BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of the 2018 Long-Term Forecast Report of Ohio Power Company and Related Matters.	)))	Case No. 18-501-EL-FOR
In the Matter of the Application of Ohio Power Company for Approval to Enter Into Renewable Energy Purchase Agreements for Inclusion in the Renewable Generation Rider.	)))))	Case No. 18-1392-EL-RDR
In the Matter of the Application of Ohio Power Company for Approval to Amend Its Tariffs.	)))	Case No. 18-1393-EL-ATA

INITIAL POST-HEARING BRIEF OF
OHIO PARTNERS FOR AFFORDABLE ENERGY

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OHIO PARTNERS FOR AFFORDABLE ENERGY'S INITIAL POST-HEARING BRIEF

I. Introduction

Ohio Partners for Affordable Energy ("OPAE") herein submits to the Public Utilities Commission of Ohio ("Commission") this initial post-hearing brief in these proceedings considering the Long-Term Forecast Report and Amended Long-Term Forecast Report ("LTFR") of Ohio Power Company ("AEP Ohio"). AEP Ohio is required to propose the development of at least 900 MW of renewable energy projects in Ohio pursuant to the Commission's Opinion and Order in Case Nos. 14-1693-EL-RDR, et al. (March 31, 2016). Ohio Revised Code ("R.C.") Section 4928.143(B)(2)(c) requires AEP Ohio to demonstrate need for electric generating facilities based on the resource planning projections in its LTFR before the Commission will authorize recovery of the costs of those facilities from ratepayers. AEP Ohio's purpose in the LTFR Amendment filing is to demonstrate need for at least 900 MW of renewable energy projects in Ohio. AEP Ohio Exhibit ("Ex.") 3 at 6.

II. AEP Ohio's Analysis Shows Need for the Renewable Energy Projects, which will Lead to Lower Energy Costs for AEP Ohio customers.

AEP Ohio presented the testimony of William A. Allen to explain how AEP Ohio evaluated the need for renewable energy projects in Ohio. AEP Ohio Ex. 3. AEP Ohio prepared an Integrated Resource Plan ("IRP"), which demonstrates that the addition of economically-beneficial renewable energy projects will lead to lower energy costs for AEP Ohio customers. Securing low-cost renewable energy sources meets a need of AEP Ohio's customers.

Pursuant to the Commission's Order in Case Nos. 14-1693-EL-RDR, et al. (March 31, 2016), AEP Ohio requested proposals for renewable energy projects in a competitive procurement process. Transcript ("Tr.") Volume VIII at 2128. AEP Ohio proposes to have Renewable Energy Purchase Agreements ("REPAs") with third parties to purchase the output of the projects; AEP Ohio will not own the projects. Tr. I at 66. The costs under the REPAs are fixed, and, given that the fuel is wind or solar energy, there are no fuel costs. Id. at 67. An advantage of the solar projects is that they would generally be operating at their maximum output at the time of the summer system peak. Id. at 69.

AEP Ohio's IRP analyzed the impacts of the proposed projects. The PJM Impact analysis shows a reduction in the cost of energy resulting from the generic renewable projects at the AEP load hub of $0.07/MWh on a levelized basis over 20 years. Applying the $0.07/MWh hourly energy price savings to the hourly AEP Ohio load for the period 2021 through 2040, AEP Ohio calculated the net present

value (“NPV”) of the annual energy cost savings for the AEP Ohio load to be $31 million. AEP Ohio Ex. 4 at 6, 10.

AEP Ohio’s Ohio Impact analysis shows that 650 MW of generic renewable projects (400 MW of solar and 250 MW of wind) that go in service by 2021 will result in a reduction of costs relative to market on a NPV basis over the 20-year life of the projects of $88 million for the solar resources and $54 million for the wind resources. AEP Ex. 4 at 6, 11. The total customer benefit shows a $173 million customer benefit over the 20 years. AEP Ex. 4 at 6.

For the generic 400 WM solar projects, the generic solar REPAs have fixed and levelized pricing of $45 over 20 years, making the present value to customers an $88 million benefit. On a NVP basis, levelized, it is a $9.3 million per year benefit. Given AEP Ohio’s 49,618 GWh load, if the average residential customer uses 1 MW a month, it would be a 20 cents a month benefit for all years, 2020 to 2040. Tr. I at 61, 63. In year 2040, it would be a $36 million credit or about 73 cents a MW benefit to the average residential customer using 1 MW per month. Tr. I at 64. If the forecast goes in the opposite direction, it would a $36 million or about a 73 cent per MW monthly charge. Id.

The advantage of a third-party REPA over a utility-owned project is that the REPA can produce a levelized cost over 20 years instead of a front-end-loaded cost of a utility-owned project. Tr. I at 65. With a REPA, customers mitigate or recognize the costs associated with some of the financing of the project over the 20 years. The projects could result in charges to customers, but

the projects could also result in credits if the power is sold into the PJM market at a price that is higher than cost. Tr. V at 1241; Tr. V at 1262.

The evidence demonstrates that the addition of economically-beneficial renewable projects will lead to lower energy costs for Ohio customers. Securing low-cost renewable energy sources meets a need of AEP Ohio's customers. AEP Ohio's analysis shows projections of savings benefits to AEP Ohio consumers.

III. The Commission has Flexibility to Determine Need under Ohio Law.

Ohio law, specifically R.C. 4928.143(B)(2)(c), permits electric distribution utilities to recover from ratepayers the cost of constructing an electric generating facility under certain conditions if the Commission first determines that there is a need for the facility. R.C. 4935.04 provides for the regular filing of what is commonly known as an Integrated Resource Plan ("IRP") as described by Section 4901:5-5, Ohio Administrative Code ("O.A.C."), which amplifies R.C. 4935.04.

