DUKE ENERGY OHIO EXHIBIT_____

BEFORE

THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Review of the Reconciliation Rider of Duke Energy Ohio, Inc.	)))	Case No. 20-167-EL-RDR

DIRECT TESTIMONY OF

JOHN D. SWEZ

ON BEHALF OF

DUKE ENERGY OHIO, INC.

PUBLIC VERSION

October 19, 2021

TABLE OF CONTENTS

ATTACHMENTS:

I. INTRODUCTION

Q. STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is John D. Swez and my business address is 526 S. Church Street, Charlotte, North Carolina 28202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Duke Energy Carolinas, LLC (Duke Energy Carolinas) as Managing Director, Trading and Dispatch. Duke Energy Carolinas is a public utility that is an affiliate of Duke Energy Ohio, Inc. (Duke Energy Ohio or Company), both of which are subsidiaries of Duke Energy Corporation (Duke Energy).

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

A. I received a Bachelor of Science degree in Mechanical Engineering from Purdue University in 1992. I received a Master of Business Administration degree from the University of Indianapolis in 1995. I joined PSI Energy, Inc., in 1992 and have held various engineering positions with the Company or its affiliates in the Power Services and Power Trading departments. In 2003, I assumed the position of Manager, Real-Time Operations. Though my title has changed on several occasions, I assumed my current role on November 1, 2019.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO?

A. No, although I have testified before the Indiana Utility Regulatory Commission and the Kentucky Public Service Commission on several occasions.

Q. PLEASE BRIEFLY DESCRIBE YOUR DUTIES AS MANAGING DIRECTOR, TRADING & DISPATCH.

A. As Managing Director, Trading and Dispatch, for Duke Energy, I am responsible for Power Trading on behalf of Duke Energy Ohio and Duke Energy's other regulated utilities in the Carolinas, Florida, Indiana, and Kentucky. I am also responsible for Duke Energy's Indiana and Kentucky utilities' generation dispatch, unit commitment, and 24-hour real-time operations as a member of the Midcontinent Independent System Operator, Inc., (MISO) for Indiana and PJM Interconnection, L.L.C.. (PJM) for Kentucky and Ohio. For Duke Energy Ohio, this involvement is with the Ohio Valley Electric Corporation (OVEC) generating units, where I am on the OVEC Operating Committee as well as managing Duke Energy Ohio's day-to-day involvement with these generating units. Finally, I manage a team of meteorologists responsible for providing weather analysis to support operations and planning decisions across the Duke Energy enterprise.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my direct testimony is to discuss what steps Duke Energy Ohio takes to ensure that its customers receive as much value as possible through its Price Stabilization Rider (Rider PSR). In doing so, I describe the Company's participation and processes in place with the generating units owned by OVEC and those units' involvement in PJM. I also describe the various PJM Billing Line Item (BLI) charges and credits that are currently included in Rider PSR and why those charges and credits are appropriate for inclusion in the Rider PSR calculation.

II. OVEC AND ITS GENERATING FACILITIES

Q. PLEASE DESCRIBE OVEC AND ITS OWNERSHIP STRUCTURE.

A. OVEC was formed in 1952 during the Cold War to help the United States government enrich uranium in Southern Ohio. The public utilities and power cooperatives that surrounded this part of the Ohio Valley came together to form OVEC, which built two large electric generating facilities, Clifty Creek and Kyger Creek Stations, and a long span of high-voltage (345 kV) transmission lines. Duke Energy Ohio, one of these original utilities, owns 9 percent of OVEC.

The OVEC generation stations are Clifty Creek Station, comprising 6 coal-fired generating units, each with a winter capability of 200 MW for a site total of 1,200 MW, and Kyger Creek Station, comprising 5 coal-fired generating units, each with a capability of 199 MW for a site total of 995 MW. Thus, the generating capability of all OVEC units totals 2,195 MW. Duke Energy Ohio receives 9 percent of this energy and capacity, or approximately 198 MW (before losses).

Q. PLEASE EXPLAIN THE INTER-COMPANY POWER AGREEMENT (ICPA).

A. Duke Energy Ohio is a party to a contract with OVEC and the other owners of OVEC called the Amended and Restated Inter-Company Power Agreement, or ICPA. The ICPA provides for the various contracting parties' rights and obligations about capacity, generation, and the costs thereof. Duke Energy Ohio is one of many co-sponsoring companies under the ICPA (Sponsoring Companies) in the OVEC corporation. The ICPA is not a simple power purchase agreement as it represents a long-term compact among OVEC's utility counterparties to pay all of OVEC's costs and to be entitled to utilize the power and energy from OVEC.

Q. HOW ARE CAPACITY AND ENERGY COSTS ALLOCATED UNDER THE ICPA?

A. Under the ICPA, Duke Energy Ohio is entitled to 9 percent of OVEC's energy and capacity and is responsible for the same share of its costs.

III. RIDER PSR

Q. HOW DOES RIDER PSR FUNCTION?

A. Through the Rider PSR, as it pertains to the Duke Energy Ohio ownership of OVEC, the Company credits its customers with its share of all revenues received from operation of the OVEC generating units, including energy, ancillary services, and capacity revenues in the PJM market, and charges customers with the Company's share of costs associated with running the OVEC units, including costs incurred in the PJM markets.

Q. IN ORDER TO RESULT IN RIDER PSR BEING AS BENEFICIAL AS POSSIBLE FOR CUSTOMERS, WHAT NEEDS TO HAPPEN?

A. As far as the OVEC revenues and costs that are recovered through the Rider PSR, to the extent possible, the Company attempts to maximize the benefits, minimize costs, and thereby achieve as much value as possible for its Ohio customers. Throughout the remainder of this testimony, I will explain how the Company works to accomplish this objective through its management and active participation in its share of the energy, capacity, and OVEC costs.

