BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Ohio)	
Edison Company, The Cleveland Electric)	
Illuminating Company and The Toledo)	
Edison Company for Authority to Provide)	Case No. 14-1297-EL-SSO
for a Standard Service Offer Pursuant to R.C.)	
4928.143 in the Form of an Electric Security)	
Plan)	

SUPPLEMENTAL TESTIMONY OF

RAYMOND L. EVANS

ON BEHALF OF

OHIO EDISON COMPANY THE CLEVELAND ELECTRIC ILLUMINATING COMPANY THE TOLEDO EDISON COMPANY

MAY 4, 2015

PUBLIC VERSION

I. <u>INTRODUCTION</u>

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- 2 Q. PLEASE STATE YOUR NAME, POSITION, AND BUSINESS ADDRESS.
- 3 A. My name is Raymond L. Evans. I am employed by FirstEnergy Service Company as
- 4 Vice-President, Environmental and Technologies. My business address is 76 South Main
- 5 Street, Akron, Ohio 44308.

6 Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

8 I earned a Bachelor's degree in civil engineering from the University of Dayton, and also A. 9 am a graduate of Clemson University's Master of Environmental Systems Engineering 10 program. I am a registered professional engineer in Ohio. I began my career in 1978 at 11 The Cleveland Electric Illuminating Company, and throughout my career I have held technical and environmental positions including engineering design, project management, 12 13 and strategic planning, environmental pollution control design, operation and permitting, 14 commodity risk management, and management positions. I have worked in the environmental field for 26 years of my 37 year career. In 2009, I was promoted to 15 director of the Environmental Department; became executive director, Environmental, in 16 17 February 2011; and was promoted to my current position in August 2012.

18 Q. WHAT ARE YOUR CURRENT JOB DUTIES AND AREAS OF RESPONSIBILITY?

A. I am responsible for developing environmental programs and strategies that comply with laws and regulations pertaining to all facilities owned or operated by subsidiaries of FirstEnergy Corp., including, among others, generating plants owned by subsidiaries of FirstEnergy Solutions Corp. ("FES") and facilities of Ohio Edison Company ("Ohio Edison"), The Cleveland Electric Illuminating Company, and The Toledo Edison

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Company (collectively, the "Companies"). I also provide advice regarding the operation and maintenance of environmental systems throughout the FirstEnergy Corp. subsidiaries and am responsible for development, assessment, testing, and application of emerging technologies in the energy delivery and supply businesses. I also represent subsidiaries of FirstEnergy Corp. before federal and state environmental agencies, non-governmental organizations and industry peer groups.

O. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

The purpose of my testimony is to describe how the Davis-Besse Nuclear Power Station ("Davis-Besse") and the coal-fired W.H. Sammis Plant ("Sammis") are compliant with all pertinent environmental regulations and to describe the plan for compliance with pending environmental regulations, which are final and awaiting action by the state or the Companies. In my testimony, I'll refer to the Davis-Besse and Sammis plants collectively as the "Plants." Portions of my testimony, as noted below, also apply equally to FES's entitlement to the output of two coal-fired plants owned by Ohio Valley Electric Corporation ("OVEC") – the Kyger Creek Plant in Cheshire, Ohio ("Kyger Creek") and the Clifty Creek Plant in Madison, Indiana ("Clifty Creek").

Q. PLEASE SUMMARIZE YOUR CONCLUSIONS.

A.

Α.

The Plants are in compliance with all applicable environmental regulations and have plans to comply with pending environmental regulations. The Plants are subject to multiple existing and pending regulations administered by the United States Environmental Protection Agency ("U.S. EPA") and Ohio Environmental Protection Agency ("Ohio EPA"), including the Section 316(b) Cooling Water Intake Structures at Existing Facilities rule ("316(b)"), the Disposal of Coal Combustion Residuals ("CCR")

rule, the Effluent Limitations Guidelines and Standards ("ELG"), the National Ambient Air Quality Standards ("NAAQS") for sulfur dioxide ("SO₂") and ozone, and the Cross State Air Pollution Rule ("CSAPR"). Any costs that the Plants may incur to comply with these regulations are included in the Companies' cost forecast provided by Company witness Lisowski.

