

FILE

BEFORE

THE PUBLIC UTILITIES COMMISSION OF OHIO

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In The Matter of the Application of)
Duke Energy Ohio, Inc. for an)
Increase in Gas Rates)

Case No. 07-589-GA-AIR

In the Matter of the Application of)
Duke Energy Ohio, Inc. for Approval)
of an Alternative Rate Plan for its)
Gas Distribution Service)

Case No. 07-590-GA-ALT

In the Matter of the Application of)
Duke Energy Ohio, Inc. for Approval)
to Change Accounting Methods)

Case No. 07-591-GA-AAM

DIRECT TESTIMONY OF

TODD W. ARNOLD

ON BEHALF OF

DUKE ENERGY OHIO, INC.

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I. INTRODUCTION AND PURPOSE

1 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS?**

2 A. My name is Todd W. Arnold. My business address is 139 East Fourth Street, Cincinnati,
3 Ohio 45202.

4 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

5 A. I am Senior Vice President, Smart Grid and Customer Systems, Duke Energy Business
6 Services, Inc, which is the service company affiliated with Duke Energy Ohio, Inc. (DE-
7 Ohio or Company).

8 **Q. PLEASE BRIEFLY DESCRIBE YOUR JOB DUTIES AS SENIOR VICE**
9 **PRESIDENT, SMART GRID AND CUSTOMER SYSTEMS.**

10 A. As Senior Vice President, Smart Grid and Customer Systems, I am responsible for the
11 SmartGrid strategy, deployment planning and implementation as well as the customer
12 and meter data management information systems.

13 **Q. PLEASE BRIEFLY DESCRIBE YOUR PROFESSIONAL AND EDUCATIONAL**
14 **BACKGROUND.**

15 A. I received a Bachelor's Degree in Marketing from Indiana State University in 1977 and a
16 Master's Degree in Business Administration from the University of Indianapolis in 1986. I
17 began my career with PSI Energy in 1977, in field sales and marketing. I have served in
18 many customer operations, distribution operations and corporate office capacities. Most
19 recently, I served as Senior Vice President of Customer Services for Duke Energy Business
20 Services. I have my "Strategic Leader" professional certification from the Call Center
21 Industry Advisory Council (CIAC). CIAC is a not-for-profit corporation established by the
22 call center industry to provide standardized competency-based professional certification for

1 call center leaders. I am currently a member of the Board of Directors of People Working
2 Cooperatively.

3 **Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?**

4 A. The purpose of my direct testimony is to provide current information about the
5 deployment and status of DE-Ohio's Utility of the Future project, which we propose to
6 call SmartGrid. My testimony begins with a discussion of the overall SmartGrid project,
7 which encompasses both the Company's electric and gas business. Much of my
8 testimony will describe the benefits as they related to the electric business, but I will also
9 describe the benefits that are expected to be realized by the gas distribution system as
10 well. This holistic view is necessary because, as a combined electric and gas utility, the
11 SmartGrid system encompasses both and I believe it is worthwhile to outline all of the
12 expected benefits of the program.

13 **II. STATUS OF SMARTGRID DEPLOYMENT**

14 **Q. WHAT PROGRESS HAS DE-OHIO MADE TOWARD DEPLOYING THE**
15 **SMARTGRID PROJECT?**

16 A. DE-Ohio is currently engaged in pre-deployment, preparing for the potential full-scale
17 deployment of the SmartGrid project for both gas and electric customers. DE-Ohio began
18 these pre-deployment activities in 2004 and the pre-deployment activities are accelerating as
19 the Company has acquired experience with the technologies required for the project. DE-
20 Ohio plans to continue deploying communication equipment and smart endpoint devices in
21 the Cincinnati, Ohio service territory. Planning and deployment of AMI/SmartGrid
22 technologies is underway, initially targeted at gaining operational efficiencies and enhancing
23 customer service for customers with inside-the-premise meters. Approximately 50,000

1 electric and 40,000 gas meters are being replaced with smart meters capable of connecting
2 to a communication network by the end of 2008. At the present, we are moving forward
3 with an initial deployment to gain experience and build processes that will sustain a full
4 deployment.

