BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Ohio Power Company to Revise Reliability Performance Standards Pursuant to O.A.C. 4901:1-10-10(B)(7)	))))	Case No. 20-1111-EL-ESS

STAFF COMMENTS
SUBMITTED ON BEHALF OF
THE STAFF OF THE PUBLIC UTILITIES COMMISSION OF OHIO

Respectfully submitted,

Dave Yost
Ohio Attorney General

John H. Jones
Section Chief

Thomas Lindgren
Rhiannon Plant
Assistant Attorneys General
Public Utilities Section
30 East Broad Street, 26th Floor
Columbus, Ohio 43215-3414
614.644.8588 (telephone)
866.849.3176 (facsimile)
Thomas.Lindgren@OhioAGO.gov
Rhiannon.Plant@OhioAGO.gov

On Behalf of the Staff of
The Public Utilities Commission of Ohio

October 7, 2022

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I. INTRODUCTION

On June 30, 2016 in Case No. 16-1511-EL-ESS, Ohio Power Company ("AEP Ohio" or the "Company") filed an application[1] to establish reliability performance standards pursuant to 4901:1-10-10(B). A Stipulation and Recommendation ("Stipulation") signed by the Company and Staff of the Public Utilities Commission of Ohio ("Staff") was filed October 30, 2017 and was approved and adopted in its entirety on February 07, 2018.

The approved Stipulation set the Company's standards for 2018 calendar year performance at 1.19 for the System Average Interruption Frequency Index ("SAIFI") and 149.00 for the Customer Average Interruption Duration Index ("CAIDI"). Further, the Stipulation set the Company's standards for 2019 and thereafter until changed to 1.18 for SAIFI and 148.00 for CAIDI. Finally, the Stipulation directed AEP Ohio to file an application to establish new reliability standards by June 1, 2020 for 2021 and beyond.

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[1] *In the Matter of the Establishment of 4901:1-10-10(B) Minimum Reliability Performance Standards for Ohio Power Company*, Case No. 16-1511-EL-ESS, Application (June 30, 2016).

On February 26, 2020 in Case No. 17-1842-EL-ORD, the Public Utilities Commission of Ohio ("Commission") adopted certain amendments to Ohio Adm. Code Chapter 4901:1-10.[2] These amendments included the following change ("ESSS rule change") to Ohio Adm. Code 4901:1-10-01(T):

> "Major event" encompasses any calendar day when an electric utility's system average interruption duration index (SAIDI) exceeds the major event day threshold using the methodology outlined in section 3.5 of standard 1366-2012 adopted by the institute of electrical and electronics engineers ("IEEE") in "IEEE Guide for Electric Power Distribution Reliability Indices." The threshold will be calculated by determining the SAIDI associated with adding 2.5 standard deviations to the average of the natural logarithms of the electric utility's daily SAIDI performance during the most recent five-year period. ~~The computation for a major event requires the exclusion of transmission outages.~~ For purposes of this definition, the SAIDI shall be determined in accordance with paragraph (C)(3)(e)(iii) of rule 4901:1-10-11 of the Administrative Code.

In adopting the ESSS rule change, the Commission directed each of the Electric Distribution Utilities ("EDUs") (who were not already scheduled to do so in other proceedings) to file an updated standards application reflecting what that EDU believed to be the impact to currently approved standards.[3]

On July 1, 2020 in Case No. 20-1111-EL-ESS, AEP Ohio filed an application ("original application") for establishing new standards.[4] On November 3, 2020, the attorney examiner issued an entry staying the proceeding pending finalization of the amendments to Ohio Adm. Code Chapter 4901:1-10, specifically the change to Ohio

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[2] *In the Matter of the Commission's Review of its Rules for Electrical Safety and Service Standards Contained in Chapter 4901:1-10 of the Ohio Revised Code*, Case No. 17-1842-EL-ORD, Finding & Order (February 26, 2020).

[3] *Id.* at ¶16.

[4] *In the Matter of the Application of Ohio Power Company to Revise Reliability Performance Standards Pursuant to O.A.C. 4901:1-10-10(B)(7)*, Case No. 20-1111-EL-ESS, Application (July 1, 2020).

Adm. Code 4901:1-10-01(T). The stay was lifted on March 2, 2022[5], and the attorney examiner ordered AEP Ohio to file a revised application incorporating the ESSS rule change as well as updated historical performance data.

