

AEP OHIO EX. NO. _____

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 for)	Case No. 14-1693-EL-RDR
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
JOHN M. MCMANUS
IN SUPPORT OF AEP OHIO'S
APPLICATION

Filed: October 3, 2014

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JOHN M. MCMANUS

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DIRECT TESTIMONY OF
JOHN M. MCMANUS
ON BEHALF OF
OHIO POWER COMPANY

1 **PERSONAL DATA**

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 A. My name is John M. McManus, and my business address is 1 Riverside Plaza,
4 Columbus, Ohio 43215.

5 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

6 A. I am employed by American Electric Power Service Corporation (“AEPSC”) as Vice
7 President – Environmental Services. AEPSC is a wholly owned subsidiary of
8 American Electric Power Company, Inc. (“AEP”), the parent of Ohio Power Company
9 (“OPCo”, or “the Company”) and AEP Generation Resources, Inc. (“AEPGR”).

10 **Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL AND**
11 **PROFESSIONAL BACKGROUND.**

12 A. I earned a Bachelor of Science Degree in Environmental Engineering from Rensselaer
13 Polytechnic Institute in 1976 and undertook graduate studies there from 1976-77. I
14 joined AEPSC’s Environmental Engineering Division in September 1977. After
15 holding various positions in the environmental division over the years, I was appointed
16 as Manager, Environmental Services in December 2002 and remained in that position
17 until April 2003. I was appointed to my current position as Vice President -
18 Environmental Services in April 2003. I am also a registered professional engineer in
19 the State of Ohio.

1 **Q. HAVE YOU PREVIOUSLY TESTIFIED IN ANY REGULATORY**
2 **PROCEEDINGS?**

3 A. Yes, I have previously testified before the Public Utilities Commission of Ohio,
4 Kentucky Public Service Commission, Virginia State Corporation Commission, Indiana
5 Utility Regulatory Commission, Public Service Commission of West Virginia, and I
6 have submitted written testimony before the Public Utility Commission of Texas.

7 **PURPOSE OF TESTIMONY**

8 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

9 A. The purpose of my testimony is to describe the proposed Greenhouse Gas (“GHG”)
10 Guidelines that were announced by the United States Environmental Protection Agency
11 (“EPA”) on June 2, 2014 and published in the Federal Register on June 18, 2014,
12 referred to as the Clean Power Plan (“CPP” or “Guidelines”). Specifically, I will
13 describe the main provisions of the proposed CPP, I will discuss the current status of
14 the proposed Guidelines, and I will summarize the issues that AEP has with the
15 Guidelines as currently proposed. Additionally, I will discuss some of the significant
16 challenges that AEP sees in implementing the proposed Guidelines. Finally, I will
17 discuss why, in my opinion, the proxy for future carbon regulation that witness Pearce
18 included in the Companies' analysis presented in this proceeding remains a reasonable
19 surrogate for the potential effects of the proposed CPP.

20 **SUMMARY OF THE PROPOSED CPP**

21 **Q. PLEASE DESCRIBE THE CURRENT STATUS OF THE PROPOSED CPP.**

22 A. AEP, the Company, and others within the electric industry have known for some time
23 that the EPA would be issuing a proposal addressing GHG emissions from existing

1 fossil-fired power plants. The EPA announced in December, 2010 its intent to
2 develop a program for these sources under Section 111 of the Clean Air Act. More
3 recently, on June 25, 2013, President Obama announced a climate action plan to
4 address GHG emissions from a number of sectors of the economy, which included a
5 specific schedule for the EPA to propose and finalize a greenhouse gas program for
6 electric generating units. The EPA published the proposed Guidelines in the Federal
7 Register on June 18, 2014. As of that date, a comment period of 120 days began,
8 which was subsequently extended until December 1, 2014.

9 The anticipated timing of the proposed CPP is as follows:

- 10 1) Proposed CPP Guidelines published in the Federal Register on June 18,
11 2014.
- 12 2) Public Comment Period on the proposed Guidelines through December 1,
13 2014¹.
- 14 3) The EPA plans to issue final Guidelines in June, 2015.
- 15 4) State Implementation Plans (“SIPs”) are developed by individual states,
16 for submittal to the EPA by June, 2016. If a state is developing its SIP but
17 needs additional time, a second year is available, until June, 2017. There
18 is also a provision to allow one more year for multiple states that decide to
19 develop a regional plan. This would extend the SIP development process
20 until June, 2018.
- 21 5) The EPA will then have up to one year to review and approve SIPs, or to
22 disapprove the SIPs and propose a Federal Implementation Plan (“FIP”).
23 Only when a SIP or FIP has become final will regulated entities know the
24 requirements for their facilities and/or activities. This could occur as early
25 as June, 2017, but may extend beyond 2019.
- 26 6) Under the proposed CPP, compliance requirements would become
27 effective beginning in 2020.

