

**FILE**

**BEFORE  
THE PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Energy Efficiency	)	
and Peak Demand Reduction Program	)	
Portfolio of Ohio Edison Company,	)	Case No. 10-3023-EL-EEC
The Cleveland Electric Illuminating	)	10-3024-EL-EEC
Company, and The Toledo Edison	)	10-3025-EL-EEC
Company.	)	

**PUBLIC VERSION**

**MOTION FOR HEARING  
BY  
THE OFFICE OF THE OHIO CONSUMERS' COUNSEL,  
THE NATURAL RESOURCES DEFENSE COUNCIL,  
AND CITIZENS POWER**

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**June 2, 2011**

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The Office of the Ohio Consumers' Counsel ("OCC"), the Natural Resources Defense Council ("NRDC"), and Citizens Power (collectively with OCC and NRDC, the "Movants") move for a hearing in the above-captioned cases. In their Application, the Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company (collectively, "FirstEnergy EDUs" or "Companies") propose a method of implementing the energy efficiency provisions of Substitute Senate Bill 221 ("S.B. 221") that is inconsistent with Ohio law. As the result, a hearing should be held to investigate the facts regarding any qualifying energy savings under S.B. 221.

The Application also suffers various technical infirmities regarding the proposed measurement of energy efficiency related to the Companies' projects that should be closely examined by the Public Utilities Commission of Ohio ("Commission" or "PUCO").

Therefore, the matters raised in the Companies' Application should be set for hearing.

The reasons for granting the above-stated motion are further set forth in the attached Memorandum in Support.

Respectfully submitted,

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**MEMORANDUM IN SUPPORT**

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**I. INTRODUCTION**

These cases involve the review of the lawfulness and the reasonableness of the Companies' proposal to satisfy certain energy efficiency requirements that resulted from enactment of S.B. 221 and that were intended to give the public the benefit of improved efficiency in the delivery and use of electricity in Ohio. These requirements in S.B. 221, being relatively new to Ohio and to the Commission regarding approval of utility compliance under the law, should be carefully considered since the case law is a matter of early impression. These cases involve both legal and practical controversies.

From a legal perspective, the FirstEnergy EDU's proposal to satisfy a portion of their energy efficiency requirements by counting transmission and distribution ("T&D") upgrades taken by another company does not satisfy Ohio law. Also, the improvements addressed by the Companies are not, as a practical matter, properly analyzed for purposes of measuring their contributions to energy savings in Ohio. The Commission should scrutinize the Application and, in the end, reject the FirstEnergy EDU's approach to satisfying the requirements set out in S.B. 221.

## II. ARGUMENT

### A. The Companies' Proposal Appears to Violate Ohio Law.

The Companies' Application cites to the requirements stated in R.C. 4928.66(A)(1)(a),<sup>1</sup> but ignores the statutory requirements that are fundamental to the Companies' proposal to satisfy the statutory requirements that are intended to give Ohio customers the benefits of energy efficiency. R.C. 4928.66(A)(1)(a) states:

Beginning in 2009, an *electric distribution utility* shall implement energy efficiency programs that achieve energy savings equivalent to at least three-tenths of one percent of the total, annual average, and normalized kilowatt-hour sales of the electric distribution utility during the preceding three calendar years to customers in this state.<sup>2</sup>

A key element to these requirements is that the required compliance actions are taken by an "electric distribution utility." The FirstEnergy EDUs ignore this key element of the statute in their Application.

The Application states in a variety of places that the FirstEnergy EDUs propose to satisfy energy efficiency requirements by means of transmission projects, and those transmission projects are not identified as projects undertaken by the FirstEnergy EDUs. R.C. 4928.66(A)(1)(a) requires the implementation of energy efficiency programs by the "electric distribution utility." The distribution utility may use the demand-response programs from mercantile customers served by the distribution utility. However, no provision in Ohio law permits an electric distribution utility to count the activities of other companies that provide services in the electric services industry -- whether affiliated with the electric distribution utility or otherwise.

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<sup>1</sup> Application at 1, ¶ 1.2.

<sup>2</sup> Emphasis added.

The Application does not clearly state the entity that has undertaken the projects mentioned, which is particularly troublesome in light of Movants' previous objections to counting the projects engaged in by affiliated companies in Case Nos. 09-934-EL-EEC, et al.<sup>3</sup> and in Case Nos. 09-951-EL-EEC, et al.<sup>4</sup> The projects listed in Exhibit C are designated as "FE-Ohio Transmission Level Projects." Since the projects are transmission in nature, they may have been performed on facilities owned by the Companies' affiliated transmission provider. The designation as "FE-Ohio" projects (i.e. in Exhibit C) suggests ownership by an entity other than the FirstEnergy EDUs since the body of the Application collectively refers to these utilities as the "Companies"<sup>5</sup> (i.e. not as "FE-Ohio"). The response to OCC Interrogatory 2, sub-parts a. and c. (attached), are not entirely clear regarding ownership of the "New 138 kV delivery point to Cleveland Public Power,"<sup>6</sup> but the response supports the conclusion that the referenced facility is not entirely owned by any of the FirstEnergy EDUs.

