Customer Research and Analysis. The job description includes:

- 16 • Customer Research Analyst. This position is necessary to perform the
17 expanded customer research functions. Responsibilities include: analyzing
18 changes in customers' ability to pay their gas bills based on changes in the
19 economy; analyzing customer satisfaction results to help pinpoint
20 improvement areas for better meeting the needs and concerns of our
21 customer; conducting research to understand the communication needs of
22 our customers, including needs for safety information, conservation tips,
23 and general understanding of rates; and updating a demographic analysis
24 of Vectren's customer base to help better understand customer's needs
25 and segments of our customer base.
26

27 **Q. What is the expense amount associated with this new position?**
28

29 A. The allocated annual expense for the analyst position is \$27,955. The adjustment
30 necessary to capture this annual expense is \$16,307, which is reflected on WPC-
31 3.14 Line 9.
32

33 **Q. Will VEDO hire a customer research consultant?**
34

1 A. As discussed above, Economic Development and Customer Research will use
2 additional employees to provide the most cost effective support resources to the
3 VEDO workforce. To be successful, however, an optimized blend of outside
4 contract services will also be needed. These contract services will be primarily
5 used for the various surveys we perform at Vectren.

6
7 Specifically, we will hire a customer research consultant to help interpret customer
8 research data and help develop programs that are suggested by that research
9 data. The research consultant's activities will augment the Customer Research
10 Department's efforts. The annual cost to VEDO of using this outside consultant is
11 \$43,961. An expense adjustment of \$10,707 is required to recognize this annual
12 cost, which is presented on WPC-3.14 Line 5.

13
14 **Q. Does this conclude your testimony?**

15
16 A. Yes, at this time it does.

**BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Application of Vectren)	
Energy Delivery of Ohio, Inc. for Authority)	
To Amend Its Filed Tariffs to Increase the	)	Case No. 07-1080-GA-AIR
Rates and Charges for Gas Service and)	
Related Matters.)	

In the Matter of the Application of Vectren)	
Energy Delivery of Ohio, Inc. for Approval	)	Case No. 07-1081-GA-ALT
Of an Alternative Rate Plan for a Distribution)	
Replacement Rider to Recover the Costs of)	
A Program for the Accelerated Replacement)	
Of Cast Iron Mains and Bare Steel Mains)	
And Service Lines, a Sales Reconciliation)	
Rider to Collect Differences between Actual)	
And Approved Revenues, and Inclusion in)	
Operating Expense of the Costs of Certain)	
System Reliability Programs.)	

**DIRECT TESTIMONY
OF ELLIS S. REDD
ON BEHALF OF
VECTREN ENERGY DELIVERY OF OHIO, INC.**

<input type="checkbox"/>	Management policies, practices, and organization
<input checked="" type="checkbox"/>	Operating income
<input type="checkbox"/>	Rate base
<input type="checkbox"/>	Allocations
<input type="checkbox"/>	Rate of return
<input type="checkbox"/>	Rates and tariffs
<input type="checkbox"/>	Other

December 4, 2007

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ELLIS S. REDD

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1 **DIRECT TESTIMONY OF ELLIS S. REDD**

2 **I. INTRODUCTION**

3
4 **Q. Please state your name, business address, and occupation.**

5
6 A. My name is Ellis S. Redd. My business address is One Vectren Square,
7 Evansville, Indiana 47708. I am the Vice President of Human Resources for
8 Vectren Corporation ("Vectren") which is Vectren Energy Delivery of Ohio, Inc.'s
9 ("VEDO") ultimate corporate parent.
10

11 **Q. What are your duties in your present position?**

12
13 A. I have overall responsibility for human resources ("HR") and compensation and
14 benefits administration. This includes labor relations, the administration of
15 compensation and benefits for active employees as well as retirees. In addition,
16 HR is also responsible for the processes and programs to select, develop, and
17 retain talented employees to effectively and efficiently execute the business
18 processes that deliver safe and reliable energy to our customers. In addition, HR
19 oversees Vectren's recently launched Continuous Improvement initiative.
20

21 **Q. Please describe your employment experience.**

22
23 A. I have been employed at Vectren for six years. Over that period I have held the
24 positions of Director of Purchasing, Buildings and Fleet Operations and Vice
25 President of Strategic Sourcing & Productivity. I was elected to my current
26 position in 2007. Prior to my employment with Vectren, I was employed at Mead
27 Johnson Nutritionals (MJN), a division of Bristol-Myers Squibb Company, for nine
28 years, where I held numerous positions, including Sr. Manager of Production and
29 Maintenance for a 300 person FDA regulated manufacturing plant. Prior to my
30 employment with MJN, I was employed by Alcoa for five years as an Industrial
31 Engineer.
32

33 I also serve on the Advisory Board of the Indiana Business Diversity Council, the
34 Dunigan YMCA, St. Mary's Hospital Foundation Board, and the local United

1 Negro College Fund advisory group. I am a former member of the Evansville
2 Redevelopment Commission and currently serve as the chairman of the Supplier
3 Diversity & Development Committee of the Indiana Energy Association.
4

5 **Q. What is your educational background?**
6

7 A. I received my B.S. in Industrial Engineering from North Carolina A&T State
8 University in 1986. I also received a Masters of Business Administration from
9 Washington University in St. Louis in 2001.
10

11 **Q. Have you previously testified before this commission?**
12

13 A. No.
14

15 **Q. What is the purpose of your testimony?**
16

17 A. I will discuss various areas of VEDO's HR operations and explain certain
18 programs and other activities which are necessary to continue to meet the needs
19 of our customers. In particular, my testimony will describe the challenges VEDO
20 faces as the highly qualified and experienced baby boom segment of our work
21 force reach retirement age within a brief span of time and begin to leave our
22 company. I will describe our proactive efforts for dealing with this aging
23 workforce phenomenon and the resulting costs. I will also discuss several
24 proposed new employee positions needed by VEDO to meet our business
25 requirements. Finally, I will discuss expenditures for various training programs,
26 including Recruiting and Employment and Diversity.
27

28 **Q. What areas of VEDO's rate application are you responsible for in this**
29 **proceeding?**
30

31 A. I am responsible for the explanation of certain adjustments contained within the
32 Commission's Standard Filing Requirements (SFR). Specifically, I am
33 responsible for portions of the adjustment on Line 1 and all of the adjustment on

1 Line 2 of Schedule C-3.16 which were prepared by me or under my direction and
2 supervision.

3
4 Specifically, the adjustments in Schedule C-3.16 I am responsible for cover the
5 following topics:

6
7 Line 1 – Employee Additions

8 Line 2 – Human Resources Programs

9
10 VEDO Witness M. Susan Hardwick is also responsible for a portion of the
11 adjustment on Line 1 of Schedule C-3.16.

12
13 **II. VEDO'S AGING WORKFORCE IMPACT ON HUMAN RESOURCES**

14
15 **Q. Please describe Schedule C-3.16 Line 1.**

16
17 A. Schedule C-3.16 Line 1 is an adjustment to test year operating revenues to
18 annualize expenses associated with the Human Resources Department and
19 employee additions to support these programs.

20
21 **Q. Please describe the impact of VEDO's aging workforce on the HR**
22 **department.**

23
24 A. According to Bureau of Labor statistics, over 30% of the existing utility workforce
25 will be eligible for retirement over the next 5 years. This phenomenon will have a
26 significant impact on VEDO. Within my department, we have summarized the
27 circumstance as follows: "We are a highly regulated and technical business that
28 requires talented employees who possess specific competencies and skill sets.
29 In the next few years we are expecting retirements to be at a pace that may
30 double or triple historical levels. Because of that risk we are looking at all of our
31 key HR and training processes to ensure we will be able to recruit, assimilate and
32 develop new Vectren Colleagues at a more rapid pace than any other time in
33 Vectren's history." The sheer magnitude of the anticipated retirements has
34 drawn great attention to the issue, and, as a result, a heightened level of HR

1 planning has commenced as companies are focusing on their recruiting and
2 training programs to assure that business productivity will not suffer. Not only is
3 internal demand increasing for these services, but external competition is
4 increasing as many companies attempt to recruit new talent.

5 As described by VEDO Witness William S. Doty, VEDO is keenly aware of this
6 potentially critical business problem and has engaged in a planning process to
7 enable the company to address the issue before it threatens the reliability of the
8 service we provide to our customers. As I describe in more detail later in my
9 testimony, we have determined that HR will manage the loss of non-bargaining
10 personnel through new and traditional intensified recruiting efforts. In addition,
11 internal succession planning and training efforts will require greater emphasis in
12 an effort to better prepare the existing employees to be prepared to fill vacancies.
13 Thus, the need to have an adequate HR staff in place to recruit, train and
14 oversee employees is critical.

15 The existing resources in HR that serve VEDO are very lean. Survey results
16 support that our current HR staffing level is low compared to our peer companies.
17 Vectren scored at the bottom end of the 4th quartile in Headcount Ratio.
18 Specifically, the survey indicates the HR "Headcount Ratio" at Vectren is 148:1
19 compared to the utility benchmark of 89:1. When compared to other various
20 companies of comparable size (measured by total headcount) the benchmark is
21 75:1. Our HR professionals cannot provide the HR service and support
22 necessary as each HR professional is serving between 59-73 more employees
23 than other HR professionals at benchmark.

24 As specific examples, we currently have a single Director who oversees the daily
25 needs of over 900 non-bargaining unit employees. These responsibilities include
26 employee evaluations, salary issues, and disciplinary actions. This is a
27 consuming challenge which does not allow for incremental duties, much less
28 spending more time on basic employee issues. Similarly, a single director level
29 employee is charged with administering all non-operations personnel
30 development efforts. These efforts include orienting new employees to the
31 company, developing leadership skills for lower level managers, and coordinating
32 outside professional programs to develop skill sets. Even absent the aging

1 workforce issue, VEDO requires more resources in these areas to obtain better
2 results from its employees in order to sustain and improve performance to meet
3 increasing demands on the business to deliver higher customer satisfaction, and
4 safe and reliable service. Our ability to develop leaders also helps us attract and
5 retain the talent required to operate the company in the future. In light of the
6 aging workforce issues, these needs become more pressing.

