BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Duke Energy Ohio, Inc., for Authority to Adjust its Power Forward Rider	)	Case No. 19-1750-EL-UNC
In the Matter of the Application of Duke Energy Ohio, Inc., for Approval to Change Accounting Methods.	)	Case No. 19-1751-GE-AAM

COMMENTS OF THE ENVIRONMENTAL LAW & POLICY CENTER

I. INTRODUCTION

The Environmental Law & Policy Center (ELPC) respectfully submits these comments regarding Duke Energy Ohio, Inc.'s Application for Approval of its Infrastructure Modernization Plan in response to the Attorney Examiner's March 11, 2020 Journal Entry and Order. Duke's Plan consists of four major components: Advanced Metering Infrastructure (AMI); a Land Mobile Radio (LMR) communication system; a Smart Cities Infrastructure Acceleration Program; and an Electric Vehicle (EV) Pilot. Duke Application at 5. ELPC's comments discuss only the proposed EV Pilot, and its silence on other proposals in Duke's Plan does not constitute an endorsement of those proposals. ELPC's comments focus on Duke's EV Pilot because it has deep experience with the design of successful utility EV programs. For example, ELPC recently supported Ohio Power Company's EV charging program proposal, which it explained was designed in a manner that would benefit the Company's customers and the grid. *See Ohio Power Co.*, Case No. 16-1852-EL-SSO *et al.*, Pub. Util. Comm'n of Ohio, Initial Post-Hearing Brief of the Environmental Law & Policy Center, Natural Resources Defense Council, Sierra Club, Ohio Environmental Council, and Environmental Defense Fund (Nov. 30, 2017).

Similarly, based on our review of Duke's application (including testimony and exhibits) and its responses to discovery requests, ELPC supports the Company's EV Pilot. The design of the EV pilot—including the Company's plan to collect information from pilot implementation and report that information to the Commission on a regular basis—will benefit Duke's customers, support the distribution grid, and promote the development of EVs in the Company's service territory and in Ohio more broadly. ELPC supports approval of the Pilot with minor modifications to the electric school bus program to ensure Duke maximizes the opportunity to learn from connecting the buses to the grid, and provides greater opportunity for low income participation.

II. BACKGROUND ON ELPC

ELPC is a not-for-profit public interest environmental organization that works to achieve cleaner air, advance clean renewable energy and energy efficiency resources, improve environmental quality, protect clean water, and preserve natural resources in Ohio and throughout the Midwest. ELPC's members, several of whom live and work in Ohio and in Duke's service territory, have an interest in thoughtful grid modernization investment that promotes the increasing penetration of clean distributed energy resources and electric vehicles, while maintaining affordable rates. ELPC regularly intervenes and actively participates in cases before the Commission, including Dayton Power & Light Company's (Case Nos. 18-1875-EL-GRD *et al.*) and First Energy Solutions' (Case Nos. 16-481-EL-UNC *et al*.). recent grid modernization cases.

III. DUKE'S EV PILOT PROPOSAL

A. Overview

Duke is proposing a 36-month EV Pilot program that it asserts "will support Ohio in joining other states to advance deployment of EV infrastructure to meet growing market needs."

Reynolds Direct Testimony at 3. The Company's EV Pilot consists of five sub-programs: an EV Fast Charge Program; an Electric School Bus Rebate Program; an Electric Transit Bus Program; a Residential EV Charging Rebate Program; and a Commercial EV Charging Program. Collectively, these programs target the several segments within the EV market that, according to the Commission's PowerForward Roadmap, merit utilities' attention. PUCO PowerForward Roadmap at 21. The EV Pilot not only aims to help increase the number of electric vehicles in Duke's service territory, but importantly will also allow the Company to collect data regarding customer use and charging of electric vehicles, and the associated grid impacts. Reynolds Direct Testimony at 5. The Company articulates three goals for the pilot:

1. To facilitate installation of a foundational level of fast charging infrastructure in southwest Ohio;
2. To study the timing and effects of charging multiple types of electric vehicles; and
3. To provide cost share to Volkswagen (VW) Settlement Mitigation Trust funding to the advantage of Ohio customers.