In all filings by the FirstEnergy EDUs regarding compliance with R.C. 4928.66, the FirstEnergy EDUs should be required to identify which projects were conducted on facilities owned by the Companies so that the Commission can determine which projects could count towards the Companies' requirements. The Application in the above-captioned cases fails to provide this information. The Commission must obtain additional information under such circumstances, and a hearing should be held to

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<sup>3</sup> *In re FirstEnergy's First T&D Program Proposal*, Case Nos. 09-384-EL-EEC, et al., Motion to Dismiss or, In the Alternative, Motion for Hearing at 4-5 (June 24, 2009), jointly submitted by OCC, the Ohio Environmental Council, and the NRDC.

<sup>4</sup> *In re FirstEnergy's Second T&D Program Proposal*, Case Nos. 09-951-EL-EEC, et al., Joint Motion to Dismiss at 2-3 (May 28, 2010).

<sup>5</sup> The Application uses the term "Companies" to refer to the FirstEnergy EDUs. Application at 1.

<sup>6</sup> Application, Exhibit C.



investigate the facts regarding any qualifying energy savings under S.B. 221 that were achieved for the benefit of customers.

**B. The Companies' Proposal Suffers Technical Deficiencies.**

**1. Introduction**

The means by which the Companies calculate savings is problematic, and approval of the Application would set poor precedent for determining energy savings for T&D projects. The FirstEnergy EDUs rely upon the same methods that they stated in their earlier application in Case Nos. 09-951-EL-EEC, et al., regarding T&D projects. That pending case includes extensive criticism of the Companies' measurement methods,<sup>7</sup> including failure to match accepted methods for evaluating T&D projects that are stated in the Ohio Technical Reference Manual ("TRM").<sup>8</sup>

**2. The measurement of programs to satisfy the requirements under R.C. Chapter 4928 should be consistent with Technical Reference Manual Protocols that reflect standard measurement practices.**

**a. The Companies' "do-nothing" approach to the determination of baselines is inconsistent with the approach in the TRM.**

The Companies' proposed T&D projects in the instant proceeding do not result in energy savings if an appropriate definition for a "baseline" is used for energy efficiency projects as provided for in the TRM. A central objective of R.C. 4928.66 is to encourage

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<sup>7</sup> See, e.g., *In re FirstEnergy's Second T&D Program Proposal*, Case Nos. 09-951-EL-EEC, et al., Second Motion for Hearing at 3-13 (January 31, 2011).

<sup>8</sup> The TRM has been the subject of extensive effort and comment in a separate proceeding before the Commission. *In the Matter of Protocols for the Measurement and Verification of Energy Efficiency and Peak Demand Reduction Measures*, Case No. 09-512-GE-UNC ("*TRM Case*"). The TRM contains important measurement protocols that are important to the instant proceeding. TRM, Chapter V ("*Protocols for Transmission & Distribution Projects*").

energy savings for the benefit of Ohioans. Energy efficiency is “a key resource in meeting the future energy needs,”<sup>9</sup> but no energy is “saved” by actions that merely preserve the *status quo* of normal operations. The Commission should quantify such savings in a manner that is consistent with its approach in the closely related *TRM Case* and with the manner in which savings are calculated in the energy efficiency programs implemented by other utilities.<sup>10</sup>

The definition of energy savings for T&D projects is critical for the outcome of the instant proceeding. All T&D system upgrade projects reduce line losses when compared to a “do-nothing” option. However, a majority of T&D projects are required in the course of business to meet other regulatory requirements such as North American Electric Reliability Corporation (“NERC”) compliance or meeting voltage level standards. Therefore, a “do-nothing” approach to T&D development is not a viable option. Doing nothing would result in overloaded systems, poor reliability, and low voltage service to customers. Further, doing nothing inherently results in higher losses due to projected system overloads.

The key, as highlighted in the various protocols developed in the *TRM Case*, is to determine the appropriate starting point for measuring energy savings. The starting point, or baseline, for T&D projects should be the standard practice of the utility to meet regulatory compliance such as NERC compliance or voltage levels. The baseline for purposes of

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<sup>9</sup> Understanding Cost-Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-Makers, a Resource of the National Action Plan for Energy Efficiency at 1-1 (November 2008), available at: <http://www.epa.gov/cleanenergy/documents/suca/cost-effectiveness.pdf> (“National Action Plan”).

<sup>10</sup> Model Energy Efficiency Program Impact Evaluation Guide, a Resource of the National Action Plan for Energy Efficiency at ES-3 (November 2008), available at: [http://www.epa.gov/cleanenergy/documents/suca/evaluation\\_guide.pdf](http://www.epa.gov/cleanenergy/documents/suca/evaluation_guide.pdf): “It is important to note that energy and demand savings, and avoided emissions, cannot be directly measured. Instead, savings are determined by comparing energy use and demand after a program is implemented (the reporting period) with what would have occurred had the program not been implemented (the baseline).”

satisfying the requirements in R.C. Chapter 4928 should be the standard practice of the utility to meet regulatory compliance for system operation absent the energy efficiency benchmarks required by R.C. 4928.66.<sup>11</sup> The approach that is stated in the TRM supports the comparison of energy losses between the higher efficiency and the base cases. The latter is defined in the TRM as “base-efficiency equipment that would be installed under current standard utility practice.”<sup>12</sup>

The Companies’ proposed T&D projects in the instant proceeding should be carefully evaluated by the Commission in this proceeding using the definition of “baseline” stated in the TRM. The Companies’ use of the “do nothing” approach for their baselines is inconsistent with the TRM that reflects standard evaluation practices, and therefore should not be used for measuring progress towards meeting the requirements set out in R.C. 4928.66.

