

**BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Application of Ohio)	
Power Company for an Increase in Electric)	Case No. 20-585-EL-AIR
Distribution Rates.)	
In the Matter of the Application of Ohio)	Case No. 20-586-EL-ATA
Power Company for Tariff Approval.)	
In the Matter of the Application of Ohio)	
Power Company for Approval to Change)	Case No. 20-587-EL-AAM
Accounting Methods.)	

**REPLY BRIEF
OF
ARMADA POWER, LLC**

July 6, 2021

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I. INTRODUCTION

The Public Utilities Commission of Ohio (“Commission”) should continue its proactive approach with advanced technologies by adopting the innovative pilot proposal from Armada Power, LLC (“Armada Power”) for Ohio Power Company’s (“AEP Ohio”) distribution grid, and without risking a lengthy delay. The next rate case from AEP Ohio is not expected to be filed anytime soon and, therefore, the opportunity that exists today may disappear for a decade or more. A complete and fair analysis of the proposed Joint Stipulation and Recommendation (“Stipulation”), including the evidence and arguments presented by Armada Power, supports adoption of its pilot program that directly provides distribution grid reliability in the AEP Ohio service territory. Multiple stipulating parties (“Stipulating Parties”) ignore the Commission’s proactive approach to new distribution technologies and urge the Commission to review the Stipulation without an in-depth analysis of all of the evidence presented despite binding case law. In doing so, those parties seek to modify the Commission’s long-standing test for stipulations; ignore the many benefits in the record of Armada Power’s proposed pilot that directly relates to distribution grid reliability; and rely on certain pilots in the Stipulation that provide either insufficient or no distribution grid reliability benefits.

The record in these proceedings mandates a different result. First, the Stipulation is not in the public interest because it fails to include the Armada Power pilot. The record evidence establishes that Armada Power’s proposed innovative pilot will benefit ratepayers and the public interest because it is proven technology that provides grid reliability benefits and the pilot is fully developed. The details of the pilot, including costs, are uncontroverted in the evidence, and the pilot is consistent with and does not violate Ohio’s energy policy. Additionally, Armada Power’s

pilot fits with the purpose of the continuing Distribution Investment Rider (“DIR”),¹ is consistent with the stipulated information sharing and provides different kinds of distribution system reliability benefits. Under the Armada Power pilot, AEP Ohio would install additional distribution grid assets (proven and secure water heater controllers containing revenue-grade meters and sophisticated software) at a fleet level (providing a sufficient scope) to provide AEP Ohio with real-time, valuable data and insight into its distribution grid. AEP Ohio can also use the pilot’s technology to implement a multitude of grid reliability measures in real-time. The record is replete with evidence that, with the pilot, AEP Ohio will have the ability to conduct many grid reliability functions, such as:

- Shifting load in real time to avoid “rebound peaks” after an outage or demand response event;
- Avoiding a spike following an outage and improving the speed of outage recovery (“cold load pick-up spike”) which can improve the system average interruption duration index (“SAIDI”) score;
- Accessing real-time voltage data, which provides visibility into circuit reconfigurations, VoltVar control and emergency situations;
- Shifting load so that renewable energy can be consumed, which assists with balancing electric supply and demand; and
- Reducing capacity constraints on circuits.

Second, while the Stipulation provides for AEP Ohio to continue collecting significant distribution investment revenues, the stipulated pilot programs that the Stipulating Parties tout (which support specific technologies such as electric vehicles) lack the ability to provide

¹ The purpose of the DIR is to facilitate “the timely replacement of aging infrastructure, improving and maintaining service reliability; support[] the installation of gridSMART technologies, including automated meter infrastructure, volt/VAR optimization, and distribution automation circuit reconfiguration; and [] serve as the foundation for the installation of other advanced technologies in the future. *In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to R.C. 4905.143 in the Form of an Electric Security Plan*, Case Nos. 16-1852-EL-SSO et al., Opinion and Order at ¶189 (April 25, 2018).

meaningful distribution system reliability-related benefits. Similarly, the distribution-investment-related information-sharing provision of the Stipulation will not provide reliability benefits – it does not even require reporting of grid reliability benefits. Such deficiencies in the Stipulation are further support for the Armada Power pilot.

Lastly, the Commission is not required to accept a stipulation simply because it provides some benefit to ratepayers. To the contrary, the Commission has a history of approving advanced technologies and of modifying stipulations to further the public interest. In this proceeding, the Commission has the opportunity to modify the Stipulation to include the Armada Power pilot, the costs of which can be recovered under the DIR and from which valuable information on grid reliability can be gathered. Per Commission precedent and given the lack of a pilot in the Stipulation that is directly related to grid reliability, the Commission should modify the Stipulation by approving implementation of Armada Power’s pilot in these proceedings with AEP Ohio’s costs recovered through the DIR under the stipulated DIR terms.

II. ARGUMENT

A. The Commission has repeatedly supported and enabled utility use of new technologies in the electric distribution grid.

The Commission’s mission is to ensure consumers are provided electricity “in a reliable, cost-effective, and safe manner.”² Because the Commission has determined that it must be proactive in recognizing and preparing for new technologies, it has adopted “next generation technologies” and developments that are driving “innovation and modernization to the grid.”³

² *In the Matter of the Application Seeking Approval of Ohio Power Company’s Proposal to Enter into an Affiliate Power Purchase Agreement for Inclusion in the Power Purchase Agreement Rider*, Case Nos. 14-1693-EL-RDR et al., Opinion and Order at 1 (March 31, 2016). Accord, the Commission’s webpage describing its mission at <https://puco.ohio.gov/wps/portal/gov/puco/about-us/resources/mission-and-commitments> (accessed July 6, 2021).

