BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

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

DIRECT TESTIMONY OF JOSEPH P. KALT, PH.D.
ON BEHALF OF THE PJM POWER PROVIDERS GROUP
AND THE ELECTRIC POWER SUPPLY ASSOCIATION

PUBLIC VERSION

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I. INTRODUCTION

Q1. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.

A1. My name is Joseph P. Kalt. I am the Ford Foundation Professor (Emeritus) of International Political Economy at the John F. Kennedy School of Government, Harvard University. The Kennedy School of Government is Harvard's graduate school for public policy and public administration. I also work as a senior economist with Compass Lexecon. Compass Lexecon is an economics consulting firm with offices in various cities throughout North America, South America, and Europe. My business address is 4280 N. Campbell Avenue #200, Tucson, Arizona 85718.

Q2. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A2. I hold B.A., M.A., and Ph.D. degrees in economics and I am a specialist in the economics of competition, antitrust, and regulation. Throughout my professional career I have conducted research, published, taught, and testified extensively on the economics of market structure, contracting, regulation, pricing, and strategic performance, with a focus on the energy industries.

At Harvard, I served as an Instructor, Assistant Professor, and Associate Professor in the Department of Economics over 1978-1986. I joined the faculty of the Kennedy School of Government at Harvard as a Professor with tenure in 1986. In the Department of Economics, I had primary responsibility for teaching the graduate and undergraduate courses in the economics of regulation and antitrust. At the Kennedy School, my teaching responsibilities have included the economics of regulation and antitrust; economics for public policy; natural resource and environmental policy; and economic

development on American Indian reservations. At the Kennedy School, I have also served as Chair of the Economics and Quantitative Methods Program, Faculty Chair and Academic Dean for Research, Chair of Teaching Programs, Chair of Ph.D. Programs, and the faculty chair of the Harvard University Native American Program.

During 2005-2009, I served as a visiting professor at the University of Arizona's Eller College of Management. Since 2008, I have been a visiting professor at the University of Arizona's Rogers College of Law, and from 2009 to 2012, I served as visiting professor at the University of Arizona's School of Government and Public Policy. My teaching at the University of Arizona has included the economics of regulation and antitrust, as well as economic development policy.

In the course of my academic and consulting experience, I have extensively studied the economics of industrial organization, antitrust analysis, public goods, regulation and industrial oversight, and the principles of sound public policy. In addition to my university teaching, I have taught such matters to federal administrative law judges, elected and appointed federal, state and local officials, working journalists, and other mid-career audiences. The energy industries, including electric power, have been a primary focus of my professional work since the mid-1970s.

Over my career, I have frequently provided expert economic testimony on the regulation of the electric power sector and many other issues before state courts, public utility commission proceedings, federal courts and regulatory agencies, and international tribunals, as well as before the United States Congress. My curriculum vita is attached hereto as Appendix A and shows my prior testimony as an expert and my publications.

Q3. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS MATTER?

A3. I am testifying on behalf of the PJM Power Providers Group ("P3 Group") and the Electric Power Supply Association ("EPSA").

Q4. PLEASE DESCRIBE THE P3 GROUP AND EPSA.

A4. P3 is a non-profit organization dedicated to advancing federal, state, and regional policies which promote properly designed and well-functioning electricity markets in the PJM Interconnection, L.L.C. ("PJM") region. P3 membership is comprised of energy providers that are members of PJM, conduct business in the PJM balancing authority area, and are signatories to various PJM agreements. Combined, P3 members own over 87,000 megawatts of generation assets and over 51,000 miles of transmission lines in the PJM region, serve nearly 12.2 million customers and employ over 55,000 people in the PJM region, representing 13 states and the District of Columbia. EPSA is a national trade association representing competitive power generators and suppliers. EPSA members own or operate nearly 40% of all the installed generation capacity in the United States. Many of EPSA's members own or operate facilities in Ohio and are market participants in PJM. EPSA seeks to bring the benefits of competitive generation to all power customers. My testimony represents the position of P3 and EPSA as organizations, but not necessarily the views of any particular member with respect to any issue.

Q5. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A5. I have been asked by the P3 Group and EPSA to provide an economic analysis of the Electric Stability Program ("ESP") filed by FirstEnergy Corp.'s ("FirstEnergy") three Ohio monopoly transmission and distribution utilities: Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company (the "Companies"). The Companies have proposed an unprecedented long-term Power

Purchase Agreement ("PPA")[1] whereby they will purchase generating unit contingent power for 15 years from their Federal Energy Regulatory Commission ("FERC") regulated affiliate company FirstEnergy Solutions Corp. ("FES"). In particular, the Companies propose to purchase all power products which are currently sold at wholesale in FERC-regulated markets from FES' Davis-Besse (nuclear fueled) and Sammis (coal fueled) generating units.[2] These purchases would be made at the plants' fully embedded costs, providing a fixed return of and on capital, as if the plants were still regulated by the Public Utilities Commission of Ohio ("PUCO" or "Commission"). The Companies would then re-sell the acquired power products into the FERC-regulated wholesale markets. Any losses that the Companies might experience in these transactions would be covered by a non-bypassable charge—a so-called Retail Rate Stability Rider ("Rider RRS") – paid by their captive local ratepayers, and any gain that might be realized would be flowed through to those ratepayers. In the simplest economic terms, the proposed ESP asks the Companies' local ratepayers to go into the merchant power business by shifting the next 15 years' costs and risks of ownership of the noted power plants to the Companies' retail ratepayers in exchange for the right to sell the plants' output into the wholesale electricity markets operated by PJM.

The generating plants that the Companies propose to purchase power from over the 15-year term of the PPA are heavily in debt.[3]

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[1] The Companies have not provided the PPA. However, the Companies produced a term sheet for the PPA through discovery. See IEU-Set-1-INT-25, included in Appendix B.

[2] The proposal also includes the purchase by the Companies of a small portion (115.9 megawatts) of Ohio Valley Electric Corporation ("OVEC") capacity. My understanding is that FES does not control the OVEC facilities and that OVEC plant operating decisions are not made by either the Companies or FES.

[3] See Harden Direct Testimony, at 10.

In spite of these investments—the most recent of which is the completion in 2014 of a $600 million steam generator replacement at Davis-Besse—FES now indicates that the plants may be retired without the regulated ratepayer backing provided by a PPA which prices the plants' outputs at their fully embedded costs (including the costs of debt).

To the extent that the subject plants cannot cover their full embedded costs, local Ohio ratepayers are being asked to assume the debt and subsidize the costs of the FES plants. In making their proposal, however, the Companies have projected that, over the longer term, the PPA will provide a significant financial benefit to ratepayers. Yet, the proposal as proffered then involves an economic *non sequitur*: If the plants face retirement, it is because they do not yield a positive expected net present value for an efficient owner going forward – and would not do so for ratepayers. That is, the plants are "losers." On the other hand, if the plants can and will produce a positive net present value on the open market (claimed by the Companies to total fully $770 million[5]) for ratepayers even when those ratepayers pay the full embedded cost (plus return) of the plants, they would also do so for an efficient, non-subsidized owner and would therefore not rationally be retired. Indeed, under the latter conditions, FES is inexplicably giving the rights to the plants' outputs away to ratepayers at below their fair market value.

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[5] See Direct Testimony of Steven E. Strah (at 16:12-13, errata filed November 14, 2014) and Direct Testimony of Jay A. Ruberto (at 6:5-6, errata filed November 14, 2014, and Attachment JAR-1 Revised) on behalf of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company, Case No. 14-1297-EL-SSO, August 4, 2014, hereinafter "Strah Direct Testimony" and "Ruberto Direct Testimony."

My testimony here addresses these and related economics of the Companies' proposed ESP. I focus, in particular, on the following direct testimonies submitted by the Companies: Paul A. Harden, Jason Lisowski, Eileen M. Mikkelsen, Donald Moul, Judah Rose, Jay A. Ruberto, Joanne M. Savage, and Steven E. Strah.[6]

Q6. WHAT IS THE BACKGROUND OF THE COMPANIES' PROPOSAL?

A6. The Companies' ESP proposal was first made public in the aftermath of last winter's so-called "polar vortex" of unusually cold weather,[7] and the proposal is presented in large part as providing protection against possible price increases over the longer term.[8] Rather than soliciting the marketplace for competitive offers that could provide hedges against such circumstances, the Companies instead entered into exclusive discussions with their affiliate FES. This produced the terms and conditions of a 15-year cost-based agreement that would have ratepayers support the recovery of and on historical and recent capital investments in the noted FES generation assets.

The resulting PPA represents a "bet" that either (i) the fully embedded costs of the subject power plants over the next 15 years will be less in net present value than the market revenues that would otherwise be earned by the plants, or (ii) the ratepayers will be on the hook for any shortfall in that comparison. Importantly, the proposed

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[6] In addition to Strah Direct Testimony and Ruberto Direct Testimony cited above, Direct Testimonies of Paul A. Harden, Jason Lisowski, Eileen M. Mikkelsen, Donald Moul, Judah Rose, and Joanne M. Savage on behalf of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company, Case No. 14-1297-EL-SSO, August 4, 2014, hereinafter, "Harden Direct Testimony," "Lisowski Direct Testimony," "Mikkelsen Direct Testimony," "Moul Direct Testimony," "Rose Direct Testimony," and "Savage Direct Testimony."