**b. Baselines should be used that are consistent with the TRM, consistent with standard evaluation practices.**

Energy savings occur when the utility can leverage opportunities to install more energy efficient system components than it would under normal practice. For example, if the utility normally installs a certain conductor size, it could install a lower resistance conductor to save energy beyond the standard installation. Projects that go beyond the standard practice should be deemed energy efficiency projects.

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<sup>11</sup> National Action Plan.

<sup>12</sup> *TRM Case*, TRM at 340-341. See also, Replies from Vermont Energy Investment Corporation to Joint Objections and Comments to the August 6, 2010 Draft Technical Reference Manual, Clarification 270 at 67 (November 15, 2010) (“If the EDU has a ‘unique’ T&D infrastructure project that produces energy savings compared to standard practice, it should propose a protocol for estimating incremental savings.”) (emphasis added).

Portions of the T&D system are upgraded to meet minimum voltage delivery requirements<sup>13</sup> as load grows. The upgrade could involve installing large capacity conductors or cables, constructing new substations, or both types of projects. These projects require the installation of system components that have a lower resistance when compared to the existing system components. Further, by installing additional substations, the power (current) that passes through the system components is reduced, thus reducing losses and improving the delivery voltage. These components are required for delivery of energy to customers. The utilities must install these upgrades to meet voltage delivery requirements. Thus, the installed upgrades become the baseline for measuring energy efficiency.

A useful analogy to the T&D situation can be formulated using a consumer electronics example. An older air conditioner may be replaced at the end of its useful life with a new unit. The baseline for such a consumer electronics replacement is not the energy consumption of the older unit, but rather a unit that meets the minimum Federal Standard efficiency.<sup>14</sup> This baseline recognizes that the replacement unit is not the only unit that is available to meet these guidelines, and that the piece of failed equipment would be replaced absent any effort to increase efficiency. Energy savings should be credited only for equipment that exceeds the minimum Federal standard for efficiency.<sup>15</sup> The Companies' "do-nothing" approach to baseline measurement is analogous to considering the energy consumption of the older air conditioner as the baseline, which is inconsistent with the Ohio TRM and standard practice for measuring the energy savings of energy efficiency programs.

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<sup>13</sup> ANSI C84.1 ANSI for Electric Power Systems and Equipment – Voltages (60 Hertz).

<sup>14</sup> *TRM Case*, TRM at 30.

<sup>15</sup> *Id.*

**c. The Companies should not be permitted to use a proxy system-wide loss factor to determine annual losses for projects.**

The “loss factor” approach used by the Companies to estimate energy savings is very simplified, not transparent for verification of the purported energy savings, and inconsistent with the approach taken by the Commission’s consultant in the development of the TRM.<sup>16</sup> The loss factor can be calculated on a project basis, on an area basis, or for the entire system. The further removed the loss factor value is from the project level, the greater the uncertainty of the results. The Companies used two different “loss factors”; one for the transmission system and one for the distribution system.

The transmission loss factor calculated by the FirstEnergy EDUs was based on a single year that remains undisclosed.<sup>17</sup> The Companies assert that the loss factor is equal to the load factor when using an hourly method to normalize the demands.<sup>18</sup> Thus, the loss factor and therefore the purported energy savings will be directly proportional to the system load factor. The load factor for a transmission system varies from year to year. The Companies concur, stating that “system losses can vary year to year ... based on changes in load patterns, generation dispatch, and system transfers . . . .”<sup>19</sup> However, the transmission loss factor has remained constant in the Companies’ filings for 2009 and 2010.<sup>20</sup> Yet, based

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<sup>16</sup> *TRM Case*, VEIC Replies at 67 (November 15, 2010) (“All engineering references require that the loss computations be based on the actual load on the equipment in question, not on load in some other part of the system.”). See also, Fink DG and Bealy HW, *Standard Handbook for Electrical Engineers*, 13<sup>th</sup> Edition, 1993, at 18-107 to 18-109.

<sup>17</sup> FirstEnergy EDUs’ Responses to the OCC’s First Set of Discovery, DR-12 (March 22, 2011) (attached).

<sup>18</sup> *Id.*, DR-5 (March 22, 2011) (attached).

<sup>19</sup> *Id.*, DR-20 (March 22, 2011) (attached).

<sup>20</sup> *In re FirstEnergy 2009 T&D Case*, Case No. 09-951-EL-EEC, et al., Application (October 14, 2009).

on the Companies' FERC Form 714, their load factor varied from 66 percent to 62 percent over a three-year period.<sup>21</sup>

The Companies used a weighted average of the loss factors of 98 feeders to create a system-wide loss factor.<sup>22</sup> Data provided by the Companies show [REDACTED]<sup>23</sup>

[REDACTED] The Companies do not explain how these circuits were selected or if they are representative of the system as a whole.

[REDACTED]

[REDACTED]

[REDACTED]<sup>24</sup> The Companies state they used the following formula for the 98 circuits:<sup>25</sup>

$$\text{Loss Factor} = (0.15 * \text{Load Factor}) + (0.85 * (\text{Load Factor})^2)$$

[REDACTED]

[REDACTED]<sup>26</sup> [REDACTED]

[REDACTED]<sup>27</sup> [REDACTED]

[REDACTED] This wide range of values and the lack of reproducible results for the loss factor shows that the Companies' system-wide loss factor approach introduces great uncertainty into the calculation of losses and therefore into the calculations for energy efficiency improvements that use loss factors.