7 **Q. How does HR propose to address the impact that the aging workforce**
8 **challenge has on the department?**

9
10 **A.** We will meet this challenge head on. Our strategy includes implementing several
11 new training programs, intensifying our recruitment efforts, diversifying our
12 workforce and expanding our employees' capabilities.

13
14 With regard to training, Vectren has already planned to implement several new
15 programs including: Problem Solving and Decision Making; Finance for the Non-
16 Finance Professional; Delegating for Results; Leading High Performance Teams;
17 Leading Change; Coaching Employees; Resolving Conflicts; and, Setting
18 Performance Expectations. Similarly, on the recruiting front, Vectren has
19 recently established a co-op program, partnering with several colleges to recruit
20 students, with the intent to hire outstanding co-ops into open positions in the
21 future. Vectren has also expanded its intern program to cover a number of
22 departments where hiring needs have been identified. We also plan to expand
23 the number of career fairs outside of the Evansville and Indiana areas to attract
24 candidates into both our bargaining and non bargaining unit skilled positions.
25 Business publications will also be used to draw interest to the company and its
26 opportunities.

27
28 Likewise, addressing diversity is an area Vectren is already planning to address
29 head-on. A detailed diversity strategic plan has been prepared and will soon be
30 presented to Vectren's leadership team. The strategy frames the process for
31 increasing diversity and developing and maintaining an inclusive culture.
32 Specifically, Vectren's strategic plan includes: recruiting and launching a diversity
33 action council; utilizing the council to assess Vectren's past diversity efforts and
34 identifying gaps in these efforts; developing and implementing short and long-

1 term tactics to close certain gaps; developing a dashboard to measure and track
2 progress to close the gaps; educating all employees by communicating the plan;
3 establishing accountability metrics for meeting the vision and implementing
4 identified tactics to ensure success. As part of this, Vectren staff has joined the
5 American Association of Black's in Energy to develop partnerships with larger
6 utilities to broaden reach of our recruiting efforts. Vectren is also increasing
7 women and minorities in the company's intern/co-op programs, building
8 relationships in minority communities through the Diversity Manager's
9 participation and support of community events and meetings with community
10 leaders, and establishing on-going relationships with universities having larger
11 percentages of minority students. Vectren has already undertaken other
12 initiatives to increase awareness about diversity including interactive diversity
13 training sessions for all business units. Various diversity training is also now
14 required for all managers, supervisors, and employees.

15
16 Obviously, to effectively accomplish all of this, HR needs to add certain
17 employees who will manage various aspects, current and new, of the company's
18 strategy. We have begun this process. For example, we have hired a Manager
19 of Diversity to head our efforts in that area and filled several of the positions I
20 describe later in my testimony, but there is much more that needs to be done.

21
22 **Q. Will the focus of these additional employees only be directed at dealing**
23 **with the aging workforce challenge faced by VEDO?**

24
25 **A.** No. Many of the HR costs I will describe are related to the broader employee
26 needs caused by the aging workforce issue at Vectren but their work product will
27 produce benefits experienced all across the company. For instance, the
28 Recruiting and Employment Specialist will be heavily focused on finding
29 replacements for specific positions impacted by our aging workforce. But this
30 person will also be recruiting for other positions in the company that are not
31 directly attributable to the aging workforce. In the end, however, the work of
32 these new employees will have a direct benefit to our customers because our
33 workforce will be more talented, diverse and better trained and therefore able to
34 provide better service.

1 Q. Please review each of the HR cost categories contained in Schedule C-3.16
2 Line 1 and explain the need for the requested adjustment to operating
3 income.

4 A. These cost categories represent employees, which will be added during the test
5 year. In total, there are six positions critical to the HR department needs. The
6 first four are positions whose job functions primarily relate to the aging workforce
7 challenge. Four of these positions have been filled and recruiting has begun for
8 the other positions that are expected to be filled during the test year. They are:

9
10 • Retirement Plans Administrator. This employee will assist with financial
11 planning, insurance issues, and health care concerns for all of Vectren's
12 employees but the position was created to intensify the effort on retirement
13 education and the development of information programs. In the past, these
14 responsibilities were assigned to a Benefits Manager who was also
15 responsible for administering all employee health, dental, life insurance, and
16 long term disability plans. Given the significant responsibility of managing all
17 of these plans, the Benefits Manager was unable to devote the amount of
18 time necessary to effectively administer retirement education plans. Because
19 retirement levels will be two to three times the present pace, the small
20 amount of resources previously focused on retirement education combined
21 with this growing demand for retirement information from prospective and
22 current retirees necessitated the addition of the Retirement Plans
23 Administrator. Thus, retirement education and training programs will be
24 developed and administered by this employee. This position has been filled
25 and is already providing support across the organization. The VEDO
26 allocated annual amount for this position is \$15,435. To recognize the annual
27 expense, an adjustment of \$9,004 was required as shown on WPC-3.16, Line
28 7.

29
30 • Financial Analyst. Prior to filling this position, HR had no analysts to perform
31 necessary and critical invoice review and processing. These responsibilities
32 were handled by two HR Benefits Specialists whose primary missions are to
33 respond to questions and claims related to compensation and benefits for

1 1,800 active employees and over 1,400 retirees. Mixing these responsibilities
2 created challenges in both areas: invoices were not receiving proper attention
3 resulting in mistakes and employees and retirees were receiving untimely
4 responses to their questions. The Financial Analyst reviews, sorts and
5 analyzes HR healthcare related invoices; communicates with vendors to
6 resolve discrepancies; documents timing, calculations, and accounts for
7 active employees and retirees; prepares monthly vendor reports for health
8 pool; analyzes and corrects inconsistencies with accounts payable; assists in
9 preparation of monthly analysis of entire benefits pool and stop loss claims;
10 analyzes and processes business unit operating and maintenance invoices;
11 and, completes monthly variance analysis by cost center. A dedicated
12 analyst performing these responsibilities helps control VEDO's healthcare
13 costs. Separating the responsibilities will also improve employee and retiree
14 support and satisfaction and result in increased productivity by allowing our
15 Benefit Specialists to concentrate on their specific job duties. The VEDO
16 allocated annual cost for this position is \$12,120. As reflected on WPC-3.16,
17 Line 6, an adjustment of \$7,070 is required to achieve the annual expense in
18 the test year.

- 19
- 20 • Training Specialist (Training and Development Administrator). This position
21 has been filled. This employee is dedicated to assisting our Manager of
22 Diversity who oversees VEDO's hiring and training of new employees as well
23 as a new initiative to train our existing workforce on the need and benefits of
24 a diverse workforce. Previously, another HR employee who left the company
25 performed the training duties, but the Manager of Diversity has taken over
26 responsibility for this as well as the new initiative. Given the consolidation of
27 these roles, and the incremental diversity initiatives including training, the
28 manager will use this new employee to support these broader activities.
29 Some of these activities include assessment of current organization needs,
30 track employee opportunities, design curriculum and materials as well as
31 instruct colleagues throughout all Vectren service territories. This employee
32 will also interface with educational institutions to design job training programs.
33 The VEDO allocated annual cost for this position is \$8,425. As reflected on

1 WPC-3.16, Line 5, an adjustment of \$4,914 is required to achieve the annual
2 expense in the test year.

- 3
- 4 • Recruiting and Employment Specialist. To date VEDO has met increasing
5 recruiting requirements through use of a temporary employee. This cost is
6 reflected in the test year. A permanent employee has been hired to provide
7 continuity and experience to this role. This employee is necessary to assist
8 in filling and recruiting open positions due not only to the increased
9 retirements for the aging workforce, but also to the increased competitive
10 market in the VEDO service territory. This position will be responsible for
11 filling open requisitions, posting positions internally and externally, and
12 working with hiring managers on the individual position's needs. Adding this
13 employee will also allow the current Recruiting and Employment Specialist to
14 focus more on building relationships with the colleges and universities within
15 Vectren's service territory to better assist the company in filling skill-positions
16 and bargaining unit positions that are the bulk of the expected retirements
17 within the next 10-15 years. The VEDO allocated annual expense associated
18 with this position is \$8,415. As reflected on WPC-3.16, Line 4, an adjustment
19 of \$4,909 is required to achieve the annual expense in the test year.

20

21 The basis for the final two positions are influenced by the aging workforce
22 challenge, but are not directly related to it. Those positions are more fully
23 described below:

- 24
- 25 • Employee Relations Director: Currently, our Employee Relations Director is
26 also VEDO's Safety Director, two functional areas that are not closely related.
27 Prior to adjusting to cover both areas, this existing Director served only as
28 Safety Director. VEDO realizes it is critical to again separate these two
29 functional areas. The company's corporate goal is to achieve best-in-class
30 safety performance as measured by the AGA benchmark. VEDO has also
31 had two recent fatalities in our Company. For these reasons, it is critical
32 VEDO have a dedicated strategic level focus on safety programs and
33 training. In addition, having these positions combined greatly hinders safety
34 progress and communication with the union. The same person struggles to

1 work effectively when handling controversial labor relations issues and
2 simultaneously conducting friendly discussion regarding employee safety and
3 safety programs. The Employee Relations position will execute the
4 Company's labor relations strategy to ensure the Company's and employees'
5 continued success. This employee will interact with the leadership of five
6 separate labor agreements representing 900 plus bargaining unit employees.
7 He/she will act as lead negotiator for the company in labor and employment
8 matters. Given the nature of this position, we have recruited candidates with
9 a strong background in union-labor relations. This will be filled during the test
10 year; therefore, VEDO has included an adjustment of \$20,266 (WPC-3.16,
11 Line 10) to capture VEDO's annual allocated expense of \$34,741 in the test
12 year.