IV. OVERVIEW OF OVEC OPERATIONS

Q. PLEASE EXPLAIN WHAT ENTITY MANAGES OVEC'S OPERATIONS ON A DAY-TO-DAY BASIS.

A. OVEC manages and operates the OVEC facilities; Duke Energy Ohio does not operate either the OVEC generating stations or its transmission facilities and Duke Energy Ohio personnel do not participate in OVEC's day-to-day operational decisions. Strategic decisions with respect to OVEC's operations are made by OVEC's management, with oversight and approval by OVEC's Board of Directors and the OVEC Operating Committee.

Q. PLEASE EXPLAIN DUKE ENERGY OHIO'S INTERACTION WITH OVEC.

A. Duke Energy Ohio has one representative and has a 9 percent "vote" on matters that are brought to the Board of Directors. In addition, I am Duke Energy Ohio's representative on the OVEC operating Committee. Certain decisions, including those regarding procedures for scheduling delivery of available energy, and recommendations as to scheduling, operating, testing and maintenance procedures, and other related matters, are delegated by the Board of Directors to the Operating Committee. Duke Energy Ohio is actively engaged in the management of its own entitlement percentage, actively participates in various committees, and may make recommendations to the OVEC personnel who are responsible for day-to-day decisions with the goal of increasing the value of OVEC for Duke Energy Ohio's customers. Additionally, Duke Energy Ohio, outside of the OVEC Operating Committee, has discussions with OVEC staff on an as-needed basis.

Q. PLEASE EXPLAIN THE OVEC OPERATING COMMITTEE.

A. Currently, there are ten members of the Operating Committee, including OVEC's representative. As the Company's representative to the OVEC Operating Committee, I attend Operating Committee meetings, respond to correspondence, vote on Operating Committee matters, and oversee Duke Energy Ohio's involvement with the OVEC assets with the goal of maximizing the value of the assets for the benefit of the Ohio customers. This is accomplished by OVEC's, Duke Energy Ohio's, and the Operating Committee's continuous focus on providing value. Examples of topics discussed at Operating Committee meetings include the decision to recommend to the board and the process of joining PJM, management of emissions allowances in conjunction with commitment of Clifty Creek Unit 6, other unit commitment discussions and decisions, and exploration of providing additional ancillary service value, such as regulation, from the OVEC units.

Q. DOES DUKE ENERGY OHIO MAKE SUGGESTIONS TO OVEC REGARDING ITS OPERATIONS?

A. Yes. The Company discusses opportunities within OVEC and potential changes in the PJM markets, participates in discussions or brings up proposals for consideration in the OVEC Operating Committee, and is active on the OVEC Board of Directors.

V. COMMITMENT AND DISPATCH IN THE PJM ENERGY MARKET

Q. PLEASE EXPLAIN THE GENERATING UNIT COMMITMENT DECISION FOR THE OVEC UNITS AND THE PROCESS USED TO MAKE SUCH OFFER.

A. First, let's define the term commitment. Commitment is the decision or act of starting a generator that is off-line or maintaining an on-line generation status for a unit that is already on-line. Simply said, it is the decision to run or not run a unit. OVEC itself determines the unit commitment in PJM. OVEC's commitment starts with the OVEC Energy Scheduling department, which has an internal daily call every non-holiday weekday morning to review unit status and availability, including applicable unit derates, potential unit liabilities, and outage status and expected unit return-to-service dates. OVEC then uses this information to formulate and submit the day-ahead unit offers into the PJM market. In advance of the morning call, the OVEC Energy Scheduling department also receives a daily unit status report from each plant. Information in this report is updated, as appropriate, based on real-time unit operating status during the morning calls. A similar, but less formal, daily meeting takes place on weekends and holidays with OVEC's system operations personnel and the contractor that provides certain functions during weekends and holidays. OVEC then updates day-ahead offers, if necessary, based on conditions at that time.

Units are offered into the PJM market with a commitment status consistent with the sponsor-approved Operating Committee procedures. With some exceptions, units that are in service and expected to be available in the day-ahead

market are offered as Must Run. During ozone season, Unit 6 at Clifty Creek is assigned an opportunity cost associated with its NOx emissions profile and is offered as Economic. Additional potential exceptions could include unusual non-market-related events such as coal shortages and/or some form of force majeure event outside of OVEC's control. Additionally, OVEC develops its appropriate day-ahead and real-time energy market offers (incremental cost, no-load cost, startup cost, etc.) in accordance with PJM Manual 15.

Q. WHAT ARE THE OPTIONS FOR COMMITTING UNITS IN PJM?

A. PJM allows for four different commitment status offers: Not Available or Outage, Emergency, Economic, and Must-Run (sometimes referred to as self-scheduled). For units that are offered with an Economic commitment status, the decision to turn on or continue running this unit is made by PJM. For units that are offered with a Must-Run commitment status, the decision to turn on or continue running the unit is made by the owner.

Q. WHY IS A MUST-RUN COMMITMENT REASONABLE?

A. At the present time, a Must-Run offer produces the most value for the OVEC units due to the relationship of the units' variable costs with the PJM energy and ancillary services revenue, especially after consideration of other factors such as cycling costs, risks, or other parameters. Simply said, over a period of time the revenues received from operation in the PJM Energy and Ancillary Services Markets (ASM) are generally greater than the variable costs necessary to run the units and thus a Must-Run offer produces more value in today's market than an offer that potentially cycles the units on and off or doesn't commit the units effectively, such as an

Economic unit commitment status offer. This will be discussed in detail in this testimony.

For example, with respect to cycling costs, OVEC, as a coal-fired generating station, is not capable of instantaneous turning on and off like a light switch. Shutting off the unit, turning on the unit, and ramping up the unit take time and come with risks and significant costs. As a result, any commitment decision must factor in the cycling timing, risks, and costs. It is often more economic to run the unit during periods where it is "out of the money" so that the unit is capable of operations during periods when it is deep "in the money" to maximize potential revenues.

