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 §4928.143, Ohio Rev. Code, in the Form of an Electric Security Plan, Accounting Modifications and Tariffs for Generation Service.	)	Case No. 14-0841-EL-SSO
In the Matter of the Application of Duke Energy for Authority to Amend its Certified Supplier Tariff, P.U.C.O No. 20.	)	Case No. 14-0842-EL-ATA

DIRECT TESTIMONY OF
DICK MUNSON
ON BEHALF OF OHIO ENVIRONMENTAL COUNCIL

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Counsel for the Ohio Environmental Council

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Dick Munson. My business address is 18 S. Michigan Avenue 12th floor Chicago, IL. 60603.

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

A. I am employed by Environmental Defense Fund ("EDF") as Midwest Director, Clean Energy. I am responsible for planning and implementing EDF's clean energy initiatives in the Midwest region.

Q. WOULD YOU BRIEFLY DISCUSS YOUR BACKGROUND AND EXPERIENCE?

A. Prior to joining EDF, I was senior vice president of Recycled Energy Development (a Chicago-based cogeneration developer), and director of the Northeast-Midwest Institute (which supported bipartisan caucuses in the United States Senate and House of Representatives working on energy, environmental, and economic development issues). I am the author of several books, including *From Edison to Enron*, a history of the electricity industry. I have received public service awards from the Great Lakes Commission, the U.S. Clean Heat and Power Association, and the American Small Manufacturers Coalition. I sit on the boards of the Center for Neighborhood Technology, the Institute for Health Policy Solutions, and Greenleaf Advisors.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. I am testifying on behalf of the Ohio Environmental Council ("OEC"), an intervenor in this case.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to make recommendations regarding data access for Duke's customers and using environmental and performance metrics to measure Duke's performance.

Q. PLEASE DESCRIBE THE EXHIBIT DM-1 ATTACHED TO YOUR TESTIMONY.

A. This exhibit, marked as Exhibit DM-1 is an "Open Data Access Framework." This was originally developed by the EDF and the Citizens Utilities Board ("CUB") for use in Illinois. The document lists several recommendations which utilities should follow to make customer electricity usage data available to customers and third parties.

Q. WHY DID EDF AND CUB DEVELOP THIS DOCUMENT?

A. The Illinois Commerce Commission approved smart grid deployment plans for Commonwealth Edison and for Ameren. The companies are well on their way to implementing the plans and already are obtaining substantial savings associated with reduced meter readings and increased grid stabilization. Yet customers will not receive the full value from the smart grid deployments unless they and their third-party contractors receive timely access to customer usage information.

Q. HOW DID YOU DEVELOP THE CATEGORIES OF INFORMATION TO BE INCLUDED IN THE OPEN DATA ACCESS FRAMEWORK?

A. I started with the Open Data Access Framework we prepared for Illinois and I adapted it to reflect customer and third party data needs in Ohio.

Q. DOES OHIO ALREADY REQUIRE UTILITIES TO PROVIDE SOME LEVEL OF ACCESS TO CUSTOMER USAGE DATA?

A. Yes. I understand that Ohio's Electric Service and Safety ("ESSS") standards and Ohio Administrative Code §4901-1-10-12, require utilities to provide access to the following information from the electric utility without charge: right to request up to twenty-four months of their usage history; payment history; if available, detailed consumption data; and, if applicable, time differentiated price data.

Q. WHO SHOULD HAVE OWNERSHIP OF CUSTOMER USAGE DATA?

A. We maintain that the customer is the principal owner of retail electric consumption data. The utility should serve only as the guardian of that data and must allow access to third parties when the customer has authorized it.

Q. WHAT TYPES OF DATA SHOULD BE MADE AVAILABLE?

A. Any data relating to demand, power quality, availability, voltage, frequency, current, power factor, or other information generated by a meter should be made available to both the customer and the utility.

