

**BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO**

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

**INITIAL POST HEARING BRIEF
BY
MATERIAL SCIENCES CORPORATION**

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I. Introduction

On August 4, 2014, Ohio Edison Company (“OE”), The Cleveland Electric Illuminating Company (“CEI”), and Toledo Edison Company (“TE”), collectively referred to as the “Companies,” filed with The Public Utilities Commission of Ohio (“Commission” or “PUCO”) an Application for authority to establish a Standard Service Offer (“SSO”) pursuant to ORC 4928.143 in the form of an Electric Security Plan (“ESP IV”) to become effective upon termination of the Companies current ESP III on May 31, 2016.¹

Thereafter, the Companies and signatory parties entered into stipulations related to ESP IV, collectively referred to as the “Prior Stipulations” constituting: the Stipulation and Recommendation filed with the Commission on December 22, 2014, as modified by the Stipulation and Recommendation Errata filed January 21, 2015; the Supplemental Stipulation and Recommendation filed on May 28, 2015; and the Second Supplemental Stipulation and Recommendation filed on June 4, 2015.² Further, the Companies, the Commission Staff, and signatory parties filed a Third Supplemental Stipulation with the Commission on December 1, 2015.³

Evidentiary hearings on the Application and Prior Stipulations began August 31, 2015 and ended October 29, 2015, with additional hearings held from January 14, 2016 through January 22, 2016 on matters involving the Third Supplemental Stipulation.

II. Electric Security Plan IV

1. Powering Ohio’s Progress/Economic Stability Program

¹ Application, Companies’ Ex. 1, Pg. 1-2

² Stipulation and Recommendation, Companies’ Ex. 2; Stipulation and Recommendation Errata, Companies’ Ex. 2a; Supplemental Stipulation and Recommendation, Companies’ Ex. 3; and Second Supplemental Stipulation and Recommendation, Companies’ Ex. 4

³ Third Supplemental Stipulation Companies’ Ex. 154

The Powering Ohio's Progress initiatives intend to stabilize customer rates, promote wholesale and retail competitive markets, provide reasonably priced electricity based on market prices whether or not customers shop for generation, and support Ohio's economic development and job retention efforts, along with significant other attributes to advance state policies listed as guidelines under ORC 4928.02.⁴

The Economic Stability Program addresses long-term volatility in current and forecasted market prices paid by customers to receive retail electric service; the retirements of baseload generation resulting in a generation mix of plants incapable of continuous operation especially during grid stress; and the retirements of nuclear and baseload coal generation plants resulting in a generation mix dominated increasingly by natural gas generation.⁵

2. The Economic Stability Program Provides for Ohio Based Solutions.

a. FES' Plants Financially Affected by Wholesale Price Decreases

The economic viability of the Davis Besse and Sammis plants (collectively referred to at times as the "Plants") appears in doubt because of historic low prices and revenue insufficiency for FES to continue operating the plants and make the necessary investments. Likewise, the FES 4.85 % output in the Clifty Creek and Kyger Creek plants (collective referred to at times as the "OVEC Plants") subject to same market conditions and stresses as the Davis Besse and Sammis plants.⁶

Even so, the generation costs at the Sammis coal units reasonably compare to existing regulated coal-fired generation units with similar level of outages, costs, and projected

⁴ Application, Companies' Ex. 1, Pg. 1-2

⁵ Strah Direct Test., Companies' Ex.13, Pg. 4, LN 4-14

⁶ Moul, Companies' Witness, Vol. X, Tr. Pg. 2184, LN 5-15; Pg. 2185, LN 1-13

expenditures. Likewise, Davis-Besse compares favorably to similar nuclear facilities based on industry data used to determine reasonable cost levels for outages, fuel, and labor to generate MWh consistent with generally accepted practices used by a significant portion of the electric utility industry.⁷

All customers of the Companies substantially benefit because base load coal and nuclear generation assets need preservation to promote retail supply and reliability, along with fuel diversity to maintain the appropriate generation mix.⁸

The 2007-2009 “Great Recession” in 2007-2009 dramatically lowered electric prices due to significantly reduced demand, according to Company witness Rose.⁹ Demand Resources depressed capacity prices when cleared into the PJM capacity market because treated as interruptible load in use only for 60 hours per year.¹⁰ The wholesale market capacity prices for electricity became lower from unexpected decreases in Natural Gas Prices partly because of more supply.¹¹ Lower capital and financing costs reduced costs to build new natural gas fueled power plants. In turn, lower new capacity costs in turn lowered electric capacity prices.¹² Further, capacity prices depressed because PJM tariffs allowed power imports without requiring physical deliveries.¹³ Finally, the variable costs to produce electrical energy dropped because environmental regulations lowered allowance prices almost to zero for SO₂ and NO_x.¹⁴

b. FES’ Plants Affected by Improperly Valued Diversity

⁷ Ruberto Direct Test., Companies’ Ex. 33, Pg. 5, LN. 7-15

⁸ Ruberto Direct Test., Companies’ Ex. 33, Pg. 8, LN 16-19

⁹ Rose, Direct Test., Companies’ Ex. 17, Pg. 14, LN 10-16; Pg. 15, LN 1-2

¹⁰ Rose, Direct Test., Companies’ Ex. 17, Pg. 15, LN. 3-8

¹¹ Rose, Direct Test., Companies’ Ex. 17, Pg. 16, LN 6-15; Pg. 17, LN 1-2

¹² Rose, Direct Test., Companies’ Ex. 17, Pg. 17, LN 9-12

¹³ Rose, Direct Test., Companies’ Ex. 17, Pg. 17, LN 13-17

¹⁴ Rose, Direct Test., Companies’ Ex. 17, Pg. 17, LN 18-21

Under the Economic Stability Program, diversity of supply benefits the Companies' retail customers by preventing before economically necessary retirements of the Sammis and Davis Besse plants. According to Companies' witness Makovich, the probability of premature retirements still exists because market cash flows inadequately compensate for the value of diversity; likewise, the value of diversity not properly internalized in current power plant decision making.¹⁵ For instance, the PJM market design that ensures reliability designates the lowest cost capacity comes from building a peaking unit even though the power supply portfolio not entirely made up of peaking technologies.¹⁶

Clearly, the "right kind of power" needed to efficiently supply customers at lower power prices and less variable monthly power bills. Missing money results from inherently flawed market and environmental policies where under power prices cleared short of covering the average total cost of efficient power supply. Uneconomic retirements result from cash flows disproportionately affecting cycling and base load power plants. Premature retirements in turn reduce the fuel and technological diversity needed in the power supply portfolio to benefit consumers.¹⁷

The missing money root problems inherently begin with not delivering power generation technologies at high enough prices in the long run to balance the demand and supply. Also, environmental regulations unintentionally imposed upon the power supply suppresses energy market prices. Both problems result in persistent gaps between market prices of energy and the average total costs.¹⁸

¹⁵ Makovich, Supplemental Test., Companies' Ex. 42, Pg.3, LN 4-11

¹⁶ Makovich, Supplemental Test., Companies Ex. 42, Pg.3, LN 11-17

¹⁷ Makovich, Supplemental Test., Companies' Ex. 42, Pg.3, LN 17-23 ; Pg. 4, LN 1-3

¹⁸ Makovich, Supplemental Test., Companies' Ex. 42, Pg. 6, LN 2-8

As in other markets, PJM market-based cash flows for energy and capacity are *chronically* and artificially too low to cover the costs of the power supply portfolio used to deliver reliable and efficient electric service. The missing money problem further results from the competitive markets' failure to balance demand and supply at high enough market-clearing prices to fully support the cost of supply with the desired reliability level. Cost effective retirements and replacements of power plants only occur when continued cost of operations exceed replacement costs.¹⁹

The Economic Stability Program promotes fuel diversity and certainty for Ohio's retail customers through the Rider RRS mechanism to achieve predictable and stable revenues needed to continuously operate the Plants and the OVEC Plants.²⁰

Rider RRS revenues above that needed to cover avoidable costs provide the financial viability needed to ensure reliable operation and return value to shareholders.²¹ The Companies through its planned purchases and re-sale of generation from the Plants and the OVEC Plants under the Economic Stability Program via Rider RRS expect continuous operation (avoid closure) of the Plants and the OVEC Plants, thereby promoting economic vitality within their service territories and within Ohio.²²

c. FES' Plants Needed for Reliability and Supply Diversity

The Economic Stability Program provides the certainty needed for investment in Ohio plants to maintain fuel-diverse base load generation critical to system reliability.²³ FES Plants

¹⁹ Makovich, Supplemental Test., Companies' Ex. 42, Pg. 6, LN 10-16

²⁰ Moul, Direct Test., Companies' Ex 28, Pg. 2, LN 24, Pg. 3, LN 1-2

²¹ Moul, Supplemental Test., Companies' Ex. 29, Pg. 4, LN 9-18

²² Ruberto, Direct Test., Companies' Ex. 33, Pg. 10, LN 5-7

²³ Moul, Supplemental Test. Companies' Ex. 29, Pg. 6, LN 13-19

and OVEC Plants needed for reliability and supply diversity, as Ohio cannot solely rely on PJM to maintain critical generation resource diversity.²⁴

The owners of generation plants still must decide the level of investments in their existing plants.²⁵ The PJM Reliability Must Run (“RMR”) process fails to secure the financial viability of the Plants. Upon receipt of deactivation notices, PJM initiates a reliability analysis to identify the transmission upgrades needed to compensate for plant losses. Voluntarily accepted RMR contracts compensate those generators until new transmission upgrades completed; however, during that upgrade period, inadequately support given to generators to effectively operate their plants.²⁶

Further, RMR contracts do not provide viable alternatives from an economic or a reliability perspective. Customers pay the costs for new transmission, but without the stability and economic benefits of generation from base load plants located in close proximity to load. Likewise, Companies’ customers financially benefit from the Economic Stability Program, but not financially from the RMR.²⁷

Unlike base load coal and nuclear plants, natural gas plants, without significant supplies of stored fuel onsite, rely on a “just-in-time” system of fuel delivery requiring problem-free scheduling and operations involving thousands of miles of gas pipelines, gas storage facilities, and effective gas “gathering” processes. This complex and interrelated gas delivery system ensures reliable operation only for those customers near natural gas plants with contracts for “firm” capacity on the pipelines, gas storage systems, and locked-in commodity supply. Construction of an adequate pipeline infrastructure takes time and tremendous monetary

²⁴ Moul, Supplemental Test., Companies’ Ex. 29, Pg. 5, LN 11-18

²⁵ Moul, Supplemental Test., Companies’ Ex. 29, Pg. 5-6, LN 22-23; Pg. 6, LN 1-4

²⁶ Moul, Supplemental Test., Companies’ Ex. 29, Pg. 7, LN 1-7

²⁷ Moul, Supplemental Test. Companies’ Ex. 29, Pg. 7, LN 7-13

resources. Even natural gas plants with firm contracts for fuel potentially interrupted due to mechanical failure on the pipeline system.²⁸

Renewable resources run intermittently without providing ancillary services capable of serving as the backbone of the electric system because most of those planned assets in the PJM queue never go into service to generate megawatts. Further, the Plants not replaced in-kind unless the new plants sited in the same proximity to provide similar quality of megawatts as before with onsite fuel supply.²⁹

