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November 15, 2010

**Via Federal Express  
and Facsimile (614-466-0313)**Ms. Renee J. Jenkins  
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Secretary to the Commission  
Docketing Division  
The Public Utilities Commission of Ohio  
180 Broad Street  
Columbus, OH 43215-3793RECEIVED-DOCKETING DIV  
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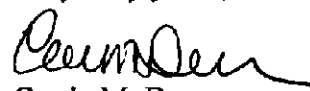
Dear Ms. Jenkins:

**Re: Joint Reply Comments regarding the August 6, 2010 Technical Reference Manual from Ohio Edison Company, The Cleveland Electric Illuminating Company, The Toledo Edison Company, Columbus Southern Power Company, Ohio Power Company, Duke Energy Ohio, Inc., The Dayton Power and Light Company and Industrial Energy Users-Ohio Case No. 09-512-GE-UNC**

Enclosed for filing, please find the original and twelve (12) copies of the *Joint Reply Comments regarding the August 6, 2010 Technical Reference Manual from Ohio Edison Company, The Cleveland Electric Illuminating Company, The Toledo Edison Company, Columbus Southern Power Company, Ohio Power Company, Duke Energy Ohio, Inc., The Dayton Power and Light Company and Industrial Energy Users-Ohio* regarding the above-referenced case. Please file the enclosed Joint Reply, time-stamping the two extras and returning them to the undersigned in the enclosed envelope.

Thank you for your assistance in this matter. Please contact me if you have any questions concerning this matter.

Very truly yours,

  
Carrie M. DunnCMD/jhp  
Enclosures  
cc: Parties of Record

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**BEFORE THE  
PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of Protocols for the )  
Measurement and Verification of )  
Energy Efficiency and Peak Demand ) Case No. 09-512-GE-UNC  
Reduction Measures )

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**JOINT REPLY COMMENTS REGARDING THE AUGUST 6, 2010 DRAFT  
TECHNICAL REFERENCE MANUAL FROM OHIO EDISON COMPANY,  
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY, THE TOLEDO  
EDISON COMPANY, COLUMBUS SOUTHERN POWER COMPANY, OHIO  
POWER COMPANY, DUKE ENERGY OHIO, INC., THE DAYTON POWER  
AND LIGHT COMPANY AND INDUSTRIAL ENERGY USERS-OHIO**

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Pursuant to the Public Utilities Commission of Ohio's ("Commission") October 4, 2010 Entry, Ohio Edison Company, The Cleveland Electric Illuminating Company, The Toledo Edison Company, Columbus Southern Power Company, Ohio Power Company, Duke Energy Ohio, Inc., The Dayton Power and Light Company (collectively "Electric Distribution Utilities" or "EDUs") and Industrial Energy Users-Ohio ("IEU-Ohio") (hereinafter the EDUs and IEU-Ohio will be referred to collectively as "Respondents") hereby submit their Joint Reply Comments regarding the August 6, 2010 Draft Technical Reference Manual ("TRM"). Specifically, Respondents hereby reply to the Objections and Comments filed by: a) the OCC, Citizen's Coalition, Ohio Poverty Law Center, Citizen Power, Sierra Club of Ohio, the Natural Resources Defense Council and the Ohio Environmental Council (hereinafter referred to collectively as "OCC Parties;" and b) OPower, Inc.

The OCC Parties have made two objections to the TRM. First, the OCC Parties assert that the TRM should be modified to include additional protocols that deal with programs directed at influencing behavior. As discussed below, Respondents agree that

the TRM should include protocols for verifying savings from behavioral energy efficiency programs. OPower, Inc., in its comments to the TRM, has offered one such potential protocol. However, Respondents respectfully submit that it is premature to adopt this particular protocol until and if it can be tested and evaluated and compared against other potential variations of protocols for verifying the effectiveness of programs designed to influence customer behavior. Furthermore, Respondents assert that these protocols should be developed by independent evaluation professionals with no links to the behavior program administrators or service providers.

