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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 TOBY L. THOMAS IN SUPPORT OF AEP OHIO'S AMENDED APPLICATION

Filed: May 15, 2015

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BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO DIRECT TESTIMONY OF TOBY L. THOMAS ON BEHALF OF OHIO POWER COMPANY

1

PERSONAL DATA

2 O. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS. 3 A. My name is Toby L. Thomas, and my business address is 155 West Nationwide 4 Boulevard, Suite 500, Columbus, Ohio 43215. 5 Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY? 6 I am employed by the AEP Generation Resources ("AEPGR") as Vice President – A. 7 Competitive Generation. I am responsible for the safe, efficient, and environmentally 8 compliant operation of competitive generating assets for American Electric Power 9 Company, Inc. ("AEP"). 10 **PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL AND** Q. 11 PROFESSIONAL BACKGROUND. 12 A. I hold a Bachelor of Science Degree in Mechanical Engineering from the Rose Hulman 13 Institute of Technology. I joined AEP in 2001 as a project engineer involved in the 14 development and optimization of competitive power generation and industrial steam 15 generation projects across the United States. I have performed various roles of 16 increasing responsibility, and most recently served as the Managing Director -17 Kentucky Power, Gas Turbine and Wind Generation prior to assuming my current role

- in 2012. While employed at AEP, I have been involved in asset acquisitions, asset
- 2 management, and the operation and maintenance of a portion of AEP's generation fleet.

3 Q. HAVE YOU PREVIOUSLY TESTIFIED IN ANY REGULATORY

4 **PROCEEDINGS?**

- 5 A. Yes. I testified before the Kentucky Public Service Commission in Case No. 2011-
- 6 00401.

8

7 PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

- 9 A. The purpose of my testimony is to describe the AEPGR generating units related to AEP
- Ohio's request for a Purchase Power Agreement ("PPA") in this proceeding. These
- units will be referred to as the Affiliated PPA Units. I will describe the characteristics
- of each generating unit, their economic viability in the deregulated market for
- electricity, their anticipated compliance with environmental regulations, and the impact
- of that deregulated market with respect to the financial needs of the generating units.
- My discussion of the anticipated environmental compliance and financial need of the
- AEPGR generating units addresses Factors 3 and 1, respectively, described in the
- 17 testimony of AEP Ohio witness Vegas, which the Commission put forward as
- 18 necessary for a PPA application.

19 **GENERATING UNITS**

- 20 Q. WHICH AEPGR GENERATING UNITS IS AEP OHIO PROPOSING TO
- 21 INCLUDE IN ITS REQUEST FOR A PPA?
- 22 A. As indicated by Company witness Vegas, the Affiliated PPA Units are as follows:
- Cardinal Plant Unit 1,

1		• Conesville Plant Units 4, 5, and 6,
2		• Stuart Plant Units 1 through 4, and
3		• Zimmer Plant Unit 1.
4	Q.	IS AEPGR THE SOLE OWNER OF ALL THE AFFILIATED PPA UNITS?
5	A.	No. AEPGR owns 100% of Cardinal Unit 1 and Conesville Units 5 and 6. However,
6		Conesville Unit 4, Stuart Units 1 through 4, and Zimmer Unit 1 are all co-owned with
7		other companies.
8	Q.	PLEASE DESCRIBE THE AEPGR GENERATING UNITS THAT ARE
9		INCLUDED IN AEP OHIO'S AFFILIATED PPA REQUEST.
10	A.	Each of the nine generating units included in the Affiliated PPA is fired with pulverized
11		coal, where the coal is combusted in a furnace and the resulting heat is used to generate
12		steam to power a turbine. All of the units are equipped with low-nitrogen oxide
13		("NO _x ") burners ("LNBs") that minimize the creation of NO _x during the combustion
14		process. Conesville Units 4, 5, and 6 are also equipped with over-fire air systems that
15		further reduce NO_x via controlling the combustion process. All units are also equipped
16		with electrostatic precipitators ("ESPs"), which reduce emission of particulate matter
17		by more than 99%.
18		Located in Brilliant, Ohio (Jefferson County), Cardinal Unit 1 is a nominal 595
19		MW generating unit that was placed into service in 1967. Aside from LNBs, Unit 1 is
20		equipped with selective catalytic reduction ("SCR") to further reduce emissions of
21		NO _x . The unit is also equipped with a flue gas desulfurization ("FGD", or a
22		"scrubber") system to reduce emissions of sulfur dioxide ("SO2"). FGD systems allow

coal-fired generating units to consume relatively lower-cost, higher sulfur coal when

compared to units that are not equipped with such systems. AEPGR owns 100% of Cardinal unit 1, and the unit is operated by the Cardinal Operating Company, which also operates Units 2 and 3 at the plant, which are owned by Buckeye Power.

