

## BEFORE

## THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of	)	
Duke Energy Ohio, Inc., for an	)	Case No. 12-1682-EL-AIR
Increase in Electric Distribution Rates.	)	
In the Matter of the Application of	)	
Duke Energy Ohio, Inc., for Tariff	)	Case No. 12-1683-EL-ATA
Approval.	)	
In the Matter of the Application of	)	
Duke Energy Ohio, Inc., for Approval	)	Case No. 12-1684-EL-AAM
to Change Accounting Methods.	)	

## DIRECT TESTIMONY OF

RICHARD D. HARRELL

## ON BEHALF OF

DUKE ENERGY OHIO, INC.

<u>  X  </u>	Management policies, practices, and organization
<u>      </u>	Operating income
<u>      </u>	Rate base
<u>      </u>	Allocations
<u>      </u>	Rate of return
<u>      </u>	Rates and tariffs
<u>      </u>	Other

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### Attachments:

RDH-1: CAIDI

RDH-2: SAIDI

RDH-3: SAIFI

RDH-4: Capital Expenditures March 31, 2008 - March 31, 2012

RDH-5: Age distribution for distribution circuit breakers

RDH-6: Age distribution for distribution transformers

## **I. INTRODUCTION AND PURPOSE**

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

2 A. My name is Richard D. Harrell, and my business address is 139 East Fourth  
3 Street, 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 Vice President  
6 of Field Operations, Midwest region. DEBS provides various administrative and  
7 other services to Duke Energy Ohio, Inc., (Duke Energy Ohio or Company) and  
8 other affiliated companies of Duke Energy Corporation (Duke Energy).

9 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND**  
10 **PROFESSIONAL EXPERIENCE.**

11 A. I have an Associate Degree in Electrical Engineering Technology from Purdue  
12 University, a Bachelors Degree in Industrial Technology from Indiana State  
13 University, and a Masters Degree from Indiana Wesleyan University.

14 I have held various positions throughout my 33-year career with Duke  
15 Energy, including Electric Field Operations, Gas Construction and Operations,  
16 Transmission & Distribution Maintenance and Construction, Industrial and  
17 Commercial Customer Services, Vegetation Management, and Customer  
18 Engineering.

19 **Q. PLEASE SUMMARIZE YOUR RESPONSIBILITIES AS VICE**  
20 **PRESIDENT OF FIELD OPERATIONS, MIDWEST REGION.**

21 A. I am responsible for transmission and distribution construction and maintenance,  
22 substation construction and maintenance, customer service engineering, and

1 electric outage response for the Duke Energy Midwest service area, which  
2 includes Ohio, Kentucky, and Indiana.

3 **Q. HAVE YOU EVER TESTIFIED BEFORE THE PUBLIC UTILITIES**  
4 **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: (1) describe Duke Energy Ohio's electric  
9 delivery system; (2) explain the policies relating to the design, construction,  
10 operation, and maintenance of Duke Energy Ohio's electric delivery facilities; (3)  
11 explain the need for continued investment in the electric delivery system in order  
12 to maintain reliability; (4) discuss challenges facing the Company's electric  
13 distribution system; and (5) support certain of the new programs and tariffs the  
14 Company is proposing in these proceedings. I also provided data to Duke Energy  
15 Ohio witness Peggy A. Laub that supports Schedules C-3.21 and C-3.28.

## **II. DESCRIPTION OF DUKE ENERGY OHIO'S** **ELECTRIC DELIVERY SYSTEM**

16 **Q. PLEASE DESCRIBE THE DUKE ENERGY OHIO ELECTRIC**  
17 **DELIVERY SYSTEM.**

18 A. The Duke Energy Ohio electric delivery system is used, among other things, to  
19 provide electric service to approximately 690,000 customers located throughout  
20 the Company's service area. Duke Energy Ohio owns and operates all of its  
21 electric distribution and local transmission facilities. Effective January 1, 2012,  
22 the bulk transmission facilities are subject to the functional control of PJM

1 Interconnection, LLC (PJM).

2 Duke Energy Ohio's electric delivery system includes approximately 238  
3 substations, 15 transmission substations (locations with 69 kilovolt (kV) or higher  
4 operating voltages) having a combined capacity of approximately 8,923,438  
5 kilovolt-amperes (kVA), 194 distribution substations (locations that supply one or  
6 more circuits at 35 kV or lower voltage) having a combined capacity of  
7 approximately 6,795,371 kVA, and 29 joint transmission and distribution  
8 substations (locations with 69 kV or higher operating voltages that also have 35  
9 kV or lower voltage) having a combined capacity of approximately 7,297,320  
10 kVA. The Duke Energy Ohio electric delivery system includes various other  
11 equipment and facilities, such as control rooms, computers, capacitors, street  
12 lights, meters and protective relays, and telecommunications equipment and  
13 facilities.

14 Although the Duke Energy Ohio electric delivery system is not in the  
15 North American Electric Reliability Corporation (NERC) Balancing Authority  
16 Area, Duke Energy Ohio does own transmission facilities that are part of the  
17 Duke Energy Balancing Authority Area, which is operated by Duke Energy  
18 Midwest Control Area Operation. Duke Energy Ohio's facilities have extensive  
19 interconnections with other entities in PJM and direct interconnections with four  
20 other Balancing Authority Areas. Duke Energy Ohio's electric delivery system  
21 provides considerable flexibility for Duke Energy Ohio to operate in a manner  
22 that provides reliable and economic power to its customers.

1   **Q.   PLEASE GENERALLY DESCRIBE HOW THE TRANSMISSION AND**  
2       **DISTRIBUTION SYSTEM IS DESIGNED, CONSTRUCTED, AND**  
3       **OPERATED.**

4    A.   The electric transmission system is designed to deliver bulk electric power from  
5       local generating plants and other resources to regional substations, or to interconnect  
6       with other systems in order to enhance system reliability. Duke Energy Ohio's  
7       transmission voltages are 69 kV, 138 kV, and 345 kV. The system generally consists  
8       of steel tower or wood pole transmission lines and substations with power  
9       transformers, switches, circuit breakers, and associated equipment. The system is  
10      operated in accordance with standards issued by NERC and ReliabilityFirst  
11      Corporation (RFC). RFC is a Regional Reliability Organization that is the successor  
12      organization to the East Central Area Reliability Council (ECAR). The system is  
13      under the control of PJM, a regional transmission organization approved by the  
14      Federal Energy Regulatory Commission (FERC).

