

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Long-Term)
Forecast Report of Ohio Power) Case No. 18-501-EL-FOR
Company and Related Matters.)

In the Matter of the Application Seeking)
Approval of Ohio Power Company's)
Proposal to Enter Into Renewable Energy) Case No. 18-1392-EL-RDR
Purchase Agreements for Inclusion in the)
Renewable Generation Rider.)

In the Matter of the Application of Ohio) Case No. 18-1393-EL-ATA
Power Company to Amend its Tariffs.)

**INITIAL POST-HEARING BRIEF OF OHIO POWER COMPANY
REGARDING ITS AMENDED LONG-TERM FORECAST REPORT
AND THE ISSUE OF NEED**

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CERTIFICATE OF SERVICE

I. Introduction

Some parties to this proceeding want to return the Public Utilities Commission of Ohio (“Commission”) to the fully deregulated vision and goals of SB 3, while conveniently ignoring that SB 3 failed in its basic purpose (transitioning to market pricing by 2006) and was replaced by a hybrid re-regulatory approach in 2009. One of the hallmarks of SB 221’s hybrid electric security plan (ESP) construct is the opportunity for an electric distribution utility (EDU) to own or operate a new generation facility. *See* R.C. 4928.143(B)(2)(c). While Ohio Power Company’s (“AEP Ohio” or the “Company”) opponents may prefer to ignore this provision or dismiss it as anachronistic, the General Assembly included it as a vital component of the hybrid ESP construct. Thus, the extent to which the Commission should make use of the provision is a policy debate, not a legal one.

Under division (B)(2)(c), no surcharge shall be authorized unless the Commission *first determines that there is a need for the facility based on resource planning projections submitted by the utility*. Thus, although the Commission already approved the Renewable Generation Rider (RGR) in its recent *ESP IV* decision, the Commission must make a positive need finding if the renewable energy projects AEP Ohio proposes are to proceed. A threshold and pivotal issue in this regard is the definition of need under the ESP statute.

After SB 221 was passed, and in light of the generation opportunity enacted as part of the new ESP statute, the Commission reinstated some of the key integrated resource planning (IRP) rules that existed under traditional regulation. *In the Matter of the Adoption of Rules to Implement Sub. SB No. 221*, Case No. 08-888-EL-ORD, Opinion and Order at 41 (Apr. 15, 2009). Specifically, the current rules contain the same criteria for considering the reasonableness of a utility’s IRP that existed prior to SB 3, including potential rate, customer bill,

environmental, and economic impacts and associated costs; impacts on the utility's financial status, flexibility, diversity, commitment size and lead time; and lost investment opportunities, customer class equity, plan impacts over time, and other matters the Commission considers appropriate. *See* Ohio Adm.Code 4901:5-5-06(B)(3)(d)(iii). AEP Ohio's Amended Long-Term Forecast Report ("*Amended LTFR*") and supporting testimony yield a high score when these factors are considered. Record evidence in this case further demonstrates that developing at least 900 MW of renewable energy projects in Ohio will ensure the availability of adequate, reliable, safe, efficient, nondiscriminatory, and reasonably priced retail electric service (R.C. 4928.02(A)); give customers the options they choose (R.C. 4928.02(B)); ensure "diversity of electric supplies and suppliers" (R.C. 4928.02(C)); protect consumers from "market power" (R.C. 4928.02(I)); incentivize "technologies that can adapt successfully to potential environmental mandates" (R.C. 4928.02(J)); and facilitate Ohio's "effectiveness in the global economy" (R.C. 4928.02(N)).

In its *Amended LTFR* and supporting testimony, the Company set forth six distinct factual bases for supporting the requested need finding:

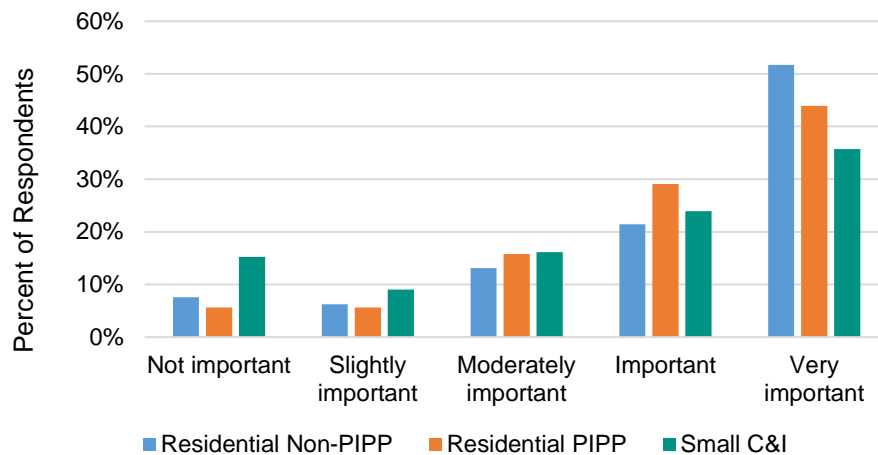
1. A formal survey shows that AEP Ohio customers want and need long-term renewable power generated by new Ohio renewable projects.
2. Large-scale development of reasonably priced Ohio renewable energy projects conveys a price advantage and rate stability for customers.
3. Developing renewable projects in Ohio that are deliverable to AEP Ohio's service territory can help reduce congestion costs and ultimately transmission rates.
4. New in-state renewable projects will provide significant local and state-wide economic benefits.
5. New in-state renewable projects will help reduce Ohio's importation of power at the prices charged by out-of-state generation suppliers.
6. New in-state renewable projects will promote fuel diversity, advance the development of renewable technology, and help reduce carbon emissions.

Each of these bases supports a finding of need and is supported by evidence of record.

AEP Ohio has conclusively demonstrated a resource planning need for at least 900 MW of additional renewable energy resources in the Company’s service territory through: (A) the Voice of the Customer Survey, which demonstrates that AEP Ohio customers desire additional, Ohio-sited renewable energy resources; (B) the economic analyses set forth in its IRP, which demonstrate that constructing such resources would be economically beneficial to AEP Ohio’s customers; (C) its economic impact study, which demonstrates that constructing such resources would create tangible and significant economic benefits for Ohio, and (D) substantial testimony and other evidence that market failures have discouraged development of in-state, utility-scale renewable resources, which a finding of need will help ameliorate.

Regarding the independent Voice of the Customer Survey, 92% of residential non-PIPP customers think it is important (slightly important, moderately important, important, or very important) that AEP Ohio make greater use of renewable energy above the mandatory level. Residential Percentage of Income Payment Plan (PIPP) customers come in even higher, at 94%. And 85% of small C&I customers think it is important. These impressive results are captured in Figure 6 from the Survey:

Figure 6. Importance That AEP Ohio Makes Greater Use of Renewable Energy above Current Levels

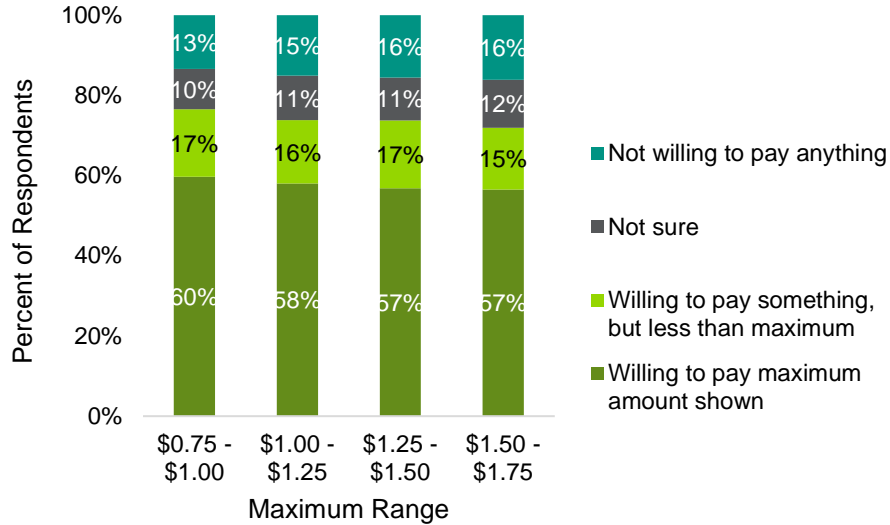


(AEP Ohio Ex. 6, Ex. TH-1 at 17 of 41.)

This is overwhelming and unmistakable support – and it is not just in the abstract.

Customers were asked about their willingness to pay for the additional renewable resources at levels that range much higher than the expected cost of the Company’s current proposal. In this regard, consider Figure 9 from the Voice of the Customer survey report:

Figure 9. Residential Non-PIPP Willingness to Pay Results



(*Id.*, Ex. TH-1 at 20 of 41.) As Figure 9 shows, a significant majority of residential non-PIPP customers were willing to pay the maximum value in the each of the price ranges explored. Combining the customers willing to pay the maximum values with those willing to pay something less than the maximum, the numbers exceed 70% for each price range. These are compelling results, particularly considering that the *low end* of the pricing tiers surveyed is above the *high end* of the potential bill impacts for residential customers discussed so far for the solar projects. (Tr. I at 64-65.)

In addition, there is overwhelming public support for AEP Ohio’s proposals. At the public hearing in December 2018, 56 individuals testified in support of the proposal, and not a single witness registered opposition. (*See* December 4, 2018 Public Hearing Transcript (PHT))

(docketed on December 14, 2018).) Similarly, as of March 1, 2019, well over 5,000 comments in support of the Company’s proposal have been filed in the docket. *No one* has filed comments that oppose the proposal. This kind of unanimous support is extremely rare with a public utility filing, and the Commission should give weight to such a broad-based and uniform display of public support.

Regarding the economics of the proposal, Company witness John Torpey sponsored AEP Ohio’s IRP, which presents the results of four analyses the Company performed to determine the expected economic impact associated with the addition of utility-scale renewable energy projects in Ohio. (AEP Ohio Ex. 14 at 5-13, Ex. JFT-1 at 16-26.) The results of those analyses demonstrated significant economic benefits to AEP Ohio customers, as Mr. Torpey summarized:

ANALYSIS	RESULT
PJM Impact	<p><u>Economic Benefit:</u></p> <ul style="list-style-type: none"> • LMP price reduction of \$0.07/MWh, and • NPV savings of \$31 million to AEP Ohio customers.
AEP Ohio Impact	<p><u>Economic Benefit:</u></p> <ul style="list-style-type: none"> • NPV benefit of \$88 million from the 400 MW generic solar resources, and • NPV benefit of \$54 million from the 250 MW generic wind resources.
Total Customer Benefit	PJM Benefit \$31 M Solar Benefit \$88 M Wind Benefit <u>\$54 M</u> \$173 M
Break-Even Analysis	Actual REPA costs lower than the REPA price noted below result in lower costs to AEP Ohio customers: <ul style="list-style-type: none"> • SOLAR: REPA costs below \$56.82/MWh • WIND: REPA costs below \$48.40/MWh
Probabilistic Simulation	<ul style="list-style-type: none"> • 100 % of the time solar projects result in a net benefit • 99.9% of the time wind projects show a net benefit.

(*Id.*, at 6, Ex. JFT-1 at 19.)

In addition, the Company is the only party that presented an actual study and report quantifying the projected economic impacts of the Company's proposal: *Impacts of Solar Plant Construction and Operation on the Ohio Economy* (hereinafter "Impact Study"), coauthored by Dr. Bill LaFayette, of Regionomics LLC, and Dr. Stephen Buser, Professor Emeritus, Fisher College of Business at The Ohio State University. The Impact Study projects that the construction of new solar facilities will: create 3,870 new jobs, grow Ohio earnings for Ohio workers by more than \$250 million, grown output by nearly \$700 million, and increase Ohio's gross domestic product (GDP) by nearly \$390 million. (AEP Ohio Ex. 12 at 4.) These construction impacts will be followed by annual operating impacts that, although smaller in magnitude, will continue indefinitely: Ohio employment will grow by approximately 50 jobs, Ohio workers' earnings will grow by more than \$2.5 million, output will grow by more than \$38 million, and Ohio's GDP will grow by more than \$33 million. (*Id.*) The Impact Study also described the effects of the renewable projects on tax revenues for government entities. (*Id.* at 5.) These fiscal impacts include more than \$24 million in additional tax revenue for the State of Ohio, along with \$8.4 million of additional tax revenue for various local communities. (*Id.*)

Finally, to the extent that market failures support the Commission's "need" finding in this proceeding, the record evidence confirms that the competitive markets have failed to address numerous compelling bases for the development of in-state, utility-scale renewable resources, even as we celebrate the 20th anniversary of deregulation in Ohio. These market failures can be attributed to aspects of the PJM market structure and practical limitations on the deployment of distributed solar, as well as the limited nature of competitive retail electric service (CRES) renewable energy offerings for customers. A finding of need in Phase I of these proceedings will help the Commission begin to meaningfully address the market failures inhibiting development

of customer-desired and economically beneficial in-state utility-scale renewable resources. Equally important, the need finding will enable the Company to reach the majority of its customers who have been left out of these limited market options.

II. Regulatory Background

Before focusing on the specific issues presented in this case, it is helpful to review additional background regarding AEP Ohio's commitment to pursue development of 900 MW of renewable resources, and the Commission's adoption of the RGR in *ESP IV*¹ pursuant to R.C. 4928.143(B)(2)(c). As part of the settlement in the *PPA Rider Case* (Case Nos. 14-1693-EL-RDR, *et al.*), AEP Ohio committed to pursue development of 900 MW of renewable resources in Ohio (500 MW of wind and 400 MW of solar), subject to Commission approval, with the underlying costs to be recovered through the PPA Rider. *PPA Rider Case*, Stipulation at 30 (Dec. 14, 2015). The Commission adopted the settlement and embraced the 900 MW commitment, stating in part:

The Commission supports the construction of new renewables in this state. The state has previously seen a number of wind-related projects approved for siting through the Board, many of which have yet to be constructed. However, solar projects are not as prevalent. Solar projects would enhance the diversity of available generation options. The Commission first encourages that bilateral contracting opportunities be explored to provide support for the construction of renewables. To the extent that bilateral opportunities are not available, the Commission will entertain and review a cost recovery filing, first focusing on enhancing solar opportunities. We also direct AEP Ohio to demonstrate that bilateral opportunities were explored and that a competitive process was utilized to source and determine ownership of any project to be built.

(Emphasis added.) *PPA Rider Case*, Opinion and Order at 83 (Mar. 31, 2016). AEP Ohio did focus first on solar, and it conducted a competitive bidding process to formulate a bilateral

¹ *In re Application of Ohio Power Co. for Approval of its Electric Security Plan*, Case Nos. 16-1852-EL-SSO *et al.*

Renewable Energy Purchase Agreement (REPA) proposal that was ultimately filed for approval in Case Nos. 18-1392-EL-RDR, *et al.* (*Tariff Cases*). Although the Office of the Ohio Consumers' Counsel (OCC) and the Ohio Manufacturers' Association Energy Group (OMAEG) appealed the Commission's decision in the *PPA Rider Case*, the Supreme Court of Ohio unanimously affirmed the Commission's decision. *In re Application of Ohio Power Co.*, Slip Opinion No. 2018-Ohio-4698.

The signatory parties to the *ESP IV* settlement proposed a new mechanism to recover the costs associated with new renewable projects approved under the 900 MW commitment: the RGR. *ESP IV*, Stipulation and Recommendation at ¶ III.D. (Aug. 25, 2017). The new RGR incorporated some of the same conditions applicable to the PPA Rider but also made clear that it was being established pursuant to R.C. 4928.143(B)(2)(c). *Id.* In addition, the *ESP IV* stipulation created an option whereby individual retail customers could purchase some or all of the projects' output through a reasonable arrangement (subject to Commission approval). *Id.*

The Commission adopted the RGR over OCC's objections:

Contrary to OCC's claims that the RGR is an unlawful, above-market generation subsidy and will cause customer confusion as a separate rider, the General Assembly has specifically authorized the establishment of a nonbypassable surcharge for the life of an electric generating facility owned or operated by the electric distribution utility, subject to certain requirements specified in R.C. 4928.143(B)(2)(c). * * * In each EL-RDR proceeding proposing a specific project, AEP Ohio will be required to demonstrate need for each proposed facility and to satisfy all of the other criteria in R.C. 4928.143(B)(2)(c), and OCC will have a full and fair opportunity to raise its concerns on the issue of need.

ESP IV, Opinion and Order at ¶ 227 (Apr. 25, 2018). *See also ESP IV*, Second Entry on Rehearing at ¶ 50 (Aug. 1, 2018). The RGR remains a placeholder until the Commission approves a project for inclusion in the rider.

Throughout both cases, the Commission repeatedly recognized the importance of developing renewable energy resources in Ohio. In the *PPA Rider Case*, the Commission recognized – consistent with R.C. 4928.02(A) and (B) – that “renewable energy plays an integral role in promoting a reliable and cost-effective grid.” *PPA Rider Case*, Opinion and Order at 82. The Commission also affirmed its support for construction of new in-state renewables – consistent with R.C. 4928.02(C) – to “enhance the diversity of available generation options” to “offset the price volatility impact that any single fuel source may have on electric rates.” *Id.* at 83. The Commission further recognized – consistent with R.C. 4928.02(J) – that investment in renewable generation “will afford the state flexibility in complying with any future requirements of carbon regulation, by providing greater fuel source diversity.” *Id.* at 84. The Commission reaffirmed these findings in the *ESP IV Case*, recognizing again that all customers benefit from the renewable energy projects that the Company intends to pursue through the RGR. *ESP IV Case*, Opinion and Order at ¶ 204, 269. Accordingly, as further demonstrated below, AEP Ohio submits that there is a resource planning need for development of renewable resources in the Company’s service territory in order to most effectively fulfill its obligation under R.C. 4928.141(A) to provide a standard service offer through an ESP under R.C. 4928.143.