Similarly, with respect to other risks, every time a coal-fired unit is shut down, there are risks associated with starting it up again. Units can fail to start due to thermal cycles or other cycling issues, causing potential damage to the units and loss of market revenue. This risk of cycling must also be factored into commitment decisions and whether or not to commit the unit as Economic or Must-Run.

Q. FOR A UNIT THAT HAS ENERGY AND ANCILLARY SERVICE REVENUES GREATER THAN ITS VARIABLE COSTS OVER A COMMITMENT PERIOD, IS THERE AN ADVANTAGE TO THE USE OF A MUST-RUN OFFER?

A. Yes. Since the unit is "in the money" (*i.e.*, revenues exceed variable costs) in this scenario, use of a Must-Run offer guarantees the unit to run and is not subject to potential decommitment during periods of time when the unit may be out of the money but not for a long enough period of time to justify an economic cycle.

However, assuming that there is no change to a unit's commitment (the unit still runs in both scenarios), the amount of revenue each unit receives is identical between the two different scenarios. In this situation, the assumption is made that there is no additional revenue available when a unit is committed by PJM but doesn't receive enough revenue to offset the unit's variable costs, called Day-Ahead or Balancing Operating Reserve payments, since the unit is in the money.

Q. WILL A MUST-RUN COMMITMENT STRATEGY ALWAYS BE REASONABLE FOR THE OVEC GENERATING UNITS?

A. Not necessarily. As a unit becomes more marginal or even out of the money, the advantage of using a Must-Run offer tends to decline or be eliminated versus the use of an Economic offer. However, the determination between the two different types of offers depends on many factors, such as the variable cost of the unit, the cost and risk to cycle a unit, consideration of required unit testing or other reasons why a unit may be required to operate, the amount of time necessary to shut down and restart a generating unit, the ramp rate of a generating unit, and external PJM sponsor coordination, among many factors. For this reason, Duke Energy Ohio has brought up potentially including the units' expected profit and loss as one of the many factors to consider in determining the commitment status of the OVEC units to OVEC personnel in the Operating Committee meeting. This topic is currently being studied by OVEC.

Q. IS AN ECONOMIC COMMITMENT STRATEGY ALWAYS REASONABLE FOR THE OVEC GENERATING UNITS?

A. No, not in the current PJM energy market pricing environment. Offering a unit

with an Economic commitment status, at all times, can either cause the unit to not be started when it is economic to operate or cause excessive cycling costs and shutdown the unit when it is economic to leave the unit on-line. This is due to the length of the PJM Day-Ahead market (24 hours) in relationship to the unit's practical minimum up time, minimum down time, and/or startup time. If an Economic commitment status is utilized in the future for the OVEC units, with the current variable cost of these units in relationship with the energy revenues received, strategically using both Must Run and Economic commitment status offers is expected.

Q. DO YOU BELIEVE THAT OVEC WOULD CHANGE THE COMMITMENT STATUS OFFER IF NEEDED?

A. Absolutely. In fact, this is exactly what happened during the second quarter of 2020 due to the impact of COVID and the resulting low energy prices in PJM. Since the units tended to have a negative margin, at the request of Duke Energy Ohio, as noted on page 44 of the audit report in this proceeding,[1] the Operating Committee voted and approved the use of an Economic commitment status offer during this time. At times, OVEC then utilized this strategy when it made economic sense, in addition to changes in scheduled outage timing, to minimize financial losses brought on by the low energy prices because of COVID.

Q. DOES DUKE ENERGY OHIO ALONE HAVE THE ABILITY TO CONTROL OR FORCE OPERATIONAL DECISIONS OF OVEC?

A. No. The procedures for the scheduling of available energy are set by the Operating

[1] Audit of the Price Stabilization Rider of Duke Energy Ohio Final Report, by London Economics International LLC (Oct. 15, 2020) (LEI Report).

Committee. Again, Duke Energy Ohio has only one vote on this committee. Pursuant to Section 9.05 of the ICPA, "[t]he decisions of the Operating Committee, including the adoption or modification of any procedure by the Operating Committee pursuant to this Section 9.04, must receive the affirmative vote of at least two-thirds of the members of the Operating Committee present at any meeting." Pursuant to the operating procedures of the Operating Committee (see Confidential Attachment JDS-1 OVEC Operating Procedures – Revision 11-15-19), the unanimous approval of the Operating Committee (excluding OVEC's representative) is required to change the commitment status of "Must Run" with respect to the offer of the "PJM Sponsors' aggregate share of reserved Available Energy into PJM's Day-Ahead Energy Market," with limited exceptions expressly set forth therein, including with respect to Clifty Unit No. 6 during ozone season.

Q. IN YOUR OPINION, WAS THE OVEC COMMITMENT STATUS OFFER STRATEGY AND IMPLEMENTATION IN 2019 APPROPIATE AND IN THE BEST INTEREST FOR CUSTOMERS?

A. Yes. However, since energy prices and the variable cost to operate the units can change over time, the optimal commitment status offer could also change. For 2019, in my opinion, the optimal commitment decision was employed by OVEC by submitting a Must-Run commitment status offer for available units except for Clifty Creek Unit 6 during ozone season. This is further supported by examination of the LEI Report. LEI calculated that the average variable cost of the OVEC generating units was $24.47/MWh in 2019,[2] which is consistent with the

[2] LEI Report, pp. 28, 29, Figure 11.