³ *In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to R.C. 4928.143, in the Form of an Electric Security Plan*, Case Nos. 16-1852-EL-SSO et al., Opinion and Order at ¶ 175 (April 25, 2018); *In the Matter of the Application Seeking Approval of Ohio Power Company’s Proposal to Enter into an Affiliate Power Purchase Agreement for Inclusion in the Power Purchase Agreement Rider*, Case

These proceedings are a timely opportunity for the Commission to continue this approach in the AEP Ohio service territory by providing direct reliability benefits to its ratepayers by approving an innovative pilot and technology into AEP Ohio's distribution grid.

1. The Commission and Staff have supported new technologies that have enabled Ohio's utilities to use new technologies for their distribution grids.

In numerous proceedings, the Commission and its Staff have supported a wide variety of technologies for the Ohio energy utilities. Below are a number of examples:

Green Button:

- The Staff supported and, last month, the Commission approved a new technology in DP&L's service territory called Green Button Connect My Data, allowing suppliers and third parties to access customer energy usage data.⁴
- The Staff supported and the Commission approved Green Button Download, allowing AEP Ohio customers to access their own energy usage data and gain insight into their usage.⁵

Renewable Energy Technology:

- The Staff supported and the Commission approved renewable energy technology programs in AEP Ohio's service territory that would assist the utility to meet the statutory benchmarks through incentives to solar photovoltaic and wind generators.⁶

Microgrids:

- The Staff supported and the Commission approved one or two microgrid projects in AEP Ohio's service territory to collect data regarding future

Nos. 14-1693-EL-RDR. Opinion and Order, Concurring Opinion of Commissioner Trombold at 1 (March 31, 2016); and *In the Matter of the Application of Duke Energy Ohio, Inc., for an Increase in Electric Distribution Rates*, Case Nos. 17-32-EL-AIR et al., Opinion and Order, Concurring Opinion of Commissioner Friedeman at 2 (December 19, 2018).

⁴ *In the Matter of the Application of The Dayton Power and Light Company for Approval of Its Plan to Modernize Its Distribution Grid*, Case Nos. 18-1875-EL-GRD et al., Opinion and Order at ¶ 42 – subparagraph 11(b) (June 16, 2021).

⁵ *In the Matter of the Application of Ohio Power Company to Initiate Phase 2 of Its gridSMART Project and to Establish the gridSMART Phase 2 Rider*, Case No. 13-1939-EL-RDR, Opinion and Order at ¶ 40 (February 1, 2017).

⁶ *In the Matter of the Application of Ohio Power Company for Approval of Its Renewable Energy Technology Programs*, Case Nos. 09-1871-EL-ACP et al., Finding and Order at ¶¶ 15 and 22 (June 8, 2011).

deployment of microgrids after gaining an understanding of the technology and its impact on the distribution system. The Commission specifically stated that “[w]e agree with Staff that the microgrid demonstration project can provide important information for the expanded use of microgrid technology ... The implementation of this microgrid demonstration pilot may afford AEP Ohio a better method to improve service reliability to hospitals, fire, and police stations.”⁷

Electric Vehicle Charging:

- The Staff supported and the Commission approved an electric vehicle charging station demonstration project in AEP Ohio’s service territory to conduct research and development around the technology and to better inform AEP Ohio, the Commission and stakeholders on policies related to the technology.⁸

Distribution Automation:⁹

- The Commission approved and “strongly” supported the implementation of distribution automation in AEP Ohio’s service territory because that advanced technology is a “foundation for AEP-Ohio providing its customers the ability to better manage their energy usage and reduce their energy costs.”¹⁰

Advanced Metering Infrastructure:

- The Staff supported and the Commission approved an advanced metering infrastructure (“AMI”) pilot in the FirstEnergy utilities’ service areas, finding it “important” that the electric utilities “explore and implement

⁷ *In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to R.C. 4928.143, in the Form of an Electric Security Plan*, Case Nos. 16-1852-EL-SSO et al., Opinion and Order at ¶¶ 158, 168, 173-174 (April 25, 2018).

⁸ *In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to R.C. 4928.143, in the Form of an Electric Security Plan*, Case Nos. 16-1852-EL-SSO et al., Opinion and Order at ¶¶ 158, 159, 168, 173, 175 (April 25, 2018).

⁹ Distribution Automation is an advanced technology that improves service reliability by minimizing, quickly identifying and isolating faulted distribution line sections and remotely restoring service interruptions. *In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to R.C. 4928.143, in the Form of an Electric Security Plan*, Case Nos. 08-917-EL-SSO et al., Opinion and Order at 31 (March 18, 2009).

¹⁰ *In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to R.C. 4928.143, in the Form of an Electric Security Plan*, Case Nos. 08-917-EL-SSO et al., Opinion and Order at 37 (March 18, 2009).

technologies, such as AMI, that will potentially provide benefits to customers in the long-run.”¹¹

Battery Technology:

- The Commission approved a battery pilot (“community energy storage”) in AEP Ohio’s service territory to explore how well the batteries would achieve the purpose of mitigating localized load anomalies or fluctuations.¹²

The above decisions establish a history of both the Staff and the Commission supporting multiple advanced technologies for the distribution grids in Ohio. The Commission should similarly approve Armada Power’s advanced technology, particularly since Staff is not opposed to the Armada Power technology.¹³

2. Now is the time to approve Armada Power’s pilot because distribution rate proceedings are few and far between.

In addition to the Commission’s history of supporting advanced technologies for the distribution grid, the Commission should also approve Armada Power’s pilot in these proceedings because another opportunity is not expected any time soon. There is nothing in the Stipulation that obligates AEP Ohio to file another rate case in near future. AEP Ohio’s last rate case was filed in 2011, and it waited nearly ten years before filing these pending cases.¹⁴

¹¹ *In the Matter of the Application of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Revised Code, in the Form of an Electric Security Plan*, Case No. 08-935-EL-SSO, Opinion and Order at 48-49 (December 19, 2008).