[7] First Energy filed the ESP on August 4, 2014 and made its first formal public mention of this potential affiliate agreement during its second earnings call in 2014. See FirstEnergy Corporation, Q2 2014 Earnings Conference Call, August 5, 2014, available at http://seekingalpha.com/article/2385275-firstenergys-fe-ceo-anthony-alexander-on-q2-2014-results-earnings-call-transcript.

[8] See, for example, Harden Direct Testimony, Moul Direct Testimony, and Strah Direct Testimony.

transaction shifts the risk of this "bet" from FES' private investors to the Companies' captive ratepayers. That is, without the proposed PPA, the investors who own FES' Davis-Besse (nuclear fueled) and Sammis (coal fueled) generating units would either find that market-generated revenues would be sufficient to cover the fully embedded costs (including a return) of the plants, or they – the lenders and equity investors – would be on the hook for any shortfall.

Q7. PLEASE SUMMARIZE YOUR FINDINGS.

A7. Based on the economics and the evidence, I find that the proposed ESP and associated Rider RRS are anticompetitive, portend harm to Ohio ratepayers, and would distort the sound functioning of the PJM wholesale electric power markets. Although the proposed ESP claims to provide resource diversity, reduced consumer power price volatility, and eventually customer savings (assuming the Companies' 15-year forecasts are correct), resource diversity and insulation from price volatility are available to the Companies and their ratepayers through the open market, and there is no basis for assuming or contending that self-dealing between the Companies and their affiliated wholesale generation company will enable them to "beat the market" when it comes to pricing. I find that the central economic character of the proposed ESP is most properly seen as the use of captive ratepayers to subsidize and bail out two of FES' largest unregulated power generation facilities

As I explain below, the federally regulated wholesale power markets relied upon by the state of Ohio are signaling to the marketplace exactly what we expect. That is,

there have been some power plant retirements in Ohio as older, less-efficient, high-emitting generating facilities have become uncompetitive. In place of these retirements, the market is bringing forth lower cost, high efficiency gas-fired power plants poised to take advantage of the increasing gas supplies being developed in Ohio. At the same time, renewable energy resources (primarily wind power) are locating more frequently in Ohio. The combination of these market-driven responses is clearly providing Ohioans the future generation resources needed to ensure electric system reliability while, at the same time, increasing the competitive pressure on remaining older, less efficient power suppliers.

In fact, this market-driven process of weeding in the efficient and weeding out the inefficient is the cornerstone of the restructuring of the nation's electric power sector and regulation over the last two decades. We undertook this restructuring because it had become all too apparent that cost-of-service regulation of generation, with captive ratepayers ultimately backstopping even bad decisions and operations, was insulating generation from competitive discipline by preventing consumers from accessing the lowest cost alternatives that could meet their needs. The proposed ESP of the Companies represents a return through the back door to old-style ratemaking that uses the captivity of local ratepayers to insulate generation owners from risk. From the perspective of ratepayers and for the health of the overall economy, we don't want such insulation from risk: Risk incentivizes care and efficiency and separates good decision makers from bad.

Against this backdrop, I find that the justifications for the proposed ESP are conceptually flawed. The proposed ESP will depress prices in the wholesale market, benefit inefficient producers at the expense of more efficient ones, and crowd out efficient new and existing suppliers. These economics of the proposed PPA's impact on

the competitive market are straightforward. The *de facto* guaranteed returns of and on costs would create incentives for sustaining inefficient operations (i.e., operations that would not be economic if put to the test of PJM's market-determined prices). Because FES would essentially be allowed to pass through all costs associated with the plants and receive a guaranteed return on investment, the proposed ESP effectively would have ratepayers bear risks otherwise borne by FES' owners. Such subsidization of risk would have readily predictable consequences: FES' owners would rationally seek to make capital investments in the plants to support continued operations, even when such investments are uneconomic relative to alternatives in the open marketplace.[9] The costs of uneconomic and distorted investment choices will surely fall upon the Companies' ratepayers. At the same time, to the extent that uneconomic operations and investments bring electricity supplies to the market, they cannot help but put downward pressure on power prices and displace power from new and existing efficient sources.

I also find the Companies' proposal to be internally contradictory. On the one hand, the Companies' testimony supporting its proposal suggests that the plants in question face imminent retirement, with adverse consequences for resource diversity and reliability, if ratepayers do not step in and backstop the recovery of their costs.[10] On the other hand, the Companies' assert that the ESP will benefit ratepayers

[9] The Companies must seek PUCO approval for costs incurred under the proposed PPA; however, the incentives to overinvest created by rate of return regulation are well documented by economists (see below).

[10] See Moul Direct Testimony at 2:17: "The economic viability of the Plants is in doubt." See also Moul Direct Testimony at 5-12.

the implication is not the imminent abandonment of the plants. If the plants can cover their going-forward operating costs when run efficiently, market forces will direct their continued operation – either by the current owners or with the current owners taking a loss and putting the plants at written-down value in the hands of owners who can run them efficiently. While the latter alternative would be to the chagrin of the current equity investors and, perhaps, lenders, such outcomes are to the benefit of consumers and the economy: Consumers still get the benefit of the power that the plants can produce and the incentive effects of placing losses and gains on those who put capital at risk are maintained.

Finally, claims that the proposed ESP maintains resource diversity and mitigates retail price volatility are significantly overstated and unsupported by objective analysis. In particular, Ohio already relies on coal-fired generation for 70% of its power supply.[12] Incremental moves toward greater reliance on natural gas resources will not rapidly

[11] See Ruberto Direct Testimony at 6-9.

[12] See http://www.puco.ohio.gov/puco/index.cfm/consumer-information/consumer-topics/where-does-ohioe28099s-electricity-come-from/#sthash.IjoPholv.dpbs, accessed December 20, 2014.

change the Ohio fuel mixture. Moreover, PJM will ensure that new gas-fired resources are available to provide a reliable source of supply; claims otherwise grossly distort the reality of wholesale power market operations. At the same time, claims that retail price volatility will increase, ignore the power procurement process used by the Companies. The majority of retail customers face power prices set by power procurements carried out considerably in advance of consumption.[13] Retail prices based on forward market prices are much less volatile than day-to-day power prices. The Companies have not provided any evidence that there will be a material change in retail power price volatility as a result of their proposal.

II. WHOLESALE ELECTRICITY MARKET REGULATION AND OHIO ELECTRIC REGULATORY EVOLUTION

A. Wholesale Electricity Market Regulation

Q8. CAN YOU DESCRIBE THE UNITED STATES' BASIC REGULATORY FRAMEWORK FOR WHOLESALE ELECTRICITY MARKETS?

A8. Federal regulation of wholesale electricity markets is founded on the principle of relying on competitive markets for the provision of wholesale electricity supply. Specifically, the FERC's regulatory framework seeks to utilize, support, and promote wholesale competition wherever practical.[14] In particular, FERC regulations promote competitive

[13] There can be sophisticated larger customers who obtain power supply in hourly markets, but these customers elect to obtain supply in these short-term markets.

[14] See *Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Servs. by Pub. Utils.;* Recovery of Stranded Costs by Pub. Utils. & Transmitting Utils., Order No. 888, FERC Stats. & Regs. ¶31,036 (1996) "FERC Order No. 888", order on *reh'g*, Order No. 888-A, FERC Stats. & Regs. ¶31,048, *order on reh'g*, Order No. 888-B, 81 FERC ¶ 61,248 (1997), *order on reh'g*, Order No. 888-C, 82 FERC ¶61,046 (1998), *aff'd in relevant part sub nom., Transmission Access Policy Study Group v. FERC*, 225 F.3d 667 (D.C. Cir. 2000), *aff'd sub nom., New York v. FERC*, 535 U.S. 1 (2002).

wholesale electricity markets administered by regional transmission organizations ("RTOs")—such as PJM—as the preferred structure for wholesale electricity markets.[15] At the same time, many states not covered by RTOs support competitive frameworks, albeit their wholesale market structures are generally less transparent than centralized PJM-style wholesale electricity markets administered by RTOs.[16]

Q9. WHY DOES THE FERC RELY ON REGULATED COMPETITIVE MARKETS FOR WHOLESALE ELECTRICITY TRADE?

A9. Competitive markets promote an efficient allocation of the nation's scarce resources, hold down costs to consumers, spur innovation, and ensure that prices paid reflect the true costs of providing electricity. Accordingly, over the past two decades, the FERC has encouraged competition by supporting the growth of non-utility electric generation by (a) unbundling generation from local (regulated utility) electric distribution utility ("EDU") services; (b) opening access to transmission systems on a non-discriminatory basis so that the energy that competing generators produce can reach customers; (c) endorsing and overseeing the formation of transparent centralized wholesale markets (including auctions); and (d) regulating such wholesale markets to ensure that electricity prices are established competitively.

Q10. WHAT PRINCIPLES GUIDE THE FERC IN REGULATING WHOLESALE ELECTRICITY MARKETS?

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[15] *Regional Transmission Orgs.*, Order No. 2000, FERC Stats. & Regs. ¶31,089 (1999), *order on reh'g*, Order No. 2000-A, FERC Stats. & Regs. ¶31,092 (2000) "FERC Order No. 2000", *aff'd sub nom. Pub. Util. Dist. No. 1 Snohomish County v. FERC*, 272 F.3d 607 (D.C. Cir. 2001).