- 13
14 • HR Generalist – Support of Workforce Transformation. VEDO currently has
15 one HR Generalist position which supports approximately 1,800 employees.
16 To effectively administer all the areas of HR, it is essential VEDO have
17 incremental resources. This employee would support the single Director that
18 provides support for our entire non-bargaining unit workforce. Additional
19 responsibilities include assisting with hiring; conducting exit interviews, which
20 include feedback and recommendations to management; compensation
21 approval; performance monitoring such as disciplinary guidance and annual
22 performance evaluations; organizational restructuring such as organizational
23 design and reorganization implementation strategy; EEO, state and federal
24 employment reporting and compliance; and consult management personnel
25 regarding HR policy administration. As described earlier, VEDO can not
26 continue to effectively manage its workforce going forward with the added
27 burdens associated with aging workforce driven employee turnover absent
28 this resource. Recruiting for the position has begun. The VEDO allocated
29 annual expense associated with this position is \$15,726. As reflected on
30 WPC-3.16, Line 8, an adjustment of \$9,174 is required to achieve the annual
31 expense in the test year.

32
33 **Q: How were the salary levels for each of these positions determined?**
34

1 A: All salaries for non bargaining unit positions at the Company are determined
2 using a market based approach which uses external comparisons to create a
3 salary structure. VEDO primarily uses data from the Towers Perrin Energy
4 compensation survey (which includes survey results from 115 utilities across the
5 country), the Towers Perrin General Industry compensation survey (which
6 includes more than 700 general industry companies from across the country),
7 and the American Gas Association compensation survey (which includes 49
8 natural gas utilities from across the country). From these three data sources, a
9 mid point is established that represents the 50th percentile of the salary data.
10 The minimum salary is established at 80% of the midpoint with the maximum
11 salary established at 120% of the midpoint. VEDO determined the salary level
12 for each of these positions using this exact methodology.

13

14 **Q. Why are these adjustments reasonable?**

15

16 A. VEDO has made every effort to keep rates low by managing employee numbers
17 to the lowest reasonable level by using attrition and replacing only those jobs that
18 are required. This strategy has worked for several years but we have
19 increasingly seen that HR is falling short in meeting employee and company
20 needs because of lack of resources. Now we need to respond to conditions and
21 match future workforce levels to the requirements of the gas delivery system and
22 VEDO's customers. While these additional employees result in cost increases,
23 adding the employees now and having them in place as retirements occur is a
24 prudent, necessary, and reasonable approach resulting in the lowest possible
25 cost of operations and good customer service levels. The need for and benefits
26 of planning for competent replacement employees make this is a very reasonable
27 adjustment.

28

29 **III. Process Improvement**

30

31 **Q. Are there other incremental employee additions represented it the amount**
32 **on Line 1 of Schedule C-3.16?**

33

1 A. Yes. This figure includes two additional employees for the Continuous
2 Improvement Initiative occurring at VEDO.

3

4 **Q. Please describe the Continuous Improvement and Productivity Initiative.**

5

6 A. Prior to taking over HR, I supervised the company's recently launched
7 Continuous Improvement and Productivity Initiative. I have retained this function.
8 While widely adopted by many companies, the Continuous Improvement
9 approach is probably best known due to GE's pioneering efforts to find
10 efficiencies and improvements in department processes. Essentially, via
11 benchmarking and other studies, the Continuous Improvement department
12 obtains external data to compare to internal processes and costs for each
13 business function and then evaluates ways to improve performance, reduce
14 costs and along the way, increase employee satisfaction. This effort is relatively
15 new at VEDO, at least at this level of formality, but it is truly the foundation
16 needed to critically assess our operations and improve them. As the name
17 suggests, the process is continuous – as we continue to gather corporate data
18 and train employees to look for improvements, results will be seen and the "this
19 is the way we have always done it" philosophy will be replaced by openness to
20 change.

21

22 **Q. Please describe the functions of the two additional employee additions**
23 **necessary for the Continuous Improvement and Productivity Initiative.**

24

25 A. As discussed, VEDO realizes it needs to continue its efforts to contain and
26 control cost. The Company must ensure that all business units are setting stretch,
27 but achievable, goals to become more efficient and effective. This will be
28 accomplished through two new positions in the Continuous Improvement and
29 Productivity department. Both are Productivity Analyst positions which will serve
30 as liaisons between VEDO's business units and senior leadership. Their main
31 task is to independently gather and analyze current processes, procedures and
32 technology to identify and document cross-functional, departmental and
33 divisional dependencies. Working closely with VEDO's business units,
34 alternative approaches for improvements to our business processes will be

1 identified. This will be accomplished utilizing a combination of training, process
2 re-engineering, technology enhancements and electronic document integration.

3

4 **Q. Were the salary levels for these two positions determined with the same**
5 **methodology as the other positions in HR you described earlier?**

6

7 **A.** Yes, the exact same methodology was employed for these two positions.

8

9 **Q. Can you describe what the Continuous Improvement and Productivity**
10 **initiative has done at Vectren to date.**

11

12 **A.** The initiative has gone from the development stage into creation of a Department
13 that has already performed several projects. It is now ready to be more fully
14 staffed in order to broaden the scope of the efforts. The program has created a
15 benchmarking process along with a pilot project using the Six Sigma continuous
16 improvement methodology. We currently have a Director who is leading this
17 effort and used the pilot project to become certified as a Six Sigma Black Belt.
18 The scope of the program, however, is too significant for the current Director and
19 we need additional resources which can focus on other areas of the company.
20 Adding employees will allow for faster development of action plans based on
21 known best practices which are adapted and modified to fit Vectren's needs. It
22 also facilitates better goal setting and execution leading to improved overall
23 performance including safety, customer satisfaction, and operating results.

24

25 Vectren has already joined various external benchmarking groups as an active
26 participant and participates in the strategic development of benchmarking
27 surveys internally. Benchmarking is a continuous exercise working with peer
28 groups and other companies both within and outside the utility industry.
29 Participating in benchmarking allows us to stay abreast of changes in the
30 industry in order to sustain and improve performance relative to those
31 comparison groups. However, the data provided by the studies must be
32 evaluated and applied to our company. This is another area where these
33 incremental employees will be critical.

1 **Q. Can you further describe the pilot project you previously mentioned?**

2

3 A. The pilot project, using the Six Sigma, involves our billing department.
4 Employees have gathered under the direction of the Continuous Improvement
5 Director, who shares external benchmarking data. This data provides new
6 numbers as well as concepts on how other companies perform the function.
7 Over the course of months, self-critical analysis and brainstorming have occurred
8 to produce process change ideas and efficiencies. The business unit owns the
9 outcome, and the employees improve their own jobs, with the help of the
10 Continuous Improvement department. The department helps with measuring
11 outcomes over time and revisiting issues. Specifically, this project identified
12 issues around meter reads, estimates of bills, and has recommended ways to
13 improve service. But this is the tip of the iceberg. Benefits flow from the
14 process. We just need to devote more resources to the effort.

15

16 **Q. What is the adjustment amount for these two positions?**

17

18 A. The VEDO annual allocated cost for these two positions is \$26,364. As reflected
19 on WPC-3.16, Line 9, an adjustment of \$15,379 is required to achieve the annual
20 expense in the test year.

21

22 **IV. Aging Workforce Implications on HR Training and Recruiting**

23

24 **Q. Please describe Schedule C-3.16 Line 2.**

25

26 A. Schedule C-3.16 Line 2 is an adjustment to test year operating revenues to
27 annualize expenses associated with new programs implemented in the Human
28 Resources Department to address the aging workforce challenge faced by the
29 Company.

30

31 **Q. Please discuss the non-FTE aging workforce-related effects on the HR**
32 **Department.**

33

1 A. The American Public Power Association (APPA) surveyed its members and
2 produced a report on the aging workforce defining this as the "new challenge to
3 its members." The findings were that half the companies project the potential
4 loss of somewhere between 21-50% of their workforce over the next five years.
5 The companies indicated that knowledge loss would be the single greatest
6 problem resulting from the retirements, with finding replacements also a great
7 challenge. The APPA outlined steps for its members to take to address the
8 retirement onslaught, including identifying gaps in terms of ongoing productivity
9 needs and investing in training resources. The recommended emphasis is to be
10 proactive in order to commence the necessary development of a new workforce
11 before the retirement wave occurs.

12
13 VEDO intends to be proactive to address this challenge. Our entire operation will
14 require significant training and support from HR to manage our way through the
15 aging workforce challenges. As discussed above, HR plans to use additional
16 employees to provide the most cost effective support resources to the VEDO
17 workforce. To be successful, however, an optimized blend of outside contract
18 services will also be needed. These contract services will be primarily used in
19 the various training and development programs at VEDO. The programs where
20 these support services will be used include:

- 21 • Supervisor Training/Leadership Development. Supervisory training will be
22 driven in part by the aging workforce requirements as they affect both
23 bargaining unit and non-bargaining unit positions. Leadership development
24 relates to existing employees. In this area, there will be significant efforts to
25 identify employees who have potential to replace retiring employees in
26 supervisory jobs, and engaging in skill development for those employees that
27 will prepare them to move into positions that open up as a result of
28 retirements. An example would be identifying key employees to use
29 resources from local universities to provide continued education
30 opportunities. Since we have not included an adjustment for actually hiring
31 employees to replace supervisory vacancies that will occur in both the
32 bargaining and non-bargaining areas, this exercise is very important to
33 maintain expertise and train the future leaders in the company. The annual

1 allocated cost for this program is \$42,500 as reflected on WPC-3.16, Line 14,
2 and to capture the annual expense in the test year, an adjustment of \$24,792
3 is required.

- 4 • Recruiting Employment Program. In the tight labor market recruiting will be a
5 continuous challenge. Obtaining the best possible individuals for VEDO's
6 work force is a critical task. To meet this challenge, VEDO must seek
7 additional recruiting assistance from general recruiting and diversification
8 search firms. Also, Vectren believes pre-employment testing provided by
9 professional outside consultants helps ensure the "right-fit" in an effort to limit
10 re-hiring for positions. Finally, to maintain a quality workforce, additional
11 expenses related to relocation and other new employee services are
12 unavoidable. The annual allocated cost for recruiting is \$21,250 as stated on
13 WPC-3.16, Line 15, and to capture the annual expense in the test year, an
14 adjustment of \$12,396 is required.

