OCC EXHIBIT NO. ______

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

SUPPLEMENTAL TESTIMONY OF JAMES F. WILSON

On Behalf of
The Office of the Ohio Consumers' Counsel
10 West Broad Street, Suite 1800
Columbus, Ohio 43215-3485

And

Northeast Ohio Public Energy Council
31320 Solon Rd.
Cleveland, Ohio 44139

May 11, 2015

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I. INTRODUCTION

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

A1. My name is James F. Wilson. I am an economist and principal of Wilson Energy Economics. My business address is 4800 Hampden Lane Suite 200, Bethesda, MD 20814.

Q2. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY IN THIS PROCEEDING?

A2. Yes. I submitted direct testimony in this proceeding on behalf of the Ohio Consumers' Counsel ("OCC") and the Northeast Ohio Public Energy Council ("NOPEC") on December 22, 2014. My experience and qualifications were described in that testimony, which also included a list of past cases in which I testified before the Public Utilities Commission of Ohio ("PUCO"). My curriculum vitae, further describing my experience and qualifications and listing other past testimony, was attached to my direct testimony.

Q3. ON WHOSE BEHALF ARE YOU PROVIDING SUPPLEMENTAL DIRECT TESTIMONY IN THIS PROCEEDING?

A3. I am again testifying on behalf of OCC and NOPEC.

Q4. WHY ARE INTERVENORS SUBMITTING SUPPLEMENTAL DIRECT TESTIMONY AT THIS TIME?

A4. In this proceeding, Ohio Edison Company, The Cleveland Electric Illuminating Company and The Toledo Edison Company ("FE Companies") have proposed to enter into a purchase power agreement ("PPA") to purchase the output of the Davis-Besse Nuclear Power Station ("Davis-Besse") and the W. H. Sammis Plant ("Sammis"), power plants owned by subsidiaries of their affiliate FirstEnergy Solutions Corp. ("FES"), and also an entitlement to a portion of the output of two generating plants of the Ohio Valley Electric Corporation ("OVEC"). I refer to the Davis-Besse and Sammis plants and the OVEC entitlement collectively as the "Indicated Generation". The FE Companies further proposed to sell these resources' capacity, energy and ancillary services into the wholesale markets operated by PJM Interconnection, L.L.C. ("PJM"), and the full costs of the resources plus a return on invested capital, net of the associated market revenues, would be recovered from customers through the proposed Retail Rate Stability Rider ("Rider RRS").

In an Opinion and Order dated February 25, 2015 in Case No. 13-2385-EL-SSO ("AEP Ohio Order"), the PUCO addressed factors that it would balance in considering whether to approve a similar PPA proposal from AEP Ohio. The attorney examiner's Entry of March 23, 2015 in this proceeding modified the procedural schedule to allow the FE Companies and intervenors to supplement their testimony to address the factors in the AEP Ohio Order with regard to the FE Companies' PPA proposal in this proceeding.

Q5. ***WHAT IS THE PURPOSE AND SCOPE OF YOUR SUPPLEMENTAL DIRECT TESTIMONY?***

A5. My assignment was to review the supplemental testimony and respond to additional issues raised therein, focusing on the supplemental testimony of the FE Companies' witness Lawrence Makovich that was submitted May 4, 2015.

II. SUMMARY AND RECOMMENDATION

Q6. ***PLEASE BRIEFLY SUMMARIZE YOUR EVALUATION AND MAIN CONCLUSIONS FROM YOUR DIRECT TESTIMONY.***

A6. In my direct testimony, I evaluated the FE Companies' estimate of the potential future net costs to customers under the proposed PPA and associated Rider RRS. I concluded that the FE Companies' estimated cost was unreliable, primarily due to the speculative nature of the price assumptions used in the analysis, and that the net cost to customers of the proposed Rider RRS would likely be much greater. I prepared three alternative scenarios, where I changed only the assumed natural gas and corresponding electricity price assumptions. Under my second and third scenarios, which I consider more likely to occur than the FE Companies' scenario, Rider RRS would cost customers $3 billion or $3.9 billion, respectively, over the 15 years of the rider and PPA.