On April 29, 2022, AEP Ohio filed an amended application ("amended application") to revise reliability standards and in doing so, proposed the following calculation:

Table 1: Company proposed standards

	SAIFI	CAIDI
5-year (2017-21) average	1.20	141.00
Standard deviations (2)	0.12	17.00
Baseline	1.32	158.00
2022 DACR Phase 2 Adjustment	-0.02	0.00
Proposed 2022	**1.30**	**158.00**
2023 DACR Phase 3 Adjustment	-0.02	0.00
Proposed 2023 and Beyond	**1.28**	**158.00**

II. EXECUTIVE SUMMARY

Staff reviewed the original and amended applications filed by AEP Ohio for revised standards and believes the standards proposed by the company are unreasonable. Based upon a review of historical data and taking into account reliability commitments made by the Company, Staff recommends that the Commission deny the original and amended applications filed by AEP Ohio for revised standards and adopt the following standards proposed by Staff:

CAIDI = 136.52

SAIFI = 1.16

[5] *In the Matter of the Application of Ohio Power Company to Revise Reliability Performance Standards Pursuant to O.A.C. 4901:1-10-10(B)(7)*, Case No. 20-1111-EL-ESS, Entry (March 2, 2022).

Staff further recommends that proposed standards apply as soon as practicable and remain in place until superseded by revised standards approved by the Commission.

III. THE COMPANY'S PROPOSED STANDARDS

A. Baseline Average

The Company's proposed reliability standards begins with a recalculation of the previous five years CAIDI and SAIFI performance, taking into account the impact of the ESSS rule change. Staff believes that the Company's recalculated standards for 2016-2020 accurately reflects the applicable ESSS rule change. However, the Company missed its CAIDI standard in 2018 and missed its SAIFI standard in both 2018 and 2019. Staff believes that the baseline should be adjusted so as to not allow worsening performance to result in worsening standards and addresses this adjustment in Section IV.A.

B. Two Standard Deviations

The Company proposes adding two standard deviations to its recalculated 5-year average to account for normally expected annual fluctuations. In a normal distribution, 95% of values will fall within two standard deviations. Said another way, 47.5% of values will fall below the average, 47.5% of values will exceed the average, with the remaining 5% of values making up the tails of the distribution. This all but guarantees that the Company would never miss its approved reliability standards.

Performance standards are not calculated such as to guarantee that the company meets the standards every year without fail. Per Ohio Adm. Code 4901:1-10-10(E), a company must miss the standards for two consecutive years to be in violation of the rule.

Staff does not believe that a cushion of two standard deviations is necessary or appropriate. Staff's proposed variability adjustment is addressed in Section IV.G.

C. DACR Phase 2 Adjustments

AEP Ohio proposes a negative adjustment to SAIFI of 0.02 customer interruptions for 2022 and a further negative adjustment of 0.02 customer interruptions for 2023 and beyond to reflect the impact of gridSMART Phase 2.

The Company's gridSMART Phase 2 project was approved by Commission order in Case No. 13-1939-EL-RDR on February 1, 2017[6]. Per the joint stipulation adopted in the case, Distribution Automation and Circuit Reconfiguration (DACR) technology would be deployed on 250 circuits. Also, per the joint stipulation, AEP Ohio committed to achieve a 3-year average annual SAIFI improvement of 15.8%, excluding major storms, on the aggregated performance of the 250 circuits.

Staff does not believe that the Company's proposed adjustment to SAIFI accurately reflects the reliability commitment agreed to in the gridSMART Phase 2 stipulation. Staff's proposed adjustment to SAIFI to reflect DACR Phase 2 is addressed in Section IV.B.

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[6] *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*, Case No. 13-1939-EL-ESS, Order (February 1, 2017).

D. Distribution Investment Rider (DIR)

In Case Nos. 20-585-EL-AIR et al., AEP Ohio agreed to certain provisions regarding the DIR revenue caps including performance-based triggers tied to outages related to the following causes:

CONTROLLABLE CAUSES (INCLUDED)	
D-Station	DISTRIBUTION STATION
D-Line Equip	EQUIPMENT FAILURE
Weather	WEATHER - FLOOD/SLIDE
	WEATHER - HIGH WINDS (EXCEEDING 60 MPH)
	WEATHER - HURRICANE
	WEATHER - ICE (1/2 INCH OR > 6 " SNOW)
	WEATHER - LIGHTNING
	WEATHER - TORNADO
	WEATHER - UNKNOWN
Remaining Cause:	ANIMAL - BIRD
	ANIMAL - NON BIRD
	CONTAMINATION/FLASHOVER
	CORROSION
	ERROR - FIELD
	ERROR - OPERATIONS
	FACILITATION OF WORK
	OTHER
	OVERLOAD
	UNBALANCE
Unk (non-weath)	UNKNOWN (NON WEATHER)