- 15 • Diversity Employment Program. As indicated earlier in my testimony, VEDO
16 realizes it needs to continue its efforts to diversify its workforce. The
17 company must apply additional specialized recruiting techniques and
18 resources to ensure that all qualified candidates are considered for
19 employment in all jobs throughout the company. To do this, Vectren must
20 develop a number of new initiatives including working with external recruiters,
21 developing mentoring programs for current and new employees, establishing
22 relationships and sponsoring successful organizations such as INROADS.
23 We must also expand diversity education/training on a regular and ongoing
24 basis for all levels of employees. In addition to racial and ethnic diversity,
25 Vectren's diversity efforts will need to address gender and inter-generational
26 issues. This includes implementation of diversity awareness and harassment
27 training. The annual allocated cost for the diversity employment program is
28 \$25,500 as reflected on WPC-3.16, Line 15, and to capture the annual
29 expense in the test year, an adjustment of \$14,875 is required.

30
31 **Q. Do you support the need for these additional HR programs for your**
32 **department?**
33

1 A. Yes I do. Prior to becoming Vice President of HR, I worked closely with the HR
2 department and relied on them heavily to help supervise and manage issues
3 related to our workforce. I am confident these programs will aid in building and
4 maintaining the type of workforce that VEDO's customers will need in the near
5 future. Also, it is important to note a recent study indicated Vectren fell well
6 below the 50th percentile within the utilities group in average training cost per
7 non-bargaining unit employee. Specifically, that study shows the "Training
8 Headcount Investment Factor" at Vectren is \$300 compared to a utility
9 benchmark of \$389. Various companies similar in size (measured by total
10 headcount) have a benchmark of \$805. Translated into actual dollars for Vectren
11 and based on approximately 1,800 employees, we are spending \$160,000 -
12 \$909,000 less in training per employee per year than benchmarked companies.

13
14 As I mentioned earlier, HR is responsible for designing and implementing
15 processes and programs to recruit, select, develop, and retain talented
16 employees to effectively and efficiently execute the business processes that
17 deliver safe and reliable energy to our customer. In order to provide the best
18 service possible to our customers, VEDO must have the resources necessary to
19 put in place programs that are able to attract, recruit, hire and retain a skilled
20 workforce. Part of this includes developing our current workforce so that newer
21 employees can grow into future leaders of the company. Failure to recruit and
22 keep talented workers and grow future leaders will result in a nonintegrated
23 workforce, prohibits effective knowledge transfer, and ultimately will lead to poor
24 customer service. The adjustments are very reasonable and are clearly needed
25 by the HR area to support VEDO's operations.

26
27 **Q. Does this conclude your testimony?**

28
29 A. Yes.

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**DIRECT TESTIMONY OF
DOUGLAS A. KARL
ON BEHALF OF
VECTREN ENERGY DELIVERY OF OHIO, INC.**

☐ Management policies, practices, and organization
☒ Operating income
☐ Rate base
☐ Allocations
☐ Rate of return
☐ Rates and tariffs
☐ Other

December 4, 2007

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DOUGLAS A. KARL

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1 DIRECT TESTIMONY OF DOUGLAS A. KARL

2
3
4 **Background and Qualifications**

5
6 **Q. Please state your name and business address.**

7
8 A. My name is Douglas A. Karl, and my business address is One Vectren Square,
9 Evansville, Indiana 47708.

10
11 **Q. By whom are you employed and in what capacity?**

12
13 A. I am Vice President of Marketing and Customer Service for Vectren Utility
14 Holdings, Inc., the parent company of Vectren Energy Delivery of Ohio
15 (collectively "VEDO" or the "the Company").

16
17 **Q. Please describe your educational background.**

18
19 A. In December 1974, I graduated from Bryant College, located in Smithfield, Rhode
20 Island, with a Bachelor of Science Degree in Business Administration.

21
22 **Q. Please describe your professional background.**

23
24 A. From 1976 to 1988, I was employed at Providence Gas Company, serving
25 through those years in a number of residential, commercial and industrial sales
26 and marketing positions. From 1988 to 1990, I was Marketing Manager of
27 International Fuel Cells Corporation, a Division of United Technologies
28 Corporation, South Windsor, Connecticut. In February 1990, I was hired by
29 Indiana Gas Company, Inc. as Manager of Industrial Marketing. Subsequently, I
30 have held the positions of Director of Industrial Marketing, Director of Industrial
31 and Commercial Marketing, Director of Marketing and Sales, and Senior Director
32 of Customer Service. On May 1, 2002, I was promoted to Vice President of
33 Marketing and Customer Service.

34
35 **Q. Please describe the responsibilities of your current position.**

1 A. I am responsible for Vectren Energy Delivery's Customer Service functions
2 including residential, commercial and industrial marketing and sales activities in
3 Vectren service territories in Ohio and Indiana. My duties also include
4 overseeing the Company's customer service activities associated with the
5 management and operation of Vectren's customer contact center.
6

7 **Q. What is the purpose of your testimony?**
8

9 A. The purpose of my testimony is to provide an overview of the energy
10 conservation program portfolio proposed by VEDO on Schedule C-3.15. The
11 program has been designed to provide customers with conservation tools,
12 information and energy efficient equipment incentives. These resources are
13 intended to enable VEDO customers to reduce their natural gas consumption
14 which will, in turn, result in reductions to their monthly bills. To implement the
15 program portfolio, VEDO has included two additional employees to assist in
16 administering the programs, which are included in Schedule C-3.15.
17

18 Additionally, my testimony will cover the two additional positions related to our
19 sales staff, which is included in Schedule C-3.14.
20

21 **Q. Please describe what is referred to as the conservation program portfolio?**
22

23 A. The proposed conservation program portfolio, with an aggregate annual budget
24 of \$4,000,000, is comprised of a low-income weatherization plan component at
25 \$1,100,000 annually and a broader comprehensive, integrated plan at
26 \$2,900,000 annually. This program is included in Schedule C-3.15 and is further
27 defined on WPC-3.15 Line 5.
28

29 The low income weatherization plan is known as Teaching Energy Efficiency
30 Measures or TEEM. TEEM was initiated in the autumn of 2005 and is
31 administered through Dayton Community Action Program (CAP). Eligible
32 customers are those who fall within 200% of poverty as defined by the Federal
33 Poverty Guidelines and includes measures and protocols prescribed by the State
34 of Ohio Home Weatherization Assistance Program (HWAP). Funds available

1 through TEEM are leveraged with other available funds for customers whose
2 incomes are up to 175% of poverty while funds for customers whose incomes
3 range between 175% and 200% are solely from funds approved for TEEM.
4

5 The broader, comprehensive, integrated plan ("DSM") is described in detail by
6 VEDO witness Matthew Rose, but generally includes:
7
8

9 **Residential Programs**

- 10 - High Efficiency Furnace/Boilers
11 - High Efficiency Gas Water Heating
12 - On-Line Audit and Water Heating Kit
13 - Energy Efficient New Construction
14 - Audit and Home Performance-Pilot
15

16 **Commercial Programs**

- 17 - Commercial High Efficiency Boiler and Furnace
18 - Commercial High Efficiency Water Heating
19 - Commercial Re-Commissioning Program- Pilot
20

21 **Q. Please describe generally the process by which VEDO crafted the**
22 **conservation program portfolio?**
23

24 **A.** VEDO has been engaged in conservation related discussions with the Ohio
25 consumer representatives for numerous years. These discussions have focused
26 on low income and general conservation programs. VEDO also engaged a
27 consultant, The Vista Energy Group, Inc., an organization that has designed
28 demand side management and conservation programs for many years, to work
29 with VEDO to design the core programs that are included in the program portfolio
30 that is proposed. In addition, during the same period of time, VEDO has gained
31 valuable experiential knowledge from Vectren's significant efforts to study and
32 design conservation programs pertaining to customer segments in addition to low
33 to moderate income individuals in its Indiana service territory. Also, VEDO
34 developed the portfolio in a manner consistent with the insights provided by the

1 Commission in its June 2007 Supplemental Order and Opinion in Case Number
2 05-1444-GA-UNC.

3
4 The overarching strategic guidance in developing the program portfolio was to
5 commit sufficient financial resources and to design specific program components
6 to ensure accessibility for a broad segment of VEDO customers and meaningful
7 conservation results for customers.

8
9 **Q. Please describe the Indiana conservation efforts you have referenced?**

10
11 A. In 2005 Vectren formed a conservation collaborative ("Indiana Collaborative")
12 consisting of representatives of the Indiana Office of Utility Consumer Counselor,
13 The Citizens Action Coalition and an Industrial Energy User Group to focus on
14 determining appropriate natural gas conservation programs that could be
15 implemented and to sponsor interim efforts to establish pilot programs to
16 effectively assist customers in reducing their natural gas consumption. As a
17 starting point, the Indiana Collaborative selected an energy conservation
18 consultant, a combination of Forefront Economics and H. Gil Peach and
19 Associates, to perform a comprehensive study of the market potential for gas
20 conservation in that part of the state served by Indiana Gas Company, Inc, which
21 does business as Vectren Energy Delivery of Indiana - North. The outcome of
22 the consultant's work was a comprehensive study that included a market
23 assessment and a recommended action plan consisting of the programs that
24 could be implemented to assist customers and drive various conservation
25 measures to reduce natural gas consumption.

26 The Forefront Economics and H. Gil Peach and Associates' study, completed in
27 December 2005, indicated that the greatest impact from conservation programs
28 would be from primary end uses of residential space and water heating,
29 commercial space and water heating, and commercial cooking. The study
30 further indicated that industrial customers, while significant energy consumers,
31 only represented a small percentage of gas sales and typically employ in-house
32 experts to guide energy related decisions. These key findings together with
33 ongoing dialogue among the collaborative members guided the development of
34 the residential and commercial programs for the portfolio.