Additional environmental regulations may be issued in the future, and we will develop compliance plans whenever the U.S. EPA issues final decisions. Until an environmental regulation is final for implementation, we do not attempt to speculate what form that regulation will take and what compliance measures may be required. Regulations that may become final in the future include the proposed Clean Power Plan purportedly designed to regulate carbon dioxide ("CO₂") emissions from existing power plants, revisions to the ELG regulations, and revisions to the NAAQS for SO₂ and ground-level ozone.

II. <u>COMPLIANCE WITH EXISTING AND PENDING ENVIRONMENTAL</u> <u>REGULATIONS</u>

16 A. 316(b)

17 Q. WHAT IS 316(b)?

A.

The term 316(b) refers to that section of the Federal Water Pollution Control Act ("FWPCA") addressing the requirements for "cooling water intake structures." Specifically, this section requires, among other things, that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact. Over the years, U.S. EPA has issued a number of proposed and final regulations to implement this section of the

FWPCA. This final rule defines the processes for determining cooling water intake best available technology, with an effective date of October 14, 2014.

3 Q. WHAT IS SAMMIS'S PLAN TO COMPLY WITH THE PENDING 316(B) REGULATIONS?

The pending version of 316(b) would require Sammis in 2015 to document intake and screen design data including flow volumes, flow velocities, structural and equipment drawings and calculations. Concurrently, to demonstrate best available cooling water intake technology, a number of aquatic studies also will be performed for up to three years to study what, if any, impact the intake structure and screens have on the Ohio River aquatic species in the vicinity of the plant. Once the studies are complete and decisions made by Ohio EPA, Sammis will comply with any further requirements.

12 Q. ARE THE COSTS FOR SAMMIS TO COMPLY WITH 316(B) INCLUDED IN THE COMPANIES' COST FORECAST FOR THE 15-YEAR TERM OF THE ECONOMIC STABILITY PROGRAM?

15 A. Yes.

16 **B.** <u>CCR rule</u>

17 O. WHAT IS THE CCR RULE?

18 A. The U.S. EPA issued the CCR final rule on December 19, 2014. It provides a
19 comprehensive set of requirements for the safe disposal of coal combustion residuals
20 (commonly known as coal ash) from coal-fired power plants. The rule establishes
21 technical requirements for CCR landfills and surface impoundments under Subtitle D of
22 the Resource Conservation and Recovery Act ("RCRA"), the nation's primary law for
23 regulating solid waste.

1 2	Q.	WILL SAMMIS INCUR ADDITIONAL COSTS TO COMPLY WITH THE PENDING CCR RULE?
3	A.	The CCR rule provides that disposed CCR will continue to be regulated as a
4		nonhazardous waste. Therefore, while there may be additional costs related to disposal
5		sites, we expect such costs to be immaterial.
6 7	Q.	ARE THE COSTS FOR SAMMIS TO COMPLY WITH THE PENDING CCR RULE INCLUDED IN THE COMPANIES' COST FORECAST?
8	A.	Yes.
9		C. <u>ELG Regulations</u>
10	Q.	WHAT ARE THE ELG REGULATIONS?
11	A.	The U.S. EPA first promulgated the Steam Electric Power Generating effluent guidelines
12		and standards in 1974, and the ELG regulations have been amended several times since.
13		The regulations cover wastewater discharges from power plants operating as utilities.
14 15	Q.	ARE THE PLANTS CURRENTLY IN COMPLIANCE WITH THE ELG REGULATIONS?
16	A.	Yes. Any ongoing costs to comply with the existing ELG regulations are included in the
17		Plants' normal operating budgets, and therefore reflected in the Companies' cost forecast.
18		D. <u>1-Hour SO₂ NAAQS</u>
19	Q.	WHAT IS THE 1-HOUR SO ₂ NAAQS?
20	A.	Under the Clean Air Act ("CAA"), the U.S. EPA sets NAAQS for six criteria pollutants,
21		including sulfur dioxide ("SO2"). Ohio then is required by the CAA to develop a "state
22		implementation plan" ("SIP") describing how it will attain and maintain the NAAQS. In
23		2010, the U.S. EPA established a revised primary SO ₂ standard at 75 parts per billion