Under the Economic Stability Program, FES operated plants in Ohio provide resource diversity, fuel diversity, and on-site fuel supply. FES fully recognizes, once retired, these plants very costly and difficult (if not impossible) to restart.³⁰ Retirements of plants result in customers paying significantly more for energy because of needed transmission upgrades, and eventually for constructed new base load plants, along with capacity imports from other states resulting in higher congestion costs.³¹ Ohio net imported electricity from other states for some time.³²

The Economic Stability Program stabilizes and supports diversity of resources (e.g., coal, nuclear, gas, wind, solar) to comprise the generation fuel mix.³³ Likewise, diversity of assets mixes assets of different classes. (e.g., baseload, intermediate, peaking) ³⁴ Diversified coal and nuclear assets provide affordable and reliable baseload power supply with critical operational and retail reliability benefits, while gas assets take advantage of low-cost, locally-supplied natural gas; and renewables offer a no-fuel-cost way supplement to the generation mix.³⁵

²⁸ Moul, Supplemental Test., Companies' Ex. 29, Pg. 7, LN 23; Pg. 8, LN 1-9

²⁹ Moul, Supplemental Test., Companies' Ex. 29, Pg. 8, LN 10-19

³⁰ Moul, Direct Test., Companies' Ex. 28, Pg. 5, LN 3-6

³¹ Moul, Direct Test., Companies' Ex. 28, Pg. 5, LN 8-18

³² Mikkelsen, Companies Witness, Tr. I, pg. 148, LN 1-18

³³ Moul, Direct Test., Companies' Ex. 28, Pg. 6, LN 6-8

³⁴ Moul, Direct Test., Companies' Ex. 28, Pg. 6, LN 10-12

³⁵ Moul, Direct Test., Companies' Ex. 28, Pg. 6, LN 15-19

Resource diversity protects customers from over-reliance on any one type of fuel, and shields retail customers against volatile and increasing gas prices, along with volatile and increasing gas prices as during the Polar Vortex situation caused by highly constrained gas resources. Resource diversity protects also against interruptions in fuel supply for a given class of generating assets. Conversely, intermittent renewables, because of the interruptible nature of their fuel supplies, not counted on for base load generation.³⁶

The Plants critical to maintain grid reliability and other integrated variable resources such as VARS, voltage, and other vital grid support. Intermittent resources cannot provide these services.³⁷ Davis-Besse also an important zero carbon resource for Ohio to meet its U.S. EPA's carbon reduction standards.³⁸ The U.S. EPA proposes that six percent of each state's historical nuclear capacity remains in operation. Ohio lose 908 MW of carbon free generation if Davis Besse retired.³⁹

Resource diversity affected by additional retirements of base load coal and nuclear plants which further expose the Ohio market to more risks because lower priced gas plants determine marginal clearing prices even though those plants rely on interruptible sources of gas fuel supply. For now, the construction of more gas-fired units slowed by currently stressed gas infrastructure.⁴⁰

Compared to baseload coal and nuclear operating plants, gas-fired units operate as "just-in time" interruptible fuel supply, while solar resources in Ohio generate the equivalent of only 233 MWh per day.⁴¹ As resource diversity diminishes, Ohio becomes more dependent on

³⁶ Moul, Direct Test., Companies' Ex. 28, Pg. 7, LN 5-21; Pg. 8, LN 1-21

³⁷ Moul, Direct Test., Companies' Ex. 28, Pg. 8, LN 15-18

³⁸ Moul, Direct Test., Companies' Ex. 28, Pg. 8, LN 19-21

³⁹ Moul, Direct Test., Companies' Ex. 28, Pg. 12, LN 12-16

⁴⁰ Moul, Direct Test., Companies' Ex. 28, Pg. 9, LN 3-14; Pg. 10, LN 4-7

⁴¹ Moul, Direct Test., Companies' Ex. 28, Pg. 9, LN 20-21; Pg. 10, LN 1-3

intermittent renewable generation in need of back-up generation, and new transmission lines, to produce electricity about 30 percent of the time, along with voluntary demand response curtailments by customers.⁴² These gas fire units cannot replace the Plants and OVEC Plants without new plants approximately situated as now and provide similar quality of megawatt with onsite fuel supply.⁴³

d. FES' Plants Comply with Environmental Regulations.

Development of environmental programs and on-going strategies needed to comply with laws and regulations for facilities owned or operated by subsidiaries of FirstEnergy Corp., including generating plants owned by subsidiaries of FES and facilities of the Companies.⁴⁴ Compliance plans apply to the Plants and to FES OVEC Plants.⁴⁵

Companies' witness Evans confirms compliance with all applicable environmental regulations with further plans to comply with pending environmental regulations. Compliance required for multiple existing and pending regulations administered by the U.S. EPA and Ohio EPA, including the Cooling Water Intake Structures at Existing Facilities rule ("316(b)"), the Disposal of Coal Combustion Residuals ("CCR") rule, the Effluent Limitations Guidelines and Standards ("1 ELG"), the National Ambient Air Quality Standards ("NAAQS") for sulfur dioxide ("SO₂") and ozone, and the Cross State Air Pollution Rule ("CSAPR").⁴⁶

1. 316 (b)

The U.S. EPA issued over the years a number of proposed and final regulations to implement Section 316 (b) of the FWPCA addressing "cooling water intake structures" as to

⁴² Moul, Direct Test., Companies' Ex. 28, Pg. 9, LN. 11-14

⁴³ Moul, Supplemental Test., Companies' Ex. 29, Pg. 7, LN 19-23; Pg. 8, LN 1-19

⁴⁴ Evans, Supplemental Test., Companies' Ex. 46, Pg. 1, LN. 20-24; Pg. 2, LN 1

⁴⁵ Evans, Supplemental Test., Companies' Ex. 46, Pg. 2, LN 8-16

⁴⁶ Evans Supplemental Test., Companies' Ex. 46, Pg. 2, LN 18-23; Pg. 3, LN 1-3

location, design, construction, and capacity of structures. This final rule defines the processes for determining cooling water intake best available technology, with an effective date of October 14, 2014. The pending version required in 2015 that Sammis document intake and screen design data. Also, aquatic studies over up to three years undertaken to determine in the vicinity of Sammis whether the intake structure and screens impact aquatic species. Thereafter, Sammis will comply with any further requirements.⁴⁷

2. CCR rule

The U.S. EPA issued CCR final rule on December 19, 2014 provides comprehensive requirements for safe disposal of coal combustion residuals (i.e. coal ash) from coal-fired power plants. The rule establishes technical requirements for CCR landfills and surface impoundments under Subtitle D of the Resource Conservation and Recovery Act (“RCRA”), the nation’s primary law for regulating solid waste. Disposed CCR continued subject to regulation as a nonhazardous waste.⁴⁸

3. ELG Regulations

The U.S. EPA first promulgated the Steam Electric Power Generating effluent guidelines and standards in 1974. The ELG regulations cover wastewater discharges from power plants operating as utilities. The Plants currently comply with ELG regulations.⁴⁹

4. 1-Hour SO₂ NAAQS

Under the Clean Air Act (“CAA”), the U.S. EPA sets NAAQS for six criteria pollutants, including sulfur dioxide (“SO₂”). Ohio required by the CAA to develop a “state implementation

⁴⁷ Evans Supplemental Test., Companies’ Ex. 46, Pg. 3, LN 18-23; Pg. 4, LN 1-2, LN 5-11

⁴⁸ Evans Supplemental Test., Companies’ Ex. 46, Pg. 4, LN 18-23; Pg.5, LN 3-5

⁴⁹ Evans Supplemental Test., Companies’ Ex. 46, Pg. 5, LN 11-13; LN 16-17

plan” (“SIP”) describing how to attain and maintain the NAAQS. In 2010, the U.S. EPA established a revised primary SO₂ standard at 75 parts per billion (“ppb”), which is met at a monitoring site when the 3-year average at the 99th percentile of daily maximum 1-hour concentrations does not exceed 75 ppb. In 2013, based on certified ambient air quality monitoring data for the years 2009-2011, the U.S. EPA 2 designated 29 areas in 16 states as nonattainment for the 2010 SO₂ standard.⁵⁰

A nonattainment area for the 2010 SO₂ Standard Mean refers to an area, typically a county or sub-county, whose SO₂ ambient air quality monitored readings exceed the criteria of the 2010 SO₂ Standard. The Sammis, Kyger Creek, and Clifty Creek plants are not in a non-attainment area subject to compliance requirements under Ohio’s or Indiana’s 11 SIPs for the 2010 SO₂ Standard. Notably, although an area of Jefferson County, Ohio now designated as non-attainment, Sammis is not located in the non-attainment area and does not impact SO₂ emissions in that area (Sammis is down-wind of the non-attainment area). In developing its SIP, Ohio EPA chose not to model Sammis as part of the non-attainment area because not viewed as impacting the non-attainment area.⁵¹

The 2005 Consent Decree between the United States of America and Ohio Edison sets not to exceed SO₂ emission limits for each individual unit, and design efficiencies for the wet flue gas desulfurization systems (“WFGD”) used to scrub SO₂ from the Sammis plant’s emissions. Sammis complies because coal procured ensures emission limits met when scrubbed by the WFGD using good engineering practices. Also, semi-annual reports submitted to the US

⁵⁰ Evans Supplemental Test., Companies’ Ex. 46, Pg. 5, LN 20-24; Pg. 6, LN. 1-3

⁵¹ Evans Supplemental Test., Companies’ Ex. 46, Pg. 6, LN 6-7, 10-16

EPA and Ohio EPA to document emission rates. Sammis capable of further reductions in SO₂ emission rates to accommodate changes to the 1-hour SO₂ NAAQS.⁵²

5. Ozone NAAQS

The current ozone NAAQS requires a concentration not to exceed 75 ppb. The measured standard uses the annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years. Ozone created by reaction of oxides of nitrogen (“NO_x”) and volatile organic compounds (“VOCs”) in the presence of sunlight. State implementation plans seek to limit NO_x emissions in non-attainment areas to comply with the ozone NAAQS. The Sammis, Kyger Creek and Clifty Creek plants not subject to existing mandates related to Ozone NAAQS in non-attainment areas. Consequently, these plants not required to make further NO_x reductions. Moreover, there is no mandate to install emissions controls related to the ozone NAAQS.⁵³

Except for seldom used turbines, Davis-Besse’s power generation not a source of NO_x or VOCs. Davis Besse upon retirement likely replaced by power generated from natural gas-fired plants emitting NO_x and VOCs. Until retirement, continued use of Davis-Besse as a zero emissions energy source helps Ohio reduce emissions of ozone precursors.⁵⁴

6. 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

⁵² Evans Supplemental Test., Companies’ Ex. 46, Pg. 6, LN 18-21; Pg. 7, LN 1-4; LN 6-7

⁵³ Evans Supplemental Test., Companies’ Ex. 46, Pg. 7, LN 10-15, LN 19-21

⁵⁴ Evans Supplemental Test., Companies’ Ex. 46, Pg. 8, LN 1-5

toll the CSAPR compliance deadlines by three years. Accordingly, CSAPR Phase 1 implementation took effect on January 1, 2015, with Phase 2 beginning in 2017.⁵⁵

CSAPR is a market-based system that issues allowances to offset emissions of SO₂ and NO_x emissions with individual state caps on emissions. Phase 1 and Phase 2 establish state-level requirements to reduce annual emissions of SO₂, NO_x, and ozone season NO_x from 2005 levels, with Phase 2 requiring greater reductions than Phase 1.⁵⁶