¹² *In the Matter of Columbus Southern Power Company to Update its gridSMART Rider*, Case No. 10-164-EL-RDR, Opinion and Order at 12 (August 11, 2010); and *In the Matter of Columbus Southern Power Company to Update Its gridSMART Rider*, Case No. 12-509-EL-RDR, Finding and Order at 6-7, 9 (October 3, 2012).

¹³ Staff Ex. 4 (Schaefer Direct Testimony) at 2-3.

¹⁴ *In the Matter of the Application of Columbus Southern Power Company and Ohio Power Company, Individually and if Their Proposed Merger is Approved, as a Merged Company (Collectively, AEP Ohio) for an Increase in Electric Distribution Rates*, Case Nos. 11-351-EL-AIR et al., Opinion and Order (December 14, 2011).

The Commission should seize the opportunity to add Armada Power's technology. Otherwise, the utility's distribution system will remain for an unknown period of time without advancement.

B. The Stipulating Parties are misrepresenting the Commission's standard of review of stipulations.

The Stipulating Parties referenced or quoted the Commission's standard of review in their briefs. Many, however, misapply the standard and urge the Commission to do the same. Specifically, certain Stipulating Parties claim that a stipulation should be approved if it provides "any" benefits to ratepayers or if it imposes lower rates than what the utility originally proposed. These interpretations of the Commission's test for stipulations are not correct and, if adopted, would limit the Commission's ability to determine the reasonableness of stipulations and modify stipulations.

1. The Commission's test for stipulations is well established.

The standard of review for considering the reasonableness of a stipulation has been discussed in a number of prior Commission proceedings. *See, e.g., Cincinnati Gas & Electric Co.*, Case No. 91-410-EL-AIR (April 14, 1994); *Western Reserve Telephone Co.*, Case No. 93-230-TP-ALT (March 30, 1994); *Ohio Edison Co.*, Case No. 91-698-EL-FOR, et al. (December 30, 1993); *Cleveland Electric Illum. Co.*, Case No. 88-170-EL-AIR (January 30, 1989); and *Restatement of Accounts and Records (Zimmer Plant)*, Case No. 84-1187-EL-UNC (November 26, 1985). The ultimate issue for the Commission is whether the agreement is reasonable and should be adopted. In considering the reasonableness of a stipulation, the Commission has used the following criteria:

- (1) Is the settlement a product of serious bargaining among capable, knowledgeable parties?
- (2) Does the settlement, as a package, benefit ratepayers and the public interest?

- (3) Does the settlement package violate any important regulatory principle or practice?

The Ohio Supreme Court has endorsed the Commission's analysis using these criteria. *Indus. Energy Consumers of Ohio Power Co. v. Pub. Util. Comm.* (1994), 68 Ohio St.3d 559, citing *Consumers' Counsel* (1992), 64 Ohio St.3d 123, 126.

2. "Reasonableness" is not based on only a stipulation containing some benefit or on a stipulation being "less than" what the utility originally proposed.

Instead of following the Commission's criteria to determine reasonableness, multiple Stipulating Parties have revised the second criterion to justify their self-serving position that the Stipulation is reasonable as presented. Staff claims that "if the package, as a whole, *provides benefits* to ratepayers and the public interest, it should be approved."¹⁵ The Kroger Company ("Kroger") and Ohio Manufacturers' Association Energy Group ("OMAEG") make similar claims.¹⁶ Under this theory, so long as a stipulation contains some benefit, no matter how inconsequential, the stipulation "should be approved." A stipulation, for instance, containing language for the utility to provide its "best effort" in responding to a customer request would have to be approved – no matter the vagueness/insufficiency of that wording, and no matter what else is in the stipulation – because improved customer service is a benefit to ratepayers and the public interest. As this simple example shows, the interpretation of the second criterion advocated by Staff, Kroger and OMAEG would undoubtedly lead to illogical and unreasonable results. The Commission's standard for review of stipulations requires a more in-depth and sophisticated analysis for a stipulation to be found reasonable. Staff's, Kroger's and OMAEG's misapplication of the second criterion should be rejected.

¹⁵ Staff Initial Brief at 8 (emphasis in original).

¹⁶ Kroger Initial Brief at 6; OMAEG Initial Brief at 17.

Multiple Stipulating Parties argue that their agreement to not accept AEP Ohio’s original proposals for the revenue requirement and rate of return “provides benefits” to the ratepayers and the public interest.¹⁷ This is not a situation, however, where ratepayers were subject to the revenue requirement or rate of return that AEP Ohio proposed in its application and now, because of the Stipulation, are going to benefit from a lower revenue requirement and lower rate of return. AEP Ohio’s proposed revenue requirement and rate of return were never approved. They were simply AEP Ohio’s initial offer, which was not accepted. In truth, the Stipulating Parties have agreed to a higher revenue requirement than what exists today – Section III.B.1.d of the Stipulation states “[a] just and reasonable increase in AEP Ohio’s revenue requirement is \$295 million (Stipulated Schedule A-1).”¹⁸ Comparing the prior authorized revenue requirement to what was proposed and stipulated in this case reaffirms the increase:

Prior Authorized Revenue Requirement	AEP Ohio’s Proposed Revenue Requirement	Stipulated Revenue Requirement
\$747,322,000 ¹⁹	\$1,065,876,000 ²⁰	\$955,101,000 ²¹

The Stipulation simply resulted in a value that was less than what AEP Ohio proposed. It is the end result that the Commission should evaluate, not whether AEP Ohio is taking less than what it proposed.