("ppb"), which is met at a monitoring site when the 3-year average of the 99th percentile

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- of daily maximum 1-hour concentrations does not exceed 75 ppb. In 2013, the U.S. EPA announced the designations of 29 areas in 16 states as nonattainment for the 2010 SO₂ standard, based on certified ambient air quality monitoring data for the years 2009-2011.
- 4 Q. WHAT DOES A NONATTAINMENT AREA FOR THE 2010 SO₂ STANDARD MEAN?
- 6 A. It means an area, typically a county or sub-county, that has an SO₂ ambient air quality
 7 monitor with readings exceeding the criteria of the 2010 SO₂ Standard.

8 Q. ARE SAMMIS, KYGER CREEK AND CLIFTY CREEK IN NON-ATTAINMENT AREAS FOR THE 2010 SO₂ STANDARD?

10 A. No. Thus, they are not subject to any compliance requirements under Ohio's or Indiana's
11 SIPs for the 2010 SO₂ Standard. Notably, although an area of Jefferson County, Ohio,
12 has been designated non-attainment, Sammis is not located in the non-attainment area
13 and does not impact SO₂ emissions in that area (Sammis is down-wind of the non14 attainment area). Indeed, in developing its SIP, Ohio EPA has chosen not to model
15 Sammis as part of the non-attainment area because it is not viewed as impacting the non16 attainment area.

17 Q. WHAT DETERMINES THE LEVEL OF SO₂ EMISSIONS FROM SAMMIS?

A. The 2005 Consent Decree between the United States of America and Ohio Edison sets SO₂ emission limits not to be exceeded for each individual unit and design efficiencies for the wet flue gas desulfurization systems ("WFGD"), which scrubs SO₂ from the plant's emissions.

22 Q. HOW DOES SAMMIS COMPLY WITH THE 2010 SO₂ STANDARD?

- 1 A. There are two principal ways. First, the coal procured for Sammis ensures these emission
 2 limits are achieved when scrubbed by the WFGD in accordance with good engineering
 3 practices. Second, semi-annual reports are submitted to the U.S. EPA and Ohio EPA
 4 documenting emission rates.
- 5 Q. IS SAMMIS POSITIONED TO ADDRESS FUTURE SO₂ EMISSIONS LIMITS?
- 6 A. Yes. Sammis has existing capability to make further reductions in SO₂ emission rates to accommodate changes to the 1-hour SO₂ NAAQS.
- 8 E. <u>Ozone NAAQS</u>
- 9 Q. WHAT IS THE CURRENT STATUS OF THE OZONE NAAQS?
- 10 A. The current status of the ozone NAAQS requires a concentration not to exceed 75 ppb.
- The standard is measured using the annual fourth-highest daily maximum 8-hour
- concentration, averaged over 3 years. Ozone is created by the reaction of oxides of
- nitrogen ("NOx") and volatile organic compounds ("VOCs") in the presence of sunlight.
- 14 Thus, state implementation plans seek to limit NOx emissions in non-attainment areas in
- order to comply with the ozone NAAQS.
- 16 Q. ARE SAMMIS, KYGER CREEK AND CLIFTY CREEK SUBJECT TO
 17 EXISTING MANDATES RELATED TO THE OZONE NAAQS IMPOSED IN
 18 NON-ATTAINMENT AREAS?
- 19 A. No. Under the existing standards, Sammis, Kyger Creek and Clifty Creek are not
 20 required to make further NOx reductions. Moreover, there is no mandate to install
 21 emissions controls related to the ozone NAAQS.
- Q. HOW IS MAINTAINING DAVIS-BESSE AS A ZERO EMISSIONS ENERGY SOURCE RELATED TO OHIO'S COMPLIANCE WITH THE OZONE NAAQS?

A. Except for turbines at Davis-Besse, which are seldom used, Davis-Besse's power generation is not a source of NOx or VOCs. If Davis-Besse is retired, its output likely would be replaced by power generated by natural gas-fired plants, which emit NOx and VOCs. Thus, maintaining Davis-Besse as a zero emissions energy source helps Ohio reduce emissions of ozone precursors.