<sup>21</sup> FERC Form 714 for FirstEnergy 2006, 2007, and 2008.

<sup>22</sup> Application, Exhibit B at 2.

<sup>23</sup> FirstEnergy EDUs' Responses to the OCC's First Set of Discovery, RPD -7 ("FE-West Feeders Loads for One Year.xls") (March 22, 2011). A hard copy printout of the spreadsheet would comprise nearly 4,000 pages, and is not attached. The spreadsheet should be available to the PUCO Staff upon their request of the Companies.

<sup>24</sup> Id., RPD-10, Bates Stamp FE0042 (March 22, 2011) (attached).

<sup>25</sup> Application, Exhibit B.

<sup>26</sup> FirstEnergy EDUs' Response to OCC's First Set of Discovery, RPD-8, Bates Stamp FE0036 (March 22, 2011) (attached).

<sup>27</sup> Id., RPD-7 (March 22, 2011). See footnote 23 regarding the availability of the data.

An annualized load duration curve can be effectively used to determine losses for projects, as stated in the TRM.<sup>28</sup> The TRM goes further to state the load duration curve should be applied at or near a new piece of equipment or project.<sup>29</sup> Modern utility systems maintain hourly demand data at the feeder or substation level. This data, which represents the energy usage patterns near a potential project, provides a transparent method for determining energy savings. The work required of a utility's engineering staff increases by using site specific data, but this approach allows for future verification of the energy savings that should result for the benefit of customers. Departures from best practices, as described in the TRM, should not be permitted.

**3. Measurements consistent with the approach taken in the TRM should be applied to projects at various levels in the electricity delivery system.**

**a. The utility should measure transmission projects consistently.**

Not performing transmission upgrades was not an option for the projects listed in the Companies' Application, the so-called "do-nothing" option. The Companies list two transmission projects:<sup>30</sup>

1. Lakeview 34.5 kV Cap Bank, and
2. New 138 kV delivery point to Cleveland Public Power.

The Companies stated that "all of the transmission projects submitted in the filing were installed to meet the planning criteria of the Companies and NERC, which details thermal

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<sup>28</sup> This is the same method proposed for T&D projects in Chapter V of the TRM, "Protocols for Transmission & Distribution Projects."

<sup>29</sup> Chapter V of the TRM, "Protocols for Transmission Projects," describes the use of load duration curves for each new equipment type and at each line section.

<sup>30</sup> Application, Exhibit C. The Lakeview 34.5kV Capacitor Bank was deleted in a previous filing. *In re FirstEnergy's Second T&D Program Proposal*, Case Nos. 09-951-EL-EEC, et al., FirstEnergy EDUs' Notice of Corrected Exhibits (April 7, 2010).

and voltage limits that must be met at forecasted peak load under normal and contingency conditions.”<sup>31</sup> Thus, each of these projects is required to meet a specific criterion or criteria.

[REDACTED]

[REDACTED]<sup>32</sup> [REDACTED]

[REDACTED]<sup>33</sup> Based on the control scheme employed by the Companies, these switched capacitors are not energized at all times.<sup>34</sup> Therefore applying a system-wide loss factor based on operation 24 hours a day, 7 days week, does not properly capture any energy savings.

[REDACTED]

[REDACTED]<sup>35</sup> There was no alternative presented, so a “do nothing” option did not exist.

The Companies’ Application states that the method to calculate system losses was to model the system both with “pre-project and post-project” in an otherwise identical system model.<sup>36</sup> The method described in the Application -- using a loss factor to convert to an annualized megawatt-hour estimate of energy savings<sup>37</sup> -- results in claimed reductions in energy losses at the system peak. The projects are required regardless of any energy savings, and this methodology is therefore inappropriate for determining energy savings.

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<sup>31</sup> FirstEnergy EDUs’ Responses to the OCC’s First Set of Discovery Requests, DR-7 (March 22, 2011) (attached).

<sup>32</sup> FirstEnergy EDUs’ Responses to the OCC’s First Set of Discovery Requests, Bates Stamp FE0001 (March 22, 2011) (attached).

<sup>33</sup> Id.

<sup>34</sup> Id., DR-6 (March 22, 2011) (attached).

<sup>35</sup> Id., Bates Stamp FE0004 (March 22, 2011) (attached).

<sup>36</sup> Application, Exhibit B at 1.

<sup>37</sup> Id.



The FirstEnergy EDUs rely upon baseline calculations that assume the absence of the projects, which is a faulty assumption (i.e. that the projects are not required). The baseline should be the standard practice of the installing company to meet regulatory compliance for system operation absent the energy efficiency benchmarks required by R.C. 4928.66.<sup>38</sup>

The appropriate “before” scenario (i.e. the baseline that requires the proposed project) and the “after” scenario for the transmission projects listed in the Application are exactly the same. No energy savings should be credited to the FirstEnergy EDUs for purposes of satisfying R.C. 4928.66.