The state of Ohio issues emissions allowances to all fossil-fueled electric generators in the state, including Sammis, to be used for CSAPR compliance. Sammis will not require additional capital expenditures, e.g., installation of additional emissions controls, to comply with CSAPR. Sammis may from time to time purchase additional allowances, but such costs expected immaterial.⁵⁷

7. THE CLEAN POWER PLAN

The Clean Power Plan (“CPP”) intends to regulate CO₂ emissions under Section 111(d) of the Clean Air Act. The U.S. EPA estimates that the CPP will reduce national power sector emissions 30% below 2005 levels in 2030. The CPP requires states to develop plans to meet state-specific CO₂ state average emission rate standards.⁵⁸

The Clean Air Act requires U.S. EPA to define the Best System of Emission Reductions (“BSER”) to develop emission performance standards. In its proposal, U.S. EPA defined BSER as a combination of measures available to states, referred to as “Building Blocks.” In assessing

⁵⁵ Evans Supplemental Test., Companies’ Ex. 46, Pg. 8, LN 8-15

⁵⁶ Evans Supplemental Test., Companies’ Ex. 46, Pg. 8, LN 17-20

⁵⁷ Evans Supplemental Test., Companies’ Ex. 46, Pg. 9, LN 1-7

⁵⁸ Evans Supplemental Test., Companies’ Ex. 46, Pg. 9, LN 11-14

each state's options for reducing emissions from the state's 2012 fossil emission rate, U.S. EPA used assumptions for each of four Building Blocks summarized as:

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.⁵⁹

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. The U.S. EPA developed a final BSER 2030 target CO₂ emission rate for Ohio of 1,338 lb./MWh. Ohio likely will wait for the final form of the Clean Power Plan, since could be affected by litigation concerning the plan's legality, before determining the form its state compliance plan would take. The CPP, as proposed, gives flexibility to each state in determining how to meet its CO₂ state average emission rate standard.⁶⁰

Sammis is a valuable asset for Ohio's compliance with the proposed Clean Power Plan, through the term of the Economic Stability Program and beyond, according to U.S. EPA's modeling for the proposed rule.⁶¹ Combined with investment in the other building blocks, Sammis represents Ohio's least-cost strategy for complying with the Clean Power Plan.⁶²

⁵⁹ Evans Supplemental Test., Companies' Ex. 46, Pg. 9, LN 17-24; Pg. 10, LN 1-6

⁶⁰ Evans Supplemental Test., Companies' Ex. 46, Pg. 10, LN 7-15

⁶¹ Evans Supplemental Test., Companies' Ex. 46, Pg. 10, LN 18-20

⁶² Evans Supplemental Test., Companies' Ex. 46, Pg. 11, LN 1-3

Sammis and Davis Besse provide benefits under a CPP in effect because Ohio a net importer of electricity. U.S. EPA mandates and economic factors caused a number of Ohio coal units to retire. Reliability in Ohio vulnerable to decisions by other states when implementing their CPP compliance plans. In particular, states that currently net export electricity such as Pennsylvania could achieve compliance, in part, by eliminating these exports and reducing their total generation.⁶³

8. 1-Hour SO₂ NAAQS Activity

In 2014, the U.S. EPA proposed the SO₂ Data Requirements Rule (“DRR”) to require that states 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 characterize SO₂ air quality in the vicinity of 1 priority SO₂ sources, and submit the modeling and/or monitoring results to the U.S. EPA on the schedule specified in the rule.

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 which either emitted more than 16,000 tons of SO₂ in 2012, or emitted more than 2,600 tons of SO₂ with an annual average emission rate of at least 0.45 lbs SO₂/mmBtu in 2012 and (as of March 2, 2015) had not been announced for retirement. Sammis is not such a stationary source. Based on discussions with

⁶³ Evans Supplemental Test., Companies’ Ex. 46, Pg. 15, LN. 1-7

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.⁶⁴

9. Ozone NAAQS Revisions

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 issued, the states have time to develop and implement plans to meet revised standards. EPA projections show the vast majority of U.S. counties would meet the proposed standards by 2025 with the rules and programs now in place or under way.⁶⁵

Jefferson County, Ohio not likely designated as a non-attainment area under the revised ozone standards. Ozone levels now trend downward as result of multiple programs limiting ozone precursors. Non-attainment based on the fourth highest average of eight hour readings for ozone over a three-year period. Ozone measured 71 ppb in Steubenville using the fourth highest three-year average for 2011-13, but fell to 66 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 not a direct contributor to any ozone issues measured in Jefferson County.⁶⁶

An ozone standard in the 65-70 PPB range has no direct impact on Sammis because the state implementation plan would only address other sources of NO_x and VOCs. NO_x addressed as a transport issue through a future change in the CSAPR regulation, i.e., through allowances. If needed, Sammis purchase of allowances avoids additional capital investments to comply with an ozone standard on the 65-70 ppb range.⁶⁷

⁶⁴ Evans Supplemental Test., Companies' Ex. 46, Pg. 15, LN 18-22; Pg. 16, LN. 1-16

⁶⁵ Evans Supplemental Test., Companies' Ex. 46, Pg. 16, LN 20-24; Pg. 17, LN. 1-2

⁶⁶ Evans, Supplemental Test., Companies' Ex. 46, Pg. 17, LN 5-11

⁶⁷ Evans, Supplemental Test., Companies' Ex. 46, Pg. 17, LN 14-19

e. FES' Plants Closure Severely Impacts Ohio's Economy

Companies' witness Murley concluded from extensive analysis the FES Sammis and Davis Besse plants economically important to Ohio:

“Overall, the Plants are significant contributors to their respective regions' economies, as well as the Ohio economy, and their closure would deal a significant negative economic blow to both the regions around the Plants and the State of Ohio. The Plants provide high paying jobs with benefits to thousands of workers, support the regional and state economies with millions of dollars in vendor purchases each year, and benefit local governments and school systems through property tax payments. The continued operation of Sammis and Davis-Besse ensures a positive economic impact of \$634.1 million and \$487.5 million per year in Ohio respectively, while a closure of the Plants would cause an economic impact loss of \$634.1 million and \$469.2 million per year respectively. In total, the Plants combine to contribute a total of \$23.3 million in state and local taxes. The total Ohio economic impact associated with the Plants is \$1.12 billion each year, and the Plants directly and indirectly support thousands of jobs in Ohio. If the Plants were to retire, the vast majority of this beneficial economic activity would be lost, as detailed above, at both the regional and statewide levels.”⁶⁸

f. Closure of FES' Plants Impacts Transmission Siting and Costs

FES Plant closures impact transmission siting and costs. Transmission upgrades needed for real and reactive power to flow across the grid from existing and planned generation sources to load previously served by now retired plants. Reliability significantly impacted depending on located plant closures. System reinforcements needed to bridge deficiencies because the power system needs to withstand sudden, unexpected disturbances, overloads and voltage collapse.⁶⁹

Plant retirements in Ohio resulted in 38 separate transmission system upgrades to improve the flow of power between regions in support of system voltage, to alleviate thermal

⁶⁸ Murley, Supplemental Test., Companies' Ex. 35, Pg. 11, LN. 1-15

⁶⁹ Phillips, Supplemental Test., Companies' Ex. 39, Pg. 4, LN. 4-11

capacity constraints, and to alleviating transmission congestion. These projects cost approximately \$1 billion ultimately paid for by Ohio customers.⁷⁰

Study analysis shows required transmission upgrades at more than \$442 million in event Davis-Besse and Sammis retired as based on PJM's regional transmission expansion plan ("RTEP") 2019 base case model; the reliability pricing model ("RPM") 2017/18 base case model; and per-unit cost estimates.⁷¹

PJM used a "50/50" load forecast, representing a 50% chance of actual load being higher or lower. Load deliverability studies used a "90/10" load forecast, which represents a 10% chance of actual load being higher. PJM used per unit costs to approximate per mile costs to construct various transmission line projects.⁷²

Companies' witness Phillips upon adopting witness Cunningham testimony quantified the cost of additional transmission upgrades necessary based on already announced planned retirements, and assumed closure of the Davis-Besse and Sammis plants. After review of Mr. Cunningham's direct testimony and Exhibit GLC-1, Mr. Phillips accepted with minor adjustments the transmission impact study based on methodology used and conclusions correctly reached.⁷³

Mr. Cunningham conservatively estimated that total costs of the upgrades to address needs identified by the transmission impact study exceeded \$442 million. Witness Phillips adjusted that conservative estimate by: (1) reducing the costs of two terminal equipment upgrades; (2) using a different per mile cost estimates to re-conductor three of the 345 kV facilities; and (3) using a different multiplier for a fourth 345 kV facility. With these

⁷⁰ Cunningham adopted by Phillips, Direct Test., Companies' Ex.37, Pg. 3 LN 10-16, LN 19, 21

⁷¹ Cunningham adopted by Phillips, Direct Test., Companies' Ex.37, Pg. 4 LN 10-12

⁷² Cunningham adopted by Phillips, Direct Test., Companies' Ex.37, Pg. 4 LN 15-24 ;Pg. 5 LN 1-2

⁷³ Phillips, Supplemental Test., Companies' Ex. 39, Pg. 4, LN 2-10

adjustments, the conservative estimate became \$436.5 million for the total cost of the upgrades identified by the transmission impact study.⁷⁴

Removal of generating plants like Sammis or Davis-Besse from the transmission grid affects the real and reactive power flow across the grid, perhaps significantly impact system reliability, and often negatively impacts the ability of the power system to withstand sudden, unexpected disturbances.⁷⁵

Generators perform a necessary and key role in the real time operation of the system by providing real and reactive power which helps to alleviate reliability issues, such as thermal overloads, high/low system voltage and/ or excessive system voltage drops which may occur during normal conditions, planned outages and/or unplanned outages on the system.⁷⁶

Industry practice historically located system generation resources in close electrical proximity to the load centers. The System operator re-dispatched coal fired plants like Sammis to manage transmission constraints that occur on the system in real-time. The loss of Sammis and other coal fired units, however, deprive the system operator of a key tool to manage the transmission system, and re-dispatch reliability problems. Instead, a system operator must rely on system reconfiguration to remove lines or transformers from service, or undertake other emergency procedures such as load shedding.⁷⁷

The identified 38 separate transmission upgrades at an estimated cost to customers of approximately \$1 billion does not improve reliability in Ohio. System reliability entrusted to out-of-state generators sending power on not-yet-built transmission lines cause significant reliability and economic risks for Ohio as a large imported of power because insufficient generation located

⁷⁴ Phillips, Supplemental Test., Companies' Ex. 39, Pg. 4, LN 13-23

⁷⁵ Phillips, Supplemental Test., Companies Ex. 39, Pg. 5, LN 4-8

⁷⁶ Phillips, Supplemental Test., Companies' Ex. 39, Pg. 5, LN 17-21

⁷⁷ Phillips, Supplemental Test., Companies' EX. 39, Pg. 5 LN 24, Pg. 6 LN 1-10

in close electrical proximity to load. Data maintained by the Energy Information Administration shows that retirements of Ohio generation outpace added new Ohio capacity. PJM data disclosed 4,292 MW of Ohio coal generation deactivated since 2005, with another 1,925 MW of Ohio coal generation scheduled for deactivation later in 2015, while only 1,207 MW of natural gas generation placed into service in Ohio between 2005 and 2014.⁷⁸