O.A.C. 4901:5-5-06(3)(e)(iii) provides a list of factors that the Commission may consider as part of its review of an IRP. Key considerations include: (a) rate and customer bill impacts; (b) environmental impacts and costs of the plan; (c) other significant economic impacts and their associated costs; (d) impact of the plan on the financial status of the company; (e) other strategic considerations such as flexibility, diversity, the size and lead time of the commitments, and lost opportunities for investment; (f) equity among customer classes; (g) the impact of

the plan over time; and, (h) such other matters the Commission deems appropriate. These items are all elements of "need" that the Commission will consider when determining whether there is a need for new electric generation facilities.

It is obvious from the plain reading of the statutes and administrative code rules that the Commission has great flexibility in determining the need for additional electric generating facilities. The Commission is not limited by any one factor and may consider any number of factors as the Commission sees fit.

The rate and bill impacts of the renewable projects are projected to be minimal. As discussed above, given AEP Ohio's 49,618 GWh load, if the average residential customer uses 1 MW a month, there would be a 20 cents a month benefit for the years 2020 to 2040. Tr. I at 61, 63. In year 2040, it would be a $36 million credit or about 73 cents a MW benefit to the average residential customer using 1 MW per month. Tr. I at 64. If the forecast goes in the opposite direction, it would a $36 million or about a 73 cent per MW monthly charge. Id. Under either the credit or the charge, the rate and bill impact is minimal.

There also appears to be little risk of a negative impact on the financial viability of AEP Ohio. The construction of solar photovoltaic projects is not prone to exceeding budgets or failing to meet construction deadlines, unlike nuclear and coal plants. OPAE Ex. 1 at 9. The projects are being built using Renewable Energy Purchase Agreements (REPAs) that minimize the exposure of AEP Ohio financially.

In addition, investment in renewable energy projects in Ohio will advance several important state policy objectives. The projects are consistent with the state policy to provide consumers with adequate, reliable, safe, efficient, nondiscriminatory, and reasonably-priced retail electric service. R.C. 4928.02(A). The projects ensure customers have available a quality option they want and need. R.C. 4928.02(B).

Renewable projects will contribute to diversity of electricity supplies and fuel supplies. R.C. 4928.02(C). At this point, in-state wind and solar generation makes up less than 2% of all energy generated in Ohio. Ohio falls short of advancing renewable energy resources when compared to other states with comparable renewable resources. The Commission has already found that renewable energy projects provide greater fuel source diversity, which will offset the price volatility impact any single fuel source may have on electric rates. Case Nos. 14-1693-EL-RDR, et al., Opinion and Order (March 31, 2016) at 82-83. Renewal energy projects will increase the diversity of Ohio's energy supply. Natural Resources Defense Council Ex. 1 at 18, 23.

Renewable projects will promote innovation in Ohio's electric generation. R.C. 4928.02(D). Such projects provide a mechanism to support the deployment of a technology "that can adapt successfully to potential environmental mandates." R.C. 4928.02(J). The development of renewable energy will also support future carbon emissions reductions. AEP Ex. 3 at 13.

Renewable projects also protect at-risk populations by ensuring renewable energy at a reasonable cost for all customers. The projects' competitive price

and positive health and economic development impacts will act to protect at-risk populations. R.C. 4928.02(L). The projects also provide a mechanism to make an alternative energy resource available to small businesses, which will be able to take advantage of cost-effective utility-scale renewable energy when small businesses are unable to built or procure individualized renewable options. R.C. 4928.02(M).

Renewable projects facilitate the state's effectiveness in the global economy by ensuring the availability of clean energy, which many of the largest corporations in the country see as critical to their futures. R.C. 4928.02(N). The projects will also facilitate the state's effectiveness in the global economy because states with renewable energy generating plants are attractive to a broad range of businesses, and will, along with the construction and operation of the plants, increase employment opportunities in Ohio.

IV. AEP Ohio Is Not Seeking a Determination of Need Based on PJM Capacity.

AEP Ohio is not seeking a determination that there is a need for additional electric capacity in the PJM region, nor is AEP Ohio's filing addressing a capacity need under the PJM capacity market construct. The Regional Transmission Organization ("RTO") PJM operates a competitive wholesale electricity market and manages the transmission grid to ensure reliability and economic benefits on its system. PJM has a capacity market that is designed to provide adequate capacity three years out by increasing the price to consumers that generators receive when additional capacity reserves are needed. Tr. I at 70. The role of

ensuring that reliable and adequate capacity is available to serve Ohio customers is a PJM capacity market function.

PJM capacity markets and the PJM capacity reserve margin are irrelevant to the Commission's determination of need for economically-beneficial renewable resources in AEP Ohio's retail service area. PJM does not seek to meet the needs of AEP Ohio customers based on their preference for a specific type of energy resource nor does PJM take AEO Ohio's customers' need for renewable energy into consideration. AEP Ohio Ex. 3 at 9. Only the Commission takes the needs of AEP Ohio's retail customers into consideration.

The Staff of the Commission ("Staff") witness Timothy W. Benedict addressed whether a resource planning need exists for at least 900 MWs of renewable generation resources located in Ohio and deliverable to AEP Ohio's service territory. Staff Ex. 1 at 2. He testified that R.C. 4928.143(B)(2)(c) allows an electric distribution utility to seek non-bypassable cost recovery for new generation facilities contingent on several factors, including a need determination within the context of an LTFR.

In establishing whether a resource planning need exists, the Staff seeks to determine whether sufficient resources exist, including an adequate reserve margin to meet projected load. Id. at 3. If a resource deficiency is likely to occur within the forecast time horizon, the Staff then evaluates the type of resource that is needed, and the primary objective would be to minimize total costs, i.e., a least-cost integrated resource plan. There are a number of other factors such as

environmental attributes, portfolio fuel diversity, siting considerations, and economic impact analyses. Id. at 4.