1
2 Coincidentally, Mr. Peach testified on behalf of a party other than VEDO in Case
3 No. 05-1444-GA-UNC, in which VEDO proposed a portfolio of conservation
4 programs. In that case, Mr. Peach, based on his work in Indiana and his national
5 experience, characterized VEDO's proposal as "excellent for an initial DSM
6 cycle." The portfolio proposed in this application is modified only slightly from
7 that proposed in Case No. 05-1444-GA-UNC.
8

9 **Q. Does VEDO plan to measure the results of the conservation programs?**
10

11 A. Yes, each component program will be measured separately. VEDO witness
12 Matthew F. Rose provides a detailed description of the methodologies that will be
13 implemented to measure program performance.
14

15 **Q. Does VEDO intend to share the results of the program portfolio with other
16 stakeholders?**
17

18 A. Yes, VEDO intends to meet regularly with VEDO's Ohio Collaborative, comprised
19 of Commission Staff, the Ohio Consumers' Counsel, and Ohio Partners for
20 Affordable Energy (OPAEE). These meetings will constitute the forum in which
21 program performance measurements will be shared and continuing dialogue on
22 energy conservation measures generally can take place.
23

24 **Q. Please describe how the program might be modified in the future to ensure
25 they continue to be effective?**
26

27 A. VEDO will review program results, and based on those results and input from the
28 Ohio Collaborative, VEDO may consider appropriate modifications to the
29 conservation program portfolio, including reallocation of funding between
30 programs and use of carry over funds from a prior program year. Based on
31 program results, VEDO may also consider the design and implementation of new
32 programs as technologies continue to develop.
33

1 Q. Does Vectren need additional resources to manage its conservation
2 program portfolio?

3
4 A. Yes. To date, a program manager and I have been primarily responsible over
5 the last few years to launch Vectren's efficiency efforts in two states, including
6 Ohio. We work with consultants and contractors to supplement our efforts.
7 Given our ongoing commitment to these efforts, we will fill two positions during
8 the test year: Conservation Program Manager and Conservation Analyst,

9
10 • Conservation Program Manager will be responsible for VEDO
11 Conservation programs, which will include the primary management
12 oversight of the natural gas conservation program portfolio. This position
13 will also coordinate all collaborative efforts that will engage in program
14 design and implementation, evaluation and measurement, and
15 coordination of any subcontractors performing services within the
16 program portfolio.

17
18 • Conservation Analyst. This position will include analyzing the attributes of
19 homes in our service territory (size, heating fuel used, age of home, age
20 of heating unit, condition of home) to help identify possible conservation
21 initiatives and their projected impact and using demographic analysis to
22 help pinpoint target areas for conservation initiatives. This position will
23 also oversee research and related outreach to try to understand the
24 reason for inactive service and to recapture past customers so their
25 contribution to fixed costs can be regained to the benefit of all customers.

26
27 Q. What is the expense associated with adding these positions?

28
29 A. The Conservation Program Manager and Conservation Analyst are included in
30 Schedule C-3.15, and as noted on WPC-3.15 Lines 7 and 8, to capture the
31 annual expense associated with these positions, an adjustment of \$84,557 is
32 required to the test year.

1 Q: Apart from your efficiency responsibilities, do you continue to oversee all
2 customer relationships?

3
4 A: Yes.

5
6 Q. Does VEDO need to enhance its sales group?

7
8 A. Yes, Vectren plans to add a Director of Sales and a Field Sales Representative
9 to support a growing need to enhance service to its residential, commercial and
10 industrial accounts.

11
12 Q. Please describe the responsibilities of these two positions?

13
14 A. The Director of Sales will primarily be responsible for development,
15 implementation and management oversight of the company's residential,
16 commercial and industrial account management activities. This employee will
17 lead the customer addition activities in coordination with VEDO conservation
18 strategies and programs. An important aspect of this position will be the focus on
19 VEDO's commercial and industrial market segment.

20
21 VEDO's large industrial customer growth has remained relatively flat since 2004.
22 Like other areas of the State, VEDO's industrial customers reflect the challenges
23 facing manufacturers who compete globally against cheap labor, less
24 environmental regulation, and lower health care costs. In recent years, there has
25 been little to no economic development expansions in the VEDO territory. For
26 the years ending 2004, 2005 and 2006, total industrial load was 16.8 BCF, 17.1
27 BCF and 17 BCF, respectively. It is likely that Industrial load for 2007 will again
28 approximate 17 BCF. VEDO must endeavor to serve as a more effective
29 resource to its industrial and commercial customers through greater personal
30 interaction.

31 This Field Sales Representative position provides direct account support for
32 business clients within their assigned areas of responsibility. Responsibilities
33 include customer service, relationship building, facilitation of facilities

1 installations, resolution of billing issues, and providing basic economic
2 development and community relations support.
3

4 **Q. What is the expense associated with adding these positions?**

5
6 A. The Director of Sales is included in Line 1, Schedule C-3.14, and to capture the
7 annual expense, \$57,221, of this position, VEDO has included an adjustment of
8 \$33,379, which is reflected on WPC-3.14 Line 10.
9

10 The Field Sales Representative is included in Schedule C-3.14 Line 1. As noted
11 on WPC-3.14 Line 11 the allocated annual cost to VEDO is \$ 28,080, and to
12 capture the annual expense associated with this position, VEDO has included an
13 adjustment of \$ 16,380.
14

15 **Q. Does this conclude your direct testimony?**

16
17 A. Yes.
18
19

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MATTHEW F. ROSE
ON BEHALF OF
VECTREN ENERGY DELIVERY OF OHIO, INC.**

☐ Management policies, practices, and organization
☒ Operating income
☐ Rate base
☐ Allocations
☐ Rate of return
☐ Rates and tariffs
☐ Other

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1 **DIRECT TESTIMONY OF MATTHEW F. ROSE**

2

3 **Background and Qualifications**

4

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

6

7 A. My name is Matthew F. Rose, and my corporate business address is 3501B N.
8 Ponce de Leon Blvd S. # 388, St. Augustine, FL 32084.

9

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

11

12 A. I am Principal of Vista Energy Group, Inc. an energy consulting firm specializing in
13 demand-side management (DSM) and related energy issues.

14

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

16

17 A. In 1978 I graduated from Michigan State University with a Bachelor of Science
18 Degree. I received a Masters in Urban Planning in 1980 from The University of
19 Michigan.

20

21 **Q. Please describe your professional background.**

22

23 A. I have been a Principal at The Vista Energy Group, since 2004. From 2000 through
24 2003, I was employed by Skipping Stone, Inc., an energy consulting firm as Director
25 of Strategic Consulting. From 1997 to 2000 I was employed at Stone & Webster
26 Management Consultants as an Executive Consultant.

27

28 From 1985 to 1997 I was with Synergic Resources Corporation/Resource
29 Management International (also know as: Navigant Consulting) where I had several
30 positions, I was Vice President of DSM Planning and Engineering for 3 years,
31 Director of DSM Planning for 3 years, and a Manager/Senior Analyst for 6 years.

32

33 Prior to that, I was a Research Associate in the Energy Policy Group at the Institute
34 for Social Research by appointment at The University of Michigan.

1
2 **Q. Please describe your experience in demand-side management?**

3
4 A. My experience over the past 25 years focuses on working with utilities, energy
5 agencies and regulatory organizations in identifying, packaging, implementing and
6 evaluating demand-side and demand-response management initiatives. These
7 efforts include: technology screening/assessment, cost-effectiveness modeling,
8 program design and regulatory support. I have developed DSM plans and analyzed
9 programs for over 50 utilities across the US and internationally. I also managed a
10 staff of up to 17 people dedicated to providing DSM engineering and planning
11 services. Examples of clients and projects include:

12
13 DSM Plan Development for Investor-Owned Utilities- DSM plan development for
14 numerous electric and natural gas investor-owned utilities. Clients have included:
15 Jersey Central Power & Light Co., Vectren, Kentucky Utilities, Northern Indiana
16 Public Service Company, Utilicorp United, Florida Power (Progress Energy),
17 Southwest Gas Corporation, Duquesne Light and Power Company, Dayton Power
18 and Light Company, PECO Energy, Northern Minnesota Utilities, Peoples Natural
19 Gas, Missouri Public Service Company, West Plains Energy, Hawaii Electric
20 Company, and Baltimore Gas and Electric Company.

21
22 DSM Plan Development for Municipal and Rural Cooperatives- DSM plan
23 development and cost effectiveness analysis conducted for various rural
24 cooperatives and joint action agencies including: Brazos Electric Cooperative,
25 Southern Minnesota Municipal Power Agency, Massachusetts Municipal Wholesale
26 Electric Cooperative, Pennsylvania Rural Electric Association, Indiana Municipal
27 Power Agency, Lansing (MI) Board of Water and Light and the Orlando Utilities
28 Commission.

29
30 Statewide Energy Efficiency Potential Analysis- Directed studies for selected states
31 and Canadian provinces designed to examine DSM potential (technical, economic
32 and market potential). Specific projects include studies for the following states:
33 Florida, Wisconsin and the provinces of British Columbia and Newfoundland.
34

1 DSM Program Evaluation—Participated in various DSM evaluation projects for various
2 clients including: Georgia Power Company, Duke Energy Company (NC), Eastern
3 Utility Associates (MA), GPU Energy (now known as First Energy Corporation) and
4 the City of Tallahassee (FL).

5
6 International DSM Experience—Directed DSM planning studies for international
7 energy companies including: Oslo Lysvyker (City of Oslo, Norway), Statkraft
8 (Norway's State –Owned Power Company), Manila Electric Company (part of a
9 project for the Asian Development Bank) and Tokyo Electric Power Company. I also
10 provided technical support to The Electric Power Research Institute (EPRI) for an
11 International Energy Association (IEA) focused on the role of DSM in a resource
12 planning environment.

13
14 I have authored many articles and books detailing Demand Side Management (DSM)
15 efforts including work for EPRI, The American Council for an Energy-Efficient
16 Economy (ACEEE), the Edison Electric Institute (EEI) and the American Gas
17 Association (AGA). I was also a trainer in the DSM Training Institute providing DSM
18 training and expertise.

19
20 **Q. Please describe the responsibilities of your current position.**

21
22 A. As Principal at the Vista Energy Group, I am responsible for directing and managing
23 the company's demand-side and demand-response management activities including:
24 DSM plan development, economic analysis, renewable energy, climate change
25 activities and conducting industry workshops and training.