5 **Q. WHERE ARE THE NEW METERS BEING DEPLOYED?**

6 A. To date, the meters are deployed in the areas of Hyde Park, Walnut Hills, Clifton, Mt.
7 Adams, Avondale, Price Hill, and Evanston, all in the greater Cincinnati area.

8 **Q. HOW WERE THESE AREAS SELECTED?**

9 A. These areas were selected for initial deployment because they are generally densely
10 populated urban areas. The areas were further singled out for a variety of reasons, including
11 substation reliability and the percentage of meters located inside the premise.

12 **Q. HAS DE-OHIO DEVELOPED A PREFERENCE FOR ANY PARTICULAR TYPE**
13 **OF TECHNOLOGY FOR THE SMARTGRID PROJECT BASED ON ITS**
14 **DEPLOYMENT ACTIVITIES TO DATE?**

15 A. We will require a balance of different types of technologies in order to obtain universal
16 coverage for the SmartGrid project. Using smart endpoints, which can communicate over
17 an internet protocol-based network, builds on an established platform and will reduce the
18 risk of near-term obsolescence. Specifically, we are utilizing our power lines from the
19 electric meter to transmit data to a communications node located at the transformer. The
20 communication node allows us to gather data from the electric meter and transmit it to our
21 information systems on a public wireless carrier's network. The wireless network platform
22 is presently Verizon Digital cell. The electric meter is manufactured by Echelon and
23 provides communications via secondary service. We are also able to collect data from gas

1 meters using technology built into a module installed on the meter that communicates
2 wirelessly to the communication node located near the transformer. We are minimizing the
3 required build out of a new communication network by utilizing our existing assets and
4 public carrier networks already in place, while maximizing the amount of data that can be
5 transmitted on the network.

6 **III. BENEFITS OF SMARTGRID**

7 **Q. WHAT TYPES OF CUSTOMER SERVICE OFFERINGS WILL BE ENABLED** 8 **BY THE SMARTGRID INITIATIVE?**

9 A. Through the SmartGrid initiative, infrastructure will be installed that will enable DE-
10 Ohio to provide a variety of new service offerings that cross a broad spectrum. These
11 new service offerings will provide the customer with more detailed information about
12 their energy usage, which will allow them to better manage their monthly budget for their
13 home or business. This is even more important for gas customers because their usage is
14 primarily tied to the heating usage, which is driven by the degree of winter or heating
15 degree days. As a result, customers do not have a good sense of what their winter season
16 monthly bill might be until it arrives. We will provide customers the ability to see their
17 usage daily and better manage their monthly budget.

18 In addition, the SmartGrid will allow DE-Ohio to have access to some real-time
19 data, enabling us to respond immediately to customer questions and inquiries about their
20 bill. This detailed data will also give us information to project and manage load
21 forecasting and peak demand.

22 With over a third, or over 400,000, of DE-Ohio's gas and electric meters inside, it
23 is difficult to get monthly read to provide an accurate bill. In 2007, DE-Ohio estimated

1 over 1.1 million bills. The majority of these estimates are due to lack of access to the
2 meters. SmartGrid will reduce the number of estimated bills to a relatively small
3 number.

4 We are making available to our DE-Ohio customers this summer a product called
5 Energy Analyzer. It combines the customer's individual usage history with external
6 weather data to provide information on how weather has impacted their usage. If the
7 customer completes a short survey regarding their home's structure and their energy
8 habits, it will then provide analysis that yields information on how they have impacted
9 their usage and what they can do to save energy. It would be our intent to eventually
10 upgrade this tool to use the daily information to provide an even better energy analysis.

11 **Q. PLEASE DESCRIBE SOME OF THE NEW SERVICE OFFERINGS THAT**
12 **COULD BE ENABLED THROUGH THE SMARTGRID.**

13 **A.** We will no longer require a field trip or an appointment for those customers with inside
14 meters, when a customer requests a read to discontinue service in their name and begin
15 service in another customer's name. In 2007, we completed over 200,000 succession
16 reads for gas and electric service. With a third of our meters inside the premise, you can
17 assume close to 70,000 of these required appointments for the customers to be on
18 premise. With SmartGrid, we can do the transfer of service on any day of the year since
19 we can get the read remotely.