Q. PLEASE EXPLAIN YOUR RECOMMENDATION FOR USING ENVIRONMENTAL AND PERFORMANCE METRICS TO MEASURE DUKE'S PERFORMANCE.

A. Duke seeks approval for a cost recovery "tracker" mechanism, in the form of its Distribution Capital Investment Rider, which would allow them to annually update their distribution rates to reflect new capital investment. This allows Duke to avoid filing general distribution base rate cases for a prolonged period of time. Parties may seek to intervene and comment in the annual distribution rider audit cases, but these proceedings are more streamlined than rate cases and do not always provide the same opportunities for discovery and hearing. If adopted, these environmental and performance metrics

would require Duke to proactively report on certain areas, which would help establish that Duke is managing these distribution system investments prudently.

Q. PLEASE IDENTIFY THE METRICS WHICH YOU BELIEVE DUKE SHOULD REPORT?

A. I recommend that the Company report on twenty-one metrics covering a range of issues, including: numbers of customers enrolled in smart grid programs, technical difficulties with smart grid enabled technology, peak load reductions, environmental benefits from the smart grid deployment, and enabled distributed generation. The attached Exhibit DM-2, which I label as "Measures and Metrics," shows those twenty-one reportable metrics as well as the operational tracking measure that Duke would use for each. These Measures and Metrics are similar to those agreed to be reported by Commonwealth Edison and Ameren in Illinois, as well as those recommended by OEC in the AEP gridSMART Phase II proceeding[1] this past year.

Q. ARE THESE REPORTING REQUIREMENTS BECOMING MORE COMMON IN THE INDUSTRY?

A. Yes. I understand that the Department of Energy required utilities who received smart grid deployment grants to report on these types of metrics. This type of reporting has also been required in Illinois[2] and Maryland[3]. Massachusetts has opened a grid modernization docket[4] where these types of metrics are being developed.

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[1] *In the matter of the application of Ohio Power Company to Initiate Phase 2 of its gridSMART Project and to Establish the gridSMART Phase 2 Rider*, PUCO Case No. 13-1939-EL-RDR.
[2] 220 ILCS 5/16-108.6(c)(4).
[3] *See* Baltimore Gas and Electric Company and Potomac Electric Power Company - Advanced Metering Infrastructure Performance Metrics Reporting Plan. Maryland Public Service Commission Case Nos. 9208 and 9207 (ML 131260).
[4] *See Investigation by the Department of Public Utilities on its own Motion into Modernization of the Electric Grid*, D.P.U 12-76-A, Order, at pp. 29-31 (December 23, 2013).

Q. WHY SHOULD DUKE BE REQUIRED TO REPORT ON THESE METRICS?

A. As I mentioned earlier, this reporting would better enable the Commission and other stakeholders to determine whether Duke is managing its distribution investments in a prudent manner. If Duke proactively reports on these items, this would avoid repetitive discovery during the annual tracker updates, resulting in more efficient proceedings. I understand that Duke did similar reporting to the Department of Energy relating to the smart grid investment grant, so it should not be overly burdensome for Duke to do this reporting.

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

A. Yes.

Open Data Access Framework

Ownership	**Customer is principal owner of retail electric consumption data. The customer has the ability to authorize third parties to access individual customer data, and the customer can revoke that access at the customer's discretion.** **The utility serves as the guardian of retail electric consumption data, and must allow access to third parties where the customer has authorized it.**
Type of Data	**Interval.** Customers should have access to their retail electric consumption data in as short intervals as possible, with 15-minute intervals recommended for data that travels from the meter to the utility, but never in intervals greater than 1-hour. This includes power (kW) and energy (kWh) at the designated intervals. **Consumption**. Customers should have access to the monthly aggregate retail electric consumption data used for billing purposes. **Power data**. Any data relating to demand, power quality, availability, voltage, frequency, current, power factor, or other information generated by a meter should be made available to both the customer and the utility. **Pricing.** Customers should have access to any and all price and rate data at the time for which they are being charged that rate. For price and rate data that is known in advance (day-ahead, TOU), price and rate data should be available to a customer for the duration of the price and rate data availability preceding the effective time.
Third Party Access	Third parties are defined as any entity not including the customer or utility that is seeking access to retail electric consumption data. **Customer Authorization.** Customers wishing to provide access to their customer-specific retail electricity consumption data to any third party must affirmatively authorize the third party to gain access. • There should be no distinction drawn between the type of usage data given to third parties with customer authorization now and what usage data will be available following deployment of AMI. Currently authorized third parties should receive interval usage data as it becomes available to customers who have already authorized the same third party access to their usage data. • The authorization process must be simple, practical, and rapid for the customer. • Authorization should be available to customers through the same method as the provision of data where practical (e.g., directly from the meter, through the internet, through mobile devices) using the most convenient method for the customer. Although a customer's non-electronic signature should not be not required to indicate authorization, such a signature is acceptable if the customer and third party determine it is more convenient/appropriate than alternative verbal or electronic methods. A non-electronic signature may be preferred in the case of parties who must attest to the utility having obtained customer authorization on behalf of large groups of

