DUKE ENERGY OHIO EXHIBIT_____

BEFORE

THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Duke Energy Ohio, Inc., for Approval to Adjust its Power Future Initiatives Rider.	)))	Case No. 21-0012-EL-RDR

DIRECT TESTIMONY OF

ROBERT RIES

ON BEHALF OF

DUKE ENERGY OHIO, INC.

March 31, 2021

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Robert Ries, and my business address is 424 Gest Street, Cincinnati Ohio, 45203.

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

A. I am employed by Duke Energy Business Services LLC (DEBS), as Manager, Project Construction. DEBS provides various administrative and other services to Duke Energy Ohio, Inc., (Duke Energy Ohio or Company) and other affiliated companies of Duke Energy Corporation (Duke Energy).

Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I received a Bachelor of Science Degree in English from the University of Cincinnati in 1993. At the time, I was employed by Duke Energy Ohio, Inc., (then known as Cincinnati Gas & Electric Company) in the Distribution Design organization. Throughout my 35 year career, I have held various positions of increasing responsibility in the areas of engineering and operations, including distribution design, gas field operations, and metering. Prior to my current role, I was Manager, Midwest Service Delivery, responsible for managing the field technicians for Duke Energy's Ohio and Kentucky Premises Services department. I was promoted to my current position in 2012.

Q. PLEASE DESCRIBE YOUR DUTIES AS MANAGER, PROJECT CONSTRUCTION.

A. As Manager, Project Construction, my primary responsibility is managing the project execution of Advanced Metering Infrastructure (AMI) related projects for Duke Energy Midwest (Ohio, Kentucky, and Indiana) jurisdictions.

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

A. Yes. I previously testified in Case No. 20-666-EL-RDR, regarding the Company's AMI transition.

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

A. The purpose of my testimony is to discuss the Company's AMI transition and provide an update on its progress. I then describe and support the Company's application for recovery of costs of the communication infrastructure through the Power Future Initiatives Rider (Rider PF) in these proceedings.

II. BACKGROUND ON DUKE ENERGY OHIO'S AMI ENVIRONMENT

Q. WHAT IS AMI?

A. AMI involves a two-way communication network between the utility and its meters that is used to provide operational efficiencies and to enable customer services not possible with metering programs involving walk-by or one-way communications network (drive-by) readings.

Q. DESCRIBE THE CURRENT AMI ENVIRONMENT FOR DUKE ENERGY OHIO.

A. Today, the Company has two AMI metering environments, which I will describe as the node and mesh environments. The node environment is composed of Echelon electric meters, Badger gas communication modules, and communication nodes that were originally manufactured by Ambient, which has since been acquired by Ericsson. The mesh environment is composed of Itron electric meters, Itron gas communications modules, Itron range extenders, and Cisco Connected Grid Routers (CGRs).