I also explained that, because the proposed Rider RRS would simply pass the net cost of the PPA through to customers, the incentive to manage the costs, and to maximize revenues, would be eliminated. This would further expose customers to high costs, and allow generation that might prove to be uneconomic to continue in operation for many additional years at the customers' expense.

I also found that any incremental price stability the arrangement might provide by serving as a type of hedge (which I considered doubtful), would be of little value compared to the expected net cost, and risk of even higher cost, to customers.

Q7. WHAT DID YOU RECOMMEND WITH REGARD TO THE PROPOSED RIDER RRS AND PPA?

A7. I recommended that the Rider RRS proposal be rejected, primarily because the proposal would shift the costs and risks associated with the Indicated Generation to customers, while eliminating the owners' incentives to manage the costs and risks of these plants.

I also recommended that, should the PUCO choose to approve Rider RRS in some form, it be modified to reduce the cost and risk to customers and restore some incentive to the FE Companies to control costs and maximize operation and revenue. I described how such an incentive mechanism could be designed in the last section of my direct testimony.

Q8. WHAT DID THE AEP OHIO ORDER REQUIRE WITH REGARD TO A FUTURE PPA PROPOSAL?

A8. The AEP Ohio Order called for AEP Ohio to address, at a minimum, the following factors, which it would consider in deciding whether to approve the proposal (p. 25):

i. financial need of the generating plant;

ii. necessity of the generating facility, in light of future reliability concerns, including supply diversity;

iii. description of how the generating plant is compliant with all pertinent environmental regulations and its plan for compliance with pending environmental regulations; and

iv. the impact that a closure of the generating plant would have on electric prices and the resulting effect on economic development within the state.

The AEP Ohio Order further required that a PPA rider proposal must include the following (pp. 25-26):

v. provide for rigorous Commission oversight of the rider, including a proposed process for a periodic substantive review and audit;

vi. commit to full information sharing with the Commission and its Staff;

vii. include an alternative plan to allocate the rider's financial risk between both the Company and its ratepayers; and

viii. include a severability provision that recognizes that all other provisions of an Electric Security Plan would continue, if the PPA rider is invalidated, in whole or in part at any point, by a court of competent jurisdiction.

Q9. AS A PRELIMINARY MATTER, HAVE THE FE COMPANIES ADDRESSED ALL OF THESE REQUIREMENTS, IN DIRECT OR IN SUPPLEMENTAL TESTIMONY?

A9. No. In particular, the FE Companies' testimony does not include, in any form, "an alternative plan to allocate the rider's financial risk between both the Company and its ratepayers" (# vii above).

Q10. HAVE THE FE COMPANIES WITNESSES UPDATED THEIR ESTIMATE OF THE COST TO CUSTOMERS OF THE PROPOSED PPA AND RIDER?

A10. No. They did not submit any new testimony on this subject.

Q11. HAVE YOU UPDATED YOUR ESTIMATES OF THE COST TO CUSTOMERS OF THE PROPOSED RIDER AND PPA?

A11. No, I have not. However, since December, natural gas forward prices have continued to decline, and the U.S. Energy Information Administration has released a new installment of its Annual Energy Outlook, two sources of information I relied upon for my estimates. Were I to update my estimates at this time, the estimated cost to customers would be higher than the values in my direct testimony.

Q12. BASED ON YOUR REVIEW OF THE SUPPLEMENTAL TESTIMONY, WHAT DO YOU NOW RECOMMEND WITH REGARD TO THE PPA?

A12. I still recommend that the PUCO reject the proposed Rider RRS and PPA, for the same reasons explained in my direct testimony. With the passage of time, the likelihood that the arrangement would be very costly for customers continues to grow, and the FE Companies' witnesses have not provided any new reasons to approve the arrangement.

III. ALLEGED "MISSING MONEY" IN THE PJM MARKETS

Q13. FIRST, PLEASE SUMMARIZE DR. MAKOVICH'S CONCLUSION WITH REGARD TO THE PPA IN HIS SUPPLEMENTAL TESTIMONY.