20 Another new service offering enabled by the SmartGrid technology is the ability
21 to communicate with customers in new ways. For example, DE-Ohio could notify the
22 owner of a small business via text message that the business is experiencing an outage
23 after hours. DE-Ohio could know that the customer's power is out before the customer

1 knows and DE-Ohio could notify the customer of this fact. DE-Ohio could also forecast
2 an individual customer's monthly usage based on mid-month data, weather and
3 applicable rates and provide the customer with information that will help them better
4 manage to their budget. Customers could access this type of information on their cell
5 phone, Blackberry, or through new in-home display devices.

6 **Q. WHEN WOULD SUCH OFFERING BE ENABLED?**

7 A. Once the meter and the communications systems are in place and commissioned to our
8 information systems, DE-Ohio would begin within approximately thirty days providing
9 daily usage information and providing succession reads remotely.

10 **Q. WHY ARE REMOTE RECONNECTS AND DISCONNECTS A BENEFIT TO**
11 **CUSTOMERS?**

12 A. The ability to remotely reconnect and disconnect service should provide a more positive
13 customer experience because customers would not need to be on premise for us to
14 complete service requests. Also, the technology that enables remote disconnects and
15 reconnects provides the ability to receive daily, hourly, or real-time data regarding the
16 customer's meter reading and usage. Therefore, when customers contact DE-Ohio
17 regarding a high bill inquiry, the meter reading used for the customer's bill can be
18 validated by the call center representative, by reviewing the first data point on the
19 account, which would generally be the previous day, rather than having to wait until the
20 next monthly read or sending personnel to the premise for a special read. As stated
21 earlier, with the remote disconnect and reconnect functionality, customers will be able to
22 request service to match their schedule and have it completed very quickly, with no
23 appointments and no waiting.

1 **Q. WOULD THE ABILITY TO REMOTELY DISCONNECT AND RECONNECT**
2 **CUSTOMERS ALSO BENEFIT DE-OHIO?**

3 A. Yes. We expect this to ultimately reduce our costs related to meter reading, customer
4 service calls, and call center operations. The remote disconnect and reconnect ability will
5 eliminate the need to make a trip to the customer's premise, thus reducing costs for field
6 visits and employees for this work. It will also empower our call center representatives
7 by allowing them to respond to customer service requests immediately and on the
8 customer's terms. We also expect customer satisfaction to improve. Once this
9 technology is fully deployed, we will no longer need to send a meter reader to the
10 customer's premise, also saving costs.

11 **Q. WHAT TYPES OF CUSTOMER COMMUNICATIONS WILL BE ENABLED BY**
12 **THE INTELLIGENT METERS?**

13 A. The SmartGrid technology includes smart or intelligent meters and new communication
14 capabilities. As mentioned earlier, with smart meters, DE-Ohio may know that a
15 customer's service is out before the customer. Instead of relying on customers to call DE-
16 Ohio when their service is out (which is how our current outage system works), we will
17 already know, because the system will monitor and send error messages when it detects
18 no power. Not only will this allow us to notify customers when service is out, but it will
19 also allow us to determine the cause of outages sooner, thereby expediting the restoration
20 of service. Also customers will have options to receive communications from us through
21 their preferred method such as text messages on their cell phone, e-mail, outbound
22 Interactive Voice Response (IVR) messages, or in-home digital display devices.

1 Q. HOW WOULD IT BENEFIT A SMALL BUSINESS CUSTOMER TO RECEIVE
2 A TEXT MESSAGE THAT THE POWER AT ITS BUSINESS LOCATION WAS
3 CURRENTLY OUT?