The Staff found that AEP Ohio has sufficient resources to meet its projected load. In doing so, the Staff stated that PJM was responsible for ensuring resource adequacy across its footprint, including AEP Ohio and all the state of Ohio. Id. at 7. In May 2018, PJM conducted its most recent Base Residual Auction ("BRA") to procure the capacity needed to ensure reliability through the 2021/2022 delivery year. The BRA resulted in a reserve margin of 21.5%, well in excess of PJM's target reserve margin.

Thus, the Staff found that PJM wholesale markets adequately supply capacity and energy to the AEP Ohio load zone. Id. Therefore, the Staff found that AEP Ohio has not demonstrated a need to construct any additional resources at this time. If the Staff had found that additional resources were necessary, Staff would have continued to the next step of evaluating the types of resources that would be best suited to meet the identified need. Id. at 9.

On the other hand, the Staff agreed that R.C. 4928.143(B)(2)(c) could be interpreted in various ways. Tr. VIII at 2292. While resource diversity is addressed from a regional level, given that Ohio is in an RTO, Ohio certainly has, within its rights, its ability to regulate its electric generating sector as it deems fit. Tr. VIII at 2343. In terms of the Staff's definition of need, the Staff is providing its advice to the Commission as it would in any proceeding. The Commission is free to consider a broad array of factors that can justify the investment in renewable generation. Tr. VIII at 2368.

Obviously, the Staff focused its analysis on the PJM capacity market and the resulting reserve margins in PJM. The Commission should question the Staff's delegation of the responsibility of Ohio resource planning to PJM if the deployment of renewable energy in the PJM wholesale market is falling short of the level that would optimally serve the economic and environmental interests of AEP Ohio's customers.

Nationally, wind and solar provide around 8.9% of electricity generation, but provide only 2.8% in PJM. Sierra Club Ex. 1 at 5. In PJM, renewable resources have not reached levels at which they begin to reduce energy market clearing prices during hours with high renewable output. Id. at 7. PJM region Renewable Energy Credits ("RECs") trade at a higher price than those in almost all other regions, indicating that PJM renewable supply is inadequate to meet the region's aggregate Renewable Portfolio Standard ("RPS") demand. Id. at 9.

In PJM's capacity markets, incumbent generation owners have an incentive to increase their capacity market revenue by seeking higher capacity reserve levels. PJM consistently overestimates future load growth in its capacity market procurements. PJM capacity markets thus incentivize the retention of excess generating capacity, which militates against developing new renewable generating resources.

Renewable energy projects generally obtain a relatively large share of their value from the energy market and a relatively small share of their value from the capacity market. Id. at 10. The presence of a capacity market, such as

PJM's, drives revenue from the energy market, which tends to prevent recognition of the lower energy prices from renewable generation. Id. at 10.

Renewable projects have up-front capital costs and very low marginal operating costs, including zero fuel costs. In regions where renewable generation has significantly penetrated the market, the impact has generally been to lower energy market clearing prices. Renewable projects have near-zero marginal production costs. The development of 900 MW of additional renewable energy projects would tend to lower locational marginal prices ("LMP") in the Ohio region of PJM. As more renewable projects are built, the downward effect on energy market clearing prices would be greater. Sierra Club Ex. 1 at 30.

There is a need for the AEP Ohio 900 MW renewable projects because "need" encompasses more than just the PJM market construct for capacity supplied to consumers. When determining need, the Commission should focus on the need for long-term rate stability in the Ohio energy marketplace and how fixed-price renewables will help meet this need.

The totality of benefits from the AEP Ohio renewable projects would certainly outweigh the costs. AEP Ohio's generic renewable projects have a minimal impact on the customer's bill. Tr. VIII at 2083. A REPA might start out with a slightly higher price during the early years, but ultimately becomes a very significant benefit to customers who are getting the service. Tr. VIII at 2097.

Renewable projects can mitigate exposure to supply cost escalations such as natural gas price volatility. PJM has more natural gas generation in its supply than ever before due to the current, but unsustainable, low cost of natural gas.

This creates an increased exposure to natural gas supply cost escalation. Mid-Atlantic Renewable Energy Coalition ("MAREC") Ex. 1 at 5. Ratepayers face increased risk of natural gas cost escalation. The remedy to this risk is to have a diverse set of supply resources for long-term rate stability. Id. at 6.

Solar energy projects provide a hedge to ratepayers against rising costs. The REPAs set a price for the life of the contracts that provides long-term rate stability. Id. at 7. PJM capacity auctions are for three-year terms; compared to a 20-year REPA, PJM markets represent pricing over a short time horizon. Competitive Retail Electric Supply ("CRES") offers and even the Commission's Standard Service Offers ("SSO") are short-term offers, the longest being three years, which coincides with the length of the PJM forward market. Tr. VIII at 2082-2083. These short-term offers should be compared to a 20-year fixed price long-term contract that would mitigate against price volatility. Tr. VIII at 2077.

The Commission should recognize that PJM's capacity market limits the availability of renewable resources in the PJM region. The inadequate deployment of renewables is not a natural "market" result but a result of the construct of the PJM capacity market and its incentives for some sets of generating resources over others. Under Ohio law, the state must overcome the bias in the PJM capacity market construct to promote diversity of resources, especially renewable resources and follow an "all of the above" energy strategy as articulated by Governor DeWine. The Commission is not only able to do so lawfully, but also obligated to do so on behalf of Ohio retail customers.

V. There is an Urgent Need to Address Environmental Issues Associated with Electric Generation.

The environmental advantages of solar photovoltaics for electric generation cannot be understated. Solar panels produce no emissions, and because they use no fuel, there is minimal impact on the land and virtually no air or water pollution. The most recent report of the Intergovernmental Panel on Climate Change ("IPCC") makes clear that global warming is a serious threat to the planet, and the negative environmental consequences of fossil-fuel energy use are increasing. Solar energy will help the transition to cleaner, safer electric generation sources. From an individual health standpoint, there will be fewer premature deaths - and fewer instances of breathing problems caused by emissions from fossil fuel plants, a key concern in Ohio where fossil-fuel generation dominates. https://www.ucsusa.org/clean-energy/coal-and-other-fossil-fuels/coal-air-pollution#.XCzzT1xKiUk. OPAE Ex. 1 at 11.