As of December 2014, there is only a 14.6% historical probability that projects entered into the Feasibility Study phase go into service. Developers commonly withdraw generation projects from the PJM queue. Further, potentially in service natural gas generation lacks important qualities of base load nuclear and coal plants with significant on-site fuel supply to withstand extreme weather events and other interruptions of just-in-time fuel supply.⁷⁹

The transmission impact study conservatively estimate \$436.5 million in costs as a “best case scenario” (i.e. lower costs to customers) by assuming overloaded lines re-conducted.⁸⁰

Very likely, certain transmission lines need rebuild to install larger conductors or because of age or condition of the existing facilities. Rebuilt lines necessarily significantly increase the costs of transmission upgrades.⁸¹

The low end of the spectrum is \$436.5 million in costs. The other end of the spectrum, by assuming transmission upgrades consist of rebuilds instead of to re-conductor, increases estimated costs of upgrades increases to nearly \$1.1 billion. Assuming not necessary to build more expensive new facilities (e.g., new lines, new substations), actual costs of transmission

⁷⁸ Phillips, Supplemental Test., Companies’ Ex. 39, Pg. 6 LN 11-17, LN 20-22: Pg 7, LN 1-6

⁷⁹ Phillips, Supplemental Test., Companies’ Ex. 39, Pg. 7 LN 9-15

⁸⁰ Phillips, Supplemental Test., Companies’ Ex. 39, Pg. 7 LN 18-19

⁸¹ Phillips, Supplemental Test., Companies’ Ex. 39, Pg. 8, LN 3-6

upgrades necessary by retirements of Sammis and Davis-Besse falls between \$436.5 million and \$1.1 billion.⁸²

Plant retirements cause other transmission costs. Facilities upgrade requires removal of transmission from service for extended periods of time needed to re-conductor and/or rebuilding upgrades. Some or all of these outages result in transmission congestion (constraints) on the transmission system. Transmission congestion costs increase because PJM dispatches one or more of the generating units out of economic merit to keep transmission flows within the required limits.⁸³

Reliability impacted by removing transmission from service for necessary upgrades. The large number of facilities in need of upgrades requires simultaneously extended outages to complete within acceptable timeframes. These upgrade outages overlap with other construction/maintenance outages on the system which causes the transmission system greater stress, and greater risks of additional unplanned forced outages.⁸⁴

The least cost scenario, consisting entirely of re-conductor transmission lines, requires large number of facilities taken out of service at one time creating potential reliability risks and congestion costs. Conversely, new construction facility projects cause less stress and constraints on the transmission system.⁸⁵

PJM and transmission owners likely develop solutions that combine new facilities and re-conductor/rebuild existing facilities. As with the transmission projects necessitated by the retirements of approximately 2,400 MW of coal-fired power plants in Ohio between 2012 and 2015, the majority of projects were new construction projects (e.g., new lines, new transformers,

⁸² Phillips, Supplemental Test., Companies' Ex. 39, Pg. 8 LN 10-15

⁸³ Phillips, Supplemental Test., Companies' Ex. 39, Pg. 8 LN 18-23

⁸⁴ Phillips, Supplemental Test., Companies' Ex. 39, Pg. 9 LN 3-8

⁸⁵ Phillips, Supplemental Test., Companies' Ex. 39, Pg. 9 LN 11-17

new substations, and new capacitors). The inclusion of new facilities moves the cost of reliability away from the lower end of the cost spectrum and toward the higher end.⁸⁶

Schedule 12 of the PJM Open Access Transmission Tariff governs allocation of the costs of reliability-based transmission enhancements. However, the costs of projects necessitated by the retirements of Sammis and Davis-Besse allocated among customers difficult to predict. PJM and transmission owners must decide on now unknown ultimate combinations: build new facilities, re-conductor, or re-build existing facilities. Even so, transmission projects caused by retirements of approximately 2,400 MW of coal-fired plants in Ohio between 2012 and 2015 at an estimated cost of \$1 billion resulted in customers of the Companies responsible for 82% of those costs totaling \$820 million.⁸⁷

III. Rider RRS Meets the Factual and Statutory Basis for Approval

1. Rider RRS Critical Part of the Economic Stability Program

FES sells the energy, capacity, ancillary services, and environmental attributes from the Plants and the OVEC Plants to the Companies at negotiated prices spelled out in the Term Sheet between the two parties.⁸⁸ [Plants refer to Sammis and Davis-Besse, while OVEC Plants refer to FES' 4.85 % output in the OVEC Clifty Creek and Kyger Creek plants]

The Term Sheet provides for five different categories of costs identified on pages 5 and 6 as: fuel payments, O&M payments, depreciation payments, capacity payments, and tax reimbursement payments.⁸⁹

⁸⁶ Phillips, Supplemental Test., Companies' Ex. 39, Pg. 9 LN 17-24; Pg. 10 LN 1-2

⁸⁷ Phillips, Supplemental Test., Companies' Ex. 39, Pg. 10 LN 5-15

⁸⁸ Mikkelsen Companies' Witness, Vol. I Tr. Pg. 32, Ln. 5-8;18-20; 22-23; Companies' Ex. 156, Term Sheet

⁸⁹ Mikkelsen Companies' Witness, Vol. I Tr. Pg. 33, Ln. 4-6; pg. 34, Ln. 17-21; Ln. 34-35, Ln. 23-2

The Companies, in turn, sell that energy, capacity, ancillary, and environmental attributes into the PJM wholesale markets. Those wholesale market sales, coupled with the costs to pay for those attributes, provide for rate stabilization service to the Companies' customers under Rider RRS.⁹⁰

The Companies through Rider RRS passes through to all their customers the net of costs incurred from purchasing generation from the Plants and OVEC Plants under the transaction with FES, and the market revenues the Companies received from selling the energy, capacity, ancillary services, and environmental attributes into PJM.⁹¹

All the Companies' customers continue shopping either from competitive suppliers for their generation services or competitively sourced generation through the companies' SSO product offering.⁹² Within this transaction, the Companies do not serve their SSO customers with generation purchased under the Term Sheet from the Plants and OVEC Plants.⁹³ The SSO non-shopping customers receive market-based generation procured by the Companies through competitive bids.⁹⁴ The SSO price that customers pay remains unchanged for the physical energy received. However, Rider RRS overall impacts the price that all customers pay as a generation-related nonbypassable component separate from the SSO price.⁹⁵

The Economic Stability Program through Rider RRS stabilizes rates because customers pay charges during low market prices, while those customers receive credits as market prices rise over term of that rider and program. Essentially, retail rate stabilization credits pass on to

⁹⁰ Mikkelsen Companies' Witness, Vol. I Tr. Pg. 37, Ln. 13-18

⁹¹ Mikkelsen Companies' Witness, Vol. I Tr. Pg. 42, Ln 3-9

⁹² Mikkelsen Companies' Witness, Vol. I Tr. Pg. 39, Ln. 6-10

⁹³ Mikkelsen Companies' Witness, Vol. I Tr. Pg. 38-39, Ln. 24-25, 1

⁹⁴ Mikkelsen Companies' Witness, Vol. I Tr. Pg. 38, Ln. 6-9

⁹⁵ Mikkelsen Companies' Witness, Vol. I Tr. Pg. 38-39, Ln. 18-22, 2

customers through Rider RRS when market revenues received by the Companies exceed the costs the Companies paid for generation from the Plants and FES OVEC Plants.⁹⁶ The credits or charges passed on to customers under Rider RRS do not impact amounts the Companies pay to FES under negotiated prices agreed to in the Term Sheet.⁹⁷

Commission approval requested for Rider RRS as proposed in this proceeding without further approvals subsequently required.⁹⁸

2. Rider RRS Conforms to ORC 4928.143 (B) (2) (d).

a. AEP Court Decisions

In an earlier AEP case, the Supreme Court of Ohio reversed the Commission by finding that ORC 4928.143 (B)(2)(d) limits *the type* of categories a plan may include, but “without limitation” allows *as many or as much* of the listed categories as the commission finds reasonable—subject to any other applicable limits, which we do not consider here.”⁹⁹

The Court later on remand concluded that ORC 4928.143 (B)(2)(d) may include “[t]erms, conditions, or charges relating to * * * carrying costs * * * as would have the effect of stabilizing or providing certainty regarding retail electric service” that AEP Ohio provides to customers. The term “retail electric service” defined under ORC 4928.01(A)(27) means “any service involved in supplying or arranging for the supply of electricity to ultimate consumers in this state, from the point of generation to the point of consumption.”¹⁰⁰

⁹⁶ Mikkelsen, Companies’ Witness, Vol. I Tr. Pg. 42-43, Ln. 25, 1-10

⁹⁷ Mikkelsen, Companies’ Witness, Vol. I Tr. Pg. 49, Ln. 1-4, 6-10; Pg. 50, Ln 5-7, 9-14; Pg. 51, Ln. 6-15

⁹⁸ Mikkelsen, Companies’ Witness, Vol. I Tr. Pg. 58, Ln 23-25; Pg. 59, Ln 1-9

⁹⁹ In re Application of Columbus S. Power Co., 128 Ohio St.3d 512, { ¶ 33, ¶ 34 }

¹⁰⁰ In re Application of Columbus S. Power Co., 138 Ohio St.3d 448, 2014-Ohio-462, {¶ 21 }

The Commission during remand decided the evidentiary record demonstrated AEP's environmental-investment carrying costs "have the effect of providing certainty to both the Companies and their customers regarding retail electric service, specifically generation service. The Commission further found that the carrying costs contributing to "stabilizing prices," benefited AEP customers.¹⁰¹

The Court affirmed because the record supported the Commission finding that carrying costs authorized under ORC 4928.143(B)(2)(d) have the effect of providing certainty to both AEP and its customers regarding retail electric service, specifically generation service, and had the effect of lower retail prices for retail electric service by AEP providing low-cost generation power.¹⁰²

The Court emphasized ORC 4928.143(B)(2)(d) requires only a showing that "[t]erms, conditions, or charges * * * have the effect of stabilizing or providing certainty regarding retail electric service." The carrying charges, by providing reasonably priced electric-generation service, provided certainty regarding retail electric service.¹⁰³

b. Subsequent Commission AEP Decisions

The most recent AEP Ohio ESP Case proposed a PPA rider under ORC 4928.143(B)(2)(d) to provide customers with non-bypassable service either as charges or credits dependent on the results of selling its OVEC contracted entitlements into the PJM market. AEP Ohio describes the PPA Rider as providing its Ohio customers a financial hedge against market volatility with added price stability. The PPA rider affords greater flexibility in meeting federal

¹⁰¹ In re Application of Columbus S. Power Co., 138 Ohio St.3d 448, 2014-Ohio-462, {¶ 21}

¹⁰² In re Application of Columbus S. Power Co., 138 Ohio St.3d 448 {¶ 31}

¹⁰³ In re Application of Columbus S. Power Co., 138 Ohio St.3d 448 {¶ 32}

environmental regulations, while allowing economic benefits to continue statewide and within the Ohio region in which OVEC plants located.¹⁰⁴

The Commission used a three criteria approach based on Court precedents, which are: “***an ESP component approved under R.C. 4928.143(B)(2)(d) must ***be a term, condition, or charge; [must] relate to one of the enumerated types of terms, conditions, and charges; and, *** have the effect of stabilizing or providing certainty regarding retail electric service.”¹⁰⁵

AEP Ohio met the first ORC 4928.143(B)(2)(d) requirement since customers billed PPA rider charges during at least the ESP’s first year even though credits projected over its term.¹⁰⁶

