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BEFORE

THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Duke Energy Ohio for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Revised Code, in the Form of an Electric Security Plan, Accounting Modifications and Tariffs for Generation Service.)
Case No. 14-841-EL-SSO
In the Matter of the Application of Duke Energy Ohio for Authority to Amend its Certified Supplier Tariff, P.U.C.O. No. 20.)
Case No. 14-842-EL-ATA

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MOTION FOR PROTECTIVE ORDER
OF
DUKE ENERGY OHIO, INC.

Duke Energy Ohio, Inc., (Duke Energy Ohio) by its attorneys and pursuant to O.A.C 4901-1-24(D), moves for a protective order keeping confidential the designated information provided by Duke Energy Ohio in discovery in these proceedings and in its filings that initiated same. The information designated as confidential or highly confidential was derived from confidential information submitted by Duke Energy Ohio in discovery and pursuant to a protective agreement signed August 29, 2014, between Duke Energy Ohio and the Office of the Ohio Consumers' Counsel (OCC). In a letter dated September 26, 2014, OCC provided notice that it desired to use Protected Materials in a "manner that might require disclosure." The information designated in OCC's letter is competitively sensitive and/or otherwise proprietary

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and confidential. Accordingly, Duke Energy Ohio seeks a protective order preventing public disclosure of the designated information.

Attached hereto are affidavits attesting to the proprietary, confidential and competitive nature of the material sought to be protected. For the reasons set forth therein and in the following memorandum in support, Duke Energy Ohio respectfully requests that the Public Utilities Commission of Ohio protect from public disclosure the confidentiality of extremely sensitive and otherwise proprietary and confidential information filed by Duke Energy Ohio under seal by order of the Attorney Examiner.

Respectfully submitted,



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Elizabeth H. Watts (0031092)
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MEMORANDUM IN SUPPORT

Duke Energy Ohio, Inc., (Duke Energy Ohio) respectfully requests the Public Utilities Commission of Ohio (Commission) grant its Motion for Protective Order to protect the proprietary, confidential and competitive information provided in discovery to parties in these proceedings pursuant to protective agreements. These documents were provided in good faith and, for purposes of this Motion, pursuant to the terms set forth in a protective agreement that was signed on August 29, 2014, between Duke Energy Ohio and the Office of the Ohio Consumers' Counsel, (OCC) (hereinafter, Protective Agreement). On September 26, 2014, OCC advised Duke Energy Ohio that it wished to use certain Protected Materials in a "manner that might require disclosure."¹ Accordingly, pursuant to the terms of the Protective Agreement, Duke Energy Ohio submits this motion setting forth the reasons for maintaining confidentiality of the identified materials. The information that the OCC may seek to publicly disclose is competitively sensitive or otherwise business proprietary and confidential trade secret information. It is information that the Company does not disseminate into the public record but for which precautions are taken to ensure that only those within the Company having a business need are privy to the information.

O.A.C. 4901-1-24(D) provides that the Commission or its attorney examiners may issue a protective order to assure the confidentiality of information contained in filed documents, to the extent that state or federal law prohibits the release of the information, and where non-disclosure of the information is not inconsistent with the purposes of Title 49 of the Revised Code.

The Commission, therefore, generally refers to the requirements of R.C. 1333.61 for a determination of whether specific information should be released or treated confidentially. Subsection (D) of that section defines "trade secret" as follows:

¹ See affidavit of Amy B. Spiller, a copy of which is attached hereto as Exhibit A.

“Trade secret” means information, including the whole or any portion or phase of any scientific or technical information, design, process, procedure, formula, pattern, compilation, program, device, method, technique, or improvement, **or any business information or plans, financial information**, or listing of names, addresses, or telephone numbers, that satisfies both of the following:

- (1) It derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use.
- (2) It is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.²

Thus, business information or plans and financial information are trade secrets if they derive independent economic value from not being generally known to or ascertainable by others who can obtain their own value from use of the information and they are the subject of reasonable efforts to maintain their secrecy.

The first confidential document that the OCC seeks to disclose concerns one discovery request; namely, OEG-DR-01-001 (hereinafter “the OEG Response”).³ Specifically, the OCC desires to disclose a dollar amount related to the Company’s proposed Rider PSR (Price Stabilization Rider) for the term of the Duke Energy Ohio’s proposed electric security plan (ESP). It is presumed, for purposes of this Motion, that the OCC is intending to publish numbers derived from the cash flow line on the OEG Response. The OCC has not expressed any intention to disclose any other information contained in the OEG Response. As such, for purposes of this Motion, the Company limits its discussion to the OCC’s request, reserving all rights to seek confidential treatment of any other information reflected in the OEG Response should the need to do so arise in the future.

² R.C. 1333.61(emphasis added).

³ See affidavit of Amy B. Spiller, a copy of which is attached hereto as Exhibit A.

Notwithstanding the limited focus of the OCC's request and the Company's retained right to assert additional requests for protective treatment in the future, it is helpful to the current Motion to understand what the OEG Response represents.

The information provided in the OEG Response relates to an analysis prepared by the Company in response to discovery requests in these proceedings; said requests addressing the Company's proposed Rider PSR. The information reflected in the OEG response is proprietary, confidential, and trade secret. Furthermore, it is derived from proprietary modeling employed by or on behalf of Duke Energy Ohio and its affiliated companies. Such proprietary modeling, the financial results generated thereby, and the Company's financial statements are not reported on the segment basis that is reflected in the OEG Response.⁴ Rather, the Company's financial information is reported on a consolidated basis. The treatment of such information – segment financial information – has previously been afforded confidential treatment by the Commission.⁵

Additionally, the information set forth in the OEG Response concerns competitively sensitive information. As discussed in the Company's Application, its Rider PSR proposal has its foundation in the Company's contractual entitlement in the Ohio Valley Electric Corporation (OVEC).⁶ As Duke Energy Ohio witness William Don Wathen Jr. explains, "OVEC, created in the 1950s, is a corporation that was created to provide power for uranium enrichment facilities located near Portsmouth, Ohio. OVEC owns two coal-fired generating units... [and] Duke Energy Ohio's share of the capacity and energy from OVEC is equal to its 9 percent equity

⁴ See affidavit of Bryan J. Dougherty, a copy of which is attached hereto as Exhibit B.

⁵ See, e.g., *In the Matter of the Application of Duke Energy Ohio, Inc., for the Establishment of a Charge Pursuant to Revised Code Section 4909.18*, Case No. 12-2400-EL-UNC, et al., Transcript of Proceedings, Vol. IV, at pp. 868-870 (April 18, 2013).

⁶ Duke Energy Ohio's Application, at pg. 13 (May 29, 2014).

interest.”⁷ Through these proceedings, Duke Energy Ohio proposes to sell the energy, capacity, and ancillary services associated with its contractual entitlement in OVEC into the market, with the net benefit of all revenues, less all costs, being provided to all retail customers.⁸ Rider PSR, therefore, will function as a hedge against future wholesale market prices.

The OEG Response reflects the Company’s confidential projections in respect of its OVEC contractual entitlement. With regard to the information that is the subject to the OCC request, public disclosure would compromise Duke Energy Ohio vis-à-vis its counterparties and competitors in the marketplace. Indeed, as the Company has discussed in its filings, the energy and capacity associated with its OVEC entitlement will be sold into the market – the competitive wholesale market. Publishing the Company’s internally derived information for future periods would undeniably disadvantage it, as compared to those with whom it may interact in the competitive markets. Indeed, even the disclosure of information on the cash flow line in the OEG Response is indicative of the Company’s positions with regard to a competitive interest and, if its counterparties or competitors have access to such information, Duke Energy Ohio would be compromised in its effort to engage in power sales. The type of competitive information reflected in the OEG Response has been afforded confidential treatment by the Commission.⁹

The Company takes steps, internally to ensure that none of the information reflected in the OEG Response is disclosed to individuals within the Duke Energy organization who do not have a business need to know of the material. Additionally, the Company has not disclosed the information contained in the OEG Response externally, with the exception of the limited purpose

⁷ Direct Testimony of William Don Wathen Jr., at pp. 10-11.

⁸ Application, at pg. 13.

⁹ See, e.g., *In the Matter of the Application of Duke Energy Ohio, Inc., for the Establishment of a Charge Pursuant to Revised Code Section 4909.18*, Case No. 12-2400-EL-UNC, et al., Transcript of Proceedings, Vol. IV, at pp. 869-870 (April 18, 2013).

of discovery in these proceedings. And, in connection with that disclosure, the information was identified has highly confidential and provided only to those intervenors with whom protective agreements exist.

The Company further observes that the OCC's request is misleading. Specifically, the OCC has indicated to counsel for the Duke Energy Ohio that it may disclose a dollar amount associated with Rider PSR "that Duke [Energy Ohio] has calculated for the three-year term of its proposed [ESP]."¹⁰ But the OEG Response contains no such calculation. Rather, the OEG response reflects financial projections on a calendar-year basis. The Company's proposed ESP pertains to a different term – one that commences on June 1, 2015, and expires on May 31, 2018. Thus, exactly what the OCC intends to potentially disclose is uncertain. But to the extent it is derived from the OEG Response, it must be afforded confidential treatment for the reasons set forth above.

Likewise, the information designated by OCC to be potentially disclosed includes attachments to the testimony of Duke Energy Ohio witness Marc W. Arnold.¹¹ This information consists of survey responses that are proprietary and competitively sensitive and must be protected for all of the same reasons set forth above and for the reasons set forth in Duke Energy Ohio's Motion for Protective Order, filed with the Commission on May 29, 2014. The information identified by the OCC includes excerpts from J.D. Power customer surveys that are provided to the Company confidentially, via paid subscriptions, and pursuant to a license agreement that includes restrictions on disclosure.¹² Further, the information reflected in the J.D.

¹⁰ See affidavit of Amy B. Spiller, a copy of which is attached hereto as Exhibit A.

¹¹ Id.

¹² See affidavit of David Fruend, a copy of which is attached hereto as Exhibit C.

Power surveys is not disclosed by the Company in other public forum. Similarly the customer satisfaction results, which are obtained via internal processes, should be afforded confidential treatment. This survey-related information is not disclosed outside of the Company¹³ and is, instead, used by internally by the Company for a number of purposes that include internal planning and reporting. Disclosure of the information would compromise the Company in its ability to evaluate the ongoing operation of its business.

The final document for which the OCC seeks potential disclosure is MWA-7, an attachment to Marc A. Arnold's Direct Testimony in these proceedings. The Company has submitted into the record a revised version of MWA-7. The revised version of this document is one for the Company continues to seek protection as it reflects business proprietary, confidential, and trade secret information. This attachment contains proprietary information regarding budgeting and forecast of costs to be incurred in future years. Its public disclosure would impair the Company's financing and resource procurement efforts, as well as having a negative impact on its activities in various aspects of the marketplace. Further, forecasted information, especially such as that concerning one segment of a consolidated business, is consistently afforded confidential treatment by the Commission. The Company takes steps, internally, to ensure that the information is not disclosed within the organization to anyone not having a business interest for such information. Additionally, the Company does not disclose its budgeting and forecasted information externally, unless such production is made pursuant to appropriate confidentiality agreements.

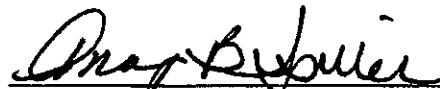
The information was provided to OCC in good faith and in reliance upon OCC's adherence to the Protective Agreement.

¹³ See affidavit of Amy B. Spiller, a copy of which is attached hereto as Exhibit A.

O.A.C. 4901-1-24(D) allows Duke Energy Ohio to seek leave of the Commission to file information Duke Energy Ohio considers to be proprietary trade secret information, or otherwise confidential, in a redacted and non-redacted form, under seal.¹⁴ Duke Energy Ohio is filing the information in unredacted form, under seal, together with this Motion.

WHEREFORE, Duke Energy Ohio respectfully requests that the Commission, pursuant to O.A.C. 4901-1-24(D), grant its Motion for Protective Order for the proprietary information by making a determination that the redacted information is confidential, proprietary, and a trade secret under R. C. 1333.61.

Respectfully submitted,



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¹⁴ Ohio Admin. Code Rule 4901-1-24.

Certificate of Service

I hereby certify that a true and accurate copy of the foregoing has been served upon the following parties via electronic mail, regular mail or by hand delivery this 1st day of October 2014.



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BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO

STATE OF OHIO)
)
COUNTY OF HAMILTON) SS

AFFIDAVIT

The undersigned, AMY B. SPILLER., being first duly sworn, hereby states as follows.

1. Affiant is the attorney of record for Duke Energy Ohio, Inc., (Duke Energy Ohio or Company) relative to these proceedings.
2. On September 26, 2014, Affiant received correspondence from Joseph P. Serio, Assistant Consumers' Counsel, relative to certain information that has been previously filed or otherwise exchanged in discovery in connection with these proceedings. The correspondence from Mr. Serio was tendered consistent with the protective agreement entered into between Duke Energy Ohio and the Ohio Consumers' Counsel (OCC). Specifically, Mr. Serio, on behalf of the OCC, has informed Affiant of the OCC's intention to use certain information that has been identified by the Company as confidential in a manner that may require disclosure.
3. The specific information identified by Mr. Serio includes discrete information reflected in the Company's response to a discovery request tendered by the Ohio Energy Group. The specific discovery request has been identified as OEG-DR-01-001. The request from Mr. Serio, on behalf of the OCC, does not extend to all aspects of the Company's response, as contained in OEG-DR-01-001. Rather, the OCC request is

limited to information for the period of time between June 1, 2015, and May 31, 2018, and concerns that which is set forth on line identified as "cash flows."

4. The additional information identified by Mr. Serio in his September 26, 2014, correspondence pertains to attachments to the Direct Testimony of Marc W. Arnold, filed on May 29, 2014. Specifically, Mr. Serio has indicated that the OCC may use Attachments MWA-2, MWA-3, MWA-4, and MWA-7 in a manner that may require disclosure.

FURTHER AFFIANT SAYETH NAUGHT.



Amy B. Spiller

Subscribed and sworn to before me, a Notary Public in and for said County and State, this 1st day of October, 2014.



Adele M. Frisch
NOTARY PUBLIC

ADELE M. FRISCH
Notary Public, State of Ohio
My Commission Expires 01-05-2019

My Commission Expires: 1/15/2019

BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO

STATE OF OHIO)
)
COUNTY OF HAMILTON) SS
)

AFFIDAVIT

The undersigned, BRYAN J. DOUGHERTY., being first duly sworn on his oath,
disposes and says:

1. I am employed by Duke Business Services, Inc., as a Manager of Finance, Corporate and Commercial Forecasting. Duke Energy Business Services, Inc., provides various administrative and other services to Duke Energy Ohio, Inc., (Duke Energy Ohio) and affiliated companies.
2. In this role, I am responsible for providing financial information to Duke Energy Ohio and its affiliated companies.
3. I prepared financial information, on a calendar year basis, specific to Duke Energy Ohio's contractual entitlement in the Ohio Valley Electric Corporation (OVEC) for purposes of these proceedings. This information is reflected in the Company's responses to OEG-DR-01-001. The information was designated as Highly Confidential and provided to the requesting parties in these proceedings pursuant to protective agreements.
4. It is my understanding that the Office of the Ohio Consumers' Counsel wishes to use the information contained in OEG-DR-01-001 in a manner that might require disclosure.

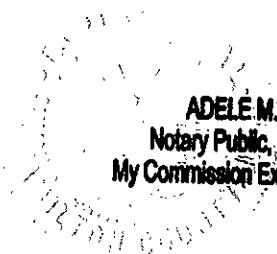
5. Such information is Highly Confidential and should not be released into the public domain. As an initial matter, the referenced discovery responses reflect one contractual entitlement owned by Duke Energy Ohio and financial information concerning this entitlement. Duke Energy Ohio does not publicly distribute financial projections of its interests, assets, and entitlements or its business units on a standalone basis. Rather, Duke Energy Ohio provides financial disclosures on a consolidated basis. Further, the information reflected in the discovery requests at issue concerns an interest in a corporation that operates generating assets in a competitive marketplace. Publicly disclosing information related to competitive operations will serve to prejudice Duke Energy Ohio vis-à-vis those entities with whom it competes.

6. Such information is not released in any form to any third party and is protected from disclosure at all times by the Duke Energy Ohio, Inc. and Duke Energy Corp. With the exception of these proceedings, the information reflected in the identified discovery responses would not have been disseminated outside of Duke Energy.



Bryan J. Dougherty

Subscribed and sworn to before me, a Notary Public in and for said County and State, this 1st day of October, 2014.