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

23           Duke Energy Ohio operates the transmission and distribution facilities it

owns in accordance with good utility practice. Duke Energy Ohio continuously runs the system with a workforce that provides customer service 24 hours per day, 7 days per week, 365 days per year, and includes trouble response crews. Duke Energy Ohio monitors equipment loading in accordance with good utility practice. The Company monitors outages with various systems, such as Supervisory Control and Data Acquisition (SCADA), Trouble Call Outage Management System (TCOMS), Electric Trouble Data Mart, and Outage Information System.

Customers typically report outages by telephone through Duke Energy's call center. The call center creates an outage report through a telephone software application that interfaces with TCOMS, a state-of-the-art outage management software application that Duke Energy Ohio adopted in 2001 to improve its ability to monitor and respond to outages. TCOMS analyzes the calls and identifies for Duke Energy Ohio's dispatchers the piece of equipment (circuit breaker, recloser, fuse, transformer, etc.) that is the probable location of the outage. The dispatcher contacts the field trouble response person through the radio system to direct them to the probable equipment location to make repairs and restore electric service. Generally, the field trouble response person inspects the circuit or segment of line in question to identify and report the cause of the outage. The dispatcher records the date, time, duration, and cause of the outage in TCOMS.

Dispatchers continuously monitor weather conditions, both in anticipation of and during weather events. When lightning, wind, or ice storms hit Duke Energy Ohio's service territory, line crews are paged, called, or held over to respond. Duke Energy Ohio will call in several hundred employees, as necessary, to respond to

1 severe storms, including Duke Energy's U.S. Franchised Electric and Gas  
2 employees stationed in Kentucky, Indiana, North Carolina, and South Carolina, and  
3 Florida. If necessary, Duke Energy Ohio will contact other utilities for additional  
4 line crews through a mutual assistance program. These rigorous operating practices  
5 have enabled Duke Energy Ohio to provide reliable electric service to its customers.

6 **Q. PLEASE GENERALLY DESCRIBE HOW DUKE ENERGY OHIO'S**  
7 **DISTRIBUTION SYSTEM IS MAINTAINED.**

8 A. Duke Energy Ohio maintains its distribution system in accordance with good utility  
9 practice by adhering to several inspections, monitoring, testing, and periodic  
10 maintenance programs. Examples of these existing programs include, but are not  
11 limited to, the following, among others: (1) substation inspection program; (2) line  
12 inspection program; (3) ground-line inspection and treatment program; (4)  
13 vegetation management program; (5) underground cable replacement program; (6)  
14 capacitor maintenance program; (7) infrared scanning of equipment; and (8)  
15 dissolved gas analysis. These programs may be enhanced, as necessary, consistent  
16 with good utility practice.

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



1   **Q.     PLEASE DESCRIBE HOW DUKE ENERGY OHIO'S ELECTRIC**  
2       **DELIVERY SYSTEM HAS GROWN BETWEEN MARCH 31, 2008, THE**  
3       **DATE CERTAIN IN DUKE ENERGY OHIO'S LAST ELECTRIC**  
4       **DISTRIBUTION RATE CASE, AND THE CURRENT DATE CERTAIN,**  
5       **MARCH 31, 2012.**

6   A.   Duke Energy Ohio's electric distribution system has grown significantly. On March  
7       31, 2008, Duke Energy Ohio's original cost of electric distribution system plant in  
8       service was approximately \$1.64 billion. By March 31, 2012, Duke Energy Ohio's  
9       original cost of electric delivery system plant in service had increased by 14.6  
10      percent to approximately \$1.88 billion. It is significant to note that this growth  
11      excludes the substantial investment made by the Company over those four years in  
12      grid modernization. Although grid modernization costs are being recovered in a  
13      separate rider and thus not included in these proceedings, this investment represents  
14      another nearly \$140 million of gross plant that has been added since March 31,  
15      2008.

16               As examples of this growth, since March 31, 2008, Duke Energy Ohio has  
17      installed distribution lines to serve an additional 184,384 kVA of distribution  
18      substation transformer capacity and has added four new 13kv and 34.5kv  
19      substations.

20   **Q.     HAVE THERE BEEN ANY IMPROVEMENTS TO THE MANNER IN**  
21       **WHICH DUKE ENERGY OHIO MAINTAINS ITS ELECTRIC**  
22       **DISTRIBUTION SYSTEM SINCE THE COMPANY'S LAST ELECTRIC**  
23       **DISTRIBUTION RATE CASE?**

1 A. Yes. The Company has implemented a variety of programs and initiatives, which  
2 include: (1) an Arc flash mitigation inspection program on the Company's  
3 underground network; (2) manhole inspection and locking program; (3)  
4 underground vault inspection with repairs; (4) cable injection for life extension; and  
5 (5) cable replacement programs. Examples of recent overhead line initiatives  
6 include: (1) transformer fusing retrofits; (2) cutout replacement program; (3)  
7 grounding improvements; and (4) circuit sectionalization. These programs or  
8 initiatives are in addition to the continued ground line inspection and maintenance  
9 programs previously instituted.

10 **Q. IN YOUR OPINION, ARE DUKE ENERGY OHIO'S ELECTRIC**  
11 **DELIVERY SYSTEM FACILITIES USED AND USEFUL IN PROVIDING**  
12 **SERVICE TO DUKE ENERGY OHIO'S RETAIL ELECTRIC**  
13 **CUSTOMERS?**

14 A. Yes. Duke Energy Ohio's electric delivery system is used daily to provide safe,  
15 reliable, efficient, and reasonably priced electric delivery service to its customers.

**III. MEASURING THE RELIABILITY OF DUKE ENERGY**  
**OHIO'S ELECTRIC DISTRIBUTION SYSTEM**

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

20 A. Reliability indices are generally recognized standards for measuring the number,  
21 scope, and duration of outages. Ohio requires electric distribution utilities to report  
22 annually on these reliability indices. These indices are defined as follows:

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

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

14   A.   Duke Energy Ohio has performed well. Its reliability scores have always exceeded  
15   Duke Energy Ohio's targets established in consultation with Commission Staff  
16   pursuant to O.A.C. 4901:1-10-10(B)(2). The latest reliability index scores available  
17   are for calendar year 2011 and they are reflected in Attachments RDH-1 (CAIDI),  
18   RDH-2 (SAIDI), and RDH-3 (SAIFI).