A13. Dr. Makovich supports the proposed "Economic Stability Program" (the PPA), claiming it would benefit consumers. He asserts that without this financial support, the Indicated Generation might retire before it is economic to do so. p. 3.

Q14. WHAT DOES DR. MAKOVICH BELIEVE IS THE PROBLEM THAT COULD CAUSE THE INDICATED GENERATION TO RETIRE BEFORE IT IS TIME?

A14. Dr. Makovich alleges there is "missing money" in the PJM markets. p. 3.

Q15. MR. WILSON, YOU HAVE BEEN INVOLVED IN RESOURCE ADEQUACY ISSUES IN THE PJM MARKETS FOR A LONG TIME. IS THERE "MISSING MONEY" IN THE PJM MARKETS?

A15. No, there is not "missing money" in the PJM markets. "Missing money" is a term that has been used for many years to refer to the difference in revenues generated by an electricity market and the (presumably higher) level of revenues needed to attract and retain sufficient generation to satisfy resource adequacy objectives. For many years now, the PJM markets have had sufficient new entry and adequate total resources to satisfy applicable resource adequacy targets, indicating there is no "missing money".

Q16. WHAT IS THE PRIMARY EVIDENCE ON WHICH YOU CONCLUDE THERE IS NOT MISSING MONEY IN THE PJM MARKETS?

A16. The main evidence is simply that year after year, PJM clears sufficient resources through its Reliability Pricing Model ("RPM") resource adequacy construct to exceed the target installed reserve margin. Through RPM, both existing and new resources are cleared for the delivery year three years into the future; and retirements are also reflected in the accounting of resources through RPM. In particular, through RPM many new power plants have cleared and have been constructed. In the most recent RPM base residual auction for the 2017/2018 delivery year, PJM cleared a 19.7% installed reserve margin, 4% higher than the target reserve margin of 15.7%.[1] 5,927.4 MW of new generation cleared in this auction.

[1] PJM, *2017/2018 RPM Base Residual Auction Results*, p. 1.

Q17. WHILE THERE HAS BEEN SUBSTANTIAL NEW ENTRY IN PJM, HAS THERE BEEN NEW ENTRY SPECIFICALLY IN THE MARKET REGION THAT INCLUDES OHIO?

A17. Yes. The broader market region that includes Ohio has had excess capacity, and, as a result, relatively low capacity prices; but there has been some new entry. In addition, there are currently a number of new power plants under construction or proposed in Ohio:

i. The 869-MW Oregon Clean Energy Center, a combined-cycle natural-gas fired generation facility to be located in Oregon, Ohio, has cleared in RPM and obtained financing.

ii. Carroll County Energy is a 700 megawatt natural gas fired power generation facility under construction in Carroll County and expected to be online in December 2017.

iii. Tenaska has proposed to convert its Rolling Hills Generating Station in Wilkesville, Vinton County, to a 1,414 MW station including baseload combined cycle and peaking combustion turbine units.

iv. NTE Energy plans to construct a 525 MW combined cycle unit in Middletown, Butler County.

PJM's generation interconnection queue currently includes over 4,300 MW of new, Ohio, gas-fired generation for the 2016 through 2019 planning years.[2]

Q18. WHAT DOES THE FACT THAT MANY NEW POWER PLANTS HAVE CLEARED IN RPM TELL US ABOUT WHETHER THERE MIGHT BE "MISSING MONEY" IN THE PJM MARKETS?

A18. The fact that many companies have proposed and have built or are now building new power plants, including new gas-fired combined cycle units, combustion turbines, wind, and other resources, indicates that these parties find that the PJM markets (for energy, ancillary services, and capacity) are offering sufficient revenues to make such investments worthwhile; that is, these market participants' investments show that there is not "missing money" in the PJM markets.

Q19. WHAT DOES PJM'S INDEPENDENT MARKET MONITOR HAVE TO SAY ABOUT THE ADEQUACY OF CURRENT REVENUES IN THE PJM MARKETS?