Conesville Units 4, 5, and 6 are located in Conesville, Ohio (Coshocton County). Conesville Unit 4 has a nominal rating of 780 MW, and was placed in service in 1973. The generating unit, much like Cardinal Unit 1, is equipped with SCR for NO_x emissions reduction and an FGD system that allows it to consume a blend of high sulfur and low sulfur coals. Conesville Units 5 and 6 are similarly designed generating units, each capable of generating 405 MW, and were placed in service in 1976 and 1978, respectively. These generating units are equipped with FGD systems. AEPGR owns 43.5% of Conesville Unit 4, 100% of units 5 and 6, and is responsible for the operation of all three of these generating units.

The Stuart power plant is located in Aberdeen, Ohio (Brown County). The Stuart Plant is comprised of four similarly designed generating units, each rated at 585 MW, for a total plant capacity of 2,340 MW. Units 1 through 4 were placed in service in 1971, 1970, 1972, and 1974, respectively. These units are equipped with SCR and FGD for reduction of NO_x and SO₂ emissions. AEPGR owns a 26% interest in each of these four generating units, and the plant is operated by Dayton Power & Light.

The Zimmer Plant is located in Moscow, Ohio (Clermont County). Unit 1 at the Zimmer Plant, which was placed in service in 1991, is a nominal 1,300 MW generating unit that is equipped with SCR for NO_x reduction as well as FGD for SO₂ reduction. AEPGR owns a 25.4% interest in the Zimmer Plant, which is operated by Dynegy, Inc.

Q.	PLEASE	DESCRIBE	YOUR	ROLE	WITH	REGARD	TO	THE	OPERATION
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- OF, AND INVESTMENT IN, THE AFOREMENTIONED GENERATING
- 3 UNITS.

- 4 A. For the units above which AEPGR operates (Cardinal Unit 1, Conesville Units 4, 5 and
- 5 6), I am responsible for the day-to-day operation of those generating units, as well as
- 6 the long-term planning for those units with regard to capital investments and long-term
- 7 maintenance initiatives.

For the Stuart and Zimmer units, the operator of each of those respective plants is responsible for the day-to-day operations. As the Vice President – Competitive Generation for AEPGR, I am a member of the Engineering and Operating Committee for those generating units. Through my participation in this committee, I am kept informed of the operation of the generating units and I participate in review and approval processes for capital investment and O&M expense budgets. I am involved with major decisions regarding the operation of the generating units, as well as the development of future plans for expenditures. So, while AEPGR is not responsible for the daily operational decisions at those generating units, AEPGR is involved in the decision making process that is used to determine their long-term operation. This allows AEPGR to review operational and investment decisions, and to provide our input to the other co-owners as appropriate.

ENVIRONMENTAL COMPLIANCE FOR THE AFFILIATED PPA UNITS

- Q. WHAT IS YOUR ROLE WITH RESPECT TO THE ENVIRONMENTAL
- 22 COMPLIANCE OF THE AFFILIATED PPA UNITS?

1	A.	As Vice President - Competitive Generation, I am responsible for the prudent
2		allocation of capital and operation and maintenance expenses among AEPGR's fleet
3		of generating units, including the Affiliated PPA Units, so that the plants can continue
4		to operate as effectively as possible. Aside from day-to-day operations, this also
5		includes scrutinizing future investments that are planned for complying with the
6		existing and anticipated environmental regulations that are described by AEP Ohio
7		witness McManus in this proceeding.
8	Q.	PLEASE DESCRIBE HOW YOU WORK WITH AEPSC TO PLAN FOR THE
9		ENVIRONMENTAL COMPLIANCE OF THE PPA UNITS.
10	A.	AEPGR uses the resources available to us from AEPSC, including those of witness
11		McManus' Environmental Services organization. AEPGR relies upon the
12		Environmental Services organization to interpret environmental regulations and
13		rulemakings and provide guidance as to how our generating fleet can meet the intent
14		of each regulation.
15		I then work with my organization to determine the most effective method for
16		each of our generating plants to comply with those regulations.
17	Q.	DO YOU ANTICIPATE THAT THE AFFILIATED PPA UNITS WILL BE
18		COMPLIANT WITH THE ENVIRONMENTAL REGULATIONS
19		DESCRIBED IN THE TESTIMONY OF AEP OHIO WITNESS MCMANUS
20		IN THIS PROCEEDING?
21	A.	Yes. For the regulations described by witness McManus, the Affiliated PPA Units
22		are either already equipped with the environmental controls necessary to comply with