19   **Q.   WHAT IS DUKE ENERGY OHIO'S APPROACH TO DESIGNING,**  
20   **CONSTRUCTING,   OPERATING,   AND   MAINTAINING   ITS**  
21   **DISTRIBUTION FACILITIES?**

22   A.   Duke Energy Ohio's distribution facilities are designed, constructed, operated,

1 and maintained with the goal of providing customers with safe, reliable, efficient,  
2 and reasonably priced electric service.

3 **Q. PLEASE DESCRIBE SOME OF THE FACTORS THAT THE COMPANY**  
4 **MUST CONSIDER IN ATTEMPTING TO ACHIEVE THIS OBJECTIVE.**

5 A. In supplying electric service to its customers, Duke Energy Ohio must provide  
6 safe and reliable service while at the same time prudently and responsibly  
7 managing the costs of providing such service. In balancing these considerations,  
8 Duke Energy Ohio weighs various factors in selecting the electric delivery system  
9 projects in which to invest. By way of example, the Company will give  
10 consideration to its planning criteria, any requirements mandated either by  
11 regulatory authorities or reliability councils, and government-mandated projects.

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

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

20 In the course of maintaining and operating the electric system, equipment  
21 and hardware that requires repair or replacement is identified. Blanket budgets  
22 have been established to cover small items, but specific projects are developed for  
23 larger expenditure items. These items are triggered as a result of operating issues

1 or new load growth, or as a result of the various inspections, monitoring, and  
2 testing programs I described above.

**IV. DUKE ENERGY OHIO'S INVESTMENT IN  
ITS DISTRIBUTION FACILITIES**

3 **Q. PLEASE DESCRIBE DUKE ENERGY OHIO'S INVESTMENT**  
4 **RELATING TO ITS DISTRIBUTION FACILITIES DURING THE PAST**  
5 **FOUR YEARS AND ITS PROJECTED FUTURE INVESTMENT.**

6 A. Attachment RDH-4 summarizes Duke Energy Ohio's capital expenditures for its  
7 distribution facilities for the period from March 31, 2008, through March 31,  
8 2012. Duke Energy Ohio anticipates that its projected future investment in its  
9 electric distribution system will depend on the same considerations I mentioned  
10 above (*e.g.*, planning criteria and third-party mandates). Additionally, this future  
11 investment will depend upon decisions related to electric rate riders and grid  
12 modernization costs for coming years.

**V. MAJOR CHALLENGES FACING DUKE ENERGY  
OHIO'S ELECTRIC DISTRIBUTION SYSTEM**

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

15 A. There are several challenges to managing Duke Energy Ohio's electric distribution  
16 system. Perhaps the biggest challenge relates to aging infrastructure and the need to  
17 regularly review the system and its operation for appropriate upgrades or  
18 replacements. Changing customer expectations also present challenges for Duke  
19 Energy Ohio. I discuss these two challenges in greater detail below.

20 System replacements, as well as relocations, can also be prompted by

1 external requests, such as those by public entities associated with public works  
2 projects, street widening, and beautification projects. This circumstance creates a  
3 challenge for the Company in that these projects are outside its control, and instead  
4 dictated by other entities. The inability to plan for municipal projects with any  
5 degree of accuracy presents difficulties in terms of budgeting capital and labor, not  
6 to mention the timely recovery of costs. As a result, these projects can create another  
7 level of complexity when managing customer expectations and balancing the need  
8 to provide reliable service at a reasonable cost. And unlike replacements due to age  
9 that can be planned for and budgeted over time, municipally driven projects cannot  
10 be reasonably predicted such that the necessary work can be coordinated in a manner  
11 that mitigates cost.

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

15 A. Aging distribution systems are a major challenge for all utilities. Much of Duke  
16 Energy Ohio's electric distribution equipment is over thirty years old and such  
17 equipment typically lasts from thirty to fifty years. Duke Energy Ohio expects to  
18 continue to incur substantial expenditures to replace this equipment during the next  
19 several years in order to maintain and improve customer reliability. Attachment  
20 RDH-4 reflects the age distribution for utility poles. Attachment RDH-5 provides the  
21 age distribution for distribution circuit breakers. And Attachment RDH-6 shows the  
22 age distribution for distribution transformers.

1   **Q.   PLEASE EXPLAIN FURTHER HOW CUSTOMERS' EXPECTATIONS**  
2   **PRESENT A CHALLENGE.**

3   A.   Customers are now using equipment that is highly sensitive to voltage  
4       fluctuations; therefore, customers are demanding highly reliable service that  
5       minimizes the number of voltage fluctuations. These changing expectations can  
6       present a challenge for Duke Energy Ohio as it attempts to prudently and  
7       reasonably balance reliable service with cost.

8   **Q.   PLEASE EXPLAIN HOW PUBLIC WORKS, STREET WIDENING, AND**  
9   **BEAUTIFICATION PROJECTS PRESENT A CHALLENGE TO THE**  
10   **COMPANY.**

11   A.   Unlike planning for system and facility retirements and replacements due to age,  
12       the Company typically is not able to anticipate or predict when it will be required  
13       to replace or relocate facilities due to the actions of either the state of Ohio or  
14       municipalities within the Company's service territory. Consequently, as I  
15       discussed above, the required work is not readily incorporated into the Company's  
16       longer term plans relating to system operation. Another important consideration,  
17       and potential complication, relates to the Company facilities that potentially may  
18       be affected by these projects. Finally, there must be consideration to cost and cost  
19       recovery, the latter which is dependent on the circumstance. For example, the type  
20       of project at issue and the entity initiating the project are relevant to the  
21       determination of whether Duke Energy Ohio recovers costs through the project or  
22       from its customers.

23   **Q.   PLEASE EXPLAIN HOW THE TYPE OF COMPANY FACILITY AT**

1           **RISK FOR RELOCATION CREATES AN ADDITIONAL**  
2           **CONSIDERATION.**

3    A.    As explained by Duke Energy Ohio witness Julia S. Janson, much of the  
4           Company's distribution system incorporates overhead pole lines and associated  
5           equipment. Relocation of these facilities requires, for example, coordination with  
6           other entities having attachments on the poles, as well as affected property  
7           owners. Consideration must be given to customers served by these pole lines. If,  
8           for example, the project requiring the removal and replacement of distribution  
9           facilities is a beautification project that involves burying the facilities, customers  
10          served by the existing, overhead lines may be required to upgrade their electric  
11          panels and incoming wiring, consistent with applicable codes or regulations.