Company's understanding of the variable costs of the units at the time. Although no re-commitment study was completed (it is debatable that a meaningful commitment study can even be completed due to the "what if" analysis and changes to locational marginal pricing (LMP) and unit operations that is involved with such a study), it is my estimation that frequently cycling the units during the times when the units were marginal (revenues approximately equal to variable costs) in 2019 would have resulted in a lower overall margin, not a higher overall margin. Although LEI didn't necessarily come to this conclusion,[3] if examination of Figure 29 is made, one can see where I draw this conclusion. In that figure, LEI calculates the margin (generating unit revenue minus generating unit variable cost) for each month of 2019. Note that, when the units are "in the money" (revenue greater than variable cost), the difference tends to be quite large ($8.32/MWh in January, $5.05/MWh in March, etc.), but when the units are "out of the money" (revenue less than variable cost), the difference tends to be quite small (-$0.28/MWh in August, -$0.44/MWh in December, etc.). This supports my assertion that the units were very marginal in these months, meaning that one could have attempted to cycle the units during the time that they were out of the money, but the result would have been the opposite of that which was desired; the units' margin would have been reduced. Note that this is without consideration of other facts, such as required unit testing, risk of cycling the unit, PJM impacts of not operating such as the potential for PJM capacity performance penalties, external to PJM sponsor requests, etc. With the current startup cost of an OVEC unit at approximately

[3] LEI noted on page 53 of the LEI Report that the units had a negative margin during April, May, June, August, and December 2019.

$22,000/start (cold startup) and $10,000/start (intermediate or hot startup) per unit, with eleven total units and potentially multiple instances of starting/stopping per month, cycling costs can get expensive quickly. Thus, I believe that had the OVEC units been offered with a commitment status of Economic instead of Must Run and had excessive cycling resulted in 2019, the value to the Duke Energy Ohio customer would have remained approximately the same or decreased, not increased.

Q. CAN YOU EXPRESS FIGURE 29 FROM THE LEI REPORT IN A DOLLAR FORMAT, INSTEAD OF A $/MWH FORMAT, TO SHOW THE 2019 ENERGY VALUE TO THE DEO CUSTOMER?

A. Yes. Although Figure 29 was only calculated on a $/MWh basis, I converted the $/MWh figures to a $ value by multiplying the generation produced by difference in the units' revenue and cost (the units' margin) to show an approximate energy value of the Duke Energy Ohio share of the units in the PJM energy market (see table below). This showed that the units' interaction in the PJM energy market caused a positive margin of approximately $33 million in 2019. Thus, given OVEC's low energy costs and revenue from operation of the units in 2019 primarily being greater than the units' variable costs, the OVEC units earned $33 million in total energy margins (revenues greater than variable costs).

Month	Available Energy (billing MWh)	Energy cost ($/MWh)	PJM DA energy, DEOK ($/MWh)	PJM price less OVEC energy charge ($/MWh)	Energy Margin ($)
January-19	1,105,653	$23.60	$31.92	$8.32	$ 9,199,033
February-19	947,501	$23.49	$26.83	$3.34	$ 3,164,653
March-19	1,057,392	$24.24	$29.28	$5.04	$ 5,329,256
April-19	510,260	$27.00	$26.72	-$0.28	$ (142,873)
May-19	737,859	$26.43	$25.17	-$1.26	$ (929,702)
June-19	879,553	$24.70	$23.15	-$1.55	$ (1,363,307)
July-19	1,091,065	$24.11	$29.41	$5.30	$ 5,782,645
August-19	957,878	$25.42	$25.14	-$0.28	$ (268,206)
September-19	882,036	$24.03	$27.72	$3.69	$ 3,254,713
October-19	953,130	$24.62	$26.82	$2.20	$ 2,096,886
November-19	1,087,701	$23.40	$30.37	$6.97	$ 7,581,276
December-19	1,024,325	$24.50	$24.06	-$0.44	$ (450,703)
					$ 33,253,670

Q. HOW DOES THE COMPANY ENSURE THAT THE UNITS' MOST ECONOMICALLY ADVANTAGEOUS COMMITMENT STATUS OFFER TO PJM IS BEING UTILIZED BY OVEC?

A. Each business day, OVEC sends two reports to each PJM sponsor company; one report titled "OVEC Available Power Offer for Sponsors" and another titled "OVEC Morning Generation Report." Through these reports, the Company can maintain awareness of the availability and capability of the available OVEC generating units. Additionally, every business day, for each hour of the upcoming 21-day period, Duke Energy Ohio independently projects the expected energy market revenues from operation of the OVEC units in PJM, the variable costs to operate the unit at the forecasted unit hourly loading, and the resulting hourly energy margin. This report, called the Daily Profit & Loss Analysis, shows the hourly results summarized to a daily amount. Relevant to this discussion, an example of one day's report depicting Duke Energy's projections for all of the

generating units managed by my group, as well as those units managed by OVEC, is included as Confidential Attachment JDS-2. This report was completed on June 19, 2020, with the first day profit and loss forecast shown for June 20, 2020, and then additionally for a total of three weeks.

Similar to most generating units, there were days during 2019 when the revenues from the PJM day-ahead energy market were projected to be less than the variable operating costs for the OVEC units, i.e. a negative margin can be shown from time to time on this report. Thus, the plants can and do "lose money" for a particular hour or day. However, this is not a complete picture of a unit's proper commitment decision, as these decisions involve more variables that just a simple number on a spreadsheet at a single point in time. For example, frequently a coal unit may lose money on weekends or at night due to the lower energy prices, but it wouldn't make economic sense to cycle the unit off-line and back on-line due to the fact that the startup costs can be larger than the loss caused by just leaving the unit on-line. Thus, the way to maximize the operating margin from the unit may be to voluntarily have a loss in margin to avoid a larger loss in margin from cycling the unit off-line. In addition, there may be other reasons for a unit being on-line at any given point in time, including to startup a unit following a planned outage, for required unit testing, to avoid the risk of cycling and causing a thermal cycle that could lead to a forced outage at some point in the future, the amount of time necessary to shut down and start a generating unit back up, the ramp rate of a generating unit, and external PJM sponsor coordination, among many factors.