AEP met the third requirement because the PPA rider, as a financial hedge mechanism, stabilizes, or provides certainty to, retail electric service by smoothing out market price fluctuations that rise or fall opposite to that of the wholesale market. On basis of those findings, the Commission concluded “[t]he PPA rider *** intended to mitigate, by design, the effects of market volatility, providing customers with more stable pricing and a measure of protection against substantial increases in market prices.”¹⁰⁷

AEP Ohio met the second requirement under ORC 4928.143(B)(2)(d), that the proposed charge “ must relate to at least one of the following nine items: limitations on customer shopping for retail electric generation service, *bypassability*, standby, back-up, or supplemental power service, default service, carrying costs, amortization periods, and accounting or deferrals.(emphasis added)¹⁰⁸

The Commission determined under R.C. 4928.143(B)(2)(d) that AEP Ohio’s PPA related to "bypassability" of charges “to the extent that such charges have the effect of stabilizing or

¹⁰⁴ In Re Ohio Power, Electric Security Plan, Case No. 13-2385 EL-ESP, Opinion and Order, Feb 25, 2015, Pg. 19

¹⁰⁵ In Re Ohio Power Company at Pg. 20

¹⁰⁶ In Re Ohio Power Company at Pg. 20

¹⁰⁷ In Re Ohio Power Company at Pg. 20-21

¹⁰⁸ In Re Ohio Power Company at Pg. 21

providing certainty regarding retail electric service,” citing to the DP&L ESP Case, Opinion and Order (Sept. 4, 2013) at 21. On that basis, the PPA rider should be non-bypassable, as authorized by the second criterion of ORC 4928.143(B)(2)(d).¹⁰⁹

The second criterion of ORC 4928.143 (B)(2)(d) also satisfied since as the Commission found the “PPA rider constitutes a financial limitation on customer shopping that is intended to stabilize rates.”¹¹⁰

c. Rider RRS Benefits all Companies’ Customers

Rider RRS stabilize or provide certainty regarding retail electric service for the period June 1, 2016 through May 31, 2024 under the Application and Stipulated ESP IV by billing as non-bypassable charges all retail customers of the Companies. The non-bypassable Rider RRS charges authorized under ORC 4928.143 (B)(2)(d) “to the extent that such charges have the effect of stabilizing or providing certainty regarding retail electric service,” which, by design, intends to mitigate the effects of market volatility by providing those customers with more stable pricing, and a measure of protection against substantial increases in market prices.

Rider RRS, as the proposed rate mechanism, flows through credits or charges to mitigate increased prices and volatility retail customers expect to experience. The Economic Stability Program protects customers from long-term market trends by operating as a retail rate stabilization mechanism.¹¹¹

¹⁰⁹ In Re Ohio Power Company at Pg. 22

¹¹⁰ In Re Ohio Power Company at Pg. 22

¹¹¹ Strah, Direct Test., Companies’ Ex.13, Pgs. 4, LN 16-21

The Companies support the retail rate stabilization mechanism by purchasing output from designated plants at cost, plus return on capital, for sale of that output into PJM Interconnection LLC (“PJM”) operated markets. The Companies’ sale revenues received from PJM netted against costs paid for plant output, with all customers on a non-bypassable basis under Rider RRS receiving the difference either as a charge or credit.¹¹² Initially, charges will be the difference.

In markets increasingly supplied by natural gas generation services, Rider RRS promotes generation resource diversity to stabilize rates against fluctuations and forecasted increases by purchasing the entire output from the Plants and the OVEC Plants for resale into the PJM market. Rider RRS as a non-bypassable charge eliminates the need for customers to elect whether or not to choose third-party suppliers. Both shopping and non-shopping customers of the Companies significantly benefit from the increased certainty and stability associated with stable retail electric service, and the economic support provided to the Ohio economy.¹¹³

Throughout the unprecedented cold spell of the 2014 Polar Vortex, the Plants continued operations while many interruptible gas generation assets ceased operations due to inconsistent scheduling protocols between the natural gas and electricity industries; inadequate pipeline infrastructure to support increasing demand for gas; and conflicted priority between using natural gas for heating instead of electricity production.¹¹⁴

Rider RRS provides a cost based mechanism against long term risks of rising market prices, while improving levels of security to retail customers without interfering with current

¹¹² Strah, Direct Test., Companies’ Ex.13, Pgs. 4, LN 21-23; Pg. 5, LN 1-5

¹¹³ Strah, Direct Test., Companies’ Ex.13, Pgs. 6, LN 2-12

¹¹⁴ Strah, Direct Test., Companies’ Ex.13, Pgs.8, LN 15-20

retail market design. Also, Rider RRS smooth out rate volatility and retail price increases by providing credits to customers as market rates increase in PJM.¹¹⁵

Rider RRS promotes economic development by tempering future rate increases and volatility. The Companies' SSO competitive procurements benefits non-shopping customers by smoothing out the impact of short-term price volatility over the ESP period, while credits under Rider RRS benefits both shopping and non-shopping customers during long-term volatility and price increases.¹¹⁶

Rider RRS runs counter to impacts expected from increasing or decreasing rates because for both CRES shopping and SSO customers the retail rate stabilization mechanism lowers purchasing costs as market prices increases causing expected market revenue projections to exceed costs paid for the purchased output of the Plants and OVEC Plants. Monthly credits offset increasing cost of retail generation since mitigation of long-term price increases operate independently of the staggering and laddering of products included in SSO auctions.¹¹⁷

d. Rider RRS Provides for Reasonable Revenue Requirements

The financially neutral Rider RRS stabilizes retail rates or charges for all customers of the Companies on a non-bypassable basis. The Companies annually update and reconcile Rider RSS retail rates or charges effective June 1st of each year unless otherwise ordered by the Commission.¹¹⁸

Rider RRS' Revenue Requirements for the Plants, and costs assessed against FES' share of OVEC entitlement, equal the difference between (1) the projected costs, including a return on, and of, invested capital, associated expenses, and applicable taxes, for the upcoming year; and

¹¹⁵ Strah, Direct Test., Companies' Ex.13, Pg. 10, LN 17-23

¹¹⁶ Strah, Direct Test., Companies' Ex.13, Pg. 11, LN 1-7

¹¹⁷ Strah, Direct Test., Companies' Ex.13, Pg. 12, LN 4-10

¹¹⁸ Savage, Direct Test., Companies' Ex.43, Pg. 3, LN 7-14

(2) the projected market revenues received by the Companies for selling the energy, capacity and ancillary services from the Plants and OVEC Plants into the PJM market. Further, Revenue Requirements, from comparisons of actual costs to forecasted costs, and actual market revenues to forecasted market revenues, reconcile the forecasted Rider RRS charge or credit with the actual Rider RRS charge or credit for the period.¹¹⁹

Actual revenue collected from, or credited to, customers trued up through reconciliation for that period. The cumulative reconciliation balance shown on each of the Companies books as of February month-end becomes the Revenue Requirement used for the upcoming 12-month period.¹²⁰

The Companies compare monthly the revenue requirements for the Plants and FES' share of OVEC entitlement to the actual PJM market revenues, and actual Rider RRS revenues or credits. The monthly under or over collection recorded as a regulatory asset or liability on the Companies' books for future recovery or return to customers. Over the term of Rider RRS, carrying costs accrue on any under or over collection using the Companies' after-tax weighted average cost of capital approved in their most recent base distribution rate case of 8.48%. The cumulative actual regulatory asset or liability balance, including applicable carrying charges, included in the Rider RRS revenue requirement, calculated for each Company as described above.¹²¹

Rider RRS revenue requirements allocated to the Companies, and to each rate schedule. Demand values allocated based on the average of four monthly coincident peaks, including distribution losses, for the months of June through September of the prior year consistent with the capacity component rate design of the Companies' Generation Service Rider ("Rider GEN").

¹¹⁹ Savage, Direct Test., Companies' Ex. 43, Pg. 3, LN 7-18

¹²⁰ Savage, Direct Test., Companies' Ex. 43, Pg. 3, LN 18-22

¹²¹ Savage, Direct Test., Companies' Ex. 43, Pg. 4, LN 3-11

The allocated revenue requirement for each rate schedule converts to an energy charge or credit based on projected kWh sales for the upcoming recovery period June 1st through May 31st. The resulting energy charge or credit for each rate schedule applies to all customers on a non-bypassable basis.¹²²

The costs to purchase the output from the Plants and OVEC Plants, and all revenues received by the Companies from sale into the PJM markets of capacity, energy and ancillary services from those plants, included in Rider RRS.¹²³

e. Rider RRS Subject to PUCO Review of Revenue Requirements

The PUCO Staff reviews the annual Rider RRS filing for mathematical errors, consistency with Commission approved rate design, and incorporation of prior audit findings. The Staff also audits the reasonableness of the actual costs (excluding Legacy Cost Components not included in second review or challenged in any subsequent audit or review) and actual market revenues contained in Rider RRS.¹²⁴

The audits confirms whether actual costs and actual market revenues included in Rider RRS not unreasonable in light of the facts and circumstances known at the time such costs committed, and market revenues received similar to the historic test the Commission used in rate and fuel cases. A Staff Report to the Commission documents the audit results. The Companies given opportunities to review the draft for factual accuracy and identify confidential items prior to its filing, then opportunities to file responses to the Staff Report and findings from the Staff audit. If needed, the matter set for hearing. Disputed costs and revenues continue recovered in Rider RRS during the dispute period. Resolved audit findings included in the next Rider RRS

¹²² Savage, Direct Test., Companies' Ex. 43, Pg. 4, LN 13-25

¹²³ Mikkelsen, Direct Test., Companies' Ex. 7, Pg. 14, LN 3-8

¹²⁴ Mikkelsen, Direct Test., Companies' Ex. 7, Pg. 14, LN 21-22, Pg. 15 LN 1-2

filing after the final non appealable Order in that proceeding. Expenses incurred by the Companies associated with the audit recovered in Rider RRS.¹²⁵

IV. Stipulations Expanded Terms and Conditions of ESP IV

1. Salient Features of the Prior Stipulations within Stipulated ESP IV

The Ohio Administrative Code provides that two or more parties may enter into oral or written stipulations to resolve all or some of the issues in a proceeding.¹²⁶

The Prior Stipulations within Stipulated ESP IV,¹²⁷ as a package, extends terms and conditions of the Companies' current ESP III and prior ESP II approved in Cases No. 12-1230-EL-SSO and 10-388-EL-SSO. The Prior Stipulations assures continuous power supply for Standard Service Offer ("SSO") customers through competitive bids, enhances delivery service, promotes economic development, assures job retention, promotes energy efficiency and demand response, and provides support for low income programs.