III. Legal Background and the “Need” Standard under R.C. 4928.143(B)(2)(c)

Under Ohio law, an EDU can meet its “standard service offer” (SSO) requirement through either a market-rate offer (MRO) or an ESP. R.C. 4928.141(A); 4928.142; 4928.143. If the EDU files an ESP, the Commission must find that the ESP, “including its pricing and all other terms and conditions, * * * is more favorable in the aggregate as compared to the expected results that would otherwise apply” under an MRO. R.C. 4928.143(C)(1). Some parties to this

proceeding want to return to the full deregulation envisioned in SB 3,² while conveniently ignoring that SB 3 failed in basic purpose and that the requirement for “market-based” SSO pricing in R.C. 4928.14 was repealed as part of SB 221.³

While SB 221 was not a U-turn in regulatory policy, the General Assembly did turn a sharp corner. Unlike the assumption that market rates would be lower than regulated rates underlying SB 3, SB 221 recognized that market rates are volatile and often higher than cost-based rates. Indeed, in the *ESP I* cases,⁴ the Commission found the cost of AEP Ohio’s first ESP (\$1.4 billion) was less than half the expected cost of an MRO (\$2.9 billion), *saving customers \$1.5 billion*. *ESP I*, Opinion and Order at 72 (Mar. 18, 2009). Similarly, in the *ESP II* cases,⁵ the Commission found the approved rate plan was quantifiably \$386 million more favorable than an MRO, in addition to significant non-quantifiable benefits associated with the rate plan. *ESP II*, Opinion and Order at 75-77 (Aug. 8, 2012). The most significant of those non-quantifiable benefits was that the ESP would result in a fully competitive SSO in three years – half the minimum period possible under an MRO. *Id.* at 76. In *ESP III*,⁶ the Commission found the approved ESP was more favorable than an MRO by more than \$44 million and contained significant non-quantifiable benefits. *ESP III*, Opinion and Order at 95 (Feb. 25, 2015). Most recently, in *ESP IV* (the current rate plan), the Commission again found the approved ESP was

² Am. Sub. S.B. 3 (1999).

³ Am. Sub. S.B. 221 (2008).

⁴ *In re Application of Columbus Southern Power Co. and Ohio Power Co. for Approval of its Electric Security Plan*, Case Nos. 08-917-EL-SSO *et al.*

⁵ *In re Application of Columbus Southern Power Co. and Ohio Power Co. for Approval of its Electric Security Plan*, Case Nos. 11-346-EL-SSO *et al.*

⁶ *In re Application of Ohio Power Co. for Approval of its Electric Security Plan*, Case Nos. 13-2385-EL-SSO *et al.*

more favorable than an MRO by more than \$78.5 million and also contained significant non-quantifiable benefits. *ESP IV*, Opinion and Order at ¶¶ 266-269 (Apr. 25, 2018). Thus, the entire premise of an ESP is that it must be both beneficial for customers and consented to by the EDU. And while market prices have generally decreased since SB 221, and it has become more challenging to achieve such outcomes, all four of the Company’s ESPs have achieved a win-win.

In these cases, the Company seeks to further enhance the benefits of *ESP IV* through an additional win-win proposal. One of the hallmarks of SB 221’s hybrid ESP construct is the opportunity for an EDU to own or operate a new generation facility – as the statute permits an ESP to include:

a nonbypassable surcharge for the life of an electric generating facility that is owned or operated by the electric distribution utility, was sourced through a competitive bid process subject to any such rules as the commission adopts under division (B)(2)(b) of this section, and is newly used and useful on or after January 1, 2009, which surcharge shall cover all costs of the utility specified in the application, excluding costs recovered through a surcharge under division (B)(2)(b) of this section. However, no surcharge shall be authorized unless the commission *first determines in the proceeding that there is need for the facility based on resource planning projections submitted by the electric distribution utility.* * * *

(Emphasis added.) R.C. 4928.143(B)(2)(c). As Direct Energy witness Lacey acknowledged at hearing, “need” can have different meanings in different contexts. (Tr. VI at 1755.) The statute does not define “need” except to clarify that the utility must show need through its “resource planning projections.” R.C. 4928.143(B)(2)(c); *see* Tr. VIII at 2289 (Benedict). The Commission’s rules further clarify that need must be “reviewed and determined * * * through an integrated resource planning process * * *.” Ohio Adm.Code 4901:1-35-03(C)(9)(b).

The integrated resource plan is part of the long-term forecast report, which electric utilities file annually. *See* Ohio Adm.Code 4901:5-3-01(A), 4901:5-5-06. That report must typically include a resource plan that discusses and analyzes factors including anticipated

technological changes affecting the impact of environmental regulations on generating units. Ohio Adm.Code 4901:5-5-06(A)(1), (4). But if an EDU seeks a nonbypassable charge under R.C. 4928.143(B)(2)(c), the report must also include a description of the “existing generating system” and the “need for additional electricity resource options,” along with an “integrated resource plan.” Ohio Adm.Code 4901:5-5-06(B)(1)-(3). Commission rules describe an “integrated resource plan” as a “plan * * * to furnish electric energy services in a cost-effective and reasonable manner consistent with the provision of adequate and reliable service, which gives appropriate consideration to supply- and demand-side resources and transmission or distribution investments for meeting the person’s projected demand and energy requirements.” Ohio Adm.Code 4901:5-5-01(L).

In light of the generation opportunity enacted as part of the ESP statute after SB 221, the Commission reinstated some of the key IRP rules that had existed under traditional regulation. *In the Matter of the Adoption of Rules to Implement Sub. SB No. 221*, Case No. 08-888-EL-ORD, Opinion and Order at 41 (Apr. 15, 2009) (stating that “the Commission’s forecast rules are being modified to restore the IRP requirements under Chapter 4901:5-5 in response to SB 221”). Consequently, the current rules contain the same criteria to consider the reasonableness of a utility’s IRP that existed prior to SB 3 (*see* Tr. VIII at 2362-63; AEP Ohio Ex. 20), including:

- (a) Potential rate and customer bill impacts of the plan.
- (b) Environmental impacts of the plan and their associated costs.
- (c) Other significant economic impacts and their associated costs.
- (d) Impacts of the plan on the financial status of the company.
- (e) Other strategic considerations including flexibility, diversity, the size and lead time of commitments, and lost opportunities for investment.
- (f) Equity among customer classes.
- (g) The impacts of the plan over time.
- (h) Such other matters the commission considers appropriate.

Ohio Adm.Code 4901:5-5-06(B)(3)(d)(iii). Thus, while the traditional IRP process no longer applied after SB 3, the same key rule provisions exist to implement SB 221 that were in effect under traditional IRP regulation.

Some intervenors have argued that determining “need” through the resource planning process is merely a question of generation resource adequacy – specifically, whether “projected supply meets projected demands of customers” with a “reserve margin.” (Intervenors’ Mot. *in Limine* to Exclude Evidence Purporting to Show Need at 2 and Mem. Supp. at 6 (Jan. 7, 2019). OCC witness Lesser testified that AEP Ohio, as a member of PJM, could demonstrate need only if the PJM base residual auction and supplemental auctions failed to produce needed capacity. (Tr. VI at 1707-11, 1723.) Similarly, OMAEG witness Seryak does not believe there could be a resource planning need for generation resources if a utility has sufficient capacity to satisfy minimum reserve requirements. (Tr. IX at 2529.)

But R.C. 4928.143(B)(2)(c) does not require such a restrictive and unreasonably narrow interpretation. Staff witness Benedict readily acknowledged that there could be various other reasonable interpretations of need besides the narrow reading Staff used. (Tr. VIII at 2292.) Mr. Benedict acknowledged that the Commission “can do what it wants” and may adopt a broader definition of need because “the Commission is not bound to agree with Staff.” (Tr. VIII at 2345, 2368; Staff Ex. 2 at 11.) And R.C. 4935.04, which describes the scope of a hearing on a long-term forecast report, also does not require a restrictive reading of “need.” That statute says such hearings “shall include, but *not be limited to*,” information on “projected loads and energy requirements for each year of the [forecast] period” and “[t]he estimated installed capacity and supplies to meet the projected load requirements.” (Emphasis added.) R.C. 4935.04(E)(2). Under both statutes, “need” is not simply a question of generation resource adequacy. *See In re*

Long-Term Forecast Report of Ohio Power Co. and Related Matters, Case Nos. 10-501-EL-FOR *et al.* (“*In re 2010 Forecast Reports*”), Opinion and Order at 22 (Jan. 9, 2013) (recognizing that the list of topics in R.C. 4935.04(E)(2) is “non-exhaustive”).

Nor would such a constrained interpretation of “need” make any sense. When reviewing a statute, the Commission must look at “‘the four corners of the enactment’ to determine the intent of the legislature.” *MacDonald v. Bernard*, 1 Ohio St.3d 85, 89, 438 N.E.2d 410 (1982), quoting *Black-Clawson Co. v. Evatt*, 139 Ohio St. 100, 104, 38 N.E.2d 403 (1941). When R.C. 4928.143 went into effect as part of SB 221, Ohio had already required (in SB 3) that EDUs cede control of their transmission facilities to regional transmission organizations (RTOs). As the Supreme Court of Ohio recognized:

Since competition began in the provision of electric-generation service, the law has required incumbent electric-distribution utilities to transfer control of their transmission assets to “one or more qualifying transmission entities.” R.C. 4928.12(A). On October 1, 2004, Ohio Power transferred control of its transmission assets to PJM Interconnection, L.L.C. * * *.

(Footnote omitted.) *In re Application of Ohio Power Co.*, 140 Ohio St.3d 509, 20 N.E.3d 699, 2014-Ohio-4271, ¶ 4. Importantly, PJM is “responsible for ensuring resource adequacy across its footprint, including [AEP Ohio] and all of the state of Ohio.” (Staff Ex. 2 at 7.) Thus, by requiring electric utilities to join RTOs, the General Assembly had already ensured there would be sufficient generation to meet demand.

Interpreting R.C. 4928.143(B)(2)(c) to require a showing of unmet demand would make it impossible to demonstrate “need” at all, rendering that provision superfluous. An interpretation of R.C. 4928.143(B)(2)(c) that renders it a dead letter on arrival cannot be correct. *See Elec. Classroom of Tomorrow v. Ohio Dept. of Edn.*, Slip Opinion No. 2018-Ohio-3126, ¶ 23 (rejecting a statutory interpretation that “would render portions of the statute superfluous”),

citing *Stolz v. J & B Steel Erectors, Inc.*, 146 Ohio St.3d 281, 2016-Ohio-1567. Because AEP Ohio was already required to be part of PJM at the time SB 221 was enacted, the term “need” in the ESP statute necessarily means something more than resource adequacy as provided for by PJM. Plus, “the General Assembly is not presumed to do a vain or useless thing, and * * * when language is inserted in a statute it is inserted to accomplish some definite purpose.” *State v. Wilson*, 77 Ohio St.3d 334, 336, 673 N.E.2d 1347 (1997), quoting *State ex rel. Cleveland Elec. Illum. Co. v. Euclid*, 169 Ohio St. 476, 479, 159 N.E.2d 756 (1959). It follows that the term “need” in the ESP statute necessarily means something more than resource adequacy as provided for by PJM.

When reviewing a statute, one cannot “pick out one sentence and disassociate it from the context,” but we instead must look at “the four corners of the enactment” to determine the intent of the legislature. *MacDonald*, 1 Ohio St.3d 85, 89, quoting *Black-Clawson Co. v. Evatt*, 139 Ohio St. 100, 104, 38 N.E.2d 403 (1941). There is nothing in the ESP statute to indicate that a determination of “need” was only to be triggered if there is a collapse of PJM markets. Thus, taken together with the other provisions in RC Chapter 4928 (including R.C. 4928.12), the term “need” in R.C. 4928.143(B)(2)(c) cannot be reasonably interpreted as only encompassing a doomsday scenario for PJM.

Under the Commission’s rules, an integrated resource plan clearly must *address* generation resource adequacy. *See* Ohio Adm.Code 4901:5-5-06(B)(3)(a) (“LTFR Rule 6”), (e)(i) (requiring a discussion of the utility’s “projected mix of resource options” to meet projected “peak demand and total energy requirements”), and (b) (requiring a discussion of the short- and long-term adequacy of the “electric utility’s projected system” and “fuel supplies”). But that is not the plan’s sole focus. The long-term forecast report must discuss “*all* major

factors” when describing how the utility determined “the need for additional electricity resource options.” (Emphasis added.) Ohio Adm.Code 4901:5-5-06(B)(2). And the integrated resource plan must include information “sufficient for the commission to determine the *reasonableness* of the resource plan,” including the plan’s “adequacy, reliability, and cost-effectiveness”; its “potential * * * customer bill impacts”; its “environmental impacts” and “significant economic impacts”; “strategic considerations including flexibility [and] diversity”; *and* “[s]uch other matters the commission considers appropriate.” (Emphasis added.) *Id.*, (B)(3)(e).

On the stand, Staff witness Benedict argued that the reasonableness of an integrated resource plan is “largely irrelevant without the Commission first determining there is a need for a facility.” (Tr. VIII at 2359-60.) But that position does not square with the Commission’s rules. The SSO filing rules require a LTFR filing to address the need question. Ohio Adm.Code 4901:1-35-03(C)(9)(b)(i). The LTFR rules require the utility to provide information sufficient for the Commission to determine the reasonableness of the IRP. Ohio Adm.Code 4901:5-5-06(B)(3)(e). The Commission would not impose rules and filing requirements that are not germane.

Ultimately, during cross examination, Mr. Benedict admitted that the Commission’s adoption of LTFR filing requirements are germane to this proceeding and that the Commission had a good reason to adopt the rules. (Tr. VIII at 2365.) And Commission precedent confirms that the factors in (B)(3)(e) of LTFR Rule 6 are not an afterthought, to be considered only after reviewing the utility’s load forecasts and determining “whether there [are] sufficient resources to meet that need.” (*Id.*) Instead, they are a central focus of the “need” determination, as the Commission explained in 2009:

It is not unreasonable for the Commission to use the results of the IRP process to determine the need for construction of a facility being proposed as part of an ESP

proceeding. Making a determination of need for a generating facility requires consideration of forecasts, existing and new resources, *and the impacts of alternative resource strategies*. Given that an IRP proceeding is where an electric utility files its forecasts and resource plans and the Commission reviews the electric utility's analysis of resource alternatives, *an IRP proceeding is the appropriate proceeding in which to identify the characteristics of needed new resources*.

(Emphasis added.) *In re Adoption of Rules for Standard Service Offer, Corporate Separation, Reasonable Arrangements, and Transmission Riders for Electric Utilities Pursuant to Sections 4928.14, 4928.17, and 4905.31, Revised Code, as amended by Amended Substitute Senate Bill No. 221*, Case No. 08-777-EL-ORD, Entry on Rehearing at 10 (Feb. 11, 2009).

Several intervenors conceded the relevancy of these factors at hearing. OCC witness Lesser acknowledged that resource planning includes a least-cost component. (See OCC Exhibit 18 at 22.) Indeed, he was emphatic that you cannot separate need from cost – both in the generic need analysis and with regard to specific projects. (Tr. VI at 1631-32, 1635.) Yet, even if there was certainty about the net benefit exceeding the cost for the renewable resources, OCC witness Dr. Lesser would not support a finding of need. (*Id.* at 1636-37.) IEU-Ohio witness Murray testified that concerns about “fuel diversity” could lead the Commission to “look at the resource mix within the PJM and say we want some different type of generation * * * over and above what’s being acquired through [PJM’s] capacity auction.” (*Id.* at 1835.) OCA witness Medine agreed that fuel diversity is a valid factor in the context of resource planning cases and a goal under Ohio’s codified energy policy. (Tr. VII at 1947-48.) Kroger Witness Bieber also acknowledged that it is appropriate for the Commission to consider economic impacts and fuel diversity in connection with determining whether there is a resource planning need for a renewable generation project. (See Tr. VIII at 2249-2251, 2254.) OCA witness Brown admitted he had testified, in a Power Siting Board proceeding, that public need for power generation depends not only on the sufficiency of baseload generation and “other aspects of system

reliability,” but also “economic benefit, environmental benefit, or the ability to meet renewable energy portfolio standards[.]” (Tr. VII at 1904:10-21.) The Commission should confirm that “need” under the ESP statute can be triggered based on the factors in Rule 6 that establish the reasonableness of an integrated resource plan.

Staff witness Benedict readily acknowledged that there could be various other reasonable interpretations of the need statute besides the narrow reading Staff used. (Tr. VIII at 2292.) Mr. Benedict stated that the Commission “can do what it wants” and may adopt a broader definition of need than Staff is proposing because “the Commission is not bound to agree with Staff.” (*Id.* at 2345, 2368; Staff Ex. 2 at 11.) One important factor that Mr. Benedict cited as something that could cause the Commission to reject Staff’s narrow interpretation of need is the benefits the Company has identified in its Amended Application – which he indicated that the Commission might find “compelling.” (Staff Ex. 2 at 11; Tr. VIII at 2369-70.) AEP Ohio submits that the Commission should endorse a broader definition and more reasonable of need consistent with the Company’s *Amended LTFR* filing and supporting testimony.

The Commission’s opinion on the Turning Point project requires no different conclusion. In those proceedings, AEP Ohio supplemented its forecast report to provide information about its plan to enter into a capital leasing arrangement for 49.9 MW of solar energy resources (the “Turning Point” project) “to facilitate compliance with its SER [solar] benchmarks” in R.C. 4928.64(B). *See In re 2010 Forecast Reports*, Opinion and Order at 2 (Jan. 9, 2013). AEP Ohio and Staff stipulated that AEP Ohio had shown a need for the project under R.C. 4928.143(B)(2)(c) and R.C. 4928.64(B)(2). *See id.* at 6. The Commission disagreed, finding AEP Ohio had not met the test for “need” previously set out in AEP Ohio’s *ESP II* case: *i.e.*, that Turning Point be “necessary to comply with the solar renewable energy resource [benchmarks]

* * * and that sufficient solar energy resources [not be] available through competitive markets.”

See id. at 25-26, citing *ESP II*, Opinion and Order at 40 (Dec. 14, 2011). The Commission found AEP Ohio already had a power purchase agreement that would likely provide “sufficient SRECs to satisfy the Company’s SER benchmarks[,]” and that other electric utilities and CRES providers would likely be able to meet their solar benchmarks as well. *Id.* at 26-27.

AEP Ohio believes the Turning Point decision can be distinguished from the circumstances presented in the current case. The Commission’s February 23, 2012 Entry on Rehearing in the *ESP II* proceeding that revoked the December 14, 2011 Opinion and Order in that case relied upon in the *2010 Forecast Report* decision was revoked by the Commission through its February 23, 2012 Entry on Rehearing in the *ESP II* proceeding. So subsequent reliance on that decision is questionable. More importantly, the Commission’s findings regarding market conditions (lack of market failure at that time, etc.) are fact-intensive and based on the record in that case. Such findings from the 2010 case are not binding as to the outcome of the record evidence in this case about current market failures. Moreover, the decision merely represents the policy views of a prior Commission. The Commission can change its policy views or modify the rationale from a prior decision by simply explaining why it is doing so. *See In re Duke Energy Ohio, Inc.*, 150 Ohio St.3d 437, 2017-Ohio-5536, ¶ 23, citing *In re Application of Columbus S. Power Co.*, 128 Ohio St.3d 512, 2011-Ohio-1788, ¶ 52 (“If the commission departs from precedent, it must explain why.”). In any event, the Commission never held that an electric utility seeking to recover the costs of a renewable energy resource *must* demonstrate that the facility is needed to meet its renewable benchmarks. In fact, the Commission noted it was only assuming “that the determination of need under [R.C.] 4928.143(B)(2)(c) * * * may take into account the SER benchmarks * * *.” *In re 2010 Forecast Reports*, Opinion and Order at 26 n.10

(Jan. 9, 2013). The Commission had previously held it may authorize generation projects under R.C. 4928.143(b)(2) “upon a demonstration of need” if the projects were “narrowly tailored to advance the policy provisions contained in [R.C.] 4928.02 * * * or the statutory mandates contained in [R.C.] 4928.64 * * *.” (Emphasis added.) *ESP II*, Opinion and Order at 39-40. The Commission further indicated that it would authorize new generation projects “only * * * when generation needs cannot be met through the competitive market.” *Id.* at 39.