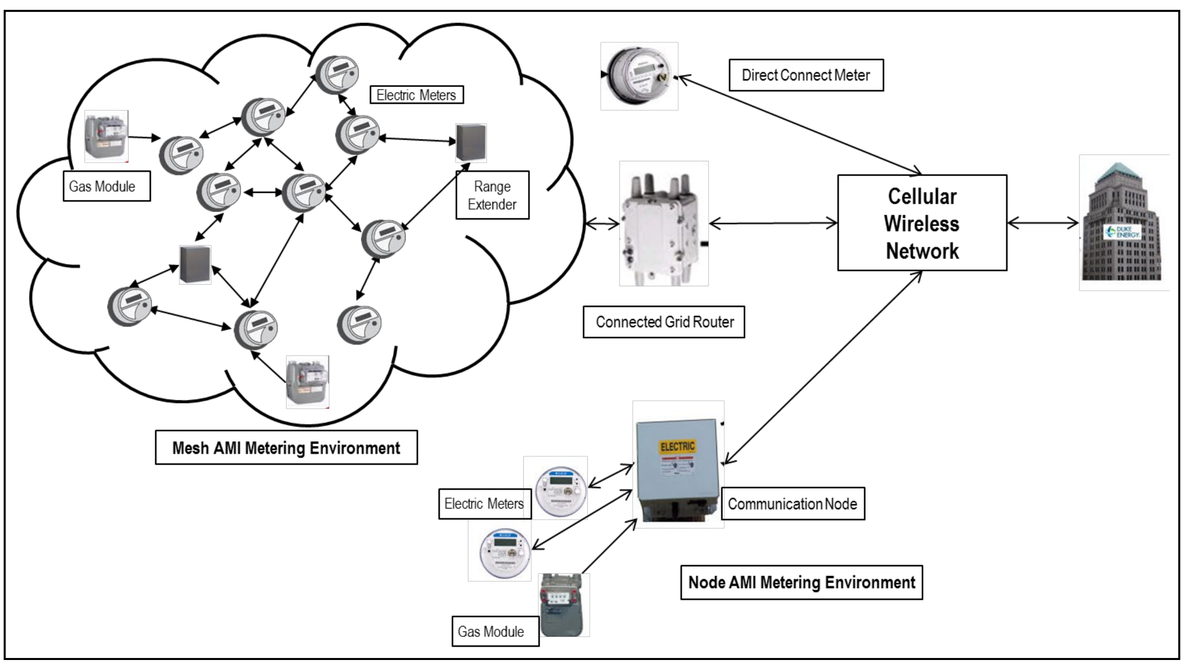
Q. HOW DO COMMUNICATIONS WORK IN THE AMI MESH ENVIRONMENT?

A. The mesh environment is so described because Itron electric meters communicate with one another and CGRs using wireless radiofrequency signals with Internet Protocol version 6 communication protocol, effectively forming a meshed communication network across a geographic area. Itron gas communication modules communicate with Itron electric AMI meters using a separate wireless radiofrequency signal that uses a communication protocol known as ZigBee, and that data is then carried over the mesh network to CGRs. Each CGR is equipped with a cellular modem that allows for data and signals to be sent to and received from the mesh environment. Itron range extenders are used in the mesh environment to help extend the wireless radiofrequency signal when necessary. The Itron OpenWay head-end system manages the Itron AMI meters and the Cisco Network Management System (CGNMS) manages the CGRs.

Figure 1 below illustrates Duke Energy Ohio's overall AMI network architecture. The mesh environment is depicted in the top left corner of the image.

It shows gas modules communicating with electric meters and the electric meters communicating with one another and the CGR wirelessly. It then shows how the CGR communicates through the cellular wireless network. The node environment is portrayed at the bottom of the image. It shows electric meters and gas modules communicating directly to a communication node, which also then communicates through the cellular wireless network. Finally, at the top of Figure 1 there is a depiction of an Itron Direct Connect electric AMI meter, which communicates directly over the cellular wireless network using a built-in cellular radio. The Direct Connect meters are used as an alternative for situations in which an Itron mesh electric meter at a specific premise cannot connect reliably with other mesh network meters in that area, and it is cost prohibitive to extend the mesh utilizing Itron range extenders.

Figure 1:



III. DUKE ENERGY OHIO'S AMI TRANSITION

Q. PLEASE BRIEFLY EXPLAIN DUKE ENERGY OHIO'S AMI TRANSITION?

A. The Commission approved Duke Energy Ohio's transition of its AMI system from a node-based system to the mesh system as part of its Opinion and Order in consolidated Case No. 17-32-EL-AIR *et. al* (Order). The Company needed to transition away from the node-based Echelon technology due to several technological issues, including obsolescence. The communication nodes installed to support the Echelon technology experienced a higher than expected rate of failure and stopped being produced by the manufacturer. In addition, the Echelon technology relied upon Verizon cellular service and was incompatible with Verizon's planned system upgrade to a 4G network. Moreover, the transition to the Itron mesh network technology enabled additional enhancements to the overall customer experience including the availability of customer energy usage data (CEUD) that can be used by competitive retail electric service providers to provide customers more innovative products.[1] The Commission recognized the need and reasonableness of the AMI transition in its Order, and among other things, approved a settlement that allowed the Company cost recovery for the communication infrastructure needed to support the AMI transition as part of Rider PF.

