	AEP	OHIO EX.	NO.
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BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application Seeking)	
Approval of Ohio Power Company's)	
Proposal to Enter into an Affiliate)	
Power Purchase Agreement)	Case No. 14-1693-EL-RDR
for Inclusion in the Power Purchase)	
Agreement Rider)	
In the Matter of the Application of)	
Ohio Power Company for Approval of)	Case No. 14-1694-EL-AAM
Certain Accounting Authority)	

DIRECT TESTIMONY OF ERIC J. WITTINE IN SUPPORT OF AEP OHIO'S AMENDED APPLICATION

Filed: May 15, 2015

BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO DIRECT TESTIMONY OF ERIC J. WITTINE ON BEHALF OF OHIO POWER COMPANY

PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

1 **PERSONAL DATA**

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3	A.	My name is Eric J. Wittine. My business address is 1 Riverside Plaza, Columbus, Ohio
4		43215.
5	Q.	BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?
6	A.	I am employed as Manager - Regulatory Research and Issues Analysis for American
7		Electric Power Service Corporation (AEPSC), a wholly owned subsidiary of American
8		Electric Power Company, Inc. (AEP). AEP is the parent company of Ohio Power
9		Company (AEP Ohio), referred to as AEP Ohio or the Company.
10	Q.	PLEASE DESCRIBE YOUR CURRENT RESPONSIBILITIES.
11	A.	My group is responsible for providing research and analysis to support the regulatory
12		filings made by the AEP operating companies.
13	Q.	PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL
14		BACKGROUND?
15	A.	I earned a Bachelor of Science degree in Chemical Engineering from Ohio University in
16		2002. I began my professional career as an intern engineer at the Gavin Power Plant in
17		Cheshire, Ohio. Following my graduation, I was hired into a two-year rotational program

at AEP where I performed various engineering duties at the Gavin and Mountaineer

Power Plants, as well as in environmental systems engineering and environmental permitting roles. From 2004 through 2008, I supported the engineering and regulatory activities surrounding a number of new generation projects across the AEP system. In 2008, I accepted a position at PacifiCorp in Portland, Oregon as Regulatory Consultant. My responsibilities were primarily focused on modeling system dispatch and preparing net power cost forecasts for use in company regulatory filings. In 2011, I returned to AEP in the regulatory department where I supported generation and environmental regulatory filings for the AEP operating companies. I was promoted to my current position in 2013.

In addition to my responsibilities at AEP, I currently serve as Chairman of the Board of Advisors for the Department of Chemical and Biomolecular Engineering at Ohio University.

PURPOSE OF TESTIMONY

14 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

15 A. The purpose of my testimony is to provide an assessment of the construction of new
16 generating plants in Ohio. In doing so, I will provide a general outlook for electric power
17 generation in Ohio. I will also demonstrate that there is uncertainty regarding whether
18 projects approved by the Ohio Power Siting Board (OPSB) will be placed into service
19 consistent with their proposed schedules, if at all. In fact, most of the dispatchable
20 generation under development has already been delayed – and history indicates that most
21 new generation winds up being withdrawn rather than placed in service.

Q. WHAT EXHIBITS ARE YOU SPONSORING?

1 A. I am sponsoring Exhibit EJW-1, which consists of site photographs of proposed future dispatchable generation projects in Ohio.

3 OHIO GENERATION OUTLOOK

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- Q. PLEASE PROVIDE AN OVERVIEW OF OHIO'S RECENTLY RETIRED, OR
 SOON-TO-BE RETIRED GENERATING FACILITIES.
- A. As Company witness Vegas noted, since 2012, generators have announced the retirement of over 5,900 MW of generation in Ohio by mid-2015. Table 1 provides a summary of these generating units.

Table 1. Ohio Generating Unit Retirements (2012-2015)

Unit(s)	Fuel Type	Capacity (MW)
Ashtabula 5	Coal	244
Bay Shore 2-4	Coal	495
Conesville 3	Coal	165
Eastlake 1-5	Coal	1,233
O.H. Hutchings 1-6	Coal	339
Lake Shore 18	Coal	245
Lake Shore Internal Combustion	Fuel Oil	0
Mad River Combustion Turbine A&B	Fuel Oil	0
Miami Fort 6	Coal	163
Muskingum River 1-5	Coal	1,390
Niles 1-2	Coal	217
Picway 5	Coal	95
SMART Paper	Biomass	25
Walter C. Beckjord 1-6	Coal	1,118
Walter C. Beckjord CT 1-4	Fuel Oil	188
	Total Capacity	5,917