The Company agreed to annually report the prior year's reliability performance in terms of System Annual Interruption Duration Index (SAIDI) attributable to these causes on or before March 31st for the prior year to be compared to the agreed-upon triggers as follows[7]:

[7] *In the Matter of the Application of Ohio Power Company for an Increase in Electric Distribution Rates*, Case No. 20-585-EL-AIR, Stipulation (March 12, 2021), p.7.

Table 2: DIR SAIDI triggers

Year	SAIDI
2021	87.8
2022	86.8
2023	85.8

Per the report[8] filed in the case on March 31, 2022, the company met its 2021 performance goal as SAIDI attributable to the specified causes was 76.4. The company proposes no adjustment to the standards to account for this portion of the DIR.

The issue of trees falling from outside the right-of-way or "danger trees" has historically been addressed through the DIR. The Company states in its original application that the "Danger Tree Program will have addressed every circuit that has had an outage caused by trees outside ROW by the end of 2020 and will align with the ESRR cycle trim plan 2021-2024 to address every circuit in AEP Ohio's service territory." Further, the Company states that this will result in SAIDI attributable to trees outside ROW to drop to 29.8 minutes by the end of 2024[9]. However, the company proposes no adjustment to the standards to account for this improvement.

Staff believes that the Company has erred by not including adjustments to reflect the Distribution Investment Rider and Danger Tree Program. Staff's proposed adjustments to CAIDI in these areas are addressed in Sections IV.C and IV.D respectively.

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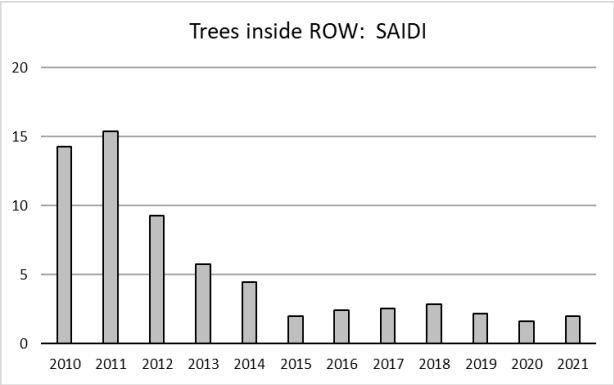
[8] *In the Matter of the Application of Ohio Power Company for an Increase in Electric Distribution Rates*, Case No. 20-585-EL-AIR, Performance Report (March 31, 2022).

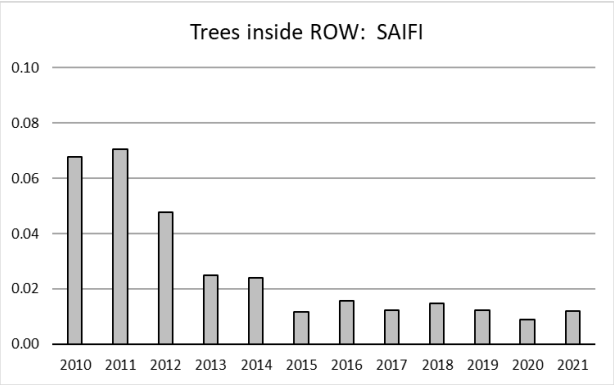
[9] *In the Matter of the Application of Ohio Power Company to Revise Reliability Performance Standards Pursuant to O.A.C. 4901:1-10-10(B)(7)*, Case No. 20-1111-EL-ESS, Application (July 1, 2020), p.8.

E. Enhanced Service Reliability Rider (ESRR)

The Company in its application states that the vegetation management program reduced outages from trees inside the right-of-way by 80% since 2010. The Company further states that as the program has been in place for the last five years, the reliability impact attributable to the program is reflected in the historical performance and thus no further adjustment to the standards is needed.

Staff reviewed the outage history and found that since 2010, outages caused by trees inside the right-of-way has indeed decreased significantly. Further, Staff notes that SAIFI and SAIDI due to this outage cause has been generally level since 2015. Staff agrees with the Company's assertion that no adjustment is needed to account for the impact of ESRR.