**b. Projects must be placed into service in 2010 to be used in counting reductions to meet statutory requirements for 2010.**

Based the Companies response to the OCC’s First Set of Data Requests, the new 138kV delivery point to Cleveland Public Power was not in service in 2010.<sup>39</sup> The new delivery point was not even energized at the time the FirstEnergy EDUs responded to the OCC’s discovery in 2011. Therefore, this project should not be used in any calculations for compliance with the requirements for 2010.

**c. Consistent measures should be undertaken regarding distribution system projects.**

Not performing distribution upgrades was also not an option for many of the projects listed in the Companies’ Application. In Exhibit D, the Companies’ Application described five distinct projects:

1. Reconductoring line along North Street,

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<sup>38</sup> National Action Plan at 1-1.

<sup>39</sup> FirstEnergy EDUs’ Responses to the OCC’s First Set of Discovery Requests, DR-2 (March 22, 2011) (attached).

2. Jefferson Sub – R/P Transformer #2,
3. Weston Sub – Replace #2 Transformer,
4. St. Charles Hospital – New Substation,
5. Clifford Line Reconductor (Bagley Rd.).

The “Reconductoring line along North Street” and the “St. Charles Hospital – New Substation” [REDACTED]. The

“Reconductoring line along North Street” project [REDACTED].

The “St. Charles Hospital – New Substation” [REDACTED]

[REDACTED]<sup>40</sup> [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]<sup>41</sup>

[REDACTED]

[REDACTED]

[REDACTED]<sup>42</sup> [REDACTED]

[REDACTED]

[REDACTED]<sup>43</sup> Thus, these five projects were required to meet regulatory standards or in direct

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<sup>40</sup> FirstEnergy EDUs’ Responses to the OCC’s First Set of Discovery Requests, DR-13 (Bates FE0006 and FE0018) (March 22, 2011) (attached).

<sup>41</sup> Id. at Bates Stamp FE0024 (March 22, 2011) (attached).

<sup>42</sup> Id. at Bates Stamp FE0008 and FE0014 (March 22, 2011) (attached).

<sup>43</sup> Id. at Bates Stamp FE0008 and FE0014 (March 22, 2011) (attached).

response to required changes initiated by customers or governmental authorities. The baseline for these projects should be the standard practice of the utility, absent the energy efficiency benchmarks required by R.C. 4928.66.<sup>44</sup>

[REDACTED]

[REDACTED]

[REDACTED]<sup>45</sup> To achieve energy efficiency, the Company could have purchased a new, energy efficient transformer. In keeping with the requirements of the TRM, the baseline for this project should be the *status quo* [REDACTED]. The Companies did not know the actual impedance of the transformer at Jefferson Substation, which suggests that the project may not have been complete in 2010.<sup>46</sup>

The Companies do not rely on life-cycle loss costing as their primary means of selecting a new transformer. Instead the Companies generally rely on first cost.<sup>47</sup> Life-cycle loss costing is a method used by many electric utilities that permits the utility to consider long-term benefits of an energy efficient transformer. This technique of life-cycle loss costing is analogous to including fuel costs when comparing an expensive hybrid vehicle with a high miles-per-gallon rating to a low cost vehicle with a low miles-per-gallon rating (or including the cost of electricity when comparing the life cycle cost of a high efficiency air conditioner to a standard efficiency air-conditioner). So while the Companies installed a transformer at the Weston Substation that was more energy efficient than the

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<sup>44</sup> National Action Plan at 1-1.

<sup>45</sup> FirstEnergy EDUs' Responses to the OCC's First Set of Discovery Requests, DR-13, Bates Stamp FE0008 (March 22, 2011) (attached).

<sup>46</sup> FirstEnergy EDUs' Responses to the OCC's First Set of Discovery Requests, DR-14 (March 22, 2011) (attached).

<sup>47</sup> FirstEnergy EDUs' Responses to the OCC's First Set of Discovery Requests, DR-9 (March 22, 2011) (attached).

original unit, it should not qualify as an energy efficiency project because a standard impedance unit transformer was used rather than a low loss unit.<sup>48</sup>

Each of the distribution projects were required to meet the Companies' planning criteria and load growth. It was not possible for the Companies to "do-nothing." Therefore the baseline for energy savings projects should be the standard practice of the Company to meet regulatory compliance for system operation absent the energy efficiency benchmarks. In each case, the baseline should be the projects installed by the Companies. The Companies should not be credited with energy savings from the projects.

**d. Consistent measures should be undertaken regarding mass replacement projects**

The Transformer Replacement Project that is partly shown on Exhibit D to the Application concerns the planned replacement of approximately 100 overloaded distribution transformers. The TRM has a protocol for determining "the loss reductions due to installation of mass utility plant with *lower losses than standard equipment . . .*"<sup>49</sup> The Companies do not assert that the transformers installed have lower losses than standard equipment. Therefore the Commission should not permit the Companies to use these replacements to meet the energy savings requirements of S.B. 221.

The Companies stated that "[s]tandard engineering equations were used to evaluate estimated losses for each of the three replacement options."<sup>50</sup> There is no transparency for verification of the purported energy savings. The TRM provides specific equations for the

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<sup>48</sup> FirstEnergy EDUs' Responses to the OCC's First Set of Discovery Requests, DR-15 (March 22, 2011) (attached).

<sup>49</sup> TRM at 340 (emphasis added).

<sup>50</sup> FirstEnergy EDUs' Responses to the OCC's First Set of Discovery Requests, DR-17 (March 22, 2011) (attached).