[16] These market structures tend to be based on bilateral contracting arrangements.

A10. The FERC's stated policy adheres to the principle that wholesale electricity prices must be determined competitively. Thus, an important focus of FERC regulation of wholesale electricity markets is protecting against the exercise of market power. In the case of the market's supply side, the FERC has an overarching framework for screening electricity sellers for the potential to exercise market power under its Order No. 697.[17] In addition, FERC regulations for centralized wholesale electricity markets include various market power mitigation mechanisms—effectively, upper-bound price caps, which seek to take away any payoffs to the exercise of monopoly market power that a seller might otherwise hope to realize.

At the same time, FERC regulations guard against the exercise of monopsony, or buyer market power. Although historically less emphasis has been placed on protecting against buyer market power, the potential exercise of market power by both sellers and buyers must be taken into account in market design. Taking particular note of the potential for uneconomic capacity additions to artificially depress prices, the FERC has stressed that the exercise of market power by both sellers and buyers must be mitigated to ensure that prices are neither artificially inflated nor artificially suppressed.[18] In fact, as

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[17] *Mkt.-Based Rates for Wholesale Sales of Elec. Energy, Capacity & Ancillary Servs. by Pub. Utils.*, Order No. 697, FERC Stats. & Regs. ¶31,252, *order on clarification*, 121 FERC ¶61,260 (2007), *order on reh'g and clarification*, Order No. 697-A, FERC Stats. & Regs. ¶31,268, *order on reh'g and clarification*, 124 FERC ¶61,055, *order on reh'g and clarification*, Order No. 697-B, FERC Stats. & Regs. ¶31,285 (2008), *order on reh'g and clarification*, Order No. 697-C, FERC Stats. & Regs. ¶31,291 (2009), *order on reh'g and clarification*, Order No. 697-D, FERC Stats. & Regs. ¶31,305, *order on clarification*, 131 FERC ¶61,021 (2010).

[18] *N.Y. Indep. Sys. Operator, Inc.*, 122 FERC ¶61,211 at P 1 ("*NYISO*") ("In this order, the Commission accepts New York Independent System Operator, Inc.'s (NYISO's) proposals to strengthen the mitigation of market power in the New York City (NYC) Installed Capacity (ICAP) market. The Commission finds that NYISO's proposals improve the mitigation that exists today and are otherwise just and reasonable because they prevent sellers with market power from artificially raising capacity prices and prevent net purchasers from artificially depressing capacity prices with uneconomic generation."), *order on reh'g*, 124 FERC ¶61,301 (2008), *order on reh'g and clarification*, 131 FERC ¶61,170 (2010).

organized, electric capacity markets have become more common, the protection against buyer market power has become critical.

Q11. HOW DOES THE FERC ENSURE THAT POWER MARKETS EFFECTIVELY SIGNAL WHEN NEW GENERATION RESOURCES ARE NEEDED AND WHEN AGING GENERATION RESOURCES SHOULD BE RETIRED?

A11. By efficiently pricing electric energy and capacity, the FERC-approved electric generation energy and capacity markets guide generation resource operation, investment, and retirement. The FERC has clearly articulated its expectation that PJM's market design is expected to result in a least-cost, reliable resource mix for the region.[19] Although PJM's wholesale power markets have evolved since their inception, they have consistently demonstrated that market-based power pricing can be relied upon to guide investment and retirement decisions.[20]

For example, PJM's market structures have supported new entry by a mixture of large volumes of supply-side resources while simultaneously accommodating the retirement of thousands of megawatts ("MWs") of generation resources. As Attachment JPK-1 shows, PJM supply resource additions have kept pace with generation resource

[19] For example, the FERC has stated: "In a competitive market, prices do not differ for new and old plants or for efficient and inefficient plants; commodity markets clear at prices based on location and timing of delivery, not the vintage of the production plants used to produce the commodity. Such competitive market mechanisms provide important economic advantages to electricity customers in comparison with cost of service regulation. For example, a competitive market with a single, market-clearing price creates incentives for sellers to minimize their costs, because cost-reductions increase a seller's profits. And when many sellers work to minimize their costs, competition among them keeps prices as low as possible. While an efficient seller may, at times, receive revenues that are above its average total costs, the revenues to an inefficient seller may be below its average total costs and it may be driven out of business. This market result benefits customers, because over time it results in an industry with more efficient sellers and lower prices. (117 FERC ¶61,331 at P 141 (2006), *order on reh'g*, PJM Interconnection, L.L.C.)"

[20] See Pfeifenberger, Johannes, *et al*., "Second Performance Assessment of PJM's Reliability Pricing Model: Market Results 2007/08 through 2014/15," The Brattle Group, August 26, 2011, p. 159, available at http://www.pjm.com/~/media/committees-groups/committees/mrc/20110818/20110826-brattle-report-second-performance-assessment-of-pjm-reliability-pricing-model.ashx.

retirements and PJM has continued to maintain an adequate reserve margin.[21] Although a subset of these new resources—referred to as demand response resources—have been critiqued as not comparable to generation resources, demand-response resource performance has been tested and verified.[22] Moreover, demand response resources proved to be readily available when PJM's capacity market was initiated. New supply-side generation resources have also come forth. These are also shown in Attachment JPK-1, which reports the amount of new generation resources accepted in PJM's capacity market auctions over the last three years. The majority of these new generation resources are actively under construction.[23]

Q12. ARE ANY OF THE NEW GENERATION RESOURCES BEING DEVELOPED IN THE PART OF PJM LOCATED IN OHIO?

A12. Yes. Attachment JPK-2 shows that there are several high efficiency, low emission, gas-fired generation resources under development in Ohio. All of these plants have received Ohio Power Siting Board approval and are actively engaged in the PJM generation interconnection process.[24] One of these plants—Oregon Clean Energy—has recently

[21] See, for example, PJM RPM capacity market auction reports available by delivery year at http://www.pjm.com/markets-and-operations/rpm/rpm-auction-user-info.aspx.

[22] See Executive Summary, Emergency Demand Response (Load Management) Performance Report 2013/14, April 2014, Version 2, PJM Interconnection, available at http://www.pjm.com/markets-and-operations/demand-response/dr-reference-materials.aspx, accessed December 21, 2014. In addition, I note that PJM continues to place emphasis on ensuring demand response resources will be available as capacity resources. See PJM Interconnection, L.L.C., *Reforms to the Reliability Pricing Market ("RPM") and Related Rules in the PJM Open Access Transmission Tariff ("Tariff") and Reliability Assurance Agreement Among Load Serving Entities ("RAA")*, FERC Docket No. ER15-623-000 ("PJM RPM Reforms") at III.C.

[23] See my work papers which provide various references confirming generation resource construction is underway.

[24] See: 1) *In the Matter of the Application of Carroll County Energy LLC for a Certificate of Environmental Compatibility and Public Need to Construct an Electric Generation Facility,* Case No. 13-1752-EL-BGN, Opinion, Order, and Certificate April 28, 2014; 2) *In the Matter of the Application of NTE Ohio, LLC for a Certificate of Environmental Compatibility and Public Need to Construct an Electric Generation Facility in Middletown, Ohio,* Case No. 14-534-EL-BGN, Opinion, Order, and Certificate November 24, 2014; 3) *In the Matter of the Application*

commenced construction.[25] Moreover, existing resources that have previously planned retirements are being kept in service and new investment is being made in existing plants.[26] PJM's wholesale market is bringing forth new generation capacity and investment in existing facilities, particularly in Ohio where there has been recent retirement of older, less efficient plants and development of favorable indigenous gas supply sources.[27]

In addition, it is important to note that these newly proposed resources are expected to be more responsive to system changes in supply and demand when compared to older, less flexible coal-fired resources. Wind developers have been particularly interested in siting in Ohio, and several are actively developing wind powered resources.[28] As the generation resource mixture evolves over time, new gas-fired

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of Oregon Clean Energy, LLC for a Certificate of Environmental Compatibility and Public Need to Construct an Electric Generation Facility, Case No. 12-2959-EL-BGN, Opinion, Order, and Certificate May 1, 2014; and, 4) *In the Matter of the Application of Rolling Hills Generating for an Amendment to the Certificate of Environmental Compatibility and Public Need for the Rolling Hills Generating Combined-Cycle Conversion Project in Vinton County, Ohio*, Case No. 12-1669-EL-BGA, Opinion, Order, and Certificate May 1, 2013. See also: http://www.pjm.com/planning/generation-interconnection/generation-queue-active.aspx.

[25] *In the Matter of the Application of Oregon Clean Energy, LLC for a Certificate of Environmental Compatibility and Public Need to Construct an Electric Generation Facility*, Case No. 12-2959-EL-BGN, Opinion, Order, and Certificate May 1, 2013 and Notice of Start of Construction November 12, 2014.