26
27 **Q. What is the purpose of your testimony?**

28
29 A. My testimony will explain the methodology and results of Vectren Energy Delivery of
30 Ohio's (VEDO) DSM program design and cost effectiveness analysis.

31
32 **VEDO's DSM Planning Approach**

1 **Q. Why is it appropriate for Vectren to promote conservation if customers already**
2 **receive promotional information regarding efficiency related products from a**
3 **variety of vendors and retailers, and have the incentive to conserve every time**
4 **they receive heating bills that reflect high gas costs?**
5

6 **A. The volatility in energy prices and customer bills combined with a confusing array of**
7 **technologies purporting to save customers energy and money through lower bills**
8 **points to the need for a directed effort to promote energy-efficiency. Customers**
9 **continue to look to the utility as an objective, independent source of information**
10 **about energy equipment and services. The utility also has a relationship with its**
11 **customers making it easier to target and communicate with customers. In addition,**
12 **some technologies and all of the proposed program offerings are new to VEDO's**
13 **service area, requiring involvement by the utility to orchestrate the needed**
14 **information, services and possible incentives to build the market capabilities and**
15 **infrastructure to support energy-efficiency.**
16

17 **Q. Please describe how VEDO's DSM programs were identified?**
18

19 **A. VEDO's programs were developed through a series of planning steps. The first step**
20 **included a comprehensive survey of the most current industry and market**
21 **information to screen and prioritize the opportunities based on their costs and**
22 **benefits. The primary input into the process was the identification, review and**
23 **application of relevant market and industry information as follows:**
24

- 25 1. We leveraged current Vectren Energy Delivery of Indiana's experience based on
26 the utility administered natural gas DSM programs. These programs have been
27 operating since 2005 and provide a current and relevant base of knowledge and
28 market insight useful for designing programs in Ohio.
- 29 2. We reviewed available reports, studies and presentations detailing recent DSM
30 program opportunities and initiatives. This review included reports from the
31 American Council for an Energy Efficient Economy, Energy Star® programs by
32 the Environmental Protection Agency and DSM program evaluation reports from
33 the New Jersey Clean Energy Council and the New York State Energy Research
34 and Development Authority. Information was also obtained from a recently

completed DSM analysis report for Vectren as part of a state collaborative in Vectren Energy Delivery of Indiana *DSM Action Plan: Final Report*, Forefront Economics Inc. and H. Gil Peach & Associates LLC, December 2005. A list of reports used as input into the program analysis and design process is presented in MFR Exhibit 1, Table 1.

3. Vista Energy Group conducted a formal review of best practices in DSM programs which included in-depth interviews with DSM program managers running successful and exemplary programs across the country. This ensured reliance on the most current information and market experience to develop "best practices" DSM programs for VEDO.

Q. What types of analysis were conducted to assess program cost effectiveness?

A. A formal economic analysis of each candidate technology and program was conducted. The analysis served to identify the associated costs and benefits as compared to projected natural gas supply costs to determine cost-effectiveness. The analysis included all the relevant program costs including program administration, training, incentives and evaluation as well as estimated annual program participation. These costs were compared to forward natural gas supply costs to provide a net present value impact of all costs and benefits. The result was a cost-benefit ratio and estimate of the economic value of the program. By simulating the results of the program using a dedicated spreadsheet cost-effectiveness model, the full range of economic impacts were determined.

The economic analysis included a full range of market perspectives including: the Participant Test, Utility Cost Test, Rate Impact Measure Test and the Total Resource Cost Test. The results of each of the tests were conducted for each program. All the economic tests were based on the cost-effectiveness methodologies from the publication: *California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects*, California Governor's Office of Planning and Research, 2002.

Q. How did you use the economic analysis results?

1 A. The economic analysis results for each program provided an indication whether the
2 program was cost-effective or whether program costs exceeded the projected
3 benefits. The Total Resource Cost Test (TRC) was used to assess the primary
4 overall perspective to determine cost-effectiveness of each program. Programs
5 which did not pass the TRC test were either re-packaged in a more cost-effective
6 manner or eliminated from the DSM portfolio. The other test perspectives were also
7 reviewed to refine program design elements.
8

9 **VEDO Program Selection and Design**
10

11 **Q. What were the results of the cost-effectiveness analysis?**
12

13 A. The cost effectiveness analysis results are shown on MFR Exhibit 1, Table 2. It
14 shows the net present value and benefit- cost results for each of the candidate
15 programs for each of the relevant perspectives. The results, as modeled indicates
16 that the portfolio passes the TRC test with a benefit-cost ratio of 1.36 with a net
17 present value stream of benefits of \$9.5 million dollars.
18

19 **Q. What are the conservation programs that VEDO plans to implement?**
20

21 A. The following are the programs that comprise VEDO's DSM program portfolio:
22

23 **Residential Programs**
24

- 25 1. High Efficiency Furnaces and Boilers- The program is designed to use
26 information, trade ally relationships and strategic use of rebates to promote
27 installation of high efficiency gas furnaces and boilers. The program is targeted at
28 the replacement market and advances the opportunity for customers to install
29 efficient equipment at time of system replacement. The program uses a sliding
30 scale to attempt to get customers to install increasingly more efficient equipment
31 as follows:
32

Heating Equipment	Rebate Strategy
Furnace AFUE 90%	Customer rebates of \$175 for each qualifying unit in the first two years of the program. Incentive drops to \$75 for the subsequent three program years.
Furnace AFUE 92% or more	Customer rebates of \$250 for each qualifying unit for each year of the program

Boiler AFUE 85-90%	Customer rebates of \$175
Boiler AFUE 85-90% or more	Customer rebate of \$250

The program also includes a seasonal "early retirement" campaign aimed at getting customers with older, comparatively inefficient but still operable equipment to change out their furnace and boiler. The program will be operated in either the spring or fall and addresses the "lost opportunity" of getting customers to change out their equipment for energy efficient models, prior to waiting for the equipment to fail.

At the end of five years, the program provides the following results:

Participation	MMBTU Savings	Incentive Payments	Total Program Costs
16,550	1,110,485	\$2,593,000	\$3,500,000

2. High Efficiency Gas Water Heating- The program is designed to use information and strategic incentives to promote the installation of very efficient gas water heaters. The program will use information and trade ally involvement to promote water heaters with an energy factor of .60-.63. Current economics makes it difficult to support the use of financial incentives for water heaters with an energy factor between .60-.63. Water heaters with an energy factor of .64 or greater are eligible for a \$30 rebate. Customers opting to install a tankless water heater with energy factor of .64 or greater will also be eligible for a rebate. The program will leverage involvement of water heater distributors and local plumbers to help in providing specific energy-efficient equipment options for customers. At the end of five years, the program provides the following results:

Participation	MMBTU Savings	Incentive Payments	Total Program Costs
5,760	109,850	\$173,000	\$530,000

3. On-Line Audit and Water Heating Kit- The program is designed to give customers who use VEDO's on-line audit tool an opportunity to receive a hot water heating kit which includes various measures which can be self-installed by customers. The kit which will be provided free-of-charge will include a low flow showerhead, faucet aerators and a water heater wrap.¹ Instruction detailing proper installation

¹ There has been some concern regarding the safety and fire hazard impacts of installing water heater wraps. This will need to be explored by VEDO prior to offering wraps as part of the program

will also be included. The intent of the program is to provide savings options for gas water heating customers who are not ready to replace their existing system. The program also includes a focused evaluation effort to follow-up with customers to understand which measures were actually installed. At the end of five years, the program provides the following results:

Participation	MMBTU Savings	Incentive Payments	Total Program Costs
9,500	216,000	\$330,000	\$908,000

4. Energy-Efficient New Construction- The program is targeted at new home builders and promotes energy efficient energy design and equipment in their newly built homes. The long term goal of the program is to transform the new home market into one which incorporates energy efficiency and address the "lost opportunity" market. The program is modeled after the Energy Star New Construction Program® brand and is designed to promote construction of new homes built 15% or more energy efficient than current Ohio codes. The use of home builder incentives is used to cover costs of home certification. At the end of five years, the program provides the following results:

Participation	MMBTU Savings	Incentive Payments	Total Program Costs
700	177,815	\$455,000	\$1,061,000

5. Audit and Home Performance Pilot Program- This initiative is designed as a pilot program to perform a thorough home audit and follow-up with whole-home performance technologies and efficiency upgrades. The program is structured to use the Energy Star® brand. The program is designed as a cost-sharing initiative, with customers receiving a rebate amount based on the installation of qualifying measures. Since the package of measures across all participating homes will vary, it is important to develop VEDO-specific information regarding savings estimates. The program is positioned as a pilot effort to determine actual cost and participation data and estimate long-term potential for the program. At the end of five years, the program provides the following results:

Participation	MMBTU Savings	Incentive Payments	Total Program Costs
650	176,750	\$325,000	\$955,000

Commercial Programs

6. High Efficiency Boiler and Furnaces- The program is designed to use a combination of information, trade ally relationships and strategic use of rebates to

1 promote installation of high efficiency gas boilers and furnaces for commercial
2 and small industrial customers. The program is targeted at the replacement
3 market, getting customers to install efficient equipment at the time of system
4 replacement. The program is also offered to new installations. The program uses
5 rebates to cover the higher incremental cost for energy-efficient equipment with
6 qualifying boiler units of 87% or greater and furnaces with an AFUE of 92% or
7 greater. Systems up to 150,000 BTU/H will receive a prescriptive rebate of \$350
8 upon verified installation. Larger systems (150,000 BTU/H or greater) will receive
9 a rebate payment designed to cover 25% of the equipment cost (up to \$5,000).
10 At the end of five years, the program provides the following results:

11

Participation	MMBTU Savings	Incentive Payments	Total Program Costs
1,550	1,381,900	\$2,403,000	\$3,402,000

12

- 13 7. Commercial High Efficiency Water Heating Program- This effort is designed to
14 promote installation of energy efficient commercial water heating systems.
15 Qualifying units are required to have efficiency levels of 88% or higher. The
16 program targets new installations and replacement opportunities. The program
17 includes use of strategic incentives covering up to 25% of technology costs, up to
18 \$750. At the end of five years, the program provides the following results:

19

Participation	MMBTU Savings	Incentive Payments	Total Program Costs
1,290	579,000	\$968,000	\$1,565,000

20

- 21 8. Commercial Re-Commissioning Program- A pilot program aimed at addressing
22 the proper operation, maintenance, and replacement of energy systems in
23 existing buildings as technologies and building uses change over time. The
24 program uses information, rebates, insight and delivery by participating
25 consulting engineers to assist facility managers with proper operation of energy
26 systems. The program is targeted at the existing market and focuses on high
27 gas-consuming businesses. The program includes a cost-sharing to cover the
28 commissioning audit, up to a cost of \$750. The program is designed as a pilot
29 effort, to provide the necessary research and market-specific information to
30 evaluate program cost-effectiveness. At the end of five years, the program
31 provides the following results:

32

Participation	MMBTU Savings	Incentive Payments	Total Program Costs
80	92,800	\$60,000	\$455,000

1
2 **Q. What are the key elements and target markets for each of the candidate**
3 **programs?**

4
5 A. The DSM program portfolio was designed to address the range of relevant markets:
6 equipment replacement, retrofit of cost-effective measures, early retirement of aging
7 equipment and the new construction market. A detailed breakdown of the program
8 targets is presented on MFR Exhibit 1, Table 3.