¹⁷ AEP Ohio Initial Brief at 6-8; Kroger Initial Brief at 3; OMAEG Initial Brief at 5, Ohio Consumers’ Counsel Initial Brief at 6, Ohio Hospital Association Initial Brief at 3, Industrial Energy Users-Ohio (“IEU”) Initial Brief at 6; and Ohio Energy Group (“OEG”) Initial Brief at 3.

¹⁸ Joint Ex. 1 at 4.

¹⁹ This is the total of the previously authorized revenue requirements for Columbus Southern Power Company and Ohio Power Company (respectively, \$371,978,000 + \$375,344,000 = \$747,322,000). *See In the Matter of the Application of Columbus Southern Power Company and Ohio Power Company, Individually and if the Merger is Approved, as a Merged Company (collectively AEP Ohio) for an Increase in Electric Distribution Rates*, Case Nos. 11-352-EL-AIR et al., Opinion and Order at 5, 10 (December 14, 2011).

²⁰ Joint Ex. 1 at Attachment A (Schedule A-1).

²¹ Joint Ex. 1 at Attachment A (Schedule A-1).

3. How the specific issues involved in the case are proposed to be resolved must be considered.

The Commission must consider how the specific issues presented by the application are proposed to be resolved by Stipulating Parties and, also, by the opposing parties. The Commission has acknowledged that the evaluation is not cursory. For example, the Commission stated in 2016:²²

[I]t is not the mere comparison of the number of parties who support the stipulation to the number of parties who oppose the stipulation that this Commission undertakes to conclude whether the stipulation should be adopted, **as such a cursory determination is insufficient**. The three-part test involves a more in-depth analysis.

In conducting the in-depth analysis, the Commission is not required to accept the terms of any stipulation. *In re Columbus Southern Power Company*, 129 Ohio St.3d 46, citing *Ohio Consumers' Counsel v. Pub. Util. Comm.*, 114 Ohio St.3d 340, 2007 Ohio 4276, ¶ 16. Rather, the Commission must determine *from the evidence* what is just and reasonable. *Consumers' Counsel v. Pub. Util. Com.* (1992) 64 Ohio St.3d 123, 126, 1992 Ohio 122.

The Commission has concluded in other AEP Ohio cases that the ratepayers and the public interest deserved more than what the stipulations proposed. In these cases, the Commission evaluated how the issues were proposed to be resolved and did not find them reasonable:

- *AEP Ohio Energy Efficiency/Peak Demand Reduction Plan Cases*: Stipulation modified to allow recovery temporarily for lost revenue because the record failed to establish the revenue necessary to recover AEP Ohio's costs and earn a fair and reasonable return. With that modification, "the Commission [was] convinced that the Stipulation, as a package, benefits ratepayers and the public interest."²³

²² *In the Matter of the Application Seeking Approval of Ohio Power Company's Proposal to Enter into an Affiliate Power Purchase Agreement for Inclusion in the Power Purchase Agreement Rider*, Case Nos. 14-1693-EL-RDR et al., Second Entry on Rehearing at ¶ 21 (November 3, 2016) (emphasis added).

²³ *In the Matter of the Applications of Columbus Southern Power Company and Ohio Power Company for Approval of Program Portfolio Plans and Requests for Expedited Consideration*, Case Nos. 09-1089-EL-POR et al., Opinion and Order at 26 (May 13, 2010).

- *AEP Ohio ESP II Cases*: Stipulation modified for the electric security plan to be more favorable in the aggregate than a market rate offer, including changing automatic base generation rate increases, removing a contingency related to two AEP Ohio’s initiatives, and increasing a credit for schools that shop. Then later, the stipulation was rejected entirely, after the Commission found that stipulated rider provisions for the Market Transition Rider and GS-2 load factor rate did not promote rate certainty and certainty and would not benefit ratepayers and the public interest.²⁴
- *AEP Ohio PPA Cases*: Stipulation modified, among other things, to detail the purchase power agreement (“PPA”) rider reviews, mandate provision of accounting information, outline when the liquidated damages provision can be triggered and preclude recovery of PPA unit conversion costs. The Commission’s modifications to the stipulation “were found necessary to enable [the Commission] to determine that the stipulation, as modified, meets the three-part test.”²⁵

In sum, the Commission must analyze whether the Stipulation provides benefits to the ratepayers and the public interest and consider the reasonableness of the Stipulation through an in-depth analysis of how the issues were resolved considering all evidence in the record. The Stipulating Parties’ arguments for a perfunctory review should be rejected.

C. The Stipulation is not in the public interest because it fails to include the Armada Power pilot, which is an innovative pilot based on proven technology that directly benefits ratepayers and the public interest.

Armada Power’s pilot fits within multiple components of AEP Ohio’s current DIR Work Plan, fits within the purpose of the DIR, and uses unopposed technology. The Stipulating Parties are asking the Commission to continue distribution investments and related cost recovery. The Commission should ensure that, concurrent with the authorization continuing the DIR and cost-recovery authorizations, distribution system reliability benefits are provided by approving the

²⁴ *In the Matter of the Application of Columbus Southern Power Company and Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Revised Code, in the Form of an Electric Security Plan*, Case Nos. 11-346-EL-SSO et al., Opinion and Order at 30-32, 38, 41-42, 50, 54-55, 59, 61, 63-65 (December 14, 2011); Entry on Rehearing at ¶ 19 (February 23, 2012).