Thus, the fact that AEP Ohio does not require additional wind or solar capacity to meet its renewable portfolio standard benchmarks is not an impediment to showing need as set forth in the Company’s *Amended LTFR* filing. Nothing in Ohio law prevents an electric utility from developing more renewable energy resources than it needs to meet its portfolio standards. *See* R.C. 4928.64(B)(1) (“[N]othing in this section precludes a utility * * * from providing a greater percentage.”). On cross-examination, even OMAEG witness Seryak agreed that state policy could support renewable energy beyond the level required by the RPS. (Tr. IX at 2532.)

Regarding state policies, record evidence in this case demonstrates that developing at least 900 MW of renewable energy projects in Ohio will ensure the availability of adequate, reliable, safe, efficient, non-discriminatory, and reasonably priced retail electric service (R.C. 4928.02(A)); give customers the options they choose (R.C. 4928.02(B)); ensure “diversity of electric supplies and suppliers” (R.C. 4928.02(C)); protect consumers from “market power” (R.C. 4928.02(I)); incentivize “technologies that can adapt successfully to potential environmental mandates” (R.C. 4928.02(J)); and facilitate Ohio’s “effectiveness in the global economy” (R.C. 4928.02(N)). In short, the evidence presented by AEP Ohio and supporting intervenors demonstrates that there is a resource planning need for developing economical renewable resources in the Company’s service territory that the market is not meeting, and that

developing those resources would meaningfully further the Ohio energy policies codified in R.C. 4928.02.

IV. Issues Presented in the Phase I Hearing Relating to the Need Determination

On April 16, 2018, AEP Ohio submitted its 2018 Long-Term Forecast Report (“2018 LTFR”) pursuant to Rule 4901:5-1-03 and 4901:5-3-01 of the Ohio Administrative Code. AEP Ohio supplemented its 2018 LTFR on May 31, 2018 and June 26, 2018 to provide additional information regarding planned electric transmission lines and proposed substations. On September 19, 2018, the Commission granted AEP Ohio’s motion for waivers of limited portions of the Commission’s forecast report requirements. That same day, the Company filed an amendment to its 2018 LTFR and testimony in support. During the evidentiary hearing, the Company presented two witnesses, AEP Ohio witnesses Torpey and Ali, that jointly sponsored AEP Ohio Ex. 1 (the 2018 Long-Term Forecast Report) and AEP Ohio Ex. 2 (the Amendment to the 2018 LTFR). (Tr. I at 11-12 (introduced); Tr. VI at 1576 (admitted).) The Commission should find that the Company’s filings satisfy the LTFR filing requirements.

Shortly after filing its *Amended LTFR* in this proceeding to support a finding of need for at least 900 MW of renewable generation resources located in Ohio, AEP Ohio initiated the *Tariff Cases*. In the *Tariff Cases*, AEP Ohio filed an application seeking approval to include two solar energy resources totaling 400 MW of nameplate capacity in the Company’s RGR and establish a new Green Power Tariff, under which customers may purchase renewable energy certificates (RECs) for the solar energy resources’ environmental attributes. AEP Ohio requested consolidation of the *Amended LTFR* and the *Tariff Cases*, for administrative efficiency and based on the inter-related issues between the cases. The Attorney Examiner consolidated the

cases but established a two-phase hearing process because the need issue should be heard first as a distinct issue. Entry at ¶ 32 (Oct. 22, 2018).

That Entry also indicated that the bifurcated hearing did not preclude the Company from offering direct testimony from the *Tariff Cases* at the hearing on the issue of need. *Id.* The Company promptly indicated that it planned to add the testimony of Drs. Buser and LaFayette to the list of witnesses for the need hearing. *See* October 26, 2018 Letter. Through an additional Entry dated January 14, 2019, the Attorney Examiner reiterated the scope of the need hearing and deferred certain intervenor testimony to the second phase of the hearing.

In the *Tariff Cases*, AEP Ohio seeks approval to include two solar energy resources totaling 400 MW of nameplate capacity in the Company's RGR and establish a new Green Power Tariff, under which customers may purchase RECs for the solar energy resources' environmental attributes. In accordance with the *PPA Rider Case* and the *ESP IV Case*, the Company executed 20-year REPAs for the energy, capacity, and environmental attributes associated with two solar energy projects to be constructed in Highland County, Ohio – a 300 MW nameplate capacity solar facility known as Highland Solar and a 100 MW nameplate capacity solar facility known as Willowbrook Solar. *Tariff Cases*, Application at 1-2. The solar facilities would be operated on the Company's behalf and the Company would be responsible for the dispatch of the resources in the wholesale markets. *Id.* at 2. In the *Tariff Cases*, AEP Ohio requests that the Commission find that it is reasonable and prudent for the Company to enter into the REPAs and that the Company should be authorized under R.C. 4928.143(B)(2)(c) to recover through the RGR its REPA costs and debt equivalency costs for the life of the facilities. *Id.* With respect to the Green Power Tariff, AEP Ohio requests approval to establish the tariff under R.C. 4909.18, as an application not for an increase in rates, in order to provide all customers

(whether served by the Company's SSO or by a competitive retail electric service provider) the opportunity to purchase RECs to cover some or all of their usage. *Id.* at 3.

AEP Ohio requested consolidation of the *Amended LTFR* and the *Tariff Cases*, for administrative efficiency and based on the common and inter-related issues between the cases. The Attorney Examiner consolidated the cases but established a two-phase hearing process because the need issue should be heard first as a distinct issue. Entry at ¶ 32 (Oct. 22, 2018). That Entry also indicated that the bifurcated hearing did not preclude the Company from offering direct testimony from the *Tariff Cases* at the hearing on the issue of need. *Id.* The Company promptly indicated that it planned to add the testimony of Drs. Buser and LaFayette to the list of witnesses for the need hearing. *See* October 26, 2018 Letter. Through an additional Entry dated January 14, 2019, the Attorney Examiner reiterated the scope of the need hearing and deferred certain intervenor testimony to the second phase of the hearing.

In support of the *Amended LTFR*, AEP Ohio filed direct and rebuttal testimony that was admitted into record and should be relied upon by the Commission. While the testimony will be discussed in more detail below, a high-level summary of the testimony is offered at the outset:

William Allen, Managing Director of Regulatory Case Management, American Electric Power Service Corporation (AEPSC) - Mr. Allen: 1) provides an overview of the *Amended LTFR* and introduces the witnesses; 2) provides the background information leading the Company to make this filing; 3) defines and supports the need for renewable generation in Ohio; 4) discusses the RGR, the recovery mechanism for renewable energy resources, and; 5) discusses the required timing of renewable projects. (AEP Ohio Ex. 3; Tr. I at 23-24 – Tr. II at 398.)

Kamran Ali, Managing Director of Transmission Planning, AEPSC - Mr. Ali's testimony supports the Company's methodology, analysis, and results in determining the expected impacts of the renewable projects on locational marginal prices (LMPs), and provides an overview of the planning and operation of AEP Ohio's transmission system. (AEP Ohio Ex. 5; Tr. II at 402-528; AEP Ohio Ex. 26; Tr. XII at 2748-2832.)

Trina Horner, Navigant Director - Ms. Horner sponsors the report prepared by Navigant Consulting, Inc. ("Navigant"), "AEP Ohio Voice of the Customer: Attitude & Expectations of Renewable Energy" ("Voice of the Customer Survey"). The Voice of the Customer Survey indicated that a strong majority of customers believe it is important that AEP Ohio makes greater use of renewable energy above current levels. The Voice of the Customer Survey also revealed that a majority of residential customers and many small C&I customers are willing to pay some additional amount on their electricity bills for AEP Ohio investments in renewable energy. (AEP Ohio Ex. 6; Tr. III at 544-730.)

Nicole Fry, Navigant Associate Director - Ms. Fry describes the design and implementation of Navigant's primary research of customer interest in renewable energy generated in Ohio and delivered by AEP Ohio. (AEP Ohio Ex. 10; Tr. III at 739-773.)

Karl Bletzacker, Director of Fundamental Analysis, AEPSC - Mr. Bletzacker sponsors the Company's Long-Term North American Energy Market Forecast utilized in the IRP analysis sponsored by Company witness Torpey. (AEP Ohio Ex. 11; Tr. III at 775-869.)

Dr. Stephen A. Buser, Emeritus Professor of Finance, Fisher College of Business at The Ohio State University – Dr. Buser demonstrates that the projects will benefit Ohio's economy, based on a formal economic impacts study. (AEP Ohio Ex. 12; Tr. IV at 1060-1123.)

Dr. Bill LaFayette, Owner, Regionomics LLC – Dr. LaFayette is jointly sponsoring the study that demonstrates the projects’ favorable economic impacts and summarizes the model and data analysis employed in the study. (AEP Ohio Ex. 13; Tr. IV at 1126-1173.)

John Torpey, Managing Director of Resource Planning and Operational Analysis, AEPSC - Mr. Torpey’s testimony presents the cost savings associated with the addition of economically beneficial renewable resources. (AEP Ohio Ex. 14; Tr. V at 1281—Tr. VI at 1564.)

In addition to the Company’s testimony, several intervenor witnesses supported the Company’s proposal:

Bruce Burcat, Executive Director for the Mid-Atlantic Renewable Energy Coalition (MAREC) – Mr. Burcat supports a finding of resource planning need for renewable energy projects of at least 900 MW in Ohio, based on promoting economic benefits, environmental benefits, and helping drive long-term rate stability through a hedging mechanism. (MAREC Ex. 1; Tr. VIII at 2024-2214.)

David C. Rinebolt, Director of Special Projects for Ohio Partners for Affordable Energy (OPAE) - Mr. Rinebolt applied the criteria in Ohio Admin. Code 4901:5-5-06(B)(3)(e) to show how the Company’s proposal promotes the economic interests of the Company’s customers and the State of Ohio, while creating a favorable environmental impact and promoting Ohio energy policies. (OPAE Ex. 1; Tr. V at 1185-1275.)

Michael Goggin, Vice President of Grid Strategies LLC and witness for Sierra Club – Mr. Goggin testified in support of a renewable need determination by demonstrating five points: (1) PJM renewable resources are low, (2) PJM capacity markets unreasonably disadvantage renewable resources, (3) PJM ancillary and energy markets undervalue

renewable resources, (4) PJM transmission planning, cost allocation and interconnection processes inhibit renewable resource development, and (5) 900 MW of new renewable resources would create downward pressure on energy clearing prices and provide significant environmental benefits. (Sierra Club Ex. 1; Tr. IV at 882-989.)

Gabrielle Stebbins, Senior Consultant at Energy Futures Group and witness for Natural Resources Defense Council (NRDC) – Ms. Stebbins supports a finding of need because the proposal will significantly increase the amount of in-state solar, customers strongly support increased renewable power, and Ohio energy policies would be advanced. (NRDC Ex. 1; Tr. IV at 999-1056.)

In addition, there was overwhelmingly supportive public testimony and comments filed in the docket. At the December 4, 2018 public hearing, 55 individuals took the time and effort to travel to the hearing and testify in support of the proposal and not a single witness registered opposition. (*See* PHT.) Similarly, well over 5,000 comments in support of the Company's proposal were filed in the docket as of March 1, 2019. No one filed comments that oppose the proposal. This kind of unanimous support is extremely rare with a public utility filing, and the Commission should give weight to such a broad-based and uniform display of public support.

V. Record Evidence Supports a Finding of Need for At Least 900 MW of Additional Renewable Resources.

The *Amended LTFR* and the Company and intervenor testimony submitted in this proceeding support a finding of need for at least 900 MW of renewable generation resources located in Ohio. In its *Amended LTFR* and supporting testimony, the Company set forth six distinct factual bases for supporting the requested need finding:

1. A formal survey shows that AEP Ohio customers want and need long-term renewable power generated by new Ohio renewable projects.

2. Large-scale development of reasonably priced Ohio renewable energy projects conveys a price advantage and rate stability for customers.
3. Developing renewable projects in Ohio that are deliverable to AEP Ohio's service territory can help reduce congestion costs and ultimately transmission rates.
4. New in-state renewable projects will provide significant local and state-wide economic benefits.
5. New renewable projects in the state will help reduce Ohio's importation of power and avoid Ohio consumers being price-takers for out-of-state generation supply.
6. New renewable projects in the state will promote fuel diversity, advance the development of renewable technology, and help reduce carbon emissions in Ohio.

All of these are supported by evidence of record, specifically: (A) the Voice of the Customer Survey, which demonstrates that AEP Ohio customers desire additional, Ohio-sited renewable energy resources; (B) the economic analyses set forth in its IRP, which demonstrate that constructing additional, Ohio-sited renewable energy resources would be economically beneficial to AEP Ohio's customers; (C) its economic impact study, which demonstrates that constructing additional, Ohio-sited renewable resources would create tangible and significant economic benefits for Ohio, and (D) providing substantial testimony and evidence that there are market failures that have discouraged development of in-state, utility-scale renewable resources which a finding of need will help ameliorate. In addition, as demonstrated in Section V.D, *infra*, the record confirms that the potential market alternatives put forth by Staff and intervenors are inadequate and do not meet customer needs for renewable energy.

A. Navigant's Voice of the Customer Survey demonstrates that customers desire additional, Ohio-sited renewable energy resources.

Ohio customers and policymakers have a growing awareness of the need to modernize the electric grid and diversify consumers' energy supply. Not knowing for sure how it would turn out, the Company took a risk undertaking a formal survey of customer views toward utility-sourced renewable energy and the associated bill impacts. AEP Ohio retained Navigant to assess residential and commercial and industrial (C&I) customer interest and attitudes toward renewable energy generated in Ohio and delivered by AEP Ohio. Navigant used a two-step

process to identify large C&I customers with a higher likelihood of interest in renewable energy given commitments to one or more leading sustainability organizations and then estimated the potential magnitude of that interest. (AEP Ohio Ex. 6, Ex. TH-1 at 5 of 41.) The research team found that 75 of AEP Ohio's largest customers representing 8.8% of its C&I customer load have made such a commitment. (*Id.* at 14 of 41.) Serving all of these customers with renewable generation would require the procurement of approximately 2,600 GWh of renewable generation. (*Id.*)

And the results of the Voice of the Customer Survey were overwhelmingly positive – consistent with the unanimous customer support at the public hearing and in the docket in this proceeding. C&I customers have driven demand for renewable generation across the U.S. with ambitions to source their own operations with renewable energy resources and create local jobs and growth. Many of these companies have headquarters or operations in Ohio, creating local demand for renewable generation.

To better understand small C&I and residential customers' perspectives on utility-sourced renewable generation, Navigant also conducted an online survey with three AEP Ohio customer groups in August 2018: active PIPP residential customers, residential non-PIPP customers, and small C&I customers. (*Id.* at 5 of 41.) The survey explored the following topics:

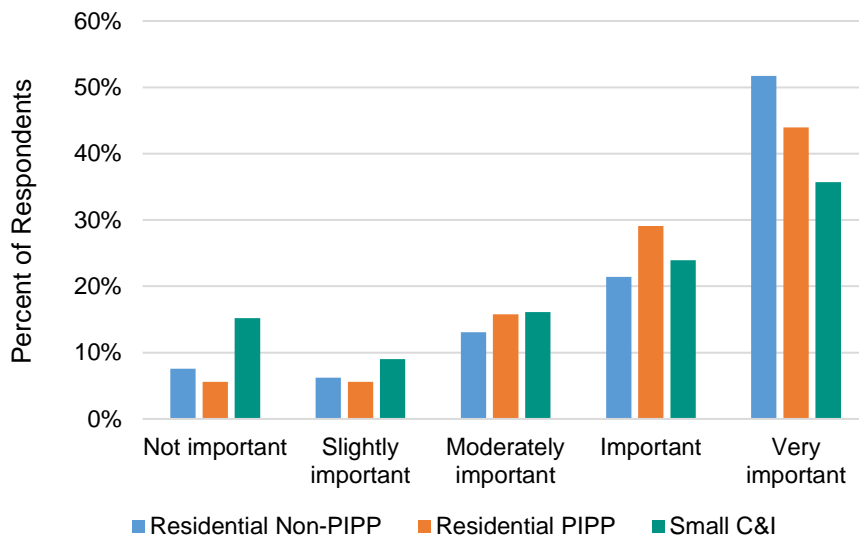
- Level of importance that future energy provided by AEP Ohio makes greater use of renewable energy generation (e.g., wind and solar) above the current mandatory minimum level of 4.5% of the generation mix
- Perceived benefits of utility investments in renewable energy
- Level of importance that AEP Ohio provide renewable energy that is produced within the state of Ohio
- Support for paying a monthly bill increase associated with AEP Ohio's commitment to pursue development of 900 MW of new renewable generation, consisting of 500 MW of wind generation and 400 MW of solar generation
- Level of agreement with statements regarding AEP Ohio's efforts to reduce air pollution and invest in wind and solar energy generation

(*Id.* at 5-6 of 41.) The survey also provided an opportunity for open-ended comments regarding AEP Ohio’s commitment to pursue development of renewable energy generation. (*Id.* at 6 of 41.)

Results from the online survey indicate that a strong majority of customers believe it is important that AEP Ohio makes greater use of renewable energy above current levels. (*Id.*) At least half of the participants in each customer group also believe it is important that AEP Ohio provide renewable energy produced in Ohio. (*Id.*) Navigant’s Voice of Customer survey demonstrates that AEP Ohio customers prefer that the utility deploy additional renewable resources above the current mandatory level – and they are willing to pay for that addition. Stated differently, the survey shows that customers expect, demand and need more renewable energy than is being provided through existing market sources.

The tabulation of the survey response data presents a compelling case for need. For example, consider Figure 6 from the Voice of the Customer Survey report:

Figure 6. Importance That AEP Ohio Makes Greater Use of Renewable Energy above Current Levels



Survey question response counts: residential non-PIPP n=7,498; residential PIPP n=660; small C&I n=664.