F. Customer perception results

Ohio Adm. Code 4901:1-10-10(B)(4)(b) states the following:

Each electric utility shall periodically (no less than every three years) conduct a customer perception survey. The survey results shall also be used as an input to the methodology for calculating new performance standards. The survey shall be paid for by the electric utility and shall be conducted under staff oversight. The objective of the survey is to measure customer perceptions, including, but not

limited to expectations of electric service reliability in terms of the service reliability indices defined in paragraph (B)(1) of this rule.

AEP Ohio conducted the required customer perception survey in accordance with this rule and provided results to Staff. The most recent survey was conducted over four quarters beginning in the first quarter of 2021. The Company proposes no adjustment to the standards to reflect the survey results. While Staff agrees that while a quantified adjustment is not needed, customer expectations should be considered. Staff addresses the customer perception survey results in Section IV.E.

G. Other considerations

The Company takes into consideration service territory size and geography, system design, and advancements in technology. The Company proposes no adjustment based on service territory, system design or technological advancements. Staff agrees that there have been no significant changes to either service territory size or geography or general system design and therefore believes there is no need for an adjustment in these areas. However, Staff believes that DACR is a technological advancement and that an adjustment to reflect this technology is appropriate, which Staff addresses in Section IV.B.

H. Effective Date

In its Application, the Company proposes that the revised standards be applicable for the 2022 calendar year. Per Ohio Adm. Code 4901:1-10-10(B)(8), authorized performance standards are to remain in place until superseded by revised standards

approved by the Commission. Therefore, Staff believes revised standards should be applicable as soon as practicable once approved by the Commission.

IV. STAFF PROPOSED STANDARDS

A. Historical Baseline

Staff's calculation of proposed standards begins with a recalculation of historical reliability performance, applying the impact of the ESSS rule change. Staff then compared the performance metrics as reported in the annual "Rule 10" reports[10] and compared these with recalculated metrics. In doing so, Staff found that the five-year average SAIFI and CAIDI increased slightly. It is important to note, however, that this increase does not reflect a worsening reliability performance but rather a more accurate calculation of performance.

Table 3: Recalculated historical performance

	SAIFI		CAIDI	
	Reported	**Recalculated**	**Reported**	**Recalculated**
2017	1.15	1.17	146.02	148.38
2018	1.30	1.31	150.32	148.98
2019	1.20	1.24	140.98	144.45
2020	1.11	1.13	129.93	132.17
2021	1.17	1.17	132.13	132.13
Averages	1.19	1.20	139.88	141.22

Staff notes that the Company's reported performance in 2018 exceeded approved SAIFI and CAIDI standards in 2018 and the approved SAIFI standard in 2019. That is,

[10] *In the Matter of the Annual Report of Ohio Power Company Pursuant to Rule 10 of the Electric Service and Safety Standards, Ohio Administrative Code 4901:1-10-10*, Case Nos. 22-0992-EL-ESS, 21-0992-EL-ESS, 20-0992-EL-ESS, 19-0992-EL-ESS, 18-0992-EL-ESS.

performance in those years was worse than the standards. Staff believes that the baseline should be adjusted so as to not allow worsening performance to result in worsening standards. To calculate the adjustment while also taking into account the ESSS rule change, Staff calculated the differences between reported performance and recalculated performance for those years, and then applied the difference to the approved standards.

Table 4: Adjustments to missed performance years

	Reported	Recalculated	Difference	Standard	Adjusted
2018 SAIFI	1.30	1.31	0.41%	1.19	1.19
2018 CAIDI	150.32	148.98	(0.89)%	149.00	147.67
2019 SAIFI	1.20	1.24	2.98%	1.18	1.22

Staff believes that these approximated standards should be used in those years where the approved standards were missed. Consequently, Staff's baseline is as follows:

Table 5: Historical Baseline

	SAIFI	CAIDI
2017	1.17	148.38
2018	1.19	147.67
2019	1.22	144.45
2020	1.13	132.17
2021	1.17	132.13
Averages	1.17	140.96

B. DACR Phase 2 Adjustments

As of the filing of these comments and the most data most recently made available to Staff, 209 Phase 2 circuits have been equipped with DACR technology and a total of 46 additional are expected to be equipped by April 2023.