Adele M. Frisch
NOTARY PUBLIC

ADELE M. FRISCH
Notary Public, State of Ohio
My Commission Expires 01-05-2019

My Commission Expires: 1/5/2019

BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO

STATE OF NORTH CAROLINA)
) SS
COUNTY OF WAKE)

AFFIDAVIT

The undersigned, DAVID FRUEND., being first duly sworn on his oath, disposes and says:

1. I am Director of Market Research and Customer Insights for Duke Energy, Inc., and I am employed by Duke Energy Business Services, Inc.
2. Duke Energy Business Services, Inc., provides various administrative and other services to Duke Energy, Inc.
3. In my duties as Director of Market Research, I have responsibility for creating, administering and interpreting survey data conducted for Duke Energy and conducted by Duke Energy.
4. I have knowledge of the facts pertinent to the confidentiality of information contained in studies provided to Duke Energy, Inc. by J. D. Power and Assoc. that was provided to requesting parties in Duke Energy Ohio, Inc.'s electric security plan proceedings, Case No.14-841-EL-SSO, *et al.*
5. I also have knowledge about surveys conducted internally for use internally.
6. The information, including attachments to the testimony of Marc W. Arnold:
 - a. MWA-2: Excerpt from 2014 J.D. Power Study showing the power quality and reliability performance rankings;
 - b. MWA-3: Excerpt from J.D. Power 2013 Residential Electric Study;
 - c. MWA-4: Customer Satisfaction Results from Ohio/Kentucky for Calendar Year 2013; and

d. MWA-7: Distribution Program Details

7. Information related to surveys conducted by J.D. Power and Assoc., and an internal survey conducted by Duke Energy, Inc., were provided to the Office of the Ohio Consumers' Counsel pursuant to a Protective Agreement and the information was designated as Confidential.

8. Duke Energy, Inc.'s agreement with J.D. Power and Assoc. requires Duke Energy, Inc. to protect the information and it is not to be released in any form to any other party outside of the Company unless subject to a protective order.

9. Duke Energy does not share J.D. Power and Assoc. or other internal survey information outside the corporation except in summary fashion.



David Fruend

COUNTY Gaston
STATE North Carolina

Subscribed and sworn to before me, a Notary Public in and for said County and State, this 1st day of October, 2014.



Jimmie O. Stroud
NOTARY PUBLIC

My Commission Expires: October 31, 2018

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Duke Energy Ohio for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Revised Code, in the Form of an Electric Security Plan, Accounting Modifications and Tariffs for Generation Service.)
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VOLUME IV
CONFIDENTIAL PROPRIETARY TRADE SECRET

**MARC W. ARNOLD-DIRECT TESTIMONY
AND ATTACHMENTS**

**ON BEHALF OF
DUKE ENERGY OHIO, INC.**

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Attachments:

- MWA-1: Graphic Depiction of the Age of Duke Energy Ohio's Distribution Facilities
- MWA-2: Excerpt from the 2014 J.D. Power Study Showing the Power Quality and Reliability Performance Rankings
- MWA-3: Excerpt from J.D. Power 2013 Residential Electric Study
- MWA-4: Customer Satisfaction Results for Ohio/Kentucky for Calendar Year 2013
- MWA-5: Commission-Required Residential Survey for the First Quarter of 2014 and Calendar Year 2013
- MWA-6: Commission-Required Non-Residential Survey for the First Quarter of 2014 and Calendar Year 2013
- MWA-7: Distribution Program Details

I. INTRODUCTION

1 Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

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

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

5 A. I am employed by Duke Energy Business Services LLC (DEBS) as the Director
6 of Engineering and Construction Planning for Ohio and Kentucky. DEBS
7 provides various administrative and other services to Duke Energy Ohio, Inc.,
8 (Duke Energy Ohio or the Company) and other affiliated companies of Duke
9 Energy Corporation (Duke Energy).

10 Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATION AND
11 PROFESSIONAL EXPERIENCE.

12 A. I received a Bachelor of Science in Business from St. Leo University and a
13 Master's Degree in Business from Indiana Wesleyan University. I began my
14 career at Cinergy Corp., as a Distribution Designer in 2001, and have held a
15 variety of positions of increasing responsibility across Duke Energy in the areas
16 of electric system distribution engineering.

17 Q. PLEASE DESCRIBE YOUR DUTIES AS DIRECTOR OF ENGINEERING
18 AND CONSTRUCTION PLANNING.

19 A. As the Director of Engineering and Construction Planning, I am responsible for
20 the distribution integrity programs for Duke Energy's regulated utility operations
21 in Ohio and Kentucky. I am also responsible for engineering and design for line

1 extensions for new businesses in the Duke Energy Ohio and Duke Energy
2 Kentucky, Inc., (Duke Energy Kentucky) service territories.

3 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC**
4 **UTILITIES COMMISSION OF OHIO?**

5 A. No.

6 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THESE**
7 **PROCEEDINGS?**

8 A. The purpose of my testimony is to provide an overview of how Duke Energy
9 Ohio maintains the reliability of its distribution system and the investments
10 necessary to continue to provide safe, reliable, and reasonably priced service to its
11 approximately 700,000 distribution customers located in southwestern Ohio. I
12 also will discuss the challenges the Company faces in maintaining its distribution
13 system; including, but not limited to, efforts necessary to continue to meet its
14 customers' power quality expectations. I then support Duke Energy Ohio's plan
15 to implement its Distribution Capital Investment Rider (Rider DCI) and discuss
16 the initiatives the Company will undertake to enhance and improve the safety and
17 reliability of its infrastructure to better meet its customers' growing reliability
18 needs.

19 **Q. PLEASE DESCRIBE THE ATTACHMENTS FOR WHICH YOU ARE**
20 **RESPONSIBLE.**

21 A. I am sponsoring the following attachments:

- 22 • Attachment MWA-1 – Graphic depiction of the age of Duke Energy
23 Ohio's distribution facilities.

- 1 • Attachment MWA-2 – Excerpt from the J.D. Power and Associates (J.D.
2 Power) 2014 study, showing the power quality and reliability performance
3 rankings.
- 4 • Attachment MWA-3 – Excerpt from J.D. Power 2013 Residential Electric
5 Study.
- 6 • Attachment MWA-4 – Customer satisfaction results for Ohio/Kentucky
7 for calendar year 2013.
- 8 • Attachment MWA-5 – Residential survey required by the Public Utilities
9 Commission of Ohio (Commission) for calendar year 2013 and the first
10 quarter 2014.
- 11 • Attachment MWA-6 – Non-residential survey required by the
12 Commission for calendar year 2013 and the first quarter 2014.
- 13 • Attachment MWA-7 – Distribution Program Details.

II. **DUKE ENERGY OHIO'S ELECTRIC
DISTRIBUTION SYSTEM**

14 Q. **PLEASE BRIEFLY DESCRIBE DUKE ENERGY OHIO'S EXISTING
15 ELECTRIC DISTRIBUTION INFRASTRUCTURE.**

16 A. The Duke Energy Ohio electric delivery system is used, among other things, to
17 provide electric service to approximately 700,000 customers located throughout
18 southwestern Ohio. Duke Energy Ohio owns and operates all of its electric
19 distribution and local transmission facilities.

20 Duke Energy Ohio's electric delivery system includes approximately 238
21 substations, 15 transmission substations (locations with 69 kilovolt (kV) or higher
22 operating voltages) having a combined capacity of approximately 8,923,438
23 kilovolt-amperes (kVA), 194 distribution substations (locations that supply one or
24 more circuits at 35 kV or lower voltage) having a combined capacity of
25 approximately 6,795,371 kVA, and 29 joint transmission and distribution

1 substations (locations with 69 kV or higher operating voltages that also have 35
2 kV or lower voltage) having a combined capacity of approximately 7,297,320
3 kVA. The Duke Energy Ohio electric delivery system includes various other
4 equipment and facilities, such as control rooms, computers, capacitors, street
5 lights, meters and protective relays, and telecommunications equipment and
6 facilities.

7 **Q. PLEASE GENERALLY DESCRIBE HOW THE ELECTRIC**
8 **DISTRIBUTION INFRASTRUCTURE IS DESIGNED, CONSTRUCTED,**
9 **MANAGED AND OPERATED.**

10 A. The electric distribution infrastructure is designed to receive bulk power at
11 transmission voltages, reduce the voltage to 34.5 kV, 12.5 kV, or 4 kV, and deliver
12 power to customers' premises. The distribution infrastructure generally consists of
13 substation power transformers, switches, circuit breakers, wood pole lines,
14 underground cables, distribution transformers, and associated equipment. The
15 physical design of the distribution system is also generally governed by the National
16 Electrical Safety Code, which I understand has been adopted by the state of Ohio in
17 Ohio Administrative Code (O.A.C.) 4901:1-10-06.

18 Duke Energy Ohio operates the distribution facilities it owns in accordance
19 with good utility practice. Duke Energy Ohio continuously runs the system with a
20 workforce that provides customer service 24 hours per day, 7 days per week, 365
21 days per year, and includes trouble response crews. The Company monitors outages

1 with various systems, such as Supervisory Control and Data Acquisition,
2 Distribution Outage Management System (DOMS), Electric Trouble Data Mart, and
3 Outage Information System.

4 **Q. HOW DOES DUKE ENERGY OHIO DISCOVER AND ADDRESS SYSTEM
5 OUTAGES TODAY?**

6 A. Customers typically report outages by telephone through Duke Energy's call center.
7 The call center creates an outage report through a telephone software application that
8 interfaces with DOMS, a state-of-the-art outage management software application
9 that Duke Energy Ohio implemented in 2011 to improve its ability to monitor and
10 respond to outages. DOMS analyzes the calls and identifies for Duke Energy Ohio's
11 dispatchers the piece of equipment (*e.g.*, circuit breaker, recloser, fuse, transformer)
12 that is the probable location of the outage. The dispatcher contacts the field trouble
13 response person through the radio system to direct them to the probable equipment
14 location to make repairs and restore electric service. Generally, the field trouble
15 response person inspects the circuit or segment of line in question to identify and
16 report the cause of the outage. The dispatcher records the date, time, duration, and
17 cause of the outage in DOMS.

18 Dispatchers continuously monitor weather conditions, both in anticipation of
19 and during weather events. When lightning, wind, or ice storms hit Duke Energy
20 Ohio's service territory, line crews are paged, called, or held over to respond. Duke
21 Energy Ohio will call in several hundred employees, as necessary, to respond to
22 severe storms, including Duke Energy's utility employees stationed in Kentucky,
23 Indiana, North Carolina, South Carolina, and Florida. If necessary, Duke Energy

1 Ohio will contact other utilities for additional line crews, through a mutual assistance
2 program.

3 **Q. PLEASE GENERALLY DESCRIBE HOW DUKE ENERGY OHIO**
4 **CURRENTLY MONITORS AND MAINTAINS ITS DISTRIBUTION**
5 **INFRASTRUCTURE AND ITS PERFORMANCE.**

6 A. Duke Energy Ohio maintains its distribution infrastructure in accordance with good
7 utility practice by adhering to inspections, monitoring, testing, and periodic
8 maintenance programs. Examples of these existing programs include, but are not
9 limited to, the following: (1) substation inspection program; (2) line inspection
10 program; (3) ground-line inspection and treatment program; (4) vegetation
11 management program; (5) underground cable replacement program; (6) capacitor
12 maintenance program; and (7) dissolved gas analysis.

13 Duke Energy Ohio also uses various reliability indices to measure the
14 effectiveness of its maintenance programs and system reliability. Duke Energy Ohio
15 follows the Commission's Electric Service and Safety Standards (ESSS), as set forth
16 in O.A.C. Chapter 4901:1-10. The Company also uses various indices to measure
17 the effectiveness of its maintenance programs and system reliability.

18 **Q. YOU STATED THAT DUKE ENERGY OHIO USES VARIOUS INDICES**
19 **TO MEASURE THE EFFECTIVENESS OF ITS MAINTENANCE**
20 **PROGRAMS AND SYSTEM RELIABILITY. PLEASE EXPLAIN THESE**
21 **RELIABILITY INDICES.**

22 A. Reliability indices are generally recognized standards for measuring the number,
23 scope, and duration of outages. Ohio requires electric distribution utilities to report

1 annually on these reliability indices. These indices are defined as follows:

- 2 • Customer Average Interruption Duration Index (CAIDI) is the average
3 interruption duration or average time to restore service per interrupted
4 customer and is expressed by the sum of the customer interruption durations
5 divided by the total number of customer interruptions.
- 6 • System Average Interruption Duration Index (SAIDI) is the average time
7 each customer is interrupted and is expressed by the sum of customer
8 interruption durations divided by the total number of customers served.
- 9 • System Average Interruption Frequency Index (SAIFI) is the system average
10 frequency index and represents the average number of interruptions per
11 customer. SAIFI is expressed by the total number of customer interruptions
12 divided by the total number of customers served.

13 **Q. HOW HAS DUKE ENERGY OHIO'S DISTRIBUTION INFRASTRUCTURE
14 PERFORMED, AS MEASURED BY THESE RELIABILITY INDICES?**

15 A. Duke Energy Ohio has performed well. Its reliability scores have always exceeded
16 Duke Energy Ohio's targets for CAIDI and SAIFI established in consultation with
17 Commission Staff pursuant to O.A.C. 4901:1-10-10(B)(2). As referenced in Case
18 No. 14-0493-EL-ESS, the Company's latest reliability index scores available for
19 calendar year 2013 are: CAIDI = 117.8 excluding storms, 121.56 with no
20 exclusions; SAIDI = 115.44 excluding storms, 160.46 with no exclusions; and

1 SAIFI = 0.98 excluding storms, 1.32 with no exclusions. The performance
2 standards for the above reliability index scores are CAIDI 115.02 and SAIFI 1.31
3 respectively.¹

4 **Q. PLEASE DESCRIBE SOME OF THE FACTORS THAT THE COMPANY**
5 **MUST CONSIDER IN PROVIDING CUSTOMERS WITH SAFE,**
6 **RELIABLE, AND REASONABLY PRICED ELECTRIC SERVICE.**

7 A. Duke Energy Ohio weighs various factors in selecting the electric delivery
8 infrastructure improvement projects in which to invest. By way of example, the
9 Company will give consideration to customer expectations, its planning criteria,
10 any requirements mandated by either regulatory authorities or reliability councils,
11 and government-mandated projects.

12 **Q. HOW DOES DUKE ENERGY OHIO BALANCE ALL OF THESE**
13 **FACTORS?**

14 A. From a planning perspective, electric system studies are performed annually to
15 determine where and when system modifications are needed to ensure load is
16 adequately served. When these needs are identified, multiple solutions are
17 developed, addressing not only the capacity need, but potential opportunities to
18 maintain or improve reliability and operating flexibility. Recommendations are
19 made and discussed with the operations staff to ensure that a balanced, workable
20 plan has been developed.

21 In the course of maintaining and operating the electric distribution system,
22 Duke Energy Ohio identifies equipment and hardware that requires repair or

¹ There is no target established for SAIDI.

1 replacement. Blanket budgets have been established to cover small items, but
2 specific projects are developed for larger expenditure items. These items are
3 triggered as a result of operating issues, new load growth, or the various
4 inspections, monitoring, and testing programs I described above.

III. **CHALLENGES FACING DUKE ENERGY OHIO'S
DISTRIBUTION FACILITIES**

5 **Q. WHAT ARE THE MAJOR CHALLENGES FACING DUKE ENERGY
6 OHIO'S DISTRIBUTION SYSTEM?**

7 A. There are several challenges to managing Duke Energy Ohio's electric
8 distribution system. Perhaps the biggest challenges relate to aging infrastructure,
9 obsolescence of equipment, and the need to regularly review the system and its
10 operation for appropriate upgrades or replacements. Satisfying changing
11 customer expectations also presents a challenge for Duke Energy Ohio.

12 **Q. PLEASE EXPLAIN HOW THE AGE OF THE ELECTRIC
13 DISTRIBUTION SYSTEM AND OBSOLESCENCE OF EQUIPMENT
14 PRESENT A CHALLENGE TO THE COMPANY.**

15 A. Aging distribution systems are a major challenge for all utilities. Indeed the
16 majority of the outages experienced by customers are due, at least in part, to the
17 aging of the distribution system. Much of Duke Energy Ohio's electric
18 distribution equipment is over 30 years old. Such equipment typically lasts from
19 30 to 50 years if preventative maintenance is performed on a regular schedule. By
20 way of example, there are some portions of the Company's underground network
21 in downtown Cincinnati with equipment dating back to the 1920s that is in need
22 of replacement in order to maintain and improve customer reliability. Attachment

1 MWA-1 shows a graphic depiction of the age of Duke Energy Ohio's distribution
2 facilities.

3 Another challenge Duke Energy Ohio and other utilities are seeing is that
4 replacement parts are becoming harder to find and, when they are located, can be
5 quite expensive. For example, this very issue surfaced during Hurricane Sandy
6 with Consolidated Edison, Inc., (a/k/a ConEd) reaching out to mutual assistance
7 partners attempting to locate rare fuses.

8 **Q. PLEASE EXPLAIN FURTHER HOW CUSTOMERS' EXPECTATIONS
9 PRESENT A CHALLENGE.**

10 A. Customers are now using equipment that is highly sensitive to voltage
11 fluctuations; therefore, customers are more sensitive to power quality than they
12 have been in the past. Customers are demanding highly reliable service that
13 minimizes the number of voltage fluctuations. These changing expectations can
14 present a challenge for Duke Energy Ohio as it attempts to prudently and
15 reasonably balance reliable service with cost.