The Company provides its reporting metrics and learning objectives from the EV Pilot in Attachment LWR-3 to Mr. Reynolds' direct testimony. The Company plans on making data regarding the Pilot available through annual reports and stakeholder meetings every twelve months, filing a final report with the Commission within 180 days after conclusion of the pilot, and having a "full, open stakeholder process" at the end of the Pilot. Reynolds Direct Testimony at 24.

B. Duke's Fast Charge and Level II Programs are reasonably designed to produce valuable information.

Duke proposes to invest a maximum of $11 million in capital and $63,000 in operations and maintenance expense on EV Fast Charge and Commercial Level II[1] "make-ready" infrastructure—the electrical infrastructure necessary to operate charging stations including conduit and wire. Reynolds Direct Testimony at 10. The Company will install, own, and operate necessary electrical infrastructure facilities up to the customer's charging (Fast Charge or Level II) points, while the actual supply equipment would be installed, owned and operated by customers. In addition, the Company is proposing a rebate program to support residential EV Level II charging. That program would deliver customers a $500 incentive for purchasing and installing a Level II EV charging station, and an additional $500 incentive in exchange for participating in monthly load management events (by avoiding charging during peak hours) during years 2-3 of the pilot. Reynolds Direct Testimony at 19-21.

Duke's Fast Charge and Commercial Level II programs will add infrastructure that will lay a foundation for the growth of the EV market in Ohio. Duke's Fast Charge program, in particular, is thoughtful and well-designed. The Company's plan for fast charging station placement involved consultation with Ohio, Kentucky and Indiana Regional Council of Governments. Reynolds Direct Testimony at 15. Through this consultation, Duke has identified locations that "require minimal electric facility expansion, are within one and a half mile of a major highway or interstate interchange, have 24/7 public access with restrooms, appropriate site lighting, and nearby retail and restaurant options," and provides a map of potential Fast Charge locations in the Greater Cincinnati area as Attachment LWR-4 to Mr. Reynolds' testimony. *Id.* at

[1] "Fast Charge" and "Level II" refer to EV charging technologies; Fast Charge technology allows higher charging speeds.

16. ELPC agrees that the Company's thorough and collaborative approach to Fast Charging site identification will "enable intra- and inter-state electric vehicle travel and build driver confidence in EV range." *See id.* at 16.

Duke's Residential EV Level II charging program design will allow the Company to compare the impacts of unmanaged to managed charging. That comparison, in turn, will help the Company better understand potential grid and utility impacts from EV charging and gain experience with managing charging. While the Company is not proposing any specific time-of-use rates[2] in coordination with its EV proposals that would encourage customers to charge their vehicles off-peak, ELPC notes that the Company's proposed additional $500 "managed charging" incentive serves a similar purpose by incentivizing off-peak charging behavior. To implement the managed charging incentive, the Company proposes to set and communicate specific time frames to avoid residential EV charging within 6-9 a.m. and 4-7 pm. Reynolds Direct Testimony at 20. Customers who avoid charging in those time frames will be eligible for the incentive. *Id.* ELPC believes that collectively, the Company's proposed Fast Charge and Level II programs will produce valuable information regarding the impacts and management of electric vehicle load on the Company's distribution grid, which will help not only EV owners but the Company's customers more broadly.

C. Duke's EV bus programs can deliver value to its customers and to the grid.

Duke's EV Pilot includes a rebate program to support procurement of ten electric school buses by public school transportation systems. Through that program, Duke would provide up to $215,000 per bus for the procurement, delivery, and installation of electric school buses and associated supply equipment. Reynolds Direct Testimony at 17. Duke is also proposing a "make-

[2] The Company currently offers one residential Time-of-Use rate, Rate TD; however, that rate is not specifically tailored to EV owners. *See* Attachment 3, Duke Response to ELPC-INT-02-003 SUPPLEMENTAL.

ready" investment of up to $30,000 per charging station for up to ten electric transit buses. Reynolds Direct Testimony at 18. ELPC has significant experience with the design of electric school bus programs across the Midwest, and therefore focuses this section of its comments on Duke's electric school bus proposal.