Second, the OCC Parties offer specific objections to the portion of the TRM that deals with transmission and distribution energy efficiency measures. Respondents respond to each specific objection below.

In accordance with their Joint Comments and Objections filed on November 3, 2010, specifically incorporated herein, Respondents respectfully request that the Commission accept their objections, comments and reply comments to the TRM and modify it accordingly.

**I. RESPONDENTS AGREE THAT PROTOCOLS SHOULD BE INCLUDED IN THE TRM FOR BEHAVIORAL ENERGY EFFICIENCY PROGRAMS.**

In their objections to the TRM, both the OCC and OPower, Inc. argue that protocols should be included in the TRM for behavioral energy efficiency programs. OPower, Inc. offers a specific proposed protocol to verify savings to behavioral measures. While Respondents agree with OCC and OPower, Inc. that it is appropriate to add these types of protocols in the future, it is premature to add any such protocols to the TRM that deal with behavioral measures until those protocols can be tested and evaluated.

As an initial matter, during the August 10, 2010 TRM workshop, Vermont Energy Investment Corporation ("VEIC") indicated that while there was an intention to adopt behavioral protocols, it would be done so at a later date. Thus, Respondents, in their Joint Comments and Objections to the TRM, did not introduce new protocols for behavior.

The OCC Parties and OPower, Inc. assert that the TRM should include a single proposed methodology derived by OPower, Inc., which will be used as the protocol for measuring contractor performance in a pilot program by a single EDU in Ohio. At this time, it is premature to include a methodology that is yet untested in Ohio as the norm for the state. Rather, time should be given so that the pilot program and other behavioral type programs can develop and mature in Ohio. Then, VEIC, along with other stakeholders can review the methodologies and results prior to incorporating a single untested (in Ohio) protocol into the TRM. Indeed, these protocols should be developed by independent evaluation professionals with no links to the behavior program administrators or service providers. It is more important to develop a strong technically defensible protocol, than to prematurely develop one without a workshop and discussion of the merits.

Thus, it is inappropriate to include a behavioral methodology in the TRM at this time. The experiments are in their infancy and should be allowed to mature and be subjected to rigorous evaluations prior to inclusion in the TRM.

## **II. REPLY TO THE OCC PARTIES' COMMENTS REGARDING TRANSMISSION AND DISTRIBUTION MEASURES.**

### **A. Response to the OCC Parties' Recommendation that the TRM Provides a More Accurate Method than the "Loss Factor Method" Commonly Used in the Electric Utility.**

The OCC Parties recommend that the TRM provide a more accurate method than the "loss factor method" commonly used in the electric industry such as meter information. As discussed in the Respondents' Joint Objections and Comments to the TRM, hourly load information is not always available for a specific project.<sup>1</sup> Also, if this information is not available, the EDUs should be able to use other methods consistent with the International Performance Measurement and Verification Protocol ("IPMVP") or those supported by typical engineering practice. Thus, the Commission should reject the OCC Parties' recommendation.

### **B. Response to the OCC Parties' Recommendation 1: The Base Case for Certain Transmission and Distribution ("T&D") Projects Should be Defined.**

The OCC Parties' recommend that the base case for certain T&D projects should be better defined and offer a proposed definition. As discussed in the Respondents' Joint Comments and Objections to the TRM, under O.R.C. 4928.66, there is no authority delegated to the Commission to redefine "any" to mean only the increment above some hypothetical "market practices" standard.<sup>2</sup> Furthermore, such a definition has two seriously negative consequences. First, it would require much more expensive programs to meet the efficiency targets that become harder and harder to achieve each time some other governmental entity – federal, state or local – or "industry standard/practices" establishes any standard or policy that results in resetting the baseline from which

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<sup>1</sup> Joint Objections and Comments to the TRM at pp. 67 and 68.

compliance should be measured.<sup>3</sup> Second, it would decrease the Commission's ability to balance costs and policy objectives by ceding the power to reset the baseline to other entities. The legislature granted power to the Commission to implement these efficiency standards, not other entities who might in the future create their own efficiency standards. The OCC Parties' Recommendation is another attempt to limit what can be counted by imposing a baseline that is the EDU's standard practice. Efficiency should be counted from the "as found" condition.