6 F. CSAPR

A.

7 O. WHAT IS THE CURRENT STATUS OF CSAPR?

The U.S. EPA finalized CSAPR on July 6, 2011. The rule requires states to improve air quality by reducing power plant emissions that contribute to ozone and/or fine particle pollution in other states. Litigation stayed the implementation of CSAPR until 2014, when the U.S. Supreme Court issued an opinion reversing an August 21, 2012 D.C. Circuit decision that had vacated CSAPR. The D.C. Circuit then approved a U.S. EPA request to lift the CSAPR stay and toll the CSAPR compliance deadlines by three years. Accordingly, CSAPR Phase 1 implementation took effect on January 1, 2015, with Phase 2 beginning in 2017.

16 Q. WHAT ARE THE PHASE 1 AND PHASE 2 REQUIREMENTS UNDER CSAPR?

17 A. CSAPR is a market-based system that issues allowances to offset emissions of SO₂ and
18 NOx emissions with individual state caps on emissions. Phase 1 and Phase 2 establish
19 state-level requirements to reduce annual emissions of SO₂, NOx, and ozone season NOx
20 from 2005 levels, with Phase 2 requiring greater reductions than Phase 1.

Q. WHAT IS SAMMIS'S PLAN TO COMPLY WITH CSAPR?

1	A.	The state of Ohio issues emissions allowances to all fossil-fueled electric generators in
2		the state, including Sammis, to be used for CSAPR compliance. [BEGIN
3		CONFIDENTIAL] [END
4		CONFIDENTIAL] Sammis will not require any additional capital expenditures, e.g.,
5		installation of additional emissions controls, to comply with CSAPR. Sammis may from
6		time to time purchase additional allowances, but such costs are expected to be
7		immaterial. Moreover, the expected costs are included in the Companies' cost forecast.

III. PROPOSED ENVIRONMENTAL REGULATIONS

A. <u>THE CLEAN POWER PLAN</u>

10 O. WHAT IS THE CLEAN POWER PLAN?

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11 A. The Clean Power Plan ("CPP") proposes to regulate CO₂ emissions under Section 111(d) 12 of the Clean Air Act. The U.S. EPA estimates that the CPP will reduce national power 13 sector emissions 30% below 2005 levels in 2030. The CPP requires states to develop 14 plans to meet state-specific CO₂ state average emission rate standards.

15 Q. HOW DID U.S. EPA DEVELOP EACH STATE'S CO₂ AVERAGE EMISSIONS RATE STANDARD?

- 17 A. The Clean Air Act requires U.S. EPA to define the Best System of Emission Reductions
 18 ("BSER") to develop emission performance standards. In its proposal, U.S. EPA defined
 19 BSER as a combination of measures available to states which it refers to as "Building
 20 Blocks." In assessing each state's options for reducing emissions from the state's 2012
 21 fossil emission rate, U.S. EPA used assumptions for each of four Building Blocks:
 - Building Block #1: An assumed 6% average savings from unit-level efficiency improvements for coal-fired units (4% through best practices, 2% from new equipment);

- Building Block #2: Redispatch/fuel switching, assuming combined cycle plants can run to 70% on average to displace coal-fired generation;
 - Building Block #3: Renewable energy and nuclear, based on an assumed growth factor for renewable energy and 5.8% of existing nuclear generation; and
 - Building Block # 4: Energy efficiency potential, based on savings of up to 1.5% per year, inclusive of existing state energy efficiency program requirements.¹

The proposed 111(d) rule, as modeled by U.S. EPA, reflects a rate-based approach,
whereby the average emission rate of a state must be less than or equal to the BSER
target developed for that particular state. U.S. EPA developed a final BSER 2030 target
CO₂ emission rate for Ohio of 1,338 lb/MWh.

11 Q. HOW WILL OHIO COMPLY WITH THE CLEAN POWER PLAN?

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12 A. Ohio likely will wait to see what the final form of the Clean Power Plan will be, which 13 could be affected by litigation concerning the plan's legality, before determining what 14 form a state compliance plan would take. Under the CPP as proposed, each state has 15 flexibility in determining how it will meet its CO₂ state average emission rate standard.