If the units lose money on a consistent basis over the commitment period,

the Daily Profit and Loss Report would reflect this situation. In such a situation, where it makes economic sense, Duke Energy Ohio could contact OVEC and request examination of a potential change to one or more units' commitment status offer to PJM. Since the OVEC units were not forecasted to consistently have enough negative margin from these daily reports to justify cycling, a specific request was not made in 2019. However, as mentioned, during April 2020, based on very low market prices from reduced loads in the PJM footprint due to COVID-19 impacts on customer demand, Duke Energy brought up this concern with OVEC. OVEC responded by proposing a modification of the Operating Committee process. The matter was voted on by members of the Operating Committee and passed.

Q. WHAT ADDITIONAL MEASURES DOES THE COMPANY EMPLOY TO MONITOR THE MARGINS PRODUCED BY THE OVEC GENERATING UNITS?

A. Duke Energy Ohio performs the following additional processes to monitor the profitability of the units and accuracy of information:

- After the units' Day-Ahead awards are published by PJM, each day the Company creates a preliminary profit and loss (or margin) report. Note that this is different from the Daily Profit and Loss report discussed previously, as this report uses the actual PJM Day-Ahead awards, not a forecast. An example of this report for January 17, 2019, is included as Confidential Attachment JDS-3.
- Company personnel review the OVEC monthly bill (the "Available Power

Statement"), by checking for accuracy in a separate excel spreadsheet. This was especially helpful during the time when additional shares of OVEC from FirstEnergy Solutions were allocated to others, as I discuss below.

- At the end of each month, Company personnel, including members of the front office, back office, and IT, review the PJM settlements statement in the "Monthly Settlement Meeting." At these meetings, Company employees review the OVEC PJM Settlement Statement that is specific to Duke Energy Ohio's OVEC shares only in PJM. Additionally, a comparison is made of the net sum of these values (the net revenues) to the OVEC charges broken out between fixed and variable charges, as shown in the OVEC Available Power Statement.
- Duke Energy Ohio creates a monthly unit margin report for the total OVEC generating unit in PJM (not the Duke Energy Ohio share). Duke Energy Ohio creates this report by taking the Duke Energy Ohio share of its PJM Billing Line Item (BLI) amounts and dividing this amount by the Duke Energy Ohio PJM sponsor share percentage, with the resulting value being the total value for all PJM sponsoring companies. By doing this, Duke Energy Ohio creates a total profit and loss statement for all PJM sponsor companies. This report is then sent to OVEC management as feedback for the units' PJM energy margin. Note that capacity is not included in this report as capacity is handled on an individual company basis only.

Q. DOES DUKE ENERGY OHIO EMPLOY ANY OTHER GENERATION OR PJM MARGIN FORECASTS OF THE OVEC GENERATING UNITS?

A. Yes. In addition to the above processes, using the same plant parameters, unit variable costs, and forecasted PJM energy markets, among other inputs, Duke Energy Ohio forecasts OVEC unit generation, energy revenue, variable costs, and energy margin for a longer term basis (up to 5-year) through a model called GenTrader.

Q. PLEASE EXPLAIN OVEC'S DISPATCH IN PJM.

A. Again, let's first start by defining the term dispatch. Dispatch is the process of determining at which output to operate an on-line generating facility and the movement of the unit to that desired output. In OVEC's case, the dispatch of the generating units refers to the instructions for the dispatch of the OVEC units from PJM and movement of the unit to the requested setpoint. These dispatch instructions for the OVEC generating units are sent by PJM and received by OVEC every 5-minutes. Unless a unit is required to be at an exact output such as what would be required for an environmental test, the OVEC generators are economically dispatched based on the units' incremental cost offer between minimum and maximum available output. Thus, as an example, if a unit's incremental cost offer is $25/MWh and the real-time LMP is greater than this amount, the unit typically would receive an instruction to move up in output or remain at full output since it is economically advantageous to do so.

Q. WHAT PROCESS DOES OVEC USE TO MONITOR THE ACCURACY OF FOLLOWING THE PJM DISPATCH INSTRUCTIONS?

A. OVEC has established an internal PJM Demand Comparison Report which is generated daily. This report provides operating data that includes a unit-by-unit

hourly comparison of actual net generation versus PJM demand. This report is also made available to plant operations personnel to aid them in evaluating prior day unit and operations related performance.

Q. WAS OVEC A FULL MEMBER OF PJM FOR THE ENTIRE YEAR 2019?

A. Yes. After converting the unit to a Pseudo-Tie arrangement in 2016, OVEC became a full member of PJM as of December 1, 2018. Thus, for the entire year 2019, the units were committed and dispatched each day as a full member of PJM.

Q. ARE THERE PROCESSES IN PLACE FOR DUKE ENERGY OHIO TO MONITOR THE UNITS IN REAL TIME?

A. Yes. Duke Energy Ohio has incorporated the OVEC units into its Energy Management System (EMS) to monitor the output of these units through generation dispatch management. Additionally, OVEC has created a secure website with which each member can interface to see the output of units in real-time, the status of each unit, and forecasted costs, among other information.

VI. PARTICIPATION IN THE PJM CAPACITY MARKET

Q. PLEASE EXPLAIN HOW DUKE ENERGY OHIO MANAGED ITS SHARE OF OVEC CAPACITY DURING THE CALANDER YEAR 2019.

A. Duke Energy Ohio bid its appropriate share of OVEC capacity into both the Base Residual Auctions (BRA) and each of the subsequent Incremental Auctions (IA) that contained the year 2019. Thus, because PJM capacity auctions cover the period from June through May, the PJM auctions that contained the calendar year 2019 would have been 2018/19 (June 1, 2018 through May 31, 2019) and 2019/2020 (June 1, 2019 through May 31, 2020).