The OCC Parties are asserting that the baseline for T&D projects should be based on some potential future system configuration instead of present day conditions. A baseline is supposed to be where you are starting from, not some time in the future. The OCC Parties' recommendation is unreasonable because the EDUs only know the present condition of the T&D system. As future plans for T&D improvements change routinely as customer loads and expansion plans change, utilizing future system configuration is speculative and not a fair measurement. Thus, the Commission should reject the OCC Parties' recommendation.

**C. Response to the OCC Parties Recommendation 2: The Ending of Efficiency Projects/Programs Should be Defined.**

The OCC Parties' recommend that there be a mechanism established that would identify an end-date for calculating the annual savings of certain T&D energy efficiency projects. The OCC Parties assert that annual savings due to improved efficiency should be curtailed at the end of the operational life of efficiency projects and that annual savings should be curtailed at the end of measured life of the project/program. Lastly, the OCC Parties argue that if the load growth results in the obsolescence of a T&D energy

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<sup>2</sup> *Id.* at p. 8.

efficiency project, that project's savings should not apply to energy reductions for satisfaction of the requirements under R.C. 4928.66(A)(1)(a).

As discussed in the Respondents' Joint Comments and Objections to the TRM, in O.R.C. 4928.66, there is nothing that suggests that the compliance count should be diminished if the energy efficiency occurs as part of an equipment replacement program that causes more energy efficient equipment to be installed to replace equipment at the end of its "useful life."<sup>4</sup> Measure life should be included exclusively for the purposes of calculating the TRC test associated with projects; for purposes of counting savings for S.B. 221 compliance, measure useful life should not play a role. Once savings are counted toward S.B. 221 compliance, those savings should remain in a utility's cumulative savings bank. To constantly adjust compliance savings based on measure life would be excessively cumbersome. The items installed on the T&D system at this time will set a new baseline for future loss analysis, which will include the loss savings for these projects. When it is time to replace these facilities, the loss savings for these new facilities will be the incremental loss savings above and beyond the original facilities. Therefore, it is necessary to continue to include the savings created by the initial energy efficiency programs and the incremental savings from any new programs or replacement equipment. Thus, the Commission should reject the OCC Parties' recommendation.

**D. Response to the OCC Parties' Recommendation 3: The Use of the Measure Life Should be Limited for Proper Measurement of Loss Savings.**

The OCC Parties' recommend that, in order to properly measure loss savings, an EDU should get no credit from a project that may also create benefits in terms of meeting

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<sup>3</sup> *Id.* at p. 11.

<sup>4</sup> *Id.* at p. 9.

load or reliability requirements. As an initial observation, the OCC Parties' recommendation would place the Commission and its Staff in the uncomfortable position of having to look beyond what a project actually does and explore instead the motivations and psychology of the EDU management that approved the project. For example, the Commission would be forced to determine whether the utility installed equipment in order to meet energy efficiency targets or improving system reliability. Fortunately, such an exercise is unnecessary and contrary to S.B. 221, which clearly recognizes that multiple benefits can arise from projects, which also promote energy efficiency. "Energy efficiency," is defined, without limitation, as "reducing the consumption of energy while maintaining or improving the end-use customer's existing level of functionality, or while maintaining or improving the utility system functionality." O.A.C. §4901:1-39 (L). The OCC Parties' position is contrary to S.B. 221 and should be rejected.

**E. Response to the OCC Parties' Recommendation 4: The Protocol for Capacitors Should be Simplified.**

The OCC Parties' recommend that the protocol for measuring savings from capacitors should be simplified. Respondents agree that capacitors are a very cost-effective means of reducing system losses and agree that a "deemed value" should be used for incremental annual savings for a capacitor bank.