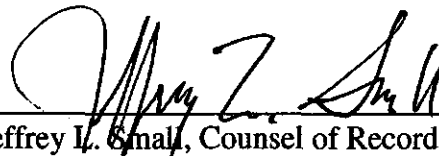
purpose of determining the energy savings,<sup>51</sup> and these should be used by the Commission in the evaluation of the Companies' Application.

### **III. CONCLUSION**

The problems with the Application analyzed in the instant pleading strongly argue that the PUCO should obtain additional information from the Companies. And the Commission should permit further participation by Movants and any other interested parties regarding the legality and appropriateness of the Companies' proposals for the Ohio customers who are the intended beneficiaries of the energy efficiency statutes in question. Movants ask that the PUCO set this matter for hearing.

Respectfully submitted,

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<sup>51</sup> TRM at 340.

*H. Eckhart*

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**CERTIFICATE OF SERVICE**

I hereby certify that a copy of this Motion for Hearing, Public Version, was served on the persons stated below via electronic transmission this 2<sup>nd</sup> day of June 2011.



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# ATTACHMENTS



Case No. 10-3023-EL-EEC, 10-3024-EL-EEC, 10-3025-EL-EEC

In the Matter of the Energy Efficiency and Peak Demand Reduction Program Portfolio of  
Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo  
Edison Company.

**RESPONSES TO DATA REQUESTS**

**OCC Set 1** Regarding the "New 138 kV delivery point to Cleveland Public Power," identified in Exhibit  
**DR-2**

C of the Application:

- a. What corporate entity directly owns this facility?
- b. On what date did construction begin on the project?
- c. On what date was construction completed on the project?
- d. On what date was the project placed into service?

**Response:**

- a. Objection. This Request seeks information that is neither relevant nor reasonably calculated to lead to the discovery of admissible evidence. Without waiving this objection, American Transmission Systems, Inc. ("ATSI") and Cleveland Public Power ("CPP") own the New 138 kV delivery point to CPP.
- b. March 2010
- c. ATSI completed September 2010
- d. Initially the project was expected to be in service on 11/1/10. New project in service date indicates completion by the end of March.

Case No. 10-3023-EL-EEC, 10-3024-EL-EEC, 10-3025-EL-EEC

In the Matter of the Energy Efficiency and Peak Demand Reduction Program Portfolio of  
Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo  
Edison Company.

RESPONSES TO DATA REQUESTS

**OCC Set 1** Why does the equation used by the FirstEnergy's EDUs for calculating distribution losses  
**DR-5** yield a higher loss value than the equations recommended in "*The  
Equivalent Hours Loss Factor Revisited*," referenced on page 2 of Exhibit  
B to the Company's Application for T&D Projects?

**Response:** Objection. This Request is vague, ambiguous not relevant and seeks information that is not reasonably calculated to lead to the discovery of admissible evidence Without waiving these objections, the Companies state that the equation used by the Companies yielded a higher loss value because it applied a subset of 98 distribution circuits, all from Ohio, where sufficient interval kW and kVAR metering data was collected and available for a full calendar year. Further, the computation of the "system" loss factor utilized equations in which the coefficients were slightly different than the coefficients used in the referenced document titled "The Equivalent Hours Loss Factor Revisited." Rather than use the coefficients in that document, the Companies used coefficients that were calculated based on the actual data from their own system.

Case No. 10-3023-EL-EEC, 10-3024-EL-EEC, 10-3025-EL-EEC

In the Matter of the Energy Efficiency and Peak Demand Reduction Program Portfolio of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company.

RESPONSES TO DATA REQUESTS

OCC Set 1 Referring to Exhibit C in the Company's Application for T&D Projects regarding capacitor  
DR-6 banks:

- a. is the capacitor bank fixed or switched bank (i.e. are there controls in place to manually or automatically switch the capacitors on/off to control VAR flows over the course a year)?
- b. If switched banks, what is the control logic for the Lakeview 34 kV Capacitor Bank (i.e. describe the logic)?
- c. How is the switching logic incorporated into the line loss calculations?

**Response:** Objection. This Request is vague, ambiguous, not relevant, and seeks information that is not reasonably calculated to lead to the discovery of admissible evidence. Without waiving these objections, the Companies state: a-c. The Lakeview 34 kV Capacitor Bank is a switched/voltage control bank equipped with automatic controls that operate based on the transmission voltage at each substation. This bank switches on automatically when voltage falls to a predetermined "on" voltage setting and switch off when voltage rises to the "off" voltage setting. The capacitor controls described above are designed so that the capacitors will be on during peak periods (when losses are generally higher) and off during light load periods (when losses are generally lower). However, during these lighter load periods, the capacitors may be utilized to support the system during scheduled maintenance outages of generation and transmission equipment. Therefore, based on this controlled utilization of the capacitor banks during varying load and scheduled outage periods, the previously described system-wide loss factor is utilized to determine loss savings associated with capacitor projects.

Case No. 10-3023-EL-EEC, 10-3024-EL-EEC, 10-3025-EL-EEC

In the Matter of the Energy Efficiency and Peak Demand Reduction Program Portfolio of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company.