The impact of adding 900 MW of renewable energy on the level of air pollutants and carbon dioxide is significant. Sierra Club Ex. 1 at 30. Adding 900 MW of renewable generation in Ohio would significantly reduce air pollution in the region. Sulfur dioxide emissions would be reduced by 956 tons per year, annual nitrogen oxides emissions would be reduced by 796 tons, and particulate matter emissions would be reduced by 168 tons annually. Id. at 31. These pollutants cause environmental degradation, including smog and acid rain, and contribute to cardiopulmonary health problems, including asthma, bronchitis, and heart attacks. Id. at 31-32.

With the acknowledgement of the environmental problems caused by fossil-fuel electric generation, the electric utility industry is going through a period of rapid change. The coal fleet is old and being retired. Many of the coal plant retirements are the result of plants being worn out; others because coal plants cannot financially compete in wholesale markets. There have been significant coal plant closures and reductions in the relative generation produced by fossil fuels. OPAE Ex. 1 at 5-6; DCR-1 and DCR-2.

Natural gas electric generation has recently surpassed coal-fired generation. Natural gas plants are twice as efficient as an average coal plant and have significantly lower greenhouse gas and other pollutants. New approaches to producing natural gas have resulted in a decline in natural gas prices, elevating the percentage of generation fueled by natural gas to new highs. The increased market share for natural gas comes at the expense of coal-fired power plants. OPAE Ex. 1; Exhibits DCR-1 and DCR-2. Natural gas generation has a low capital cost, and can be sited and built in a reasonable period of time at a predictable price. OPAE Ex. 1 at 5.

But the transition to natural gas plants from coal-fired plants is only one step in the path to cleaner energy. Solar and wind energy are seeing a period of rapid growth driven by environmental needs, significant reductions in cost, and customer demand. The Energy Information Administration ("EIA") projects that renewables will continue to grow in coming years. OPAE Ex. 1; Exhibit DCR-3. Recent price reductions to $0.06/kWh have made utility-scale solar cost-competitive in the marketplace. OPAE Ex. 1 at 6; Exhibit DCR-4.

Customers will be protected against climate change and environmental degradation when cost-effective renewable projects begin to dominate the generation mix. Wind and utility-scale solar have come down in cost to the point where they can displace fossil fuel resources while having a positive long-term impact on rates that residential customers pay. Tr. V at 1232. The development of renewable generation is a cost-effective way of resolving the problem of excess carbon and other emissions. There is not necessarily a higher cost to put renewable energy on the grid. Tr. V at 1241.

The cost of utility-scale solar, as the AEP Ohio generic projects here, is competitive when compared to fossil fuel technologies or any other generation resource that is available today. Tr. V at 1230. Rooftop solar is not cost-competitive. Tr. V at 1230. Community solar, while more cost-effective than rooftop solar, is almost twice as expensive as utility-scale solar. Renewable energy generated at a scale that can come on the grid and not significantly raise prices should be maximized so that renewable resources are built in a way that is cost-competitive with other sources of generation. Tr. V at 1230.

Now that wind and utility-scale solar are cost-competitive with other generation, it is time to expand the use of these technologies to reduce greenhouse gas emissions. Customers receive a benefit when fossil fuel generation is displaced with renewable energy because of reduced carbon emissions and other greenhouse gas emissions. Tr. V at 1226, 1230.

The analysis provided by AEP Ohio indicates a high probability – between 99.9% and 100% – that over the lifetime of the generic renewable projects, they

will provide financial benefits to customers. The costs for photovoltaic arrays are cost competitive with all forms of generation. OPAE Ex. 1 at 7; DCR-4. Solar photovoltaic projects have overwhelmingly positive environmental impacts and minimal costs of compliance with current and future environmental rules. The primary compliance considerations of renewable sources relate to land use and impact on flora and fauna on the site. There are no emissions, so there is no need to spend ratepayer funds on technologies to control emissions. Id.

Ohio has few utility-scale solar photovoltaic projects, so construction of these projects will promote the flexibility and diversity of the current generation mix in Ohio. Data from the EIA indicates that in 2017 "coal fueled 58% of Ohio's net electricity generation, natural gas fueled 24%, and nuclear energy accounted for another 15%." (https://www.eia.gov/state/?sid=OH#tabs-4.) This leaves a mere 3% that is generated by renewable sources. While the generation mix will change as coal plants are replaced by natural gas, in order to achieve diversity of supply which hedges against potential volatile fossil fuel prices, large-scale investments, such as the generic AEP Ohio projects, will help improve the balance of resources providing electricity to Ohio customers. OPAE Ex. 1 at 9.

Climate concerns and the high price of coal and nuclear generation are causing electric utilities to move from traditional fossil-fueled generation. While the use of coal or natural gas power plants will not likely be eliminated in the near future, the long-term trend is to minimize or eliminate the use of fossil fuels and to increase reliance on renewable sources. Ohio is behind other states in the

development of solar photovoltaic resources. The renewable AEP Ohio projects will help establish and grow a new Ohio industry. Id. at 11.

VI. AEP Ohio's Customers Have Demonstrated Need for the Projects.

AEP Ohio presented a report "Voice of the Customer: Attitudes and Expectations for Renewable Energy" by Navigant to demonstrate a strong desire on the part of AEP Ohio customers for in-state renewable power. AEP Ohio Ex. 6. Navigant examined renewable energy policy trends in Ohio and analyzed business leaders' actions and commitments to sustainability and renewable energy. Navigant also surveyed residential and small commercial and industrial customer perspectives on utility-sourced renewable generation. Id. at 3.