²⁵ *In the Matter of the Application Seeking Approval of Ohio Power Company’s Proposal to Enter into an Affiliate Power Purchase Agreement for Inclusion in the Power Purchase Agreement Rider*, Case Nos. 14-1693-EL-RDR et al., Opinion and Order at 81-92, 106 (March 31, 2016) and Second Entry on Rehearing at ¶ 103 (November 3, 2016).

innovative pilot using a proven technology as proposed by Armada Power. As the evidence conclusively establishes, Armada Power’s pilot proposal can offer different grid reliability benefits such as droop control, quick discharge, shifting of load in real-time (like storage assets), and “cold load pick-up.”²⁶ Mr. Rehberg detailed the technology and pilot proposal, and no other witness has the depth of knowledge or level of expertise regarding the technology, the value, or the benefits that the Armada Power pilot can provide for grid reliability. The record strongly supports modification of the Stipulation to include the Armada Power pilot.

1. The Armada Power pilot is fully developed as proposed.

OMAEG claims that Armada Power’s pilot is not fully developed because there are cybersecurity and compatibility issues to “flesh out.”²⁷ OMAEG did not identify what still is needed, and noticeably absent is any claim from AEP Ohio that it is concerned with cybersecurity and compatibility. Nevertheless, the evidence in the record establishes that OMAEG is wrong. Mr. Rehberg, who is a developer of the core technology, a founder of Armada Power and its Chief Engineer,²⁸ presented testimony regarding the technology. He explained the pilot proposal in detail and specifically opined that cybersecurity and compatibility are not issues. Below are the specifics:

- The controllers are designed with industry-recognized cybersecurity best practices, and an integrated hardware security chip that stores unique certificates that enables authenticated communications and security controls.²⁹
- The security technology used is **best-in-class**.³⁰

²⁶ Armada Power Ex. 17 (Rehberg Direct Testimony) at 3-5.

²⁷ OMAEG Initial Brief at 21.

²⁸ Armada Power Ex. 17 (Rehberg Direct Testimony) at 1, 2; Tr. IV at 669:7-9, 754:2-5, 802:17-20, 809:6-8.

²⁹ Armada Power Ex. 17 (Rehberg Direct Testimony) at 6; Tr. IV at 691:8-15, 696:7-10.

³⁰ Tr. IV at 691:2-4.

- Other utilities have already tested Armada Power’s controllers for compliance with cybersecurity protocols and used the technology without issue.³¹
- **Thousands of controllers are already deployed in the PJM region, and there have been no security issues.**³²
- The controllers contain a revenue-grade meter that can meet ANSI accuracy standards. The meter was **tested using the AEP test lab** and meets PJM Interconnection’s metering standards.³³
- Armada Power’s software is a stand-alone technology that does not have to be integrated into AEP Ohio’s existing systems to provide benefits and features. If selected, however, the integration is “very partner friendly.”³⁴

OMAEG has ignored all of this evidence that was not only unchallenged, but also presented by the most knowledgeable person about the technology – Mr. Rehberg. The record conclusively establishes that there would be no increased risk of a cyberattack on the distribution grid, or compatibility concerns if AEP Ohio incorporated a fleet of Armada Power’s water heater controllers into its distribution system. The technology is proven, safe and secure. The Commission should reject OMAEG’s claims to the contrary.

2. The Armada Power pilot costs are validly estimated.

OMAEG also tries to claim that the costs of Armada Power’ pilot proposal are incomplete.³⁵ OMAEG overlooked Mr. Rehberg’s direct testimony as well as the multiple questions on this point during his cross-examination, all of which is in the record.³⁶ Mr. Rehberg provided the costs associated with AEP Ohio owning twenty thousand water-heater controllers,

³¹ Armada Power Ex. 17 (Rehberg Direct Testimony) at 4; Tr. IV at 696:18-695:2.

³² Tr. IV at 852:3-7.

³³ Tr. IV at 718:18-19, 23-24, 835: 5-9, 23-24.

³⁴ Armada Power Ex. 17 (Rehberg Direct Testimony) at 9; Tr. IV at 704:15-23.

³⁵ OMAEG Initial Brief at 21.

³⁶ Armada Power Ex. 17 (Rehberg Direct Testimony) at 7-8; Tr. IV at 718-721, 818-828, 833-834, 852.

explaining that the costs vary depending on whether the controllers are Wi-Fi connected or cellular-enabled (approximately \$6 million or \$7.74 million, respectively).³⁷ Mr. Rehberg also acknowledged certain other costs, which he stated would not be expensive: (a) there could be integration costs if elected, which he testified are expected to be minimal based on actual experience with PJM;³⁸ and (b) installation costs, which he testified would also not be costly because it takes only about 15 to 30 minutes to install a water heater controller and because Armada Power offers installation services if AEP Ohio so elected.³⁹ He acknowledged as well that AEP Ohio might engage in marketing or education, but he had not recommended that expense.⁴⁰

OMAEG's sweeping claim about the pilot's costs is unfounded. The necessary evidence is in the record and is sufficient for the Commission to understand the expense associated with Armada Power's pilot proposal. Moreover, all of the costs of the pilot would be recovered under the proposed DIR caps. OMAEG's claim should be rejected.

3. A request for proposals process is not necessary, but not objectionable.

While the Stipulating Parties advanced their special interests during settlement negotiations and defended them in their initial briefs, some also criticized Armada Power because its proposed pilot did not recommend an open selection process via a request for proposals.⁴¹ As detailed in Armada Power's Initial Brief, its technology is proven and effective – it has been used and proven in demonstration projects and also is installed in the PJM territory today.⁴² As such, a request for proposal process is not necessary. If the Commission so decides, however, Armada Power would

³⁷ Armada Power Ex. 17 (Rehberg Direct Testimony) at 7 -8; Tr. IV at 819:10-12.