4 A. A number of small businesses are not staffed twenty-four hours per day, seven days a
5 week. In these situations, the notification to the appropriate person that the power is out
6 could help with scheduling the workforce the following day, identifying to the owner that
7 electronic processing may not be occurring, or minimizing business interruptions that
8 result from a lack of electricity. This proactive notification will allow them time to
9 activate back-up plans and better manage their situation. In addition, a text message that
10 the power has been restored would prevent the owner from having to check in at their
11 business or from having to call DE-Ohio.

12 Q. WHAT OTHER TYPES OF CUSTOMER SERVICE OFFERINGS COULD BE
13 ENABLED?

14 A. DE-Ohio would also be enabled to offer customers prepaid metering and other flexible
15 billing options. Customers expect a variety of options and there are features of prepaid
16 metering that are attractive to some customers. Prepaid metering would eliminate the
17 need for a security deposit, there would be no need to run a credit check, and customers
18 would not have to worry about late fees.

19 IV. CUSTOMER SATISFACTION

20 Q. WHAT TYPES OF BENEFITS WILL CUSTOMERS SEE THROUGH THE
21 SMARTGRID INITIATIVE?

22 A. Customers will receive more accurate bills due to the increased accuracy of the meter
23 readings. In addition, DE-Ohio will know sooner when meters are not working or

1 functioning properly, thereby allowing DE-Ohio to fix any faulty meters and minimize
2 the impact on a customer's bill. Also, tamper and theft situations will be detected sooner,
3 because error messages are sent when a meter is pulled from its base and/or plugged back
4 in. High bill inquiries will be resolved faster and customers will feel more confident
5 about the information because of the ability to review data on a daily basis. In addition,
6 there are currently situations when we are unable to access the meters. In these
7 situations, DE-Ohio sends an estimated bill. With this new technology, estimated bills
8 will be significantly reduced. Customers often question the validity of an estimated bill.
9 Also, when a bill is estimated too low, customers are not happy when they have to pay a
10 higher bill to make up for an underestimated bill the prior month. Significantly reducing
11 estimated bills will enable us to provide a more positive customer experience.

12 **Q. ARE THERE ANTICIPATED BENEFITS FOR DE-OHIO'S LOWER-INCOME**
13 **CUSTOMERS?**

14 A. Yes, SmartGrid technology can provide our lower-income customers with more options
15 to help them manage their electric bill. The SmartGrid technology will also benefit our
16 lower-income customers through enabling prepaid metering. By selecting prepaid
17 metering, customers can eliminate having to pay a security deposit and they can better
18 manage their budget by being able to "pay as they go." This option also eliminates late
19 fees. Also, for customers who select the prepaid option, we foresee fewer customers
20 being disconnected for non-payment. This is because these customers will have a set
21 amount on their prepaid card versus receiving a bill after service is already received and
22 being surprised by a large amount.

1 The special assistance agencies could also expedite service to our lower-income
2 customers by having prepaid cards to give directly to customers. Instead of having to
3 prepare vouchers and then notifying DE-Ohio that they are helping a customer, the
4 agency can provide a prepaid card directly to the customer who can receive the credit to
5 their account by calling DE-Ohio's IVR or by visiting a pay agent. This would speed the
6 restoration of their service if it is in disconnected status.

7 Since the SmartGrid technology will enable DE-Ohio to communicate with its
8 customers in new ways, it will be able to notify lower-income customers via text
9 messages, cell phones, emails, or outbound messages of pertinent information. An
10 example of a message DE-Ohio could send to its lower-income customers is a
11 notification of the availability of programs, services, or financial assistance. When the
12 social service agencies have assistance available, DE-Ohio could send a message through
13 the customer's preferred communication channel to let them know funds are available
14 and how to go about obtaining them.

15 Another benefit SmartGrid technology will provide to our lower-income
16 customers is that DE-Ohio can design a service option to allow customers to identify a
17 dollar threshold that they want to manage to each month. The technology would allow us
18 to monitor customers' electric usage and notify them at specified times throughout the
19 month if their electric usage and dollar amount used fall within their threshold amount or
20 it is estimated to be higher or lower based on where they are at that time. By being more
21 aware of their electric usage throughout the month, customers can adjust their usage to
22 better manage their bills to the amount they would like to spend that month.