Results from the online survey indicate that a strong majority of AEP Ohio customers believe it is important for AEP Ohio to make greater use of renewable energy. The survey also revealed that a majority of residential customers and many small commercial and industrial customers were willing to pay some additional amount on their electric bills for AEP Ohio investments in renewable energy. The survey indicates that AEP Ohio customers are planning for, and expecting to be served by, more renewable generation to supply their energy needs going forward. Id. at 4.

Many corporate entities, including those that may consider investment in Ohio, have initiatives to have their energy needs met by renewable products. AEP Ohio Ex. 3 at 7-8. There is also a growing demand not just for renewable

energy but also for renewable energy that is produced locally. Renewable projects provide local economic development benefits. Id. at 9.

As coal and nuclear plants continue to be retired in Ohio, the state must depend on energy produced in other states to meet the needs of its people, businesses, and industry. This results in energy dollars from Ohio customers being exported to generators outside Ohio and providing economic development benefits to residents and businesses in other states. In-state resources provide local economic development to the communities where they are located as well as the surrounding region and Ohio as a whole. When Senate Bill 210 passed in 2009, no one would have predicted the wholesale closure of coal-fired generating plants in Ohio. It is time to invest in the generating technologies of the future.

When Ohio's energy dollars are invested in the state through locally produced energy, the multiplier effect of economic development is increased to the benefit of Ohio customers and communities. Having in-state renewable resources to serve Ohio customers makes Ohio more attractive to certain businesses that may have corporate sustainability goals. Id. at 10.

Staff witness Benedict believed that the Navigant study led AEP Ohio to conflate customer preferences with customer needs. Staff Ex. 1 at 9. Staff pointed to the 1,500 Ohio Power customers on net metering tariffs who have chosen to install distributed generating facilities at their own premises. Staff did not believe that AEP Ohio had established a need for utility-scale wind and solar investments; however, this is need as the Staff defines the term. The Staff recognizes that AEP Ohio and other parties may define what constitutes a need

in a different manner than Staff, and the Commission may find the benefits of the AEP Ohio renewable projects compelling. It will be the Commission which ultimately decides whether or not to broaden the definition of need beyond the Staff's limited definition. Staff Ex. 1 at 11.

The evidence of record shows that residential and small commercial customers are at a disadvantage in terms of the accessibility of solar photovoltaic systems. First, 43% of all residential buildings are not physically suitable for solar panels according to the National Renewable Energy Laboratory. (https://www.nrel.gov/docs/fy18osti/70901.pdf at 5.) Only 51% of housing occupied by low- and moderate-income families is suitable. Many families with incomes under 80% of the Federal Poverty Line live in rental housing, which is a major barrier to the deployment of solar panels for these consumers. OPAE Ex 1 at 10.

Utility-scale solar is the least expensive solar option. Utility-scale solar makes solar energy available to customers who cannot put panels on their roofs for either physical or economic reasons. Utility-scale solar also helps keep customers connected to the distribution system because it represents the least-cost option for customers to purchase renewable generation. Id.

Many customers who want renewable energy may not have the appropriate credit ratings, experience, or access to capital to develop renewable energy sources on their own or to enter into long-term contracts to support renewable development. Many customers also do not have sufficient load to justify renewable energy on their own. Ohio will benefit from AEP Ohio developing renewable energy projects because the utility can take advantage of

economies of scale, low-cost financing, and development expertise some customers cannot access. Sierra Club Ex. 1 at 33.

Utility-scale solar also overcomes the barriers small businesses face to securing renewable power. Major corporations are developing green power, but smaller businesses do not have the same ability. The proposed AEP Ohio projects make available competitively-priced solar electricity to all customers, ensuring equity among all classes. OPAE Ex. 1 at 10-11.

Absent Commission approval of the development of these AEP Ohio renewable projects, it is unlikely that in-state renewable energy projects of this scale will occur. NRDC Ex. 1 at 5. The role of a long-term contract signed with a credit-worthy entity is critical to secure financing for solar projects and always has been necessary for renewable projects. By committing to the long-term REPAs, AEP Ohio, a financially-strong contract party, gives customers the ability to access solar power. Smaller developers of solar projects will be able to secure financing for their own renewable projects and begin construction and operation. A long-term contract such as a REPA can be the key to a project being built. NRDC Ex. 1 at 19.

The Commission should consider the public comments and testimony of public witnesses in these cases. The public comments filed in the Commission's docket in these cases are voluminous and mostly supportive of the projects. A hearing for public witnesses to express their views was held at the office of the Commission on December 14, 2018, and many public witnesses testified in support of the projects. Mr. Eddie Smith, an Athens Township trustee in Athens

County, testified that consumers in Ohio, and particularly in his community, want renewable energy and are willing to pay more for it. Rational consumers are not only concerned about prices but also how the source of the generation consumed affects the future. Public Hearing Tr. at 18-19.

Public witness Lee Blackburn testified that the development of 900 MW of renewable energy in Ohio would reduce the need to import energy from other states, promote energy diversity, lower energy costs, and most importantly, reduce carbon emissions. Id. at 21-22. Public witness Bradley Holmes testified that he supports the projects for environmental reasons because more renewables equals less pollution. Updating our energy infrastructure is desperately needed in Ohio. Id. at 24. In addition, more renewable energy projects will normalize these projects in the future. Id. at 25.

Public witness David Cruz testified that coal fueled 58% of electricity generation in 2017 and that there is a need to start moving away from coal a lot faster than we are. Id. at 26. He believed that the projects would be a game-changer for Ohio and would put Ohio among the other states that are using renewable energy. Id. at 27. Public witness Frida Etchell testified that if the projects increase utility bills by a few cents, it is a small price to pay for ultimately cheaper bills down the line. Id. at 28. Public witness Benjamin Cross testified that solar energy needs to be a strong part of diverse energy sources so that there are sustainable energy systems in the future. Id. at 31.