16 **Q. ARE THE PRACTICES AND PROGRAMS YOU DESCRIBED ABOVE
17 COUPLED WITH THE CURRENT LEVEL OF SPENDING SUFFICIENT
18 FOR THE COMPANY TO MAINTAIN ITS PRESENT LEVEL OF
19 SERVICE RELIABILITY AND MEET CUSTOMER EXPECTATIONS?**

20 A. I do not believe so. Customer expectations are evolving as technology changes.
21 Customers are requiring a higher degree of reliability, performance, and response.
22 They are expecting service restorations to be made more quickly, as so much of their
23 daily life depends upon the availability of electricity. This ranges from the ability to

1 power and charge cellular phones, computers, and other mobile devices, in order to
2 maintain communication access, to heating and cooling homes. Although Duke
3 Energy Ohio's current practices have served it well in the past, the Company must
4 continue to evolve to meet these growing customer expectations. Duke Energy Ohio
5 cannot be stagnant and simply rely upon the premise that past practices will continue
6 to be sufficient to maintain future performance. Rather, it must adapt its practices
7 and implement new programs to respond to industry demands, changes in
8 technology, and continually evolving customer needs and expectations.

9 **Q. DOES THE COMPANY MEASURE OR ATTEMPT TO QUANTIFY**
10 **CUSTOMER EXPECTATIONS?**

11 A. Yes.

12 **Q. PLEASE EXPLAIN.**

13 A. Duke Energy and Duke Energy Ohio continuously evaluate customer satisfaction
14 and expectations as well as the Company's performance, through third-party
15 national benchmarking and regional surveys generated by Duke Energy.
16 Specifically, Duke Energy subscribes to and participates in the J.D. Power annual
17 electric utility residential customer and business customer satisfaction studies.
18 Duke Energy also conducts its own surveys of residential, small/medium
19 business, and large business customers, including community leaders, on a
20 corporate and regional level for Ohio and Kentucky.

21 Duke Energy Ohio also performs a quarterly survey at the direction of the
22 Commission, using a study that includes questions authored by the Commission.
23 The Duke Energy surveys are generally done electronically and are emailed to a

1 random sample of customers throughout the year on a quarterly basis. Based
2 upon the results of all these surveys, the Company gauges its performance in
3 relation to customer expectations.

4 **Q. PLEASE DESCRIBE THE MOST RECENT J.D. POWER SURVEYS AND**
5 **WHAT THEY INDICATE WITH RESPECT TO CUSTOMER**
6 **EXPECTATIONS, SATISFACTION, AND PERFORMANCE.**

7 A. J.D. Power is well known for setting the standard for measurement of consumer
8 opinion and customer satisfaction in many key industries. J.D. Power annually
9 surveys electric utilities' residential and business customer satisfaction. Duke
10 Energy's Midwest utilities (Ohio, Kentucky, and Indiana) participate in these
11 annual studies.

12 The J.D. Power electric utility business customer satisfaction study,
13 established in 2000, calculates overall customer satisfaction based on six
14 performance areas: (1) corporate citizenship, (2) communications, (3) price, (4)
15 billing and payment, (5) power quality and reliability, and (6) customer service.
16 For 2014, the most recent study for which results are available, J.D. Power
17 measured business customer satisfaction for the country's Midwest large electric
18 utilities, serving over 25,000 business customers. Duke Energy Midwest scored
19 666 points in the Overall Customer Satisfaction Index, which is above the
20 national average. Attachment MWA-2 is a true and accurate copy of an excerpt
21 from the 2014 J.D. Power study, showing the power quality and reliability
22 performance rankings.

1 Attachment MWA-3 is an excerpt from the J.D. Power 2013 Residential
2 Electric study that supports the conclusion that customer outage tolerances are
3 declining while expectations are increasing. The top line indicates that, on a
4 national average, overall satisfaction is flat to slightly declining, even among
5 customers who are experiencing “perfect power” or no outages. This means that
6 customer expectations are high with respect to the power quality and reliability of
7 their electric utility service.

8 **Q. PLEASE DESCRIBE THE DUKE ENERGY CUSTOMER SURVEYS AND**
9 **WHAT THEY INDICATE IN TERMS OF CUSTOMER EXPECTATIONS**
10 **REGARDING POWER QUALITY AND THE COMPANY'S**
11 **PERFORMANCE.**

12 A. Duke Energy's Customer Satisfaction Team conducts continuous customer
13 satisfaction studies of the residential, small/medium business, and large business
14 customer segments for each of Duke Energy's utility operating companies.
15 Attachment MWA-4 is a true and accurate copy of the Ohio and Kentucky
16 excerpt of the Midwest Summary Presentation for fourth quarter of 2013. This
17 presentation shows the customer satisfaction results for Ohio/Kentucky for
18 calendar year 2013. The results are expressed on the basis of the percentage of
19 respondents who are highly satisfied and the percentage who are least satisfied.
20 Using a ranking system of one to ten, customers who rated the Company an eight
21 or higher are considered to be highly satisfied and those who rated the Company a
22 four or below are considered least satisfied. Page 11 of this excerpt directly
23 addresses the performance of Duke Energy Ohio and Duke Energy Kentucky

1 relative to customer power quality and reliability expectations across the
2 Ohio/Kentucky region.

3 **Q. PLEASE DESCRIBE THE COMMISSION RELIABILITY SURVEYS**
4 **AND WHAT THEY INDICATE IN TERMS OF CUSTOMER**
5 **EXPECTATIONS REGARDING POWER QUALITY AND THE**
6 **COMPANY'S PERFORMANCE.**

7 A. Attachments MWA-5 and MWA-6 are excerpts from summaries of the
8 Company's most recent Commission-required residential and non-residential
9 surveys, respectively. The surveys, showing data for calendar year 2013 through
10 the first quarter of 2014, were performed online to random samples of customers.
11 While the Company does not use these surveys for planning purposes, they are
12 useful as tools to indicate what our customers expect in terms of power quality
13 and service. These surveys, among other things, tested customer tolerances for
14 service interruptions and how the Company has performed in relation to those
15 expectations.

16 For example, the non-residential customer surveys provide information
17 regarding customer tolerances for, among other things, service interruptions of
18 less than five minutes and greater than five minutes, as well as storm-related
19 outages. There are also follow-up questions related to the number and duration of
20 outages actually experienced by these same customers. As can be seen from these
21 surveys, business customers have very high expectations related to the number
22 and duration of outages. On page 5, the customers were asked how many
23 momentary outages they would find acceptable over a 12-month period. Over 80

1 percent of the customers expect two or fewer momentary outages over a 12-month
2 period. These expectations, while varying somewhat during these surveys, do
3 show that customers' expectations are increasing regarding power quality. Duke
4 Energy Ohio has performed relatively well in meeting these expectations.

5 Similar surveys were performed for residential customers. Again, these
6 results indicate that Duke Energy Ohio's residential customer have increasing
7 expectations of reliability and power quality.

8 **Q. WHAT DO THESE SURVEYS INDICATE IN TERMS OF DUKE**
9 **ENERGY OHIO'S STRATEGY TO MEET CUSTOMER POWER**
10 **QUALITY AND RELIABILITY EXPECTATIONS?**

11 A. Even though the majority of Duke Energy Ohio's customers appear to be satisfied
12 with the Company's reliability and power quality, there is room for improvement.
13 And failure to be proactive to resolve issues before they manifest will result in a
14 decline in system performance and customer satisfaction. In order to meet these
15 high expectations, Duke Energy Ohio must be proactive and take corrective
16 actions before a problem manifests itself. Identifying these issues and employing
17 the necessary resources presents challenges from a budgeting perspective when
18 the sole source of operating and maintenance capital is limited to base rates
19 established through base rate proceedings.

20 **Q. WHAT IS THE COMPANY PROPOSING IN THESE PROCEEDINGS TO**
21 **ADDRESS THESE CHALLENGES?**

22 A. Duke Energy Ohio is proposing an infrastructure modernization plan and recovery
23 mechanism consistent with Ohio Revised Code 4928.143(B)(2)(a) and O.A.C.

1 4901:1-35(g) as part of this electric security plan (ESP). The distribution
2 infrastructure plans and the associated recovery mechanism, Rider DCI, are
3 designed to balance the needs of the Company to maintain its financial stability
4 with its commitment to customers to minimize costs and continue to provide safe,
5 reliable, and reasonably priced service.

6 **Q. PLEASE DESCRIBE RIDER DCI.**

7 A. The objective of Rider DCI is to allow the Company to implement new initiatives
8 to enhance the safety and reliability of its delivery system, recover a return of and
9 on incremental capital investment in electric distribution plant, and recover the
10 associated property tax and depreciation expenses from the date certain of Duke
11 Energy Ohio's last electric distribution rate case. Duke Energy Ohio witness
12 Peggy A. Laub fully explains how Rider DCI will work and be adjusted. In
13 summary, the rider will recover the Company's incremental distribution capital
14 investment, including, but not limited to ongoing maintenance capital, as well as
15 the cost to implement various specific programs or initiatives designed to
16 maintain and/or enhance the safety and reliability of the Company's distribution
17 system. The programs to be implemented under the infrastructure modernization
18 plan are designed to meet customer expectations, manage costs, and proactively
19 address the aging infrastructure issues through a targeted and coordinated
20 approach. Attachment MWA-7 is a detailed analysis of the forecasted costs under
21 the Company's infrastructure modernization plan, including estimated customer
22 rate impacts.

1 **Q. WHAT IS THE ANTIPLICATED IMPACT TO THE COMPANY'S
2 CURRENT RELIABILITY AND PERFORMANCE THROUGH THE
3 PLANS PROPOSED FOR INCLUSION UNDER RIDER DCI?**

4 A. Although Duke Energy Ohio cannot guarantee that system reliability or customer
5 satisfaction will improve in terms of specific reliability index scores or a
6 particular level of performance from implementing its infrastructure improvement
7 plans, doing nothing is sure to erode both. There are factors that impact the
8 Company's reliability that are simply beyond its control, such as the frequency
9 and severity of major storms. Nonetheless, the programs selected by the
10 Company are designed to address those issues that are predictable and
11 controllable, such as replacement of obsolete and aging infrastructure that
12 becomes less reliable as it approaches the end of its useful life. Proactively
13 addressing vulnerable spots on the distribution system is the most effective way to
14 attempt to improve reliability and will provide benefits to customers.

15 **Q. PLEASE SUMMARIZE THESE CUSTOMER BENEFITS.**

16 A. By implementing these programs together, the Company is better able to manage
17 and control its costs and its workforce resources. That should allow for a more
18 efficient process. The new equipment that replaces and updates the Company's
19 aging distribution equipment will likely be more resilient to loading due to
20 extreme weather conditions. Because many of these programs will be
21 implemented throughout the Company's service territory, ultimately every
22 customer will benefit from these efficiencies and system hardening. Rider DCI
23 and the infrastructure modernization programs proposed therein will allow Duke

1 Energy Ohio to take a holistic, coordinated approach to addressing these
2 identified areas of concern, in contrast to the current, reactive strategy inherent in
3 a pure base rate recovery model.

4 **Q. PLEASE IDENTIFY THE PROGRAMS INCLUDED IN DUKE ENERGY**
5 **OHIO'S INFRASTRUCTURE MODERNIZATION PLAN, THE COSTS**
6 **OF WHICH WOULD BE RECOVERABLE UNDER RIDER DCI.**

7 A. Duke Energy Ohio is currently proposing a total of nineteen programs (both new
8 programs and enhancements to existing programs) as part of its overall
9 infrastructure modernization plan, with recovery through Rider DCI. Attachment
10 MWA-7 provides a list and the estimated cost of the infrastructure maintenance
11 programs to be included under Rider DCI through the term of this ESP.
12 Consistent with the intent of Rider DCI, which is to allow the Company to
13 proactively address reliability issues through a coordinated and targeted strategy,
14 the Company anticipates that Rider DCI will continue to evolve, with
15 technological advances or changes in field conditions, to include additional
16 programs or revisions and modifications to the initial programs over time. The
17 current programs in the infrastructure modernization plan are as follows:

- 18 • Transformer Retrofit Program
19 • Vegetation Clearing/Right-of-Way Acquisition/Facility Modification
20 • Underground Cable Injection
21 • Underground Cable Replacement
22 • DTUG-Online Dissolved Gas Analysis (DGA), Sump Pump, Oil
23 Monitoring (Network)

- 1 • Manhole Lid Retrofit Program
- 2 • Manhole/Vault Capital Rebuild (Network)
- 3 • Network Secondary Main Replacement
- 4 • Vault Network Protector/Transformer Change Out
- 5 • Redesign of Worst Congested Underground Structures
- 6 • URD Submersible Transformer Upgrades
- 7 • Distribution Substation Protection (Physical Security)
- 8 • Upgrade Live Front Transformers
- 9 • Upgrade Distribution Transformer Substations (Unique Customer Locations)
- 10 • PILC Replacement (Feeder Exits)
- 11 • Distribution Operations Center and Mobile Logistics Modernization
- 12 • Ownership of Underground Residential Services
- 13 • Conversion of Old 4kV Feeders
- 14 • Recloser Replacement
- 15 • Circuit Sectionalization

17 **Q. PLEASE DESCRIBE THE TRANSFORMER RETROFIT PROGRAM, ITS
18 PURPOSE, AND THE ANTICIPATED BENEFITS.**

19 A. The Transformer Retrofit Program proactively replaces aging Completely Self
20 Protected (CSP) transformers throughout the Company's distribution system and
21 is intended to result in fewer transformer-related customer outages. The
22 installation of CSPs was prevalent from approximately 1965 through the 1990s.
23 CSP transformers are internally fused on the secondary side of the transformer

1 and when overloaded have and continue to cause outages. In addition to CSP
2 transformer replacements, the program will include adding external lightning
3 arresters, squirrel guards, and covered lead wires for additional protection from
4 outages. By installing high-voltage fuses and lightning arresters on the line side
5 of this device, the Company will significantly reduce the line exposure. This
6 program will encompass the entire overhead distribution system in Duke Energy
7 Ohio's service area. The program is intended to enhance the overall customer
8 experience, reliability, and the Company's operational integrity and will
9 eventually reduce operating and maintenance (O&M) costs by reducing outages
10 attributed to the older equipment.

11 **Q. PLEASE DESCRIBE THE VEGETATION CLEARING/RIGHT-OF-WAY**
12 **ACQUISITION/FACILITY MODIFICATION PROGRAM, ITS PURPOSE,**
13 **AND THE ANTICIPATED BENEFITS.**

14 A. The Vegetation Clearing/Right-of-Way Acquisition/Facility Modification
15 Program identifies dead or high risk trees or vegetation, within or along the right-
16 of-way, that pose a hazard or danger for the Company's overhead lines. Dead or
17 at-risk trees outside of the Company's easements cause numerous outages
18 annually. Proactively addressing these potential threats would potentially avert a
19 future outage. This capital program allows the acquisition of additional
20 easements for vegetation management clearing purposes to remove additional
21 trees and vegetation and reduce tree-related outages. This program will
22 encompass the entire overhead service area, but with a primary focus on wooded
23 areas and along rights-of-way. The Company will make contact with the

1 customer prior to removing the trees or vegetation. The benefits anticipated will
2 positively impact customer experience, reliability, and the overall integrity of the
3 distribution system through fewer outages. However, the benefits of this program
4 extend beyond the Company's distribution service and its customers, as dead or
5 dying trees also threaten the general public. This is an integrity-related program
6 anticipated to assist in maintaining and even improving the Company's CAIDI
7 and SAIDI.

8 **Q. PLEASE DESCRIBE THE UNDERGROUND CABLE INJECTION
9 PROGRAM, ITS PURPOSE, AND THE ANTICIPATED BENEFITS.**

10 A. The Underground Cable Injection Program is designed to extend the life of
11 existing underground cable. Cable injection is a process that infuses a di-electric
12 gel into the cable refurbishing it for approximately fifty percent of the cost of
13 replacing it. This program will reduce future repairs with a cable warranty
14 program and should reduce future O&M costs associated with current cable
15 repairs. Cable injection can be accomplished for about one-third of the cost of
16 replacement. In addition, the technique the Company is using comes with a 25-
17 year warranty that will further mitigate future costs. Anytime upgrades are
18 needed that necessitate cable replacements, outages are required. These outages
19 can be lengthy. The injection process requires less time in terms of outage
20 duration. This program will encompass the existing underground service area and
21 there will be a primary focus on underground runs of cable that have failed and
22 that have been identified by Duke Energy Ohio's engineers as candidates for
23 injection treatment. The benefits anticipated from this program will positively

1 impact customer experience, reliability, and the overall integrity of the
2 distribution system through fewer outages.

3 **Q. PLEASE DESCRIBE THE UNDERGROUND CABLE REPLACEMENT**
4 **PROGRAM, ITS PURPOSE, AND THE ANTICIPATED BENEFITS.**

5 A. The Underground Cable Replacement Program consists of replacement of
6 existing underground cable that the Company determines to be at the end of its
7 useful life and that cannot be treated properly under the Underground Cable
8 Injection Program. The Company has discovered that soil conditions in southwest
9 Ohio can cause the neutral in non-jacketed cable to deteriorate over time. This
10 program, like the associated Underground Cable Injection Program, will
11 encompass Duke Energy Ohio's entire underground service area, where injection
12 was not feasible. The benefits anticipated from this program will positively
13 impact customer experience, reliability, and the overall integrity of the
14 distribution system through fewer outages. Fewer outages should, in the future,
15 result in O&M savings.