ELPC commends Duke for taking a step towards school bus electrification, which not only has the potential to reduce local emissions that put children at risk, but also lower system-wide carbon emissions and provide energy storage during high peak system demand. The proposed $215,000 rebate, which leverages funding from the Volkswagen Settlement Ohio EPA Beneficiary Mitigation Plan, would defray a significant portion of the cost that school districts would otherwise incur in purchasing an EV school bus and necessary supply equipment, making it easier for the district or its contractor to do so. While ELPC encourages the Company to expand the electric school bus program in the future as it learns from its pilot, the size of the initial pilot program (ten school buses, with no more than three school buses per participant) is reasonable.

The Company indicates that the rebate will be available to school districts on a "first-come-first-served" basis. Reynolds Direct Testimony at 17. While a first-come-first-served approach is a reasonable approach to promoting program subscription, ELPC recommends that the Commission require the Company to prioritize school districts with a high concentration of low-income households, as those school districts tend to be unable to afford an electric school bus without utility involvement. Further, in order to maximize the lessons from an EV school bus program going forward, the Company should test its pilot in a variety of locations, including in urban, rural and suburban communities to the extent feasible. School buses that run in urban areas often travel shorter routes than those in rural areas, and as such, testing in a variety of

locations may produce richer data on battery capacity, cycles, and numerous operational functions in different conditions.

ELPC notes that an important aspect of a well-designed utility pilot program is the utility's plan to collect information and data from the program and use that information to inform future decision-making. With respect to its school bus pilot, Duke expects to understand and evaluate the impacts of electric school buses "including but not limited to the typical timing and amount of energy consumption used to charge electric school buses; peak and average demand profiles; school bus idle items when available for potential bi-directional power flow events; distribution system upgrades necessary to accommodate school bus deployments; cost of electric service paid by participating customers to the EDU; processes, documents, and agreements that must be created and observed to safely incorporate bi-directional power flow from bus batteries; and the technical capability of electric school buses to perform bi-directional power dispatch." *See* Attachment 1, Duke Response to ELPC-INT-02-001a. In order to understand and evaluate these impacts, Duke intends to require participating customers to "procure buses which possess the technical capability and are approved by the manufacturer to perform bi-directional power flow," and to "work with customers to ensure they procure and deploy the appropriate charging stations and associated electrical infrastructure necessary" to perform bi-directional power flow at their charging location. *See* Attachment 2, Duke Response to ELPC-INT-02-002b. The Company indicates that it will collaborate with participating customers to perform at least one and potentially multiple events during which each bus funded by the program will dispatch power from the battery back to the location where the bus is parked. *Id.*

ELPC notes that the buses and charging stations procured through the program will have the technical capability to dispatch power from the battery not just to the location where the bus

is parked but also to the distribution grid (V2G capability). *See* Attachment 2, Duke Response to ELPC-INT-02-002d, e. The dispatch of power to the distribution grid is an important capability that the Company should explore further. The Commission should require the Company to test the dispatch of power from bus batteries back to the distribution grid as a part of its school bus pilot in order to understand the potential for positive or negative impacts from such dispatch.

IV. CONCLUSION

ELPC believes that Duke's proposed EV Pilot provides a good starting point for stimulating the EV market in the Company's service territory. The Company's EV Pilot promises to deliver useful information regarding the several segments of the EV market. That information will benefit the PUCO, the Company's customers, and interested stakeholders in the medium-term as the EV market grows in Ohio. The Company's EV Fast Charging program is particularly well-developed and thoughtful, and its electric school bus pilot is a good step towards broader school bus electrification. ELPC's recommendations both aim to strengthen the Company's electric school bus pilot: first, that the Commission require the Company to prioritize school districts with a high concentration of low-income households; and second, that the Commission require the Company to test the dispatch of power from bus batteries to the distribution grid in order to understand the potential for positive or negative system impacts from such dispatch. ELPC requests that the Commission adopt these recommendations for the reasons we describe in these comments.