Public witness Robert McCollister testified that the transition to renewable energy is already underway because fossil fuels have begun to change our

climate. Id. at 32-33. In addition, technology has provided us with the tools to solve the climate crisis and create jobs and economic growth at the same time. Nearly five times as many people now work in the solar industry as work in coal mines. Fossil fuels are commodities whose price will rise and fall with supply and demand, but wind and solar technologies will only grow cheaper over time. Id. at 34. Renewable energy will help attract the industries and jobs of the future. Public witness David Greene testified that Ohio needs clean energy that improves air quality and that clean energy will only get cheaper in the long run. Ohio is lagging behind other states in renewable energy. Id. at 25-36.

Debbie Phillips of Rural Action, a nonprofit organization engaged in asset-based community development in rural Ohio, testified that its Board of Directors voted unanimously to support the AEP Ohio projects. Ohio has been important to the nation's energy economy; but as consumers demand increased access to renewable energy sources, the AEP Ohio projects will help Ohio stay competitive in a changing sector. The renewable energy sector has demonstrated dramatic job growth, and a project the size of the AEP Ohio projects has the potential to increase demand in a region that lacks access to good jobs. The competitively-priced projects will help Ohio remain a leader in the energy sector and create jobs. Id. at 39. Diversity of energy generation sources contributes to security and resiliency for our communities, our economy, and our country. It is also important to address the impact on climate. Id.

Public witness Charles Lynd testified that the Commission has the opportunity to contribute to the reversal of the outdated 20th century world and

invest in clean energy that will drive a new 21st century economy. The pollution from the old system is causing the climate crisis that threatens future generations. Id. at 43. Public witness Mary Counter testified that reducing dependence on fossil fuel is a win for all of us. Id. at 46. Public witness David Palmer testified that if the projects result in increases to the average bill of about 28 cents per bill, that is a very small price for an investment that can gain us cleaner air and water. Renewable energy gives Ohio a chance to lead. It is the way forward to the future. Id at 48.

Public witness Nicholas Moore testified that expansion of our state's infrastructure will always be necessary, especially as technologies are changing. Renewable energy is much cheaper to produce after the initial investment, and is done without adding pollutants. Id. at 55. Public witness Ned Ford testified that Ohio needs to be one of the leading manufacturing states, and the AEP Ohio projects will help make clear that utility-scale solar will lower the price of electricity. Id. at 91.

Public witness Rachael Belz of Ohio Citizen Action ("OCA") testified that the Commission needs to listen to the will of AEP Ohio customers and those sending written comments and interested parties throughout the state who are finally in agreement with at least one big utility project in Ohio. Id. at 102. She testified that people are thrilled to be able to be for something, instead of always having to fight against things of which they don't agree. Id. at 102-103. Some OCA members understand that the investments may mean paying a small amount more on their bill, but many have expressed that they would like to see

the investment even if that is the case. The projects are smart investments that would help give certainty to renewable energy developers that Ohio is moving into the 21st century. The projects will enable us to take advantage of the cleanest, cheapest, and most sustainable energy investments ever proposed in Ohio. Id. at 103.

The Office of the Consumers' Counsel ("OCC") expert witness Noah Dormady testified that he was willing to pay a slightly higher premium on his electric bill for renewables and if that means that he supports renewables, then he supports renewables. Tr. XI at 2722, 2727. Although he criticized the Navigant study, Dr. Dormady and OCC performed no study to determine if other customers, like Dr. Dormady, were willing to pay a slightly higher premium for renewables or if other customers, like Dr. Dormady, support renewables. Tr. IX at 2723-2724.

Some may be concerned that low-income customers would be harmed by even slight increases in bills. However, affordability is not only an issue now but into the future. The ability of these projects to provide stable pricing over twenty years will serve as a hedge against price increases and will likely lower bills in the future. OPAE supports investing in these technologies, especially since they are now cost-competitive with fossil-fueled generation. Pricing curves show continuing declines for solar and wind sources. Rather than being harmed, low-income customers will ultimately benefit from generation in new, cost-effective renewable technologies.

VII. The Commission Should Consider the Need for Economic Development in an Economically-Stressed Region of Ohio.

The evidence shows a growing demand not just for renewable energy but also for renewable energy that is produced locally. Local renewable projects provide local economic development benefits. AEP Ex. 3 at 9. As coal and nuclear plants will be retired in Ohio, Ohio depends on energy produced in other states to meet the needs of its people, businesses, and industry. This results in energy dollars from Ohio customers being exported to generators outside Ohio and providing economic development benefits to residents and businesses in other states. In-state resources provide local economic development to the communities where they are located as well as the surrounding region and Ohio as a whole.

AEP Ohio is proposing that the solar projects be built in the Appalachian region of Ohio. There is no question that the Appalachian region of Ohio is under severe economic distress. In 2016, Highland County had a poverty rate of 19.8%, with 28.4% of all children living in poverty. According to census data, 43.6% of the population had incomes under 200% of the federal poverty line, which renders a family eligible for low-income weatherization programs. Surrounding counties have similar rates: Adams County – 51.8%; Brown County – 38.1%; Clinton County – 36.2%; Fayette County – 40%; Pike County – 44.8%; and, Ross County – 40.2%. See *State of Poverty in Ohio 2017,* Ohio Association of Community Action Agencies, http://oacaa.org/wp-content/uploads/2018/04/State-of-Poverty_Rev-2018.04.13.pdf. In 2008, one of the largest employers in the Appalachian area, ABX Air (DHL), closed its U.S. air

hub operations in Wilmington, Ohio, leaving 10,000 people without a job. This job loss and the ripple effect continue to challenge this region and contribute to the high poverty rates. OPAE Ex. 1 at 7.