³⁸ Armada Power Ex. 17 (Rehberg Direct Testimony) at 4, 9; Tr. IV at 852:8-12.

³⁹ Armada Power Ex. 17 (Rehberg Direct Testimony) at 8.

⁴⁰ Tr. IV at 718, 822.

⁴¹ OMAEG Initial Brief at 21; AEP Ohio Initial Brief at 53.

⁴² Armada Power Ex. 17 (Rehberg Direct Testimony) at 1, 4.

be supportive of a request for proposals for the supplier(s) of the utility-owned water heater controllers and software that meets the same capabilities as outlined in Mr. Rehberg's testimony for its proposed pilot program.⁴³

4. OMAEG wrongly claims that the utility acquiring the technology under this pilot would violate R.C. § 4928.02(H).

OMAEG speculates that there is a possible "disadvantage" with Armada Power's pilot proposal because it "allows a regulated monopoly to acquire ownership rights over technology for which there is market demand."⁴⁴ OMAEG cites to R.C. 4928.02(H) for support.⁴⁵ R.C. 4928.02(H) states that it is the policy of Ohio to:

Ensure effective competition in the provision of retail electric service by avoiding anticompetitive subsidies flowing from a noncompetitive retail electric service to a competitive retail electric service or to a product or service other than retail electric service, and vice versa, including by prohibiting the recovery of any generation-related costs through distribution or transmission rates.

OMAEG did not elaborate or explain this argument, nor did it cite to any record evidence to support it. Given this lack of specificity alone, the argument should be rejected. If OMAEG is claiming that AEP Ohio's purchase of either the controllers or a five-year license for use of the Armada Power's software technology for the utility's own grid reliability purposes would result in a subsidy to competitive retail electric service or a product/service other than retail electric

⁴³ Armada Power's support of a selection process should not be construed as an indication that the grid reliability benefits presented by Armada Power should be addressed through products provided by the competitive energy market. A market approach would take too long to develop the scale and scope needed in order to realize grid-level reliability benefits. And importantly, the grid reliability success is founded on the utility having direct control of the water heater controllers. Armada Power's pilot proposal is different from the competitive energy market's water heater products, and Armada Power is not aware of any competitive suppliers offering the equivalent type of grid reliability benefits as Armada Power's technology offers. As Armada Power noted before, however, its pilot proposal would not preclude competitive suppliers from offering their products to customers. Armada Power Ex. 17 (Rehberg Direct Testimony) at 11-12.

⁴⁴ OMAEG Initial Brief at 21.

⁴⁵ *Id.*

service, OMAEG misses the mark. There would be no subsidy created by the pilot. The pilot expenses will be for purchasing distribution equipment and operating it so that AEP Ohio will engage in its own activities for the betterment of its own distribution system. In this regard, the purchase is no different than other equipment and software purchased and used by AEP Ohio. The Commission should reject OMAEG's argument.

Armada Power's pilot proposal is also consistent with and **supportive of multiple provisions of the Ohio energy policies**. For example, by helping with and improving grid reliability, the proposed pilot will have a direct impact on the availability of reliable service for the customers of AEP Ohio consistent with R.C. § 4928.02(A), which is to ensure the availability to consumers of reliable retail electric service. The pilot will also provide robust data and information about the utility's distribution system, which supports the policy in R.C. § 4928.02(E) to encourage cost-effective and efficient access to information regarding the operation of the distribution system.⁴⁶ The pilot will support the policy in R.C. § 4928.02(J), which is to provide a transparent means of incenting technologies that can adapt successfully to potential environmental mandates. And as Mr. Rehberg testified, the pilot will include the ability to shift load so that renewable energy (e.g., energy generated from solar, wind, etc.) can be consumed, which assists with balancing electric supply and demand particularly if the supply were to be pursuant to an energy mandate. Finally, the pilot supports an Ohio company, Ohio innovators, and an Ohio manufacturer, which would facilitate Ohio's effectiveness in the global economy consistent with R.C. § 4928.02(N).⁴⁷

⁴⁶ Tr. IV at 847:10-16.

⁴⁷ Armada Power Ex. 17 (Rehberg Direct Testimony) at 1-2.

The Commission should reject OMAEG's policy argument and, instead, conclude that Armada Power's pilot proposal supports and is consistent with Ohio's energy policies as set forth in R.C. § 4928.02, which is an additional reason for modifying the Stipulation in these proceedings.

5. The standard utilized by the Commission in reviewing the Stipulation necessitates that the Commission modify the Stipulation to include the Armada Power pilot program.

The evidence in this case establishes that the Armada Power technology has distribution reliability benefits. The Armada Power pilot program would allow AEP Ohio to confirm such benefits, with comprehensive data, on AEP Ohio's distribution system. The Armada Power pilot is a well-defined program that **implements** the distribution reliability goals that are included in the Stipulation (and as set forth in Section II.C. below, the stipulated pilot programs do not provide any meaningful distribution system reliability benefits). The implementation of such goals is clearly in the public interest. The Commission must determine **whether the Stipulation as a whole is beneficial to ratepayers and the public.**⁴⁸ The exclusion of the Armada Power pilot program, which qualifies for cost recovery under the DIR, would be a critical omission in these proceedings – an omission that not only does not benefit ratepayers and the public interest but one that renders the Stipulation, as a whole, not beneficial to ratepayers and the public.