customers.

- For Retail Electric Suppliers (RES), the authorization should last until the customer leaves the service of that RES, unless a customer affirmatively de-authorizes access to data. No distinction should be drawn between those customers who change supply service via municipal aggregation and those who switch due to their individual preference ("organic" customers). Data should be maintained for the entire history of an account.
- For all other third parties, the authorization should last for a term of 24 months, unless a customer affirmatively de-authorizes access to data. Data should be maintained for the entire period of authorization.
- The de-authorization process must similarly be simple, practical, and rapid for the customer.
- Once customer authorization has been given to a third party, the same standards that apply to the access of third parties that have obtained customer authorization should also apply to RES access to such data.
- There is no distinction between data that is used for billing purposes with data that is used for non-billing purposes. The *purpose* of the data (billing vs. non-billing purposes) should be distinct from the *quality* of the data (preliminary vs. bill-quality data). Once a third party obtains a customer's authorization to access that customer's interval data, that third party effectively stands in the shoes of the customer and as such, no additional authorization is needed.
    - For customers who have not yet authorized a third party access to their usage data, authorization must be given that explicitly references "interval usage data" and makes the customer aware that data will be used by the third party to deliver the services being provided but also to develop new services which could be offered to the customer.
    - For customers participating in a municipal aggregation, Retail Electric Suppliers must disclose that access to interval usage data may be used to develop new services beyond what are offered in the aggregation. Authorization for these purposes shall be separately given, as per the Final Order in ICC Docket No. 13-0506, and must be separate from authorization to participate in the aggregation and/or select a new supply service.

Scope of Access. Third parties should be provided access to any and all data (see "Type of Data" and "Forms") when affirmatively authorized by a customer. Where a third party seeks access to customer usage data without customer authorization, the scope of access can be no more limited than allowed by the 15/15 Rule as adopted by the Commission in ICC Docket No. 13-0506. In summary, the 15/15 Rule permits utilities to provide to third parties 12 months of anonymized customer usage data of at least 15 customers within a customer class organized by groups of customers within the same ZIP+4 such that no one customer's usage data comprises more than 15% of the customer group.

Conditions on Access. The utility may institute a process for approval of third parties who wish to obtain access to customer-specific data if such requirements are related to data security, and the ability to receive the transmission of data in an efficient manner.