28 **Q. PLEASE DESCRIBE THE MAJOR PROVISIONS OF THE PROPOSED CPP.**

¹ Comments on the proposed CPP were originally required to be filed by October 16, 2014. On September 16, 2014 the EPA extended the comment period by 45 days.

1 A. The proposed CPP is built upon four “building blocks,” which the EPA uses to
2 calculate a proposed CO₂ emission rate target for each state. These four building
3 blocks, and their basic assumptions in the proposed CPP, are as follows:

- 4 1) Coal plant heat rate improvement - The EPA assumed that all coal
5 generators can improve operating efficiency by 6%, resulting in lower
6 CO₂ emission rates for those generating units;
- 7 2) Redispatch of natural gas generation – The EPA assumed that existing and
8 new natural gas combined cycle (“NGCC”) generating units could
9 increase their capacity factor to 70%, with the resulting increase in NGCC
10 generation displacing more CO₂-intensive, coal and oil/gas steam
11 generation;
- 12 3) Renewable Energy and Nuclear Energy – The EPA assumes that states
13 will implement what in effect is a 13% national renewable portfolio
14 standard by 2030, that no unplanned nuclear plant retirements occur, and
15 that nuclear units currently under construction are completed;
- 16 4) End-use Energy Efficiency programs – The EPA assumes that states can
17 eventually achieve annual incremental end-use energy efficiency levels
18 equivalent to 1.5% of sales, up to approximately 10% cumulative energy
19 savings by 2030.

20 Relying on various technical and economic assumptions for each of these
21 building blocks, some generic and some state-specific, the EPA calculated what it
22 believes to be an achievable CO₂ emission rate for each state, starting with 2012
23 fossil unit operations and emissions as a baseline. The proposed Ohio target is 1,570
24 lb. CO₂/MWh in 2020 and is gradually reduced to 1,338 lb. CO₂/MWh for 2030 and
25 beyond. The yearly targets from 2020 – 2029 can be met as an average over that 10
26 year period. These targets result in proposed reductions of CO₂ emission rates of
27 15% by 2020 and 28% by 2030, based on 2012 operation and emissions.

28 **Q. PLEASE GENERALLY DESCRIBE AEP’S INITIAL ASSESSMENT OF THE**
29 **PROPOSED CPP.**

1 A. It is important to keep in mind that the emission rate targets proposed by the EPA
2 vary widely by state. Because Ohio is home to coal, natural gas, and nuclear power
3 plants, each of the four building blocks applies to the state goals in the proposed CPP.

4 The timeline for regulatory development is very aggressive. State implementation
5 plans likely won't be finalized and approved until 2018, and possibly beyond 2019. This
6 tight timeframe limits the actions that can be taken to achieve the 2020 target.

7 The proposal provides little credit for the significant carbon dioxide emission
8 reductions that have already been made by the electricity sector and that will continue to
9 be made through the remainder of this decade with the retirement of coal-fired generation
10 in response to environmental regulations and other factors. Across its eleven-state
11 footprint, AEP's carbon dioxide emissions have been reduced by more than 21 percent
12 since 2005, and will be even lower after we retire more than one-fourth of our existing
13 coal-fueled power plant fleet by 2016 to comply with other EPA regulations such as the
14 Mercury and Air Toxics Standards.

15 Also, because the four building blocks in the proposed rule are all used to
16 establish the targeted overall reductions in CO₂ emission rates, failure to achieve the
17 reductions in any one building block will lead to more stringent requirements in the other
18 building blocks. AEP views the targets included in each building block as aggressive,
19 potentially making overall compliance difficult under the proposal as it currently exists.

20 **Q. HOW DOES EACH BUILDING BLOCK POTENTIALLY IMPACT FOSSIL-**
21 **FUELED GENERATING PLANTS IN OHIO?**

22 A. Under the first building block of the proposed CPP, coal-fired power plants in Ohio
23 will be expected to invest in projects or adjust operating practices to improve unit
24 operating efficiency, thus reducing the CO₂ output per unit of power produced.

1 Based on AEP's review of the technical papers cited in the proposed CPP, there is
2 concern that the EPA has overestimated the efficiency benefits and the availability of
3 improvement opportunities for the fossil fleet, and underestimated the cost of such
4 improvements.