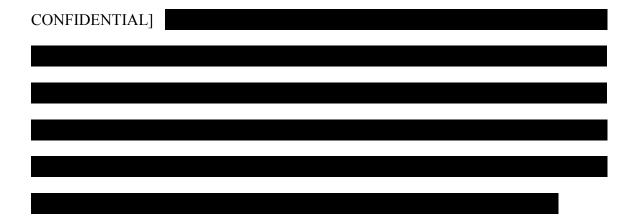
16 Q. CAN SAMMIS HELP OHIO MEET THE REQUIREMENTS OF THE PROPOSED CPP?

18 A. Yes. Sammis is a valuable asset for Ohio's compliance with the proposed Clean Power
19 Plan, through the term of the Economic Stability Program and beyond, according to U.S.
20 EPA's modeling for the proposed rule.

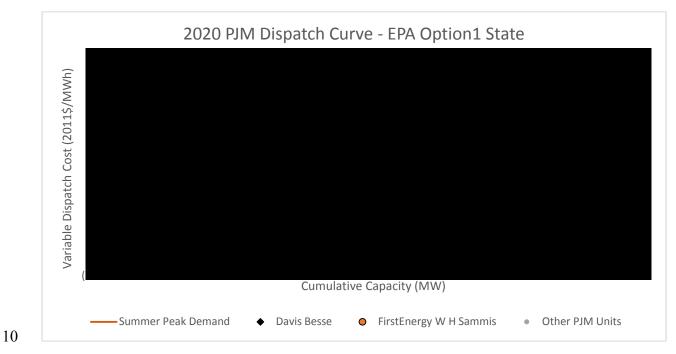
21 Q. HOW CAN SAMMIS HELP OHIO MEET THE REQUIREMENTS OF THE PROPOSED CPP?

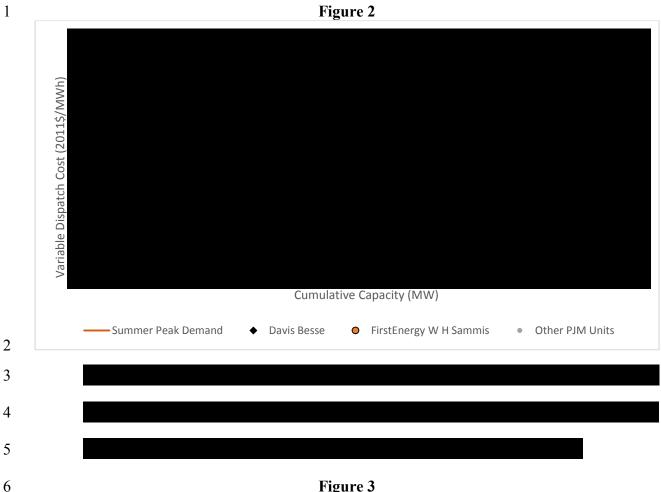
¹ Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Generating Units, 79 FR 34830, § VI (June 18, 2014) (hereinafter "CPP Proposed Rules"), available at https://www.federalregister.gov/articles/2014/06/18/2014-13726/carbon-pollution-emission-guidelines-for-existing-stationary-sources-electric-utility-generating.

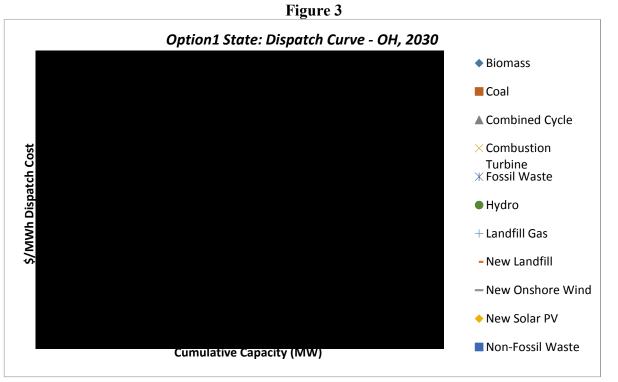
A. The operation of Sammis, combined with investment in the other building blocks,
 represents Ohio's least-cost strategy for complying with the Clean Power Plan. [BEGIN