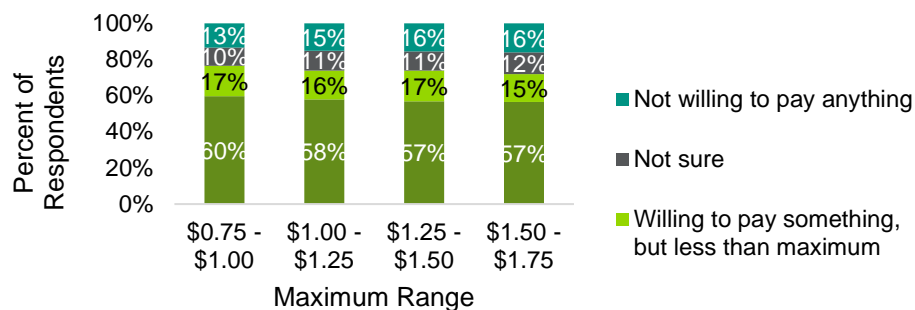
Survey question: AEP Ohio currently obtains 4.5% of its electricity from renewable sources such as wind and solar. AEP Ohio is looking to make investments to increase the percentage of electricity from wind and solar above this level. They are seeking input from customers regarding these investment choices. How important is it to you that energy provided to you in the future makes greater use of renewable energy generation (e.g., wind and solar)?

Source: Navigant online survey data

(*Id.* at 17 of 41.)

This data shows that 92% of residential non-PIPP customers think it is important (slightly important, moderately important, important or very important) that AEP Ohio make greater use of renewable energy above the mandatory level; only 8% of those customers indicated that it was not important. Residential PIPP customers come in even higher at 94%; only 6% of those customers indicated that it was not important. Similarly, 85% of small C&I customers think it is important; only 15% of those customers indicated that it was not important. This is overwhelming and unmistakable support – and it is not just in the abstract. Customers were also asked about their willingness to pay for the additional utility-sourced renewable resources at levels that range much higher than the expected cost of the Company’s current proposal. As AEP Ohio witness Horner testified, “it’s important to find out from customers what they’re willingness to pay is and * * * -- that they clearly understand that their bills would be impacted by these initiatives, and I believe the survey made that clear.” (Tr. III at 650.) In this regard, consider Figure 9 from the Voice of the Customer Survey report:

Figure 9. Residential Non-PIPP Willingness to Pay Results



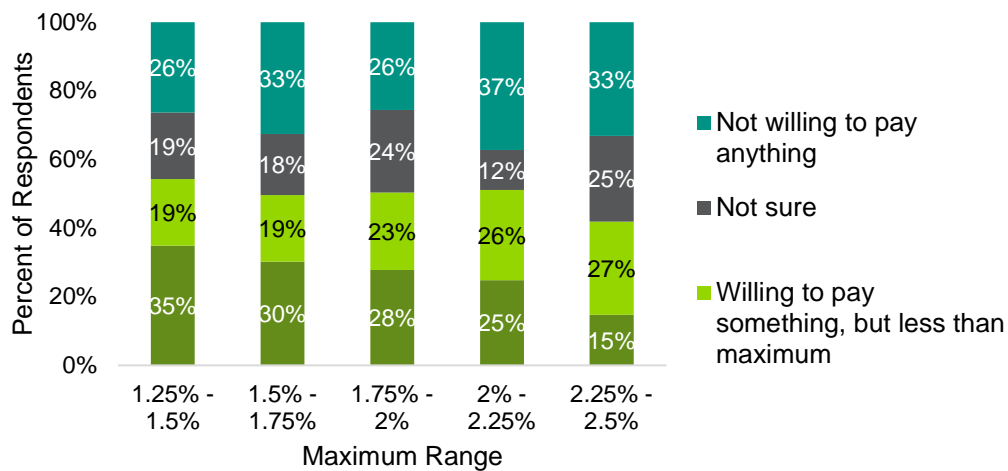
Survey question response count: residential non-PIPP n=7,498.

Source: Navigant online survey data analysis for Questions 6-9, as shown in Appendix A

(AEP Ohio Ex. 6, Ex. TH-1 at 20 of 41.) Notably, Figure 9 shows that a significant majority of residential non-PIPP customers were willing to pay the maximum value in each price range. If you combine the customers willing to pay the maximum values with the customers willing to pay something less than maximum, the numbers go up to 77% for the \$0.75-\$1.00 range; 74% for the \$1.00-\$1.25 range; 74% for the \$1.25-\$1.50 range; and 72% for the \$1.50-\$1.75 range. These are particularly compelling results, especially when you consider that the *low end* of the pricing tiers surveyed are well above the *high end* of the bill impacts for residential customers presented in the Company’s filing in the *Tariff Cases*.⁷

Small C&I results were also impressive but not as high as the residential results, as reflected in Figure 10:

Figure 10. Small C&I Willingness to Pay Results



Survey question response count: small C&I n=664.

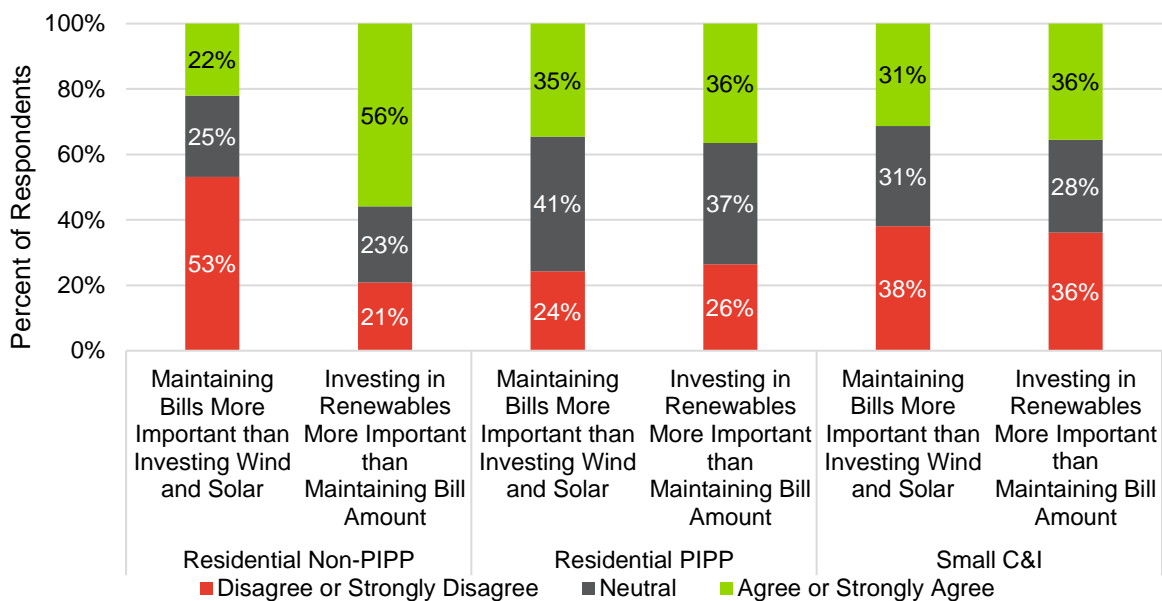
⁷ The initial projected net cost for 400 MW of solar and 250 MW of wind resources is \$8.1 million for 2021 (\$4.4 million for solar and \$3.7 million for wind). (AEP Ohio Ex. 14 at Ex. JFT, pages 21-22.) The year 2021 in the Company’s projections are the highest net cost and it turns into a net benefit over time and overall. (*Id.*) The retail sales are on FORM FE-D1 (AEP Ohio Ex. 1 at 92) and for 2021 are 43,144,591 MWh. Taking \$8,100,000 divided by 43,144,591MWh yields a cost of \$0.188/MWh. So, for a typical residential customer using 1,000 kWh a month they would pay 19 cents compared to the lowest level in the survey of 75 cents.

Source: Navigant online survey data analysis for Questions 6-9, as shown in Appendix A

(AEP Ohio Ex. 6, Ex. TH-1 at 21 of 41.) Because there are large variations in small C&I bills, a percentage increase had to be used in the pricing tiers – and there appears to be a fairly high level of “not sure” that could have ended up supporting if they had a clearer picture of the bill impacts. In any case, a majority of small C&I customers were willing to pay for most pricing tiers.

The Voice of the Customer Survey probed even further into willingness to pay by asking for relative priorities of maintaining bills versus investing in renewables. Figure 14 confirms the same theme:

Figure 14. Customer Preference for Maintaining Current Bills or AEP Ohio Investing in Wind and Solar Energy



Survey question response counts: residential non-PIPP n=7,498; residential PIPP n=660; small C&I n=664.
Source: Navigant online survey data

(*Id.* at 25 of 41.) From Figure 14, we see that most residential non-PIPP customers agree that investing in renewables is more important than maintaining their current bill; and (conversely) most of those customers disagree that maintaining bills is more important than investing in renewables. Residential PIPP customers have a large neutral group (presumably since those

customers are not as price-sensitive, due to their fixed bills). Most small C&I customers are either neutral or disagree that maintaining bills is more important than investing in renewables; those customers are also either neutral or agree that investing in renewables is more important than maintaining their bill.

Meeting customer needs is consistent with Ohio policy to “[e]nsure the availability of unbundled and comparable retail electric service that provides consumers with the supplier, price, terms, conditions, and quality options they elect to meet their respective needs.” R.C. 4928.02(B). The Commission should rely on the statistically valid, expertly-designed and -administered Voice of the Customer Survey and make a finding that AEP Ohio customers expect, demand and need more renewable energy than is being provided through existing market sources.

1. The intervenors’ critiques of the Voice of the Customer Survey’s methodology, implementation, and biases do not warrant ignoring the survey responses.

Witnesses for the intervenors have attempted to assail the Voice of the Customer Survey in numerous ways. Numerous intervenors have challenged the Survey’s methodology. Claims have been made that the questions asked in the Survey were improperly implemented. The format and the content of the questions have been impugned as biased and non-scientific. As demonstrated below, however, none of the criticisms provided by the intervening parties to the Voice of the Customer Survey are valid and AEP Ohio witnesses Horner and Fry were the only expert witnesses qualified to design, implement and evaluate a customer survey of this nature.

OCA witness Medine questions the representativeness of survey participants. (OCA Ex. 3 at 33.) She questions whether AEP Ohio had a truly representative sample of its customers because the survey was conducted via e-mail and an e-mail address was unavailable for 38

percent of non-PIPP residential accounts, 43 percent of PIPP residential accounts and 65 percent of small C&I accounts. (*Id.*) Similarly, OCA witness Brown asserts that the customer response rates are quite low and raise issues regarding non-response bias. (OCA Ex. 2 at 31.) He suggests Navigant cannot know that the results of its survey are truly representative of customers' opinions and that Navigant's statement that some customers are willing to pay an additional amount on their electricity bills for AEP Ohio investments in renewable energy is factually incorrect. (*Id.* at 31-32.) Dr. Brown bases these conclusions on a belief that using samples smaller than all of AEP Ohio customers may not be properly representative and gathering information from only those customers responding cannot be broad enough. (*Id.* at 31.) It would appear that Ms. Medine and Dr. Brown would not be satisfied with anything less than a response from every AEP Ohio customer (which is more of a census than a survey), but nowhere in their testimonies do they explain what response rate would be sufficient to satisfy their concerns. Is the Commission to conclude only a survey of every AEP Ohio customer would be satisfactory? Such a suggestion would be impossible at worst and unreasonable at best.

OMAEG's Seryak asserts that the Voice of the Customer Survey is flawed because it mainly seeks respondents' opinions about renewable energy and fails to adequately inform respondents, or at least poll them about their understanding, of the following:

[w]hether AEP Ohio – a deregulated distribution-only company - should be allowed to participate in the competitive electric generation market and receive customer funds to do so, when the policy of the state is to support competitive market development.

(OMAEG Exhibit 16 at 13.) There are two significant problems with Mr. Seryak's suggestion. First, it is almost impossible to imagine how one would pose such a question to an average Ohio electric consumer and expect a thoughtful answer without an additional, detailed presentation outlining a number of historical aspects of electric regulatory law in Ohio. Second, the question

Mr. Seryak flippantly suggests be posed to AEP Ohio customers happens to be the specific legal question reserved for this Commission in these proceedings.

OCC witness Dormady challenges the approach used by Navigant to poll the respondents about willingness to pay. Dr. Dormady claims that there are two approaches commonly used by professionals in such circumstances, either a “Stated Preference or a “Revealed Preference.” (OCC Ex. 24 at 5-6.) Stated Preference method asks a respondent to state their hypothetical preferences (what they say they will do) while a Revealed Preference would review a respondent’s actual non-hypothetical past actions (what they actually do) to obtain survey results. (*Id.* at 6.) Dr. Dormady claims that Navigant’s study is flawed and not reliable because it used a Stated Preference method rather than a Revealed Preference method. (*Id.* at 8.) However, one cannot conduct a survey using a Revealed Preference approach unless the respondent has actually made a prior choice to engage or not engage in some behavior or action. Navigant could not have surveyed AEP Ohio customers regarding their desire for utility-scale generation in Ohio or their willingness to pay for it under a Revealed Preference approach because there has never been utility-scale generation in Ohio similar to what the Company is proposing. His lack of awareness of that important fact was confirmed by his admission on cross-examination that he was not familiar with, nor would he know if, any electric utility in Ohio had a nonbypassible charge in place regarding renewables. (Tr. XI at 2736-2737.)

For the reasons above, the Commission should not allow the vituperations being offered by the intervenors to draw its focus away from the actual results of the Voice of the Customer Survey or permit itself to be persuaded into believing that the survey’s method and mechanisms produced anything other than an appropriately reliable and accurate result.

2. The intervenor witnesses challenging the survey lack experience developing or implementing customer surveys and none of them presented a competing customer survey.

It is imperative that this Commission take notice of one simple yet uncontested fact regarding the various intervening party's challenges to the Navigant Voice of the Customer Survey: no one other than the Company surveyed AEP Ohio customers regarding their interest in renewables and their willingness to pay for utility-scale renewable development in Ohio. The intervening witnesses candidly admitted their failure to conduct a survey. OMAEG witness Seryak admitted that OMAEG never surveyed its constituents regarding their positions on renewable energy or their needs for renewable energy. (Tr. IX at 2548.) OCC witness Dormady did not conduct a survey. (Tr. XI at 2695-2696 and 2723.) IGS witness Rengstorf offered that his testimony "does not present any third-party studies." (Tr. IX at 2574.) OCA witness Brown did not conduct any customer survey. (Tr. VII at 1878.) And IEU witness Murray confirmed that he did not present any competing survey of customer preferences. (Tr. VI at 1833.) OCC witness Dr. Dormady, even after he proffered a significant amount of testimony questioning and challenging the reliability of the Voice of the Customer Survey and asserting that the survey the results had to be flawed, openly admitted on cross-examination that though he did not "believe" the Voice of the Customer Survey results are accurate, it was entirely "possible" that they are accurate. (Tr. XI at 2723.)

Further, the intervening parties failed to provide evidence of any existing comparative survey that would provide a counter-point to Navigant's Voice of the Customer Survey. Dr. Dormady indicated that while he was aware of existing studies regarding renewables, it was not within "his scope" to review other available studies. (*Id.* at 2724.) He also offered that he was

not aware of any similar studies in Ohio regarding customer's opinions on renewables and their corresponding willingness to pay for them. (*Id.*)

It is also patently clear that no intervenor challenging the Company's request has ever conducted any informal survey of AEP Ohio customers or even polled its own stakeholders to get feedback – scientific, anecdotal or otherwise – regarding the Company's proposal. By way of example, the OCC represents all the residential ratepayers of Ohio (including the residential customers in the AEP Ohio service territory), yet the OCC did not inquire into the opinions of the constituency to which it is accountable regarding this proposal. When asked if he was aware if anyone at the OCC performed a survey concerning renewable energy and what customers might be willing to pay, OCC witness Dormady replied that to his knowledge, "they did not." (Tr. XI at 2723.) Additionally, it does not appear that any of the individual CRES providers (or their trade association) challenging the Company's request sought any input or feedback from AEP Ohio distribution customers regarding the Company's proposal. Such silence speaks volumes.

It is also important to note that many of the intervenors' self-professed experts admitted during cross-examination that they had no, or only limited, experience with developing and/or implementing customer surveys similar to the one performed by Navigant. OCA witness Medine maintained in her testimony that the Voice of the Customer Survey was "not statistically significant" (OCA Ex. 3 at 3), yet admitted that she has no "experience" with conducting opinion polls (Tr. VII at 1922). IGS witness White referred to the Voice of the Customer Survey and its methodology as "dubious." (IGS Ex. 11 at 4 and 15.) Yet on cross-examination, he revealed that he has no training or education relating to the design or implementation of consumer surveys and that his testimony does not support, either technically or substantively, anything that actually

addresses the survey design, sampling method or other aspect of the Voice of the Customer Survey. (Tr. IX at 2490-2491.) IEU witness Murray agreed that he also does not have any specialized training or expertise in customer surveys. (Tr. VI at 1833.) IGS witness Rengstorf has never performed a quantitative analysis of current market demand for renewables. (Tr. IX at 2574). Finally, OCC witness Dormady admits that although he doesn't consider himself a "statistician" he is experienced with surveys, but states he only really administers "economic" surveys that are predominately focused on "firms" which are "small" or "mid-size businesses" rather than individuals in order to "evaluate resilience to critical infrastructure disruptions" following natural "disasters" and additionally clarifies that he never "actually" administers those surveys, he simply "designs and analyzes" them and he works to "solicit and hire" a professional survey firm to "conduct the outreach and engagement with survey respondents". (Tr. XI at 2698-2709.) Dr. Dormady clearly does not administer surveys himself and further fails to show that he has any parallel experiences dealing with customer choice surveys of individual customers.

Intervenors also criticized the Voice of the Customer Survey as not being "not statistically significant." (*See, e.g.*, OCA Ex. 3 (Medine) at 3.) Company witness Horner testified at hearing that the number of responses obtained exceeded the number of respondents that were needed in order to achieve a statistically significant sample. (Tr. III at 635.) Ms. Horner maintained that the survey was designed to be an electronic survey, it was designed to be efficient, and it did not need to be sent to every single customer of AEP Ohio. (*Id.* at 585) In fact, obtaining a survey response from every AEP Ohio customer was never the objective. Ms. Horner stated that Navigant "didn't ever intend to sample the entire 1.1 million residential non-PIPP customers." (*Id.* at 635.) Further, Navigant believed that the population with e-mail addresses represented a more-than-adequate-sized sample to use. (*Id.*) On redirect, Company

witness Fry explained that a survey result's statistical significance is related not just to sheer response numbers, but to the survey's confidence and precision levels. (*Id.* at 770-771.) Both confidence and precision are additional factors which Navigant took into consideration when designing and administering the Voice of the Customer Survey. Interestingly, no intervenor challenged either the confidence or the precision of the Voice of the Customer Survey response results. They challenged the number of responses alone. And the testimony of Company witnesses Horner and Fry illustrate that it is not just the number of responses alone that make a survey statistically significant. With a statistically designed survey, more does not necessarily mean better.