In order to determine the benefit to ratepayers and the public interest, it is necessary for the Commission to review the Stipulation in detail **and the alternatives based on the entire record.** As set forth in Section II.A.2. above, the Commission's review standard is not whether the Stipulation provides any benefits, but, rather, is an in-depth analysis that necessarily requires an evaluation of alternatives. The Armada Power pilot is such an alternative – consisting of

⁴⁸ *In the Matter of the Application of The Dayton Power and Light Company for Approval of Its Plan to Modernize Its Distribution Grid*, Case Nos. 18-1875-EL-GRD, *et al.*, Opinion and Order at ¶ 50 (June 16, 2021).

innovative technology that provides for the implementation of grid reliability benefits consistent with the distribution reliability goals already included in the Stipulation and which innovative technology is supported with ample evidence in the record of these proceedings. The Commission can only analyze whether the Stipulation provides benefits to the ratepayers and the public interest, and consider the reasonableness of the Stipulation, **through an in-depth analysis of the issues and alternatives based on evidence in the record.**⁴⁹ The evidence in the record is clear with respect to the proven nature and benefits of Armada Power’s technology along with the specific parameters of the proposed pilot. Therefore, the Commission must exercise its authority to modify the Stipulation to include the Armada Power pilot.

D. The stipulated pilot programs provide either insufficient or no distribution system reliability benefits, and such deficiencies bolster the public benefit of Armada Power’s pilot program, which provides definitive grid reliability benefits consistent with the DIR.

As set forth above, the Commission should modify the Stipulation to include the Armada Power pilot program because such pilot program, on its own merits, benefits the ratepayers and the public interest. However, the need for the Armada Power pilot to be added to the Stipulation is only heightened by the deficiencies in the stipulated pilot programs in terms of their failure to provide meaningful grid reliability benefits, whereas the Armada Power pilot program provides an array of distribution reliability benefits.

1. The stipulated plug-in electric vehicle pilot will provide speculative distribution system reliability benefits; alternatively, those benefits will be limited at best.

Some Stipulating Parties imply that the plug-in electric vehicle (“PEV”) pilot will provide distribution system benefits.⁵⁰ Specifically, AEP Ohio claims that the PEV pilot will allow AEP

⁴⁹ *In re Application of Columbus S. Power Co.*, 129 Ohio St.3d 46, 2011-Ohio-2383, ¶ 19.

⁵⁰ The PEV pilot is set forth in Joint Ex. 1 at 12 (Section III.E.16) and Attachment C, Sheet 270-1.

Oiho to gather data on the impact to its system as PEV charging stations are added as well as incentivize charging to occur during off-peak times.⁵¹ Clean Fuels Ohio argues the PEV pilot will add load that effectively uses existing distribution system capacity.⁵² Staff implies that there are distribution system reliability benefits too, arguing that by customers charging their electric vehicles off-peak, the PEV pilot is “contributing to the system to the benefit of other customers.”⁵³

Careful review of the PEV pilot as stipulated, however, makes clear that the PEV pilot is not about distribution system reliability. The purpose and focus of the PEV pilot is to encourage development of the electric vehicle industry (continuing AEP Ohio’s corporate decision to be involved in the Smart City Columbus initiatives) and promote environmental concerns. This is evident from the PEV pilot language itself because it provides more economical electric pricing for the pilot participants so that electric vehicles charging occurs. Also, the language in Stipulation Section III.E.16.c providing for periodic discussions regarding the PEV tariff does not envision an analysis of the distribution system as a result of the PEV pilot, or any alleged reliability-related impacts from the PEV pilot. It is clear from the record that the PEV pilot is not intended to provide distribution system reliability benefits (unlike the Armada Power pilot).

In addition, as Armada Power noted in its Initial Brief (pages 14-15), the PEV pilot has multiple conditions to satisfy in order for customers to participate and is dependent on customers changing their behavior. Under the residential customer component of the PEV pilot, residential customers would have to change when they charge their electric vehicles, have to transition to electric vehicles, and have to affirmatively select the pilot.⁵⁴ Under the public charging component

⁵¹ AEP Ohio Initial Brief at 8-10.

⁵² Clean Fuels Ohio Initial Brief at 3, 4.

⁵³ Staff Initial Brief at 13.

⁵⁴ Joint Ex. 1 at Attachment C, Sheet 270-1.

of the pilot, the public charging station customers must have installed specific public station chargers, have installed separate metering, and not have included any other load sources.⁵⁵ They too have to affirmatively select the pilot. Collectively, these conditions of the PEV pilot make the impact of the PEV pilot on the distribution system's reliability questionable and speculative.

The Commission should not accept such speculation and should not view the PEV pilot as a contribution to distribution system reliability. The evidence supports rejection of any claim or implication by the Stipulating Parties that the PEV pilot provides distribution system reliability benefits. Alternatively, the Commission should conclude that any distribution system reliability benefits will be limited at best.

2. The stipulated distributed generation pilot will provide speculative distribution system reliability benefits; alternatively, those benefits will be limited at best.

AEP Ohio claims that the distributed generation ("DG") pilot will provide the appropriate incentive for certain customers to operate renewable resources to reduce the overall six coincident peaks ("6 CPs").⁵⁶ Like other pilots in the Stipulation, the DG pilot is limited to very few customers and is not limited to new renewable resources (i.e., customers with existing renewable resources can qualify). To be eligible, the customer must be a primary voltage customer with on-site generation that constitutes a net-metering system and the generation amount can only be greater than one megawatt and less than five megawatts.⁵⁷ Importantly, the pilot has an overall limit of 50 megawatts of participation.⁵⁸ These limitations on participation in the DG pilot make the impact of the DG pilot on AEP Ohio's 6 CPs questionable. Moreover, existing renewable

⁵⁵ Joint Ex. 1 at Attachment C, Sheet 270-1.