[26] See, for example, "NRG intends to continue operations at the Avon Lake facility Units 7 and 9 and the New Castle facility Units 3, 4, and 5, which are currently operating coal units that had been scheduled for deactivation in April 2015. NRG intends to add natural gas capabilities at these units, which additions are expected to be completed by the summer of 2016," NRG Energy, Inc., (November 5, 2014), Form 10-Q, p. 86, available at http://www.sec.gov/Archives/edgar/data/1013871/000101387114000022/nrg2014093010q.htm, accessed December 21, 2014. See also, http://phx.corporate-ir.net/phoenix.zhtml?c=147906&p=irol-newsArticle_Print&ID=1960327 (accessed December 21, 2014), where Dynegy discusses its recent purchase of Duke Energy asserts in Ohio.

[27] See, for example, "Shale Development Ramping Up Rapidly in Ohio," *Oil Daily*, December 10, 2014, and "Ohio's Natural Gas Boom Brings Flurry of Pipeline Construction," Jon Chavez, *The Blade*, Toledo, Ohio, December 7, 2014.

[28] See, for example, www.opsb.ohio.gov/opsb/index.cfm/cases/.

generation resources will complement wind resources in the PJM system by providing responsive supply that can accommodate rapid changes in supply and demand.[29]

Q13. WHAT ABOUT PJM'S RECENT CONCERNS REGARDING UNEXPECTED REDUCED GENERATION RESOURCE AVAILABILITY DURING THE UNUSUALLY COLD WINTER 2014 WEATHER?

A13. As would be expected, PJM has responded quickly and forcefully to concerns that arose following winter 2014's "polar vortex" weather pattern. PJM carefully documented its system performance during the cold weather snaps and has set out in detail those concerns that it identified.[30] Following its analysis, PJM moved quickly to develop and propose reforms to its electricity capacity markets to ensure that reliability will be maintained, especially if the types of cold weather patterns observed during winter 2014 were to be repeated. PJM has recently made a significant filing with the FERC to modify its capacity market product definition with an emphasis on valuing generation resource availability during those times when system reliability is most critical.[31] Although generation resource availability was at unexpectedly low levels during the unprecedented cold weather of 2014, lessons have been learned and action has been taken to minimize the risk of a similar occurrence in the future. PJM's conduct in this regard is consistent with federal policy, seeking constant improvement in wholesale power markets, not a return to cost-of-service reliance on captive ratepayers to fund electric generating capacity.

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[29] See, for example, "Gas, Wind Seen Competing, Cooperating in Texas," *Energy Trader*, July 12, 2013.

[30] *Analysis of Operational Events and Market Impacts During the January 2014 Cold Weather Events* (PJM Interconnection May 8, 2014), available at http://www.pjm.com/~/media/documents/reports/20140509-analysis-of-operational-events-and-market-impacts-during-the-jan-2014-cold-weather-events.ashx.

[31] See PJM RPM Reforms.

Q14. WHAT ARE THE SOCIETAL BENEFITS OF FERC'S RELIANCE ON COMPETITIVE WHOLESALE POWER MARKETS TO GUIDE WHOLESALE POWER MARKET PRICING?

A14. As FERC has recognized since adopting its open-access transmission system policy in 1996, competitive pricing is efficient for the economy and welfare-enhancing for the consumer. It achieves these pre-eminent policy objectives by providing appropriate short-and long-term incentives for market participants.[32] Competitive market pricing incentivizes low-cost production by rewarding efficient producers with greater profits and by penalizing inefficient operators with lower profits. As FERC noted in its 2014 strategic plan, "marketplace competition benefits energy consumers by encouraging diverse resources, spurring innovation and deployment of new technologies, improving operating performance, and exerting downward pressure on costs."[33]

B. Ohio's Current Electricity Regulatory Environment and FirstEnergy Solutions' Generation Fleet

Q15. WHAT IS OHIO'S REGULATORY FRAMEWORK FOR ITS ELECTRIC UTILITY COMPANIES?

A15. Historically, private investor-owned electric utilities in the United States provided bundled transmission, distribution, and generation services. They typically operated as regionally exclusive monopoly franchises and were regulated under cost-of-service regulation as utilities. Over time, it became apparent that while transmission and distribution services had significant barriers to entry and thus required continued

[32] See FERC Order No. 888.

[33] Federal Energy Regulatory Commission 2014 Strategic Plan, available at http://www.ferc.gov/about/strat-docs/FY-2014-FY-2018-strat-plan.pdf.

regulatory oversight, generation did not (when sufficiently interconnected so that multiple sellers could reach multiple buyers). Unbundling generation from franchise monopoly status and regulation, and turning decisions as to pricing, electricity provision, and generation investment over to market forces, was then appropriately understood to provide mechanisms for ending and avoiding inefficiencies that otherwise inevitably crept in under regulation that effectively insulated operating companies from competition and put captive local ratepayers as funders of last resort.

As described above, to encourage competition in wholesale generation, in 1996 FERC issued Orders 888 and 889 calling for the establishment of competitive wholesale electricity markets.[34] FERC Order 2000 subsequently established the format of RTOs.[35] Ohio, too, has restructured its electric power markets to encourage competition in the market for electricity generation, while maintaining regulatory oversight of transmission and distribution. The Ohio Electric Restructuring Act (SB 3) of 1999 mandated that Ohio's electric utilities separate electricity generation charges from transmission and distribution, allowing consumers to shop for the generation component.[36] Following a transition period, in 2008, Ohio SB 221 mandated the separation of regulated retail electric companies from their competitive generation businesses.[37]

Ohio's current policy reflects an ongoing transition during which utilities have been restructuring their companies to move generation resources into competitive markets regulated by FERC. Under the current framework, Ohio's generation resources

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[34] See FERC Order No. 888, FERC Stats. & Regs. ¶31,036 (1996).

[35] See FERC Order No. 2000.

[36] Am. Sub. S.B. 3 of the 123rd General Assembly (1999).

[37] Am. Sub. S.B. 221 of the 127th General Assembly (2008).

participate in PJM, a RTO which spans 13 states and the District of Columbia. PJM operates a wholesale power market in which generation resources are matched with demand via competitive hourly auctions. PJM also operates auction markets in generation capacity so that buyers (including entities like the Companies) and capacity owners (like FES) can contract for their energy needs many years in advance. In these capacity markets, system reliability is accounted for through the supply requirements that are built into the PJM regional and overall demand schedules, and the economic viability of alternative mixtures of capacity is put to the test of the marketplace, rather than opinion or fear mongering. Without subsidy (e.g., from captive ratepayers), less efficient generation with higher costs cannot be rationally offered into the market at the prices that lower cost units can afford to offer. If market demand can be satisfied with enough of the latter, the higher cost units lose out and the lower cost units are rewarded. In the process, incentives to find efficient management and technologies are brought to bear on all current and potential generation owners – to the benefit of the health of the economy and, ultimately, consumers.

Q16. HOW HAS FIRSTENERGY POSITIONED ITS POWER GENERATION FLEET IN OHIO?

A16. FirstEnergy has placed all of its Ohio-sited generation assets, including its OVEC holdings, in various subsidiaries that are FERC-regulated.[38] FES' power generation fleet, including the Davis-Besse and Sammis plants, has operated under competitive market conditions for over eight years. Specifically, the output of these plants is sold into the competitive PJM wholesale electricity market and the plants compete to offer generation in PJM's annual capacity auctions.

Q17. WAS FIRSTENERGY COMPENSATED FINANCIALLY WHEN IT TRANSITIONED ITS GENERATION FLEET OUT FROM UNDER PUCO REGULATION?

A17. Yes. As a consequence of restructuring, utilities were compensated for so-called "stranded" investments which might have been expected to be profitable in a regulated environment, but which would not be viable in a competitive market. Ohio SB3 authorized the PUCO to determine the timing and amount of recovery of stranded costs, and the PUCO's initial order allowed for the recovery of stranded costs during the regulatory transition. FirstEnergy's transition plan provided for the recovery of more than $8 billion of such costs.[39]

Q18. IS THERE ANY REASON THAT FIRSTENERGY SOLUTIONS SHOULD EXPECT TO BE COMPENSATED FOR A RETURN OF AND ON POST-TRANSITION CAPITAL INVESTMENTS MADE AS A PARTICIPANT IN THE COMPETITIVE WHOLESALE MARKETS?

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[38] See Moul Direct Testimony at 3.

[39] *Transparency, Special Contracts and Side Deals*, Testimony of Janine L. Migden-Ostrander, Office of Consumers' Counsel before Ohio House Public Utilities Committee, July 16, 2008, at 8, http://www.occ.ohio.gov/lservices/testimony/2008-01-16.pdf, accessed December 22, 2014.

A18. No, not under the competitive market principles of federal policy that govern those markets. The plants have operated under competitive market conditions since 2005.[40] Any capital investments in these plants since then can only be taken to have been made with full knowledge that the plants would participate in the FERC-regulated competitive wholesale generation and capacity markets. In the words of FirstEnergy witness Mikkelsen, these investments were made "by a competitive company that prudently and conservatively incurred costs to effectively participate in the competitive market and deliver shareholder value."[41]

It cannot have been lost on FES that it is inherent in market competition that firms must make investment decisions under uncertainty. Even for prudent and conservative firms, these investments may prove unprofitable in either the short run and/or the long run, whether due to changes in technology or changes in the market environment. In its comments submitted to the PUCO in response to the PUCO's 2012 Investigation of Ohio's Retail Electric Service Market, FES correctly noted that "suppliers, rather than customers, bear the risk of generation investments because suppliers are not guaranteed to recover their costs in the competitive market – as EDUs, for example, are guaranteed to do in the regulated environment."[42] Notwithstanding these comments, the Companies now propose to shift the risks of FES' recent generation investments in FES' Davis-Besse

[40] Staff Ex. 4 at 2-4 (Buckley Direct Testimony), in *In the Matter of the Application of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Revised Code, in the Form of an Electric Security Plan*, Case No. 08-935-EL-SSO.