Salient features of the Prior Stipulations rely on language from the Stipulation and Recommendation, as corrected by the Stipulation and Recommendation Errata, as supplemented by the Supplemental Stipulation and Recommendation, and the Second Supplemental Stipulation.¹²⁸

a. Salient features to the Stipulation as modified

- The Signatory Parties expressly agree and recommend that the Commission approve and adopt the ESP IV filing in its entirety as filed by the Companies except as modified in the Stipulation.¹²⁹

¹²⁵ Mikkelsen, Direct Test., Companies' Ex. 7, Pg. 15, LN 3-22

¹²⁶ Ohio Administrative Code, Sec. 4901-1-30 (A)

¹²⁷ Mikkelsen, Supplemental Test., Companies' Ex. 8, Stipulation

¹²⁸ Stipulation and Recommendation, Companies' Ex. 2; Errata, Companies' Ex. 2a; Supplemental Stipulation, Companies Ex. 3, and Second Supplemental Stipulation, Companies Ex. 4

¹²⁹ Mikkelsen, Supplemental Test., Companies' Ex. 8, Pg. 2, LN 21-23

•To promote economic development and job retention, system reliability and stability, and certainty regarding retail electric service, the Economic Load Response Program Rider (“Rider ELR”) that would otherwise expire will renew June 1, 2016 with modifications and participation limitations and shall expire May 31, 2019. Participation is voluntary and is limited to customers who are currently taking service under Rider ELR plus up to 75,000 kW of additional Curtailable Load from customers who have historically been eligible for Rider ELR but are not currently taking service under Rider ELR. Only Emergency Curtailment Events will apply. In order to further promote the competitive retail market, Rider ELR customers may elect to shop during the ESP IV Period.¹³⁰

•In order to promote economic development and job retention by encouraging increased production in the state of Ohio and to provide stability and certainty regarding retail electric service, the Economic Development Rider – Automaker Credit Provision (“Rider EDR (h)”) that would otherwise expire will continue with modifications and expire May 31, 2019. This credit will continue to transition the eligible automakers to market based pricing and consistent with the principle of gradualism, the discount will be limited to \$0.01 per kWh for kWh usage exceeding the automakers’ Baseline Usage. The Economic Development Rider – Automaker Charge Provision (“Rider EDR (i)”) will continue during ESP IV and expire on May 31, 2019 subject to final reconciliation.¹³¹

•In order to transition more gradually to market based pricing customers taking service on the Companies’ General Service - Transmission tariff (“Rate GT”), the Economic Development Rider – General Service – Transmission (Rate GT) Provision (“Rider EDR (d)”) will be modified from the ESP IV Application to more gradually phase down the provision. The charge for June 1, 2016 through May 31, 2017 will remain at \$8.00 per kVa of billing demand and will reduce by \$2.00 per year in each of the subsequent years of the ESP IV.¹³²

•In order to promote economic development and job retention, the Delta Revenue Recovery Rider (“Rider DRR”) rate design will be modified to provide that costs recovered through Rider DRR will be allocated to rate schedules based on a percentage of base distribution revenue collected from that rate schedule.¹³³

•In order to provide more stability and certainty regarding retail electric service, the Generation Cost Reconciliation Rider (“Rider GCR”) will be recovered via a bypassable charge unless the Rider balance exceeds 10% of the applicable generation expense in two consecutive quarters during the term of ESP IV.¹³⁴

•In order to align the costs and benefits of the Economic Stability Program better with customers’ unique load characteristics and capacity charges, the Retail Rate Stability Rider

¹³⁰ Mikkelsen, Supplemental Test., Companies’ Ex. 8, Pg. 3, LN 1-12

¹³¹ Mikkelsen, Supplemental Test., Companies’ Ex. 8, Pg. 3-4, LN 13-23

¹³² Mikkelsen, Companies’ Supplemental Test., Ex. 8, Pg. 3, LN 24-31

¹³³ Mikkelsen, Companies’ Supplemental Test., Ex. 8, Pg. 4, LN 1-5

¹³⁴ Mikkelsen, Companies’ Supplemental Test., Ex. 8, Pg. 4, LN 6-12

(“Rider RRS”) rate design will be modified for Rate GS, GP, GSU and GT customers. The costs/credits will be allocated to the rate schedules as described in the Companies’ Application, but will be recovered from customers on those rate schedules based on each customer’s billing demand, rather than on energy consumed.¹³⁵

- In order to provide more stability and certainty regarding retail electric service and to provide customers an opportunity to learn about time differentiated rates, the Generation Service Rider Time-Of-Day Option will continue during the period of this ESP.

- In order to promote energy efficiency, the Companies will provide additional energy efficiency and peak demand reduction programs that will be in addition to the programs approved by the Commission in Case No. 12-2190-EL-POR et al. To promote energy efficiency and peak demand reduction the Companies will provide funding to help the City of Akron achieve its energy efficiency and sustainability goals; provide funding to certain energy efficiency administrators for their role in submitting completed projects that count toward the Companies’ energy efficiency compliance obligations, and/or for use as seed money to provide upfront loans to assist in investments in energy efficiency, and/or to encourage the advancement and education of energy efficiency; perform 300 energy efficiency audits for the Council of Smaller Enterprises (“COSE”) commercial and industrial customers.¹³⁶

- In order to assist at-risk populations, during the period of ESP IV, the Companies, in aggregate, will provide \$4.17 million to the Cleveland Housing Network (“CHN”), the Council for Economic Opportunities in Greater Cleveland (“CEOGC”) and the Consumer Protection Association (“CPA”) for a Fuel Fund Program to assist low income customers in paying their electric bills. CHN, CEOGC and CPA will each receive \$463,333 annually for the fuel fund program. Ten percent of the annual funding will be used to offset the costs of administering the fuel fund.¹³⁷

- In order to assist at-risk populations, promote energy efficiency and to promote the retail competitive markets, during the period of this ESP, the Companies, in aggregate, will provide \$3 million to the Citizens Coalition for its use in: 1) establishing a Customer Advisory Agency to provide independent assistance to all of the Companies’ residential customers who have questions related to shopping or other energy usage concerns; 2) providing additional fuel funding to the agencies as noted above; and/or 3) providing energy efficiency assistance.¹³⁸

- During the term of ESP IV, the Companies will select the Administrator of the Community Connections program. The CHN will be allocated \$1.7 million of the annual Community Connections program funding for each year of the ESP IV.¹³⁹

¹³⁵ Mikkelsen, Companies’ Supplemental Test., Ex. 8, Pg. 4, LN 13-16

¹³⁶ Mikkelsen, Companies’ Supplemental Test., Ex. 8, Pg. 4, LN 17-31

¹³⁷ Mikkelsen, Supplemental Test., Companies’ Ex. 8, Pg. 4-5, LN 32-35, LN 1-4

¹³⁸ Mikkelsen, Supplemental Test., Companies’ Ex. 8, Pg. 5, LN 5-12

¹³⁹ Mikkelsen, Supplemental Test., Companies’ Ex. 8, Pg. 5, LN 13-16

The Errata filed on January 1, 2015 deleted and replaced with new language for V.B.7:

EE/PDR Amended Plan. The energy efficiency and peak demand reduction programs recommended above by the Stipulated Parties may be additions to the Companies' Amended Plan approved by the Commission in Case No. 12- 2190-EL-POR, et al. If the Commission deems it necessary to administer the implementation of the Companies' Amended Plan, such approval shall constitute the Commission's approval of these programs for inclusion in the Amended Plan pursuant to paragraph 5 of the Verified Application in Case No. 12-2190-EL-POR, et al.

The Stipulation modified by the Supplemental Stipulation filed on May 28, 2015 in this proceeding that inserted new language for V.A.1 i (1)-(3):

1. The Signatory Parties agreed to the Companies' proposed rate design with the following changes intended to promote economic development and provide stability and certainty regarding retail electric service:
 - i) Rider ELR will renew for service rendered beginning June 1, 2016 and shall expire with service rendered May 31, 2019, subject to the following modifications:
 - (1) Participation is voluntary and limited to (i) customers taking service under Rider ELR during ESP III; and (ii) up to 136,250 kW of additional Curtailable Load available on a first-come, first-serve basis for customers who historically have been eligible for Rider ELR, with no participant exceeding historical Curtailable Load cap.
 - (2) The aggregate Curtailable Load cap of new Rider ELR customers that have provided the Companies written notice of intent to participate in this program on or before May 31, 2015 shall not exceed 136,250 kW. The Curtailable Load cap of new customers that have provided notice to participate on or before May 1, 2015 shall be approved. The Curtailable Load cap of new customers that provide notice to participate after May 1, 2015 but on or before May 31, 2015 will be approved to participate in Rider ELR on a pro rata basis so that the aggregate total Curtailable Load of all such new Rider ELR customers does not exceed 136,250 kW.
 - (3) The Interruptible Credit Provisions ("Rider ELR" and "Rider EDR (b)") will continue during ESP IV and expire on May 31, 2019. The Rider ELR credit will be \$5.00 per kW per month by unit of Curtailable Load. This credit will be recovered through the DSE 1 component of Rider DSE. The Rider EDR (b) credit will be \$5.00 per kW per month by unit of Curtailable Load as defined in Rider ELR. The Rider EDR (b) credit will be recovered in Rider EDR (e), in the same manner as was recovered in ESP III.

The Stipulation further modified by the Supplemental Stipulation filed on May 28, 2015
in this proceeding by inserting new language for Section V.A.2:

The Companies agree to deploy a small-scale pilot program providing an alternative means for customers to obtain and pay for services otherwise provided by or through the Non-Market-Based Services Rider ("Rider NMB"). More specifically, the purpose of this pilot program is to explore whether certain customers could benefit from opting out of the Companies' Rider NMB and obtaining, directly or indirectly through a CRES provider, all transmission and ancillary services through the Open Access Transmission Tariff and other PJM governing documents ("OATT") approved by the Federal Energy Regulatory Commission ("FERC"), in effect from time to time, as modified by FERC, and applicable to the zone in which the end user is located or whether the administrative burden to the Companies, and the cost and risk to the customer, would render this option impractical. This pilot program will be limited to Industrial Energy Users-Ohio ("IEU") member-customers (IEU will notify the Companies if a customer withdraws from IEU) that, through IEU, notify the Companies in writing within 30 days of the approval of the Companies' ESP IV or by December 31, 2015, whichever is later. The notification shall provide that the member-customer elects to opt out of Rider NMB, for all service rendered on or after the date of the next effective Rider NMB rate and commits to obtain and pay for NITS and all other non-market-based and market-based services through the otherwise applicable OATT and identify the accounts subject to the election. Any increase or decrease in the load and usage characteristics of any account identified in such election, opening of a replacement account or account transfer shall not affect the right to continue the OATT eligibility. Any account or successor account voluntarily returning to Rider NMB or any Rider NMB successor, after 60 days advance notice, shall not, thereafter, make such OATT election and eligibility for such election with regard to such account or successor account shall be deemed terminated. New and expanded accounts of existing IEU member-customers shall also have the right to make such election regardless of whether the accounts are known or in existence by the election deadline specified herein. Any such election would be effective coincident with the next effective date of a new Rider NMB rate. Such IEU member-customers that have opted out shall not receive the benefits or be subject to the costs of Rider NMB or any successor to Rider NMB provided that they shall not be deprived of any costs or refunds arising from decisions issued by FERC or the Commission where such costs or refunds would flow through Rider NMB and are associated with the period during which they obtained service by or through Rider NMB and such costs or refunds are not otherwise available through the OATT. Such refunds (if any) shall be deducted from refund amounts included in Rider NMB. Such IEU member-customers shall be eligible, at their election, as long as they continuously remain an IEU member and continue to obtain such services through the applicable OATT until such time as they may elect to discontinue such election and revert to Rider NMB or a Rider NMB successor.