The AEP Ohio projects will have a beneficial impact on the Appalachian regional economy. Ohio Power projects as many as 3,870 full-time equivalent jobs during the construction phase and approximately 50 long-term jobs. The projects will produce additional tax revenues in the region and across the state. The annual operating impacts are projected to exceed $33 million. AEP Ohio Ex. 12, Exhibit SB/BL-1 at 10; OPAE Ex. 1 at 8.

The solar projects will provide both direct and indirect economic benefits to both the Appalachian region of Ohio and the Ohio economy at large. MAREC Ex. 1 at 7-8. Direct and indirect economic benefits should be taken into account as the Commission considers the totality of benefits stemming from the approval of these projects. The growth of solar power offers billions of dollars in wages, economic benefits, and local tax revenues as well as ten of thousands of new jobs. By supporting in-state renewable energy projects, Ohio will be in position to capture many of these green jobs. MAREC Ex. 1 at 9.

The solar plants may also attract additional new industry to the region and the State. Increasingly, corporations large and small are making commitments to obtain 100% of their electricity from renewable energy sources. (https://www.bloomberg.com/news/articles/2018-04-30/businesses-are-buying-more-wind-and-solar-power-than-ever-before.) The availability of renewable energy has emerged as an important factor in attracting and retaining corporate

facilities within a state. The AEP Ohio projects will provide that advantage to Ohio at a large scale. The demand for green power should also improve the market for RECs. Subsidies to large industrial customers are not the only path to retaining jobs; to expand jobs, investments in clean energy technologies in a State like Ohio are critical. OPAE Ex. 1 at 7-8.

Power plants that are cost-effective now and in the future are key to Ohio's economic development. Large scale renewable energy installations will produce jobs during construction and operational jobs over the long-term. The preference of some customers for renewable energy will be satisfied, making Ohio more attractive to modern businesses. And the stable prices from generation not subject to the vagaries of fuel prices act as a hedge against market volatility and provide the price certainty that is an advantage to all customers.

There is also evidence that 88% of Ohio-based Fortune 500 companies have sustainability or corporate responsibility reports and/or are actively investing in renewable energy initiatives. MAREC Ex. 1 at 10. Many companies have invested millions of dollars in renewables to power their operations and offset conventional energy use. MAREC Ex. 1 at 10-11. Utilities need to evolve to satisfy this growing demand for renewables. Projects like the AEP Ohio solar installations will help meet this need and make the state of Ohio more attractive to companies wanting to use renewables and clean energy. Id. at 11.

There is also an increase in private and public interest and investment in the opportunities inherent in the renewable energy economy outside of the

energy sector. This is evident in several other economic sectors, such as education and health, finance and banking, law and science, agriculture, and tourism. NRDC Ex. 1 at 24-25.

Economic development benefits would come from expanded renewable energy in Ohio even beyond the jobs and growth created from deploying the renewable resources themselves. Sierra Club Ex. 1 at 32. Many large corporations have aggressive renewable energy procurement goals, driven by environmental goals, economic savings, and the fuel price risk hedging benefits of renewable energy. These companies factor in the availability of renewable energy and renewable energy tariffs into their decisions about where to locate new facilities. The greater availability of renewable energy as a result of the AEP Ohio projects will encourage these companies to site facilities in Ohio. Id. at 32-33.

VIII. Competitive Markets Will Not Address Customer Need for Renewable Energy.

Staff witness Benedict stated that for "customers who do not wish to own their own generating facilities", the Commission's Apples to Apples website shows Competitive Retail Electric Supply ("CRES") providers whose offers are in whole or in part renewable products. Residential customers had 29 CRES provider offerings that were 100% renewable content. Staff Ex. 1 at 10. Government aggregations are also capable of sourcing renewable resources for their participants. The Staff was concerned that utility-scale wind and solar investments could serve to crowd out the other suppliers of renewable sources.

The growing need for renewable energy cannot be addressed by competitive marketers alone. The issue is not whether customers wish to own their own generating facilities or choose to take CRES offers, but whether customers are able to do so. Customers do not have a right to be served by a CRES provider; CRES providers must agree to serve a customer. Only about 35% of AEP Ohio's customers even participate as customers of CRES providers. The other 65% continue to take service from the utility's Standard Service Offer. Tr. I at 153. Unlike a CRES, the utility has an obligation to serve. The utility is the only entity that can make an offering for all of AEP Ohio's customers to take advantage of economic renewable power over a long period of time. Tr. I at 344, 358, 360.

While CRES providers may offer renewable sources to customers, not all customers have the ability to take renewable service offerings from CRES providers. Customers may not have the appropriate credit quality for CRES providers to be willing to serve those customers. Tr. I at 88. There are a lot of customers that do not have access to the scale or the financial wherewithal to take advantage of competitive market offers. The CRES market cannot meet their need. Customers want the benefits of renewable energy but may be unable to take advantage of renewables except through their utility. Tr. VII at 2078. Not all customers have the ability to own their own generating facilities, finance their own renewable installations, or pay for long-term contracts. Many customers are left out of financing options. Tr. VIII at 2081-2082.

The competitive market may provide rooftop solar, but only to certain affluent customers or customers with homes that are situated properly so that they can take advantage of rooftop solar. Tr. I at 153. Rooftop solar is a small-scale solar facility that is installed on a customer's roof, and it has very low economies of scale. There are significant costs associated with rooftop solar for mobilization and demobilization of crews that would be installing the panels, which are not able to be optimally pointed at the sun in all instances. In rooftop installations, the panels do not track the sun. Tr. I at 343. The economics of rooftop solar facilities are not as favorable as the economics of utility-scale facilities. As the size of utility-scale projects increase, the costs of mobilization and demobilization, which are only incurred once as the projects are built, improves the cost effectiveness of larger solar projects. Tr. I at 343.