16 **Q. PLEASE DESCRIBE THE DTUG-ONLINE DGA, SUMP PUMP, OIL**
17 **MONITORING (NETWORK) PROGRAM, ITS PURPOSE, AND THE**
18 **ANTICIPATED BENEFITS.**

19 A. The DTUG-Online DGA, Sump Pump, and Oil Monitoring Program will allow
20 the installation of dissolved gas analysis and oil monitoring using a
21 communication network. Downtown Cincinnati is primarily commercial in
22 nature. And, as a result, reliability is one of the key attractions for commercial
23 tenants in the downtown Cincinnati area. The type of distribution equipment in

1 the downtown Cincinnati underground network is significantly more expensive to
2 own, maintain, and operate than that equipment used in the suburbs. The vaults,
3 manholes, and conduit system in downtown Cincinnati date back to the early
4 1900s, with some equipment still in service dating as far back as the 1920s. The
5 advantage to this program is that it provides data back to the Company that could
6 potentially diagnose or forecast a future equipment failure. While DGA
7 monitoring is completed today and tested at our facility, this program will allow
8 for real-time monitoring. The program will encompass the entire downtown
9 Cincinnati underground network. The benefits anticipated from this program will
10 positively impact customer experience, reliability, and the overall integrity of the
11 downtown Cincinnati underground network distribution system through fewer
12 outages.

13 **Q. PLEASE DESCRIBE THE MANHOLE LID RETROFIT PROGRAM, ITS**
14 **PURPOSE, AND THE ANTICIPATED BENEFITS.**

15 A. The Manhole Lid Retrofit Program involves the installation of Swiveloc Manhole
16 Covers along pedestrian areas in proximity to Duke Energy Ohio's downtown
17 Cincinnati underground network. The primary focus of this program is safety –
18 that of the general public and the Company's employees and contractors. When
19 gases build up in the underground system and a source of ignition is added, a
20 volatile explosion could occur with sufficient force to launch even a 200-pound
21 cast-iron manhole lid into the air. This program focuses on securing these lids
22 along the Duke Energy Ohio underground network in downtown Cincinnati so
23 that, if such an event occurs, the lid will merely lift slightly to release the pressure

1 of gases but continue to rest on the manhole. The benefits anticipated from this
2 program will positively impact customer experience through maintaining and
3 enhancing safety, reliability, and the overall integrity of the downtown Cincinnati
4 underground network distribution system.

5 **Q. PLEASE DESCRIBE THE MANHOLE/VAULT CAPITAL REBUILD**
6 **PROGRAM, ITS PURPOSE, AND THE ANTICIPATED BENEFITS.**

7 A. The Manhole/Vault Capital Rebuild Program is designed to enhance the safety of
8 Duke Energy Ohio's delivery system and involves complete restoration of
9 concrete structures, including all racking of cables in manholes along Duke
10 Energy Ohio's underground network. This program constitutes a structural
11 rebuilding of the infrastructure that has deteriorated due to age, road traffic, and
12 the presence of other underground facilities and utilities. The issues addressed by
13 the program include, but are not limited to, water damage due to leaky vault and
14 manhole roofs, salt contamination, and structural deterioration due to the public
15 roadway vibrations. If the Company does not proactively and aggressively
16 address this issue, the damaged vaults could pose a safety issue for the general
17 public due to the potential risk of collapse. The program will encompass the
18 entire downtown Cincinnati underground network. The benefits anticipated from
19 this program will positively impact customer experience through enhancing
20 safety, reliability, and the overall integrity of the downtown Cincinnati
21 underground network distribution system through fewer outages.

1 Q. PLEASE DESCRIBE THE NETWORK SECONDARY MAIN
2 REPLACEMENT PROGRAM, ITS PURPOSE, AND THE ANTICIPATED
3 BENEFITS.

4 A. The Network Secondary Main Replacement Program is designed to maintain and
5 enhance reliability through the replacement of 600 volt PILC cable that provides a
6 necessary safety net for the secondary system through a network redundancy for
7 the downtown Cincinnati distribution system. The existing cable is, in most
8 cases, more than 40 years old and thus, because of age, has an increased
9 likelihood of failure. The redundant network in downtown Cincinnati is vital to
10 attracting new business, not to mention retaining existing businesses, especially
11 those that require a high degree of reliability, such as data centers and financial
12 institutions. An advantage that developers and current businesses have in the
13 downtown network is that its redundancy eliminates the need for these businesses
14 to have separate back-up generation in most cases. For example, in new
15 downtown buildings, as well as some current downtown buildings, the redundant
16 downtown system alleviates the need to own and maintain back-up generation to
17 power emergency equipment such as fire systems. The benefits anticipated from
18 this program will positively impact customer experience through enhancing
19 safety, reliability, and the overall integrity of the downtown Cincinnati
20 underground network distribution system through decreasing the likelihood of
21 outages. It would also continue to allow these buildings and business to not have
22 to secure separate back-up generation resources.

1 Q. PLEASE DESCRIBE THE VAULT NETWORK
2 PROTECTOR/TRANSFORMER CHANGE OUT PROGRAM, ITS
3 PURPOSE, AND THE ANTICIPATED BENEFITS.

4 A. The Vault Network Protector/Transformer Change Out Program is designed to
5 both proactively and reactively replace older vault protectors and transformers.
6 This program would include a transition from wall-mounted protectors to
7 transformer-mounted protectors, where possible. Although Duke Energy Ohio
8 currently has a rigorous preventative maintenance program in place for this
9 equipment, there are circumstances where replacing the equipment is more cost
10 effective and yields greater reliability. This is primarily due to the age of some of
11 the infrastructure, resulting in a greater risk for failure. In addition, because much
12 of this equipment is unique in nature, there is a potential risk of longer outage
13 durations in the event of a failure, due to long lead times to acquire replacement
14 equipment. The benefits anticipated from this program will positively impact
15 customer experience through maintaining and enhancing reliability and the
16 overall integrity of the downtown Cincinnati underground network distribution
17 system through decreasing the likelihood of outages.

18 Q. PLEASE DESCRIBE THE REDESIGN OF WORST CONGESTED
19 UNDERGROUND STRUCTURES PROGRAM, ITS PURPOSE, AND THE
20 ANTICIPATED BENEFITS.

21 A. The Redesign of Worst Congested Underground Structures Program will allow
22 the redesign and rebuilding of congested and overcrowded manholes and vaults.
23 There are several underground structures that were built and installed in place due

1 to the congestion of other utilities located in the street. Over time and as a result
2 of previous equipment failure and replacement, as well as general load growth,
3 these structures have become congested and pose a reliability risk due to the close
4 proximity of other conductors. The benefits anticipated from this program will be
5 seen by decreasing the likelihood of outages due to congestion in an underground
6 structure. Although this program will not eliminate all outages, this program
7 allows for Duke Energy to keep the impact isolated to one circuit

8 **Q. PLEASE DESCRIBE THE URD SUBMERSIBLE TRANSFORMER
9 UPGRADE PROGRAM, ITS PURPOSE, AND THE ANTICIPATED
10 BENEFITS.**

11 A. The URD Submersible Transformer Upgrade Program will allow for the removal
12 of overhead transformers that were installed in underground vaults and will
13 further include installing pad mounted equipment and relocating all connections
14 above ground. A submersible transformer is an overhead transformer that has
15 been retrofitted with underground bushings so that it can be installed below grade.
16 These installations were prevalent and customary prior to the time that pad
17 mounted transformers became the standard. These submersible transformers
18 present a safety and reliability concern, as a utility employee must lie on the
19 ground to work on this equipment. Outages relating to submersible transformers
20 can be lengthy. When these devices fail today, the Company replaces them with a
21 ground mounted transformer. The replacement of submersible transformers will
22 be performed in conjunction with the Cable Injection/Replacement Programs I
23 previously described. These facilities exist in areas where services were installed

1 during the mid-1970s and 1980s throughout the Duke Energy Ohio service
2 territory. The benefits anticipated from this program will positively impact
3 customer experience through maintaining and enhancing reliability and the
4 overall integrity of the Company's service area through decreasing the likelihood
5 and the length of outages.

6 **Q. PLEASE DESCRIBE THE DISTRIBUTION SUBSTATION PROTECTION
7 PROGRAM, ITS PURPOSE, AND THE ANTICIPATED BENEFITS.**

8 A. The Distribution Substation Protection Program will facilitate the upgrade of
9 security measures, including but not limited to installation of cameras, higher
10 fences, and other theft deterrents at Company substations in locations of high risk
11 of theft. The Company is experiencing more frequent attempts at vandalism and
12 theft at its substations. To the untrained person, accessing these areas, especially
13 through an act of vandalism, presents a serious risk of injury or death. Equipment
14 in these substations is used to provide service to customers. If equipment that is
15 in service is stolen, an outage may occur. The equipment must be replaced,
16 which, in turn, increases costs to all customers. Duke Energy Ohio intends to
17 implement the described measures throughout its service territory with a priority
18 focus in those areas at the highest risk of theft or vandalism. The benefits
19 anticipated from this program will positively impact customer experience through
20 maintaining and enhancing reliability, reducing O&M expense in the future, and
21 improving safety.

22 **Q. PLEASE DESCRIBE THE UPGRADE LIVE FRONT TRANSFORMERS
23 PROGRAM, ITS PURPOSE, AND THE ANTICIPATED BENEFITS.**

1 A. The Upgrade Live Front Transformers Program is designed to enable replacement
2 of 40- to 50-year-old equipment, including but not limited to transformers without
3 insulated HV bushings. Live front transformers were installed during the 1970s
4 and they limit the Company's ability to expand its underground system. These
5 devices are also difficult to maintain in that they must be fully de-energized
6 before they can be worked on. This program would identify these devices and
7 replace them. This program will encompass the entire Duke Energy Ohio service
8 territory with a primary focus on three-phase transformers. The benefits
9 anticipated from this program will positively impact customer experience by
10 maintaining and enhancing reliability and the overall integrity of the Company's
11 service area through decreasing the likelihood of outages and the length of
12 outages.

13 Q. **PLEASE DESCRIBE THE UPGRADE DISTRIBUTION TRANSFORMER**
14 **SUBSTATION PROGRAM, ITS PURPOSE, AND THE ANTICIPATED**
15 **BENEFITS.**

16 A. The Upgrade Distribution Transformer Substations Program is intended to
17 address unique and non-standard customer locations and installations. Duke
18 Energy Ohio has several unique transformer installations that do not have a
19 replacement alternative readily available. This current situation creates the
20 potential for reliability issues, not to mention an extended down time for the
21 customer, if the facilities need to be repaired. Non-standard transformers are not
22 only a risk to the customer in relation to the longer duration of an outage, but also
23 a concern to the Company. As a result of the evolution of the electric industry

1 and aesthetic attempts to keep transformers out of the public view, several
2 installations in the Company's territory are non-standard and required special-
3 order equipment at the time they were installed. This unique equipment is
4 considered obsolete in many cases and, in order to continue serving customers
5 with these types of installations, such equipment must be upgraded before a
6 failure occurs. The program would identify and facilitate updating of these
7 stations before an equipment failure occurs. This program will encompass the
8 entire Duke Energy Ohio service territory. The benefits anticipated from this
9 program will positively impact customer experience through maintaining and
10 enhancing reliability and the overall integrity of the Company's service area
11 through decreasing the likelihood of outages and the length of outages.

12 **Q. PLEASE DESCRIBE THE PILC REPLACEMENT PROGRAM, ITS
13 PURPOSE, AND THE ANTICIPATED BENEFITS.**

14 A. The PILC Replacement program includes replacement of old paper and lead
15 substation exit cables from the substation to the overhead/underground lines. The
16 PILC cables are approaching the end of their useful life and this program would
17 accelerate replacement. These cables are the first section of a feeder and, in most
18 cases, their failure could cause an outage to thousands of customers. The PILC
19 cable was a standard installation for many years. However, the oil and papers
20 have been breaking down over time. Infrared scanning has determined that
21 replacement of the PILC cables must be accelerated. This program will
22 encompass the entire Duke Energy Ohio service territory with a primary focus on
23 13kv substations. The benefits anticipated from this program will positively

1 impact customer experience through maintaining and enhancing reliability and the
2 overall integrity of the Company's service area through decreasing the likelihood
3 of outages and the length of outages.

4 **Q. PLEASE DESCRIBE THE DISTRIBUTION OPERATIONS CENTER AND**
5 **MOBILE LOGISTICS MODERNIZATION PROGRAM, ITS PURPOSE,**
6 **AND THE ANTICIPATED BENEFITS.**

7 A. The Distribution Operations Center and Mobile Logistics Modernization Program
8 focuses on optimizing and upgrading the Company's facilities to a more mobile
9 workforce. The program includes modernizing distribution office data equipment
10 and mobile technology and exploring opportunities for consolidating activities.
11 Utility trucks are carrying Mobile Data Terminals that need to be docked nightly,
12 as well as tablets and other handheld equipment. Each district will have an
13 Information Technology room where these devices will be kept and docked for
14 upgrades. Duke Energy Ohio is investing in its operation centers to provide more
15 timely response and to increase customer satisfaction. Once implemented, the
16 program will provide for real-time updates from the field during construction and
17 outage events. This program will encompass Duke Energy Ohio's Service
18 Distribution Operation Centers. The benefits anticipated from this program will
19 positively impact customer experience through improved communications and
20 information for customers, thereby enhancing reliability and the overall integrity
21 of the Company's distribution system.

1 **Q. PLEASE DESCRIBE THE OWNERSHIP OF UNDERGROUND**
2 **RESIDENTIAL SERVICES PROGRAM, ITS PURPOSE, AND THE**
3 **ANTICIPATED BENEFITS.**

4 A. Upon implementation, the Ownership of Underground Residential Services
5 Program would allow Duke Energy Ohio to take ownership and control of
6 customer underground services that must be repaired or replaced. Currently,
7 Duke Energy Ohio owns and maintains all overhead electric service drops to the
8 customers' premises. However, the underground services remain the sole
9 responsibility of the customers. Consequently, if a repair is needed on these
10 underground services, it is the customer's responsibility. The Company is
11 proposing to change this going forward such that if an underground service needs
12 repair or replacement, the Company would make such a repair, take ownership of
13 the service, and then become responsible for future maintenance. Duke Energy
14 Ohio's proposal to take over ownership of these services will allow for faster
15 restoration for the customer and will decrease customer confusion relating to
16 ownership of and responsibility for these services. Many other utilities in the
17 United States, including five of Duke Energy's seven regulated companies,
18 install, own, and maintain the underground residential services. This program
19 will encompass the entire Duke Energy Ohio service territory where these
20 underground services exist. The benefits anticipated from this program will
21 positively impact customer experience through maintaining and enhancing
22 reliability and the overall integrity of the Company's service area through
23 decreasing the likelihood of outages and the length of outages.

1 Q. PLEASE DESCRIBE THE CONVERSION OF OLD 4KV FEEDERS
2 PROGRAM, ITS PURPOSE, AND THE ANTICIPATED BENEFITS.

The Conversion of Old 4kV Feeders Program facilitates the continuing upgrade of primary distribution voltage along 4kV Feeders. These feeders were installed more than 50 years ago. The current 4kv stations are expensive to maintain due to age and provide a significant limit on future expansion. The additional funding through this program will accelerate the upgrades and allow for more load capability. This program would accelerate the schedule into a 5-year plan from the current 10-year plan so as to allow for greater availability for capacity and improved reliability through replacement of old equipment. This program will encompass the entire Duke Energy Ohio service territory, with a focus on the older suburbs. The benefits anticipated from this program will positively impact customer experience through maintaining and enhancing reliability and the overall integrity of the Company's service area through decreasing the likelihood of outages and the length of outages.

16 Q. PLEASE DESCRIBE THE RECLOSER REPLACEMENT PROGRAM,
17 ITS PURPOSE, AND THE ANTICIPATED BENEFITS.

18 A. The Recloser Replacement Program accelerates the replacement and upgrade of
19 reclosers to electronic controls. The recloser plays a key role in protecting the
20 main line of the circuit and isolating outages to a smaller group of customers.
21 Annually, this replacement encompasses approximately 100 locations or 300 units
22 on the system. This program will encompass the entire Duke Energy Ohio service
23 territory. The benefits anticipated from this program will positively impact

1 customer experience through maintaining and enhancing reliability and the
2 overall integrity of the electric distribution system.

3 **Q. PLEASE DESCRIBE THE CIRCUIT SECTIONALIZATION PROGRAM,
4 ITS PURPOSE, AND THE ANTICIPATED BENEFITS.**

5 A. The Circuit Sectionalization Program, as the name implies, sectionalizes Duke
6 Energy Ohio's distribution feeders to be broken down into smaller isolated
7 segments rather than all relaying back to a large device. This program works in
8 conjunction with the Company's Transformer Retrofit and Recloser Replacement
9 Program, to break down the distribution feeders into smaller circuits with relays
10 and protection schemes. This helps isolate outages, when they occur, to smaller
11 groups and keeps the main lines energized. This program will encompass the
12 entire Duke Energy Ohio service territory. The benefits anticipated from this
13 program will positively impact customer experience through maintaining and
14 enhancing reliability by reducing the number of customers impacted by outages
15 and the enhancing overall integrity of the electric distribution system.

16 **Q. ARE THE PROGRAMS YOU DESCRIBED ABOVE THE ONLY
17 PROGRAMS TO BE INCLUDED IN THE INFRASTRUCTURE
18 MODERNIZATION PLAN?**

19 A. As I previously stated, the Company anticipates that infrastructure modernization
20 plan will continue to evolve with technological advances or changes in field
21 conditions to include additional programs or revisions and modifications to the
22 initial programs over time. The Company needs to be able to modify the list of
23 programs and to shift dollars to similar or new programs as technology evolves.