[41] See Mikkelsen Direct Testimony at 14:12-15.

[42] FES Comments at 3 (filed March 1, 2013) in *In the Matter of the Commission's Investigation of Ohio's Retail Electric Service Market*, Case No. 12-3151-EL-COI.

and Sammis plants, after the fact, to all of the Companies' ratepayers on a non-bypassable basis.

It is important to recognize that, even if investment decisions made by FES in the Davis-Besse and Sammis plants have become unprofitable, this does not imply that the Davis-Besse and Sammis plants will cease operation if Rider RRS is not approved. If the plants are economically viable in the sense that their revenues exceed their total avoidable costs, then it would be imprudent to shut them down, since operating these plants will be more profitable (or less costly) than shutting them down.[43] If market prices are higher than going-forward avoidable costs, the resulting net cash flow can at least contribute positively to paying off the sunk costs of the plants' investments. If market prices are higher than going-forward avoidable costs, but not high enough to cover all embedded sunk costs, current owners and, perhaps, lenders may suffer a loss in capital value and regret having invested as much as they did, but it will nevertheless remain in the interests of all such parties (or alternative owners and lenders who acquire the plants at a written down, economically viable value) to operate the plants so that they can continue to throw off their positive operating cash flow. FES shareholders and, perhaps, lenders losing money and the retirement of the Davis-Besse and Sammis plants are two very different outcomes; the former does not imply the latter.

Only if the plants are not economically viable on a going-forward basis (i.e., even when operated and managed efficiently, the prices they can be expected to realize are not sufficient to cover their going-forward avoidable costs) does it make economic sense to shut them down: Consumers and the economy can get the power they need and the

[43] See, for example, Colander, D., *Microeconomics, 4th Ed.*, 2001, McGraw-Hill, pp. 250-251.

capacity they need from the suppliers who have the lower costs, which both set and are covered by market prices. At that point, shutting the plants down and removing their output from the marketplace is beneficial for the economy of Ohio and, ultimately, consumers. The economy, generally, and consumers get the power they need at least cost and any losses incurred by owners and, perhaps, lenders are the appropriate signals that investment is risky. Those parties with the ability to control that risk are in the best position (however rewarding or painful) to make good decisions and to avoid bad decisions. The Companies' ESP proposal violates this basic principle of investment economics.

Q19. WHAT ARE THE CORE ECONOMICS OF THE PROPOSED ESP AS FAR AS THE SAMMIS AND DAVIS-BESSE PLANTS ARE CONCERNED?

A19. Ultimately, the proposed ESP amounts to a bailout for FES. The proposed ESP is economically equivalent to a reversion to traditional cost-of-service, rate-of-return regulation of generation. As such, it effectively guarantees that the private investors and lenders will now find their costs covered, and profitably so. Under the terms of the Rider RRS, FES would receive a fixed and known amount of revenue that is calculated from the capital base of each plant.[44] While the plants will sell power into the competitive wholesale market, the Rider RRS ensures that ratepayers will pay to the plants any difference between competitive generation revenues and the plants' revenue requirement. The plants' revenues will no longer be subject to market risk. Instead, they will include a ratepayer-guaranteed return on capital investments made previously.

[44] See Savage Direct Testimony at 3:7-22.

Under the proposed ESP, the plants' incentives will be indistinguishable from the incentives of plants facing traditional cost-of-service, rate-of-return regulation. It is widely recognized in economics that rate-of-return regulation, while an important policy tool when firms have the characteristics of natural monopoly, distorts firms' incentives in ways that are ultimately harmful to ratepayers.[45] In the case of the Sammis and Davis-Besse plants, the Rider RRS incentivizes FES to continue operating the plants without full regard for their economic viability. FES receives no revenue if the plants are closed, yet receives a guaranteed return of and on capital if the plants operate, regardless of whether operation would be profitable and efficient at going market prices. Accordingly, the Rider RRS would give FES incentives to make investments to keep the plants operating regardless of whether they would operate under competitive conditions. In addition, the Rider gives FES limited incentives to operate efficiently.[46] In contrast, firms in competitive markets are under constant pressure to optimize their investments and to minimize the costs of operation.

[45] "Rate-of-return regulation gives the firm incentives to misreport cost allocations, choose an inefficient technology (in some cases), undertake cost-reducing innovation in an inefficient way, underproduce in a noncore market, price below marginal cost in a competitive market which happens to be included in the set of core markets regulated by an aggregate rate-of-return constraint, and view diversification decisions inefficiently." Braeutigam, R. R., & Panzar, J. C. (1989), "Diversification Incentives under 'Price-Based' and 'Cost-Based' Regulation," *The RAND Journal of Economics*, 373-391.

[46] The terms and conditions provided in response to IEU-Set-1-INT-25 make reference to "Good Utility Practice," however there is no indication that FES will be penalized if plant operations are inefficient. See Appendix B.

III. THE COMPANIES' PROPOSAL WILL UNDERMINE WHOLESALE ELECTRICITY MARKETS

A. The Companies' Proposed Power Purchase Agreement

Q20. HOW HAVE THE COMPANIES DESCRIBED THE POWER PURCHASE AGREEMENT THEY PROPOSE TO ENTER INTO UNDER THE ESP?

A20. As described in a PPA term sheet provided by Mr. Ruberto, the PPA envisions the companies paying a monthly charge in exchange for the delivery by FES of the plants' generating units' energy, capacity, ancillary services, and environmental attributes.[47] The monthly charge is broken down into five components: 1) fuel payment, 2) operation and maintenance payment, 3) depreciation payment, 4) capacity payment, and 5) tax reimbursement payment.[48] The first two categories—fuel and operations and maintenance costs—are incurred by FES in association with actually operating the generating units based on the Companies' offers to PJM's wholesale power markets. However, the operation and maintenance costs are composed of two cost categories: Variable costs, which are those costs incurred when actually generating power at the plants' units, and fixed costs, which are those costs associated with keeping the plants' units in service year to year and which do not vary with the level of the plants' output. The latter three costs noted above (3, 4, and 5) are what economics refers to as "sunk costs" and are unrelated to the costs incurred to operate the plants. Instead, these charges

[47] See Appendix B, Response to IEU Set 1-INT-25, Attachment 1.

[48] The monthly charge associated with the OVEC entitlement is accounted for separately and based on the costs incurred by FirstEnergy Generation under the Amended and Restated Inter-Company Power Agreement ("ICPA") dated as of September 10, 2010 among OVEC and its sponsoring companies.

are associated with FES' already invested capital, which it seeks to recover ("of and on") from the Companies' captive ratepayers.[49]

Q21. HOW DO THE COMPANIES DETERMINE THE IMPACT OF THE PPA ON RATEPAYERS?

A21. Under the proposed Rider RRS, the Companies will determine the difference between margins earned by the plants when making sales of energy, capacity, and ancillary services to PJM and the plant's capacity charge (or sunk costs, see above). Whenever the margin is greater than the capacity charge, all ratepayer costs will decrease. Conversely, whenever the margin is less than the capacity charge, all ratepayers' costs will increase. As proposed by the Companies, these calculations will be ongoing and trued up from time-to-time under Rider RRS.[50]

Q22. HOW DO THE COMPANIES PROPOSE TO OPERATE THE TWO PLANTS THEY WILL CONTROL UNDER THE ESP?

A22. The Companies have indicated that Mr. Ruberto will oversee the offer pricing of the generating units' energy, capacity, and ancillary services when making sales into PJM's wholesale markets.[51] Although the Companies have not offered any explanation as to how they will develop market offers,

That is, in order for ratepayers to obtain value from the plants, the plants must operate and produce

[49] These costs also include a tax payment which appears to be a transfer from the Companies to FES to shield FES from taxes incurred in association with the Companies' capacity payment.

[50] See Savage Direct Testimony at 3:7-22.

[51] See Appendix B, OCC Set 1-INT-20.

positive operating cash flow to offset the capacity payment that the Companies must make to FES. Moreover, the Companies would rationally seek to sell as much generation resource capacity as possible from the plants in PJM's Reliability Pricing Model ("RPM") capacity market because capacity market revenues also offset the significant capacity payment the Companies must make to FES.

B. The "Economic Stability Program" Would Distort the Economic Incentives of Suppliers in the Electric Power Generation Market

Q23. HOW DOES THE COMPANIES' PROPOSAL AFFECT THE FEDERALLY REGULATED WHOLESALE POWER MARKET?

A23. The Companies' proposal shifts the responsibility for managing the disposition of the generating units' capacity and production from a generator focused on competing in competitive wholesale power markets to the Companies, whose business is the transmission and distribution of electricity. Thus, the Companies in effect become the *de facto* owners of these two enormous power generation facilities. As new "owners" of these generation resources, the Companies' approach to offering the generating units' output into the wholesale power markets would be expected to change when compared to the plants being operated competitively (as described above). At the same time, the Companies' interests in the maintenance and longer-term capital investment in the facilities will not be aligned with an entity competing for sales in the wholesale markets (again, see above).