A19. PJM's independent market monitor, Monitoring Analytics, in its recent 2014 State of the Market Report for PJM,[3] concluded revenues were adequate in 2014:

[2] PJM's list of active interconnection requests is available at http://www.pjm.com/planning/generation-interconnection/generation-queue-active.aspx.

[3] Monitoring Analytics, LLC, *2014 State of the Market Report for PJM*, march 12, 2015, Volume 1 p. 36.

> "In 2014, RPM capacity revenues were sufficient to cover the shortfall between energy revenues and avoidable costs for the majority of units and technology types in PJM, with the exception of some coal and oil or gas steam units."

Q20. DR. MAKOVICH STATES THAT THE TERM "MISSING MONEY" WAS FIRST USED IN A 2006 PAPER (P. 7). IS THIS CORRECT?

A20. No. There is a substantial literature on resource adequacy for electricity markets, with which Dr. Makovich is apparently unfamiliar. The term "missing money" was coined and used by Dr. Roy Shanker in the 1990s. He explained the "missing money" problem in detail in 2003 in comments with regard to FERC's Standard Market Design.[4]

Q21. HOW DOES DR. MAKOVICH DEFINE "MISSING MONEY" FOR THE PURPOSES OF HIS TESTIMONY?

A21. Dr. Makovich uses a few different, rather non-standard definitions in his testimony:

> "The problem is that inherent market flaws and imposed environmental policies have caused market clearing power prices

[4] Comments of Roy J. Shanker, Ph.D. on Standard Market Design: Resource Adequacy Requirement, January 10, 2003 in FERC Docket No. RM01-12, p. 3.

> to chronically fall short of covering the average total cost of efficient power supply – what I refer to as the "missing money" problem." p. 3.
>
> "As a result, the market interventions impose missing money shortfalls in market cash flows and cause an under-recovery of the cycling and base load costs needed in an efficient generation supply portfolio." p. 9.

And later in his testimony, he refers to "missing money" as more of a plant-specific phenomenon, as I will discuss later in my supplemental testimony.

Q22. DR. MAKOVICH SUGGESTS THAT PJM HAS FOCUSED ON PROVIDING ADEQUATE REVENUES ONLY FOR PEAKING UNITS. IS THIS CORRECT?

A22. No, this is incorrect. This is another instance where Dr. Makovich exhibits his lack of understanding of the economics of resource adequacy. Specifically, Dr. Makovich states as follows (pp. 3-4):

> "Currently, PJM focuses on ensuring reliability by generating market cash flows that are intended to be sufficient to cover certain costs of a peaking unit. But cost effectively producing power

> supply requires more than simply having enough peaking units installed to ensure reliability. Therefore, although the theory behind the market design is that the lowest cost of capacity involves building a peaking unit, the lowest-cost reliable power supply portfolio is not made up entirely by peaking technologies…"
>
> "The missing money problem disproportionally affects cycling and base load power plant cash flows and causes uneconomic retirements of these plants."

Dr. Makovich is of course correct that the lowest-cost power supply portfolio will involve a mix of baseload, cycling and peaking resources. However, it is well-established that when the resource mix is balanced, the "missing money" that must be covered by capacity payments is the same for all categories of resources; it is not greater for baseload resources. This is clearly stated in the one paper cited by Dr. Makovich in his testimony – it is in fact Frequency Asked Question #1 in an appendix to that paper.[5]

[5] Cramton, Peter and Steven Stoft, *The Convergence of Market Designs for Adequate Generating Capacity*, April 2006, Appendix 2 Frequently Asked Questions, #1 ("Any type of unit could be used as the benchmark unit, as they all give the same answer to the question how much scarcity revenue is needed." The capacity market is designed to provide any missing scarcity revenue.).

Q23. PLEASE ELABORATE ON WHY THE "MISSING MONEY" THAT MUST BE COVERED BY CAPACITY PAYMENTS IS THE SAME FOR ALL CATEGORIES OF RESOURCES.