**F. Response to the OCC Parties' Recommendation 5: Load Duration for Loss Calculations Should be Appropriate.**

The OCC Parties' recommend that the TRM should not permit an EDU to substitute system-wide or area load duration curves for site specific data in measuring its savings for T&D projects. As discussed in the Respondents' Joint Comments and Objections to the TRM, the load duration curves are not necessarily available in every



application.<sup>5</sup> In addition, some T&D projects are better measured at the system level because improvements or changes made on one site can affect loading on other sites as well. Thus, the Commission should reject the OCC Parties' recommendation.

**G. Response to the OCC Parties' Recommendation 6: Upstream Loss Factors Should be Appropriately Applied.**

The OCC Parties' recommend that the TRM should require EDUs to verify the upstream loss factors using field data rather than allowing an EDU to estimate losses based on the system load factor. The OCC Parties' assert that new metering technology is available that will allow EDUs to obtain this data. The Commission should reject this proposal because the referenced metering technology is not always available. Indeed, this capability will not be available until EDUs can implement AMI metering throughout their systems.

**H. Response to the OCC Parties' Recommendation 7: The Transmission Peak Loss Factor Should be Appropriately Applied.**

The OCC Parties' recommend that an EDU should not be permitted to use the Transmission Peak Loss Factor for transmission infrastructure owned by other parties. As discussed by the briefing by Ohio Edison Company, The Cleveland Electric Illuminating Company, The Toledo Edison Company in EL-EEC Case Nos. 09-951, 09-952, and 09-953, transmission infrastructure improvements count for energy efficiency savings regardless of whether the improvements are made on EDU or its affiliates' property.<sup>6</sup> Thus, the Commission should reject the OCC Parties' recommendation.

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<sup>5</sup> *Id.* at 67.

<sup>6</sup> See Memorandum contra the Ohio Consumers' Counsel, The Ohio Environmental Council and The Natural Resources Defense Council's motion for filed by the Cleveland Electric Illuminating Company and The Toledo Edison Company in EL-EEC Case Nos. 09-951, 09-952, and 09-953 on December 8, 2009.

**I. Response to the OCC Parties' Recommendation 8: Protocols for Conservation Voltage Reduction Should be Established.**

The OCC Parties' recommend protocols for conservation voltage reduction ("CVR"). The OCC Parties incorrectly state that "the reduction in energy is due to the fact that constant current electrical devices such as incandescent lights and space heaters consume fewer kilowatt-hours when operating at lower voltages." In fact, incandescent lights and space heaters are constant impedance loads not constant current devices.

CVR technologies have been in existence since the late 70's, and due to the real-time communications-infrastructure capital and maintenance requirements, as well as the overall controls complexity, have never been found to be cost-effective as stand-alone projects. However, pervasive communications to distribution field equipment is becoming more common-place, with the introduction of AMI and distribution automation schemes, bringing the costs per end-node down. Several of the EDUs in Ohio are participating in pilot studies. The DOE requirements include a measurements and benefits protocol that is designed to quantify the levels of benefit derived from such a system.

It is believed that the OCC Parties' reference to "Data from Washington State" is a reference to the *Distribution Efficiency Initiative*<sup>7</sup>, performed for the Northwest Energy Efficiency Alliance, with actually included 13 utilities from multiple states. Until the results from more field studies, such as the pilot studies, are complete, it is too early to consider generic "deemed value" results as achievable, like the 0.7 CVR ratio mentioned in the OCC Parties' recommendation.