As noted above, the Rider RRS incentivizes FES to overinvest in capital and reduces incentives to the FES to operate the plants efficiently. In addition, the Rider RRS acts as a subsidy by shifting the risks of the plants to captive ratepayers: If operating and/or investing at a particular level or under particular conditions is potentially money-losing, doing so is made less risky to FES since ratepayers will ultimately bear the costs of uneconomic performance. All of these factors have the same economic effects on the wholesale market: They encourage overproduction and inefficiency, and they crowd out competitive producers.

Q24. WHY SHOULD WE EXPECT THIS EFFECTIVE CHANGE IN OWNERSHIP TO MATERIALLY CHANGE THE PLANTS' OPERATIONS?

A24. Because FES will obtain no benefits if the plants do not remain operational, and will receive a guaranteed amount of revenue if the plants do operate. Under the PPA, it does not appear that FES can make a determination that the plants, or units at the plants, are no longer economically desirable to operate.[52] Thus, instead of FES being in the position of a competitive operator of the plants, i.e., constantly assessing the ongoing economic viability of the generating units year-to-year, the Companies will be responsible for selling the output of the plants in the PJM wholesale energy market and for selling the plants' capacity in the PJM RPM capacity market.[53] The Companies will have incentives to simply seek to sell all output while having limited say in plant costs.[54] In other words,

[52] The Companies have not provided the PPA; however, in the PPA's alleged terms and conditions provided in response to IEU Set-1-INT-25, it states that only if FES experiences an outage that results in a capital expenditure that would render a facility uneconomic (undefined), then upon written agreement the seller can either replace the capacity, or drop the facility from the PPA. See Appendix B.

[53] See Ruberto Direct Testimony at 9:11-14.

[54] See Appendix B, PPA terms and conditions provided in response to IEU-Set-1-INT-25.

the Companies' ratepayers will be subsidizing the two plants over the 15-year time horizon of the PPA.

Q25. WHAT IS WRONG WITH SUBSIDIZING THESE FES PLANTS?

A25. Rider RRS can only have the effect of encouraging output from FES and thereby displacing other, efficient suppliers' output in the wholesale power and capacity markets. This is the basic economics of a subsidy that is paid to some, but not all, sellers in a market. Attachment JPK-3 illustrates the standard and well-known supply curve of economics, with applications ranging across many industries, including electricity generation. In a competitive market without subsidization, ordering sellers' costs from low to high gives the "Supply without Subsidy" curve. Because supply curves reflect the marginal cost of production, and because subsidies reduce this cost, the effect of subsidies (such as the Rider RRS) is to shift the supply in the market to the curve labeled "Supply with Subsidy".

In a competitive market with no subsidy, the market-clearing price would be P* in Attachment JPK-3. The effect of subsidy is to push the price down to P'. In the process, higher-cost, but still "in-the-money" sellers find that the new price P' becomes too low to cover their costs; these sellers' supplies are now "out-of-the-money". The sales of these sellers are displaced by the sales of the subsidized market participants. This is a basic consequence of any subsidy to some, but not all, suppliers in a market.

The subsidy will benefit less efficient producers (i.e., Davis-Besse and Sammis, which receive the subsidy) at the expense of more efficient and cost-effective generators that would otherwise supply additional power and/or enter the market if the FES plants were not subsidized by captive ratepayers. In the absence of a subsidy, energy

production would have lower total cost to the economy. Ultimately, the extra costs resulting from the greater production by inefficient producers (Sammis and Davis-Besse) and the crowding out of more efficient producers has to be paid for, and will be paid for by consumers in the economy.

Q26. PLEASE EXPLAIN HOW THE SUBSIDY WILL AFFECT THE CAPACITY MARKET.

A26. The PJM RPM capacity market provides "incentives that are designed to stimulate investment both in maintaining existing generation and in encouraging the development of new sources of capacity."[55] When a market participant sells capacity in the RPM capacity auctions it receives a fixed payment in return for the commitment to provide generation capacity three years in the future.[56] Capacity market prices provide an important function by signaling the market's perception of the going-forward cost to bring and/or keep capacity in the operation and avoid shutdown. Generators that expect to operate profitably given capacity prices and expected energy revenues continue operating, while power producers that are not profitable given capacity prices may shut down—as they should if capacity prices offer no prospect of positive return because others are supplying capacity at lower cost.

Attachment JPK-4 illustrates the effects of the subsidy on the capacity market. It shows how a less costly plant would be crowded out by an inefficient, subsidized producer. Without the subsidy, the going-forward cost to avoid shutdown for the inefficient producer is above the capacity market-clearing price. The subsidy lowers the

[55] See http://www.pjm.com/markets-and-operations/rpm.aspx, accessed December 17, 2014.

[56] See http://www.pjm.com/LearningCenter%20Content/Home/three-priorities/buying-and-selling-energy/capacity-markets.aspx, accessed on December 17, 2014.

amount of revenue the inefficient producer requires to avoid shutdown. With the subsidy, the inefficient producer will lower its offer in the PJM RPM capacity market, and this lower offer results in a lower market clearing price. The lower clearing price crowds out a producer whose going-forward cost is between the inefficient producer's subsidized and unsubsidized capacity offer.

Q27. WHAT WOULD THE EXPECTED OUTCOME BE FOR ONGOING GENERATION RESOURCE DEVELOPMENT IN OHIO IF THE ESP IS IMPLEMENTED?

A27. As shown in Attachment JPK-2, power plant development and construction in Ohio is very active. This is consistent with the expected impact of the PJM capacity market's prices signaling the need for capacity additions. Power plant developers surely recognize that older coal-fired generating units—like several of those operating at the Sammis facility—may come under increased financial pressure, especially if gas prices remain at levels currently being publicly forecasted. In describing Carroll County Energy's planned 742 MW gas-fired plant near Carrollton, Ohio, the Ohio Power Siting Board Staff agreed that generation project benefits the public interest, noting that "the proposed natural gas generation facility will replace coal-fired plants being retired, reducing air emissions."[57] To the extent new development is driven in part by the expectation that older coal units eventually retire, like several of the smaller units at the Sammis plant, it can be expected that subsidization will dampen and potentially force cancellation of these newly planned generation plants.

[57] *In the Matter of the Application of Carroll County Energy, LLC for a Certificate of Environmental Compatibility and Public Need to Construct an Electric Generation Facility*, Case No. 13-1752-EL-BGN, Opinion Order and Certificate at 26 (April 28, 2014).

In particular, as illustrated in Attachment JPK-4, capacity market prices will be lower than they would be otherwise, reducing the incentive for new developers to bring supply to market. Thus, recently sited gas-fired plants shown in Attachment JPK-2, which are much cleaner, more efficient, and likely more economical to operate than at least the Sammis plant (given access to favorable Ohio natural gas supplies) may not get built because they have to compete with old coal plants that have their costs shifted to captive ratepayers when those costs are out-of-market (i.e., costs which exceed going-forward market prices). Of the plants under development, only one has commenced construction, meaning the others can be expected to offer their capacity into an upcoming PJM capacity market auction. If they are crowded out of PJM's capacity auctions, Ohio consumers will be forced to pay higher power prices than they would otherwise.

Q28. WHAT WILL THE IMPACT OF THE COMPANIES' PROPOSED ESP BE ON EXISTING PJM GENERATING RESOURCES?

A28. Existing generation resources that have lower going-forward costs than the FES plants, but whose costs are close to capacity market-clearing prices, can be expected to find themselves under pressure to cease operations temporarily, or retire early. As illustrated in both Attachments JPK-3 and JPK-4, the Rider RRS incentivizes the Companies to offer the plants' capacity and energy output at lower prices than they would under undistorted competitive market conditions. These lower energy and capacity offers will crowd out market participants that would be efficient and "in the market" but for the subsidy from Rider RRS.

Q29. WHAT DOES THIS MEAN ECONOMICALLY?

A29. The Companies' proposal is expected to discriminate against existing and future generation suppliers, to distort the price signals in the energy and capacity markets, and to ultimately result in higher electricity costs.[58]

Q30. HAS THIS CONCERN BEEN IDENTIFIED PREVIOUSLY BY THE PUCO'S STAFF?

A30. Yes, the Staff of the PUCO in the AEP Ohio request for a ratepayer guarantee has recognized the distortive effects of shifting generators' risks and above-market costs to captive ratepayers. As noted in the testimony of Dr. Hisham Choueiki of the PUCO Staff: "It took over a decade for the Commission to transition the four Ohio EDUs to a fully competitive retail electricity market. Granting a PPA rider is a move in the opposite direction;" and "it is only fair to shift not only the risks but also the benefits associated with that generation to the investors of AEP."[59]

[58] As used herein, discrimination refers to the Companies' proposal resulting in FES' Sammis and Davis-Besse generation resources enjoying out-of-market earnings under the PPA at the expense of other similarly situated resources that were not provided an opportunity to offer similar services to the Companies. That is, the PPA is not the result of a competitive solicitation which would have treated all similarly situated sellers equally.

[59] Staff Ex. 18 at 9 (Choueiki Direct Testimony), in *In the Matter of the Application of Ohio Power Company for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Revised Code, in the Form of an Electric Security Plan*, Case Nos. 13-2385-EL-SSO et al.