A23. This is true because, while baseload plants generally have higher construction costs, they have lower variable generation costs, and, accordingly, earn relatively more revenues in energy and ancillary services markets. Plants with lower construction costs, such as peaking units, tend to run less frequently and to earn less in energy and ancillary services markets. In equilibrium with a balanced mix of resources, the different categories of resources will all require the same additional revenues to cover their total costs, including fixed and variable costs.

Indeed, if, at any point in time, one category of resource (say, peaking capacity) requires less from capacity payments than other categories, investors would be focusing on adding that, most economical type of resource to the mix. This would tend to bring the mix back into balance, with all types of resources requiring the same capacity payment.

Q24. DOESN'T PJM CALCULATE PARAMETERS FOR ITS RPM CAPACITY CONSTRUCT BASED ON COMBUSTION TURBINE PEAKING UNITS?

A24. Yes. The estimated capacity price needed to cover any missing money in RPM is called "Net CONE" – the cost of new entry ("CONE"), net of anticipated net revenues from the energy and ancillary services markets. Under RPM, Net

CONE is calculated based on a combustion turbine peaking unit. However, this is unimportant, because the missing money will over time be the same for other resource categories, as I have explained.

Q25. HOW DO PJM'S ESTIMATES OF THE "NET CONE" CAPACITY PAYMENTS NEEDED BY PEAKING AND BASELOAD RESOURCES COMPARE?

A25. They are rather close. In fact, PJM's current estimates show *lower* Net CONE values for combined cycle units, which typically operate as baseload units, than for combustion turbine peaking units, in all regions of PJM.[6]

Q26. DR. MAKOVICH NOTES THAT BASELOAD PLANTS HAVE HIGHER CAPACITY COSTS THAN PEAKING UNITS, BUT MAY BE MORE ECONOMICAL OVERALL. IS THIS SOMETHING THAT PJM'S MARKET DESIGN MISSES?

A26. No. Again, the "missing money" that must be provided by the RPM capacity construct is the same for different categories of resources, including those with high fixed costs. Dr. Makovich states as follows (p. 13):

[6] PJM, *MOPR Floor Offer Prices for 2018/2019 BRA* (showing Net CONE values for combined cycle and combustion turbine units in the four CONE regions, with the combined cycle values lower in each instance); available at http://www.pjm.com/~/media/markets-ops/rpm/rpm-auction-info/final-mopr-floor-offer-prices-for-2018-2019.ashx

> "Cycling and base load power plants are part of a cost-effective mix because of their relative operating efficiency. These power plants have capacity costs in excess of the combustion turbine, but they have a lower overall power supply cost because the expected value of the fuel savings compared to a combustion turbine are more than enough to pay for the higher upfront capacity costs. Thus, *some of the additional capacity costs over and above combustion turbine costs* in a power supply portfolio are cost-effective investments in production cost efficiency (emphasis added).

Dr. Makovich's suggestion that there are "capacity costs" associated with efficient baseload plants "over and above combustion turbine costs" that may be good investments confuses the construction or capital costs of different plants with the "missing money" or Net CONE capacity payment needed by different plants. Baseload plants indeed have higher fixed costs but also lower variable costs, and, therefore, earn much more in energy and ancillary services markets than peaking resources. Again, for both types of resources, Net CONE will be the same in a balanced mix.

Dr. Makovich's suggestion that PJM's resource adequacy construct only provides adequate capacity revenues for peaking, but not baseload units, is wrong, and based on a flawed understanding of the economics of resource adequacy. His contention the revenues are inadequate for baseload units is contradicted by PJM's Net CONE estimates, and by the evidence that baseload combined cycle units are being constructed in PJM.

Q27. DR. MAKOVICH PROVIDES A CALCULATION SUGGESTING THAT MARKET PRICES RESULT IN A "SHORTFALL IN CASH FLOWS" OF MORE THAN TEN PERCENT OF THE COST OF A COMBINED CYCLE UNIT (P 11). PLEASE COMMENT ON THIS TESTIMONY.

A27. Dr. Makovich's back-of-envelope calculation, which entails many assumptions, is contradicted by PJM's more detailed Net CONE analyses, and by the market evidence that many new combined cycle units are being built across the PJM footprint. In any case, the decision to build a new power plant, or to continue to operate an existing power plant, will be based on expectations of revenues over the coming years, not just current market revenues.