12                 And there is Duke Energy Ohio's underground network in the city of  
13          Cincinnati (City) that could be impacted by third-party projects.

14    **Q.    PLEASE DESCRIBE DUKE ENERGY OHIO'S UNDERGROUND**  
15    **NETWORK IN THE CITY.**

16    A.    There are approximately 6,000 customers served by Duke Energy Ohio's  
17           downtown network, which has existed for more than seventy-five years. The  
18           system is configured as an N-1 for redundancy to provide maximum reliability.  
19           Within the central business district, the underground network system is  
20           configured as a secondary network, subdivided into four separate networks  
21           serving load from Henry Street to Third Street and from Broadway to Central  
22           Avenue. Two networks are fed from Duke Energy Ohio's Westend substation and  
23           two are fed from Duke Energy Ohio's Charles substation. There are 28 13KV



1 feeders and ten radial circuits providing 208/120V service to the customers in the  
2 central business district. The underground feeders run through 2,000 manholes,  
3 600 of which are within the secondary networks grid. There are approximately  
4 400 network transformers in 176 transformer vaults. There are also fiber optic  
5 communication cables within these manholes that provide Duke Energy Ohio's  
6 communication interface with electric utility equipment and that are used by other  
7 entities.

8 A secondary network configuration is the most reliable way to provide  
9 electric service to the customers. Department of Energy studies from 2009  
10 specifically state the secondary network system provides superior reliability due  
11 to the redundancy. The study also states that these systems do require additional  
12 attention to maintenance. Consistent with these studies, Duke Energy Ohio  
13 understands the need to properly maintain an underground system and the  
14 Company regularly accesses its system for purposes of inspection and needed  
15 repair.

16 **Q. YOU TESTIFIED EARLIER AS TO THE CHALLENGES RESULTING**  
17 **FROM AN AGING DISTRIBUTION SYSTEM. DO THOSE SAME**  
18 **CHALLENGES EXIST IN RESPECT OF THE COMPANY'S**  
19 **UNDERGROUND SYSTEM?**

20 **A.** Not all parts of the distribution system are equal. There are different inspections  
21 and different programs applicable to the various system designs that comprise the  
22 Duke Energy Ohio distribution system. Thus, although aging equipment cannot be  
23 overlooked in respect of the underground network, it does not present the same

1 challenges for that network as it does for the overhead system.

2 **Q. GIVEN THAT COST RECOVERY FOR FACILITY RELOCATION**  
3 **ASSOCIATED WITH PROJECTS INITIATED BY GOVERNMENTAL**  
4 **ENTITIES IS DEPENDENT UPON THE CIRCUMSTANCES, HOW DOES**  
5 **DUKE ENERGY OHIO APPROACH FACILITY RELOCATION IN SUCH**  
6 **INSTANCES?**

7 A. Regardless of the reason for the relocation (*e.g.*, age, public works project), Duke  
8 Energy Ohio approaches all facility relocations with a focus on safety, reliability,  
9 and cost. As to the first two items, consideration must be given to the appropriate  
10 location of facilities to enable safe working conditions for Company employees  
11 and contractors during those instances when they need to access the facilities for  
12 maintenance or repair. Additionally, as a prudent operator, Duke Energy Ohio  
13 will consider the safety of its customers and the general public when evaluating  
14 any facility relocation.

15 As to the latter, Duke Energy Ohio consistently evaluates cost when  
16 undertaking any facility relocation, realizing that costs may be borne by its  
17 customers. In this regard, the Company will ascertain whether there are, for  
18 example, applicable service regulations or tariffs that identify the entity  
19 responsible for the costs associated with a particular project. Additionally, Duke  
20 Energy Ohio will ascertain whether the project is one that involves billable work,  
21 meaning work that can be billed to the project and for which customers are not  
22 financially responsible.

1   **Q.    HOW DOES THE CITY'S PROPOSAL TO CONSTRUCT A STREETCAR**  
2   **IMPACT THE COMPANY'S UNDERGROUND NETWORK?**

3   A.    Duke Energy Ohio has developed one of the most reliable downtown electrical  
4        networks in the country. This network provides electrical redundancies to many  
5        high rise buildings and corporate customers. And given its configuration, Duke  
6        Energy Ohio was not intending to relocate these facilities in connection with the  
7        ongoing operation of its system. However, because of the City's decision to  
8        construct a streetcar within downtown, these underground facilities will need to  
9        be relocated.

10           The relocation is necessary because of the streetcar route, as unilaterally  
11        determined by the City. The route conflicts with approximately 175 manholes that  
12        are used to provide access to the underground system. These manholes cannot  
13        remain under the track bed or in such close proximity that Company employees or  
14        contractors would be denied safe access to perform their duties as necessary to  
15        operate a reliable system. Similarly, the underground vault boxes, conduits,  
16        conductors, and related facilities will need to be relocated to enable the continued  
17        safe operation of the underground network and in an effort to provide a safe  
18        environment for future streetcar passengers and the general public. This relocation  
19        work will be complex and expensive. Further, those customers – both residential  
20        and commercial – served via the underground system will experience sustained  
21        customer outages as the network is relocated to accommodate the streetcar.

22   **Q.    WHAT IS THE COST IMPACT OF FACILITY RELOCATION?**

23   A.    Based upon the current route of the streetcar and the inability to implement

1 permanent procedures that provide Duke Energy Ohio with the discretion it needs  
2 to safely access its system for purpose of maintenance, repair, etc., the relocation  
3 costs associated only with the underground network approximate \$13,000,000.00  
4 The overhead electric system relocations approximate \$250,000.00. These  
5 estimates do not include contingencies, which would increase costs. A reasonable  
6 estimate for the contingencies is 30 percent.