Finally, the Stipulation modified by the Second Supplemental Stipulation filed on June 4, 2015 in this proceeding by inserting a new Section V.A.3:

The Companies agree to deploy a Commercial High Load Factor (“HLF”) Experimental Time-of-Use rate proposal for commercial customers with headquarters located in Ohio having at least 30 facilities in the Companies’ combined service territory with each facility consuming at least 1.5 GWh annually and having refrigeration as a major portion of the load. In addition, each individual facility must have interval metering, must have an average monthly load factor during the preceding 12 months of 70% or higher, and must otherwise be served under the Companies’ GS or GP rate schedules. The Commercial HLF Experimental Time-of-Use rate proposal will give the Companies’ commercial customers an opportunity to determine whether time-of-use rates could reduce their overall energy bills. An illustration of the Commercial High Load Factor (“HLF”) Experimental Time-of-Use rates, based on the 2015/2016 Delivery Year competitive bid process average clearing price, is contained on Attachment 1 to this Second Supplemental Stipulation and Recommendation (the “Second Supplemental Stipulation”). Once a facility qualifies for the Commercial HLF Experimental Time-of-Use rate and is enrolled in the Commercial HLF Experimental Time-of-Use rate, that facility may remain on that rate notwithstanding any subsequent change in the load characteristics of the facility or reduction in energy consumption by the facility.

Those inserts and changes to the Stipulation addressed by Companies’ witness Mikkelsen by the Second Supplemental Testimony, Third Supplemental Testimony, and Fourth Supplemental Testimony.¹⁴⁰

b. Salient Features of The Third Stipulation

- The term of the ESP IV is modified from the three year term originally proposed to an eight year term commencing on June 1, 2016 and concluding on May 31, 2024. The Stipulated ESP IV contemplates a base distribution rate freeze that will extend for the eight-year term. Rider DCR also will be extended for the duration of the Stipulated ESP IV. The term of Rider RRS is also modified from the fifteen year term originally proposed to an eight year term commencing on June 1, 2016 and concluding on May 31, 2024, subject to final reconciliation.¹⁴¹

¹⁴⁰ Mikkelsen, Second Supplemental Test., Companies’ Ex. 9; Third Supplemental Test., Companies’ Ex. 10; and Fourth Supplemental Test., Companies Ex. 11

¹⁴¹ Mikkelsen, Fifth Supplemental Test., Companies’ Ex. 155. Pg. 3, LN 18-24

- The risk sharing element contained in the Companies' original filing is expanded to include a commitment by the Companies that Rider RRS in year five will include a credit of \$10 million in total for the Companies. The Companies' include credits to customers in Rider RRS shall be increased by 10 million each additional year through May 31, 2024 and assures at least \$100 million in credits are included in Rider RRS.¹⁴²
- The rigorous review process for Rider RRS agreed to by the Companies will include the review of costs and benefits arising from the performance requirements in the PJM market and include full information sharing with the Staff regarding the FirstEnergy Solutions Corp. fleet.¹⁴³
- The Companies will advocate in good faith for a longer term wholesale capacity product before the FERC and PJM and will provide public, quarterly updates to the Commission on the state of wholesale electricity markets.¹⁴⁴
- The Companies will file a grid modernization business plan highlighting future initiatives for Commission consideration. The business plan would include a timeline for the Companies to achieve full smart meter implementation.¹⁴⁵
- The Companies agree to implement resource diversification mechanisms/programs including: (i) a goal to reduce CO₂ emissions by at least 90% below 2005 levels by 2045; (ii) an evaluation of battery resources; (iii) beginning in 2017, implementation of a portfolio of robust, comprehensive energy efficiency programs striving to achieve over 800,000 MWhs of energy efficiency savings annually; (iv) filing in their next EE/PDR Portfolio Plan a customer engagement pilot program to be implemented across the Companies' small and medium commercial and industrial customers; (v) an opportunity for an increase of in-state renewable resources; and (vi) a Carbon Reduction Emissions Plan.¹⁴⁶
- By April 3, 2017, the Companies will file an Application for Tariff Approval (ATA) case before the Commission to consider the proposed transition to decoupled rates by implementing a straight fixed variable rate design mechanism for residential customers' base distribution rates. When proposing the straight fixed variable decoupling mechanism, the Companies will be cognizant of the principle of gradualism and the effect of decoupling on various usage levels.¹⁴⁷
- For the period beginning June 1, 2016 and ending May 31, 2024, retail generation rates will be determined based on the results of a descending-clock format competitive bid process

¹⁴² Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 3, LN 25-26, Pg. 4, LN 1-3

¹⁴³ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 4, LN 4-7

¹⁴⁴ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 4, LN 8-10

¹⁴⁵ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 4, LN 11-13

¹⁴⁶ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 4, LN 14-22

¹⁴⁷ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 4, LN 23-28

that is designed to “ladder in” procurements at various times with a mix of one, two and three year products.¹⁴⁸

- Certain rate design provisions of the Prior Stipulations will be extended to align the timing of the riders with the eight year term of the Stipulated ESP IV. Rider ELR, Rider EDR (b) and the Automaker Credit (EDR (h)) and the associated cost recovery will be extended to May 31, 2024 subject to final reconciliation. Rider EDR (d), commonly referred to as the load factor provision for Rate GT customers, will be modified to reflect a phase-out such that subsequent to June 1, 2019 there will no longer be a charge or credit associated with this provision. The credit will be eliminated after final reconciliation. The Commercial High Load Factor Experimental Time of Use rate will continue through May 31, 2024. The Companies agree to continue to offer the Experimental Critical Peak Pricing Rider (Rider CPP) and the Experimental Real Time Pricing Rider (Rider RTP) for the duration of ESP IV.¹⁴⁹

- The Delivery Capital Recovery Rider (Rider DCR) will also be extended to align with the term of the Stipulated ESP IV as will the Rider DCR audit schedule. The revenue caps for Rider DCR will increase by \$30 million annually for the first three years, \$20 million annually for the subsequent three years and \$15 million annually for the final years of the Stipulated ESP IV.¹⁵⁰

- In addition to the energy efficiency commitments noted earlier, certain energy efficiency commitments made in the Prior Stipulations will be extended to align those provisions with the eight year term of the Stipulated ESP IV. COSE will be provided \$170,000 in funding in 2016, \$25,000 in annual funding for 2017 and 2018, and \$20,000 in annual funding for 2019. Each year thereafter until 2024, COSE will be provided \$60,000 in funding. The Companies will conduct 58 ASHRAE Level II Energy Efficiency Audits in 2016, 100 audits annually from 2017 – 2023, and 42 audits in 2024. Funding to the AICUO will be extended to \$50,000 per year for each of the eight years of the Stipulated ESP IV term.¹⁵¹

- The funding of the CEI fuel fund will be extended to align with the eight year term of the Stipulated ESP IV and shall consist of \$1,390,000 annually for each of the eight years. The funding provided to the Citizens Coalitions will be extended to align with the eight year term of the Stipulated ESP IV and will include funding of \$1,000,000 annually commencing in 2017 to be used for the Customer Advisory Agency. The Companies will evaluate, in consultation with the Citizens Coalition, whether the Customer Advisory Agency should continue after May 31, 2019. If it is determined that the costs outweigh the benefits of the Customer Advisory Agency, the \$1 million annual contribution for the next five years will be used to for additional fuel funding or for energy efficiency projects. The Companies will not seek recovery of these amounts from customers.¹⁵²

¹⁴⁸ Mikkelsen, Fifth Supplemental Test., Companies’ Ex. 155. Pg. 4, LN 29-32

¹⁴⁹ Mikkelsen, Fifth Supplemental Test., Companies’ Ex. 155. Pg. 4, LN 33-36, Pg. 5, LN 1-8

¹⁵⁰ Mikkelsen, Fifth Supplemental Test., Companies’ Ex. 155. Pg. 5, LN 9-13

¹⁵¹ Mikkelsen, Fifth Supplemental Test., Companies’ Ex. 155. Pg. 5, LN 14-22

¹⁵² Mikkelsen, Fifth Supplemental Test., Companies’ Ex. 155. Pg. 5, LN 23-33

•The Companies agree to: (i) file amended partial service tariffs; (ii) accept the revisions proposed by Staff to the as-filed Electric Service Regulations; (iii) use the last approved embedded cost of debt for riders with a debt based carrying charge; and (iv) withdraw its request from the Application for up front approval to exclude the impact of deferred carrying charges on annual SEET Filings and instead will make such request as part of the annual SEET filing.¹⁵³

•The Community Connection Program will be funded at an increased level of \$6,000,000 per year from 2016 through 2023. Ohio Partners for Affordable Energy (OPAE) will be paid an annual administrative fee equal to 5% of the \$6,000,000 which will be paid out of the annual commitment. Cleveland Housing Network will be allocated \$1.7 million of the annual Community Connections Funding for each year of the Stipulated ESP IV term.¹⁵⁴

•The Companies utilized an independent consultant to perform the detailed transmission reliability impact study that was based on PJM data to assess the impacts arising from the closure of the Plants. Further, the Companies agree to make available upon request an electronic version of the economic development analysis conducted by an independent third party for this proceeding.¹⁵⁵

•During the eight year term of the Stipulated ESP IV, the Companies will contribute \$3 million annually, totaling \$24 million over the term of the Stipulated ESP IV, to support economic development and job retention programs in Ohio or energy conservation programs within their service territories. The Companies will not seek recovery of these amounts from customers.¹⁵⁶

•FirstEnergy will maintain its corporate headquarters and the nexus of operations in Akron, Ohio for the duration of Rider RRS.¹⁵⁷

•The Companies will provide OPAE \$1,000,000 per year from 2016 through 2023 to be used for funding a fuel fund to be administered by OPAE in the Companies' service territories. The Companies will not seek recovery of these amounts from customers.¹⁵⁸

•The ESP IV term modified to eight years from June 1, 2016 until May 31, 20 2024. A contemplated base distribution rate freeze extends for the eight-year term. Rider DCR extended for the eight-year term. Rider RRS term reduced from fifteen years to an eight year term from June 1, 2016 to May 31, 2024, subject to final reconciliation. Rider ELR continues under the Stipulated ESP IV to promote economic development and job retention, system reliability and stability, and certainty regarding retail electric service.¹⁵⁹

¹⁵³ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 5, LN 34-37; Pg. 6, LN 1-2

¹⁵⁴ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 6, LN 3-8

¹⁵⁵ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 6, LN 9-13

¹⁵⁶ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 6, LN 14-18

¹⁵⁷ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 6, LN 19-20

¹⁵⁸ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 6, LN 21-24

¹⁵⁹ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 3, LN 18-24

- The original risk sharing element under Rider RRS expanded to include in year five a credit of \$10 million in total for the Companies, with that commitment to include credits to customers in Rider RRS increased by \$10 million in total for the Companies each additional year through May 31, 2024, which assures at least \$100 million in credits included in Rider RRS.¹⁶⁰
- The rigorous review process agreed to for Rider RRS by the Companies include review of costs and benefits arising from the performance requirements in the PJM market, and full information sharing with the Staff regarding the FirstEnergy Solutions Corp. fleet.¹⁶¹
- The Companies will advocate in good faith before the FERC and PJM for a longer term wholesale capacity product, and will provide the Commission with public, quarterly updates on the state of wholesale electricity markets.¹⁶²
- The Companies will file a grid modernization business plan highlighting future initiatives, including a timeline to fully achieve smart metering implementation, for Commission consideration.¹⁶³
- The Companies agree to implement resource diversification mechanisms/programs including: (i) a goal to reduce CO2 emissions by at least 90% below 2005 levels by 2045; (ii) an evaluation of battery resources; (iii) beginning in 2017, implementation of a portfolio of robust, comprehensive energy efficiency programs striving to achieve over 800,000 MWhs of energy efficiency savings annually; (iv) filing in their next EE/PDR Portfolio Plan a customer engagement pilot program to be implemented across the Companies' small and medium commercial and industrial customers; (v) an opportunity for an increase of in-state renewable resources; and (vi) a Carbon Reduction Emissions Plan.¹⁶⁴
- By April 3, 2017, the Companies file an Application for Tariff Approval (ATA) case before the Commission to consider the proposed transition to decoupled rates by implementing a straight fixed variable rate design mechanism for residential customers' base distribution rates. When proposing the straight fixed variable decoupling mechanism, the Companies will be cognizant of the principle of gradualism and the effect of decoupling on various usage levels.¹⁶⁵
- Beginning June 1, 2016 and ending May 31, 2024, retail generation rates determined based on the results of a descending-clock format competitive bid process designed to "ladder in" procurements at various times with a mix of one, two and three year products.¹⁶⁶