1 An example of such a shift would be through our URD cable replacement
2 program where there may be a future introduction of new injection technologies.

3 The Company continually strives to find new and better ways to employ
4 technology, proactively address system infrastructure issues in a cost-effective
5 way, and improve reliability.

6 **Q. ARE THE FORECASTED COSTS LISTED IN MWA-7, THE**
7 **INFRASTRUCTURE MODERNIZATION PLAN, REASONABLE FOR**
8 **THE WORK AND SERVICES TO BE PERFORMED?**

9 A. Yes. The costs forecasted for Rider DCI are consistent with other costs incurred
10 through the normal operation of the Company. Rider DCI will allow timely
11 recovery of the Company's costs for the programs included therein, to ensure the
12 Company can continue these programs. The rider will be trued-up for actual costs
13 and audited by the Commission to ensure that the Company is not over-
14 recovering.

15 **Q. HOW WILL THE COMPANY'S PERFORMANCE UNDER THE**
16 **INFRASTRUCTURE MODERNIZATION PLAN BE MEASURED?**

17 A. Performance will be measured primarily through the reporting indices I described
18 previously. It is anticipated that these programs will allow the Company to maintain
19 and improve CAIDI, SAIFI, and SAIDI.

IV. CONCLUSION

20 **Q. WERE ATTACHMENTS MWA-1 THROUGH MWA-7 COMPILED BY**
21 **YOU OR UNDER YOUR SUPERVISION?**

22 A. Yes.

1 Q. IS THE INFORMATION CONTAINED IN ATTACHMENTS MWA-1
2 THROUGH MWA-7 TRUE AND ACCURATE TO THE BEST OF YOUR
3 KNOWLEDGE AND BELIEF?

4 A. Yes.

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

6 A. Yes.

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Produced for purposes of PUCO Case Nos. 14-841-EL-SSO and 14-842-EL-ATA only
ATTORNEY EYES ONLY

OVEC Analysis

Capacity (MW)
UCAP (MW)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Generation Volumes (GWhs)	[REDACTED]									
PJM Capacity (\$/MW-Day)	[REDACTED]									

Revenue (\$000s)

Energy
Capacity
Dividends
Total Revenue

Costs (\$000s)

Energy
Demand
Transmission
Total Costs

Cash Flow (\$000s)

Energy Revenue Rate (\$/MWh)
Energy Cost Rate (\$/MWh)

Notes:

2015-2018 forecast values as of June 2014
2019-2024 forecast values as of January 2014
Fixed costs from OVEC schedule dated 12/11/2013

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PUCO Case No. 14-³JLSSO
Attachment MWA-2
Page 1 of 14

2014 Electric Utility Business Customer Satisfaction StudySM



Duke Energy Midwest

March 27, 2014

2014 J.D. Power Business Study Overview

- **Online interviews completed in two waves**
 - April – June (Wave 1)
 - September – December (Wave 2)
- **Total of 23,500+ businesses surveyed nationwide**
 - [REDACTED] per month average electric bill amount
- **Targeted electric utilities serving [REDACTED] business customers**
 - [REDACTED] utility brands ranked in 2014 Study
- **Region/Size Segment Reporting**
 - Companies ranked and segmented into 8 categories:
 - By Geography: East Region, Midwest Region, South Region & West Region
 - By Size: Large & Midsize

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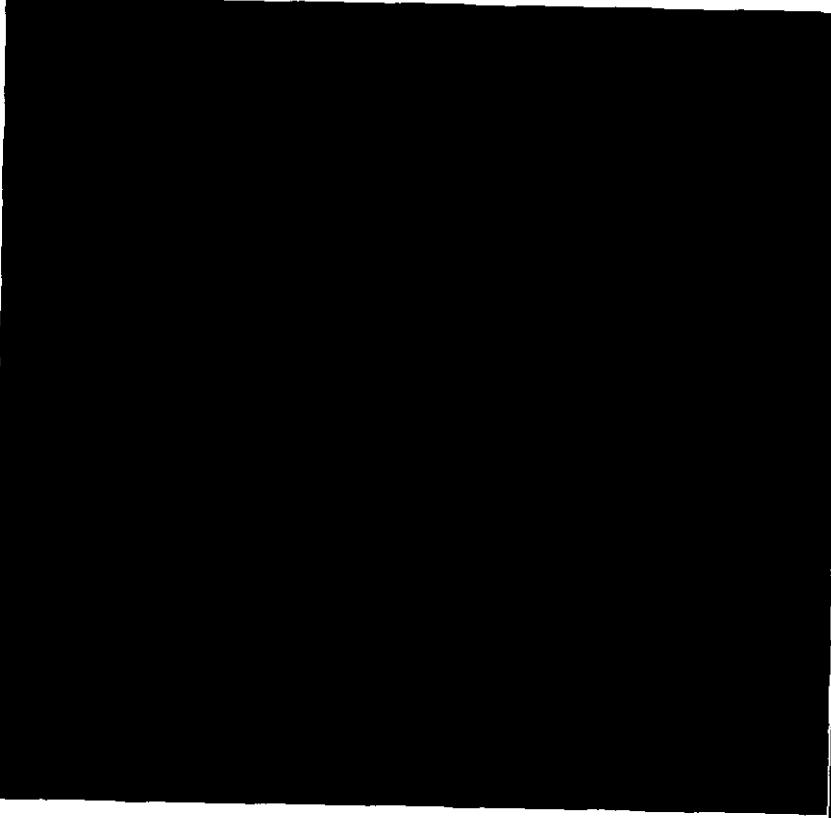
PUCO Case No. 14-JLSSO
Attachment #IV-A-2
Page 3 of 14

2014 Electric Utility Business Customer Satisfaction Study

2014 J.D. Power Business Study

Factor Model Weights

when have service

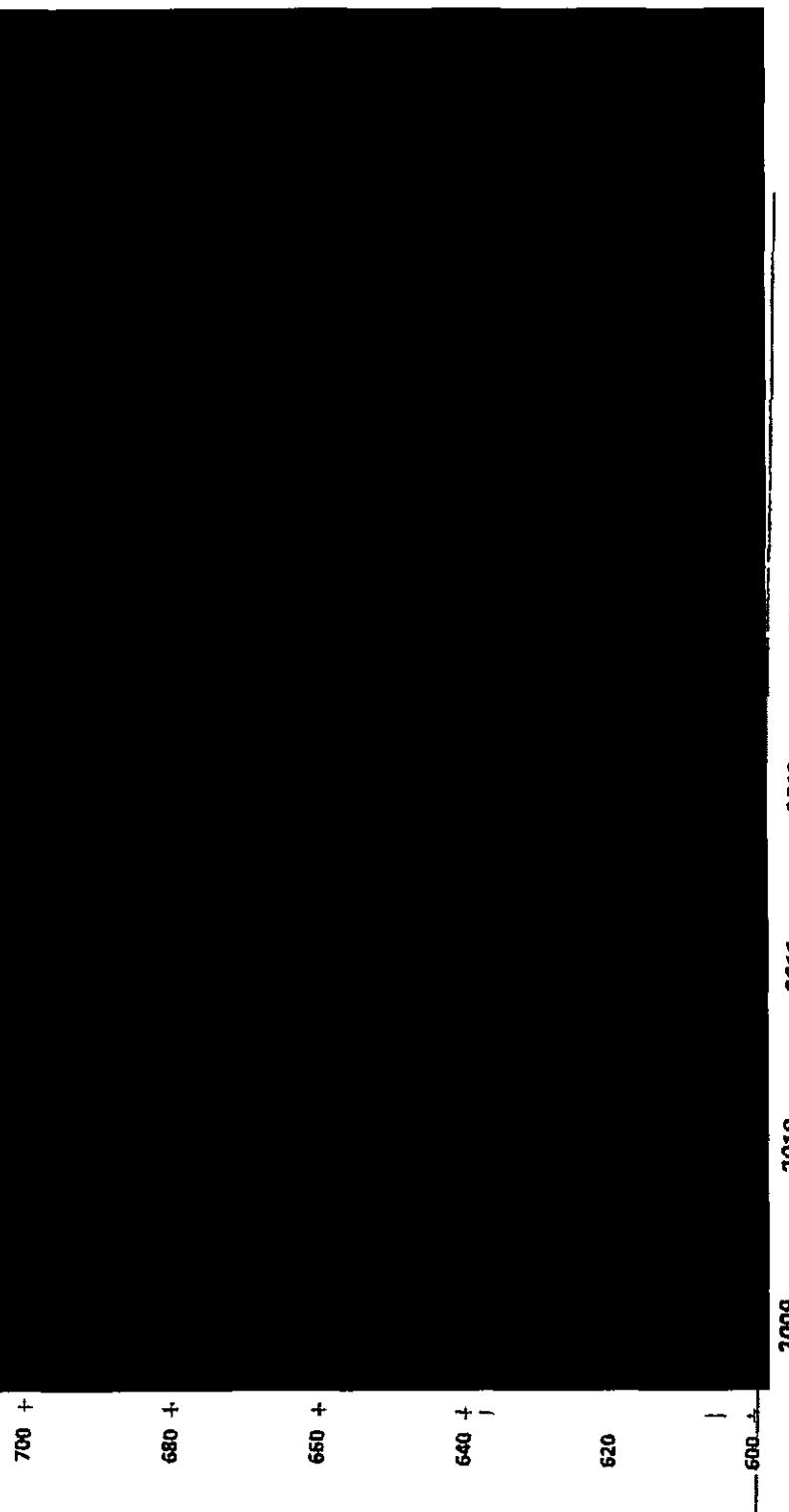


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2014 Electric Utility Business Customer Satisfaction Study

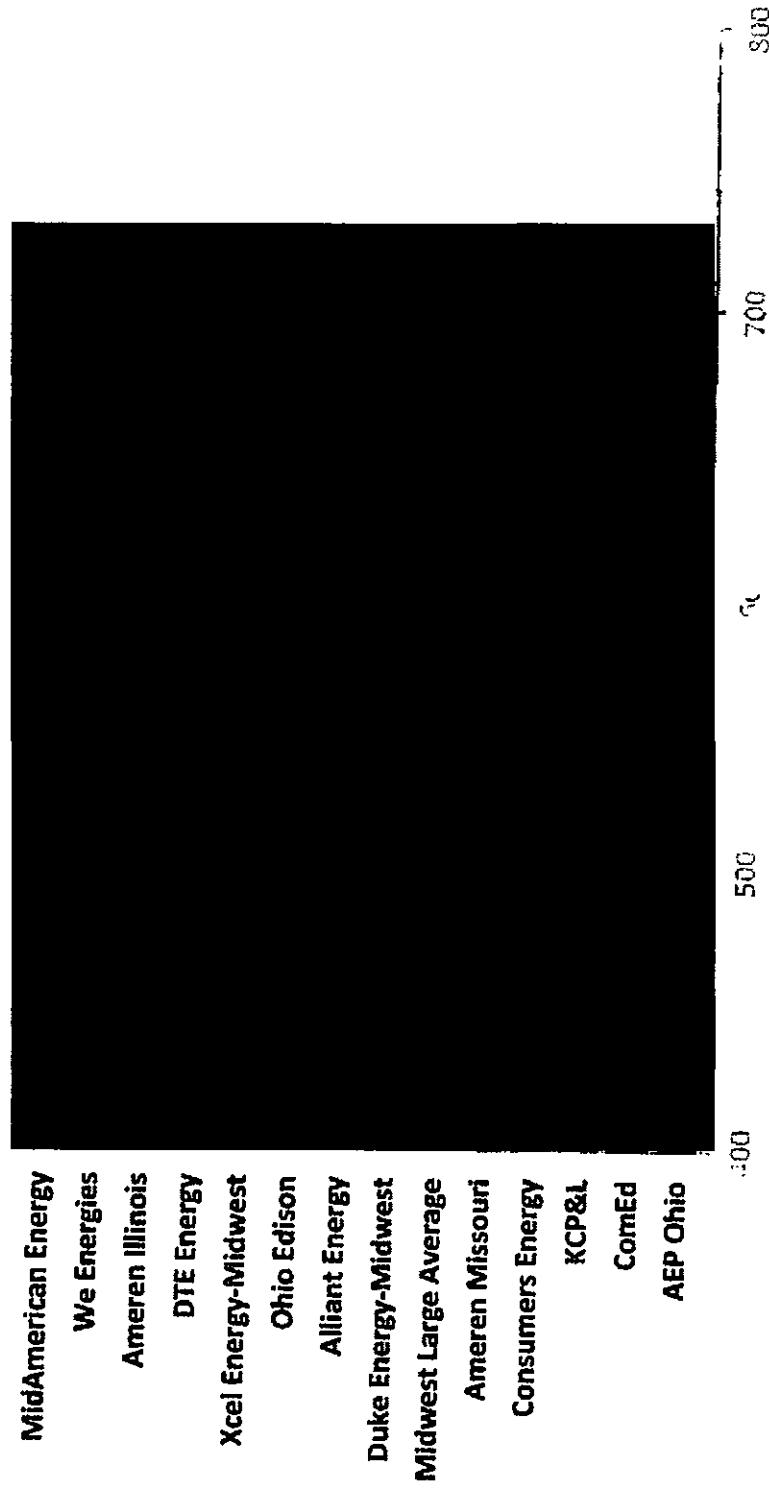
2014 J.D. Power Business Study

Large Utility Results – Duke Energy Brands



Overall CSI: Midwest Large Segment

Overall Customer Satisfaction Index



Duke Energy Midwest Factor Results – 2013 vs. 2014

	2013	Customer Service	Price	Comm.	B&P	Corp Citz.	PQR	2014
Overall Satisfaction								

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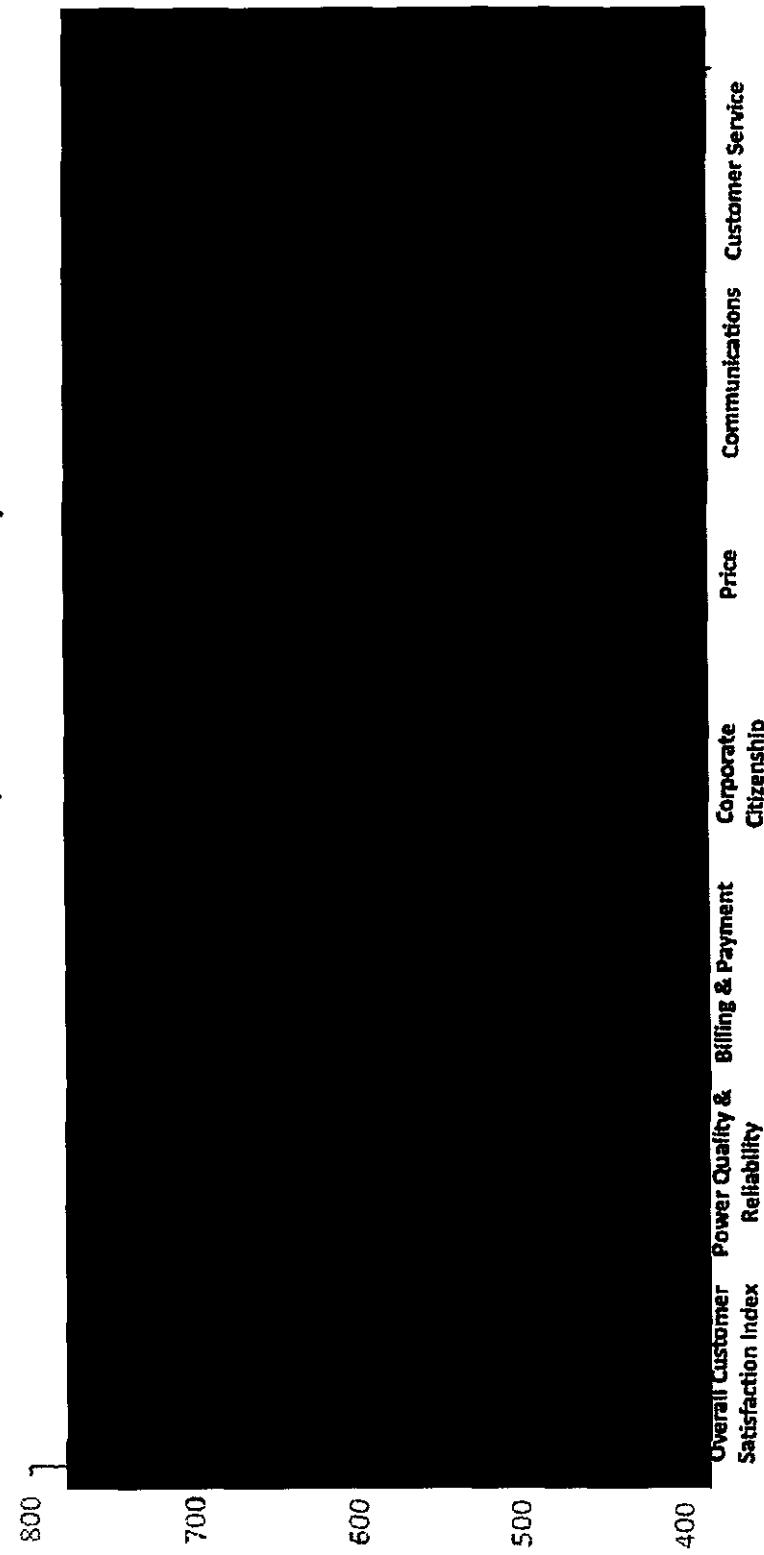
2014 Electric Utility Business Customer Satisfaction Study