7 **Q. DOES DUKE ENERGY OHIO CONTEMPLATE ADDITIONAL COSTS**  
8 **ASSOCIATED WITH THE CONSTRUCTION OR OPERATION OF THE**  
9 **STREETCAR ROUTE AS PROPOSED BY THE CITY?**

10 A. Yes. Focusing only upon the first phase or route of the streetcar, Duke Energy  
11 Ohio will incur additional labor costs as it has agreed to move maintenance  
12 activities to overnight shifts and perform as much work as reasonable outside  
13 normal streetcar operating hours to provide as little disruption as possible. Of  
14 course, if the Company needs to access the underground system during the  
15 streetcar's operation because of unforeseen circumstances, it will do so as safety  
16 is of paramount concern. The changes in work schedules will result in increased  
17 labor and administrative costs, which would not be recovered under the proposed  
18 Rider FRT and have not been included in test year expense. Should the City  
19 proceed with other routes or phases of the streetcar, additional costs for facility  
20 relocation will be incurred.

21 **Q. IS DUKE ENERGY OHIO PROPOSING ANY SPECIFIC TARIFF THAT**  
22 **ADDRESSES FACILITY RELOCATION?**

23 A. Yes. Duke Energy Ohio is proposing a facility relocation – mass transportation

1 tariff (Rider FRT) that is predicated, in large part, upon its existing, Commission-  
2 approved service regulations. Duke Energy Ohio maintains its electric  
3 distribution/natural gas system in accordance with all applicable state and federal  
4 regulations. Indeed, a safe, reliable, and efficient delivery system in the core of  
5 the Company's business. And in maintaining that system, Duke Energy Ohio is  
6 mindful of the costs to its customers. Thus, as the Commission has already  
7 authorized, where an individual customer is seeking changes to the system that  
8 are not usual or customary, Duke Energy Ohio recovers from that individual  
9 customer the incremental costs associated with the work. Rider FRT is predicated  
10 upon this same philosophy. Thus, where a governmental entity is forcing  
11 relocation of facilities as part of a mass transportation project and that relocation  
12 was not otherwise contemplated by the Company in its provision of safe, reliable,  
13 and efficient service, Duke Energy Ohio believes that the governmental entity (or,  
14 at its election pursuant to the tariff, its residents) should assume the costs  
15 associated with the facility relocation.

16 **Q. IN YOUR OPINION, IS THIS PROPOSAL REASONABLE AND IN**  
17 **CUSTOMERS' BEST INTERESTS?**

18 A. I believe so. Mass transportation projects within the geographical boundaries of a  
19 governmental entity are unlike those projects for which Duke Energy Ohio has  
20 not sought recovery via a discreet rider. Further, as I have been informed by  
21 counsel, the City's streetcar will function as a public utility and it is customary for  
22 a public utility to reimburse another public utility when the former displaces the  
23 latter. Finally, these projects, once operational, will most directly benefit those

1 individuals residing within the jurisdictional limits of the governmental entity and  
2 it is thus fair and reasonable to establish a mechanism whereby these individuals  
3 contribute to the costs of the project, provided the governmental entity has elected  
4 not to fully assume the costs.

5 **Q. WOULD THE COSTS OF FACILITY RELOCATION CAUSED BY THE**  
6 **CITY'S STREETCAR BE RECOVERED UNDER RIDER FRT?**

7 A. Duke Energy Ohio witness William Don Wathen Jr. elaborates on the mechanics  
8 of Rider FRT; however, it is my understanding that this rider is intended to allow  
9 for recovery of facility relocation necessitated by eligible mass transportation  
10 projects. The rider is not limited to the City's streetcar project. However, that  
11 project would be subject to the rider, if approved, such that Duke Energy Ohio  
12 would recover its relocation costs from the City. The City could then decide  
13 whether to collect those costs from its residents.

**VI. SCHEDULES TO WHICH WITNESS CONTRIBUTED**

14 **Q. PLEASE IDENTIFY THE INFORMATION THAT YOU PROVIDED IN**  
15 **RESPECT OF SCHEDULE C-3.21.**

16 A. Schedule C-3.21 reflects vegetation management costs. The Company is proposing  
17 to increase the costs related to vegetation management in order to account for  
18 increase labor and materials expense. These additional costs are necessary to enable  
19 Duke Energy Ohio's continued adherence to vegetation management mandates  
20 imposed by regulatory agencies and the test year expense has been adjusted  
21 accordingly.

1   **Q.   PLEASE IDENTIFY THE INFORMATION THAT YOU PROVIDED IN**  
2   **RESPECT OF SCHEDULE C-3.28.**

3   A.   Schedule C-3-28 relates to street lights and, as reflected on that schedule, Duke  
4   Energy Ohio is proposing an adjustment to test year expense to allow for the  
5   implementation of a streetlight audit program. This program is intended to ensure  
6   that streetlight attachments to Duke Energy Ohio-owned poles are properly  
7   accounted for.

**VII.   CONCLUSION**

8   **Q.   WERE ATTACHMENTS RDH-1 THROUGH RDH-6 AND THE**  
9   **INFORMATION THAT YOU PROVIDED FOR SCHEDULES C-3.21 AND**  
10   **C-3.28, PREPARED BY YOU OR UNDER YOUR DIRECTION AND**  
11   **SUPERVISION?**

12   A.   Yes.

13   **Q.   IS THE INFORMATION YOU SPONSOR IN ATTACHMENTS RDH-1**  
14   **THROUGH RDH-6, AND THE INFORMATION THAT YOU PROVIDED**  
15   **FOR SCHEDULES C-3.21 AND C-3.28, ACCURATE TO THE BEST OF**  
16   **YOUR KNOWLEDGE AND BELIEF?**