Several of the intervening parties maintain that the Voice of the Customer Survey respondents are not representative of the broader customer classes. (OCA Exhibit 2 (Brown) at 32.) OCC witness Lesser worried that because the survey was on-line survey solicited only to those AEP Ohio customers with e-mails, that the results are flawed because the respondents were part of a "targeted" group. (OCC Exhibit 18 at 81.) These concerns were parried by Company witnesses Horner and Fry. Ms. Horner maintained that she was confident the responses that Navigant designed the survey to elicit and, in fact, received, allowed Navigant to have confidence in the survey results. (Tr. III at 700.) Ms. Horner stated that they had no reason to think that customers with e-mail addresses on file at AEP Ohio were any different from customers without e-mail addresses on file and, absent a reason to think otherwise, they believed that the e-mail addresses used were a reasonable reflection of AEP Ohio's residential and small commercial customer base. (*Id.* at 583-584.) In fact Navigant, in its experience, believed that e-mail was the most efficient way to reach the most customers and get a robust survey response. (*Id.* at 729.) The response rate, according to Ms. Horner, was consistent with what Navigant has

seen in its practice with other general population surveys and actually exceeded Navigant's targets. (*Id.* at 666.) And Ms. Horner made clear that the sample methodology, the size of the survey, and the demographic information collected gave Navigant no reason to think that the results of the survey were anything other than representative. (*Id.* at 668.) Finally, in response to concerns that the Voice of the Customer Survey was targeted at certain groups of respondents, including AEP employees, Navigant requested additional information from the Company and concluded that only 7% of the respondents could have possibly been AEP employees or former employees. (*Id.* at 724 and 725.) Navigant does not believe that such a nominal number of possible AEP-related respondents could materially impact the conclusions drawn from its report. (*Id.* at 725.) Ms. Horner also confirmed that Navigant did not exclude employees of other stakeholders in this proceeding. (*Id.* at 726.)

3. Public support for the Company's proposal has been overwhelmingly positive, evidenced both by in-person public testimony provided at the Public Hearing on December 4, 2018 and comments filed in the Commission's docket for this proceeding.

Since the filing of the original application in this docket, the general public and the Company's customers have provided the Commission with their thoughts and opinions regarding the Company's proposal for the deployment of utility-scale renewable resources in Ohio and the acceptability of distributing the costs associated with such development across the rate base. At the same time that many of the intervening parties to this proceeding were assembling and presenting their testimony and witnesses challenging or contesting the Company's proposal, numerous individual customers and local organizations have been voicing their support for the Company's request. That support has been communicated through the in-person testimony presented by fifty-six individual public witnesses at the Public Hearing on December 4, 2018 and over 5,000 individual written comments filed in the docket. Unlike most other proceedings

heard by this Commission, the testimony of each individual public witness and every single written public comment filed in the docket is supportive of the Company's request. Not one public witness or commenter opposed the Company's proposal.

Due to the significant number of comments filed on the docket and the length of the transcript recorded at the Public Hearing, it would be tedious and redundant to list and describe the details of each individual affirmation here. But the support can be categorically summarized and is important to acknowledge. A review of the supportive testimony and comments provided clearly indicates the overwhelming and enthusiastic public support for the Company's proposal, including interest in the advancement and promotion of renewable energy, environmental sustainability, energy diversity, resiliency and dependability of the electric grid, stabilization of electric rates, creation of jobs, promotion of an advanced economy, economic development, workforce development, positive social impacts, and the advancement of community and cultural benefits for AEP Ohio customers and the citizens of Ohio.

Although many of the comments filed in the docket and those recorded at the Public Hearing were submitted by people in their individual capacity, a large number were provided by individuals as representatives, spokespersons or officers of groups and associations representing scores of AEP Ohio ratepayers. At the Public Hearing alone, the Commission heard from representatives from a wide variety of groups and associations such as; a Township Trustee for Athens Township, Athens County, Ohio; the Director of Organizing for the International Union of Operating Engineers; the CEO of Rural Action (a nonprofit engaged in asset-based community development in rural Ohio); the Immediate Past State Director of the United States Department of Agriculture's Rural Development Agency in Ohio; a member of the Board of Trustees at the University of Rio Grande; the Chapter Manager of the Central Ohio Chapter of

the National Electrical Contractors Association; a Member and Trustee of the Foundation for Appalachian Ohio and the Chair of the Southeastern Ohio Economic Initiative; the Business Manager for the Tri-State Building and Construction Trades Council; the CFO and Treasurer of the Bright Local School District; and the Executive Director for Ohio Citizen Action. (PHT at 18-153.) Each and every one of these public witnesses provided testimony on behalf of their constituents and members supporting the Company's request and requesting that this Commission allow AEP Ohio to move forward with the development of utility scale renewable generation in Ohio. From a review of the public input submitted in this proceeding, it is unequivocally clear that AEP Ohio customers not only like what the Company has proposed regarding renewable development, but additionally support paying for it.

The testimony from Eddie Smith, Athens Township Trustee, provided a clear reflection of the opinion of his constituents: "What I have to say today is really simple. I want to highlight that consumers in Ohio, particularly in my community, want renewable energy and they are willing to pay for it." (*Id.* at 18-19.) And Frida Etchell, a college student, offered:

As an Ohio resident and college student, I support AEP's proposal to bring more renewable energy here to our state. I'm used to budgeting out my money very carefully as every dollar makes a difference to me. Though I hear this proposal would increase utility bills by a few cents, I believe this is a small price to pay for ultimately cheaper utility bills down the line. Having more renewable energy in Ohio is something I can get behind. And knowing that students, like me, will be able to save money on utility bills in the future, really makes this worthwhile all the way around.

(*Id.* at 28.) Jerry Duke echoed the opinions of Mr. Smith and Ms. Etchell, supporting the Company's proposal:

I stand today in favor of the proposal. As an average residential consumer, I am willing to pay the little bit extra that may be required to initiate this project and get it off the ground. As a casual observer can readily see, fossil fuels are not a renewable resource, they are finite, and we need to develop and expand the

infrastructure of renewable energy so that the people of Ohio can continue to have cheap, available energy for the foreseeable future.

(*Id.* at 98.) Rachel Belz, Executive Director of Ohio Citizen Action, commented that nearly one-fourth of her 32,000 members in Ohio live in the AEP Ohio service territory and many support the Company's request: "We understand that in order to make these investments, customers will likely be paying a small amount more on their energy bill. Many of our members have expressed they would like to see that type of an investment even if that's the case." (*Id.* at 103.) Ms. Belz further testified that, while Ohio Citizen Action will continue to be a watchdog for citizens and closely watch all investments that Ohio's energy customers are being asked to fund, the Company's proposal makes good business sense, as it is forward-looking and it would bring jobs and benefits to parts of the state that need it more than any other part. (*Id.*)

Numerous other witnesses similarly focused on those potential advantages for Ohio's economy, namely the creation of jobs in parts of Ohio where the economy is stagnant and employment opportunities are few at best. Scott Stevenson, Director of Organizing for the International Union of Operating Engineers, offered the following:

We represent over 16,000 members and their families, many of whom live in the areas of these projects. On behalf of our membership, I would like to express our wholehearted support for these projects. They'll create thousands of workhours for those in the community that work on them, and the ones that don't, will benefit from the monies that flow back into the communities.

(*Id.* at 22-23.) The Immediate Past State Director of the United States Department of Agriculture's Rural Development Agency in Ohio, Tony Logan, voiced his support for the proposal and indicated he believed it would create jobs and provide for economic development:

As a longtime advocate for fortifying the economies of the small towns and rural communities in the Appalachian region, I believe this project represents one of the best opportunities for sustainable growth and job creation that our state has encountered in generations.

(*Id.* at 45.) Others focused on the benefits they anticipate the Company’s proposal will have on education and workforce development. Stacie Hutton, a member of the Board of Trustees for the University for Rio Grande, believes the proposal will create “fantastic opportunities for workforce development.” (*Id.* at 63.) And Randy Drewyor, the CFO and Treasurer of the Bright Local School District, sees the development of renewables as a way to support local K-12 education by providing an additional revenue stream that is not tied to agricultural or residential property values. (*Id.* at 79.)

Finally, many of those who testified showed they believe the Company’s proposal will help address the opiate epidemic in Appalachian Ohio. Oddly, the opiate crisis is most prevalent in the area of Ohio where the coal industry and coal generation used to be king, southern Ohio. Dr. Brown, who testified for the OCA, took the position that the construction of renewables will not, and in fact “cannot”, help mitigate the opioid crisis. (OCA Ex. 2 at 28.) Several public witnesses disagreed. Debbie Phillips, CEO of Ohio Rural Action, poignantly addressed the issue in her testimony:

As a leader in sustainable community development, I am also concerned about how a lack of opportunity affects individuals, families, and our region as a whole. Beyond the economic impact of job losses, Ohio is suffering disproportionately from the impact of the opiate epidemic. Access to quality jobs is an essential part of any effort to combat this, along with the other dangers of hopelessness and despair. Ohio’s focus on treatment and recovery is laudable, but it must be tied to economic-development efforts that contribute to communities that offer work with dignity. These jobs are important to Ohio, and deserve our support.

(PHT at 40.) Mark Johnson, the Business Manager for the Tri-State Building and Trades Council and resident of Appalachia, similarly testified that “the opioid addiction is rampant and it’s all because of lack of opportunity, and these people need help, and this is just one glimmer of hope in that help”. (*Id.* at 73.) And Trampas Puckett, the Board Chair for the Scioto Community

Action Organization of southern Ohio, testified more generally as to his thoughts regarding the development of renewables in Ohio.

The thing is, in southern Ohio, we all need the renewable energy resources that they're willing to put out there for us. We all know that live down in that area, the coal jobs aren't what they used to be; they're no longer available. The steel mills aren't in the area any longer. We actually had two coal-fired power plants close down here within the last year.

(*Id.* at 57.)

In short, the public support for the Company's proposal has been singularly positive. Thousands of positive comments have been filed in the docket and dozens of witnesses made the effort to travel to the Commission to appear and speak for the proposal at the Public Hearing. None of the filed comments have opposed the proposal, nor did any witnesses at the Public Hearing voice opposition. In light of the support described above and the lack of any discernable contrary opinion or comment being offered to the Commission by the public, there is no question that the general populace wholeheartedly supports this effort.

B. The Company's economic analysis demonstrates that constructing additional, Ohio-sited renewable energy resources would be economically beneficial to AEP Ohio's customers.

Company witness John Torpey sponsored AEP Ohio's integrated resource plan, which presents the results of four analyses that the Company performed to determine the expected economic impact associated with the addition of utility-scale renewable energy projects in Ohio: the PJM Impact analysis, AEP Ohio Impact analysis, break-even analysis, and probabilistic simulation. (AEP Ohio Ex. 14 at 5-13, Ex. JFT-1 at 16-26.) The results of each of those analyses demonstrated significant economic benefits to AEP Ohio customers, as Mr. Torpey summarized:

ANALYSIS	RESULT
PJM Impact	<p><u>Economic Benefit:</u></p> <ul style="list-style-type: none"> • LMP price reduction of \$0.07/MWh, and • NPV savings of \$31 million to AEP Ohio customers.
AEP Ohio Impact	<p><u>Economic Benefit:</u></p> <ul style="list-style-type: none"> • NPV benefit of \$88 million from the 400 MW generic solar resources, and • NPV benefit of \$54 million from the 250 MW generic wind resources.
Total Customer Benefit	PJM Benefit \$31 M Solar Benefit \$88 M Wind Benefit <u>\$54 M</u> \$173 M
Break-Even Analysis	Actual REPA costs lower than the REPA price noted below result in lower costs to AEP Ohio customers: <ul style="list-style-type: none"> • SOLAR: REPA costs below \$56.82/MWh • WIND: REPA costs below \$48.40/MWh
Probabilistic Simulation	<ul style="list-style-type: none"> • 100 % of the time solar projects result in a net benefit • 99.9% of the time wind projects show a net benefit.

(*Id.* at 6, Ex. JFT-1 at 19.)

1. The Company’s PJM Impact Analysis demonstrates net present value AEP Ohio customer savings of \$31 million.

To determine the inputs for Mr. Torpey’s PJM Impact analysis, the AEPSC Transmission Planning department, led by Company witness Kamran Ali, used the PROMOD® model to determine how adding 400 MW of solar and 250 MW of wind resources would change PJM locational marginal pricing at the AEP Hub. (AEP Ohio Ex. 14 at 6-7; AEP Ohio Ex. 5 at 4-6.) LMPs form the basis for payments to generators and payments by buyers in the PJM electricity markets and others (AEP Ohio Ex. 5 at 3), and they have three components: the energy price, the congestion component, and the loss component. (Tr. II at 502.) In a market where there is no congestion, the last unit that is needed to meet the demand and losses sets the energy component of the LMP. (*Id.* at 502-03.) Because there is no congestion in the AEP zone, Mr.

Ali testified, “the congestion cost component of the LMP is zero” and the energy cost component of the LMP is set by the last unit that is needed to clear the market. (*Id.* at 503-504.) Moreover, because there is no congestion in the AEP zone, the LMPs across the AEP transmission system are uniform. (*Id.* at 506.)

PROMOD[®] is “electric market simulation software” that “incorporates future demand, generating unit operating characteristics, transmission grid topology[,] and constraints.” (AEP Ohio Ex. 5 at 4.) As Mr. Ali explained, the model is industry-standard and built by PJM, and its assumptions are “as good as you would get * * * when it comes to running energy analysis” because PJM “is responsible to ensure our reliable grid operation across the 13 states and Washington, D.C.” (Tr. XII at 2819.) PROMOD[®] determines the hourly LMPs for both generation and load based on the incremental energy cost of the last MWhs produced and any congestion-related costs resulting from transmission capacity limitations and “provides a good forecast of the impact that adding renewable projects will have on PJM LMPs * * *.” (AEP Ohio Ex. 5 at 4.)

a. Mr. Ali’s analysis of 2021, 2024, and 2027 LMP savings demonstrates that the addition of renewable resources in AEP Ohio will lower LMPs.

Mr. Ali’s analysis comprised a base case, which was an unmodified version of the PROMOD[®] model developed by PJM, and a study case, which modeled one new wind and two new solar projects with technologies, locations, and outputs similar to projects already in the PROMOD[®] model and the PJM generation queue and near the locations where future projects may be sited. (AEP Ohio Ex. 5 at 5; AEP Ohio Ex. 26 at 3; Tr. II at 476.) As he explained:

[T]o perform an analysis to figure out what * * * will happen to the LMP prices, you have to model something. * * * You have to put that on the grid and see what the impact of that is. So the analysis that I have is pretty generic in a sense because on the AEP system there is no congestion, there are no constraints. And these

projects, from an information perspective, they are already part of the PJM queue, the studies are done, the information is available.

(Tr. II at 474.) The analysis, however, was not location-specific. (*Id.* at 480.) For the years 2021, 2024, and 2027 – the most recent years for which the PROMOD model base case was available from PJM (*id.*; Tr. XII at 514) – Mr. Ali’s analysis demonstrated that adding 650 MW of renewable resources to the Company’s system would lower LMPs when compared to the base case. (AEP Ohio Ex. 5 at 5-6.)

b. Mr. Torpey’s PJM Impact Analysis builds upon Mr. Ali’s LMP analysis and quantifies \$31 million net present value customer savings.

Company witness Torpey took the LMP reductions that Mr. Ali calculated for 2021, 2024, and 2027 and interpolated and extrapolated those benefits for the 20-year lives of the generic REPAs that are the subject of the Company’s IRP. (AEP Ohio Ex. 14 at 10, Ex. JFT-1 at 19-20; Tr. II at 410-411.) The results of Mr. Torpey’s PJM Impact Analysis show a reduction in the cost of energy at the AEP load hub of \$0.07/MWh on a levelized basis. (*Id.* at 10, Ex. JFT-1 at 20 (Table 4).) Mr. Torpey then applied the hourly energy price savings to the hourly AEP Ohio load for the period 2021 through 2040 and calculated that the net present value (NPV) of the annual energy cost savings for the AEP Ohio load would be \$31 million. (*Id.*; Tr. II at 417.)

c. The change in the Highland Solar Farm’s point of interconnection has no impact on Mr. Ali’s and Mr. Torpey’s analyses.

AEP Ohio’s PJM Impact Analysis is unrefuted. Intervenors offered no competing LMP analysis. (*E.g.*, Tr. IX at 2534 (OMAEG witness Seryak conceding he did not run his own LMP analysis for this case.)) Rather, they attempted to establish at hearing that Mr. Ali’s analysis was flawed because it did not model the specific characteristics of one of the two solar facilities from which Mr. Ali utilized certain attributes – the Highland Solar Farm – as of the hearing date.

(AEP Ohio Ex. 26 at 1.) When he performed his analysis in May 2018, Mr. Ali assumed, per publicly available PJM documentation, that the Highland facility would interconnect to the AEP transmission system. (*Id.* at 3.) Months after that generic analysis, the primary interconnection point for the proposed Highland facility changed to interconnect with the Dayton Power & Light (DP&L) transmission system and the size of that facility increased from 300 MW to 400 MW. (*Id.* at 4; Tr. XII at 2794-2795.)

Mr. Ali unequivocally confirmed on rebuttal that changing the interconnection location from the AEP zone to the DP&L zone and increasing the size of the facility from 300 MW to 400 MW “does not impact the results of the LMP analysis [in the AEP zone] or the customer benefits derived from the lower LMPs presented” in Mr. Ali’s original analysis. (AEP Ohio Ex. 26 at 4-7; *see also* Tr. XII at 2809-2810, 2812.) (*Compare* AEP Ohio Ex. 26 at 6 (Figure 1 – results of original analysis), *with id.* at 7 (Figure 7 – updated analysis).) Mr. Ali also performed a PROMOD[®] analysis assuming 300 MW of output, but changing the location of the interconnection from AEP to DP&L, and he confirmed that there also were “[n]o material changes whatsoever” between that analysis and his original LMP analysis. (Tr. XII at 2802, 2827-2828.) Like his original analysis, each of his updated analyses was unrefuted.

2. The Company’s AEP Ohio Impact Analysis demonstrates \$196 million annual net present value AEP Ohio customer benefits from 400 MW solar and 500 MW wind resources.

Mr. Torpey also presented an AEP Ohio Impact Analysis, which “measures the change in net financial position (Revenue – Cost) of AEP Ohio” by adding 250 MW of wind REPA and 400 MW of solar REPA and evaluating those resources based upon their Levelized Net Cost of Energy (LNCOE). (AEP Ohio Ex. 14 at 7, Ex. JFT-1 at 20-22.) Net Cost of Energy compares the estimated contract cost of a renewable resource (the REPA price) to the avoided cost of

energy and capacity from the market. (AEP Ohio Ex. 14 at 7.) Mr. Torpey’s avoided cost analysis used the August 2018 Long-Term North American Energy Market Forecast (“Fundamentals Forecast”) sponsored by Company witness Karl Bletzacker for forecasted hourly market energy and capacity prices. (*Id.* at 8-9; Tr. V at 1289.)