1		those rules, or AEPGR has included budgetary estimates for future reasonably
2		anticipated environmental compliance projects in its financial analyses.
3	Q.	PLEASE BRIEFLY DESCRIBE THE MAJOR ENVIRONMENTAL
4		COMPLIANCE PROJECTS THAT ARE PLANNED FOR THE AFFILIATED
5		PPA UNITS.
6	A.	The rules discussed in detail by AEP Ohio witness McManus for which AEPGR is
7		currently planning for compliance are the Cross State Air Pollution Rule ("CSAPR"),
8		the Mercury and Air Toxics Standards ("MATS Rule"), the Coal Combustion
9		Residuals Rule ("CCR Rule"), modifications under section 316(b) of the Clean Water
10		Act (the "316(b) Rule"), and changes to the steam generator Effluent Limitation
11		Guidelines ("ELG Rule").
12		Those Affiliated PPA units that are already equipped with ESP, SCR and
13		FGD systems (Cardinal Unit 1, Conesville Unit 4, Stuart Units 1-4, and Zimmer Unit
14		1) are anticipated to meet the requirements of the MATS Rule without additional
15		significant capital investment. Conesville Unit 6 is in the process of installing, and
16		Unit 5 will install next year, a new technology designed to filter mercury from the
17		flue gas exiting the FGD system on those units. Based on pilot scale testing, it is
18		anticipated that these projects will allow Conesville Units 5 and 6 to comply with the
19		MATS Rule.
20		AEPGR is also planning for compliance with the CCR Rule, which is
21		discussed in detail by AEP Ohio witness McManus. Conesville Units 4-6 and
22		Zimmer Unit 1 are all equipped with dry flyash handling systems and landfills for
23		CCR disposal that are anticipated to meet the requirements of the CCR Rule. Stuart

Units 1-4 and Cardinal Unit 1 utilize wet ash handling systems, but budgetary estimates for the conversion to dry ash handling systems have been included in the financial forecast for those units.

A.

For those Affiliated PPA Units that are equipped with cooling towers (Conesville 4-6, Stuart Unit 4 and Zimmer Unit 1) there may be a need to modify intake screens as a result of 316(b), but whether or not those screens are required will not be certain until studies described by witness McManus are complete. Additional investment may be needed at Stuart Units 1-3, which are not equipped with cooling towers, although early indications are that the units will likely not need to install cooling towers to comply with the rule.

Budgetary estimates for various projects intended to comply with the ELG Rule are also included in AEPGR's financial planning, but the final requirements of that rule will not be known until at least September 2015.

Q. HOW DOES AEPGR PLAN TO COMPLY WITH THE CSAPR?

As described by AEP Ohio witness McManus, the CSAPR establishes emission caps for SO₂ and NO_x. All of the Affiliated PPA Units have already been retrofitted with FGD systems for the control of SO₂. Additionally, for the control of NO_x, all of the Affiliated PPA Units have been equipped with LNBs and, with the exception of Conesville Units 5 and 6, SCR technology. These previous capital investments, along with emission allowance purchases if necessary, will allow for compliance with the CSAPR.

ROLE OF THE AFFILIATED PPA UNITS IN AEPGR'S FLEET

2 Q. HOW DO THE AFFILIATED PPA UNITS COMPARE TO THE BROADER

GENERATION MARKET IN WHICH AEPGR PARTICIPATES?