Dated April 15, 2020

Respectfully submitted,

/s Nikhil Vijaykar

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CERTIFICATE OF SERVICE

I hereby certify that a true copy of the foregoing Comments of the Environmental Law & Policy Center was served by the Commission's electronic docketing system on the Parties of Record on April 15, 2020.

/s Nikhil Vijaykar
Nikhil Vijaykar

Attachment 1

Duke Energy Ohio
Case No. 19-1750-EL-UNC
ELPC Second Set of Interrogatories
Date Received: April 7, 2020

ELPC-INT-02-001

REQUEST:

On page 16, line 20-23 of his testimony, Mr. Reynolds states that the Company's proposed Electric School Bus pilot rebate will be used "to collect utilization and other load characteristics to understand grid and utility impacts."

a. What "utility impacts" does the Company expect to understand and evaluate?

b. What "grid impacts" does the Company expect to understand and evaluate?

c. Does the Company intend to evaluate the potential distribution grid benefits from electric schoolbuses?

d. Please explain how the Company plans to evaluate "grid and utility impacts" from electric schoolbuses.

e. When does the Company plan to start evaluating "grid and utility impacts" from electric schoolbuses?

f. Please describe how the Company plans to collect "utilization and other load characteristics."

g. Does the Company anticipate potential distribution grid benefits from electric schoolbuses during summer peak periods?

h. Will the Company study the potential distribution grid benefits from electric school buses during summer peak periods? If so, please explain how the Company will study those potential distribution grid benefits.

RESPONSE:

a. The phrase "grid and utility impacts" was not meant to convey a bright line distinction between "grid" and "utility" impacts. The Company expects to understand and evaluate impacts of electric school buses including but not limited to the typical timing and amount of energy consumption used to charge electric school buses; peak and average demand profiles; school bus idle times when available for potential bi-directional power flow events; distribution system upgrades necessary to accommodate school bus deployments; cost of electric

service paid by participating customers to the EDU; processes, documents, and agreements that must be created and observed to safely incorporate bi-directional power flow from bus batteries; technical capability of electric school buses to perform bi-directional power dispatch.

b. See (a).

c. Yes.

d. The Company will evaluate these impacts by gathering charging data from the participating customers' charging stations, Company meters, Company billing system, and other load measurement and data collection devices as necessary.

e. The Company will start compiling data from the Electric School Bus Program as soon as it is received by the Company and evaluations of these impacts will be included in the annual and final reports provided by the Company to PUCO.

f. See (d).

g. The Company proposed this Pilot to investigate the potential for electric school buses to provide distribution grid benefits by dispatching power in a bi-drectional manner. The first step is to understand how such a deployment takes place and participate in the demonstration of this capability on the Company's system. Once the technical capability of these vehicles has been confirmed, the Company can determine whether and to what extent these vehicles provide benefits to the distribution grid, and the role of the EDU in future deployments. The Company does not expect the small number of electric school buses deployed by the Pilot to create significant near-term benefits to the distribution grid simply by virtue of their ability to dispatch power in a bi-directional fashion. The value of this Pilot deployment is to demonstrate the technical feasibility, determine the costs and benefits, and develop procedures to ensure any potential benefits are realized for the benefit of all customers by future program design.

h. Yes. Please see all responses above.

PERSON RESPONSIBLE: Lang Reynolds

Attachment 2

Duke Energy Ohio
Case No. 19-1750-EL-UNC
ELPC Second Set of Interrogatories
Date Received: April 7, 2020

ELPC-INT-02-002

REQUEST:

On page 16, line 20-23 of his testimony, Mr. Reynolds states that the Company's proposed Electric School Bus pilot rebate will be used "to explore potential for bi-directional power flow from EV School Bus batteries."

a. Please explain what the Company means by "bi-directional power flow."

b. Please describe how the Company intends to explore the potential for bi-directional power flow from EV school bus batteries.

c. What charging or schoolbus battery technology is required in order to accommodate the flow of power from schoolbus batteries to the distribution grid?

d. Will the buses procured as a part of the pilot program include technology that allows the flow of power from the bus battery to the electric distribution grid?

e. Will the charging infrastructure installed as a part of the pilot program include technology that allows the flow of power from the bus battery to the electric distribution grid?