The generic renewable projects under consideration here would receive all of their revenues through the REPAs. Tr. I at 164. One of the challenges with the competitive market developing renewables for customers is that it requires creditworthy counterparties, and not every customer is creditworthy enough to support long-term REPAs or large-scale renewable projects. Tr. I at 164. The financial risks associated with the building of the facilities and the actual cost of the facilities is borne by the developer, in this case, an affiliate of AEP. The developer, or counterparties to the REPAs, will have the REPAs with AEP Ohio. AEP Ohio customers will have a fixed-price REPA. The risk of cost overruns, construction, and the availability of the units is all borne by the counterparties, not the customers.

There is no up-side risk to the customer for the cost of power from the projects, because the cost will be fixed. Tr. II at 392-393. If the REPA cost is more than the wholesale revenues that are generated by the projects, the difference would be passed on to customers of AEP Ohio as a non-bypassable charge. But the projects will result in a charge to customers only if market prices are very low. Tr. II at 393. If market prices go up, and the REPA cost is less than the wholesale revenues that are generated by the projects, customers will see a significant benefit. Tr. VIII at 2098.

The projects could not be built without a creditworthy counterparty signing the REPAs. AEP Ohio signing the REPAs facilitates the projects being built. Tr. I at 214-215. Over the last 10 years, 200 MW of solar power have been developed in the State of Ohio. With the REPAs, an additional 400 MW of solar would triple the amount of solar in Ohio. This can only happen with a large creditworthy counterparty like AEP Ohio. Tr. I at 215. There are a limited number of counterparties that can do these types of projects and take advantage of the scale and economies that come with the projects. Solar projects for 20, 30, 40 MW do not have the same economies of scale as a 400 MW facility.

The competitive generation market to date has not developed significant sources of solar energy in Ohio. Tr. I at 152. The competitive market may be able to meet the needs of certain commercial and industrial customers, such as Fortune 500 companies, who are able to build their own solar facilities or contract for solar energy. Tr. I at 153. But CRES providers cannot develop renewable resources that would provide similar benefits as utility-scale projects. CRES

providers in Ohio have never invested in renewables at a scale that is anticipated by the AEP Ohio projects. Tr. V at 1245. CRES may provide small solar projects in Ohio, but there is no large CRES investment in significant renewable energy that would achieve goals such as price stability, clean energy, the mitigation of climate change, and economic development. Tr. V at 1246.

The projects are not anti-competitive at the retail level because retail suppliers still have the ability to serve the load of the retail customer base. CRES providers make new and different offerings all the time, and CRES providers withdraw offerings as well. CRES providers offer or do not offer whatever they choose. Nothing in these proceedings will prevent CRES providers from offering whatever they want to offer. A fixed REPA price that is market competitive would not constitute a market subsidy. For the wholesale market, the size of the projects in terms of the size of the Ohio market makes the anti-competitive argument unsubstantiated. Adding 400 MW of solar energy will have a negligible impact on wholesale energy values and a limited impact on competition. It will also give CRES providers a new, low-cost source of RECs, which can green the energy CRES provides to their customers.

The AEP Ohio projects represent renewable energy that the competitive market currently cannot provide. Tr. I at 152. The AEP Ohio projects here do not displace or prevent other alternatives such as Fortune 500 companies building their own projects or CRES renewable offers, but provide another resource that only utility-scale projects can provide. All these projects can work

together to provide additional benefits for customers, the economy of Ohio and the environment. Tr. I at 345.

These projects will allow more customers to access renewable energy. The projects broaden the base of customers that can take advantage of renewable energy. Tr. I at 216. The proposed projects have positive impacts for customers based on these considerations and should be approved.

IX. Conclusion

Based on its consideration of the AEP Ohio projects and the law, as well as electric utility industry trends and forecasts, the Commission should find that there is a need that justifies ratepayer investment to support the AEP Ohio solar projects. The Commission is not constrained by any statutory definition of the word "need" in its determination whether a resource is needed, because that definition does not exist in statute. The Commission is not constrained by PJM's capacity market reserve margins in its determination whether need exists for new resources in Ohio. If the PJM capacity market construct does not show a need for new renewable resources, this PJM blind spot is a flaw in its capacity market construct, not a basis to find there is no need for additional renewable resources in Ohio.

Nor is the Commission constrained by Ohio's competitive retail market construct in its determination of need for new renewable resources. The Commission is fully within the law to find a need, especially in the case here where CRES providers cannot and will not provide the renewable resources that are desperately needed to combat climate change. The AEP Ohio projects meet

the need for utility-scale solar that is far outside the reach of any Ohio CRES to provide. The efforts of CRES to portray their small, individualized installations and short-term offers as sufficient to meet the need for renewable resources in Ohio must be rejected.

Environmental issues alone demonstrate a need for additional renewable resources. Wind and utility-scale solar have come down in cost to the point where they can displace fossil fuel resources without having a significant impact on bills that residential customers pay. Tr. V at 1232. The development of renewable generation is a cost-effective way of resolving the problem of excess carbon emissions. Now that wind and utility-scale solar are cost-competitive with other generation, it is time to expand the use of these renewable technologies to reduce the amount of greenhouse gas emissions.

There is a strong desire on the part of AEP Ohio customers for in-state renewable power. In-state resources provide local economic development to the communities where they are located as well as the surrounding region and Ohio as a whole. The projects are smart investments that would help give certainty to renewable energy developers that Ohio is moving into the 21st century. The projects will enable Ohio to take advantage of the cleanest, cheapest, and most sustainable energy investments ever proposed in Ohio.

Respectfully submitted,

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CERTIFICATE OF SERVICE

A copy of this Initial Post-Hearing Brief of Ohio Partners for Affordable Energy will be served electronically by the Commission's Docketing Division on parties who are electronically subscribed to these cases on this 6th day of March 2019.

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Summary: Brief electronically filed by Colleen L Mooney on behalf of Ohio Partners for Affordable Energy