4 A. These generating units, Cardinal 1, Conesville 4, 5, and 6, Stuart 1, 2, 3, and 4, and 5 Zimmer 1, are all generating units that I would describe as marginal units with respect 6 to their economic viability while operating in a deregulated market. Although these 7 units are not currently planned to be retired in the next few years for economic or 8 environmental reasons, as further explained below the future market-based revenue 9 uncertainty and fixed cost structure make them vulnerable to early retirement. These 10 units are capable of safely and reliably generating electricity, and can be economically viable in a deregulated market if the market price of electricity reaches sufficient levels.

Q. WHAT IS AEPGR'S STRATEGY TO INVEST IN THESE GENERATING

UNITS?

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A.

To date, these marginal units have been well maintained and are anticipated to be capable of meeting environmental regulations in the foreseeable future with reasonable amounts of capital investment, but uncertainty of market-based revenue from the PJM capacity and energy markets may not support sufficient economic returns due to the fixed cost structure of solid fuel, base load assets. Therefore, investments in these units are generally made based on a short-term view of what the market will support over the next few years.

Because market electricity and capacity prices are currently low, it is difficult to justify significant levels of capital expenditures that could only be recouped over long periods of time, which places generating units at greater risk of being retired due to a lack of needed investment. An extended period of depressed market conditions could also lead to an earlier retirement of these units for economic reasons, or at the very least could lead to a prolonged low level of investment that could degrade the reliability of the units in the long-term.

Α.

It is also possible that any of the generating units could require a previously unforeseen capital investment for reliability or environmental reasons. However, if current market prices do not support that level of required capital, it could result in the decision to retire a unit rather than invest the capital in a generating unit, if the investment is projected to have a payback period of more than a few years.

10 Q. WHAT IS YOUR APPROXIMATE PLANNING HORIZON FOR CAPITAL 11 INVESTMENTS AS IT EXISTS TODAY?

With the current state of the electricity market, my horizon for making investments in the generating units generally goes out approximately three years. Obviously, the farther into the future we look the more uncertainty is introduced, but at least for a three year period we have a price signal in the capacity price that resulted from the most recent PJM Interconnection Reliability Pricing Model auction, where capacity prices are set in future years based on offers into that auction. Also, we have a relatively good picture of what the market will look like three years out in terms of known environmental regulations and likely plant retirements both internal and external to our Company. There can still be a great deal of variability in these signals, particularly the capacity payment amount, but it does provide something to use that far out that is reliable for planning purposes.

1	Beyond a three year timeframe, the uncertainty regarding capacity and energy
2	prices that the market will bear increases significantly, making the case for any longer-
3	term investment that much more difficult.

4 Q. ARE CURRENT MARKET CONDITIONS THREATENING THE FUTURE 5 VIABILITY OF OHIO GENERATION AND IN PARTICULAR THE

AFFILIATED PPA UNITS?

A.

- Yes. The Affiliated PPA units are on the economic "bubble", meaning the market conditions, as described by Company witness Pearce, are not providing the necessary economic signals for incremental investment in these units. The plants have been saddled with increased fixed costs resulting from recent environmental installations. Market volatility and unpredictability only serve to make the situation, faced by these generating units, more tenuous. Because of these factors, any major capital spending that might be required in the future, whether for existing equipment repairs or for new environmental requirements, could lead to premature retirements. As described by Company witness Allen, a shutdown of these plants would cause job loss and economic hardships for thousands of employees and Ohio citizens, and would be a significant blow to the Ohio tax base and other industries that rely on the plants for business. Approval by the Commission of the PPA Rider and the prudence of AEP Ohio's decision to enter into the life-of-unit PPAs substantially reduces the likelihood that the PPA units will face closure before their useful life has ended.
- Q. HOW WOULD A PPA THAT INCLUDED THE AFFILIATED PPA UNITS
 CHANGE AEPGR'S INVESTMENT STRATEGY FOR THE GENERATING
 UNITS?

The revenues that would be received through a PPA would allow the company to take a longer-term view when making investments in these power plants. This, in turn, would lead to a different investment strategy in these units than AEPGR would use if we were to base those decisions solely on short-term market pricing signals.

A.

A.

The short-term pricing signals to which I am referring are those reflected in Figure 1 in the testimony of AEP Ohio witness Pearce in this proceeding. As demonstrated in that figure, it is the low level of market revenue for these generating plants in the near term that makes any type of long-term and significant investment very difficult to justify based on the uncertain market revenues that any one of the generating units may earn in any given year during the longer term.