Q28. ***DOES DR. MAKOVICH ACKNOWLEDGE THAT PJM HAS PUT IN PLACE ITS RPM RESOURCE ADEQUACY CONSTRUCT SPECIFICALLY TO ADDRESS A "MISSING MONEY" PROBLEM THAT COULD OTHERWISE EXIST?***

A28. Yes, he does acknowledge this later in his testimony. However, he alleges that the capacity market addresses only part of the potential problem. In particular, he alleges that it does not address the impact of renewable mandates (pp. 10-11):

> "This [the PJM capacity market] addresses the inherent dimension of the missing money problem, but does not remedy the imposed dimension of the missing money problem resulting from renewable energy mandates. Therefore, a persistent gap is likely in the future between market-based cash flows and the cash flows needed to recover the average total cost of power supply, particularly for cycling and base load units."

Q29. ***IS DR. MAKOVICH CORRECT THAT RENEWABLES MANDATES WILL RESULT IN A "PERSISTENT GAP" IN CASH FLOWS?***

A29. No. This is another instance where Dr. Makovich's testimony indicates that he does not understand how the RPM resource adequacy construct operates to provide capacity payments that close this gap.

Q30. PLEASE ELABORATE ON HOW RPM CLOSES THIS ALLEGED GAP.

A30. PJM's RPM capacity market is designed to maintain resource adequacy by offering existing and new resources capacity payments based upon Net CONE which, again, is the cost of new entry net of anticipated energy market revenues. If there is "price suppression" in the energy market, as Dr. Makovich alleges, this simply means that all resources will require higher capacity payments over time, and this is precisely what RPM is designed to do. Lower energy prices and revenues increase Net CONE (CONE minus such revenues), resulting, through RPM auctions, in higher capacity prices. As a result of this mechanism, energy market revenues may rise and fall over time, but capacity payments will also change such that total revenues remain adequate to provide the required "missing money", and to maintain and attract adequate resources. So even if renewables mandates cause persistently lower energy prices (which is also questionable), this would not cause there to be "missing money" as it would be covered by higher capacity payments.

Q31. DO YOU AGREE THAT RENEWABLES MANDATES WILL CAUSE A "PERSISTENT GAP" OF SOME KIND?

A31. No. Every year there are new resources joining the market and additional retirements. If at some point there is a "gap" due to some form of "price suppression", this will cause resources decisions to be adjusted, which will quickly eliminate the gap. Dr. Makovich does not attempt to explain how such a gap could be "persistent", when every year resource owners are making and adjusting decisions in a manner that would close any such a gap.

Q32. YOU MENTIONED THAT DR. MAKOVICH USES ANOTHER DEFINITION OF "MISSING MONEY" LATER IN HIS TESTIMONY. PLEASE COMMENT.

A32. Yes. Later in his testimony, he begins to use "missing money" to refer to the shortfall in revenues seen by the Indicated Generation; it is no longer a resource adequacy or market design issue, but instead only has to do with the shortfall in revenue experienced by these older, high-cost generation plants, that he proposes can be addressed by targeted subsidies for those plants (p. 12).

> "The Economic Stability Program is a reasonable effort to address the missing money problem by compensating the Plants for system benefits that are not explicitly compensated for in the marketplace… The Economic Stability Program addresses the missing money problem and prevents uneconomic retirements of cycling and base load power plants that would move the generation portfolio toward a more expensive fuel and technology mix. …(p. 12).

> "The Plants participate in the PJM energy market and produce system-wide benefits for consumers. But these benefits are at risk of going away because market interventions result in a missing money problem *for the Plants*." (p. 15, emphasis added).

Such plant-specific cash flow shortfalls do not reflect a market design problem, of course. They simply reflect that the specific resources may no longer be economic. This is a misuse of the term "missing money."

Q33. WITH REGARD TO THE FINANCIAL VIABILITY OF THE INDICATED GENERATION, THE FE COMPANIES' WITNESS DONALD MOUL ASSERTS (P. 4) THAT COSTS ABOVE AND BEYOND AVOIDABLE COSTS MUST BE TAKEN INTO CONSIDERATION. IS THIS CORRECT?