Format	**Machine-readable.** Customers or affirmatively-authorized third parties should be provided access to their raw retail electricity consumption data in an industry-standard or web-standard machine-readable format (e.g. XML). **Summary.** In order to provide education to customers about consumption behavior and enable opportunities for behavior change, customers should be able to access their retail electricity consumption data in a summary format that is intended to influence specific or general customer behavior (e.g. display of consumption during peak-time events). **Monthly Billing.** Customers should be able to see all the components of their retail electricity consumption data used for billing on their monthly billing statement. This includes consumption aggregated by rate type for customers on dynamic or time-of-use rate plans.
Methods of Delivery	**Directly from the meter.** Usage data should be provided directly from a meter. Any and all data that is generated and transmitted by the meter should be in machine-readable formats. **Directly through the internet.** Usage data should be provided directly through the internet from the utility in machine-readable formats. **Through a Web Portal.** Billing and usage data should be provided in downloadable, comprehensive, summary forms through web portals operated by utilities or other third-party systems which meet utility security requirements, including utility vendors. **Through mobile applications.** Billing and usage data should be provided. Customers should be able to access timely downloadable, comprehensive, summary data through mobile applications operated by utilities or other third party systems which meet utility security requirements, including utility vendors. **Bulk Transfers.** For the purposes of efficiency, the utility may maintain a separate process for providing bulk or aggregate customer-specific retail electric consumption data to third parties.
Timeliness	**Real-time.** The utility and third parties shall deliver consumption data to customers in real-time to the extent practical. **15 Minutes/1 Hour through Internet/Alternate Communications Network.** To the extent practical, customers and affirmatively-approved third parties should have access to their retail electric consumption data within at most one hour from the conclusion of an interval period, when accessed directly from the internet or alternate communications network in a machine readable format. 15 minutes is the recommended standard. **1 Minute directly from the meter.** To the extent practical, customers or affirmatively-approved third parties should have access to their retail electric consumption data within 1 minute when accessed directly from the meter.
Billing-quality Data	Where there is a need for utility meter data management systems and billing systems to verify usage data for the purposes of customer billing, such

	processes should not limit customer access to data available from a meter as soon as it is available. Customers and affirmatively-approved third parties should be able to gain timely access to both preliminary data and billing-quality data. **Preliminary Data.** Data from the meter that has not yet gone through billing system processes for quality assurance. This data may be labeled as "preliminary data." This data must replaced or separately distinguished from billing-quality data once billing-quality data is available. **Billing-quality data.** Data that is sufficient for billing purposes.
Data Security	**Industry-standard protocols.** Data transmission to customers or third parties must be done using industry-standard secure communications and encryption protocols for wireless or network communications (e.g. HTTPS). **Data storage.** Customer-specific data stored by the utility or third parties should secured against unauthorized access using industry-standard cyber security protections. The same data security protections and restrictions on personally identifiable information that apply to the utility shall apply to any third party approved to receive customer-specific data.
Following National Standards	For the **format** and **methods** of provisioning customers with their retail electric consumption data from utility systems, the utility shall follow standards and protocols developed through national, multi-stakeholder processes. However, a utility shall not be constrained by being the first utility to implement standards developed through such processes.
Customer Charges	Customers and affirmatively-authorized third parties should incur no additional charge for the provision of their retail electric consumption data in a timely, accessible manner to themselves or their third party designee in the manners described herein.

SMARTGRID MEASURES AND METRICS

No.	Reportable Metric	Operational Tracking Measure
1	Customers enrolled in Peak Time Rebate, Real Time Pricing, and other dynamic/time variant prices	**Residential Customers** 1. Number of customers on a time - variant or dynamic pricing tariff offered by the utility. Expressed also as a percentage of customers in each delivery class. 2. Number of customers served by retail electric suppliers for which the supplier has requested monthly Electronic Data Interchange delivery of interval data. Expressed also as a percentage of customers taking supply from a retail electric supplier in each delivery class. **Small Commercial Customers** 1. Number of customers on a time - variant or dynamic pricing tariff offered by the utility. Expressed also as a percentage of customers in the delivery class. 2. Number of customers served by retail electric suppliers for which the supplier has requested monthly Electronic Data Interchange delivery of interval data. Expressed also as a percentage of customers taking supply from a retail electric supplier in the delivery class.
2	Customer - side - of the - meter devices sending or receiving grid related signals	Number of AMI meters with consumer devices registered to operate with the Home Area Network (HAN) chip by tariffs under which customer receives delivery
3	AMI Meter Failures	Number of advanced meter malfunctions where customer electric service is disrupted. A "malfunction" is a malfunction that causes the meter to become inoperable but does not include cases of tampering, service panel and service entry equipment, house fires, etc.
4	AMI Meters replaced before the end of their useful life	Number of advanced meters replaced annually before the end of their expected useful life, including reasons for replacement that include utility errors. "Replaced" means a replacement due to a malfunction that causes the meter to become inoperable, including tampering.
5	Customers with net metering	Number of customers enrolled on Net Metering tariff and net load of each customer.
6	Customer premises capable of receiving information from the grid	Number of installed AMI Meters as of the last day of the calendar year that communicate back to the head end system. Number of installed AMI Meters as of the last day of the calendar year that communicate back to the head end system, divided by the total number of AMI meters installed.