Q. WHY DOES AEPGR SUPPORT OFFERING THESE UNITS TO BE INCLUDED IN THE PROPOSED AFFILIATED PPA?

As I mentioned previously, these units are marginal with respect to market-based revenue. It is possible, if there are immediate and substantial market shifts in the near term, that these plants could operate profitably over the next few years. However, the current forecast of low revenues in the next few years jeopardizes that long-term viability of the generating units and makes longer-term investments more challenging. This situation makes it more difficult to justify significant investment in these generating units in the near term to secure their supply of generation in the long-term, and will likely contribute to the retirement of these units sooner than if the units operated in an economic environment that exhibited less risk.

AEPGR views the PPA as a way to mitigate the risk of these units retiring within the next few years, which will increase the likelihood that they survive to

provide the long-term benefits to customers that Company witness Pearce's financial analysis supports. Although there is a potential long-term upside for these units when compared to the currently forecasted market, AEPGR is willing to forego that long-term potential upside for the relatively stable revenues that a PPA would offer over the short and long-term.

A.

Q. DOES AEPGR ANTICIPATE THAT THE AFFILIATED PPA UNITS WILL RETIRE IN THE NEAR FUTURE IF THE PPA IS NOT APPROVED?

If the units proposed for inclusion in the PPA are not able to justify a level of capital investment and operation and maintenance ("O&M") expense that is commensurate with that included in Company witness Pearce's analysis, it is more likely that they will be retired. While there is no bright line of costs above which the plants continue to operate and below which they will retire, without the long-term stability provided by the Affiliated PPA the ability to make long-term investments decisions is hindered.

AEPGR is working diligently to drive down the cost of operating these plants so they can compete in the market. But despite our best efforts to manage the units' costs, external market forces affecting the revenues that the units can earn may alter our decision-making with regard to making prudent investments in these plants. This could certainly lead to what I consider a premature retirement of these generating units, given their physical ability to continue operating with the appropriate level of capital investment and O&M expense.

By contrast, it is my opinion that based on current environmental requirements, the prospect of retiring these generating units in the next few years is virtually

1	nonexistent if the Affiliated PPA is approved, as it will allow us to take a longer-term
2	view of the operation of, and level of investment in, these generating units.

Q. HOW IS THE AFFILIATED PPA RELATED TO THE FINANCIAL NEEDS OF THE GENERATING UNITS THAT ARE PROPOSED TO BE INCLUDED?

A.

The Affiliated PPA costs presented by Company witness Pearce are calculated using a forecast of capital and O&M that was developed for the generating units that are proposed to be included in the Affiliated PPA. These forecasts represent what I believe to be prudent and reasonable investments and expenses that should be made to continue operating the Affiliated PPA Units in a reliable fashion. In the absence of a PPA, it is possible that lower market revenues would require AEPGR to re-prioritize work, and could very likely lead to decreased levels of investment in these generating units. If such a lack of investment were to become a chronically persistent condition, it is possible that the long-term ramifications of these spending decisions could lead to reduced performance and ultimately the premature retirement of these generating units. However, at the same time, an increase in market revenues absent the Affiliated PPA could very well lead to increased amounts of investment if such investments are deemed prudent in the face of changing market conditions.

Simply put, current market conditions do not warrant the level of investment in these generating units needed to keep the units running reliably and safely until their planned retirement dates.

Q. IS THE LEVEL OF CAPITAL AND O&M EXPENSE INCLUDED IN WITNESS PEARCE'S TESTIMONY A REASONABLE ESTIMATE FOR THE PERIOD COVERED?

A. Yes. The forecasted investments and expenses included in witness Pearce's analysis represent our current plan for operating those generating units. This is an expectation based on what we know today and, as is true of good utility practices, these investments will be continuously reviewed to ensure the maximum return on investment. Changes in future regulations, advances in technology, and the condition of plant equipment could impact that plan positively or negatively. The actual level of investment required to continue operations at the generating plants may be higher or lower than the amount included in the plan, but I believe that the amount put forth is a reasonable estimate of what these units require to operate in a safe and reliable fashion over the planned years and the PPA provides the flexibility to manage these necessary investments.