17   A.   Yes.

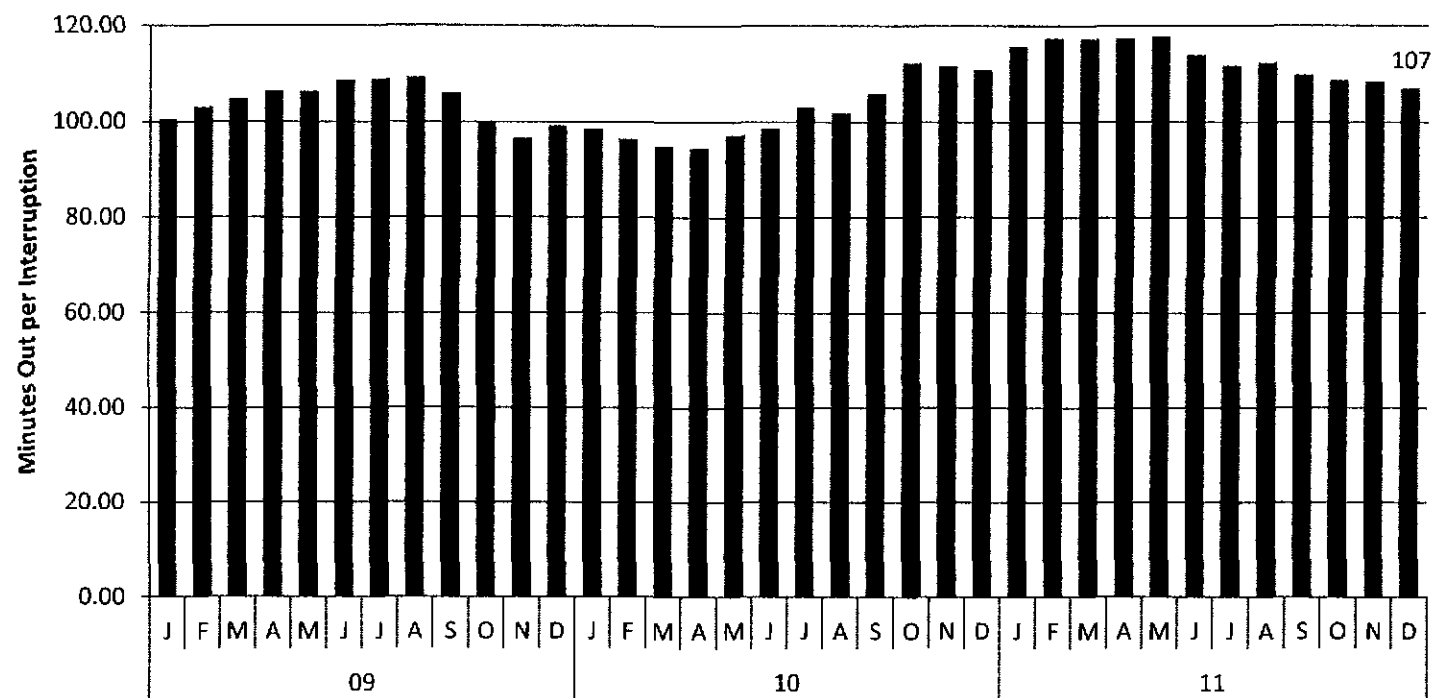
18   **Q.   DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?**

19   A.   Yes.



12 Month Rolling Average

# CAIDI



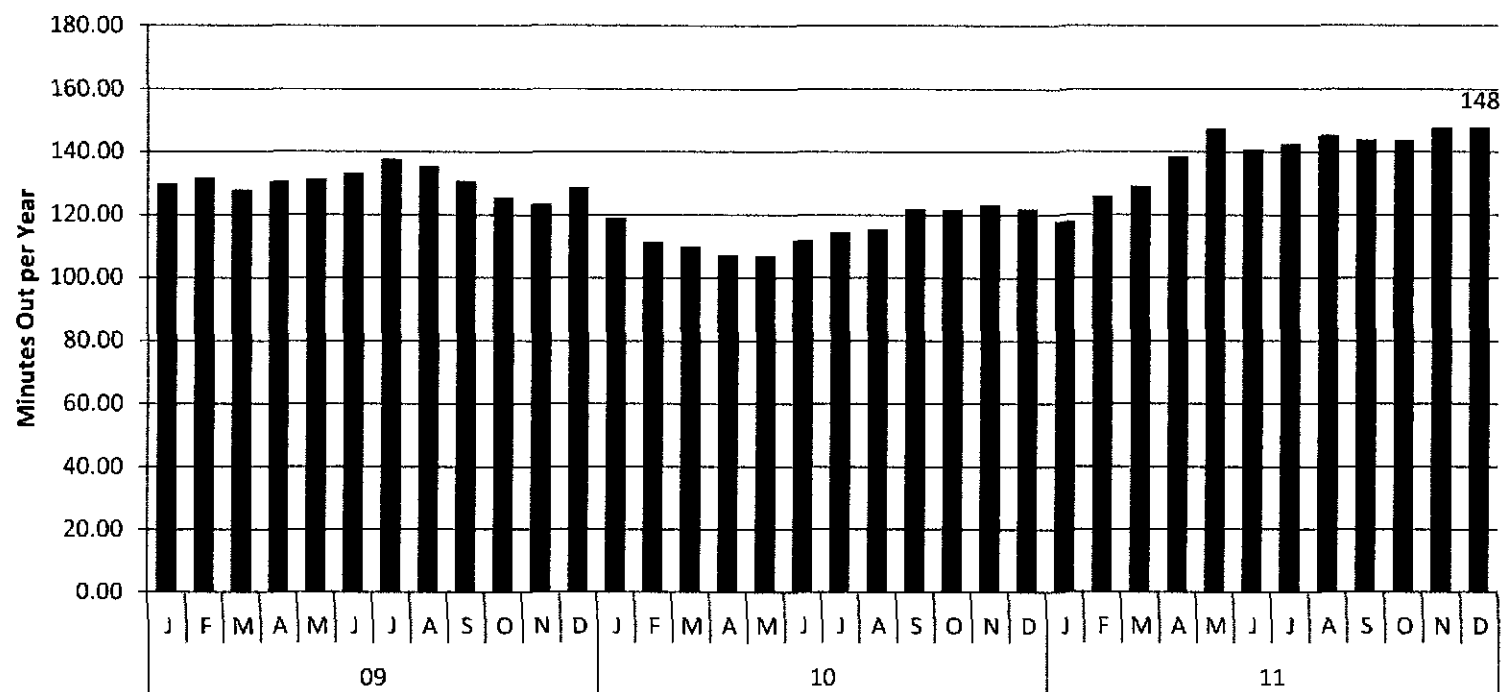
Outage data excluded for storms rated as major event days according to IEEE Std. 1366-2003, 2.5 Beta methodology.