**RESPONSES TO DATA REQUESTS**

OCC Set 1  
DR-7

Referring to the projects discussed in the Exhibits C and D of the Company's Application for T&D Projects:

- a. Which projects were installed to enhance transmission or distribution reliability due to load growth in specific services areas served by the Company?
- b. Of the projects that were installed to enhance reliability due to load growth, which projects would be delayed or canceled if there is less load growth (i.e. Identify the projects)?
- c. Of the projects that were installed to enhance reliability due to load growth, which projects would be delayed or canceled if there is less energy savings (i.e. Identify the projects)?
- d. If the value of system losses were set at \$0 per kWh, what would be the results of evaluating the projects according to the Total Resource Cost test?

**Response:** Objection. This Request is vague, ambiguous, not relevant and seeks information that is not reasonably calculated to lead to the discovery of admissible evidence. Requests b through d pose hypothetical questions and assume facts not in the record. Without waiving these objections, the Companies state:

**Distribution:**

- a. Solutions are chosen based on a variety of considerations including system reliability, system improvement and cost. These factors are balanced to optimize the solution under the system conditions which includes improved energy efficiency.
- b. The projects listed on Exhibits C and D of the Companies' Application have already been completed. The Companies will not speculate on which projects would have been delayed or canceled if there were less load growth.
- c. The projects listed on Exhibits C and D of the Companies' Application have already been completed. The Companies will not speculate on which projects would have been delayed or canceled if there were less energy savings.
- d. The loss savings is not valued at \$0 per kWh. The Companies will not speculate on what the evaluation of the projects in accordance with the Total Resource Cost would have been if the value of system losses were set at \$0/kWh.

**Transmission:**

- a. All of the transmission projects submitted in the filing were installed to meet the planning criteria of the Companies and NERC, which details thermal and voltage limits that must be met at forecasted peak load under normal and contingency conditions. The installation of these transmission projects resulted in energy savings. Some of the factors that can impact the need for a project include system load growth, generation dispatch and anticipated system-wide transfers
- b. The projects listed on Exhibits C and D of the Companies' Application have already been completed. The Companies will not speculate on which projects would have been delayed or canceled if there were less load growth.
- c. The projects listed on Exhibits C and D of the Companies' Application have already been completed. The Companies will not speculate on which projects would have been delayed or canceled if there were less energy savings.
- d. The loss savings is not valued at \$0 per kWh. The Companies will not speculate on what the evaluation of the projects in accordance with the Total Resource Cost would have been if the value of system losses were set at \$0/kWh.

Case No. 10-3023-EL-EEC, 10-3024-EL-EEC, 10-3025-EL-EEC

In the Matter of the Energy Efficiency and Peak Demand Reduction Program Portfolio of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company.

RESPONSES TO DATA REQUESTS

**OCC Set 1** Regarding the evaluation of life-cycle loss of transformers:  
**DR-9**

- a. What is the methodology and criteria used in the procurement of substation power transformers to evaluate the life-cycle loss?
- b. What are the load factor, loss factor, and line losses (valued in present dollars) used in the analysis?
- c. How does the life-cycle loss evaluation methodology or criteria used in the purchase of substation power transformers differ from the methodology described in Exhibit B of the Application for T&D Projects?

**Response:** Objection. This Request is vague, ambiguous, unduly burdensome, not relevant and seeks information that is not reasonably calculated to lead to the discovery of admissible evidence. Without waiving these objections, the Companies state:

a. The Companies generally purchase substation power transformers based first on cost. However, if quotes are similar from several vendors, life cycle loss cost may be used in making the final determination of which transformer to purchase. Total life cycle loss costs are determined by multiplying the loss factors (see response below) against the loss values provided by the vendor.

b. The life time loss costs used in transformer evaluation are:  
No Load Losses = \$2,900/KW  
Load Losses = \$1,400/KW  
Auxiliary Load Losses (Fans, etc.) = \$700/KW

c. The method for determining loss savings associated with transmission projects as described in Exhibit B uses loss reduction values determined using

**power flow modeling and transformer nameplate to determine loss reductions across the system as a result of a transformer installation or upgrade. The method described in a. above is used in evaluation of transformer procurement and may be used as a factor in the selection process. The two methods are used for entirely different purposes and are not related.**

Case No. 10-3023-EL-EEC, 10-3024-EL-EEC, 10-3025-EL-EEC

In the Matter of the Energy Efficiency and Peak Demand Reduction Program Portfolio of  
Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo  
Edison Company.

RESPONSES TO DATA REQUESTS

OCC Set 1     Regarding Exhibit B of the Application, the loss factor used to calculate the loss savings for  
DR-12         transmission system improvement:

- a.        What test year of data did the Company use to determine  
             the loss factor?
- b.        What was the system load factor for that test year?
- c.        What was the system load factor for year ending 2009?
- h.        What was the system load factor for year ending 2010?

**Response:**        Objection. Objection. This request is vague, ambiguous, unduly burdensome,  
                         and seeks information that is not reasonably calculated to lead to the discovery  
                         of admissible evidence.



Case No. 10-3023-EL-EEC, 10-3024-EL-EEC, 10-3025-EL-EEC

In the Matter of the Energy Efficiency and Peak Demand Reduction Program Portfolio of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company.