IV. THE COMPANIES' JUSTIFICATIONS FOR THE PROPOSED ESP ARE FLAWED

Q31. HOW DO THE COMPANIES RATIONALIZE THE *DE FACTO* RETURN TO COST-OF-SERVICE SHIFTING OF GENERATOR RISKS TO CAPTIVE RATEPAYERS?

A31. The Companies' supporting testimony for its ESP proposal makes several claims in association with its proposal, but central to the Companies' case is the threat that the plants may retire absent the PPA. Mr. Moul indicates that: "The economic viability of the Plants is in doubt."[60] He goes on to suggest that market-based revenues "are insufficient to permit FES to continue operating the Plants and to make the necessary investments."[61] Thus, if the plants are subsidized by the Companies' retail ratepayers, the Companies assert that this will eliminate the threat of retirement of base load generation plants and support certainty and stability for longer term pricing of retail electric service.[62] The Companies opine that this will save retail ratepayers money over the long run and ensure that plants that apparently face retirement will continue to operate promoting economic development and job retention.[63]

The Companies' claims that the PPA provides significant benefits to ratepayers are not based on sound analysis. As I have pointed out,

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60 See Moul Direct Testimony at 2.

61 *Id.*

62 See Strah Direct Testimony at 3.

63 *Id.*

Furthermore, claims of preserved resource diversity overstate the impact of what will simply be a gradual shift toward an increased reliance on gas-fired generation resources. Ohio currently relies heavily on coal-fired generation resources, but the marketplace is successfully dictating that this shift be gradual. Finally, claims that power price volatility will be exacerbated with increased reliance on natural gas are also overstated. Retail power price volatility is driven by forward market power prices, not day-to-day or hour-to-hour spot prices. Forward market price volatility is much lower than hourly and daily price volatility and, while underlying shifts in generation resources will impact prices, it does not mean prices will fluctuate wildly.

A. Resource Diversification Is a Red Herring

Q32. WHAT HAS THE COMPANY CLAIMED IN RELATION TO ITS PROPOSAL'S IMPACT ON RESOURCE DIVERSITY?

A32. Mr. Moul observes in his Direct Testimony that the retirement of additional coal and nuclear plants will change the generation mixture in Ohio.[64] Mr. Moul goes on to suggest that an increase in natural gas-fired resources in Ohio would expose customers to increased price volatility and an alleged higher risk associated with natural gas resources

[64] See Moul Direct Testimony at 9. Note that Mr. Moul indicates that his testimony is focused on Ohio, although I am unaware of any prior nuclear plant retirements in Ohio.

that he assumes are reliant on interruptible fuel supply.[65] However, Mr. Moul offers no analysis to support his contention that an increase in natural gas-fired generation units in Ohio would materially impact consumer power prices and electric system reliability.

Q33. WHAT IS OHIO'S CURRENT GENERATION RESOURCE RELIANCE?

A33. According to the PUCO, 70% of Ohio's electricity is generated using coal-fired facilities, while 15.5% and about 13% are obtained from natural gas and nuclear resources, respectively (the remaining balance is from a small number of petroleum and renewable resources).[66] Thus, Ohio relies on coal and nuclear-fueled resources for a large portion of its electricity supply.

Q34. WOULD THE REJECTION OF THE COMPANIES' PROPOSAL BE EXPECTED TO RESULT IN A SIGNIFICANT SHIFT IN RESOURCE DIVERSITY AS DEFINED BY THE COMPANIES?

A34. No.

Thus, increased use of natural gas for power generation can be expected to be driven in the near term by continued new development activity in Ohio. Second, even if there was additional plant retirement in Ohio that was replaced by gas-fired generation, it would take a significant shift toward natural gas resources to materially change the proportion of coal-fired resources.[67] Third, the state is embedded in the overall PJM RTO. This means that Ohio's resources are actually drawn from *PJM's* portfolio. Ohio's indigenous

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[65] *Id.* at 7-9.

[66] See http://www.puco.ohio.gov/puco/index.cfm/consumer-information/consumer-topics/where-does-ohioe 28099s-electricity-come-from/#sthash.dnN4mb6E.dpbs, accessed December 9, 2014.

[67] However, if a large, high utilization base load generation resource was to suspend or shut down operations and not be replaced by other similar generation a shift in resource mixture could occur more quickly.

generating capacity does not give it resource diversity; *PJM's* generating capacity gives Ohio (and other PJM states) resource diversity. PJM's policies and markets determine and ensure that the power system will operate reliably. As PJM has demonstrated with its recently proposed modifications to its capacity market product design, electric system reliability will not be allowed to be compromised by any particular resource with all resources being expected to provide reliable service year round.[68]

Q35. EVEN IF THERE IS A TREND TOWARD ADDITIONAL RELIANCE ON NATURAL GAS IN THE FUTURE, WOULD THAT REPRESENT REDUCED RESOURCE DIVERSITY?

A35. Not necessarily. Although the definition of resource diversity can be expected to vary state-to-state given different state public policies on electric generation resource mixtures, generation resources located in Ohio are predominantly coal-fired. Ohio has chosen to rely on PJM's competitive wholesale markets to guide efficient, low-cost development of new generation resources. Thus, Ohio will benefit from the ongoing shift throughout the U.S. toward a somewhat greater reliance on natural gas-fired resources. This shift is occurring because of the cost and environmental advantages of gas-fired power plants. System reliability is ensured by the combination of market pricing (under which expected conditions of short supply generate higher price payoffs to those who invest to satisfy a shortage) and the severity of penalties faced by those responsible for ensuring reliable system operations.

[68] See PJM RPM Reforms at Section I.

B. Retail Consumer Price Volatility Benefit Is Overstated

Q36. WHY HAVE THE COMPANIES CLAIMED THEIR PPA PROPOSAL WILL REDUCE CONSUMER PRICE VOLATILITY?

A36. The Companies argue that the long term of the proposed PPA, combined with the added "resource diversity" from keeping the plants running, will reduce consumer price volatility. According to the Companies' witness Strah, "Rider RRS, as proposed, will provide a mitigation mechanism for price increases and volatility that retail consumers are expected to experience over the next 15 years."[69] As described above, the Companies argue that "resource diversity helps mitigate price volatility" and that the "plants serve to shield retail customers against volatile and increasing gas prices."[70] In addition the Companies' witness Rose claims that "as the wholesale and power market prices delivered to FirstEnergy increase, retail prices will follow this trend on average."[71]

Q37. DO LONG-TERM POWER PRICES VARY AS MUCH AS SPOT-MARKET PRICES?

A37. No. Attachment JPK-5 compares the volatility of power prices at PJM's AEP-Dayton hub for product durations ranging from one day to one year. While price volatility is relatively high for daily products, for longer term products the volatility of prices is reduced greatly. For example, the annualized volatility of daily on-peak prices at AEP-Dayton is 274%, while the annualized volatility of one-year duration on-peak prices is

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69 See Strah Direct Testimony at 4:18-19.

70 See Moul Direct Testimony at 7.

71 See Rose Direct Testimony at 21:11-12.

only 18%. This implies that the volatility of one-year duration prices is only approximately 7% that of daily duration prices.[72]

Q38. DO RETAIL ELECTRICITY PRICES VARY AS MUCH AS WHOLESALE ELECTRICITY PRICES?

A38. No. Retail consumer power prices are set such that they are not even remotely as volatile as wholesale spot market prices.[73] The former rise and fall much more slowly than wholesale market prices and are considerably less volatile. The Companies currently procure generation resources for Standard Service Offer customers via a laddered auction with 12-, 24- and 36-month terms,[74] and the Companies' price to non-shopping customers is a fixed rate per kWh.[75] In Ohio, only retail customers who choose to opt into variable rate pricing are exposed to variation in the price of electricity.[76] Shopping customers may select fixed rates for periods as long as 36 months.[77] Therefore day-to-day volatility in wholesale electricity prices has limited direct impact upon retail customers.[78]

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[72] Calculating the standard deviations and coefficients of variation for forward market prices yields the same conclusions, i.e., forward market power prices vary much less than daily prices.

[73] It is important to note that Mr. Rose has not analyzed retail price volatility. Retail power prices are set in advance of delivery and their variation is not measured using historical wholesale spot prices.

[74] The competitive bidding process by which the Companies procure service for their SSO customers is described at https://www.firstenergycorp.com/content/fecorp/upp/oh/power_procurements/auction.html, accessed December 17, 2014.

[75] See https://firstenergycorp.com/content/customer/customer_choice/ohio_/understanding_yourbill.html, accessed December 17, 2014.

[76] See http://www.energychoice.ohio.gov/ApplesToApplesCategory.aspx?Category=Electric#, accessed on December 17, 2014.

[77] See Strah Direct Testimony at 13:8.

[78] See the data available at http://www.puco.ohio.gov/puco/index.cfm/industry-information/statistical-reports/ohio-utility-rate-survey/#sthash.75zaMZl4.S6cDndGx.dpbs, which indicates, for example, that the average price paid by residential consumers of electricity in eight major cities was $0.13/kWh in December 2013, January 2014, and February 2014, the months surrounding the "polar vortex" weather event in January 2014. The average prices for commercial and industrial electricity also remained constant for these months at $0.11/kWh and $0.09/kWh, respectively.