A33. No. "Avoidable costs", nothing more or less, determine financial viability, by definition. Mr. Moul asserts, "Revenues that merely cover avoidable costs are insufficient to fund necessary capital projects and to maintain the financial viability of the Plants." However, the definition of "avoidable costs" used in PJM includes such necessary investment: [7]

[7] Monitoring Analytics, LLC, *2014 State of the Market Report for PJM*, Section 5 Capacity, p. 198.

> "Avoidable costs are the costs that a generation owner would not incur if the generating unit did not operate for one year, in particular the delivery year… Avoidable costs may also include annual capital recovery associated with investments required to maintain a unit as a Generation Capacity Resource, termed Avoidable Project Investment Recovery (APIR)."

Avoidable cost includes such necessary future investment, but it does not, of course, include any cost associated with past, sunk investments, which Mr. Moul includes in his analysis of financial viability. Thus, Mr. Moul overstates the financial needs of the plants.

Q34. DR. MAKOVICH ASSERTS THAT THE ECONOMIC STABILITY PROGRAM IS NOT A SUBSIDY. IS HE CORRECT IN THIS?

A34. No. It absolutely would be a subsidy to these specific plants. It would be an out-of-market payment and revenue guarantee to specific resources; Dr. Makovich does not propose to offer the program to the thousands of MW of other, similarly-situated existing resources in the market. Nor does he propose that such payments should be offered to the many new gas-fired baseload combined cycle units and other new plants that are being built in PJM without any such subsidy. Any such broader subsidization program would, of course, only increase the amount of resources in PJM, further exacerbating the excess capacity situation which is the main cause of the relatively low prices that he laments.

Q35. FINALLY ON THIS TOPIC, DR. MAKOVICH ASSERTS THAT THE INDICATED GENERATION HAS "NOT FAILED AN EFFICIENT MARKET TEST". IS HE CORRECT IN THIS?

A35. Again, there is substantial new entry into PJM, while older, less efficient plants are being retired. If the FE Companies will not continue to operate these plants without the substantial subsidy they are requesting, and in light of the anticipated future increases in energy and capacity prices in PJM, then these plants have failed a market test.

IV. ON THE VALUE OF A DIVERSE MIX OF RESOURCES

Q36. DR. MAKOVICH ALSO TESTIFIES IN FAVOR OF A DIVERSE MIX OF RESOURCES. IS PJM'S RESOURCE MIX AT PRESENT DIVERSE?

A36. PJM's current resource mix is somewhat diverse, however, coal and nuclear capacity make up a very large portion of total generation. During 2014, coal units provided 43.5 percent, nuclear units 34.3 percent and natural gas units 17.3 percent of total generation in PJM.[8]

[8] Monitoring Analytics, LLC, *2014 State of the Market Report for PJM*, march 12, 2015, Volume 1 p. 17.

Q37. DR. MAKOVICH CLAIMS HE HAS ANALYZED THE VALUE OF DIVERSITY, AND ATTACHES A 2014 REPORT. DOES THIS REPORT QUANTIFY THE VALUE OF DIVERSITY?

A37. No. As Dr. Makovich acknowledges (p. 5), this report calculates the higher cost of generation in the U.S. under the hypothetical of "no meaningful contributions from coal-fired or nuclear power plants." The hypothetical is of course totally unrealistic, and not a quantification of the value of diversity. In addition, the calculations rely upon many questionable assumptions; in particular, with regard to the cost of replacement resources, and future fuel prices.

Q38. DR. MAKOVICH ACKNOWLEDGES THAT IF GAS-FIRED AND RENEWABLE RESOURCES INCREASE, WHILE COAL DECREASES, THE PJM RESOURCE MIX WILL BECOME MORE DIVERSE (P. 16). WHAT THEN IS THE ISSUE ABOUT "DIVERSITY"?