RESPONSES TO DATA REQUESTS

**OCC Set 1** Referring to Exhibit D, page 1 of 3 in the Application, the project entitled "Jefferson Sub –  
**DR-14**

R/P Transformer #2":

- a. What is the impedance and transformer capacity rating of the transformer in service prior to the replacement of the Jefferson Substation transformer?
- b. What was the assumed impedance and transformer capacity rating of the transformer to be installed by this project?
- c. What is the actual impedance and transformer capacity rating of the transformer installed?

**Response:** a.) Impedance of 6.85% with a rating of 5 MVA  
b.) Impedance of 6.89% with a rating of 7.5 MVA

c.) Information not available.

Case No. 10-3023-EL-EEC, 10-3024-EL-EEC, 10-3025-EL-EEC

In the Matter of the Energy Efficiency and Peak Demand Reduction Program Portfolio of  
Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo  
Edison Company.

**RESPONSES TO DATA REQUESTS**

**OCC Set 1** Referring to Exhibit D, page 2 of 3 in the Application, for the project entitled "Weston Sub –  
**DR-15** Replace #2 Transformer":

- a. What is the impedance and transformer capacity rating of the transformer in service prior to the replacement of this transformer?
- b. What was the assumed impedance and transformer capacity rating of the transformer to be installed by this project?
- c. What is the actual impedance and transformer capacity rating of the transformer installed?

**Response:**

- a. Impedance of 6.8% with a capacity rating of 2500 kVA
- b. Assumed Impedance: 7.85%  
Assumed Capacity: 11.2/14 MVA
- c. Actual Impedance: 7.64%  
Actual Capacity: 11.2/14 MVA

Case No. 10-3023-EL-EEC, 10-3024-EL-EEC, 10-3025-EL-EEC

In the Matter of the Energy Efficiency and Peak Demand Reduction Program Portfolio of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company.

RESPONSES TO DATA REQUESTS

**OCC Set 1** Referring to Exhibit D, page 2 of 3 in the Application, the project entitled "Replace  
**DR-17** Transformers Program 2010":

- a. What is the geographic, scope of this project?
- b. What are the engineering specifications for the project (describe the project and its component engineering parts and purposes)?
- c. How were transformers identified for replacement?
- d. What analysis was conducted to determine the ratings for the replacement ratings?
- e. How are the loss savings determined for each transformer installation?
- f. What process is used to verify the actual impedance for the transformer that is installed?

**Response:**

- a. Geographic territory is represented throughout our Toledo operating company (Northwest Ohio)
- b. Overloaded distribution transformers that result in low voltage issues and outage to customers. Toledo Edison has estimated 100 transformers which are reported to be overloaded and in need of replacement.
- c. Selection of transformers were identified based on a review of the estimated loading levels of distribution transformers.
- d. Standard distribution engineering practices on transformer loading criteria were used to determine replacement ratings.

- e. Loss savings are calculated by estimating a percentage of the replacements as upgrading to a 100 KVA transformer and replacing secondary wire, or adding an additional 50 KVA transformer and splitting the load, or transferring a portion of the transformers load to an under loaded transformer. Standard engineering equations were used to evaluate estimated losses for each of the three replacement options.
- f. Impedance values for each transformer are listed on the nameplate and datasheets as tested by the manufacturer.

Case No. 10-3023-EL-EEC, 10-3024-EL-EEC, 10-3025-EL-EEC

In the Matter of the Energy Efficiency and Peak Demand Reduction Program Portfolio of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company.

**RESPONSES TO DATA REQUESTS**

**OCC Set 1**      Regarding Exhibit C of the Application, the "FE-Ohio Transmission Level Projects," the  
**DR-20**

project entitled "Lakeview 34.5 kV Cap. Bank (18.9 MVAR)":

- a.      Is this the same project that was previously the subject of a filing in Case No. 09-951-EL-EEC and later removed by Notice of Corrected Exhibits on or around April 5, 2010?
- b.      If the response to INT-20, sub-part a. is affirmative, what is the explanation for different loss savings in the filing in Case No. 09-951-EL-EEC and in the Application?
- b.      What is the basis for the system loading (summer 2010, winter 2009, etc.) for the loss analysis in the current Application?

**Response:**

- a. Yes
- b. System losses can vary year to year and are based on changes in load patterns, generation dispatch and system transfers in each study period.
- c. Summer 2010

Lakeview 34.5 kV Cap Bank

PROTECTED  
MATERIAL  
REDACTED

CONFIDENTIAL

FE0001

**PROTECTED  
MATERIAL  
REDACTED**

**CONFIDENTIAL**

**FE0004**

Reconductor line along North St.

PROTECTED  
MATERIAL  
REDACTED

**CONFIDENTIAL**

**FE0006**



Jefferson Sub - R/P Transformer #2

PROTECTED  
MATERIAL  
REDACTED

**CONFIDENTIAL**

**FE0008**

Weston Sub - Replace #2 Transformer

PROTECTED  
MATERIAL  
REDACTED

**CONFIDENTIAL**

**FE0014**

**St. Charles Hospital - New Substation**

**PROTECTED  
MATERIAL  
REDACTED**

**CONFIDENTIAL**

**FE0018**

Clifford Line Reconductor (Bagley Rd.)

PROTECTED  
MATERIAL  
REDACTED

**CONFIDENTIAL**

**FE0024**

**DISTRIBUTION ENGINEERING PRACTICES**

**PROTECTED  
MATERIAL  
REDACTED**

**FE0033 – FE0042**

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**CONFIDENTIAL**

**FE0033**