Duke Energy-Midwest Rank by Factor

Index Scores	2014 Score	Vs. 2013		Vs. National Average		National Rank
		Midwest	Large Ave.	Midwest	Large Rank	
Overall Satisfaction						
Factors						
Power Quality & Reliability	100	100	100	100	100	100
Billing & Payment	100	100	100	100	100	100
Corporate Citizenship	100	100	100	100	100	100
Price	100	100	100	100	100	100
Communications	100	100	100	100	100	100
Customer Service	100	100	100	100	100	100
Rank Quantile						
	1st	2nd	3rd	4th		

DEMW Performance Over Time

2012 Syndicated 2013 Syndicated 2014 Syndicated



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2014 Electric Utility Business Customer Satisfaction Study

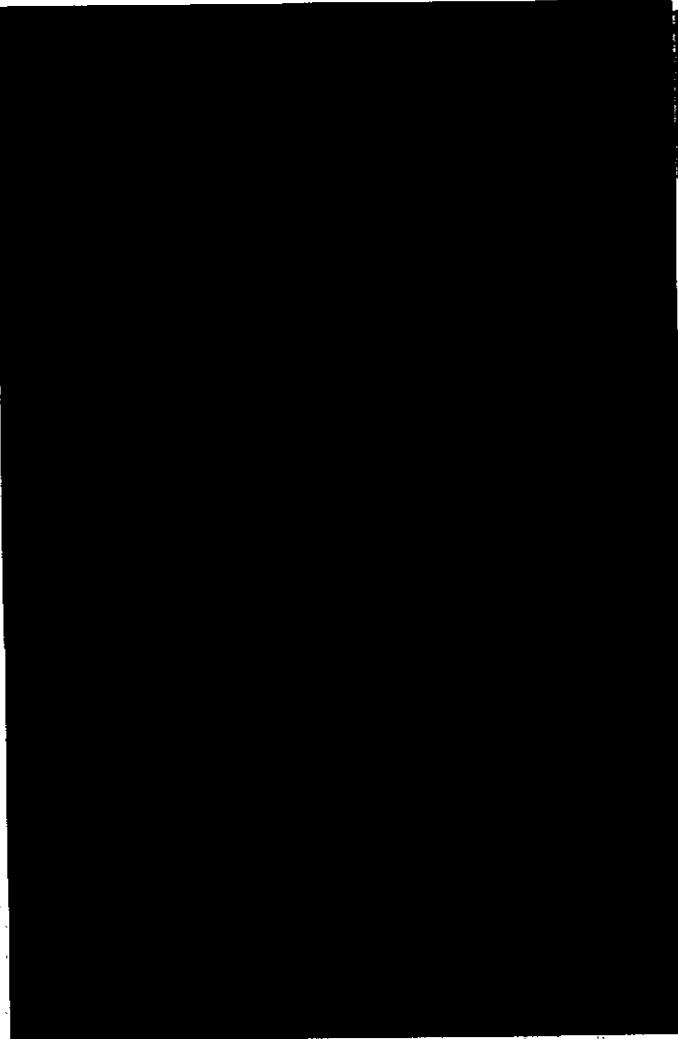


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More Comprehensive Outage Information Needed as Duration Increases

Industry Power Quality & Reliability Index

Outage Information Points



6 mins. to 30 mins.

More than 30 mins. to 1 hour

More than 1 hour to 2 hours

More than 2 hours to 3 hours

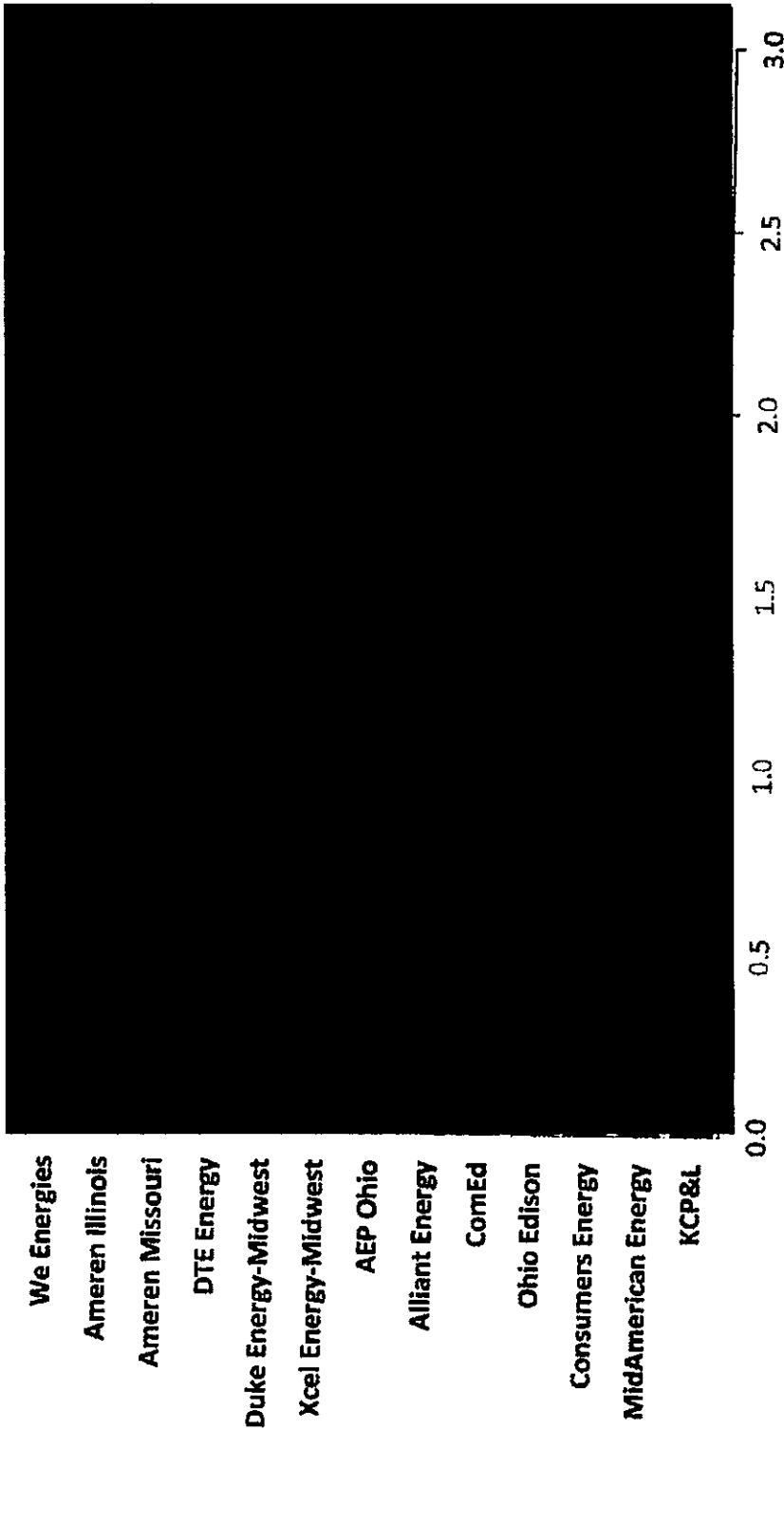
More than 3 hours to 4 hours

More than 4 hours to 10 hours

More than 10 hours

Length of Longest Outage

Number of Outage Information Points Provided by Utility Midwest Large Segment



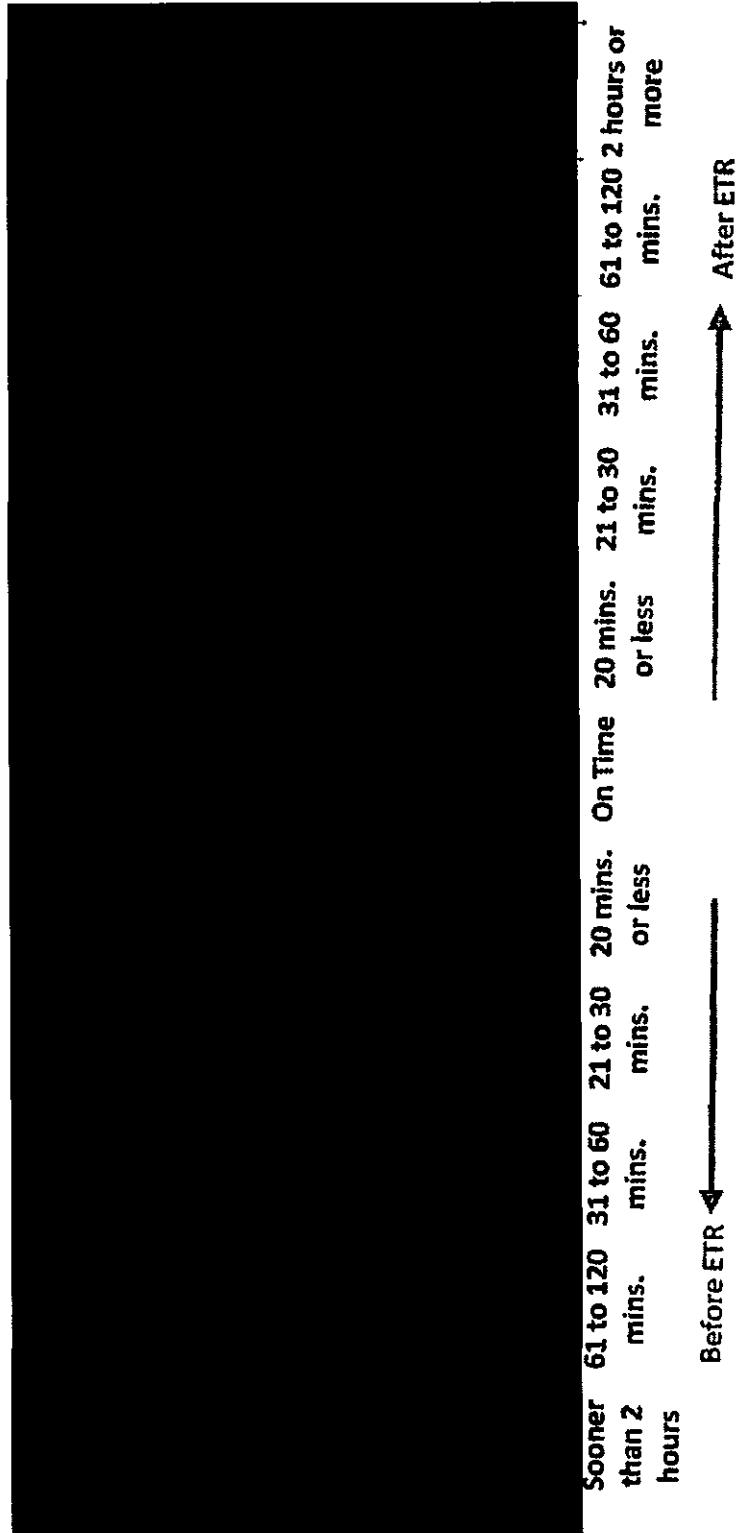
Proactive Outage Communications are Midwest Large Segment

PQR Index by Source of Outage Information



Was Power Restored When Promised? National Data

Industry PQ&R Index by Restoration Time



Power Restored After ETR Midwest Large Segment

MidAmerican Energy

Ohio Edison

Ameren Illinois

We Energies

KCP&L

Xcel Energy-Midwest

Alliant Energy

DTE Energy

Consumers Energy

ComEd

AEP Ohio

Ameren Missouri

Duke Energy-Midwest

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1. Excel at the basics



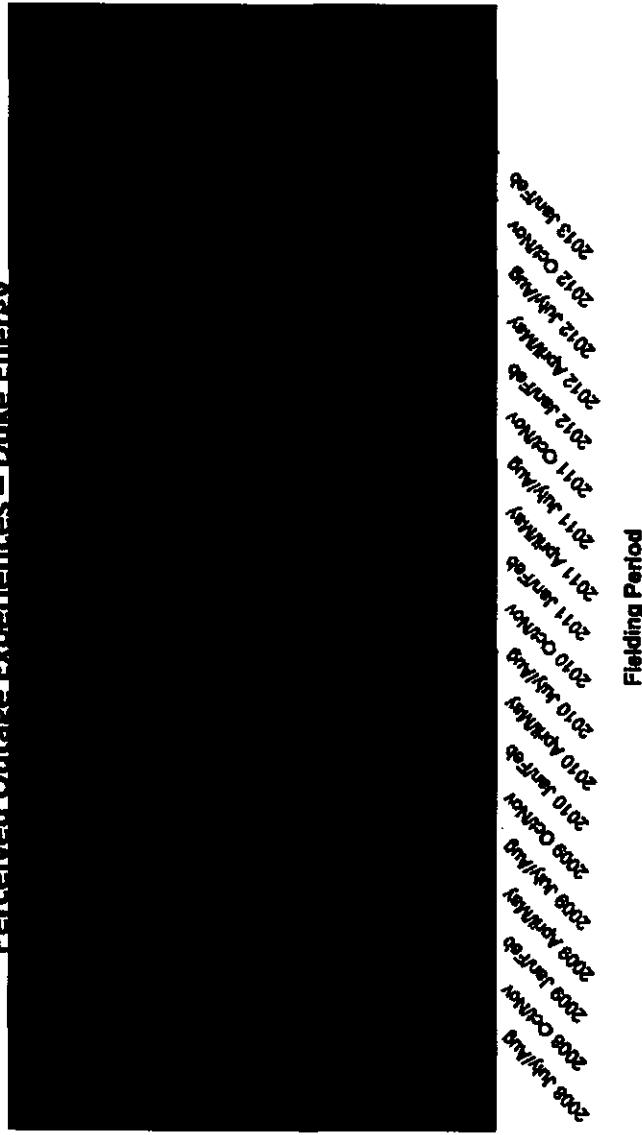
**Problems are
a problem...**

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Reliability Performance is [REDACTED]

Perceived Outage Experiences – Duke Energy



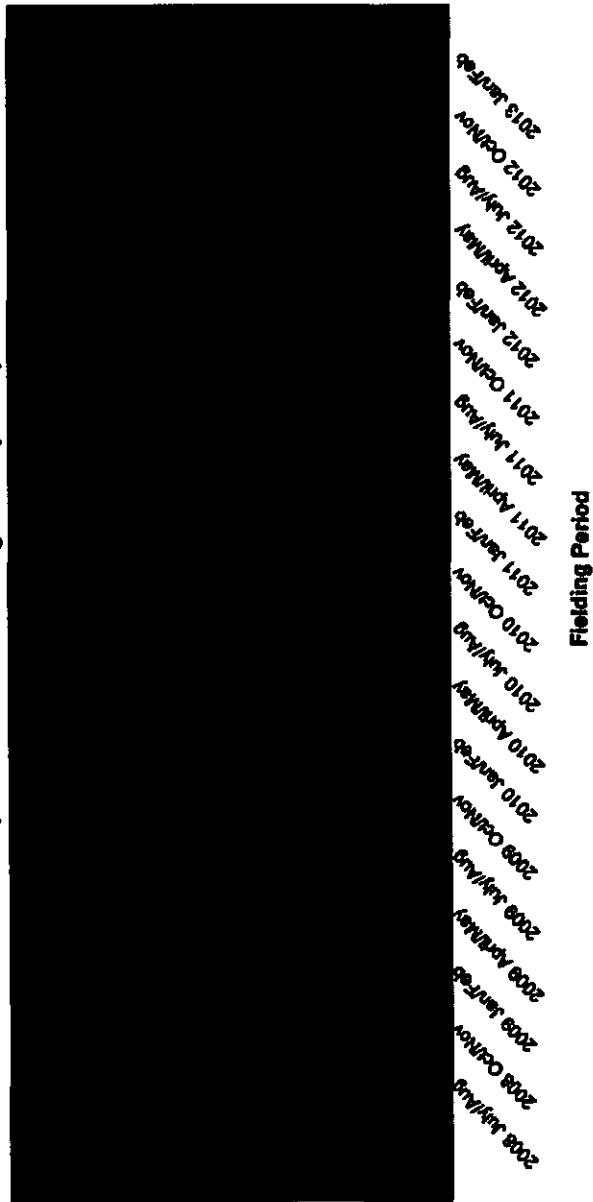
Source: Electric Utility Residential Customer Satisfaction Survey

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Households with 'Perfect Power' are [REDACTED]

Households with Perfect Power – Duke Energy
(% with No Brief or Long Interruptions)