The AEP Ohio Impact Analysis shows that adding 650 MW of generic renewable projects that go in service by 2021 will reduce costs relative to market (on an NPV basis) over the lives of the projects. (AEP Ohio Ex. 14 at 10-11.) Specifically, Mr. Torpey calculated the NPV benefit from the 400 MW generic solar resources would be \$88 million, and the NPV benefit from 250 MW of generic wind resources would be \$54 million. (*Id.* at 11, Ex. JFT-1 at 20-22.) Mr. Torpey testified at hearing that the generic wind analysis is scalable from 250 MW to 500 MW, and he explained that the NPV benefit from 500 MW of generic wind resources would be double the benefit from 250 MW of wind resources, or \$108 million. (Tr. VI at 1519-1521.) Thus, adding the \$108 NPV benefit of 500 MW of generic wind resources to the \$88 million NPV benefit of 400 MW solar, the AEP Ohio Impact Analysis shows that there is a \$196 million total NPV benefit to customers over the 20-year REPA period modeled.

a. The AEP Ohio Impact Analysis’s discount rate and capacity credit value inputs are conservative and reasonable.

Mr. Torpey’s AEP Ohio Impact Analysis utilized conservative inputs, including an 8.5% discount rate reflective of the Company’s current after-tax weighted average cost of capital and conservative capacity credit values. (Tr. V at 1291-1294, 1342.) Using a lower discount rate or higher capacity credit values would result in even greater economic benefit to customers. (*Id.* at 1291-1292.) Moreover, even though Mr. Torpey’s AEP Ohio Impact Analysis reasonably assumes that the generic wind and solar projects would have capacity values consistent with

current PJM capacity market constructs, he also demonstrated that the projects provide significant economic benefits even absent capacity revenues. As he explained:

If you look at Column M and the second row from the bottom, the “Present Worth” of the sum of the change in revenue requirements * * * for Table 5 [on page 21 of Exhibit JFT-1 to AEP Ohio Ex. 14], the generic solar REPA, currently shows a benefit of \$88 million. If there was no capacity credit * * *, we would reduce that amount by \$33.9 million[,] which would give us **\$54.1 million** of benefit as opposed to the \$88 million of benefit.

* * *

Likewise, on Table 6 [on page 22 of Exhibit JFT-1 to AEP Ohio Ex. 14, the generic wind REPA], the second row from the bottom, “Present Worth,” if we look at that value in Column M is a * * * benefit of \$54 million. If we eliminated the benefit associated with the capacity credit value of \$5.6 million, that would be a benefit of **\$48.4 million**.

(Emphasis added.) (Tr. VI at 1512-1513.) Thus, Mr. Torpey’s analysis demonstrates that even without his reasonable capacity credit assumptions, the generic 400 MW solar project and generic 250 MW wind project would produce tens of millions of dollars in NPV customer benefit. (*See id.* at 1519-1521.)

b. The AEP Ohio Impact Analysis reasonably utilizes forecasted energy and capacity prices from the Fundamentals Forecast sponsored by Company witness Bletzacker.

As noted above, the AEP Ohio Impact Analysis used the August 2018 Fundamentals Forecast sponsored by Company witness Bletzacker for forecasted hourly market energy and capacity prices. (AEP Ohio Ex. 14 at 8-9; Tr. V at 1289.) As Mr. Bletzacker explained, the Fundamentals Forecast is “a long-term, weather-normalized commodity market forecast” that is made available to all AEP operating companies and is often used for “fixed asset impairment accounting, capital improvement analyses, resource planning, and strategic planning,” among other purposes. (AEP Ohio Ex. 11 at 3-4.) The primary tool used to develop the North American long-term energy market pricing forecasts included in the Fundamentals Forecast is the Aurora energy market simulation model, which is “widely used by utilities for integrated

resource and transmission planning, power cost analysis, and detailed generator evaluation.” (*Id.* at 6.) In addition to being used widely across AEP, this Commission has previously approved its use for forecasting. *See PPA Rider Case*, Opinion and Order at 80 (Mar. 31, 2016).

AEP Ohio has presented the only actual forecast of long-term energy prices in the record. Although IGS witness Leanza criticizes Mr. Bletzacker’s Fundamentals Forecast as unreliable, Mr. Leanza acknowledged that he is not offering, and has not prepared, his own forecast. (Tr. IX at 2638-2639.) Nor did he prepare or present a competing projection of natural gas prices. (*Id.*) Mr. Leanza instead advocates that New York Mercantile Exchange (NYMEX) futures “adequately represent” long-term future market natural gas prices. (IGS Ex. 13 at 11.)

Mr. Bletzacker thoroughly explained why NYMEX futures are not a reliable forecast of future, weather-normalized, long-term energy market fundamentals. (AEP Ohio Ex. 11 at 7.) First, he explained that futures are not reliable because futures market participants are either speculating or escaping the volatility of energy prices through risk management activities (hedging). (*Id.*; Tr. III at 841) “NYMEX futures represent the price point at which a buyer and a seller can realize price certainty, but those commercial expectations do not represent the economic principles of demand, supply, and the resulting price.” (AEP Ohio Ex. 11 at 7.) He provided the following salient example to illustrate this point:

For example, natural gas consuming entities that have natural gas costs and manufacturing revenues that move independently may need to protect margin through hedging activities and the NYMEX futures market satisfies that need (by buying futures contracts). On the other side of that trade, a natural gas producer that is concerned about covering future exploration and production costs will also utilize futures market contracts (by selling futures contracts). Both sides of the transaction are satisfied with their hedged position, but neither participant is then concerned with the actual future price of natural gas.

(*Id.*) Second, Mr. Bletzacker pointed out that neither the EIA nor energy consultancies reference the NYMEX in their long-term forecasts, further demonstrating that NYMEX futures are not a

suitable substitute for a long-term, model driven forecast. (Tr. III at 840-841.) Finally, Mr. Bletzacker explained that NYMEX futures cannot reasonably be used as a forecasting tool because the liquidity of futures and the number of counterparties “drops off rapidly after three years” and the longest available NYMEX futures contract term is 12 years. (*Id.* at 842.) The Commission should reaffirm that “[f]orwards prices * * * should not be relied upon as a basis for long-term forecasts of energy prices” (*PPA Rider Case*, Opinion and Order at 79 (Mar. 31, 2016)) and rely, instead, on the only actual forecast of long-term energy prices in the record – Mr. Bletzacker’s Fundamentals Forecast.

The Commission also should disregard intervenor criticisms of the reasonable CO₂ dispatch burden assumed in the Fundamentals Forecast. (AEP Ohio Ex. 11 at 8-9.) As Mr. Bletzacker explained, it is important to incorporate potential CO₂ emission costs because such costs would adversely affect the prices of electricity generated by fossil fuels – along with emission rates and implementation timing. (*Id.* at 8.) Such regulations would affect fuel markets and, therefore, fossil generation plant operating costs. (*Id.*) The base Fundamentals Forecast assumes a CO₂ dispatch burden on all existing fossil fuel-fired generating units that escalates 5% per annum from \$15 per ton in 2028. (*Id.* at 9.) AEPSC’s Fundamentals Forecast has included a CO₂ dispatch burden assumption for the last 14 years. (Tr. III at 778.) The dispatch burden is reflective not only of potential future federal carbon regulations, but also many other factors, including coal plant retirements and state renewable portfolio standards. (*Id.* at 781.) Forecasts that fail to account for the impact of future carbon emissions regulations are not an accurate predictor of future energy prices. For these reasons, the Commission should reaffirm that “changes in environmental regulation that could occur may have an [e]ffect on market forecasts and should appropriately be considered” (*In re Application of The Cincinnati Gas & Electric Co.*

for Approval of its Electric Transition Plan, Case Nos. 99-1658-EL-ETP, Opinion and Order at 28 (Aug. 31, 2000)) and accept Mr. Bletzacker's CO₂ dispatch burden in the Company's August 2018 Fundamentals Forecast.

3. The Company's Break-Even Analysis and Probabilistic Simulation also demonstrate that utility-scale renewable energy resources provide economic benefits to customers.

As Mr. Torpey described, the Company performed a break-even analysis for both the generic wind and solar projects. (AEP Ohio Ex. 14 at 11, Ex. JFT-1 at 22-24.) For solar projects with operational characteristics similar to those in the generic solar case, a 400 MW fixed price solar REPA at a cost of \$56.82/MWh would result in \$0 NPV, and \$0/MWh LNCOE. (*Id.* at 11, Ex. JFT-1 at 22 (Table 6).) Likewise, for wind projects with operational characteristics similar to those in the generic wind case, a 250 MW fixed price wind REPA at a cost of \$48.40/MWh results in \$0 NPV, and \$0/MWh LNCOE (*Id.* at 11, Ex. JFT-1 at 23 (Table 7).) This holds true for 500 MW of wind. (Tr. VI at 1521.) The break-even analysis thus demonstrates that REPAs with costs lower than these respective break-even values have the potential to lower AEP Ohio's costs. (AEP Ohio Ex. 14 at 11.)

Finally, Mr. Torpey also performed a probabilistic analysis to simulate the volatility of the PJM energy market. (*Id.* at 11-12, Ex. JFT-1 at 24-26.) The results of that analysis show that solar projects will result in a net benefit to customers 100 percent of the time, and wind projects will result in a net benefit to customers 99.9 percent of the time. (*Id.*) This analysis, too, confirms the economic benefits to customers if the Company is permitted to enter into REPAs for renewable resources with characteristics similar to the generic projects modeled for the IRP.

In summary, Mr. Torpey's analyses of generic renewable resources demonstrate that renewable energy projects with characteristics similar to the generic projects would result in

lower costs to customers over the projects' life cycles, in addition to providing a hedge against market volatility and diversifying AEP Ohio's resource mix. (*See id.*, Ex. JFT-1 at 26.) The Commission should afford Mr. Torpey's analyses, which are unrefuted, substantial weight in analyzing the Company's *Amended LTFR* and deciding whether there is a need for AEP Ohio to own or operate utility-scale renewable energy resources in its service territory.

C. Company witness Allen's testimony and the comprehensive economic benefit analysis sponsored by Company witnesses Buser and LaFayette demonstrate that constructing additional, Ohio-sited renewable energy resources will result in tangible and significant economic benefits for Ohio.

As AEP Ohio explained above, the economic benefits from the proposed generation are directly relevant to the "need" determination that the Commission is to make in Phase I of these proceedings. *See supra* Part III. "Significant economic impacts" are expressly included among the non-exhaustive list of factors that the Commission's rules require integrated resource plans to address. *See id*; *see also* Ohio Adm.Code 4901:5-5-06(B)(3)(e). Even witnesses for intervenors opposing the Company's application confirmed that it is appropriate for the Commission to consider economic benefits in the context of assessing "need" for additional generation resources. For example, Staff witness Benedict expressly noted that economic impact analyses are among the numerous factors that must be considered in connection with resource planning. (Staff Ex. 2 at 4.) For the reasons described below, the evidence confirms beyond a doubt that the addition of 900 MW of renewable energy resources will bring significant economic benefits, along with non-quantifiable social benefits, to the State of Ohio.

Company witness Allen introduced AEP Ohio's filings by noting that "local renewable energy projects provide local economic development benefits * * * to the communities where they are located as well as the surrounding region and State as a whole." (AEP Ohio Ex. 3 at 9-10.) He also explained that "[w]hen Ohio's energy dollars are reinvested in the state through

locally produced energy the multiplier effect of economic development is increased to the benefit of our customers and communities.” (*Id.* at 10.) Mr. Allen’s testimony on these points was effectively un rebutted.

The Company is the only party that presented an actual study and report quantifying the projected economic impacts of the Company’s proposal. The study, called *Impacts of Solar Plant Construction and Operation on the Ohio Economy* (hereinafter “Impact Study”) and coauthored by Dr. Bill LaFayette, of Regionomics LLC, and Dr. Stephen Buser, Professor Emeritus, Fisher College of Business at The Ohio State University, was admitted into the record along with Dr. Buser’s sponsoring testimony as AEP Ohio Exhibit 12. The coauthors of this Impact Study have had long and distinguished careers in economics generally and concerning economic benefit analyses specifically. During his tenure at the Columbus Chamber, Dr. LaFayette undertook 27 different economic analyses, followed by more than 50 such projects for Regionomics. (AEP Ohio Ex. 13 at Ex. BL-2.) No intervenor opposing the Company’s Application effectively undermined the qualifications of Drs. Buser or LaFayette to perform the comprehensive Impact Study they presented here.

The Impact Study used reliable and standard multipliers provided by the U.S. Bureau of Economic Analysis, commonly referred to as the Regional Input-Output Modeling System (or RIMS II). (AEP Ohio Ex. 12 at 4.) Dr. LaFayette explained RIMS II in depth in his pre-filed testimony. (AEP Ohio Ex. 13 at 3-5.) OCA witness Brown admitted in his written testimony that the RIMS II methodology employed in the Impact Study is “widely accepted.” (Tr. VII at 1889-90.) The Impact Study also relied on specific cost estimates provided by AEP Ohio, where applicable, to enhance reliability and accuracy. (AEP Ohio Ex. 12 at 4; *see also* Tr. IV at 1067.)

Dr. Buser summarized the economic impacts estimated in the Impact Study (AEP Ohio Ex. 12 at 4), and those impacts are also set forth in Tables S-1 & S-2 of the Impact Study itself, with Table S-1 reflecting *construction* impacts and Table S-2 showing annual *operating* impacts. As Dr. Buser explained with respect to construction impacts:

We project the construction of the new facilities will create 3,870 new jobs. We also project that Ohio earnings for Ohio workers will grow by more than \$250 million; output will grow by nearly \$700 million; and the value added measure of the net effect on Ohio's GDP will grow by nearly \$390 million.

(*Id.*) These construction impacts will be followed by annual operating impacts that, although smaller in magnitude, will continue indefinitely. (*Id.*) As Dr. Buser testified:

Specifically, we project that continuing Ohio employment will grow by roughly 50 jobs, earnings for Ohio workers will grow by more than \$2.5 million; output will grow by more than \$38 million; and the value added measure of the net contribution to the Ohio economy will grow by more than \$33 million.

(*Id.*) The Impact Study also presented separate *fiscal* impacts – that is, the effects of the renewable projects on tax revenues. (*Id.* at 5.) These fiscal impacts are summarized in Tables S-3 and S-4 of the Impact Study, which addressed commercial activity taxes (the primary tax on Ohio businesses) as well as state and municipal income and sales taxes. (*Id.*, Impact Study at 11-13.) As Dr. Buser summarized in his testimony, construction of the solar facilities will generate more than \$24 million in additional tax revenue for the State of Ohio, along with \$8.4 million of additional tax revenue for various local communities. (AEP Ohio Ex. 12 at 5.) The increase in annual tax revenue from continuing operations post-construction is projected to be nearly \$320,000 each year for the State of Ohio, and more than \$50,000 per year for various localities within the State. (*Id.*)

Beyond the foregoing economic and fiscal impacts, the Impact Study also projects that developing additional, in-state, utility-scale renewable energy technologies would have

numerous non-quantifiable economic and social benefits, including public health benefits, the development of transferable skills that can lead to enhanced gender equality in the energy industry, improved standards of living, and potential amelioration of the opioid crisis. (*Id.* at 5-6.) In terms of public health benefits, for example, the Impact Study notes that a greater emphasis on renewable energy technologies could reduce the number of occupational deaths and injuries that occur in oil, gas, and coal mining industries. (*Id.*, Impact Study at 15-16.)

Notably, the Impact Study was *conservative* in multiple respects. For example, the Impact Study focused on the benefits of two solar energy projects for which these witnesses were provided bill-of-goods information from AEP Ohio; that is, two solar projects totaling 400 MW of output. (Impact Study at 7.) The economic benefits from constructing and operating up to 900 MW of solar and wind renewable energy facilities will be far greater than the economic benefits presented in the Impact Study. Moreover, Drs. Buser and LaFayette were careful to incorporate the unique nature of solar projects into their analysis. They noted that the construction of such facilities is significantly different from standard construction projects such as office buildings, and that it was therefore “vital to take a different ‘bill of goods’ estimation approach,” which “involves assembling budget information in as much detail as possible and estimating the economic impact of purchases and labor line by line.” (*Id.*, Impact Study at 8.) Additionally, when estimating the impact of the solar projects on commercial activity tax (“CAT”) revenue for the State of Ohio, the Impact Study notes that project-related sales to Ohio businesses and consumers by producers *outside* the State are also subject to the CAT, and yield tax revenues not included in the estimate. (*Id.* at 12.)

The most significant way the Impact Study is conservative is the fact that it did not account for a jobs commitment reflected in the Highland REPA that was finalized after the

Economic Impact Study was completed. (AEP Ohio Ex. 13 at 5.) The Hecate solar REPA makes a commitment to maintain at least 113 full-time, permanent jobs that are not related to the construction or operation of the solar facility, which is enforceable through price reductions in the REPA for five years. (*Id.*) Consequently, as Dr. LaFayette testified: “Many of the benefits associated with that jobs commitment would be in addition to the benefits in the economic impact study. Many of these jobs, like the ones that are considered, would also have indirect and induced impacts over and above the contractually-mandated 113 jobs.” (*Id.*) Perhaps the Company will have an opportunity to present additional evidence (such as a supplemental economic impact study that includes the Hecate jobs commitment) in Phase Two of the hearing. In any case, this factor alone renders the results of the Economic Impact Study extremely conservative.

Intervenors’ efforts to undermine the Impact Study at hearing proved weak and counterproductive. For example, although Dr. Buser conceded on cross-examination that the solar projects’ economic impact would be similar if they were developed without AEP Ohio’s involvement (Tr. IV at 1087-88), that admission does nothing to reduce the projected economic benefits of the renewable resources themselves. And although intervenors tried to get Dr. Buser to concede that constructing renewable facilities could result in job losses in non-renewable facilities (due to displacement of energy from such facilities), Dr. Buser noted these job losses could come in other states. (*Id.* at 1089.) Indeed, Dr. Buser explained that such job losses would likely come in other states, given the extent to which Ohio imports energy. (*Id.* at 1094.) Dr. Buser confirmed on cross-examination, in fact, that there would be “no measurable impact” on oil, gas, or coal industry jobs. (*Id.* at 1091.) And when intervenors tried to undermine the Impact Study by noting that the predicted tax benefits were based on two specific solar projects

slated for construction in Southwestern Ohio, Dr. LaFayette noted that the state and local tax impacts could be even *higher* if renewable resources are ultimately constructed elsewhere in the State. (*Id.* at 1169-70.) As Dr. LaFayette testified, “[t]he economic impact covers the entire State of Ohio.” (*Id.* at 1138.) And although Intervenors chided Dr. LaFayette for not accounting for additional costs that AEP Ohio customers might see on their electric bills as a result of the projects, Dr. LaFayette noted that: (1) those bills are expected to *decline* over the long run as a result of the renewable projects; and (2) any additional electric bill costs over the short term would not reduce Ohio spending because they would still be Ohio purchases. (*Id.* at 1141.)