9
10 **Q. What are the key mechanisms used to market and deliver the programs?**

11
12 A. Each program was designed to incorporate delivery mechanisms which best allow
13 the programs to overcome market barriers and cost-effectively promote the relevant
14 technologies in the marketplace. The mix of delivery mechanisms include:

15
16 Education- The programs incorporate the need to properly educate customers on the
17 importance and benefits of various DSM measures and the VEDO programs.
18 Customers are also educated on the availability of program offerings and benefits of
19 modifying their consumption. Each program includes activities and costs associated
20 with developing and delivering educational materials and communicating the benefits
21 of program participation.

22
23 Leverage with Trade Allies/Contractors- The programs were designed with the need
24 to include local trade allies, retailers and contractors as delivery partners in their
25 transaction with customers. In many cases, customers will come directly to trade
26 allies such as HVAC contractors, plumbers and retailers to answer their questions
27 and buy energy equipment and services. By working with the trade groups, VEDO
28 can distribute relevant information and education at the time of the customer
29 transaction and ensure that the utility energy-efficiency options are fairly considered.

30
31 Training- The programs include activities and costs dedicated to working with trade
32 allies and retailers to develop and deliver the necessary training and assistance.
33 VEDO intends to provide training and instruction to the associated trade allies and
34 contract installers to ensure proper installation of equipment and quality assurance.

1 The most efficient technology will not deliver the associated load impacts if it is not
2 installed properly.

3
4 Incentives- The program design includes strategic use of financial incentives as a
5 means of advancing participation in the marketplace. Most of the programs include a
6 customer incentive contribution to reduce the higher cost of the energy efficient
7 technology and overcome financial barriers related to the first cost of energy-efficient
8 technologies. Effort was directed at designing incentive amounts to provide a
9 percentage of the technology cost, since participants will also benefit from lower bills.
10 The program design also includes efforts by VEDO to show participants how to
11 obtain financing to procure energy efficient technologies from various market
12 sources. The incentive approach for the various programs is shown on MFR Exhibit
13 1, Table 4.

14
15 **Q. What other market delivery mechanisms are included in the program design**
16 **and delivery?**

17
18 A. The program design includes costs reflecting market outreach activities. These
19 activities reflect the need for VEDO to design and communicate broad messages of
20 energy efficiency and customer benefits. These activities are not associated with any
21 specific program, but rather provide a higher-level dissemination of information to all
22 VEDO customers. This is manifest in various activities including media advertising
23 and positioning of VEDO as an informed and willing source of helping its customer
24 efficiently consume its product. The first year cost for market outreach comprises
25 20% of the total program budget. This percentage drops to less than 10% of the total
26 budget by the fourth and fifth year of program implementation.

27
28 **Q. What key program design criteria were included in the analysis?**

29 A. In designing the DSM programs, a number of important design criteria were applied.
30 These criteria were established through discussion with state stakeholders,
31 regulatory authorities and industry experts as part of the "Best Practices" activities. A
32 review of these characteristics follows:

- 1 1. Achieve net total resource cost and societal benefits- Each technology and
2 candidate program was analyzed using the range of economic perspectives to
3 assess program cost-effectiveness and attempt to maximize resource benefits by
4 balancing the results across all the perspectives.
5
- 6 2. Minimize unnecessary and undue ratepayer impacts-The programs were
7 designed in a manner that attempted to cost share program costs with
8 participants, taking participant bill savings impacts into account. Some programs
9 were designed with sliding rebate levels to better promote increasing levels of
10 equipment energy efficiency. The Residential Furnace and Boiler Program
11 includes declining rebate levels for the 90% AFUE furnaces to anticipate
12 increasing market availability of the technology and the associated desire to
13 allocate greater rebate amounts to more efficient furnaces and boilers.
14
- 15 3. Capturing "lost opportunities"- VEDO's DSM portfolio includes programs aimed at
16 securing long-term therm savings at the time of equipment replacement and
17 during the design phase for new construction. For example, replacement of
18 furnaces and new construction design includes measure lifetime estimates of 20
19 or more years. The residential furnace program effort also incorporates a
20 component targeting the early retirement market which will encourage customers
21 with older equipment to change out their inefficient system before it runs to failure
22 and needs replacement.
23
- 24 4. Importance of program evaluations- The program portfolio includes a distinct
25 effort to properly evaluate each of the programs. This effort includes both impact
26 evaluation to gauge accurate therm savings and process evaluation to assess
27 the efficiency and logic of program operations. Each program includes a separate
28 evaluation budget. The estimated evaluation costs for all the programs translate
29 to approximately seven percent of total program costs. This effort includes the
30 need to carefully evaluate the research pilot programs to determine their viability
31 once VEDO-market specific data can be secured.
32
- 33 5. Minimize "Free Riders"- the programs are designed with the recognition of free-
34 ridership included in program modeling. In modeling each of the programs, an

1 estimated free-ridership factor was applied. It is assumed that as part of the
2 evaluation, effort will be directed at determining VEDO-specific market free-
3 ridership values. No effort was directed at determining free-ridership impacts.
4 The program evaluation process will be used to estimate free riders and free
5 drivers, after the programs are in the field.

6
7 In minimizing "free-ridership", effort was also placed on ensuring that participant's
8 pay for a reasonable share of the relevant technology costs. The program
9 incentive structure is designed to cover only a small portion of DSM technology
10 costs. This results in minimizing impacts even in cases where there are free-
11 riders.

- 12
13 6. Integrate DSM with State and Federal Initiatives- Programs were designed to
14 include opportunities to leverage existing federal tax credits, where appropriate.
15 The federal tax credit opportunities generally serve to "push" the higher efficiency
16 levels for various technologies (i.e.: furnaces, boilers and water heaters). For
17 example, gas furnaces with an AFUE of 95 or greater is eligible for a federal tax
18 credit of \$150. This can be integrated into the utility program, to provide incentive
19 for customers really pushing efficiency levels.

20
21 A description of the various criteria is shown on MFR Exhibit 1, Table 5.

22
23 **Q. Are all the programs similarly structured?**

24
25 **A.** All of the programs (with the exception of two offerings) are designed as full scale
26 programs, modeled with a five-year planning horizon. The two exceptions are
27 described below:

28 The Residential Home Performance Program was modeled using projected them
29 savings and implementation cost data from other utility programs. The results using
30 the transferred data from other utility programs indicate the program marginally fails
31 the TRC test. However, given the variability in the types of blended measures that
32 generally comprise a home performance program, the viability of the program should
33 be re-examined. The expected them savings may vary significantly depending on

1 the package of measures installed (as compared to the load impacts for a single
2 piece of equipment, such as a high efficiency furnace). Since the cost-effectiveness
3 results are close to passing the TRC Test using the transferred data, it is
4 recommended that a research pilot program be developed to obtain specific load
5 impacts and costs for the VEDO service area to effectively measure actual program
6 impacts.

7 In the commercial market, the Commercial Building Re-Commissioning program is
8 also positioned as a pilot program. The experience from other utility programs points
9 to a range of potential therm savings from facility re-commissioning, with most being
10 very site specific. It is difficult to assign a single set of therm savings given the range
11 of impacts resulting from operations and maintenance activities. The cost-
12 effectiveness analysis includes a set of load impacts from prior studies and results in
13 the modeled program passing the TRC Test. The recommendation to structure the
14 Commercial Re-Commissioning Program as a pilot effort is based on the importance
15 of obtaining VEDO-specific customer data and results to gauge program cost-
16 effectiveness.

17
18 **Q. What are the expected participation, load impacts and costs of the programs?**
19

20 **A.** As shown on MFR Exhibit 1, Table 6, the programs are designed to attract more
21 than 4,000 participants in the first year of operation and over 36,000 participants over
22 the five years of program implementation. As modeled, the programs are expected to
23 save nearly 4 million mmBtu's at a cost of approximately \$2.9 million per year, which
24 is the expense adjustment included on Schedule C-3.15 and WPC-3.15 Line 5.
25

26 **Q. How does VEDO plan to measure the results of the conservation programs?**
27

28 **A.** Each of the program designs includes a dedicated budget for program evaluation.
29 The percentage of costs allocated to program evaluation as a percentage of total
30 costs is approximately 7%, although some programs have a higher percentage
31 based on program size and the mixture of possible measures within each program.
32 Those programs requiring careful follow-up such as new construction initiatives and
33 customer installed measures such as the Audit/Water Heater Wrap Kit require higher

1 costs for evaluation due to the need to properly sample participants and verify proper
2 and optimal operation of installations.