Source: Electric Utility Residential Customer Satisfaction Survey

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PQR Satisfaction is

Power Quality & Reliability Index



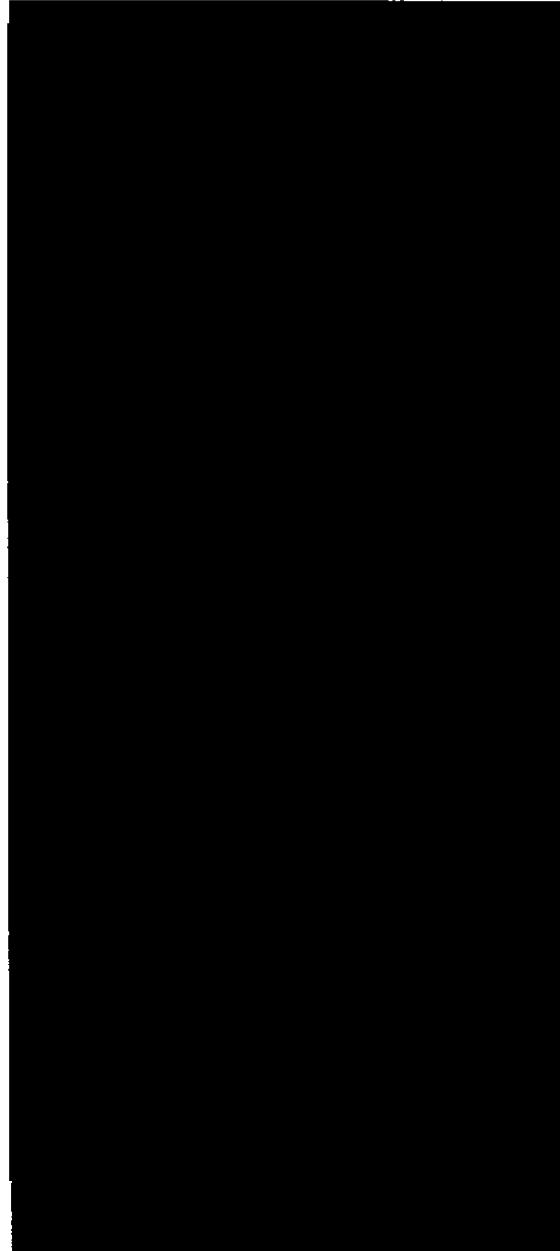
Source: Electric Utility Restructuring Customer Satisfaction Survey

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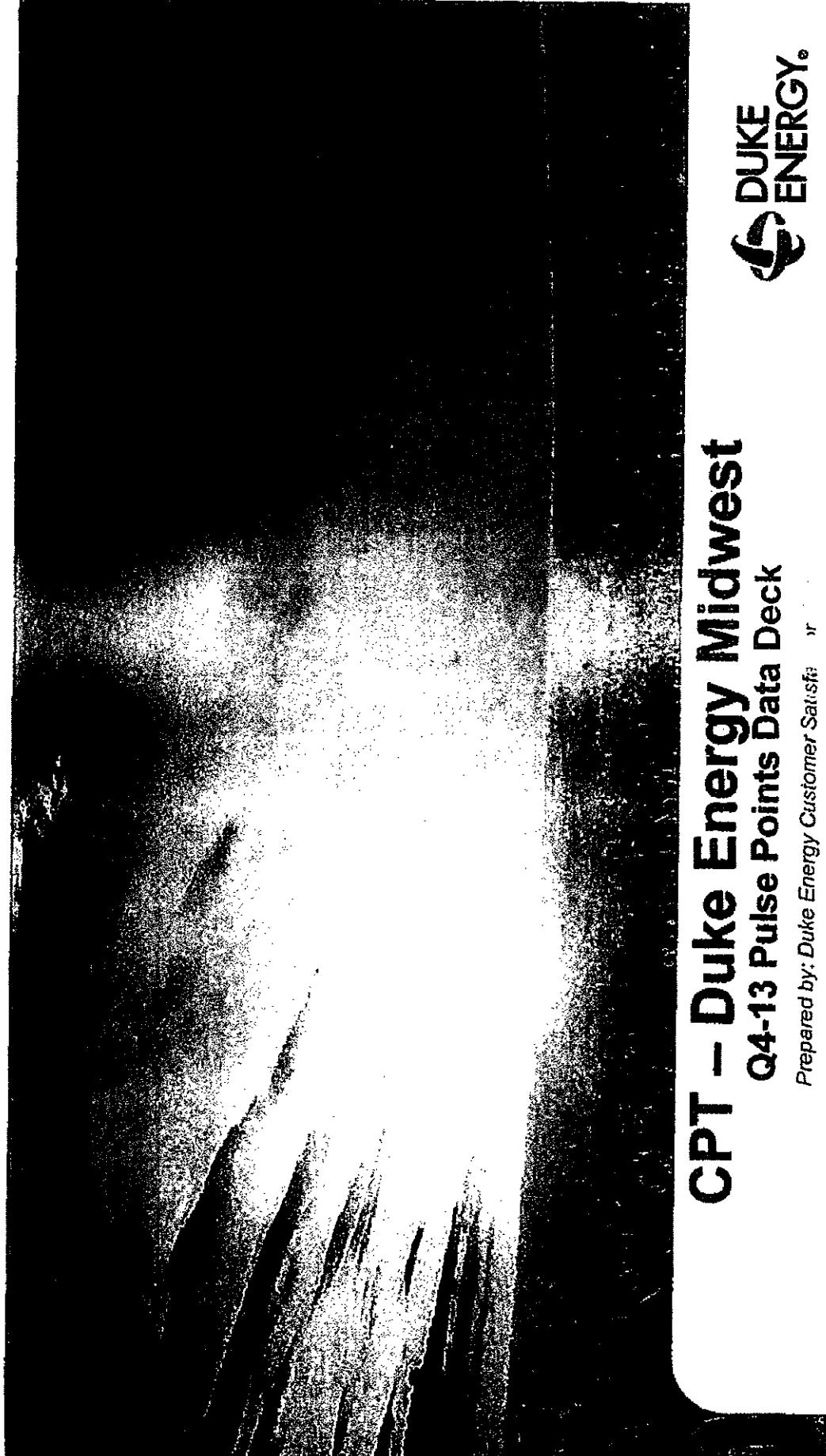
Prevention First – Resolution Doesn't [REDACTED]

Problems & Resolution – Duke Energy



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PUCO Case No. 14-LSSO
Attachment MW-A4
Page 1 of 20



CPT - Duke Energy Midwest
Q4-13 Pulse Points Data Deck

Prepared by: Duke Energy Customer Satisfaction



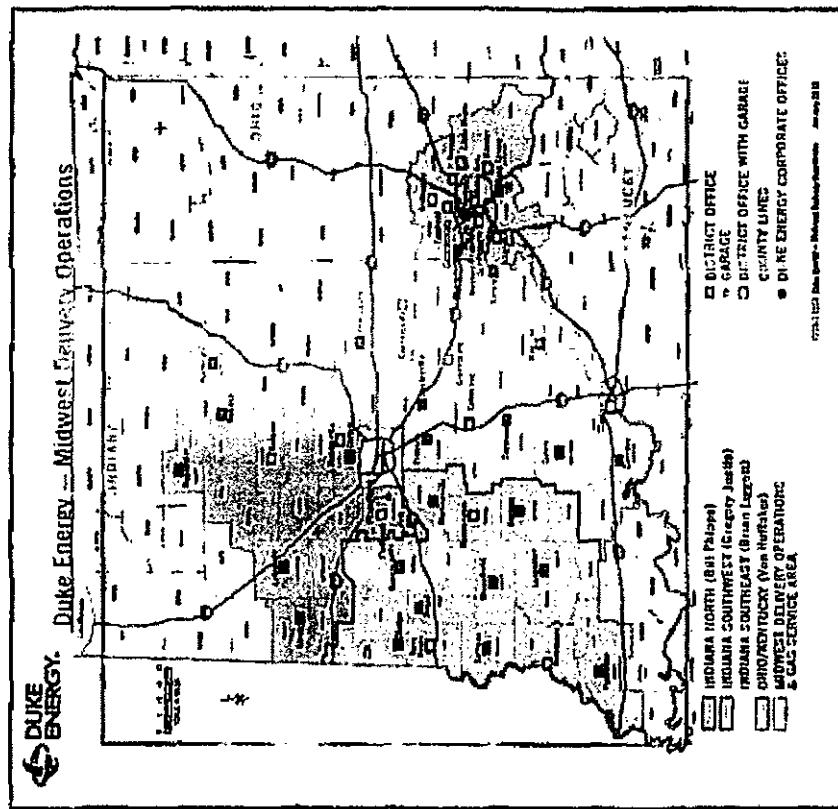
Contents

- Midwest Delivery Operations Map 3
- Sample by Quarter 4
- Residential Score Update 5
- Indiana 11
- Ohio/Kentucky 25

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Midwest CPT

Midwest Delivery Operations Map



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PUCO Case No. 14-1, LSSD
Attachment MVA-4
Page 4 of 20

Residential Sample by Quarter

	Q1-13	Q2-13	Q3-13	Q4-13
Total Residential Telephone Interviews				
Indiana				
Indiana North				
Indiana Southeast				
Indiana Southwest				
Ohio/Kentucky				

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PUCO Case No. 14-J-LSSO
Attachment MVA-J
Page 5 of 20

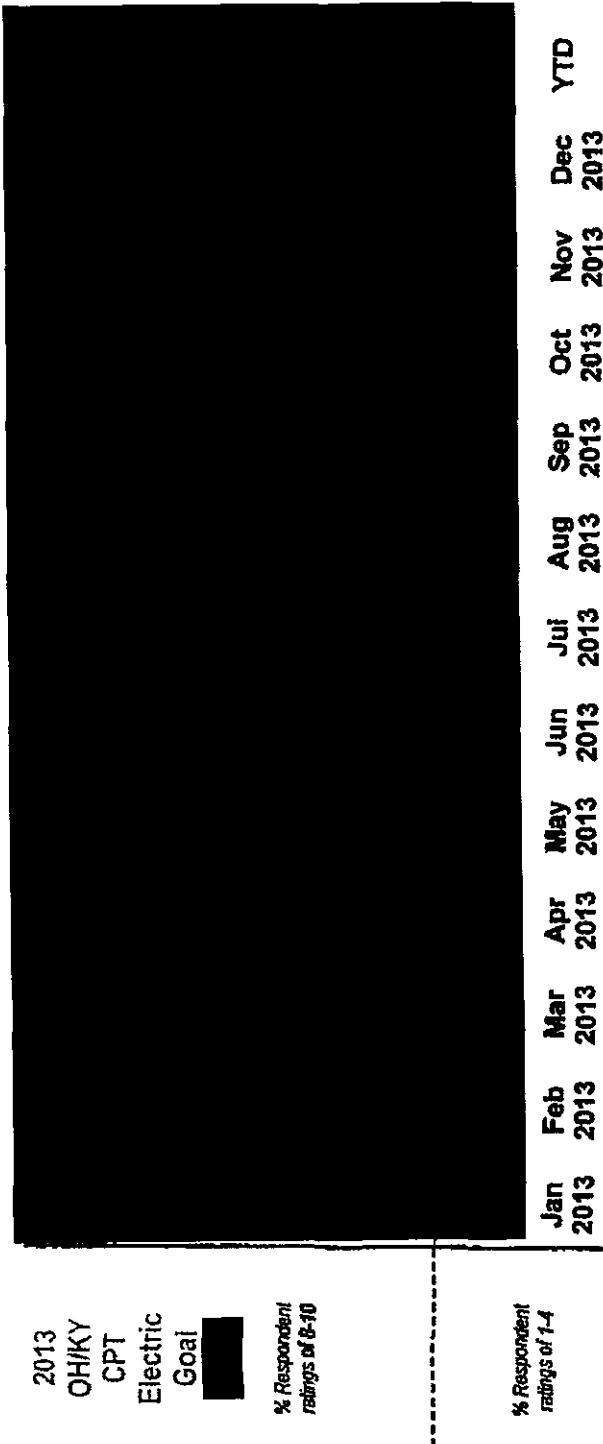
Residential CPT – Ohio/Kentucky

Q4-13 Update



25

Residential CPT Study – Duke Energy Ohio/Kentucky Monthly Score Trend – Electric Customers Only

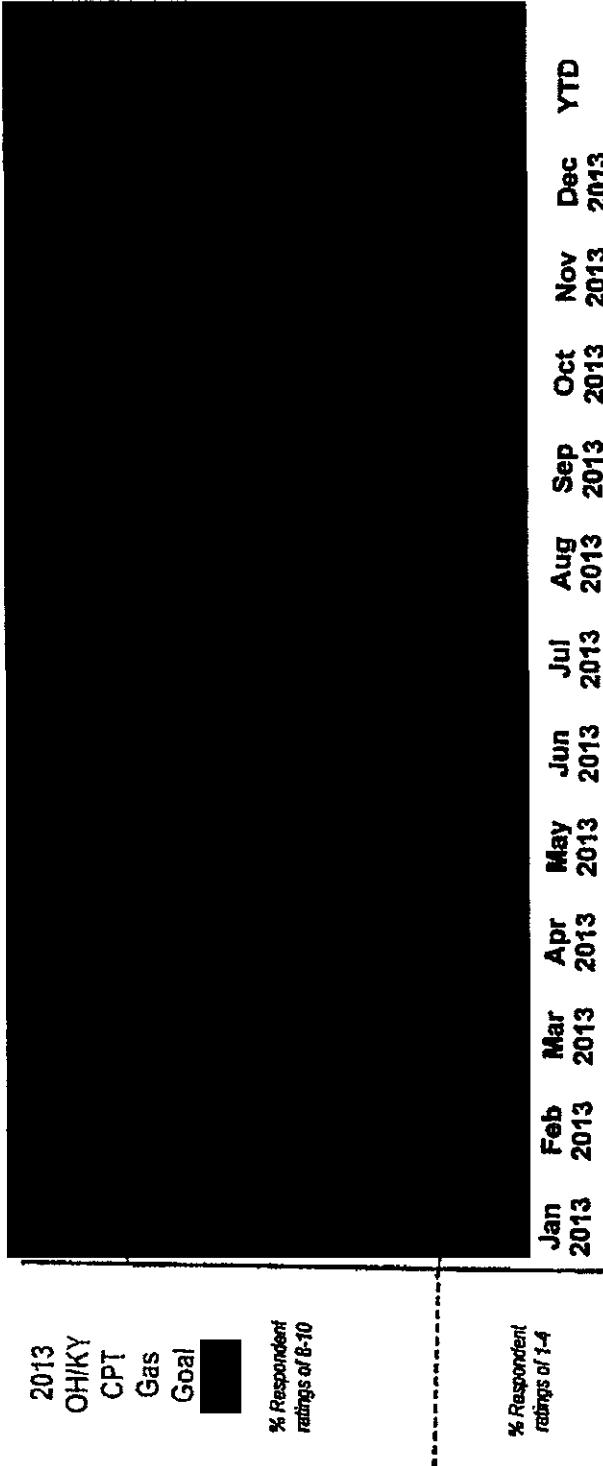


2013 Residential CPT Study – Duke Midwest



CONFIDENTIAL PROPRIETARY TRADE SECRET

Residential CPT Study – Duke Energy Ohio/Kentucky Monthly Score Trend – Gas Customers Only



2013 Residential CPT Study – Duke Midwest



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Overall Impression – Duke Energy Ohio/Kentucky Residential by Quarter

	Q1-13	Q2-13	Q3-13	Q4-13
<u>Based on your experiences and things you may have seen or heard, how favorable is your <u>overall impression</u> of Duke Energy</u>				

Rating Scale (1 - 10):
10 = Extremely Favorable
1 = Not at all Favorable

% (8-10)
% (1-4)

'Like Best' About Duke Energy – Ohio/Kentucky Residential by Quarter

	Q1-13	Q2-13	Q3-13	Q4-13
What do you like BEST about Duke Energy?	0%	0%	0%	0%
Reliable power / Quick response to outages	0%	0%	0%	0%
Good service / Customer Service	0%	0%	0%	0%
Billing / Online Bill Pay	0%	0%	0%	0%
No problems	0%	0%	0%	0%
Don't Know / Nothing	0%	0%	0%	0%
Low Rates	0%	0%	0%	0%
Renewables/Community Involvement	0%	0%	0%	0%
Energy Efficiency/Conservation	0%	0%	0%	0%
Misc	0%	0%	0%	0%

'Like Least' About Duke Energy – Ohio/Kentucky Residential by Quarter

	Q1-13	Q2-13	Q3-13	Q4-13
What do you like LEAST about Duke Energy?				
Nothing	7%	6%	5%	6%
High Bill / Rates	—	—	—	—
PQ&R	—	—	—	—
Other (Policy, etc)	—	—	—	—
Service (Took too long)	—	—	—	—
Nuclear / Environment	—	—	—	—
Merger	—	—	—	—

Power Quality & Reliability – Duke Energy Ohio/Kentucky Residential by Quarter

	Q1-13	Q2-13	Q3-13	Q4-13
Providing reliable estimates of when power will be restored				
Keeping you informed about an outage by phone call				
Keeping you informed about an outage via an internet enabled				
Providing quality electricity without spikes, surges, or drops				
Responding to storms and other widespread outages				
Avoiding interruptions of 5 minutes or less				
Avoiding outages of more than 5 minutes				
Overall power quality and reliability you receive from Duke Energy				

Rating Scale (1 - 10): % (8-10)
10=Excellent, 1=Poor % (1-4)

CONFIDENTIAL PROPRIETARY TRADE SECRET

Rates / Value – Duke Energy Ohio/Kentucky Residential by Quarter

	Q1-13	Q2-13	Q3-13	Q4-13
The value of your electricity given what you pay				
Keeping electric rates as low as possible				
Offering energy efficiency programs to help you save on energy costs				
Overall cost of your electric service				