5 The second block of the proposed CPP is based on dispatching natural gas
6 combined cycle units ahead of coal units, achieving a lower overall CO₂ state
7 emission rate. Ohio is home to combined cycle generating stations, and this building
8 block rests on the underlying assumption that each of these combined cycle gas plants
9 can operate at a capacity factor of 70% to displace generation from more CO₂-
10 intensive coal-fired power plants. Based on our initial review of the Ohio goals
11 calculated by EPA, AEP's Dresden unit was effectively doubled-counted as an
12 existing unit and as a unit still under construction. In addition, EPA used nominal
13 nameplate capacity values for all NGCC units, instead of the lower demonstrated
14 capacities that have been reported for these units. These errors understate the historic
15 operation of NGCC units in Ohio, which in turn overstates the capability of these
16 NGCC units to displace existing Ohio coal-fired capacity. There is also concern as to
17 whether the natural gas delivery infrastructure is available to reliably support such
18 high levels of operation at all combined cycle plants on a broad scale, or whether
19 needed infrastructure improvements could be completed in time to satisfy the
20 compliance goals.

21 The third and fourth blocks of the EPA's proposal call for increased use of
22 nuclear energy, renewable energy and end-use energy efficiency.

Based on Ohio's existing nuclear fleet, and the assumption that no unplanned nuclear retirements occur, continued operation of nuclear plants is expected to contribute 5% and 3% to Ohio's CO2 reductions in the 2020 and 2030 goals, respectively.

With regard to renewable energy and energy efficiency, it is not clear at this time whether the assumptions used by the EPA make technical or economic sense for Ohio. However, in theory, increased use of renewables or energy efficiency could result in reduced utilization of fossil-fired units in Ohio. Based on the requirements of the proposed CPP, increased renewable energy is anticipated to account for 8% of state reductions in the 2020 target and 29% of the 2030 reductions, while end-user energy efficiency is anticipated to contribute 29% and 38% of the state reductions in 2020 and 2030, respectively.

The following table summarizes the state reductions for Ohio that are to be achieved via each building block, as a percent of the total reductions required under the proposed CPP as it was issued in June 2014:

Building Block	2020-2029 Reduction	2030 and Beyond Reduction
Coal Plant Efficiency	31%	16%
Gas Redispatch	27%	14%
Nuclear and Renewables	13%	32%
Energy Efficiency	29%	38%
Total Reduction	100%	100%

Q. IS THERE A BENEFIT TO OPCO THAT ALL PLANTS INCLUDED IN THE PROPOSED PPA ARE LOCATED IN OHIO?

1 A. Yes, regardless of whether Ohio decides to pursue a single-state plan under the
2 proposed CPP or participates in a regional plan. The EPA's proposal requires CO₂
3 reduction programs to be developed at the state level for sources and customers
4 located in that state. Ohio would develop a plan that takes into account the
5 circumstances of the fossil generating units located within the state and that factors in
6 the energy and economic needs of the state and its residents. Ohio would be able to
7 take into consideration the value that the Cardinal, Conesville, Stuart and Zimmer
8 generating units proposed to be included in the PPA provide in meeting those needs,
9 even if Ohio participated in a regional plan.

10 For example, under the proposed CPP, energy efficiency activities can only be
11 used to offset emissions from generating assets located in the state, unless a multi-
12 state or regional plan is developed. Because the plants are in-state, they would be
13 part of the four building blocks that Ohio uses to meet the requirements of the
14 proposed CPP, be it for a state or regional plan.

15 **Q. IS THERE A PLAN CURRENTLY IN PLACE TO COMPLY WITH FUTURE**
16 **GHG REGULATIONS?**

17 A. There is no final plan at this time that is in place. AEP as a whole continues to study
18 the proposed CPP to determine how we would meet the requirements of this proposed
19 rule, and what the impacts to the Company's generating fleet would be. But, as I
20 have stated numerous times in this testimony, the CPP is a proposed rule at this time.
21 We will provide detailed comments to the EPA on the proposal, and those comments
22 should then go into the development of the final rule that we will not see until June
23 2015, as is currently laid out in the schedule.

1 **Q. CAN YOU SAY WITH CERTAINTY THAT THERE WILL BE A FINAL**
2 **RULE PUBLISHED IN JUNE 2015, AND THAT THE RULEMAKING**
3 **SCHEDULE YOU OUTLINE IN THIS TESTIMONY WILL HOLD INTO**
4 **THE FUTURE?**

5 A. No. The proposed CPP is currently a major focus of the EPA, and for that reason I
6 have no doubt that the agency will work diligently to maintain the schedule that has
7 been created for the rule's promulgation. However, the breadth of this rule will
8 impact the generation of electricity throughout the United States in a way that we are
9 still studying four months after the proposed rule was announced. There are already
10 lawsuits related to the EPA's regulation of GHGs, and even the proposed CPP, and
11 there will certainly be more to follow in the future.

12 However, even in light of the future uncertainty of the rule and the timing of
13 its eventual implementation, the most prudent course of action for the Company is to
14 plan for some form of carbon regulation in the future.