3 The evaluation component of the programs for VEDO is critical for a number of
4 reasons:

- 5 ▪ The proper design and execution of an impact evaluation for each program is
6 important to determine proper load impacts and re-examine the programs as
7 needed, if impacts vary greatly from those used in the modeling. This is
8 particularly important in programs where various measures may be bundled
9 together (versus a single technology) and the need to capture the load impacts
10 based on all the various bundles.
- 11 ▪ Impact evaluation requires a dedicated methodology which may include pre-post
12 program surveys, trade ally interviews and modeling of customer consumption
13 levels. The evaluation design approach is essential in guiding the actual
14 evaluation.
- 15 ▪ Since the introduction of DSM in VEDO's service area is relatively new, there is a
16 need to conduct process evaluations to properly determine how the programs are
17 operating and the need for any changes. In addition market information, such as
18 stocking practices for trade allies and retailers will need to be tracked and
19 captured during the life of the programs.

20
21 **Q. Does this conclude your direct testimony?**

22
23 **A. Yes.**

Table 1. Presentations and Reports Reviewed in VEDO's DSM Planning Activities

- American Council for an Energy-Efficient Economy, *Residential Energy Efficiency Program Design Recommendations*, report to Baltimore Gas and Electric Company, January 2007.
- American Council for an Energy Efficient Economy, *Responding to the Natural Gas Crisis: America's Best Natural Gas Energy Efficiency Programs*, Kushler, York and Witte, December 2003.
- American Council for an Energy Efficient Economy and the Consortium for Energy Efficiency, various presentations from the 2007 National Symposium on Market transformation, March 2007.
- Consortium for Energy Efficiency (CEE), *High Efficiency Residential Gas Heating*, Fact Sheet, 2007.
- Conference Board of Canada. *Regulatory Framework for Natural Gas DSM in Canada- Exploring Design Options, Influences and Characteristics of Success*. Canadian Gas Association. November 2005.
- Demand Side Response Working Group, *Report on Conservation, Energy Efficiency, Demand Side Response and Advance Metering Infrastructure*, prepared for the Pennsylvania Public Utilities Commission, June 2007.
- Forefront Economics Inc and H. Gil Peach & Associates, *Vectren DSM Action Plan: Final Report*, prepared for Vectren Energy Delivery of Indiana, December, 2005.
- ICF International, *Policies and Possibilities for Energy Efficiency from Electric and Gas Utilities*, prepared by. D. Pickles, February 2007.
- New Jersey Center for Energy, Economic and Environmental Policy (CEEPP), *Program Cost-Benefit Analysis of 2003 New Jersey Clean Energy Council Energy Efficiency Programs*, July 2005.
- ICF International, *Policies and Possibilities for Energy Efficiency from Electric and Gas Utilities*, prepared by. D. Pickles, February 2007.
- New Jersey Board of Public Utilities, *New Jersey's Clean Energy Program Report*, April 2007.
- PA Consulting Group, *State of Wisconsin Interim Benefit-Cost Analysis: FY07 Evaluation Report*, prepared by: Goldberg, Clark and Cohan, KEMA, February 2007.
- Southern California Edison, *Thinking Outside The Box to Achieve Aggressive Energy Savings Targets in California*, presented by Gregg. Ander- Design and Engineering Services, Southern California Edison, January 2007.
- Southwest Energy Efficiency Project, *Natural Gas Demand-Side Management Programs: A National Survey*, Tegan and Geller, January 2006.
- David Zebetakis LLC. *An Evaluation of Natural Gas Efficiency Programs*, prepared for the New York State Energy Research and Development Authority, July 2005.

Table 2. Cost Effectiveness Results by Program

Results by Program

Program Name	Participant Test		Utility Test		RIM Test		TRC Test	
	NPV, 000\$	BCR	NPV, 000\$	BCR	NPV, 000\$	BCR	NPV, 000\$	BCR
Program Outreach	\$0	0.00	(\$1,739)	0.00	(\$1,739)	0.00	(\$1,739)	0.00
Energy Efficient Furnace 92AFUE	\$2,255	1.76	\$2,182	2.75	(\$669)	0.84	\$644	1.30
Energy Efficient Furnace 90 AFUE	\$5,010	2.08	\$4,358	4.16	(\$476)	0.92	\$2,563	1.72
Early Retirement Furnace	\$602	1.50	\$834	3.20	(\$176)	0.87	\$110	1.09
Efficient Gas Water Heater	\$491	1.53	\$776	2.73	(\$217)	0.85	\$42	1.03
On Line Audit-Water Heater /Kit	\$1,733	7.30	\$883	2.15	(\$484)	0.77	\$983	2.25
Res New Construction	\$1,673	2.49	\$1,197	2.34	(\$480)	0.81	\$661	1.43
Res Home Performance Pilot	\$768	1.56	\$950	2.15	(\$539)	0.77	(\$57)	0.97
Large Comm Boiler	\$3,397	1.51	\$4,721	3.30	(\$860)	0.89	\$1,140	1.19
Small Comm. Boiler	\$4,375	4.22	\$3,568	5.42	(\$121)	0.97	\$3,000	2.85
Sm Comm Efficient Water Ht	\$3,419	1.92	\$3,820	3.91	(\$382)	0.93	\$1,756	1.48
Commercial Commissioning-Pilot	\$604	3.68	\$349	1.88	(\$250)	0.75	\$208	1.36
TOTAL	\$24,228	2.00	\$21,900	2.79	(\$6,394)	0.84	\$9,490	1.36

Table 3. Program Elements and Target Markets

Programs	Description	Target/Approach
Residential High Efficiency Heating	Promote installation of high efficiency furnaces/boilers: 90 AFUE, 92+ AFUE and boilers 85%+.	Target the replacement market and early retirement markets w/ sliding incentives for 90 AFUE furnaces.
Residential High Efficiency Water Heating	Promote installation of high efficiency gas storage tank water heaters (30 gal >, .64 EF>).	Target the replacement market and new construction. Rebates will be used only for systems of .64 EF or greater.
On-Line Audit w/Water Heater Kit	Provide water heater tank wrap and low flow showerheads for gas customers taking VEDO's on-line audit	Customer self-installed simple measures to reduce gas water heating costs and educate customers on the VEDO's existing on-line audit tools
Residential Home Performance (Pilot)	Pilot program designed to conduct thorough audit and whole-home performance activities.	Use Energy Star® branding and determine actual cost and participation data to determine long-term potential for the program
Residential New Construction	Promote construction of new homes built 15% or more energy efficient than current Ohio codes. Leverage program with current new home partners already building energy-efficient homes.	Target home builders to incorporate energy efficiency in their design process by using targeted incentives and training. Real estate agents and lending professionals would also receive training.
Commercial Space and Water Heating	Promote installation of high efficiency boilers, furnaces and water heaters for commercial applications	Strategic use of incentives to buy-down participant costs and replace stock equipment with high efficiency models
Commercial Re-Commissioning (Pilot)	Pilot effort to assess the market receptivity and economics with facility re-commissioning.	Targeted to a selected number of high gas-consumption commercial customers. Requires use of consulting engineers to facilitate the process.

Table 4. Program Incentives

Program	Incentive Schedule
Residential High Efficiency Furnace/Boiler	90% AFUE: \$175 scaling down to \$75 after the first two years 92% + AFUE \$250 Early retirement: \$250
Residential High Efficiency Water Heater	Energy factor of .64 or greater- \$30
On-Line Audit w/Water Heater Kit	\$35 water heater kit provided free of charge
Residential Home Performance (Pilot)	Modeled with an incentive of \$800
Residential New Construction	Modeled with an incentive of \$850
Commercial High Efficiency Boiler/Furnace	Small Boiler- <150,000BTU= \$350 Large Boiler->150,000 BTU= 25% of cost up to \$5,000
Commercial High Efficiency Water Heating	Modeled at 26% of technology cost up to \$750
Commercial Recommissioning (Pilot)	Modeled at \$750 to cover percentage of costs for the commissioning audit and recommendations.

Table 5. Program Design Criteria

Design Criteria	Description/Explanation
Achieve Total Resource/Societal Benefits	Full range of economic perspectives is used to assess program cost-effectiveness and attempt to maximize resource benefits. Programs which are require greater scrutiny but provide societal benefits were included as "pilot" initiatives.
"Lost Opportunity" Markets	Portfolio includes programs aimed at securing long-term them savings at the time of equipment replacement, early retirement and during the design phase for new construction.
Treatment and Impact of "Free Riders"	Recognition of free ridership included in program modeling. Effort placed on ensuring that participant's pay for most of the relevant technology costs while using strategic incentives and the recommendation of low-interest loans to "push" the efficiency markets.
Minimizing Rate Impacts	Programs were designed to attempt to minimize resulting impacts on rates by "streamling" programs costs and strategically using incentives. The Rate Impact Measure test was analyzed to assess impacts.
Leveraging State/Federal Incentives-Tax Credits	Programs were designed to include opportunities to leverage existing federal tax credits, where appropriate. The federal tax credit opportunities generally serve to "push" the higher efficiency levels for various technologies (i.e.: furnaces, boilers and water heaters).
Role of Program Evaluation and Measurement	Program design and modeling includes costs dedicated to program evaluation. Includes dollars allocated for relevant impact evaluation and process evaluations.

Table 6. Annual Program Participation and Costs (Across All Programs)**Savings By Year**

Year	Participants	mmBtu Savings	Incentives, 000\$	Program Costs, 000\$	Budget, 000\$
2008	4,395	52,710	\$855	\$1,976	\$2,831
2009	5,860	140,045	\$1,369	\$1,441	\$2,810
2010	7,340	251,810	\$1,565	\$1,269	\$2,834
2011	8,870	375,275	\$1,733	\$1,188	\$2,920
2012	9,605	504,095	\$1,786	\$1,150	\$2,937
2013	-	504,095	\$0	\$0	\$0
2014	-	504,095	\$0	\$0	\$0
2015	-	504,095	\$0	\$0	\$0
2016	-	504,095	\$0	\$0	\$0
2017	-	504,095	\$0	\$0	\$0
TOTAL	36,070	3,844,410	\$7,308	\$7,023	\$14,331