		Number of customers who have accessed the web - based portal as of the last day of the calendar year as a percentage of customers with AMI Meters and as a percentage of the utility's customers in that delivery class. Number of customers who can directly access their usage data as of the last of the calendar year as a percentage of customers with AMI Meters and as a percentage of the utility's customers in that delivery class
7	Peak load reductions enabled by demand response programs	Load impact in MW of peak load reduction from the summer peak due to AMI enabled, utility administered demand response programs such as the Peak Time Rebate program as a percentage of all demand response in the utility's portfolio.
8	Customer Complaints	Number of formal complaints, informal complaints, and complaints escalated to the utility's customer relations department related to AMI Meter deployment, broken down by type of complaint and resolution. AMI Meter deployment includes AMI Meter installation, functioning or accuracy of the AMI meter, and HAN device registration.
9	Reduction in Greenhouse Gas Emissions enabled by smart grid	Trends to track: Load shifting, reductions in system peak, and reduced truck rolls.
10	Distributed generation projects	Number of locations and total MWs of customer owned distributed generation connected to the transmission or distribution system, broken down by connection to transmission and distribution system.
11	Load served by distributed resources	Total sales of electricity to the grid from distributed generation divided by zone energy plus distributed generation sales, with all data provided in sortable format.
12	System load factor and load factor by customer class	Total annual consumption for AMI meters (including, separately, small commercial customers) divided by the average demand across all AMI meters over the 4 peak hours multiplied by 8,760 hours by customer class.
13	Products with end to - end interoperability certification	The utility will conduct an annual survey through a third - party provider to evaluate how products are being introduced in the smart grid enabled marketplace.
14	Network nodes and customer interfaces monitored in "real time"	Number of customers utilizing dynamic pricing.
15	Grid connected energy storage interconnected to utility facilities at the transmission or distribution system level	Number of locations and total MWs of utility owned or operated energy storage interconnected to the transmission or distribution system as measured at storage device electricity output terminals.

		The utility will conduct an annual survey through a third - party provider to estimate similar measures of non - utility storage units.
16	Time required to connect distributed resources to grid	response time to a distributed resource project application, and time from receipt of application until energy flows from project to grid.
17	Voltage and VAR controls	Number and percentage of distribution lines using sensing from an AMI meter as part of the utilitiy's voltage regulation scheme.
18	Grid assets that are monitored, controlled, or automated	Number and percentage of the utility's substations (Distribution Center Substations (DCs), Substations (SSs) Transmission Substations (TSSs) and Transmission Distribution Centers (TDCs)) monitored or controlled via Supervisory Control and Data Acquisition (SCADA) systems. Number and percentage of utility distribution circuits (4kV, 12kV and 34kV) equipped with automation or remote control equipment including monitor or control via Supervisory Control and Data Acquisition (SCADA) systems.
19	Customers connected per automated circuit segment	Average number of customers per automated three phase 12kV line segment. An "automated line segment" is a segment of 12 kV three phase mainline circuit between automated devices which include circuit breakers, reclosers, automated switches, etc.
20	Improvement in line loss reductions enabled by smart grid technology	
21	Tracking Actual Costs	The actual cost of the AMI deployment costs that the utility has incurred, including both one-time costs and on-going operating costs.

CERTIFICATE OF SERVICE

I hereby certify that a true copy of the foregoing has been served upon the following parties by electronic mail this 26th day of September, 2014.

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Summary: Testimony Direct Testimony of Dick Munson electronically filed by Mr. Trent A Dougherty on behalf of Ohio Environmental Council