Q. PLEASE EXPLAIN WHAT ZONE CONTAINED THE OVEC CAPACITY DURING THE YEAR 2019.

A. Duke Energy Ohio bid OVEC capacity into the regional transmission organization zone for capacity auctions during 2019. Note that the BRAs that contained the year 2019 were held prior to OVEC becoming a full member of PJM on December 1, 2018. Starting with the auction for delivery year 2022/23 that was held in May of 2021, Duke Energy Ohio now bids OVEC capacity into the OVEC zone.

Q. PLEASE EXPLAIN HOW DUKE ENERGY OHIO CALCULATES ITS CAPACITY OFFER PRICE AND THE AMOUNT THAT IS USES TO FORMULATE A BID INTO THE PJM CAPACITY AUCTION.

A. Price curves are derived using an economic indifference framework. This involves determining the break-even offer price at which participating in the auction yields the same amount of expected net revenue as does the option of not participating. The algebraic equation involves the sum of capacity payments, expected capacity performance bonuses, and expected penalties. While the indifference curve methodology is consistent across auctions, various model parameters are updated based on historical data and expected outcomes. For example, each year, a new offer price is created based on the updated inputs of (1) Forced Outage Rate, (2) PJM must-offer volume, (3) PJM expected performance assessment hours, (4) PJM Capacity Performance rate, and (5) change in installed capacity due to physical loss assignment by PJM.

Q. WHY DOES THIS APPROACH MAKE SENSE?

A. The capacity offer price curves are derived using an economic indifference method

that applies a consistent offer methodology that weighs the value of clearing in the PJM Capacity Market versus the risk associated with that obligation; essentially it is a risk versus reward approach. As the capacity market price decreases, the lower capacity payments do not justify taking on the capacity performance risk and thus the Company's offered amount of capacity decreases at a lower clearing price. As the clearing price increases, the Company is willing to sell more capacity forward since there are larger rewards to offset the potential capacity performance penalty.

Q. DID THE LEI REPORT AGREE WITH THIS APPROACH?

A. The LEI Auditor had no issues with Duke Energy Ohio's approach.

Q. DID THE COMPANY MAKE ADDITIONAL CAPACITY SALES TO OVEC DURING 2019?

A. Yes. To assist with the OVEC transition to becoming a full PJM member and the resulting OVEC capacity requirement, the Company not only self-supplied its share of the OVEC capacity obligation but sold additional capacity to OVEC at the BRA clearing prices for each auction.

VII. FES ALLOCATION

Q. PLEASE EXPLAIN THE ISSUE REGARDING FIRSTENERGY SOLUTIONS' INTEREST IN OVEC.

A. Following the rejection, by FirstEnergy Solutions Corp. (FES), of the ICPA in bankruptcy, Duke Energy Ohio, along with all other OVEC PJM Participants agreed to receive, and were allocated by OVEC, in coordination with PJM, a portion of FES's 4.85 percent share of energy and capacity between September 1, 2018, and May 31, 2020.

Q. DID DUKE ENERGY OHIO "PURCHASE" FES'S INTEREST IN OVEC? PLEASE EXPLAIN.

A. No. Duke Energy did not purchase FES's interest in OVEC. Duke Energy Ohio maintains its 9 percent share in OVEC and, along with other PJM sponsors, was allocated its share of additional FES revenues and energy costs during this time.

Q. PLEASE FURTHER EXPLAIN WHAT OCCURRED?

A. During the allocation period, the Company (like all other ICPA PJM participants) received an allocation of a portion of FES's energy and capacity entitlement and paid the same portion of variable energy costs necessary to produce the additional share of energy. This allocation was based on the remaining ICPA participants' power participation ratios. Duke Energy Ohio was not allocated any additional fixed costs or demand charges associated with the FES share of OVEC capacity. The additional share of FES capacity and energy was monetized in the PJM market.

Q. DID THE COMPANY KEEP THE ACCCOUNTING BETWEEN THE "NORMAL" OVEC ENERGY AND CAPACITY SEPARATE FROM THAT "ADDITIONAL" FES ENERGY AND CAPACITY RECEIVED?

A. Yes. Duke Energy Ohio differentiated revenues and costs associated with this additional FES energy and capacity from its previously received OVEC revenues and costs by using separate reserve accounting during this time.

Q. WAS THIS FES ALLOCATION A BENEFIT FOR CUSTOMERS?

A. Yes. The total amount of energy and capacity revenue during 2019 from this FES additional allocation was $2,105,806 and the additional amount of energy-related costs during 2019 from this additional FES allocation was $1,405,774. Therefore,

the net impact of these revenues and costs was a benefit of $700,033.00 for the Duke Energy Ohio customers for the 2019 calendar year. This can be seen in the LEI Report in figure 8 on page 26 as the summary in column G.

Q. COULD DUKE ENERGY OHIO HAVE SELECTIVELY CHOSEN CERTAIN HOURS TO HAVE THE FES ENERGY ALLOCATED?

A. No. PJM settlements must have a constant allocation amount for each entity for the entire settlement statement (*i.e.*, a whole month). Thus, the Company could not have attempted to selectively choose certain hours to accept or not accept the FES allocation. Since the allocation was overall a benefit to Duke Energy Ohio's customers, saying "No" would have made no sense and been harmful to customers.

VIII. PJM BILLING LINE ITEMS

Q. PLEASE BRIEFLY EXPLAIN THE PJM SETTLEMENT PROCESS.

A. PJM has a standard and robust process for accounting for all costs and credits accrued in participation of its markets. All costs and credits accrued as a member of PJM are invoiced weekly with a monthly true-up and settled by PJM through BLIs. The monthly bill includes a detailed listing of the different BLIs, with BLIs that start with a 1000 designation as costs and BLIs that start with a 2000 designation as credits. If a 1000 charge type is positive, that represents a charge, whereas a 1000 charge type that is negative represents a credit to the Company. Conversely, if a 2000 charge type is positive, that represents a credit, whereas a 2000 charge type that is negative represents a charge to the Company. BLIs provide a transparent process to account for costs caused and benefits incurred as a member. These BLIs include costs for use of the PJM-managed interstate transmission grid,

including reliability projects, as well as participation in the wholesale energy markets, ASM, and capacity markets. Note that, in the case of OVEC, because there is only generation and no demand (load), most of the PJM BLI's are credits (*i.e.*, either negative 1000 series BLI or positive 2000 series BLI).