Source: PJM Generator Deactivation Summary Sheets (as of 4/16/2015)

In addition, the Kammer and Sporn plants which are located along the Ohio River and have historically served Ohio load are also retiring in the spring of 2015. There is

- certainty that these plants, and the plants listed in Table 1, will not be available this

 summer to support the reliability of Ohio's electric supply.
- 3 Q. DOES THAT SAME CERTAINTY EXIST FOR THE CONSTRUCTION AND
- 4 FUTURE OPERATION OF MERCHANT GENERATING UNITS THAT HAVE
- 5 **BEEN PROPOSED IN OHIO?**
- 6 A. No. Building a large new power plant is a long, complicated process with many potential 7 opportunities for delay and cancellation. Any number of project development challenges related to permitting, financing, interconnection, construction, and commissioning can 8 9 derail these projects. Even outside of these normal activities that must be navigated by 10 every large project, legal challenges can be presented by campaigns such as the Sierra 11 Club's "Beyond Natural Gas" campaign which can make project execution even more difficult. Still more challenges can exist outside of the plant fence line with respect to 12 bringing water, fuel, and transmission lines through nearby properties. 13
- 14 Q. ARE YOU AWARE OF ANY ATTEMPT TO QUANTIFY THE AMOUNT OF
 15 ANNOUNCED CAPACITY THAT IS ULTIMATELY PLACED IN-SERVICE?
- 16 A. Yes. PJM has a process in place which allows new generators to move through the
 17 interconnection process in a stepwise fashion of increasing complexity and commitment.
 18 The advancement through this process is tracked by PJM in what they refer to as the
 19 Generation Queue ("Queue").

¹ Sierra Club website: Beyond Natural Gas / Protect Our Climate

http://content.sierraclub.org/naturalgas/protect-our-climate, Accessed on May 1, 2015;

[&]quot;The Sierra Club continues to legally challenge new natural gas plants and demand requirements that limit their emissions of greenhouse gases."

PJM recently produced a historical analysis of their Queue by assessing how far projects have historically progressed before being withdrawn or placed in-service. Table 2 below summarizes that analysis.

Table 2. 2000-2014 PJM New Capacity Progression by Phase

PJM Queue Phase	Capacity Progression
	(MW)
Application Received by PJM	261,428
Feasibility Studies Issued	226,886
Impact Studies Issued	113,621
Facility Studies Issued	68,153
Executed Interconnection Agreement	35,980
In Service	19,039

As can be seen above, only 19,039 MW out of 261,428 MW (7%) of capacity applied for between 2000 and 2014 were ultimately placed in-service. Put differently, it has historically taken 14 MW of applications to result in 1 MW of new generation in PJM. Even for projects which have entered into an executed Interconnection Agreement and committed to paying for transmission upgrades, only one out of every two megawatts was placed in-service.

Even more interesting is *when* the many proposals were withdrawn from the Queue. Only about half of the capacity with an issued Feasibility Study went on to receive an Impact Study. A little over half of *that* capacity progressed to receive a Facility Study. Again, only about half of *that* capacity entered into an executed Interconnection Agreement. Even at this advanced stage, only about half of the capacity which entered into an executed Interconnection Agreement was ever actually placed inservice. In other words, it is common for projects to advance through many phases of the Queue process and still be withdrawn.

Q. HAVE YOU STUDIED THE ADDITION OF NEW GENERATING CAPACITY

IN OHIO?

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Yes. Using publicly available information, I researched all new merchant capacity additions approved by the OPSB since PJM implemented the Reliability Pricing Model (RPM) capacity construct in 2007. During that timeframe, the OPSB approved 4,069 MW of new merchant generation, however only a relatively small amount of that capacity has been actually built and placed in-service. Specifically, since 2007, merchant generators have only added two projects consisting of just 500 MW of nameplate capacity. Both of these projects are wind projects and are largely supported by long-term purchased power agreements. In fact, 100% of the output of Timber Road II Wind Farm is secured by a 20-year PPA with AEP Ohio. In addition, due to the intermittency of wind generation, their capacity for PJM's planning purposes is just 65 MW (PJM assigns wind generation with a 13% capacity factor). Other than these two wind projects, none of the projects approved by the OPSB since 2007 have been built and placed into service.