The OCC Parties correctly note that, "incandescent lights ... consume fewer

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<sup>7</sup> R. W. Beck, *Distribution Efficiency Initiative*, Northwest Energy Efficiency Alliance, December 2007.

kilowatt-hours when operating at lower voltages.” However, OCC Parties fail to disclose that light output goes down even faster when voltage drops. The well-recognized formula for light output is:

$$LI_a/LI_d = (V_a/V_d)^{3.4}$$

Where:

$LI_a$  = Luminous Intensity at the applied voltage

$LI_d$  = Luminous Intensity at the applied voltage

$V_a$  = Applied Voltage

$V_d$  = Design Voltage

While light output varies as a function of voltage exponentially by approximately 3.4, power consumption varies exponentially by approximately 1.6. That difference means that a 5% reduction in voltage will decrease power consumption by about 8%, but will decrease light output by 16%. The likely response of many consumers to a reduced light output of that magnitude will be to install a higher wattage bulb, which would greatly diminish or eliminate any savings.

The OCC Parties also claim that “by reducing the voltage ... less energy is consumed. The reduction in energy is due to the fact that constant current electrical devices such as ... space heaters consume fewer kilowatt-hours when operating at lower voltages.” But, the goal of the space heater is to heat a specific space or product, the same energy will need to be delivered, and since the delivery is a slower pace, the heater may need to operate longer to achieve the same heating requirement.

Customer perceptions of power quality may also be reduced as system voltage levels are reduced. Many industrial and consumer products are sensitive to voltage dips

or sags, with processes dropping off line, or devices being re-set. These sags may be caused by suddenly-changing loads (other customers on the system starting a large motor), or temporary faults (i.e. animal contact with a line). As most of the sag-susceptible devices are voltage level sensitive, a device that might be sensitive to a nominal (nominal being 120 volts) 20% sag, would be sensitive to a 17.5% sag when the operating voltage is reduced by 3%. Thus, the Commission should reject the OCC Parties' recommendation.

**J. Response to OCC Parties' Recommendation 9:  
"Loss-Driven Retrofit" Should be Defined/Explained.**

The OCC Parties' recommend that "loss-driven retrofit" should be defined or explained to include the reason why an EDU engaged in a project. As discussed in the Respondents' Joint Comments and Objections to the TRM, the intentions of the companies in completing a project are not relevant for counting purposes any more than they are for mercantile customers or any other consumer.<sup>8</sup> Thus, the Commission should reject the OCC Parties' recommendation.

**K. Response to the OCC Parties' Recommendation 10:  
The Use of a Load Duration Curves in All T&D  
Protocols Should be Specified.**

The OCC Parties' recommend that the use of a load duration curve in all T&D protocols should be specified. As discussed in the Respondents' Joint Comments and Objections to the TRM, duration curves are not always available at the level that is suggested.<sup>9</sup> In addition, for some projects it is more appropriate to measure load at the system level due to interactive effects. Moreover, due to the dynamic nature of the power system, use of historical load data does not necessarily provide accurate projections of

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<sup>8</sup> Joint Objections and Comments to the TRM at p. 68.

future flows.<sup>10</sup> It is questionable whether adding this degree of analysis will add to the accuracy of the analysis. Thus, the Commission should reject the OCC Parties' recommendation.

**L. Response to the OCC Parties' Recommendation 11:  
Modeling Requirements Should be Adjusted.**

The OCC Parties' recommend that the modeling requirements for T&D projects should be adjusted and argue that the "K" factor should be eliminated. The OCC Parties' recommendation is flawed in that it assumes one would be doing a 8760 hour evaluation, which is not being practical. The use of good circuit modeling software would account for the effect this factor is trying to account for. Thus, the Commission should reject the OCC Parties' recommendation.

**III. CONCLUSION**

For all of the foregoing reasons, Respondents respectfully request that the Commission modify and amend the TRM in accordance with the objections and comments discussed in their previous filing and the replies herein.

Respectfully submitted,

/s/ Carrie M. Dunn

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<sup>9</sup> *Id.* at 67.

<sup>10</sup> *Id.* at 28.

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**CERTIFICATE OF SERVICE**

I hereby certify that a copy of the foregoing was served upon the following parties of record this 15th day of November 2010, via electronic transmission or first class U.S. mail, postage prepaid.

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