1 DE-Ohio also sees the technology enabling remote disconnects and reconnects as
2 helping its lower-income customers. Because service orders will be worked more timely,
3 customers will not be able to get as far behind. As accounts become eligible for
4 disconnection due to non-payment, DE-Ohio would utilize customers' preferred
5 communications channels to make them aware and provide options for retaining service.
6 If a customer is disconnected for non-payment, remote reconnects enable us to more
7 quickly restore service after payment is received.

8 **Q. WHAT OTHER OPTIONS WILL BE AVAILABLE THAT WILL INCREASE**
9 **CUSTOMER SATISFACTION?**

10 A. If a customer calls in to DE-Ohio's customer service department, the customer service
11 representative will be able to pull up the customer's usage and other data from the day
12 before to help the customer trouble-shoot any issues. Customers would also be able to
13 view their daily usage online, allowing them to monitor their usage and better understand
14 specific impacts to their monthly charges.

15 **Q. WILL DE-OHIO MAINTAIN THE PRIVACY OF ITS CUSTOMERS, EVEN**
16 **WITH ACCESS TO ADDITIONAL DATA THROUGH SMARTGRID**
17 **TECHNOLOGY?**

18 A. Yes, even with the enhanced capability to collect customer-related data, DE-Ohio
19 remains committed to the privacy of its customers, and its customer privacy policies will
20 continue in force.

21 **V. COMPANY-SPECIFIC CUSTOMER SERVICE BENEFITS**

22 **Q. HOW WILL DE-OHIO BENEFIT FROM THE NEW TECHNOLOGY**
23 **INSTALLED IN THE SMARTGRID INITIATIVE?**

1 A. Service requests for electric customers will be worked as requested through the remote
2 disconnect and reconnect process, eliminating callbacks from customers checking on the
3 status of their service request. The significant reduction in estimated meter readings will
4 reduce billing calls and the number of re-billings our customer service representatives
5 must complete. We expect this to ultimately reduce our costs related to meter reading,
6 customer service calls, and call center operations.

7 **VI. COST BENEFIT ANALYSIS**

8 **Q. HAS DE-OHIO ANALYZED THE COST-EFFECTIVENESS OF THE UTILITY**
9 **OF THE FUTURE PROJECT?**

10 A. Yes. The SmartGrid project is cost effective when considering the benefits that flow to
11 our customers, DE-Ohio and society in general. These benefits – such as the reduced
12 number of outages - cannot be attributed to a specific customer or customer class but
13 instead accrue to society as a whole. Additionally, SmartGrid provides a platform that
14 will provide a basis for enhanced services to customers as technologies emerge. Some of
15 us can recall when computers were first introduced for personal use. Most people at that
16 time did not understand the ways in which computers would become a part of one's daily
17 life. Now it is difficult to imagine life without computers. SmartGrid is similar to this in
18 that the initial applications are fundamental and basic but with time, it will provide the
19 foundation for many more applications that will provide value to customers. DE-Ohio's
20 witness, Christopher D. Kiergan will discuss the cost/benefit analysis that he has
21 performed on behalf of DE-Ohio to assist the Commission and other interested parties in
22 understanding the value of the project. An overview of his analysis is provided in the
23 SmartGrid Report at Tab 1.

1 DE-Ohio Witness Richard Stevie will discuss additional benefits, which must be
2 considered with regard to societal benefits. An exhibit that illustrates the application of
3 his analysis is provided in the SmartGrid Report at Tab 2.

4 **Q. ARE THERE OTHER WAYS OF MEASURING SOCIETAL BENEFITS OF**
5 **SMARTGRID?**

6 A. Yes, the Ohio electric distribution utilities commissioned a study by the Electric Power
7 Research Institute (EPRI) to consider ways to measure societal benefits from SmartGrid
8 deployment and related technologies. EPRI presented this study to Commission Staff on
9 July 9, 2008. A high level overview of EPRI's study is provided in the SmartGrid Report
10 at Tab 3.