Q. HAS ANY DISPATCHABLE GENERATION BEEN PLACED INTO SERVICE IN OHIO SINCE 2007?

Yes, however this new dispatchable generation is owned and operated by regulated or cooperative entities with dedicated customers and stable cost recovery – and all of it was certificated many years before the RPM construct began.

For example in 2000, a merchant generator proposed the 580 MW natural gasfired Dresden Plant, and the plant was certificated by the OPSB in 2001. Construction was suspended when the plant was approximately 50% complete, and in 2007 it was sold to an affiliate of AEP Ohio. Construction was finished and the plant was placed into service in 2012. It is now serving regulated customers in Virginia and West Virginia. The suspension of this project after being 50% completed is a prime example of how new merchant generation can be abandoned – even at an advanced development stage.

Another merchant generator proposed the 704 MW natural gas-fired Fremont Energy Center in 2000, and the plant received a certificate from the OPSB in 2001. The Fremont Plant was sold twice – ultimately to American Municipal Power (AMP) which was able to complete construction and place the facility in-service in 2012 – 12 years after it was initially proposed. It is now serving AMP member co-ops in seven states, as well as customers of co-operatives and municipal power authorities in Virginia and Michigan.²

Q. IS IT "NORMAL" FOR NEW MERCHANT GENERATION TO TAKE MORE THAN 10 YEARS TO BE BUILT?

A. It is difficult to characterize "normal" when it comes to building new merchant generation in Ohio. As I discussed above, many challenges must be navigated by project developers throughout the years it takes to complete the process. At each stage of project development new risks can present themselves, which can lead to delay or cancellation.

Q. WHAT IS YOUR ASSESSMENT OF NEW GENERATION DEVELOPMENT IN OHIO?

A. As I stated earlier, new generation announcements and cancellations are notoriously uncertain and depend on many uncontrollable factors. In order to assess what generation projects may be built in the future, I reviewed project information publically available from the OPSB on May 1, 2015. To supplement that information, I also utilized publicly

² American Municipal Power, Inc. website: Home / Generation / Fossil Fuels http://www.amppartners.org/generation/fossil-fuels, Accessed May 1, 2015

available information from PJM, local news sources, and project developers. In addition,
I also traveled to the proposed sites in early-May 2015 to view the developments
firsthand. Site photos are attached to my testimony as Exhibit EJW-1.

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Based on the OPSB filings, there are six dispatchable plants in various stages of development in Ohio. Two of these plants have recently started construction and will not be on-line until sometime in 2017 at the earliest. This means that when the latest wave of baseload generation resources retire later this spring, no new dispatchable generation will be ready to take its place for the summers of 2015 or 2016.

9 Q. HAVE THESE PROJECTS REMAINED ON THEIR ORIGINALLY 10 ANNOUNCED SCHEDULES?

A. Most of them have not. Out of the six dispatchable generation projects under development, four have been delayed, and the other two have not yet reached their originally proposed construction start dates. All of the projects are years away from being placed in-service; and based upon historical data, many of them may never reach that point.

16 Q. PLEASE PROVIDE A STATUS UPDATE ON THESE SIX PROJECTS BASED 17 ON PUBLICLY AVAILABLE INFORMATION.

A. A summary of the project status updates are described below in order of their original announcement.

AMP Generating Station, Meigs County

In 2006, AMP proposed to build a coal-fired power plant consisting of two 480 MW units in Meigs County. In 2008, an air permit was issued³ and the OPSB certificated

³ State of Ohio Environmental Protection Agency, Application No: 06-08138, Fac ID: 0653000069 http://wwwapp.epa.ohio.gov/dapc/permits_issued/8828.pdf

the project.⁴ Construction on the plant began in 2009.⁵ After the construction began, AMP was granted two extensions of the OPSB certificate while citing unexpected cost increases and the need to evaluate other generation options for the site.⁶ In January 2013, AMP received a completed Impact Study from PJM for a 652 MW natural gas-fired combined cycle power plant to be placed in-service on May 31, 2016.⁷ Although it remains in the PJM Active Generation Queue, the project is not progressing towards that in-service date. As shown in Exhibit EJW-1, the project site currently appears to be an agricultural field. Nearly a decade has passed since it was originally proposed, and the project has still not been completed.