Table 6: Phase 2 DACR Circuits

Year	Circuits
2018	2
2019	5
2020	31
2021	106
2022	65

To calculate the impact of Phase 2 DACR to revised standards, Staff began by examining historical performance on those circuits which have been or are expected to be equipped with DACR technology. Next, Staff applied 15.8% SAIFI improvement to the aggregated performance of those circuits to reflect the reliability commitment that the company made in gridSMART Phase 2[11] to determine an avoided number of customer interruptions for each of the next five years and included these values as an adjustment to the proposed standards.

Table 7: Phase 2 Avoided Customer Interruptions

YEAR	CI
2022	1,918
2023	9,891
2024	32,499
2025	12,110
2026	13,187

C. Distribution Investment Rider

While the Company met its SAIDI trigger for an increased revenue cap in 2021, Staff notes that the triggers going forward become more stringent. Further, Staff examined the outage causes stated by the Company to be most impacted by the DIR and

[11] *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*, Case No. 13-1939-EL-ESS, Stipulation (April 7, 2016), p.6.

found that SAIDI due to these causes is trending downward. Staff believes that the revised standards should include an adjustment to reflect this downward trend.

To calculate the adjustment, Staff examined CMI for each of the last five years[12] and found that CMI attributable to the specified causes accounts for about 50% of overall reportable CMI. Staff then examined SAIDI attributable to the specified causes and found that it has decreased 7.67% since 2016, or an average of about 1.5% per year. Therefore, Staff proposes an adjustment of 0.75% to estimated CMI for each of the next five years.

Table 8: DIR Avoided CMI

YEAR	CMI
2022	1,887,556
2023	1,841,299
2024	1,795,897
2025	1,750,739
2026	1,737,771

D. Danger Trees

The Company states in its original application that the "Danger Tree Program" will result in SAIDI attributable to trees outside ROW dropping to 29.8 minutes by the end of 2024[13]. Staff examined the reliability impact of trees outside the ROW for the last several years and found that while SAIDI had been trending upward from 2014 – 2018, it has since decreased. In 2021, SAIDI attributable to trees outside ROW was reported to be about 38 minutes. The difference between SAIDI of 38 minutes and SAIDI of 29.8

[12] *In the Matter of the Annual Report of Ohio Power Company Pursuant to Rule 10 of the Electric Service and Safety Standards, Ohio Administrative Code 4901:1-10-10*, Case Nos. 22-0992-EL-ESS, 21-0992-EL-ESS, 20-0992-EL-ESS, 19-0992-EL-ESS, 18-0992-EL-ESS.

[13] *In the Matter of the Application of Ohio Power Company to Revise Reliability Performance Standards Pursuant to O.A.C. 4901:1-10-10(B)(7)*, Case No. 20-1111-EL-ESS, Application (July 1, 2020), p.8.

minutes equates to a savings of about 12.8 million CMI by the end of 2024. To reflect this impact, Staff spread the expected CMI savings over each of the next three years and included these values as an adjustment to the proposed standards.

Table 9: Danger Trees Avoided CMI

YEAR	CMI
2022	4,280,000
2023	4,280,000
2024	4,280,000

E. Customer Expectations

As stated earlier, the Company completed customer perception surveys in accordance with Ohio Adm. Code 4901:1-10-10(B)(4)(b). Staff reviewed the results of those surveys received in 2019 and 2022. Specific to this case, Staff conducted an analysis of responses to the questions regarding what customers feel are acceptable numbers of and durations of outages. Across the board, customers' expectations are increasing. That is, customers expect fewer outages and faster restoration times.

Table 10: Customer Expectations – Outage Quantity

	Residential	Commercial
2018	2.18	2.16
2021	1.49	1.36

Table 11: Customer Expectations – Outage Length

	Residential	Commercial
2018	373	421
2021	254	261

Customer perception of reliability is subjective and should not be used as the sole factor to determine if customers' expectations are being met. However, comparison of the results from 2018 and 2021 clearly shows that customer expectations are increasing. Therefore, Staff believes that the company should strive for continuous improvement and not arbitrarily loosen the reliability standards.

F. Customer Count

As AEP Ohio is Ohio's largest electric distribution utility and is growing, Staff believes that it is appropriate in this case to take into consideration the impact of customer count. To do so, Staff determined the approximate rate at which the Company's service territory is growing and used that rate to extrapolate estimated customer count for the next several years.