11 **Q. DOES SMARTGRID HAVE BENEFITS FOR ELECTRIC CUSTOMERS AS**
12 **WELL AS FOR GAS CUSTOMERS?**

13 A. Yes. We intend to deploy SmartGrid to both electric and gas customers. We will be
14 submitting information regarding SmartGrid in our electric distribution rate case and our
15 electric security plan case before the Commission as well. DE-Ohio must have approval
16 for the project in all of these dockets in order to continue with the deployment beyond
17 initial stages.

VII. RIDER AU – ADVANCED UTILITY

18 **Q. PLEASE DESCRIBE RIDER AU AND DE-OHIO'S PROPOSAL FOR COST**
19 **RECOVERY.**

20 A. Rider AU is a tracking mechanism that was proposed in this docket to recover the costs,
21 and pass through to customers the savings, related to the SmartGrid project. DE-Ohio

1 would make an annual filing seeking approval to recover the revenue requirement related
2 to the SmartGrid project. DE-Ohio proposes to make a November 1 pre-filing using nine
3 months of actual data and three months of estimated data of Rider AU costs/benefits for
4 the current calendar year. DE-Ohio will update the filing by February 28 with an
5 application and twelve months of actual data for Rider AU costs/benefits. DE-Ohio will
6 use its best efforts to resolve any stakeholder objections by April 1, and DE-Ohio
7 requests that, if any Commission hearing is required to resolve stakeholder objections,
8 such hearing be held in early April, such that the new Rider AU rates can be implemented
9 with the May billing cycle.

10 In addition, DE-Ohio commits that it will file an updated deployment plan with
11 the Commission by August 1, annually, setting forth the SmartGrid deployment activities
12 that DE-Ohio plans to make during the following calendar year, the expected costs that
13 DE-Ohio expects to incur, and the rate impacts. Absent any Commission ruling to the
14 contrary by October 1 each year, DE-Ohio requests that such expenditures be presumed
15 to be prudent such that, if any stakeholder seeks to assert in a subsequent Rider AU
16 proceeding or a subsequent general rate proceeding that such expenditures were
17 imprudent, then that stakeholder shall bear the burden of proof the expenditures were
18 imprudent and should be disallowed. Specific details regarding the Rider will be
19 provided by DE-Ohio Witness William Don Wathen, Jr.

1 Q: ARE THERE RISKS ASSOCIATED WITH THE DEPLOYMENT OF
2 SMARTGRID?

3 A. Yes. DE-Ohio recognizes that, in modern times, technologies occasionally become
4 obsolete within a short time frame – as seen with personal computers, cellular phones and
5 music formats, to name a few examples. If, therefore, some unexpected change occurs in
6 technology, customer needs, or DE-Ohio's business operations such that DE-Ohio
7 determines that all or part of the SmartGrid project should be suspended or abandoned,
8 then DE-Ohio requests that it be permitted to recover such costs, even though the costs
9 might not meet the Commission's traditional "used and useful" standard for cost
10 recovery, as long as the costs were subject to Commission review and approval as part of
11 DE-Ohio's annual deployment plan.

12 Q. GIVEN THESE UNCERTAINTIES THAT MAY IMPACT DE-OHIO'S
13 DECISIONS TO DEPLOY THE SMARTGRID PROJECT, WHY DOES DE-
14 OHIO REQUEST THAT THE COMMISSION APPROVE RIDER AU AT THIS
15 TIME?

16 A. My understanding is that the Commission: (1) has traditionally approved tracker recovery
17 for the costs of an existing utility service in the context of a general rate proceeding; and
18 (2) would approve an Alternative Regulation Plan for gas service only if a utility files the
19 standard filing requirements that are required with the filing of an application for a
20 general increase in rates. DE-Ohio is beginning to incur some significant deployment
21 costs. In my opinion, it is reasonable to initiate a tracking mechanism for the project
22 costs at this time. This would allow DE-Ohio to recovery deployment costs, provide the

1 Commission with oversight, and provide stakeholders with a voice in DE-Ohio's future
2 plans for the SmartGrid project deployment and cost recovery.

3 **VIII. CONCLUSION**

4 **Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?**

5 **A. Yes.**