15 **Q. PLEASE DESCRIBE IN MORE DETAIL WHY IT IS YOUR OPINION THAT**
16 **A DELAY IN THE IMPLEMENTATION OF THE PROPOSED CPP IS**
17 **POSSIBLE.**

18 A. EPA has previously regulated very few source categories under Section 111(d) of the
19 Clean Air Act. One category that has been regulated is municipal solid waste
20 landfills. EPA first issued guidelines for existing sources in this source category in
21 1991, but subsequently conducted additional modeling, issued additional information
22 for public comment, and did not complete the rulemaking process and issue its final
23 guidelines until March of 1996, more than five years after its initial proposal. Final

1 state plans were required to be submitted within 9 months. While some states were
2 able to develop plans and submit them for EPA approval within the next few years, a
3 total of 22 air agencies for states, local air quality districts and U.S. territories had not
4 yet submitted a plan for these existing sources by November of 1999, when EPA
5 issued its final federal plan for these existing sources. State plans continued to be
6 submitted and approved after the effective date of the federal plan, until at least as
7 late as December of 2003, more than 10 years after EPA's initial proposal.

8 EPA's CPP affects many more facilities and is substantially more complex
9 than the emission guidelines for solid waste landfills. EPA had solicited input from
10 many stakeholders prior to its 1991 proposal for existing landfills, and the agency
11 received only 60 comment letters and public testimony from five individuals at the
12 public hearing on its original proposal. EPA conducted a similar public outreach
13 effort prior to issuing the CPP proposal. However, EPA has already received almost
14 350,000 public comments² on the proposed CPP, heard from thousands of individuals
15 at the four 2-day public hearings held in July 2014, and the comment period was
16 recently extended to December 1, 2014.

17 Furthermore, although EPA has established an extended time line for
18 submission of state plans of a year or more depending on the scope of the state plans
19 ultimately required, EPA itself acknowledges that changes in state laws could be
20 required. Many states have legislative sessions that occur once every two years,
21 which makes the implementation schedule proposed by EPA inadequate to
22 accommodate such an ambitious plan and schedule. State rulemaking will also be

² Number as of September 29, 2014 based on information available at
<http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2013-0602-0001>

1 required, which will only add to this schedule. If states elect to pursue regional plans,
2 the time for negotiating interstate compacts, receiving legislative authorization to
3 enter into such compacts, and the administrative rulemaking process must all be
4 considered.

5 It is also critical to recognize that, while EPA has structured a program with
6 state by state targets, the electric system does not operate on state lines. There is a
7 significant amount of coal generation being retired this decade across the country, and
8 the CPP holds the potential for even more changes in the generation mix. It will be
9 critical to allow time for states and regional reliability organizations to evaluate the
10 implications of all of these changes on reliability of the transmission grid before
11 wholesale implementation of the program begins.

12 And, none of the considerations outlined above take into account the potential
13 for litigation over the final guidelines, and the subsequent delays that could arise as a
14 result of such litigation. Taking all of this together, it suggests a strong possibility
15 that the proposed initial year of 2020 will be delayed.

16 **Q. ARE YOU FAMILIAR WITH THE PROXY FOR CARBON REGULATION**
17 **USED BY WITNESS PEARCE IN HIS ANALYSIS OF THE PROPOSED**
18 **PPA?**

19 A. Yes. Mr. Pearce added a cost of \$15/tonne of CO₂ emissions, beginning in 2022, to
20 the variable cost of fossil generation in his study.

21 **Q. IN YOUR OPINION, DOES THAT PROXY CONTINUE TO REASONABLY**
22 **ACCOUNT FOR POTENTIAL GHG REGULATION?**

23 A. It does, based on what is currently known regarding potential GHG regulation. As I

1 indicated previously, the Company has known for some time that some regulation of
2 CO₂ emissions from existing coal plants was coming, and that is the reason the proxy
3 was factored into the study presented by Company witness Pearce in his direct
4 testimony. The CO₂ cost that he describes in his testimony is reasonable in the sense
5 that it affects the cost of dispatching the coal-fired plants proposed to be included in
6 the PPA, which will result in a lower capacity factor for those plants for the years that
7 assumption is included in his model. There is admittedly a difference in timing, with
8 the carbon price assumption being applied beginning in 2022 in the modeling,
9 compared to the proposed CPP taking effect in 2020. And, as previously described, a
10 delay in the implementation schedule is certainly a strong possibility. For those
11 reasons, and the fact that the CPP is a proposed rule that is yet to be finalized and
12 ultimately go through the SIP or FIP process, the carbon price assumptions included
13 in the Company's study continue to be a reasonable proxy for future carbon
14 regulation.

15 **Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?**

16 **A.** Yes, it does.

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