9 Figure 1



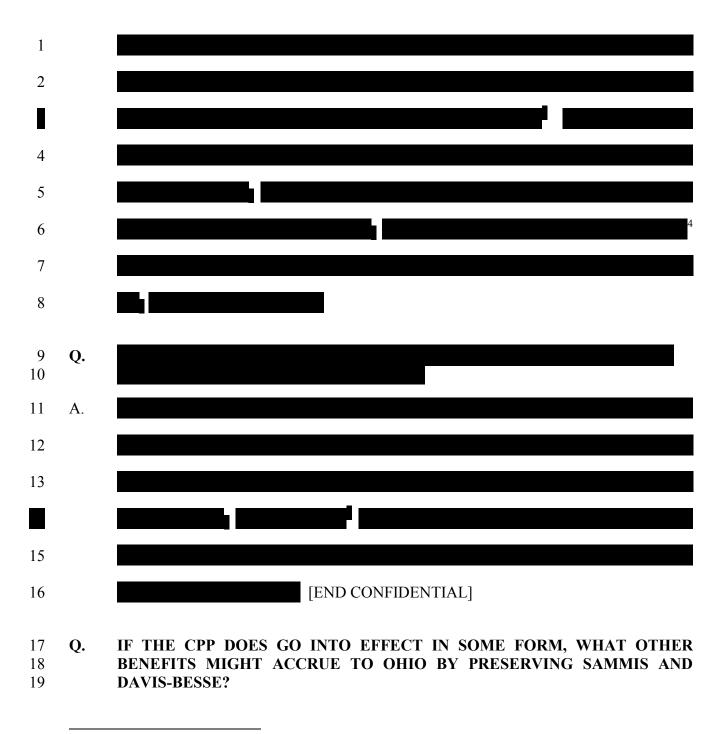




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		Figure 4
		Annual Average Capacity Factor (%): EPA Option1 State Modeling ² 2016 2020 2025 2030 2040 2050
		W H Sammis: 1
		W H Sammis: 2
		W H Sammis: 3
		W H Sammis: 4 W H Sammis: 5
		W H Sammis: 6
		W H Sammis: 7
		W H Sammis: Plant Average
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11		[END CONFIDENTIAL]
12 13	Q.	WHAT IMPACT WOULD THE RETIREMENT OF DAVIS-BESSE HAVE ON CARBON EMISSIONS IN OHIO?
14	A.	Carbon emissions in Ohio likely would increase if Davis-Besse is retired. [BEGIN
15		CONFIDENTIAL]

² EPA Option 1 State IPM Model Outputs:

 $\underline{http://www.epa.gov/airmarkets/documents/ipm/Option\%201\%20State.zip.}$



³ See CPP Proposed Rules, § VI.C.2.

⁴ Standards of Performance for Greenhouse Gas Emissions From New Stationary Sources: Electric Utility Generating Units (Jan. 8, 2014), available at https://www.federalregister.gov/articles/2014/01/08/2013-28668/standards-of-performance-for-greenhouse-gas-emissions-from-new-stationary-sources-electric-utility.

⁵ EPA projects credit prices (in 2011\$/ton) of [BEGIN CONFIDENTIAL] [END CONFIDENTIAL] See http://www.epa.gov/airmarkets/powersectormodeling/docs/Option%201%20State.zip.

1 A. Ohio is a net importer of electricity, and its reliance on imports from other states has been 2 growing recently because U.S. EPA mandates and economic factors have caused a 3 number of Ohio coal units to retire. Because Ohio is a net importer of electricity, 4 reliability in Ohio is vulnerable to decisions made by other states when implementing 5 their CPP compliance plans. In particular, states such as Pennsylvania that are net 6 exporters could achieve compliance, in part, by reducing their total generation and 7 eliminating these exports. Indeed, according to the U.S. EPA modeling for the CPP, [BEGIN CONFIDENTIAL] 8 9 10 11 12 13 14 15 [END CONFIDENTIAL]

B. <u>1-Hour SO₂ NAAQS Activity</u>

17 Q. WHAT IS THE SO₂ DATA REQUIREMENTS RULE?

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A.