Table 12: Estimated Future Customer Counts

Year	Customers	Delta
2017	1,472,270	0.72%
2018	1,480,292	0.54%
2019	1,486,637	0.43%
2020	1,499,447	0.86%
2021	1,509,795	0.69%
Average		0.65%
Estimated Counts		
2022	1,519,590	
2023	1,529,449	
2024	1,539,372	
2025	1,549,359	
2026	1,559,411	

G. Proposed Standards

To determine revised standards, Staff:

1. Recalculated 5-year average applying the ESSS rule change.
2. For years in which a standard was missed, replaced performance with the standard, approximating the impact of the ESSS rule change to the approved standard,
3. Using the average growth rate of the last five years, estimated customer counts for each year going forward,
4. Calculated avoided customer interruptions to reflect the reliability commitments of gridSMART Phase 2,
5. Calculated avoided customer minutes of interruption to reflect the ongoing SAIDI improvement attributable to the Distribution Investment Rider,
6. Calculated avoided customer minutes of interruption to reflect the Company's expected impact of addressing trees from outside the right-of-way,
7. Applied one standard deviation to account for variability.

Table 13: Staff Calculation of Proposed Standards

	SAIFI	CAIDI
2022	1.17	137.65
2023	1.16	135.01
2024	1.13	134.07
2025	1.12	134.01
2026	1.10	134.04
Average	1.13	134.96
Standard deviation	0.03	1.57
Proposed standards	1.16	136.52

V. CONCLUSION

Based on analysis as presented above, Staff recommends that the Commission deny the original and amended applications filed by AEP Ohio for revised standards and adopt the following standards proposed by Staff:

CAIDI = 136.52

SAIFI = 1.16

Staff further recommends that proposed standards apply as soon as practicable and remain in place until superseded by revised standards approved by the Commission.

Respectfully submitted,

Dave Yost
Ohio Attorney General

John H. Jones
Section Chief

/s/ Thomas Lindgren

Thomas Lindgren
Rhiannon Plant
Assistant Attorneys General
Public Utilities Section
30 East Broad Street, 26th Floor
Columbus, Ohio 43215-3414
614.644.8588 (telephone)
866.849.3176 (facsimile)
Thomas.Lindgren@OhioAGO.gov
Rhiannon.Plant@OhioAGO.gov

On Behalf of the Staff of
The Public Utilities Commission of Ohio

PROOF OF SERVICE

I hereby certify that a true copy of the foregoing **Staff Comments**, submitted on behalf of the Staff of the Public Utilities Commission of Ohio, was served by electronic mail, upon the following parties of record, this 7th day of October 2022.

/s/ Thomas Lindgren
Thomas Lindgren
Assistant Attorney General

Parties of Record:

William J. Michael
(Counsel of Record)
Amy Botschner O'Brien
Assistant Consumers' Counsel
Office of the Ohio Consumers' Counsel
65 East State Street, Suite 700
Columbus, Ohio 43215
Telephone [Michael]: (614) 466-1291
Telephone [Botschner O'Brien]: (614) 466-9575
william.michael@occ.ohio.gov
amy.botschner.obrien@occ.ohio.gov

Kimberly W. Bojko
(Counsel of Record)
Jonathan B. Wygonski
Carpenter Lipps & Leland LLP
280 North High Street, Suite 1300
Columbus, Ohio 43215
Telephone: (614) 365-4100
bojko@carpenterlipps.com
wygonski@carpenterlipps.com

Counsel for the Ohio Manufacturers' Association Energy Group

Steven T. Nourse
(Counsel of Record)
Michael J. Schuler
American Electric Power Service Corporation
1 Riverside Plaza, 29th Floor
Columbus, Ohio 43215-2373
Telephone: (614) 716-1608 (Nourse)
Telephone: (614) 716-2928 (Schuler)
stnourse@aep.com
mjschuler@aep.com

Counsel for Ohio Power Company

Susan Jagers
Ohio Poverty Law Center
1108 City Park Ave. Suite 200
Columbus, Ohio 43206
(614) 824-2501
sjagers@ohiopovertylaw.org

Michael Walters
Legal Hotline Managing Attorney
Pro Seniors, Inc.
7162 Reading Road, Suite 1150
Cincinnati, Ohio 45237
Telephone: (513) 458-5532
mwalters@proseniors.org

Summary: Comments Staff Comments Submitted on Behalf of The Staff of The Public Utilities Commission of Ohio electronically filed by Mrs. Kimberly M. Naeder on behalf of PUCO