Q. PLEASE EXPLAIN THE MAJOR PJM BILLING LINE ITEMS AND WHICH ARE RECOVERD IN THE RIDER PSR FILING.

A. The vast majority of PJM net revenue from OVEC is contained in PJM BLIs 1200, 1205, 1210, 1215, 1220, 1225, and 2600. For example, in August 2019, the net of these charge codes was a net revenue of $2,692,940 and the total PJM bill was a net revenue of $2,688,385, or essentially almost the same amount. A summary of these billing line items is as follows (note that sections of these BLI that pertain to load were eliminated since they are not relevant to OVEC):

- **1200 - Day-Ahead Spot Market Energy**: BLI 1200 represents the net day-ahead energy component. Generally, revenue is being received when generation clears the day-ahead market at the generator LMP.
- **1205 – Balancing Spot Market Energy:** BLI 1205 represents the net real-time energy component deviation between the amount of generation cleared between the Day-Ahead and Real-Time markets. If there is no change to the quantity of generation sold between the Day-Ahead and Real-Time Energy Markets, there is no adjustment in balancing spot market energy.
- **1210 – Day-Ahead Transmission Congestion**: BLI 1210 represents the change in energy costs due to re-dispatch in the Day-Ahead Market

during hours when the PJM transmission system is constrained and assessed to participants based on the congestion price component of LMP.

- **1215 – Balancing Transmission Congestion**: BLI 1215 represents the change in energy costs due to re-dispatching in the balancing market during hours when PJM transmission system is constrained and assessed to participants based on the real-time congestion price component of LMP. If there is no change to the quantity of generation sold between the Day-Ahead and Real-Time Energy Markets, there is no balancing transmission congestion charges or credits.
- **1220 – Day-Ahead Transmission Losses**: BLI 1220 represents the change in energy costs due to transmission losses in the Day-Ahead Market represented in the PJM network model and assessed to participants based on the loss component of LMP.
- **1225 – Balancing Transmission Losses**: This BLI represents the change in energy costs due to transmission losses in the balancing market as represented in the PJM network model and is assessed to participants based on the real-time loss component of LMP. If there is no change to the quantity of generation sold between the Day-Ahead and Real-Time energy markets, there is no adjustment in balancing transmission losses charges or credits.
- **2600 – RPM Auction**: This BLI represents the net revenues received from capacity sold to PJM.

Q. ARE THERE ADDITIONAL PJM BLI RECEVIED FROM OR PAID TO PJM?

A. Yes. Additional PJM BLIs include, but are not limited to, the following: 1245, 1303, 1305, 1307, 1310, 1312, 1313, 1314, 1375, 1376, 1999, 2360, and 2365.

Q. DO YOU BELIEVE INCLUSION OF ALL PJM BLIs IS APPROPRIATE FOR RIDER PSR.

A. Yes. These PJM BLIs are almost exclusively for the payment of energy and capacity provided from the OVEC units. Crediting the customer with these net revenues is appropriate since the customer is also paying for the costs to produce this energy and capacity.

IX. CONCLUSION

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

Attachment JDS-1 is being filed under seal.

Daily Generating Unit P&L Analysis - Week 1

CONFIDENTIAL PROPRIETARY TRADE SECRET

			Thursday 6/20/2019	Friday 6/21/2019	Saturday 6/22/2019	Sunday 6/23/2019	Monday 6/24/2019	Tuesday 6/25/2019	Wednesday 6/26/2019		Hot Startup Cost	Warm Startup Cost	Cold Startup Cost	Shutdown Cost
		Indiana Hub	$30.00 $19.50	$31.50 $19.50	$30.00 $19.00	$29.00 $18.00	$32.00 $20.00	$32.00 $20.00	$32.00 $20.00	Week				
MISO	CAYU_UN01	$35												
MISO	CAYU_UN02	$36												
MISO	EDWA_CC01	$36												
MISO	EDWA_CC01_NGAS	$28												
MISO	GALL_UN02	$54												
MISO	GALL_UN04	$55												
MISO	GIBS_UN01	$30												
MISO	GIBS_UN02	$31												
MISO	GIBS_UN03	$32												
MISO	GIBS_UN04	$31												
MISO	GIBS_UN05	$31												
MISO	NOBL_CC01	$27												
MISO	BENT_UN01	$101												
PJM	EABD_UN02	$29												
PJM	GIBS_UN05_WVPA	$30												
PJM	CFTY	$26	$277	($310)	$199	($41)	$1,301	$1,308	$1,305	$4,039	($591)	($591)	($1,308)	
PJM	KYGE	$24	$865	$245	$755	$482	$1,926	$1,916	$1,925	$8,114	($703)	($703)	($1,448)	
		AD Hub	$27.50 $18.00	$25.50 $17.00	$26.50 $18.00	$25.50 $17.00	$31.00 $19.00	$31.00 $19.00	$31.00 $19.00					
			6/20/2019 Thursday	6/21/2019 Friday	6/22/2019 Saturday	6/23/2019 Sunday	6/24/2019 Monday	6/25/2019 Tuesday	6/26/2019 Wednesday					