Rolling Hills Generating Plant

The Rolling Hills Generating Plant is currently an 850 MW natural gas-fired peaking plant which is being evaluated for conversion to a 1,400 MW natural gas-fired combined cycle generating plant. Filings with the OPSB described a construction start in January 2014, and an in-service date of mid-2016.⁸ The developer now states the following schedule information on its website:

Project development began in 2011; earliest construction start would be 2015; construction is expected to take 30 months with completion currently projected to be as early 2018. This is dependent upon timely receipt of required permits and approvals, as well as a demonstrated need for new baseload generation in Ohio.⁹

⁴ OPSB Case No. 06-1358-EL-BGN, Order dated March 3, 2008.

⁵ OPSB Case No. 06-1358-EL-BGN, Letter filed October 20, 2009.

⁶ OPSB Case No. 06-1358-EL-BGN, Entries dated December 17, 2012 and August 25, 2014.

⁷ PJM website: Planning / Generation Interconnection / Generation Queues: Active (W3-128)

https://www.pjm.com/pub/planning/project-queues/impact studies/w3128 imp.pdf

⁸ OPSB Case No. 12-1669-EL-BGN, Application dated June 1, 2012.

⁹ Rolling Hills Project website: Key Facts

http://rollinghillsproject.com/facts.html, Accessed May 1, 2015

So while the PJM Generation Queue shows this project having a 1st quarter 2017 projected in-service date, ¹⁰ the developer is clearly not working on the same timeline. The plant upgrade, originally scheduled to be in-service by 2016, has still not yet begun construction.

Oregon Clean Energy Center

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The Oregon Clean Energy Center, located in Lucas County, was announced in 2012 as a 799 MW natural gas-fired combined cycle plant to be in-service in May of 2016. The OPSB application was filed on January 17, 2013 with a proposed construction start date of June 2013. The construction start date was then modified to April 2014, and further modified to August 2014. The nameplate capacity was also revised to 960 MW, although the developer continues to reference a 799 MW, and even an 869 MW plant. In November 2014, the developer began construction. The developer has completed financing, sexcuted a PJM Interconnection Agreement, and has received an air permit. The plant was originally proposed to begin commercial operation in May 2016; however adding the developer's 35-month construction timeline to the delayed construction start date of November 2014 means that an in-service date of mid/late 2017 may be more realistic. Adding further complications to the project, a coalition of local

¹⁰ PJM website: Planning / Generation Interconnection / Generation Queues: Active (X3-051)

https://www.pjm.com/planning/generation-interconnection/generation-queue-active.aspx, Accessed May 1, 2015

¹¹ OPSB Case No. 12-2959-EL-BGN, Application dated January 17, 2013

¹² Toledo News Now website: Oregon Clean Energy, Posted April 08, 2014

http://www.toledonewsnow.com/story/25195598/oregons-clean-energy-power-plant-project-delayed

¹³ OPSB Case No. 12-2959-EL-BGN, Letter filed December 9, 2014.

¹⁴ OPSB Case No. 12-2959-EL-BGN, Letter filed November 11, 2014.

¹⁵ OPSB Case No. 12-2959-EL-BGN, Letter filed December 9, 2014.

¹⁶ PJM website: Planning / Generation Interconnection / Generation Queues: Active (Y1-069)

http://www.pim.com/pub/planning/project-queues/isa/v1 069 isa.pdf

¹⁷ State of Ohio Environmental Protection Agency, Permit: P0117413, Fac ID: 0448020102

http://wwwapp.epa.ohio.gov/dapc/permits_issued/1209971.pdf

residents has recently come out in opposition to the 22-mile gas pipeline needed to serve the facility.¹⁸ The plant, originally scheduled to be in-service by 2016, has only just begun construction and will not be completed until 2017 or possibly later.

Carroll County Energy Generation Facility

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The Carroll County Energy Generation facility was announced in mid-2013 as a 700 MW natural gas-fired combined cycle plant. ¹⁹ At that time, the developers had stated that the OPSB permitting process would take one year, with construction taking an additional three years. ²⁰ Given that construction has only recently started, it would follow that commercial operation may occur three years from now – as early as 2018. The records on file with the OPSB show a proposed May 2017 commercial operation date, ²¹ while the PJM Interconnection Agreement states commercial operation date of November 1, 2017, ²² so there appears to be some ambiguity around the timeline of this project. At any rate, the proposed project has entered into an Interconnection Agreement with PJM, has received an air permit, ²³ and site development appears to be actively progressing. As shown above in Table 2, only one out of every two megawatts reaching this phase was ultimately placed in-service. The plant, originally proposed 2013, has just begun construction and may not be completed until late 2017, or quite possibly later.