Q39. CAN CAPACITY MARKET PRICES AFFECT THE VOLATILITY OF WHOLESALE ELECTRICITY PRICES?

A39. Capacity market prices are set annually for a one-year period three years in the future. Basic principles of statistics imply that an independent variable (capacity prices) that is constant over a given time period cannot affect the variation of a dependent variable (daily wholesale energy prices) within that time period. PJM routinely holds one base auction per year and three very small incremental auctions per year. So even if PJM's three incremental capacity auctions are taken into account, capacity market auction results can affect wholesale spot prices at most four times per year.

Q40. WHAT IS THE BASIS FOR THE COMPANIES' CLAIM THAT THE PLANTS ARE POSSIBLY FACING RETIREMENT?

A40. The Companies indicate that the plants are not receiving sufficient market revenues to cover the ongoing costs of keeping the plants operational. The Companies' witnesses' testimony presents a confusing set of facts as a result of the tension between suggesting that the plants are on the brink of retirement while also projecting that the plants will be very profitable to operate if and when ratepayers become the *de facto* owners.

In fact, the Companies' witness Mr. Harden testifies that the plants have recently received almost $2 billion worth of capital investment in 2010 (excluding the recent reported investment of $600 million in Davis-

Besse's new steam generators),[79] indicating that FES has expected these plants to continue to operate for many years into the future. That is, these plants have recently received enormous capital investments presumably based on FES' expectation that higher future power prices will compensate FES for its capital investments.

Q41. IS THERE AN EXPLANATION THAT HELPS CLARIFY THIS CONFUSION?

Yes. First, it appears that the Companies have included some *sunk* costs associated with FES' prior capital investments when making the claim that generating plants are not receiving sufficient revenues from the wholesale power markets. As discussed above, the economically rational and fiduciarily responsible decision to operate or shut down ignores sunk costs and, instead, turns on whether going-forward avoidable costs can be covered by expected going-forward operating revenues. Second, over the term of the proposed PPA,

[79] Harden Direct Testimony at 10.

[82] As explained above, avoidable costs are those costs that would not be incurred if the plants were not operated.

Publicly available data do not permit definitive investigation of this issue, but FES' pursuit of the proposed PPA and ESP would clearly be in its interest if, for example, it is not otherwise able to meet its debt obligations or, at least, its equity investors' anticipated return of and on capital. This type of financial situation arises for companies from time to time and, if debt obligations cannot be met, can push a company into selling assets or going into some form of bankruptcy in order to restructure debt obligations and restore the prospect for profitable operations. Although companies prefer to avoid bankruptcy, it provides an orderly process for writing down the value of under-performing assets. To be sure, lenders and equity providers may suffer financially, but consumers are protected from shouldering the

costs of losing investments.[83] Importantly, when bankruptcy or other restructuring occurs, it is in the interests of all concerned that operating assets which contribute positive cash flow continue to operate. Bankruptcy or financial restructuring does not mean retirement of productive assets.

To illustrate, consider the example of Midwest Generation LLC ("Midwest"), a power generation subsidiary of Edison Mission Energy. In 2012, Midwest filed for bankruptcy.[84] During the bankruptcy process, Midwest did not shut down its power plants, but instead worked out a deal where the plants were eventually sold to NRG Energy Inc. Under the ownership of NRG Energy, all of the generation facilities were evaluated and actions were taken to modify operations at some units, and in limited instances commitments were made to shut down very old coal-fired units without pollution controls.[85] Other units which could meet the market's test of positive going-forward cash flows have been kept in operation. In short, the bankruptcy process allowed a new owner to be found that continues to operate the power plants that can deliver power efficiently to consumers.

Q44. WHAT ABOUT THE POSSIBILITY THAT ONE OF THESE PLANTS, OR ONE OR MORE INDIVIDUAL UNITS AT THE SAMMIS PLANT, WOULD RETIRE AT SOME POINT IN THE FUTURE?

[83] See Brealey, R., Myers, S., & Allen, F. (2011), *Principles of Corporate Finance*, 2011 McGraw-Hill/Irwin, pp 837-842.

[84] See Federal Energy Regulatory Commission, Order Authorizing Proposed Transaction, 146 FERC ¶61,196 at p. 2 (2014).

[85] See, for example, "NRG to Shutter, Repower Illinois Coal Units in Modernization Bid," *Power News*, August 12, 2014.

A44. If a particular generating unit, or entire plant under an appropriately structured analysis, was to cease producing positive net cash flow, the asset should be retired. This outcome, which is precisely what we expect to occur in a competitive marketplace, leads to an efficient allocation of resources, and minimizes costs for consumers. In the competitive wholesale marketplace, plants fail to generate positive operating cash flows when their costs exceed the costs of other units which can satisfy consumers' demands. Keeping the inefficient alive at the expense of the efficient is a waste of resources for the economy and, ultimately, harmful to consumers.

As newer, more efficient generation assets are brought on-line in Ohio and throughout PJM, we should expect that older, less efficient plants will be put under competitive pressure. To the extent these newer assets displace less efficient, higher-cost producers, it should not be a surprise that some older assets will retire. As has been observed in PJM, older and less efficient plants will retire over time, but new, more efficient plants are being built to replace these plants (see discussion above). This market-driven process weeds out the most expensive producers and ensures that the most cost-effective producers are the ones available to satisfy consumers' demands.

Q45. HOW DOES THE COMPANY SUPPORT ITS CLAIM THAT THE PROPOSED PPA WILL BE BENEFICIAL TO ITS RATEPAYERS?

A45. The Companies developed an analysis that compares the projected revenues the Companies expect the plants will receive when selling power into PJM's wholesale markets against the projected costs under the PPA. The overall results of this analysis—

presented as Attachment JAR-1 (Revised) to Mr. Ruberto's Direct Testimony—show projected revenues below projected costs in the first three years of the PPA. In the fourth year of the PPA, projected revenues rise significantly above projected costs, and thereafter revenues are forecasted to remain considerably above costs throughout the term of the PPA.

V. CONCLUSION

Q51. WHAT DO YOU CONCLUDE FROM YOUR ANALYSIS?

A51. In light of the substantial capital investments that FES has made in recent years in its Davis-Besse and Sammis facilities and the inherent uncertainty of its ability to recover the costs of those investments by directly participating in PJM's competitive wholesale markets, it can readily be in FES' interest to avoid the risk of under-recovery by shifting the Companies' risk onto captive ratepayers. But by the same token, if there is a net benefit to FES from this transfer of risk, there is a net cost for the captive ratepayers. From their perspective, the proposed ESP amounts to a bailout of FES for risks taken and

the investment costs incurred by FES' private owners and FES' lenders. The ESP would accomplish this through a non-bypassable Rider RRS levy on the Companies' captive ratepayers. If implemented, the ESP would provide FES a guaranteed return on its capital investments in the Davis-Besse and Sammis facilities, eliminating the market risk faced by competitive companies.

In its economic essence, the proposed ESP would represent a reversion to long-rejected cost-of-service regulation, utilizing captive ratepayers to effectively guarantee that FES as a power generator would be able to recover the embedded costs of, plus a return on, the subject plants. As such, the proposal is distinctly contrary to the nation's federal policies of utilizing competitive markets to price and compensate generators for supplying electric power and capacity to consumers. By providing FES with the *de facto* guarantee that captive ratepayers will cover the costs of operations and investments even when market conditions would otherwise judge those operations and/or investments to be inefficient and wasteful, the proposed ESP would distort the incentives of FES.

In particular, the long history of cost-of-service regulation teaches that insulating plant operators from risk of loss increases the taking of such risks and generates more loss-generating investments and operations. In this case, ratepayers would bear such consequences. The change in incentive structures that would be created by the proposed ESP would distort the wholesale interstate power and capacity markets by keeping otherwise high-cost, inefficient operations competitive, thereby driving out efficient market participants. This would redound to the detriment of the economy and, ultimately, consumers.

The proponents' arguments for the proposed ESP are deeply flawed.

Finally, the claims that the risks of the plants and responsibility for recovery of their embedded costs plus a return thereon should be shifted to the Companies' captive ratepayers in order to preserve generation "resource diversity" or to insulate ratepayers form "price volatility" do not hold up to scrutiny. The majority of Ohio's electricity generation is coal-fired. A market-driven shift by Ohio to more efficient technologies (such as gas-fired generation) benefits consumers who pay lower prices as a result. In the end, Ohio is embedded in the PJM RTO, and PJM's markets and policies promoting

reliability provide resource diversity to Ohio. With respect to claimed insulation from "price volatility", PJM's wholesale markets operate to smooth out underlying volatility in, e.g., natural gas prices, and Ohio ratepayers are afforded extensive options for choosing to purchase their electricity under price-stabilizing terms. As a result, retail consumer electricity prices are much less volatile than underlying changes in wholesale power prices. The proposal would not contribute materially to insulation from price volatility.

In sum, the proposed ESP, PPA, and Rider RRS are unwise public policy. They portend a reversion to old-style cost-of-service regulation that lets owners of generation shift the risks of under-recovering their costs to captive ratepayers. Such a policy in Ohio would be distinctly contrary to the efficient operation of the interstate wholesale electric energy and capacity markets and would be in the interest of neither the economy nor consumers.