A38. This is not very clear, and Dr. Makovich does not define what he means by the term "diversity" in his testimony. He mentions in places "fuel" and "technology" diversity specifically (p. 4).

In this context he suggests, as did earlier FE Companies witnesses, that coal and nuclear resources have "on site" fuel (p. 12) that is an advantage over gas-fired resources. However, this claim, which I addressed in my direct testimony, does not have to do with "diversity." I do not find any new arguments about power supply diversity in Dr. Makovich's testimony.

V. OTHER ALLEGED BENEFITS OF THE PROPOSED PPA

Q39. DR. MAKOVICH ALSO SUGGESTS VARIOUS OTHER BENEFITS PROVIDED BY THE INDICATED GENERATION. PLEASE SUMMARIZE AND COMMENT ON THESE ALLEGED BENEFITS.

A39. Dr. Makovich mentions various types of alleged benefits from keeping the Indicated Generation in operation; for example, at pp. 14-15:

> "The Plants involve fixed costs to fund greater power production efficiency, and provide production cost risk management and technology performance risk management, as well as provide environmental impact management."

None of the alleged benefits are anything different from what the FE Companies' witnesses claimed in earlier testimony in this proceeding. Nor does Dr. Makovich attempt to explain how these plants provide these benefits any better than other, similarly situated existing plants, or various types of new plants, that apparently he does not propose to subsidize.

Q40. DR. MAKOVICH SUGGESTS THAT THE INDICATED GENERATION PLANTS ARE "EXCEPTIONAL" FROM AN OPERATIONAL PERSPECTIVE (P. 12). DO YOU AGREE?

A40. No. While it is unclear what he means by the "operational" perspective, coal and nuclear plants are generally relatively inflexible resources with slow ramp rates, high minimum operating levels, and other disadvantageous operational attributes.

VI. THE IMPORTANCE OF AN ALTERNATIVE PLAN TO ALLOCATE FINANCIAL RISK IF ANY PPA IS APPROVED

Q41. YOU MENTIONED EARLIER THAT THE AEP OHIO ORDER REQUIRES AN ALTERNATIVE PLAN TO ALLOCATE FINANCIAL RISK, BUT THE FE COMPANIES HAD NOT PUT ONE FORWARD. SHOULD THE PUCO DECIDE TO MOVE FORWARD WITH A PPA, IS AN ALTERNATIVE PLAN TO ALLOCATE RISK IMPORTANT?

A41. Yes, an alternative plan is crucial. As I explained in my direct testimony, the PPA and associated rider, as proposed by the FE Companies, would eliminate any incentive for the FE Companies and the owners of the Indicated Generation to control costs, or to maximize revenues. In fact, due to FirstEnergy's large portfolio in PJM, there would actually be an incentive to not maximize revenues.

Q42. PLEASE EXPLAIN WHY, UNDER THE FE COMPANIES' PROPOSED PPA AND RIDER, THERE WOULD BE AN INCENTIVE TO FAIL TO MAXIMIZE REVENUES.

A42. FirstEnergy companies own a large portfolio of generation in PJM, most of which earns revenues in the PJM market that are retained by FirstEnergy rather than passed on to consumers. However, under the proposal, any incremental revenues from the Indicated Generation would net against the costs to be passed through to consumers, with no direct impact on FirstEnergy profits. However, by failing to clear the Indicated Generation in the PJM markets (and especially in the RPM capacity market), the energy and capacity market prices earned by the remainder of the FirstEnergy portfolio would be increased. This creates a strong incentive to fail to clear the Indicated Generation in any markets where that could positively affect the price.

Q43. DOES THIS COMPLETE YOUR SUPPLEMENTAL TESTIMONY?

A43. Yes it does. However, I understand that I may be asked to further update or supplement my testimony based on new information that may become available.

CERTIFICATE OF SERVICE

I hereby certify that a true copy of the foregoing *Supplemental Testimony of James F. Wilson, on Behalf of the Office of the Ohio Consumers' Counsel and Northeast Ohio Public Energy Council* was served via electronic transmission this 11th day of May, 2015 upon the parties below.

*/s/ Larry S. Sauer*______________
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