¹⁶⁰ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 3, LN 25-27; Pg. 4, LN 1-3

¹⁶¹ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 4, LN 4-7

¹⁶² Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 4, LN 8-10

¹⁶³ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 4, LN 11-13

¹⁶⁴ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 4, LN 14-22

¹⁶⁵ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 4, LN 23-28

¹⁶⁶ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 4, LN 29-32

•Certain rate design provisions of the Prior Stipulations extended to align the riders with the eight year term of the Stipulated ESP IV. Rider ELR, Rider EDR (b) and the Automaker Credit (EDR (h)) and the associated cost recovery extended to May 31, 2024 subject to final reconciliation. Rider EDR (d), the load factor provision for Rate GT customers, modified to phase-out charges or credits associated with this provision after June 1, 3 2019. The credit eliminated after final reconciliation. The Commercial High Load Factor Experimental Time of Use rate continues through May 31, 2024. The Companies agree to offer the Experimental Critical Peak Pricing Rider (Rider CPP) and the Experimental Real Time Pricing Rider (Rider RTP) for the duration of ESP IV.¹⁶⁷

•The Delivery Capital Recovery Rider (Rider DCR) extended to align with the term of the Stipulated ESP IV and the Rider DCR audit schedule. Rider DCR revenue caps increase by \$30 million annually for the first three years, \$20 million annually for the subsequent three years and \$15 million annually for the final years of the Stipulated ESP IV.¹⁶⁸

•In addition to the earlier noted energy efficiency commitments, certain energy efficiency commitments in the Prior Stipulations extended to align those provisions with the eight year term of the Stipulated ESP IV. COSE provided \$170,000 in funding in 2016, \$25,000 in annual funding for 2017 and 2018, and \$20,000 in annual funding for 2019. Each year thereafter until 2024, COSE provided \$60,000 in funding. The Companies conduct 58 ASHRAE Level II Energy Efficiency Audits in 2016, 100 audits annually from 2017 – 2023, and 42 audits in 2024. Funding to the AICUO extended to \$50,000 per year for each of the eight years of the Stipulated ESP IV term.¹⁶⁹

•The CEI fuel fund funding extends to align with the eight year term of the Stipulated ESP IV and annually consists of \$1,390,000 for each of the eight years. The funding to the Citizens Coalitions extends to align with the eight year term of the Stipulated ESP IV and includes funding of \$1,000,000 annually commencing in 2017 for the Customer Advisory Agency. The Companies will evaluate, in consultation with the Citizens Coalition, whether the Customer Advisory Agency continues after May 31, 30 2019. If determined that costs outweigh the benefits of the Customer Advisory Agency, the \$1 million annual contribution for the next five years will be used for additional fuel funding or for energy efficiency projects. The Companies will not seek recovery of these amounts from customers.¹⁷⁰

•Notwithstanding paragraph V.A.1.(i). 9 of the Stipulation, Toledo Edison will bill to and collect from Material Sciences Corporation a charge of: \$4.00 per kVA of billing demand under Rider EDR(d), General Service-Transmission (Rate GT) Provision, for service June 1, 2016 through May 31, 2019. There will be no charge or credit effective June 1, 2019 subject to final reconciliation.¹⁷¹

¹⁶⁷ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 4, LN 33-36; Pg. 5, LN 1-8

¹⁶⁸ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 5, LN 9-13

¹⁶⁹ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 5, LN 14-22

¹⁷⁰ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 5, LN 23-33

¹⁷¹ Third Supplemental Stipulation, Sec G 4 c iii, Other Issues, 8- Year Term, Companies Ex. 154, Pg. 16

- The Companies agree to: (i) file amended partial service tariffs; (ii) accept the revisions proposed by Staff to the as-filed Electric Service Regulations; (iii) use the last approved embedded cost of debt for riders with a debt based carrying charge; and (iv) withdraw from the Application its request for up front approval to exclude the impact of deferred carrying charges on annual SEET Filings and instead make such request as part of the annual SEET filing.¹⁷²
- The Community Connection Program funded at an increased level of 4 \$6,000,000 per year from 2016 through 2023. Ohio Partners for Affordable 5 Energy (OPAE) paid an annual administrative fee equal to 5% of the 6 \$6,000,000 out of the annual commitment. Cleveland Housing 7 Network allocated \$1.7 million of the annual Community Connections Funding for each year of the Stipulated ESP IV term.¹⁷³
- The Companies utilized an independent consultant to perform the detailed transmission reliability impact study that was based on PJM data to assess the impacts arising from the closure of the Plants. Further, the Companies agree to make available upon request an electronic version of the economic development analysis conducted by an independent third party for this proceeding.¹⁷⁴
- The Companies contribute \$3 million annually, totaling \$24 million over the eight year term of the Stipulated ESP IV, to support economic development and job retention programs in Ohio or energy conservation programs within their service territories. The Companies will not seek recovery of these amounts from customers.¹⁷⁵
- FirstEnergy maintains its corporate headquarters and the nexus of operations in Akron, Ohio for the duration of Rider RRS.¹⁷⁶
- The Companies provide OPAE \$1,000,000 per year from 2016 through 2023 22 for funding a fuel fund administered by OPAE in the Companies' service territories. The Companies will not seek recovery of these amounts from customers.¹⁷⁷

V. Commission Approval of Stipulated ESP IV

1. The “Stipulated ESP IV” meets the Commission’s three prong test:

a. A product of serious bargaining among capable, knowledgeable parties

¹⁷² Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 5, LN 34-37; Pg. 6, LN 1-2
¹⁷³ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 6, LN 3-8
¹⁷⁴ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 6, LN 9-13
¹⁷⁵ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 6, LN 14-18
¹⁷⁶ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 6, LN 19-20
¹⁷⁷ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155. Pg. 6, LN 21-24

The Ohio Administrative Code provides that two or more parties may enter into oral or written stipulations to resolve all or some of the issues in a proceeding.¹⁷⁸

The Companies, MSC and other Signatory Parties with widely divergent interests fairly and reasonably resolved multiple complex issues to reach an overall package advantageous to rate payers and the public.

An open settlement process between the Companies and intervening parties led to serious bargaining occurred capable and knowledgeable intervenor parties. The Prior Stipulations and The Third Supplemental Stipulation collectively the Stipulated ESP IV evidence by the expressed terms and conditions the seriousness of the negotiations.

Signatory Parties to the Stipulated ESP IV now include Commission Staff, small and medium businesses, mercantile customers (i.e. large industrial customers), colleges and universities, low income residential customers, organized labor, a large municipality, another Ohio electric distribution utility, an energy management solutions provider, and various other consumer groups.

The Signatory Parties to the Prior Stipulations and The Third Supplemental Stipulation, collectively the Stipulated ESP IV, include Ohio Edison Company, The Cleveland Electric Illuminating Company, The Toledo Edison Company, the Staff of the Public Utilities Commission of Ohio (“Staff”), Ohio Power Company, Ohio Energy Group, City of Akron, Council of Smaller Enterprises, Nucor Steel Marion Inc., and Material Sciences Corporation. Signatories also are The Association of Independent Colleges and Universities of Ohio, International Brotherhood of Electrical Workers – Local 245, Council for Economic Opportunities in Greater Cleveland, Consumer Protection Association, Cleveland Housing Network, Citizens Coalition, Kroger, EnerNOC, and Ohio Partners for Affordable Energy.

¹⁷⁸ Ohio Administrative Code 4901-1-30 (A)

b. Does not violate any important regulatory principle or practice; and

The Stipulated ESP IV implements the Economic Stability Program through Rider RRS to provide stability and certainty regarding retail electric service, along with an economic development and job retention program. The non-bypassable Rider RRS relates to default service with the effect of stabilizing or providing certainty to retail electric service. Rider RRS operates to limit the financial consequences from shopping without limiting a customer's ability to shop, nor negatively impact retail competition or POLR auctions.

The Stipulated ESP IV also includes Rider ELR and other rate tariffs to advance state policies by making Ohio more globally competitive and to further economic development within Ohio. Rider ELR benefits all customers from a system reliability perspective because the agreed to interruption of load occurs in advanced of interrupting firm load. The inclusion of Rider ELR to reduce system peak demand recovery program costs through Rider DSE similar to costs collected by the Companies for other energy efficiency and peak demand reduction programs.

As before, the Companies request approval of Rider ELR as part of the Stipulated ESP IV under the ESP statutory scheme. The Companies never requested approval of Rider ELR from the Commission under the EE/PDR portfolio plans using the statutory scheme of Senate Bill 310. However, as a peak demand reduction program, Rider ELR counts its demand reductions toward meeting statutory peak demand reduction requirements. The Commission further recently allows the Companies in energy efficiency hearings to score for statutory compliance reasons all participatory demand response resources and energy efficiency resources in the PJM markets as capacity behind the Companies' territories.¹⁷⁹

¹⁷⁹ Mikkelsen, Companies' Witness, Tr. III, Pg. 498, Pg. 2-18

Finally, customer opt out rights from the Companies' EE/PDR portfolio controlled by ORC 4928.6611, opting out of portfolio plan, and ORC 4928.6614, opting in after previously elected opt out. The reference to opt outs in context of quoted language referred to in Rider ELR not controlling since approved under the ESP statutory scheme.

c. As a package, benefits ratepayers and the public interest.

The Stipulated ESP IV designed to provide adequate, safe, reliable and predictably priced electric service by supporting economic development and job retention; continue the regulatory principle of gradualism to stabilize rates and help transition customers to fully market based prices; support competitive markets; encourage energy efficiency and peak demand reduction; protect at-risk populations through low income programs; provide benefits to large industrial customers to better compete in the global marketplace; support federal advocacy for improvements in the capacity market; reduce CO₂ emission; grid modernization; and resource diversification. The aforementioned provisions, in addition to other comprehensive components expressed in the Stipulated ESP IV, benefits ratepayer customers and in the public interest.¹⁸⁰

Approval of Rider ELR under Stipulated ESP IV beginning June 1, 2016 through May 31, 2024 consistent with important regulatory principles or practices as guided by state policy expressed by ORC 4928.02, including (N). MSC and Ohio's other largest energy users to remain competitive in the global market need economic development and job retention measures, while facilitating Ohio's competitiveness in the global market by receiving service under Rider ELR and other price reducing provisions.

VI. Conclusion

¹⁸⁰ Mikkelsen, Fifth Supplemental Test., Companies' Ex. 155, Pg. Pg. 10

Wherefore, approval of the Application and Stipulated ESP IV necessary for the Companies to implement the Powering Ohio's Progress initiatives, along with the Economic Stability Program for customers to remain competitive in the global market.

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