12 Month Rolling Average

## SAIDI

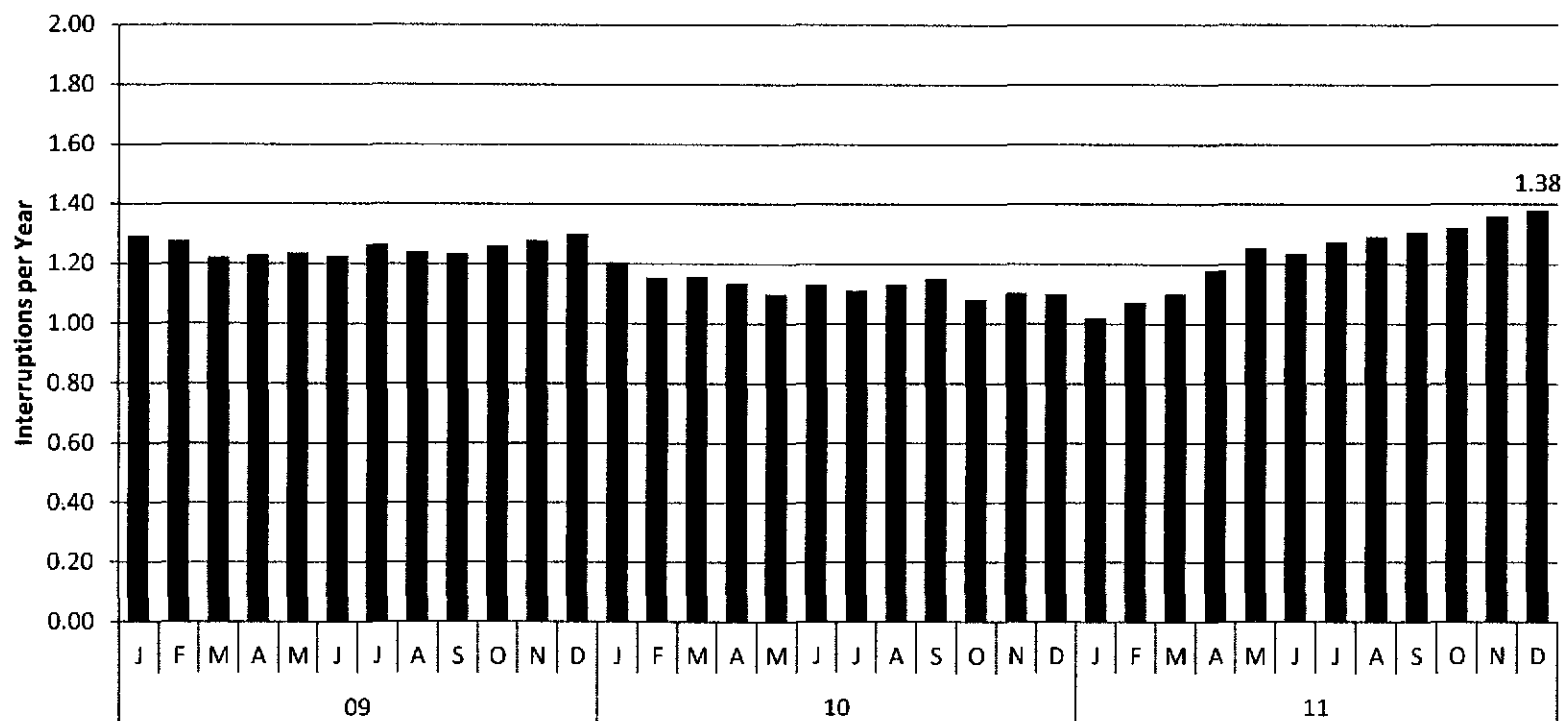


Outage data excluded for storms rated as major event days  
according to IEEE Std. 1366-2003, 2.5 Beta methodology



12 Month Rolling Average

## SAIFI



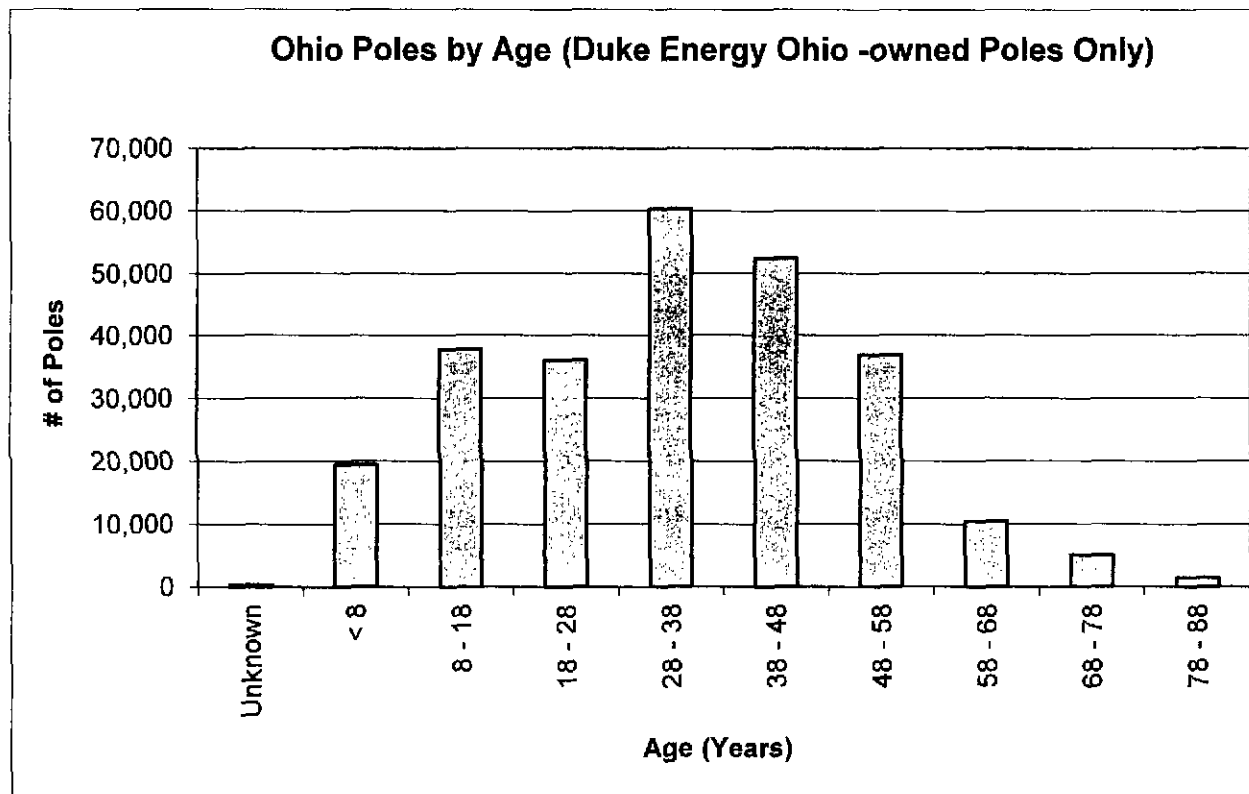
Outage data excluded for storms rated as major event days according to IEEE Std. 1366-2003, 2.5 Beta methodology.