RESPONSE:

a. "Bi-directional power flow" describes the ability of an electric school bus, when parked and connected to a charging station, to direct electricity stored in the vehicle battery back out of the battery through the charging station to a load center where it is located.

b. The Company will explore the potential for bi-directional power flow first by requiring participating customers to procure buses which posess the technical capability and are approved by the manufacturer to peform bi-directional power flow. Not all buses are manufactured with this capability. The Company will also work with customers to ensure they procure and deploy the appropriate charging stations and associated electrical infrastructure necessary to perform bi-directional power flow at the location chosen by the customer as a charging location. After successful procurement and deployment of the buses and associated charging infrastructure, the Company will collaborate with participating customers to perform at least one and potentially multiple

events during which each bus funded by the program will dispatch power from the battery back to the location where the bus is parked.

c. An electric vehicle must have either a bi-directional AC inverter or a DC charging system designed for bi-directional power flow along with the necessary software and controls in order to accommodate bi-directional power flow. The charging station chosen by the customer must match the system used by the vehicle (AC or DC) and contain the appropriate communications capabilities in order to coordinate bi-directional power flow between the vehicle battery and the parking location's load center.

d. The Pilot will require all buses and charging stations funded by the program to be V2G capable as demonstrated by the manufacturer.

e. Yes.

PERSON RESPONSIBLE: Lang Reynolds

Attachment 3

Duke Energy Ohio
Case No. 19-1750-EL-UNC
ELPC Second Set of Interrogatories
Date Received: April 7, 2020

ELPC-INT-02-003 SUPPLEMENTAL

REQUEST:

See Attachment LWR-5 to Mr. Reynolds' testimony, which shows example E-School and E-Transit Bus Savings.

a. Please confirm that the calculations in Attachment LWR-5 assume a flat rate of $0.101 for the cost of electricity.

b. Does the Company offer any time-of-use rates (rates that vary based on the time of consumption)? If the answer is yes, please explain the design of the time-of-use rate(s), including how the rate varies by hour.

c. Will the Company give participants in the Electric School Bus pilot the option to enroll in a time-of-use rate? If the answer is yes, please describe the time-of-use rate in which participants would be eligible to enroll.

d. Please explain how the Company derived the annual maintenance costs ($/Mi) for diesel and electric schoolbuses, and provide all assumptions the Company used in deriving those costs.

INITIAL RESPONSE:

a. The calculations in Attachment LWR-5 assume a flat rate of $0.101 for the cost of electricity.

b. There are currently no commercial time-of-use rates available from Duke Energy Ohio.

c. The Company does not currently offer any commercial time-of-use rates. The Electric School Bus pilot participants will not, by virtue of their participation in the pilot, be excluded from any Company rates for which they are otherwise eligible based on the terms of those rates.

d. The annual maintenance costs for diesel and electric bus maintenance estimates were confidentially supplied by electric transit and school bus manufacturers. One goal of the Pilot is to gather real-world data from program participants to validate the operational savings estimated by the Company's calculations.

PERSON RESPONSIBLE: Lang Reynolds

SUPPLEMENTAL RESPONSE:

b. The Company currently offers one residential Time-of-Use rate, Rate TD. Please see attached the relevant portion of the Company's Retail Electric Tariff, in ELPC-INT-02-003 SUPP Attach, for explanation of the rate design.

PERSON RESPONSIBLE: Lang Reynolds

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Case No(s). 19-1750-EL-UNC, 19-1751-GE-AAM

Summary: Comments of the Environmental Law & Policy Center electronically filed by Mr. Nikhil Vijaykar on behalf of Environmental Law & Policy Center