¹⁸ Toledo Blade website: Our Town News, Posted February 8, 2015

http://www.toledoblade.com/Our-Town-News/2015/02/08/Perrysburg-Schools-Owens-residents-coalition-oppose-Oregon-Lateral-gas-pipeline-route.html

 $^{^{19}}$ Free Press Standard website: News, Posted July 9, 2013

http://www.freepressstandard.com/News/01071113.htm

²⁰ Canton Rep website: Posted July 9, 2013

http://www.cantonrep.com/news/x997479293/-800-million-power-plant-planned-for-Carroll-County

²¹ OPSB Case No. 13-1752-EL-BGN, Application filed November 15, 2013

²² PJM website: Planning / Generation Interconnection / Generation Queues: Active (Y2-050)

http://www.pim.com/pub/planning/project-queues/isa/v2 050 isa.pdf

²³ State of Ohio Environmental Protection Agency, Permit: P0113762, Fac ID: 0210002025

Middletown Energy Center

In 2013, NTE Ohio, LLC proposed the Middletown Energy Center as a 540 MW natural gas-fired combined cycle plant. The project was certificated by the OPSB²⁴ and received an air permit in November 2014.²⁵ Construction has not yet begun, however some pre-construction activities such as gravel laying have commenced.²⁶ The developers have received a completed Impact Study from PJM.²⁷ Based on PJM's historical analysis shown on Table 2, only one out of every six proposed megawatts reaching this phase were ultimately placed in-service. This plant is not expected to be inservice until the 2nd quarter of 2018 if it manages to remain on schedule.

Lordstown Energy Center

In 2014, the 800 MW natural gas-fired combined cycle Lordstown Energy Center was proposed to be built in Trumbull County. The recent OPSB application states a planned in-service date of May 2018,²⁸ however the PJM Feasibility Study shows a proposed in-service date of April 2019.²⁹ The developers have currently proposed to start construction in "late summer 2015".³⁰ The certificate for this facility has not yet been approved by the OPSB.

²⁴ OPSB Case No. 14-534-EL-BGN, Order dated November 24, 2014.

²⁵ State of Ohio Environmental Protection Agency, Permit: P0116610, Fac ID: 1409001151 http://wwwapp.epa.ohio.gov/dapc/permits issued/1224365.pdf

²⁶ OPSB Case No. 14-534-EL-BGN, Letter dated April 17, 2015.

²⁷ PJM website: Planning / Generation Interconnection / Generation Queues: Active (Z1-079) https://www.pjm.com/pub/planning/project-queues/impact_studies/z1079_imp.pdf

²⁸ OPSB Case No. 14-2322-EL-BGN, Application dated March 23, 2015.

²⁹ PJM website: Planning / Generation Interconnection / Generation Queues: Active (Z2-028) https://www.pjm.com/pub/planning/project-queues/feas_docs/z2028_fea.pdf

³⁰ OPSB Case No. 14-2322-EL-BGN, Application dated March 23, 2015.

While news reports³¹ provide great fanfare and include statements like, "the heavy lifting is done"; "there's not going to be any problems"; and "there's nothing holding up this project now"; it should be stressed that this plant is in the very early stages of development. The developers still must secure numerous permits and navigate more detailed studies with PJM in addition to all of the other hurdles involving financing, construction, and legal challenges. As shown earlier in Table 2, only one out of every twelve of the megawatts historically proposed in PJM were ultimately placed into service after receiving a Feasibility Study. History indicates that the "heavy lifting" is still to come.

10 Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

11 A. Yes it does.

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³¹ The Business Journal Daily website: Posted January 5, 2015 http://archive.businessjournaldaily.com/company-news/800m-lordstown-power-project-plant-back-track-2015-1-5

Early May 2015 Site Photographs



AMP Generating Station, Meigs County Site

Site still appears to be undeveloped agricultural greenfield.



Rolling Hills Combined Cycle Conversion Site

No apparent construction activity in back of the plant where the new equipment would be located.



Oregon Clean Energy Center Site

Site preparation and construction activity appears to be occurring.



Carroll County Energy Generation Facility Site

Site preparation activity appears to be occurring.



Middletown Energy Center Site

Gravel road to access site has been laid. No other activity apparent.



Lordstown Energy Center

No development activity apparent.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of Ohio Power Company's *Pre-Filed Direct Testimony of Eric J. Wittine* have been served upon the below-named counsel and Attorney Examiners by electronic mail to all Parties this 15th day of May, 2015.

> /s/ Steven T. Nourse Steven T. Nourse

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