**Table 2 – Capital Expenditures March 31, 2008 - March 31, 2012**

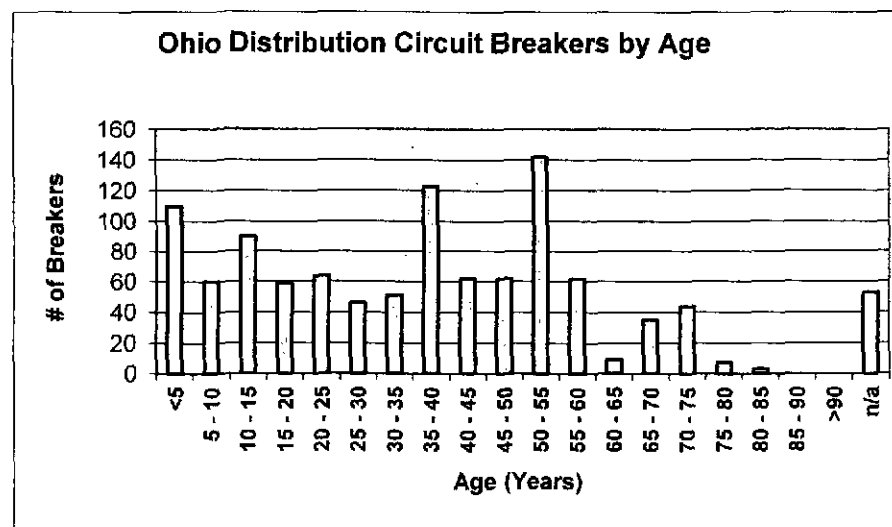
Function	2008 Q2-Q4	2009	2010	2011	2012-Q1
Elec - Distribution Plant	56,847,481	68,205,332	75,156,277	87,096,946	24,696,727

**Figure 1 – Duke Energy Ohio's Distribution**

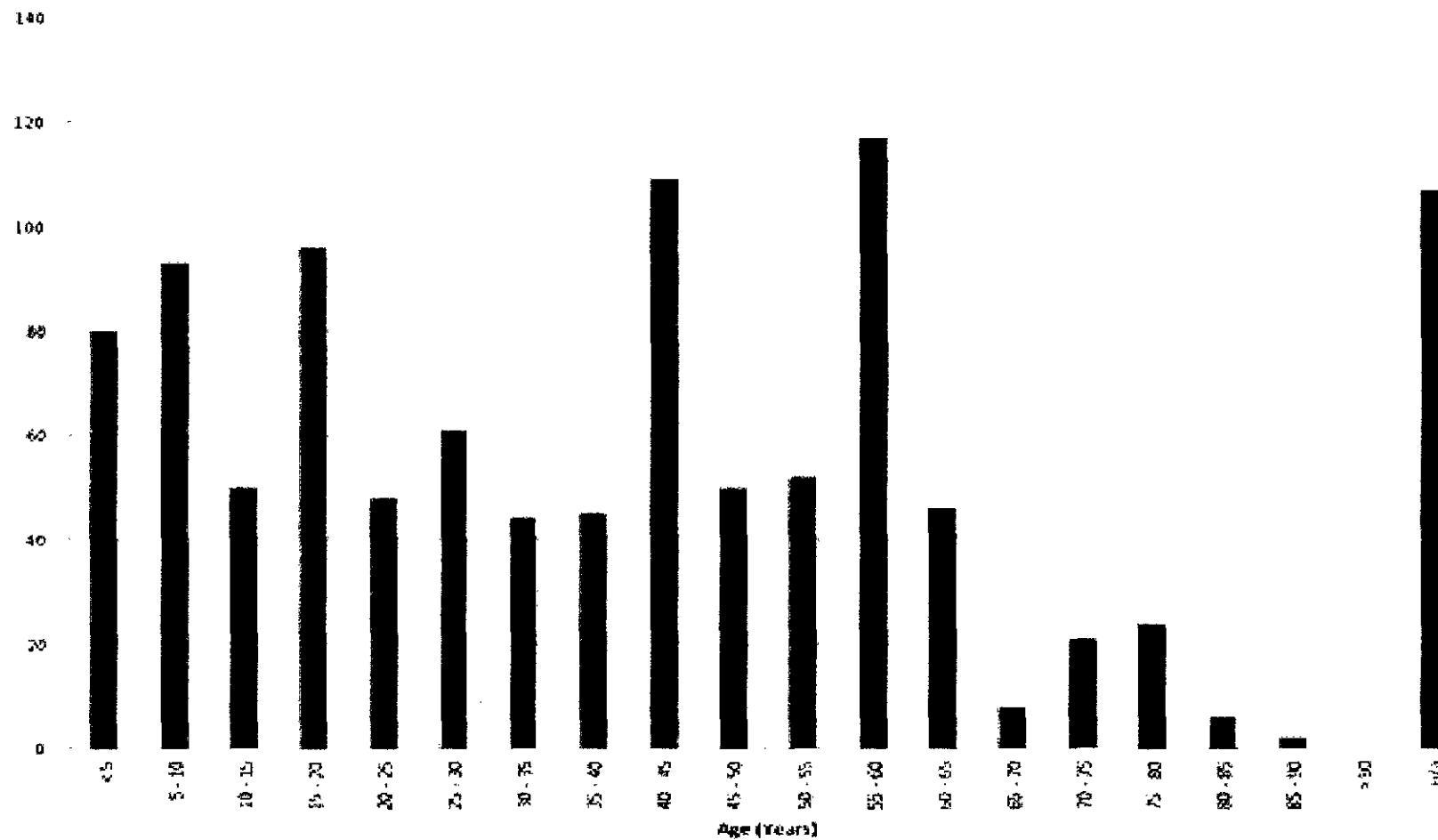
**Poles Age Distribution**



**Figure 2 – Duke Energy Ohio's**  
**Distribution Circuit Breakers Age Distribution As of**  
**March 31, 2012**



### Ohio Distribution Circuit Breakers by Age



**Figure 3 – Duke Energy Ohio's Distribution Transformer Age**  
**Distribution as of March 31, 2012**