Rating Scale (1 - 10):
10=Excellent; 1=Poor

% (8-10)
% (1-4)

CONFIDENTIAL PROPRIETARY TRADE SECRET

Billing & Payment – Duke Energy Ohio/Kentucky Residential by Quarter

	Q1-13	Q2-13	Q3-13	Q4-13
The accuracy of your bill				
The ability to locate the exact amount that is due on your bill				
Providing a well organized and easy to understand bill				
The ability to locate the payment due date on your bill				
The amount of time allowed to pay your bill without extra fees				
The options available to pay your bill, for example: mail your payment in, automatic bank draft, pay over the phone, pay in person				
Duke Energy's overall billing and payment processes				

Rating Scale (1 - 10):
10=Excellent, 1=Poor

% (8-10)
% (1-4)

CONFIDENTIAL PROPRIETARY TRADE SECRET

Corporate Image / Reputation – Duke Energy Ohio/Kentucky Residential by Quarter

	Q1-13	Q2-13	Q3-13	Q4-13
Is committed to meeting customers' future energy needs				
Is involved in local community organizations and activities				
Is environmentally responsible				
Is a company I can trust				
Is committed to finding sources of renewable energy				
Is promoting a variety of energy conservation programs				

Rating Scale (1 - 10): % (8-10) % (1-4)
10=Excellent, 1=Poor

CONFIDENTIAL PROPRIETARY TRADE SECRET

Corporate Image / Reputation – Duke Energy Ohio/Kentucky Residential by Quarter (*Continued*)

	Q1-13	Q2-13	Q3-13	Q4-13
Is easy to do business with				
Values me as an individual customer				
Respects its customers				
Goes the extra mile to ensure customer needs are met				
Is open and honest with the public				

Rating Scale (1 - 10):
10=Excellent; 1=Poor
% (8-10)
% (1-4)

Communications – Duke Energy Ohio/Kentucky Residential by Quarter

	Q1-13	Q2-13	Q3-13	Q4-13
Informing you about what the utility is doing to keep overall energy costs low				
Recommending ways you can reduce your energy usage and lower your monthly bills				
Creating attention grabbing messages that are relevant to you				
Communicating how to be safe around electricity				
Letting you know about changes that affect your account or service				
Keeping you well-informed during power outages				
Overall communications you receive from Duke Energy				

Rating Scale (1 - 10):
10=Excellent, 1=Poor

% (8-10)	% (1-4)
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Recall Seeing or Hearing Communications from DE in past 3 Months OH/KY Residential by Quarter

	Q1-13 % Yes	Q2-13 % Yes	Q3-13 % Yes	Q4-13 % Yes
On television				
On the radio				
In newspapers				
On billboards				
On the internet				
In the mail, other than your bill				
On Facebook or Twitter				

News Story Recall in Past 3 Months – Ohio/Kentucky Residential by Quarter

	Q1-13	Q2-13	Q3-13	Q4-13
Recalled news about Duke Energy				
Topics of news stories				
Electric rate or price increase	—	—	—	—
Electric rate or price decrease	—	—	—	—
Natural gas price increase	—	—	—	—
Natural gas price decrease	—	—	—	—
Power reliability or outages	—	—	—	—
Environmental or pollution issue	—	—	—	—
Power generation supply	—	—	—	—
Transmission lines	—	—	—	—
Financial results	—	—	—	—
Energy conservation or efficiency	—	—	—	—
Community or charity event	—	—	—	—
Emergency preparedness	—	—	—	—
Smart grid/m smart meter technology	—	—	—	—
Local accident or emergency	—	—	—	—
Executive salaries / other executive news	—	—	—	—
Company news (merger, new facilities, etc.)	—	—	—	—
Other	—	—	—	—



Merger Awareness – Ohio/Kentucky Residential by Quarter

	Q1-13	Q2-13	Q3-13	Q4-13
Aware that Duke Energy and Progress Energy recently merged into one company	%	%	%	%
Yes				
No				
This merger leaves you feeling _____ about your electric utility				
More Favorable				
No Change				
Less Favorable				

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Base Case Run

Ohio ESP Budget Projection
 4 year budget plan for capital
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 Printed 5/9/2014

Program	Grouping	Current Annual Budget	2015 Capital	2016 Capital	2018 Capital	Total Capital
URD Cable Injection/Replacement	Distribution	2				
Vegetation Clearing RW Acquisition / facility modification	Distribution	2				
Conversion of old 4KV Feeders	Distribution	0				
Manhole Lid Reto-fit	Distribution	0.82				
DTUG-Online DGA Sump Pump Oil Monitoring	Distribution	0.4				
Manhole/Vault Capital Rebuild	Distribution	0.9				
Network Secondary Main Replacement	Distribution	0.9				
Vault Network Protector/Transformer Changeout	Distribution	2.75				
Worst Congested Underground Structures	Distribution	0.15				
Reclouser Replacements	Distribution	0.86				
Circuit Sectionalization	Distribution	0.8				
Transformer Retrofit	Distribution	3.8				
Upgrade URD Submersible Transformers	Distribution	0				
Distribution Substation Protection (Physical/Security)	Distribution	0				
Upgrade Live Front Transformers	Distribution	0				
Upgrade Distribution Transformer Stations (Unique Customer Locations)	Distribution	0				
PILC Replacement (Feeder Exits)	Distribution	1.5				
Distribution Operation Center and Mobile Logistics/Modernization	Distribution	0				
Ownership of Underground Residential Services	Distribution	0				
		16.88	40.63	43.63	47.33	47.33
						178.9

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 tab = Budget Sheet-Raw Data

Program	Description of Program	Location/Area	Area of Benefits	Benefits in detail
Transformer Retrofit	Continuation of existing transformer retrofit program resulting in fewer transformer related customer outages. This program has a positive business case based on reduction of O&M restoration costs.	Entire overhead service area where customers are fed with overhead services. Large majority is in older areas, CSP's were prevalent from 1965 thru early 1990's.	Customer Experience, Reliability, Economic Growth, Operate, Integrity	Isolating outages at a transformer level rather than allowing an overloaded or failed transformer to cause a line device to fall or even possibly a substation breaker if fault would occur on the secondary side of the transformer or potentially on the primary lead wire. This program also includes adding a external lighting arrester, squirrel guard, and covered lead wire for additional protection from outages.
Vegetation Clearing R/W Acquisition / facility modification	Acquisition of additional easements for capital vegetation clearing to reduce tree related outages. Program based on individual project financial evaluation based on developed criteria.	Entire overhead service area, however primary focus areas would be in wooded areas or rice of ways.	Customer Experience, Reliability, Integrity	Outages by dead or at risk trees outside of our easement cause numerous outages annually. The benefits would be to all parties as well as the public by potentially removing at risk trees that could damage Duke Lines first, but also protect property and the public.
URD Cable Injection		Existing underground service area with a primary focus on underground runs of cable that have seen failures and are analyzed by our engineering team and determined to be potential candidates for injection.	Customer Experience, Reliability, Integrity	Cable injection is completed for approximately 1/3 of the cost of replacing it. In addition, the technique and products we are using comes with a 25 year warranty to further mitigate future costs. Any time upgrades are needed, outages are needed for cable replacement and can have a lengthy duration however with injection those times are significantly reduced.
URD Cable Replacement	Replacement of existing UG cable determined to be at end of life and unable to be properly treated. Integrity related program primarily improving SAIDI and CAIDI. Reduction in cable repair O&M.	Existing underground service area where cable injection was possibly attempted or determine not to be feasible.	Customer Experience, Reliability, Integrity	If injection is not possible this is the last option for the company to replace the underground sections of cable. Due to the soil conditions in southwest Ohio we have seen the non-jacketed cable where the neutral is deteriorated. SAIDI as well as CAIDI are significantly affected with underground failures and replacement would also offset future O&M costs. In 2013 in Ohio, we implemented a switch and fix program that focuses on trying to look to isolate the cable rather than immediately attempt to splice it.
DTUG-Online DGA, Sump Pump, Oil Monitoring (Network)	Installation of dissolved gas analysis, oil monitoring utilizing communication network.	Cincinnati Downtown Network area. This area primarily commercial in nature and is the main area of Downtown broken into four quadrants.	Customer Experience, Reliability, Economic Growth, Operate, Integrity	Reliability is one of the key attractions for commercial tenants to the downtown area. The equipment that is in service downtown is 3-4 times more expensive than what is used in the suburbs and most of the reasoning is due to the age of the infrastructure. The vaults, manhole's, and conduit systems date back to the early 1900's with some equipment that is still in service from the 1920's. The advantage to this program is to provide data back to the company that could potentially diagnosis or forecast a future failure. DGA monitoring is completed today and is tested at our facility. This program allows for real-time monitoring.
Manhole/Vault Capital Rebuild(Network)	complete restoration of concrete structures including all racking	Cincinnati Downtown Network area. This area primarily commercial in nature and is the main area of Downtown broken into four quadrants.	Customer Experience, Reliability, Economic Growth, Operate, Integrity	This is a structural rebuild of an aging infrastructure due to age, road traffic, and other underground facilities. The main issues include water damage due to leaking roofs. This program can quickly become a public safety issue if these items are not addressed in a timely manner and could potentially collapse.
Network Secondary Main Replacement(Network)	Replacement of 600v PILC cable that creates secondary redundancy.	Cincinnati Downtown Network area. This area primarily commercial in nature and is the main area of Downtown broken into four quadrants.	Customer Experience, Reliability, Economic Growth, Operate, Integrity	The redundancy of the downtown is vital to attracting new business as well as keeping data centers. An advantage that developers have in regards to building on the network is the lack of the need for back-up generation in most cases. The initial cost of construction is more but the overall benefits outweighs the initial costs.
Vault Network Protector/Transformer Change out(network)	proactive and reactive replacement of older vault protectors and transformers. This includes moving from wall mount protectors to transformer mounted if applicable.	Cincinnati Downtown Network area. This area primarily commercial in nature and is the main area of Downtown broken into four quadrants.	Reliability, Operate, Integrity	Duke has a rigorous Preventative Maintenance program, however due to the age of some of the equipment it would be more cost effective to replace the equipment. Some equipment has been in service over 80 years and the potential failure is imminent due to the environmental conditions. Much of this equipment is unique in nature and poses a potential risk due to lead times on replacements.
Worst Congested Underground Structures(Network)	Resolution of congested manholes and vaults that are overcrowded and requiring rebuilds.	Cincinnati Downtown Network area. This area primarily commercial in nature and is the main area of Downtown broken into four quadrants.	Reliability, Operate, Integrity	Several underground structures were built and installed in place due to the congestion of other utilities in the street. Over time with failures and load growth these structures have become congested and pose a reliability risk due to the close proximity of the other conductors.
Manhole Lid Retro-fit(Network)	Installation of Swiveloc Manhole Covers, primary focus is in high pedestrian areas.	Entire Duke Energy Ohio Service area, however largest concentration is in the Cincinnati Downtown Network area. This area primarily commercial in nature and is the main area of Downtown broken into four quadrants.	Reliability, Economic Growth, Operate, Integrity	Programs primary focus is on safety for both the company and public. When gases build up in the underground system and a source of ignition is added a volatile explosion occurs and will typically launch a 200-lb cast iron lid. This program focuses on securing these lids so that if this occurs the lids lifts very little and releases the gases and then sets back down on the hole.
Upgrade URD Submersible Transformers	Removal of overhead transformers that were installed in underground vaults. This includes installing padmount equipment and getting all connections above grade.	Duke Energy Ohio service area, however areas of focus were installed in the 1970's and 1980's. Certain suburbs including Delhi, Hyde Park, Avondale, and Marlington have a large concentration of these installations	Customer Experience, Reliability, Economic Growth, Operate, Integrity	A submersible transformer as its reference in this program is an overhead transformer that has been retrofitted with underground bushings so that it can be installed below grade. These installations were prevalent during the time period prior to padmount transformer becoming more standard. These are a safety concern for the utility as the employee has to lay on the ground to work on them and they also tend to become a drain for other household debris. These are installed below grade and when they fail today they are replaced with a ground mounted transformer. The outages can be lengthy. This program will proactively replace these programs and will work in conjunction with the cable injection/replacement programs.
Distribution Substation Protection (Physical/Security)	Upgrade to locations of high theft, including camera and other deterrents for thieves.	Duke Energy Ohio Service area with a primary focus of areas that see the most vandalism or are at the highest risk.	Reliability, Integrity	The program call for adding additional security mechanisms and protections including cameras, higher fences, and other similar items. When these types of vandalism occurs it is a risk not only to the individual, but also the company, and the public.

Program	Description of Program	Location/Area	Area of Benefits	Benefits in detail
Upgrade Live Front Transformers	Replacing 40-50 year old equipment that has been a reliability and safety concern. Transformer has non-insulated HV bushings.	Duke Energy Ohio Service area with a primary focus on three phase transformers	Customer Experience, Reliability, Economic Growth, Operate, Integrity	Live front transformers were installed during the 1970's and they are a limitation to the company to expand its underground system as well as a safety concern as the only way that they can be worked on is to be de-energized. This program would identify and proactively replace these units.
Upgrade Distribution Transformer Stations (Unique Customer Locations)	DE Ohio has several unique transformer installations that do not currently have a replacement readily available. Identify and upgrade these installations to current specifications.	Entire Duke Energy Ohio Service area.	Customer Experience, Reliability, Operate	Non-standard transformers are not only a risk to the customer in relation to CAIDI, but also a concern for the company. With the evolution of the electric industry and the age of the Greater Cincinnati Area several situations are unique and were special order equipment at the time they were installed. They are considered obsolete in many cases however the company has needed to continue service to these premises. In all cases there are options to upgrade/update these installations to current standards. This program would allow us to proactively prioritize and address these concerns before a potential event.
PILC Replacement (Feeder Exits)	Replacement of old paper and lead substation exit cables from the substation to the overhead/underground lines. Cables are approaching end of life and this program would accelerate their replacement.	Duke Energy Ohio Service Area with a primary focus on 13kv substations	Customer Experience, Reliability, Economic Growth, Integrity	PILC cable was a standard installation for many years however with age the oil and papers break down over time. Currently a program exists today for this replacement however with the infrared scans we have determined that we need to accelerate this program. These cables are the first section of a feeder and in most cases if they were to fail would take out two to three thousand customers.
Distribution Operation Center and Mobile Logistics/Modernization	Optimizing and upgrading our facilities to a more mobile workforce. This program includes updating distribution offices, mobile technology, and also exploring opportunities for consolidation of activities.	Duke Energy Ohio Service Distribution Operation Centers. 2015 would include Hartwell Operation center and Tedhunter Operation Centers.	Customer Experience, Reliability, Economic Growth, Operate, Integrity	Duke is investigating in modernizing its operation centers to provide more timely responses and also to increase customer satisfaction. This includes implementing mobile technology and also real time updates from the field during construction and outage events. In addition the company is looking at potential consolidation of locations if it is deemed financially sound.
Conversion of old 4KV Feeders	Upgrade of this primary distribution voltage is ongoing. The additional funding would accelerate the upgrades allowing for more load capacity.	Duke Energy Ohio service area with a focus on the older suburbs. These stations currently exist in Middletown, Franklin, and the Cincinnati Suburbs.	Customer Experience, Reliability, Economic Growth, Operate, Integrity	As the electrical needs of the service area grew the system needed to be upgraded to serve more customers and to also be able to transmit electricity further. These feeders were installed over 50 years ago and the company has a schedule to continue to upgrade them. This program would accelerate this need into a 5 year plan taking it down from approximately a 10 year plan as it currently stands. 4kv stations limit load growth due to load limitations and also are expensive to maintain due to aging infrastructure.
Recloser Replacements	Currently replace 1/6 of these units annually. This program would accelerate and possibly upgrade some of these devices to electronic controls.	Duke Energy Ohio Service Area	Customer Experience, Reliability, Economic Growth, Operate, Integrity	This is an existing program where we change out 1/6 of our reclosers annually. The recloser plays a key role in protecting the main line of the circuit and in making an attempt to isolate the outage to a smaller group of customers. Annually this encompasses approximately 100 locations or 300 units on the system.
Circuit Sectionalization	Ongoing program sectionalizing our distribution feeders allowing the feeders to be broken down into smaller outages rather than all relying back to a large device.	Duke Energy Ohio Service Area	Customer Experience, Reliability, Economic Growth, Operate, Integrity	Existing program that works in conjunctions with our transformer retrofit program and recloser replacement program breaking down the distribution feeders into smaller circuits with relays and protection schemes. This helps isolate outages to smaller groups and keeps the main lines energized.
Ownership of Underground Residential Services	DE Ohio currently owns and maintains all overhead electric service drops to the customer. Many other utilities including in the US install, own, and maintain the residential underground electric services. The proposal would be that DE OH at some agreed upon date repair and install UG residential services.	Duke Energy Ohio Service Area that has facilities installed underground	Customer Experience, Operate, Integrity	

Benefits	
Customer experience	Benefit the overall experience of our customer by increasing public safety or decreasing customer nuisances
Reliability	Decrease SAIDI or SAIFI
Economic Growth	Economic benefit for the community or state
Operate	Decrease operation issues or costs
Integrity	Harden the electrical system