LIFE OF THE AFFILIATED PPA UNITS

- 12 Q. FOR HOW MANY MORE YEARS ARE THE AFFILIATED PPA UNITS
- **ANTICIPATED TO OPERATE?**

- A. Each of the plants in question is capable of continuing to operate beyond 2030, based on current knowledge of physical equipment at each unit and presuming an appropriate level of future capital investment and maintenance expense can be justified economically.
- I provided the currently planned retirement dates for the Affiliated PPA Units to

 AEP Ohio witness Vegas, and those years are reflected in Table 2 of his Amended

 testimony in this proceeding.
- Q. IS AEPGR COMMITTING TO RETIRE EACH GENERATING UNIT AT ITS

 CURRENTLY PLANNED RETIREMENT DATE?

- A. No. The anticipated retirement date for each unit is based on using reasonable engineering judgment to estimate end-of-life for major pieces of equipment. The planned retirement dates reflect only the physical capability of the units to operate and even then are only estimates that are subject to change.
- 5 Q. HOW WOULD THE AFFILIATED PPA AFFECT THE REMAINING LIFE OF
- 6 THESE UNITS?

23

- 7 A. The planned unit retirement dates, which are currently beyond 2030, are not 8 definitively affected by the approval or disapproval of the Affiliated PPA. But as I 9 mentioned, the planned life is based solely on the physical condition of equipment, and 10 does not take into account other factors such as market power prices. Currently, there 11 is a prospect of the units retiring prior to their planned dates due to future market price 12 volatility, but approval of the Affiliated PPA would make it highly likely that the units 13 continue to operate until the currently planned retirement dates, based on what we 14 know today.
- 15 Q. IN YOUR PROFESSIONAL OPINION, HAVE THESE POWER PLANTS BEEN
 16 MAINTAINED IN SUCH A WAY THAT THEY CAN CONTINUE TO
 17 GENERATE POWER THROUGH 2030 AND BEYOND?
- A. Yes. These Affiliated PPA Units have been properly maintained in the past, and with the proper level of capital investment and O&M expense in the future these power plants are capable of operating in compliance with known and reasonably anticipated environmental regulations over the life of the proposed Affiliated PPA, which would support continued operation until the planned retirement date for each unit.
 - O. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

1 A. Yes, it does.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of Ohio Power Company's *Pre-Filed Direct Testimony of Toby L. Thomas* 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

EMAIL SERVICE LIST

	T
Allison@carpenterlipps.com	mhpetricoff@vorys.com
Bojko@carpenterlipps.com	myurick@taftlaw.com
callwein@wamenergylaw.com	mpritchard@mwncmh.com
Christopher.Miller@icemiller.com	mjsatterwhite@aep.com
cmooney@ohiopartners.org	msmckenzie@aep.com
dboehm@BKLlawfirm.com	mswhite@igsenergy.com
dconway@porterwright.com	mkurtz@BKLlawfirm.com
dwilliamson@spilmanlaw.com	Michael.schuler@occ.ohio.gov
fdarr@mwncmh.com	mjsettineri@vorys.com
ghull@eckertseamans.com	msmalz@ohiopovertylaw.org
glpetrucci@vorys.com	talexander@calfee.com
haydenm@firstenergycorp.com	nmoser@wamenergylaw.com
hussey@carpenterlipps.com	ricks@ohanet.org
jmcdermott@firstenergycorp.com	sam@mwncmh.com
jlang@calfee.com	Scott.Campbell@ThompsonHine.com
jeffrey.mayes@monitoringanalytics.com	scasto@firstenergycorp.com
jkylercohn@BKLlawfirm.com	schmidt@sppgrp.com
jfinnigan@edf.org	sasloan@aep.com
joseph.clark@directenergy.com	Stephanie.Chmiel@ThompsonHine.com
joliker@igsenergy.com	stnourse@aep.com
Katie.johnson@puc.state.oh.us	todonnell@dickinsonwright.com
Kurt.Helfrich@ThompsonHine.com	tobrien@bricker.com
Kyle.kern@occ.ohio.gov	toddm@wamenergylaw.com
Larry.sauer@occ.ohio.gov	tony.mendoza@sierraclub.org
<u>lhawrot@spilmanlaw.com</u>	tdougherty@theOEC.org
mdortch@kravitzllc.com	william.wright@puc.state.oh.us
mfleisher@elpc.org	

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