In 2014, the U.S. EPA proposed the SO₂ Data Requirements Rule ("DRR") that would require states to gather and submit to the U.S. EPA additional information characterizing SO₂ air quality in areas with larger sources of SO₂ emissions. The U.S. EPA intends to use this information to inform the designations of these areas. In the SO₂ DRR, as proposed, states would have the choice to use either monitoring or modeling to

1	characterize S	SO_2 air	quality	in th	e vicinity	of	priority	SO_2	sources,	and	submit	the
2	modeling and/	or moni	toring re	sults	to the U.S	. EF	A on the	sche	dule spec	ified	in the ru	ıle.

In March 2015, the U.S. EPA agreed to a consent decree requiring it to complete area designations according to a consent decree schedule. Among other things, the consent decree directs the U.S. EPA to designate by no later than July 2, 2016 areas that contain any stationary source that according to the U.S. EPA's Air Markets Database either emitted more than 16,000 tons of SO₂ in 2012 or emitted more than 2,600 tons of SO₂ and had an annual average emission rate of at least 0.45 lbs SO₂/mmBtu in 2012 and that had not been announced (as of March 2, 2015) for retirement. Sammis is not such a stationary source.

11 Q. DO YOU ANTICIPATE THAT OHIO WILL IMPOSE MORE STRINGENT 12 EMISSIONS STANDARDS ON SAMMIS FOR SO₂ IF REQUIRED TO COMPLY 13 WITH FUTURE 1-HOUR SO₂ NAAQS?

A. No. Based on our discussions with Ohio EPA, it is unnecessary to impose more stringent emission standards on Sammis as part of its implementation of the proposed 1-hour SO₂ NAAQS.

C. Ozone NAAQS Revisions

18 Q. WHAT ACTION IS THE U.S. EPA TAKING REGARDING THE OZONE NAAQS?

A. The U.S. EPA may reduce the ozone NAAQS below 75 ppb. On Nov. 25, 2014, it proposed to set the 8-hour ozone standard within a range of 65 to 70 ppb and sought comment on levels as low as 60 ppb. The U.S. EPA currently is reviewing comments regarding this proposed standard. Once a final decision is issued, the states would have time to develop and implement plans to meet revised standards. EPA projections show

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- the vast majority of U.S. counties would meet the proposed standards by 2025 just with the rules and programs now in place or under way.
- 3 Q. WILL JEFFERSON COUNTY, OHIO LIKELY BE DESIGNATED AS A NON-4 ATTAINMENT AREA UNDER THE REVISED OZONE STANDARD?
- 5 A. No. Ozone levels have been trending downward as the result of multiple programs to
- 6 limit ozone precursors. Non-attainment is based on the fourth highest average of eight-
- 7 hour readings for ozone over a three-year period. Ozone measured 71 ppb in
- 8 Steubenville using the fourth highest three-year average for 2011-13, but has fallen to 66
- 9 ppb using the fourth highest three-year average for 2013-15. This trend should continue.
- Notably, the monitor is upwind of Sammis, which means that Sammis is not a direct
- 11 contributor to any ozone issues measured in Jefferson County.
- 12 Q. WHAT IMPACT WOULD AN OZONE STANDARD IN THE 65-70 PPB RANGE HAVE ON SAMMIS?
- 14 A. I do not believe that a standard in this range would have any direct impact on Sammis
- because the state implementation plan would only address other sources of NOx and
- VOCs. NOx would be addressed as a transport issue through a future change in the
- 17 CSAPR regulation, i.e., through allowances. If needed, Sammis can purchase
- allowances. Sammis would not need to make additional capital investments to comply

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- with an ozone standard on the 65-70 ppb range.
- 20 IV. <u>CONCLUSION</u>

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- 21 Q. DOES THIS CONCLUDE YOUR TESTIMONY?
- 22 A. Yes. I reserve the right to supplement my testimony.

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Summary: Testimony Supplemental Testimony of Raymond L. Evans electronically filed by Mr. Nathaniel Trevor Alexander on behalf of Ohio Edison Company and The Cleveland Illuminating Company and The Toledo Edison Company