Q. WHAT IS THE STATUS OF THE AMI TRANSITION?

A. The company initiated a "Tech Transition" project in mid-2017. That project concluded in February 2019. As part of that project, the company completed

[1] Opinion and Order pp. 77-78.

113,637 electric meter changes, 69,911 gas module changes, and we installed 74 CGRs. We also removed approximately 23,500 Ambient communication nodes. That project was 100% complete at the end of February 2019.

The company started the full transition in March 2019. From March 2019 through December 31, 2020 the Company changed a total of 327,909 electric meters, 221,184 gas modules, and we installed 370 CGRs. The Company also removed a total of approximately 32,350 communication nodes. That project was approximately 65% complete as of December 31, 2020.

Specifically during January 1, 2020 to December 31, 2020, the Company changed 211,744 electric meters, 134,030 gas modules, and installed 194 CGRs. The Company also removed approximately 24,650 communication nodes. These efforts brought the project from 24% completion as of December 31, 2019 to 65% completion as of December 31, 2020.

In total, the entire transition (including both the above-described completed Tech Transition project and the in-progress project) was approximately 78% complete as of December 31, 2020.

Q. WHEN WILL THE AMI TRANSITION BE COMPLETED?

A. The Company will complete the vast majority of the electric meter and gas module changes by the end of 2021. The Company will have some minor "cleanup" in the first quarter of 2022. Additionally, the Company will continue to remove the Ambient communication nodes through the 3rd quarter of 2022.

IV. COSTS OF THE PROPOSED AMI TRANSITION RECOVERABLE THROUGH RIDER PF

Q. PLEASE DESCRIBE THE COSTS THAT ARE RECOVERABLE THROUGH RIDER PF COMPONENT TWO THAT RELATE TO THE AMI TRANSITION.

A. The Commission's Order authorized recovery of the communication infrastructure needed to support the AMI transition. This communication infrastructure includes both capital and operations and maintenance (O&M) costs related to the AMI transition that are not otherwise recovered through other riders, and base rates, excluding the costs of the meters themselves. Per the Stipulation, the cost recovery of the communications system shall not exceed $28,625,000.

Q. WHAT IS THE AMOUNT OF AMI TRANSITION COSTS FOR COMMUNICATION INFRASTRUCTURE INCURRED FROM JANUARY 1, 2020, THROUGH DECEMBER 31, 2020 RECOVERALBE THROUGH COMPONENT TWO OF RIDER PF?

A. The total spend from January 1, 2020, through December 31, 2020 is $4,688,150. This includes $2,078,266 of capital and $2,609,884 of incremental O&M expenditures from January 1, 2020 through December 31, 2020.

Q. IS THE COMMUNICATION INFRASTRUCTURE INSTALLED TO SUPPORT THE AMI TRANSITION THROUGH DECEMBER 31, 2020 IN-SERVICE, FUNCTIONAL, AND BEING USED TO PROVIDE SERVICE TO CUSTOMERS?

A. Yes. The communication infrastructure installed through December 31, 2020 is functional and supporting the Itron AMI meters installed to date. The infrastructure is being used to support these meters and provide service to customers.

Q. HOW WERE THESE COSTS DETERMINED?

A. Duke Energy Ohio has an existing materials contract for the electric meters, gas modules, grid routers, and range extenders. The project team utilized a competitive bid process to award work to two meter installation contractors. The project team is utilizing the existing Duke Energy Ohio contracts for the overhead construction work which includes the grid router installations and the Ambient node removals.

Q. DO YOU BELIEVE THESE COSTS WERE PRUDENTLY INCURRED?

A. Yes.

Q. PLEASE EXPLAIN WHY YOU BELIEVE THESE COSTS WERE PRUDENTLY INCURRED.

A. Each of the cost factors in this project have gone through extensive negotiations with our supply chain department to ensure cost competitiveness and accuracy. In addition, all work completed by our contractors is unit based, so we are only paying for the work they actually complete.

V. CONCLUSION

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

A. Yes.