⁵⁶ AEP Ohio Initial Brief at 10-11.

⁵⁷ Joint Ex. 1 at 13-14 and Attachment C, Sheet 220-10.

⁵⁸ *Id.*; AEP Ex. 6 at 11.

resources operate as much as possible (i.e., when the sun shines or there is sufficient air flow to operate the wind turbine). In other words, any benefit to the 6 CPs already exists by virtue of those renewable resources already operating. As to AEP Ohio's claim that the DG pilot will help it analyze how renewable resources impact the grid,⁵⁹ AEP Ohio can conduct that analysis today through the existing renewable resources net metered throughout its service territory – it does not need the special DG rate schedule to accomplish that task.

The DG pilot may provide customers with renewable resources a financial benefit through a different demand rate schedule, but it does not add anything new to AEP Ohio's distribution system. The only pilot that will provide a direct distribution system reliability benefit is Armada Power's proposed pilot.

3. The stipulated basic transmission cost recovery pilot will not provide distribution system reliability benefits.

The next pilot in the Stipulation – the basic transmission cost recovery (“BTCR”) pilot – also is not a basis for finding that the Stipulation provides grid reliability benefits. To the extent the BTCR pilot affects the system, it affects the transmission system. The Commission has expressly confirmed that scope when explaining the BTCR pilot's purpose:⁶⁰

The purpose of the BTCR pilot is to lower the overall demand at peak times and, in so doing, to reduce AEP Ohio's total transmission costs incurred from PJM and possibly to avoid the need for transmission system upgrades.

Two of the Stipulating Parties also stated that the system impact from the BTCR pilot is to the transmission grid.⁶¹ As evidenced by the Commission's own statement and the statements

⁵⁹ AEP Ohio Initial Brief at 11.

⁶⁰ *In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to R.C. 4928.143, in the Form of an Electric Security Plan*, Case Nos. 16-1852-EL-SSO et al., Opinion and Order at ¶ 147.

⁶¹ IEU Initial Brief at 7; OEG Initial Brief at 4.

from the Stipulating Parties, the BTCR pilot is not a basis for concluding that the Stipulation provides distribution system reliability benefits.

4. The DIR-related information sharing under the Stipulation will not provide distribution system reliability benefits.

In Section III.C.6 of the Stipulation, the Stipulating Parties agree that AEP Ohio will allow certain parties to review information related to the utility's completed DIR Work Plan projects or work orders. Specifically, Staff, OCC and OMAEG will be able to review:⁶²

- (a) Circuit(s) impacted;
- (b) Number of hours;
- (c) Description of issue(s) being addressed;
- (d) Outage history;
- (e) Work completed;
- (f) Whether equipment is new or replaced;
- (g) If available, the age and manufacturer of original equipment that is replaced;
- (h) If new, purpose of install;
- (i) Expected reliability improvement;
- (j) How improvement will be measured; and
- (k) Circuit design capacity in MW, where available.

AEP Ohio refers to this provision as creating “additional reliability reporting requirements associated with the DIR.”⁶³ This provision will allow certain information to be reviewed by the designated three parties, but it does not constitute providing actual reliability benefits. The first reason is obvious – the requirement is just for information to be reviewable by third parties. The

⁶² Joint Ex. 1 at 8.

⁶³ AEP Ohio Initial Brief at 19.

second reason is the Stipulation does not require AEP Ohio to provide information on the project's or work order's actual reliability effectiveness. Third, there is no requirement that any project or work order provide distribution system reliability. Finally and most importantly, there will no reporting of any reliability benefits derived from the DIR projects or work orders under this provision of the Stipulation. Each piece of information listed in the Stipulation falls far short of actually providing a reliability benefit. This provision of the Stipulation, therefore, cannot be found to provide distribution system reliability benefits.

In sum, the Stipulating Parties point to or imply that the pilots and related terms in the Stipulation provide distribution system reliability benefits to ratepayers and the public interest. Those claims are speculative or incorrect. Even if the Commission were to accept that the PEV and DG pilots provide some distribution system reliability benefits, those will be limited at best. Ratepayers and the public deserve a pilot that will provide actual and proven distribution system reliability benefits – that is Armada Power's proposed pilot.

III. CONCLUSION

Under a proper in-depth review of the evidence, the proposed terms to resolve these proceedings, and the Commission's proactive approach to adopting advanced technologies for the distribution grid, the Stipulation should be modified to provide the ratepayers and the public interest with direct grid reliability benefits from the innovative Armada Power pilot that is cost effective, proven and secure. The Armada Power pilot fits squarely within the DIR-related reporting obligations in the Stipulation, and within the DIR itself, which the Stipulation will continue and allow to be funded. The other stipulated pilots will either not address at all or not sufficiently address distribution system reliability benefits because they have other purposes. The Armada Power pilot, however, provides numerous grid functions, such as shifting load in real time to avoid "rebound peaks" after an outage or demand response event; avoiding a spike following

an outage and improving the speed of outage recovery (“cold load pick-up spike”) which can improve the SAIDI score; providing real-time voltage data, which provides visibility into circuit reconfigurations, VoltVar control and emergency situations; shifting load so that renewable energy can be consumed, which assists with balancing electric supply and demand; and reducing capacity constraints on circuits. The Commission should modify the Stipulation by approving implementation of Armada Power’s pilot with AEP Ohio’s costs recovered through the DIR under the stipulated DIR terms.

Respectfully submitted,

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