Placing renewable generation assets within Ohio offers a host of benefits to the state such as jobs, economic benefits, taxes for local communities, environmental protections and health benefits, as demonstrated. “[W]hen dollars are spent in a local community for construction jobs, other payroll for those local communities, those dollars benefit those local communities.” (Tr. I at 213.) The economic benefit testimony and analysis provided by Company witnesses provides compelling additional support for the Commission’s “need” finding in Phase I of these proceedings. It is entirely appropriate for the Commission to consider these significant projected economic benefits in this context, pursuant to Ohio Adm.Code 4901:5-5-06(B)(3)(e). And the intervenors opposing the Company’s Application have presented no competing economic benefit analysis of their own to contradict the findings of Allen, Buser, and LaFayette.

D. A finding of need will help ameliorate market failures that have discouraged development of in-state, utility-scale renewable resources and left too many AEP Ohio customers under-served in this area.

In pre-filed testimony, intervenors opposing AEP Ohio’s filings repeated a tired refrain: that the market is doing just fine when it comes to renewable energy resources and offerings, precluding any “need” finding for 900 MW of renewable resources in Ohio. (*See, e.g.*, IEU-

Ohio Ex. 1 at 12; IGS Ex. 12 at 2; OCC Ex. 25 at 6.) Although the applicable statute and rules do not require AEP Ohio to prove any market failure in order to demonstrate need, *see* R.C. 4928.143(B)(2)(c) and Ohio Adm.Code 4901:5-5-06, the Commission has indicated that market failures may indeed be relevant to its consideration. *See, e.g., PPA Rider Case*, Opinion and Order at 82-83 (Mar. 31, 2016) (“The Commission will continue to look to the markets as the primary drivers of an adequate supply of energy from any source, including renewable energy.”).

To the extent that market failures support the Commission’s “need” finding in this proceeding, the record evidence confirms that the competitive markets have failed to address numerous compelling bases for the development of in-state, utility-scale renewable resources, even as we celebrate the 20th anniversary of deregulation in Ohio. These market failures can be attributed to aspects of the PJM market structure and practical limitations on the deployment of distributed solar, as well as the limited nature of CRES renewable energy offerings for customers. A finding of need in Phase I of these proceedings will help the Commission recognize and meaningfully begin to address the market failures inhibiting development of customer-desired and economically beneficial in-state, utility-scale renewable resources. Equally important, the need finding will enable the Company to reach the majority of its customers that have been left out of these limited market options.

1. The PJM market structure fails to address Ohio-specific factors supporting the development of additional renewable resources.

As AEP Ohio explained in the *LTFR Amendment*, PJM has shown an indifference, at best, toward the development of renewable resources. (AEP Ohio Ex. 2 at 7.) Company witness Allen elaborated on this point, noting that PJM does not take into consideration customer demand for renewable energy or any other specific type of energy resource, because PJM’s

stated primary task is to ensure the safety, reliability and security of the bulk electric power system. (AEP Ohio Ex. 3 at 9.)⁸

PJM’s long-term, regional planning process provides a broad perspective that identifies the most effective and cost-efficient improvements to the grid to ensure reliability and economic benefits on a *system-wide* basis. (*Id.* at 8-9.) The PJM market structure does not consider significant Ohio-specific factors, such as fuel diversity, the fact that Ohio has been a net importer of energy, the impact of specific resources on Ohio’s economy, or the financial hedging benefits that renewable resources can provide to Ohio customers. At hearing, intervenor witnesses conceded that even PJM concurs it is important to respect the states’ abilities to address their own policy goals. (*E.g.*, Tr. VI at 1742.) The foregoing Ohio-specific factors supporting a “need” determination here – factors unmet in the existing markets – are discussed further below.

a. Fuel diversity.

It is the policy of this state to “[e]nsure diversity of electricity supplies and suppliers, by giving consumers effective choices over the selection of those supplies and suppliers * * * [.]” (Emphasis added.) R.C. 4928.02(C). Moreover, “strategic considerations including flexibility [and] diversity” are among the factors the Commission considers when weighing an integrated resource plan. Ohio Adm.Code 4901:5-5-06(B)(3)(e)(iii)(e). Kroger witness Bieber agreed that fuel diversity is a valid consideration in connection with determining whether there is a resource planning need. (Tr. VIII at 2254.) So did IEU-Ohio witness Murray, who agreed that the Commission could conceivably address fuel diversity as a factor beyond strict capacity need for additional resources. (Tr. VI at 1835-36.)

⁸ Citing PJM Mission Statement, available at <http://www.pjm.com/about-pjm/who-we-are/mission-vision.aspx>.

PJM, however, is agnostic about fuel diversity. As PJM itself puts it, “PJM is fuel neutral.” (Tr. VII at 1959 (quoting AEP Ohio Ex. 19).) IEU-Ohio witness Murray agreed that PJM capacity market design is indifferent to the type of generation resource in that market. (Tr. VI at 1850.) And although OCA witness Medine agreed that fuel diversity would be a positive attribute for PJM to pursue (Tr. VII at 1934), she was uncertain exactly what PJM does to promote resources fueled with renewable resources, and confirmed that PJM pursues fuel diversity “only to the extent it results in fuel security” (*Id.* at 1939).

The Commission has recognized that renewable energy “*enhance[s] the diversity of available generation options*” to “offset the price volatility impact that any single fuel source may have on electric rates.” (Emphasis added.) (AEP Ohio Ex. 3 at 11, quoting the *PPA Rider Case*, Opinion and Order at 82-83.) And although there is currently no formal federal plan to regulate carbon dioxide emissions from power plants, the Commission has also recognized that investment in renewable generation gives Ohio additional flexibility to comply with potential future environmental requirements, by providing greater fuel source diversity. (*Id.* at 11, citing the *PPA Rider Case*, Opinion and Order at 84.) Numerous hearing witnesses testified that adding 900 MW of renewable energy resources would promote greater fuel source diversity. (*E.g.*, NRDC Ex. 1 at 23 (“the proposed projects will increase the diversity of Ohio’s electricity supply”); MAREC Ex. 1 at 5 (noting that the Commission has “commented on the importance of enhancing the diversity of available fuel source options by investing in renewables”).) Yet there has been limited development of renewable energy resources in PJM. OCA witness Medine and Staff witness Benedict acknowledged that solar resources constitute only 0.7% of PJM’s current capacity resource mix. (*Id.* at 1943-1944 (Medine); *see also* Tr. VIII at 2375-76 (Benedict).)

Company witness Allen explained that the Commission can fulfill this important need factor and state policy through a finding of need for utility-scale, in-state renewable resources:

Q. * * * [E]arlier in your testimony you talked about such things as flexibility, fuel diversity, reliability, those kinds of attributes, correct?

A. I did.

Q. Okay. Those attributes are controlled by the PJM market, are they not?

A. Not for all utilities. The different states have the ability to influence the type of generation resources that are built within those states to serve its customers and that's one of the things that we're doing here is presenting a plan to PUCO to influence the type of resource mix that serves the State of Ohio.

(Tr. II at 270-271.) And NRDC witness Stebbins buttressed the Company's testimony, explaining that a finding of need would further the state's fuel-diversity policy in a way not possible with current renewable product offerings:

Customers can choose to purchase a small percentage of renewable energy credit or do solar on their rooftops. Customers broadly – residential, PIPP, non-PIPP – cannot enter into a 400-megawatt, long-term, fixed-price, with the fuel-diversity risk-mitigation aspect. They can't do that. That is something that a larger entity like AEP Ohio can do and then transfer all of those benefits to all customers.

(Tr. IV at 1052.) The evidence thus confirms that Ohio's public policy in favor of fuel diversity is unfulfilled by PJM and the competitive markets for renewable products, but could be advanced by a finding of need for up to 900 MW of in-state, utility-scale renewable energy resources.

b. Ohio as a net importer of energy.

Because PJM operates regional markets indifferent to state boundaries, PJM also does not ensure that individual states achieve an appropriate balance between energy imports and exports.

As Mr. Allen explained, the State of Ohio has failed to produce enough electricity to meet demand in the State for years. (AEP Ohio Ex. 3 at 9.) In fact, with the exception of one year, Ohio did not produce enough energy to meet demand from 2001 through 2017. (*Id.* at 9-10; Tr. I at 98-99.) This gap between supply and demand continues to widen, and will only continue to do so based on recent announcements regarding the closure of coal and nuclear plants. (AEP

Ohio Ex. 3 at 10; Tr. I at 99.) The addition of up to 900 MW in renewable energy resources in Ohio could help ameliorate this imbalance between Ohio's energy imports and exports that disadvantages Ohio vis-à-vis other states.

c. The impact of specific resources on Ohio's economy.

PJM is also indifferent to the economic benefits that adding energy resources will have in particular states *within* the PJM footprint. As Mr. Allen testified, along with Company witnesses Buser and LaFayette, in-state utility-scale renewable resources provide economic development benefits to the specific communities where they are located, as well as the state as a whole. (AEP Ohio Ex. 3 at 10.) These benefits are addressed in greater detail in Section V.C, *supra*.

As Mr. Allen put it, “[i]f you are buying power out of state, those dollars are leaving the state of Ohio.” (Tr. I at 104.) When Ohio's energy dollars are reinvested in the state through locally produced energy, however, the multiplier effect of economic development benefits AEP Ohio's customers and communities. (AEP Ohio Ex. 3 at 10.) Having in-state renewable resources to serve Ohio customers also enhances Ohio's ability to attract and retain businesses with corporate sustainability goals. (*Id.*) Kroger witness Bieber agreed that it would be appropriate for the Commission to consider beneficial economic impacts associated with a renewable project in deciding whether there is a resource planning need for that project. (Tr. VIII at 2250-51.)

Although intervenor witnesses criticized the economic-benefit analysis presented by Drs. Buser and LaFayette, they conceded that they presented no competing analyses of their own. (*E.g.*, Tr. VI at 1833-1834 (Murray); Tr. IX at 2589-2590 (Rengstorf); Tr. IX at 2534 (Seryak).) OCA witness Brown, for example, predicted that economic benefits from the proposed renewable resources would be outweighed by reduced profitability for unsubsidized resources,

but he admitted he performed no quantitative analysis or profitability projection for any specific generation facility that he considered to be unsubsidized. (Tr. VII at 1879-1880.) And although Dr. Brown criticized Drs. Buser and LaFayette for not examining possible shutdowns of displaced energy resources, Dr. Brown himself could not identify any resources within PJM that would be shut down if the Commission found need and ultimately approved the Company's development of up to 900 MW of renewable generation in Ohio. (*Id.* at 1891.) He also conceded that any displacement effect resulting from the renewable projects' construction in Ohio could be felt by resources located outside of Ohio. (*Id.* at 1891-1892.)

Rooftop solar does not provide the same quality or quantity of economic benefits as utility-scale renewable projects. For example, IGS witness Rengstorf conceded that IGS's own website touts benefits from utility-scale solar jobs that are not shared by smaller rooftop solar jobs. (Tr. IX at 2584-2585; AEP Ohio Ex. 25.) Mr. Rengstorf acknowledged, for example, that the IGS website says "utility scale jobs will have more versatility with their skills." (Tr. IX at 2589; AEP Ohio Ex. 25.) Specifically, IGS's website quotes a University of California at Berkeley study for its finding that "workers whose skills are limited to rooftop solar installation are subject to the large fluctuations in the solar segment of the construction market, with little to fall back on, whereas utility-scale workers generally gain a much broader skill set * * * and can work on many types of green and other constructions projects." (AEP Ohio Ex. 25.)

Economic benefits and jobs for the State of Ohio are thus another context in which the current markets simply do not offer the same level of benefits as the in-state, utility-scale projects that AEP Ohio seeks to develop.

d. A price hedge for Ohio customers.

With PJM increasingly dominated by natural-gas fired generation, AEP Ohio's proposal for 900 MW of renewable resources will also result in a valuable hedge against potentially volatile market prices. As Mr. Allen explained, because the generic REPAs have a flat, fixed price over their 20-year term, the renewable projects will offer a hedge against changes in market prices. (Tr. I at 55-56.) This would be a competitively neutral hedge, affecting SSO and shopping customers equally. (*Id.* at 56.) He also noted that the hedge would effectively allow AEP Ohio customers to purchase 4.55% of retail load at a fixed price for 20 years. (*Id.* at 58.)

Mr. Torpey then presented the economic benefits associated with adding 900 MW of renewable resources. The IRP that he sponsored concludes that “[r]enewable energy projects with characteristics similar to the generic projects modeled for this IRP would result in lower costs to customers over the project life cycles” and “provide a hedge against market volatility.” (AEP Ohio Ex. 14, Exhibit JFT-1, at 26.) At hearing, Mr. Torpey confirmed that “you enter into a hedge because you don’t know what the future will be. So it mitigates risk *** [and] even if it’s on the losing side, you are just losing less.” (Tr. VI at 1550.)

Bruce Burcat, Executive Director of MAREC, also testified regarding the hedge value of AEP Ohio’s proposed renewable generation, and why that hedge is significant in light of PJM’s increasing reliance upon natural gas-fired energy in the supply stack. As Mr. Burcat testified:

The Ohio grid and PJM at-large have more natural gas generation in the supply stack than ever before due to the low cost of natural gas that has been extracted out of the regional shale formations. This concentration in natural gas generation creates an increased exposure to natural gas supply cost escalation. * * * Specifically, ratepayers face increased risk that will result in higher electricity bills should natural gas costs rise in the future. The remedy to this cost escalation risk is to act as a prudent investor, and have a diverse set of supply resources (the same way that portfolio theory states a prudent investor shall pursue a diverse set of investments). Fuel-diversity will result in long-term rate stability for ratepayers,

and solar energy projects specifically will provide a hedge to ratepayers against rising electricity costs.

(MAREC Ex. 1 at 5-6.) (*See also* OPAE Ex. 1 at 9-10 (Rinebolt) (testifying that “large-scale investments such as those proposed in these cases” would help “achieve diversity of supply which hedges against potential volatile fossil fuel prices”); NRDC Ex. 1 at 11 (Stebbins) (testifying that the proposed solar projects “reduce exposure to future fuel price volatility.”))

Even the opposing intervenors conceded the hedge value to customers of renewable generation resources. OCA witness Brown, for example, acknowledged his prior testimony that utility fuel-hedging benefits will result from solar qualified facilities. (Tr. VII at 1903.) Dr. Brown recalled testifying in North Carolina that “if you have a contract that results in fixed costs to the utilities and customers, there will be hedging benefits in that case.” (*Id.*) Even Dr. Lesser, who argued on behalf of OCC that customers could contract for offerings that would provide a hedge against market volatility, conceded he was unaware of any 20-year hedge that could be purchased from CRES providers. (Tr. VI at 1647.)

The evidence thus confirms that hedging benefits would be achieved if the Commission found a need for up to 900 MW of renewable energy resources, which would ameliorate price volatility within the PJM market. The evidentiary record also confirms the Commission’s Opinion and Order in the *PPA Rider* case, which confirmed the value of a financial hedge and stability mechanism for customers. *PPA Rider Case*, Opinion and Order at 81.

2. PJM renewable resource deployment is falling short of levels seen in other regions.

As the foregoing discussion demonstrates, PJM fails to address several Ohio-specific factors supporting the development of additional, utility-scale renewable energy projects in Ohio. But these are not the only failures relating to PJM. As Michael Goggin of Grid Strategies

explained in his testimony, renewable energy deployment in the PJM wholesale market is falling short of optimal levels, due to certain aspects of PJM market design. For example, although wind and solar generate around 8.9% of electricity nationally, they account for only 2.8% of generation in PJM. (Sierra Club Ex. 1 at 5.) The wind capacity in PJM at the end of 2017 accounted for just 8.8% of the capacity installed nationwide – less than half the level one would expect based on PJM’s 20% contribution to nationwide generation. (*Id.*) And PJM also continues to lag other regions in renewable development. Of the 37,965 MW of under-construction and advanced development wind projects nationwide, only 2,101 MW (or 5%) are in PJM states. (*Id.* at 8.) If one excludes Illinois (because some of the wind projects there will likely connect to MISO), the figure drops to just 2% of the national total. (*Id.*)

As Mr. Goggin explained, PJM’s Minimum Offer Price Rule (MOPR) and capacity repricing proposals inject additional uncertainty and risk into the prospects for renewable development in PJM. (*Id.* at 12-14.) Uncertainty regarding the capacity market, combined with the financing needs of renewable generation projects, combine to cause the comparatively low deployment of renewable generation within PJM. (*Id.*) When these uncertainties and risks are combined with other facets of the PJM market, such as PJM’s method for calculating wind and solar capacity values, asymmetric capacity performance penalties, energy market price caps, and ancillary services rules, it is apparent that numerous aspects of the PJM market structure contribute to the comparative shortfall in renewable resources in PJM. (*Id.* at 18-25.)

Although PJM sends negative signals to potential renewable project developers, “approving [AEP Ohio’s] projects sends the opposite market signal, effectively saying that ‘Ohio is open to the business of in-state renewable development that saves money and strengthens the

Ohio economy.’” (NRDC Ex. 1 at 19.) A finding of need would thus ameliorate PJM’s failure to incent renewable energy development at a level comparable to other regional markets.

3. CRES renewable energy offerings in the market are no substitute for utility-scale renewable projects.

Although Staff and some intervenors testified that other options are available to consumers seeking to act on their need for renewable energy resources, the evidence confirms that these offerings are limited. They in no way resemble the economically beneficial, in-state, utility-scale offerings for which AEP Ohio seeks a need determination in this proceeding. In reality, the majority of AEP Ohio customers do not access these offerings, even though the Voice of the Customer Survey suggests they are broadly interested and willing to pay.

Staff witness Benedict, for example, testified that distributed generation, CRES offerings on the *Apples to Apples* website, and government aggregations are sufficient options for consumers. (Staff Ex. 2 at 10.) Direct Energy witness Lacey also testified that CRES are currently offering more than 45 different renewable energy supply products in AEP’s service territory. (Direct Energy Ex. 2 at 10.) IEU-Ohio witness Murray pointed to utility-scale projects under development in Ohio. (IEU-Ohio Ex. 1 at 9.) And IGS witness Rengstorf pointed to three onsite solar projects developed by IGS Solar in Ohio, along with available commodity products coupled with renewable energy. (IGS Ex. 12 at 3.) For the following reasons, these options do not disprove the need for the utility-scale renewable projects for which AEP Ohio seeks a “need” finding in Phase I of this proceeding.

a. Distributed generation options are not a substitute for in-state, utility-scale renewable projects.

A number of intervenor witnesses pointed to distributed generation options in the marketplace as a basis for the Commission to reject any “need” finding for 900 MW of utility-

scale renewable projects. For example, Staff witness Benedict testified that the Company currently has over 1,500 customers on net metering tariffs, who have chosen to install distributed generating facilities at their premises. (Staff Ex. 2 at 10.) Staff witness Benedict acknowledged that only about 0.1% of AEP Ohio customers participate in net metering (meaning 99.9% do not), so it is not clear why Mr. Benedict considers net metering an alternative – let alone a viable alternative – to utility-scale solar. (Tr. VIII at 2381.) There are numerous reasons why distributed generation does not provide the same answer to customers’ renewable-generation needs as the 900 MW of utility-scale renewable facilities at issue here. But regardless of all the reasons explaining why customers do not access their limited net metering options, the reality is that the vast majority of AEP Ohio customers are left behind when it comes to net metering.

Mr. Allen explained some of the reasons why distributed generation such as rooftop solar does not enjoy nearly the same economies of scale as the utility-scale resources proposed here:

There’s significant costs for rooftop solar for mobilization and demobilization of the crews that would be installing those panels. Those panels also aren’t able to be optimally pointed at the sun in all instances; typically those facilities don’t track the sun. And so the economics of those facilities are not as favorable as the economics that exist with a utility-scale facility. And those same economies of scale extend as you grow the size of a utility-scale facility from 20 megawatts up to 100 megawatts or, you know, 2- or 300 megawatts. * * * [T]hose costs such as * * * mobilization and demobilization, they are only incurred once * * * and so the cost effectiveness of larger projects is improved.

(Tr. II at 342-43.) Moreover, as Staff witness Benedict admitted, behind-the-meter generation of net metering customers is not considered a generation resource by PJM. (Tr. VIII at 2382.) The FERC dockets considering rules that would allow distributed energy resources to participate in the wholesale market have been open for quite some time, and there is no legally set deadline for FERC to finalize those rulemakings. (Tr. VI at 1749-1750 (Lacey).)

But even those factors are irrelevant to customers who simply cannot procure distributed generation resources. Many customers who want renewable energy may not have the appropriate credit rating, experience, or access to capital to develop renewable energy projects on their own or to enter into long-term contracts to support renewable development. (Sierra Club Ex. 1 at 33.) Many such customers may not have sufficient load to procure renewable energy on their own. (*Id.*) As Company witness Allen explained, customers located in areas with significant tree canopies cannot avail themselves of rooftop solar. (Tr. I at 89.) And, as OPAE witness Rinebolt testified, 43% of all residential buildings are not even physically suitable for solar, according to the National Renewable Energy Laboratory. (OPAE Ex. 1 at 10.) Only 51% of housing occupied by low- and moderate-income families is suitable, but many families with income under 80% of the Federal Poverty Line live in rental housing, which is a major barrier to deployment of solar for these customers. (*Id.*) For his part, Staff witness Benedict agreed that not all customers can afford to install solar panels on their home, and that it is not a good idea for renters to try and install equipment like solar panels on property they do not own. (Tr. VIII at 2309-11.)

In sum, as Mr. Rinebolt explained:

Utility-scale solar is the least expensive option because it is built at scale. It makes solar available to customers who cannot put panels on their roofs for either physical or economic reasons. It also helps keep customers connected to the distribution system because they have a lower cost option to rooftop solar installations. Utility-scale solar also overcomes the barriers small business[es] face to securing renewable power.

(OPAE Ex. 1 at 10.) As such, utility-scale solar promotes equity among customer classes, including classes that face inherent barriers to adoption of behind-the-meter distributed solar generation. (*Id.* at 10-11.) Company witness Allen echoed this theme at hearing, noting that “[c]ertain of our residential customers or customers with homes that are situated properly, they

can take advantage of rooftop solar. We have lots of customers that don't have those abilities and so the competitive market can't meet those needs and what we are doing is fulfilling that need." (Tr. I at 153.) Regardless of the reasons why, 99.9% of AEP Ohio customers have been left behind when it comes to competitive net metering options while 100% of customers would be able to access renewable resources under the Company's proposal.

b. CRES offerings on the *Apples to Apples* website do not disprove the need for in-state, utility-scale renewable projects.

Intervenor and Staff witnesses protest, next, that CRES offerings on the *Apples to Apples* website are a sufficient way for customers to meet their renewable energy needs. For example, Staff witness Benedict testified that "[f]or customers who do not wish to own their own generating facilities, the Commission's *Apples to Apples* website consistently demonstrates the existence of a multitude of CRES provider offerings that are, in whole or in part, renewable products." (Staff Ex. 2 at 10.)

Of course, as Company witness Allen testified, only about 35% of AEP Ohio's customers are CRES provider customers, so the 65% who may wish to continue to take SSO service cannot do so and also take advantage of CRES offerings. (Tr. I at 153.) Even so, Staff and intervenors' contention that CRES offerings are an adequate substitute for what AEP Ohio is proposing fall short. For example, AEP Ohio Exhibit 23 reflects the number of 100% renewable offerings on the *Apples to Apples* database for each week between October 5, 2018, and January 18, 2019, along with the details of the IGS 100% renewable offerings in that period. (AEP Ohio Ex. 23.) This exhibit shows that until January 4, 2019, when it had two 100% renewable offers available, IGS had only *one* such Ohio offer available—and for a maximum 36-month term. (*Id.*) AEP Ohio Exhibit 21 is a far more comprehensive compilation and comparison of CRES offerings on the *Apples to Apples* database published between October 5, 2018 and January 25, 2019.

On cross-examination, Mr. Benedict agreed that most, if not all, CRES offerings for renewable energy rely on RECs to support their environmental attributes claim. (Tr. VIII at 2312, 2313-30.) And after a thorough search of the *Apples to Apples* database, Mr. Benedict observed that none of the CRES offers were identified as being based on Ohio RECs. (*Id.* at 2383.) He further acknowledged that CRES providers are not obligated to keep their offers available for any specific period of time. (*Id.* at 2384.) Underscoring the shortcomings of CRES offerings, IGS witness White conceded that IGS only began offering a 100% Ohio-only renewable product to its customers *within the last six months*. (Tr. IX at 2479-80.) Mr. White agreed that the first time IGS’s Ohio-only renewables offering even appeared on the *Apples to Apples* website was the first batch of offerings made *after Mr. White filed his testimony in this case* on January 4, 2019. (Tr. IX at 2484; AEP Ohio Ex. 23 at 5.) Finally, as discussed above, the Navigant Voice of the Customer Survey confirmed that the renewable needs of AEP Ohio customers are not being met through CRES market offerings. *Supra* at Section V.A.

c. None of the utility-scale projects currently in development have commenced construction.

Intervenors also pointed to other utility-scale projects that are now at various stages of development in Ohio. With these projects in the queue, so the argument goes, who needs AEP Ohio’s proposed 900 MW of renewable projects?

To make this argument, some intervenors resorted to debates on the witness stand about what a “utility scale” project actually is. IGS’s witnesses, for example, resisted even defining the term “utility scale” at hearing (*e.g.*, Tr. VI at 1783 (Rever, discussing “many different views” on cut-off for utility-scale) and Tr. IX at 2470 (White, testifying that utility-scale means “solar that’s built in front of the meter”)), even though *IGS’s own website* defines the term to require

output greater 20 MW (smaller than the Power Siting Board's 50 MW jurisdictional threshold). (AEP Ohio Ex. 25 at 2.)

No matter how intervenors may choose to define "utility scale" for purposes of this proceeding, the lengthy spreadsheet of Commission-certified solar facilities appended to Mr. Murray's testimony (IEU-Ohio Ex. 1) confirms that the Commission has not yet certified any solar facility in Ohio approaching the output of the projects at issue in these proceedings. In fact, Mr. Murray's entire 183-page spreadsheet lists certified solar facilities *totaling* just 592.47 MW in output. (*Id.* at 1.) Approving AEP Ohio's proposal in this case would triple the amount of installed (versus just certified) solar – 200 MW today plus 400 MW equals 600 MW or three times the current installed level. (Tr. I at 142.) There is simply no escaping the reality that to date, Ohio has not been a receptive market for utility-scale solar development. Mr. Seryak, for example, could not identify any such projects that have become operational in Ohio. (Tr. IX at 2540-41.)

Testimony from other intervenor witnesses confirms that other solar projects at some preliminary stage of development are no substitute for the 900 MW projects AEP Ohio is proposing. Direct Energy witness Lacey, for example, conceded that, of the approximately 44 active solar generation projects in the AEP zone in the PJM interconnection queue, about 10 have already passed their projected in-service dates. (Tr. VI at 1757-1758.) As he explained, the fact that a project is in the PJM interconnection queue does not mean it will ever actually operate; "it's a long process to get something planned, sited, up and running, built, and there are no guarantees [for] any of it *** [.]” (*Id.* at 1758-1759; *see also id.* at 1839-1840 (IEU-Ohio witness Murray, agreeing that the fact a project is in the PJM interconnection queue does not

mean that it will ever become commercially operational); *see also* Tr. IX at 2550 (OMAEG witness Seryak agreeing that development does not necessarily mean construction.)

Although Mr. Murray pointed to “eight utility scale projects having a combined capacity of 914.9 MW that have been proposed in Ohio since the beginning of 2017,” he conceded that he had not analyzed whether any of the eight projects addressed in his testimony are yet commercially operational. (Tr. VI at 1839-1840.) They are not; five still await approval from the Power Siting Board. (IEU-Ohio Ex. 1 at 9.) And even projects that have obtained siting approval and PJM interconnection approval may never be constructed because financing requirements must still be met, which requires a strong counterparty. (Tr. I at 317-320.) Accordingly, the limited number of utility-scale projects that are currently under development in Ohio do not undercut the need for projects of the scale the Company proposes. (*Id.* at 215-216.)

AEP Ohio witness Allen explained some of the reasons why many retail customers are left behind with these market options as well:

[T]o date, the competitive market has not developed significant utility-scale solar in Ohio, but this isn't an either/or kind of scenario. What we are looking at here is optionality for customers. If the competitive market is able to meet the needs of certain customers like Ikea, General Motors, Whirlpool, different Fortune 500 companies that you described, that's great for those customers, but there's a lot of our customers that don't have access to the scale or the financial wherewithal to take advantage of those same types of opportunities; so what we are trying to do here is present alternatives that the competitive market currently can't do.

(Tr. I at 152.) By contrast, Mr. Allen explained that “what we're doing is providing these resources so that more of our customers can take advantage of that. It's not just limited to those large Fortune-500-type companies that can sign these long-term REPAs. We are broadening the base of customers that can take advantage of this.” (*Id.* at 216.)

d. Municipal aggregation programs do not fulfill the need for in-state, utility-scale renewable projects.

Staff witness Benedict asserted that, in addition to offerings available in the marketplace, “government aggregations are capable of sourcing renewable resources for their participants, such as the one that currently serves Ohio’s third largest city.” (Staff Ex. 2 at 10.) But Mr. Benedict conceded that he has not analyzed how many municipal aggregation programs are based on Ohio RECs, or whether any have resulted in the development of an Ohio renewable project. (Tr. VIII at 2386-87.) And there is no basis in the ESP statute or the Commission’s LTFR rules to conclude that municipal renewable offerings have any bearing on resource planning needs of an EDU, especially since they are offered in separate geographic areas and neither has an impact on the other. He also acknowledged that municipal aggregation programs are not long-term, and that the provider has no obligation to keep them available for any period of time. (*Id.* at 2387.) He agreed, further, that municipal aggregation programs are not available to all customers. (*Id.*) It is thus not clear why Mr. Benedict considers municipal aggregation programs as an alternative to utility-scale solar, but he admitted in any event that the Company’s proposal would not preclude such programs. (*Id.* at 2388.) As with the other potential market alternatives, the Company’s proposal would serve all customers without precluding the limited aggregation program options that are only available to a small subset of AEP Ohio customers.

e. The Company’s proposal will provide all of its customers with access to renewable resources – many of whom cannot access the limited market options – without precluding other market offerings that may meet customer needs.

Notably, a “need” finding regarding the Company’s proposal will not eliminate existing market options. The Company’s proposed renewable energy resources can co-exist with other offerings in the marketplace. Staff witness Benedict, for example, agreed that CRES providers

can still offer renewable energy products regardless of the outcome of this case. (Tr. VIII at 2333, 2384, 2392-2394; *see also* Staff Ex. 2 at 11.) He also agreed that municipal aggregation programs would not be precluded by a “need” determination here. (Tr. VIII at 2388.) The Company’s proposal is competitively neutral, with no undercutting of alternatives like CRES renewable offers or solar behind-the-meter generation. IGS witness Haugen agreed that IGS can still pursue bilateral contract arrangements with customers to develop solar resources, regardless of the outcome of this case. (Tr. VII at 1980.) As Mr. Allen put it, “this isn’t an either/or kind of scenario. What we are looking at here is optionality for customers.” (Tr. I at 152.)

Indeed, the Company’s proposal is *supported* by renewable developers, as Mr. Burcat’s testimony on behalf of MAREC confirms. (*See generally* MAREC Ex. 1.) And even opposing intervenors declined to testify that specific projects would be abandoned if the Commission found a need for utility-scale renewable resources. IGS witness Rengstorf testified that IGS has six or seven other projects in the pipeline in Ohio in early stages in development, and he “[doesn’t] believe that those projects would go away if this project moved forward.” (Tr. IX at 2590.) And although Mr. Rengstorf predicted a “flood” on the Ohio REC market if the Company’s projects were approved, he conceded that IGS was not anticipating that the RECs from AEP Ohio’s projects would be liquidated into the market. (*Id.* at 2597.)

In short, Staff correctly supported customers’ right to seek products that meet their preferences. (Tr. VIII at 2308.) So did IGS witness Haugen, who agreed that a customer who wants access to solar resources should have the opportunity to obtain those resources from the provider of their choice. (Tr. VII at 1988.) The market may meet some customers’ needs. For the reasons just described, however, current offerings do not meet *all* customers’ needs, nor do they address market failures inhibiting development of in-state, utility-scale renewable resources.

The Commission should make a finding of “need” in this case to address those market failures, in order to provide access to renewable resources to all AEP Ohio customers.

VI. The Commission should decide this case and the *Tariff Cases* on an expedited basis, in order to preserve the potential benefits associated with the generic solar projects modeled for this need hearing.

The Company respectfully requests, consistent with the request for relief in its *Amended LTFR* Application, that the Commission consider this filing on an expedited basis so that the Company’s renewable projects, which are separately presented in the *Tariff Cases*, may take advantage of federal tax credits that impact the price of renewable energy products and that are only available for a limited time. Thus, the Commission should consider conducting the Phase II hearing in parallel to its deliberation on the need determination and/or expediting the remaining process in order to issue merit decisions concerning both phases by October 2019.

In order to fully benefit from investment tax credits (ITCs), solar resources must begin construction before January 1, 2020, and be placed in service before the end of 2023. (AEP Ohio Ex. 3 at 15.) ITCs phase down from their current 30% level to 10% after 2021. (*Id.*) The ITC will materially reduce the cost of the renewable projects for AEP Ohio customers. Thus, promptly considering and approving AEP Ohio’s renewable energy projects will allow the Company to take maximum advantage of the tax credits while they are still available.

In addition to the tax code constraints on the ITC and the resulting impact on REPA price, there are economic and transactional constraints on the period of time that a solar project developer is willing to hold at the fixed price offered in response to AEP Ohio’s competitive RFP. Consistent with the Company’s filing in the *Tariff Cases* (and the discovery responses provided to parties in that consolidated proceeding), construction on the proposed solar projects will contractually need to start by the beginning of 2021 in order to guarantee the current price in

the REPAs. That does not leave any room for delay – especially when considering the time it takes to complete the rehearing and appeal processes relating to a Commission decision.

Achieving a timely Commission decision requires an expedited process going forward. For example, if the Commission is able to issue merit decisions in *both* Phase I and Phase II by October 1, 2019, rehearing (without added delay for further consideration) can be achieved by the end of 2019. That timeline would allow 12 months for a Supreme Court appeal (which is conservative) and issuance of a timely notice to proceed to construction under the REPAs by January 2021 as required. In order for that schedule to happen most feasibly, AEP Ohio requested at the end of the evidentiary hearing that the Commission schedule the Phase II hearing now in parallel with deliberating the need decision. (Tr. XII at 2834-35, 2837-38.)

Alternatively, if the Commission decides to continue pursuing the sequential process of Phase I and Phase II, such that an affirmative finding in the need phase of the hearing will be required prior to scheduling the Phase II hearing, a more expedited decision is required in the need phase in order to stay on track. More specifically, if the Commission wants to proceed strictly sequentially, a decision in the need phase would be needed by early Summer 2019 with an expedited Phase II process immediately thereafter – in order to achieve a merit decision by October and rehearing (without added delay for further consideration) by the end of 2019.

Understanding the complexity of the issues presented and in light of the time-sensitivity for a merit decision, the Company requested at the end of the evidentiary hearing that the Commission consider scheduling oral arguments at the conclusion of briefing. (Tr. XII at 2835.) In the Company's experience, oral argument can aid the Commission in deciding complex cases in a more expedited fashion. If the Commission feels it would be beneficial at the need phase or the second phase of hearing, the Company requests that oral argument be conducted.

VII. Conclusion and Request for Relief

Based on the foregoing, the Commission should make a finding of need under R.C. 4928.143(B)(2)(c) for at least 900 MW of renewable resources in Ohio, in order to further consider the projects proposed by AEP Ohio in the *Tariff Cases*. If it is helpful to the Commission, an oral argument could be scheduled to facilitate consideration of these issues. Given the urgency and impact on the economics of the projects due to a delay, the Commission should also move forward with Phase II of the hearing pending a decision on the need issue.

Respectfully submitted,

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CERTIFICATE OF SERVICE

In accordance with Rule 4901-1-05, Ohio Administrative Code, the PUCO's e-filing system will electronically serve notice of the filing of this document upon the following parties.

In addition, I hereby certify that a service copy of the foregoing was sent by, or on behalf of, the undersigned counsel to the following parties of record this 6th day of March, 2019, via electronic transmission.

/s/ Steven T. Nourse

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in

Case No(s). 18-0501-EL-FOR, 18-1392-EL-RDR, 18-1393-EL-ATA

Summary: Brief -Initial Post-Hearing Brief of Ohio Power Company Regarding Its Amended Long-Term Forecast Report and the Issue of Need electronically filed by Mr. Steven T Nourse on behalf of Ohio Power Company