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Unit Offered Must Run

Unit Offered Economic

Unit Offered Unavailable

Unit Online

		Thursday		Friday		Saturday		Sunday		Monday		Tuesday		Wednesday	
	Basis	1x16	1x8	1x16	1x8	1x16	1x8	1x16	1x8	1x16	1x8	1x16	1x8	1x16	1x8
MISO	Cayuga 1														
MISO	Cayuga 2														
MISO	Edwardsport SG														
MISO	Edwardsport NG														
MISO	Gallagher 2														
MISO	Gallagher 4														
MISO	Gibson 1														
MISO	Gibson 2														
MISO	Gibson 3														
MISO	Gibson 4														
MISO	Gibson 5														
MISO	Noblesville (3CT)														
MISO	Benton County														
PJM	East Bend 2														
PJM	Gibson 5 Wvpa														
PJM	Cfty	($1.00)	($0.50)	($1.00)	($0.50)	($0.50)	($0.25)	($0.50)	($0.25)	($1.00)	($0.50)	($1.00)	($0.50)	($1.00)	($0.50)
PJM	Kyge	($1.00)	($0.50)	($1.00)	($0.50)	($0.50)	($0.25)	($0.50)	($0.25)	($1.00)	($0.50)	($1.00)	($0.50)	($1.00)	($0.50)

Assumptions:

OVEC P&L represents our share of the average unit P&L at each station
OVEC startup costs represents our share of the average unit startup cost at each station

Daily Generating Unit P&L Analysis - Week 2

CONFIDENTIAL PROPRIETARY TRADE SECRET

		Thursday 6/27/2019	Friday 6/28/2019	Saturday 6/29/2019	Sunday 6/30/2019	Monday 7/1/2019	Tuesday 7/2/2019	Wednesday 7/3/2019		Hot Startup Cost	Warm Startup Cost	Cold Startup Cost	Shutdown Cost
	Indiana Hub	$32.00 $20.00	$31.00 $20.00	$28.00 $19.00	$27.00 $18.00	$33.00 $19.00	$33.00 $20.00	$33.00 $20.00	Week				
MISO	CAYU_UN01 CAYU_UN02 EDWA_CC01 EDWA_CC01_NGAS GALL_UN02 GALL_UN04 GIBS_UN01 GIBS_UN02 GIBS_UN03 GIBS_UN04 GIBS_UN05 NOBL_CC01 BENT_UN01												
PJM	EABD_UN02 GIBS_UN05_WVPA												
PJM	CFTY KYGE	$1,317 $1,918	$994 $1,570	$29 $554	($162) $348	$1,301 $1,926	$1,308 $1,916	$1,305 $1,925	$6,093 $10,157	($591) ($703)	($591) ($703)	($1,308) ($1,448)	
	AD Hub	$31.00 $19.00	$30.00 $18.00	$26.00 $17.00	$25.00 $17.00	$31.00 $19.00	$31.00 $19.00	$31.00 $19.00					
		6/27/2019 Thursday	6/28/2019 Friday	6/29/2019 Saturday	6/30/2019 Sunday	7/1/2019 Monday	7/2/2019 Tuesday	7/3/2019 Wednesday					

		Thursday		Friday		Saturday		Sunday		Monday		Tuesday		Wednesday	
	Basis	1x16	1x8	1x16	1x8	1x16	1x8	1x16	1x8	1x16	1x8	1x16	1x8	1x16	1x8
MISO	Cayuga 1 Cayuga 2 Edwardsport SG Edwardsport NG Gallagher 2 Gallagher 4 Gibson 1 Gibson 2 Gibson 3 Gibson 4 Gibson 5 Noblesville (3CT) Benton County														
PJM	East Bend 2 Gibson 5 Wvpa														
PJM	Cfty Kyge	($1.00) ($1.00)	($0.50) ($0.50)	($1.00) ($1.00)	($0.50) ($0.50)	($0.50) ($0.50)	($0.25) ($0.25)	($0.50) ($0.50)	($0.25) ($0.25)	($1.00) ($1.00)	($0.50) ($0.50)	($1.00) ($1.00)	($0.50) ($0.50)	($1.00) ($1.00)	($0.50) ($0.50)

Daily Generating Unit P&L Analysis - Week 3

CONFIDENTIAL PROPRIETARY TRADE SECRET

		Thursday 7/4/2019	Friday 7/5/2019	Saturday 7/6/2019	Sunday 7/7/2019	Monday 7/8/2019	Tuesday 7/9/2019	Wednesday 7/10/2019					
	Indiana Hub	$25.00 $18.00	$27.00 $18.00	$26.00 $18.00	$25.00 $17.00	$32.00 $20.00	$32.00 $20.00	$32.00 $20.00	Week	Hot Startup Cost	Warm Startup Cost	Cold Startup Cost	Shutdown Cost
MISO	CAYU_UN01 CAYU_UN02 EDWA_CC01 EDWA_CC01_NGAS GALL_UN02 GALL_UN04 GIBS_UN01 GIBS_UN02 GIBS_UN03 GIBS_UN04 GIBS_UN05 NOBL_CC01 BENT_UN01												
PJM	EABD_UN02 GIBS_UN05_WVPA												
PJM	CFTY	($415)	($185)	$29	($162)	$1,586	$1,593	$1,590	$4,038	($591)	($591)	($1,308)	
PJM	KYGE	$104	$387	$554	$348	$2,209	$2,199	$2,207	$8,007	($703)	($703)	($1,448)	
	AD Hub	$25.00 $17.00	$26.00 $17.00	$26.00 $17.00	$25.00 $17.00	$32.00 $19.00	$32.00 $19.00	$32.00 $19.00					
		7/4/2019 Thursday	7/5/2019 Friday	7/6/2019 Saturday	7/7/2019 Sunday	7/8/2019 Monday	7/9/2019 Tuesday	7/10/2019 Wednesday					

	Basis	Thursday		Friday		Saturday		Sunday		Monday		Tuesday		Wednesday	
	DEI	1x16	1x8	1x16	1x8	1x16	1x8	1x16	1x8	1x16	1x8	1x16	1x8	1x16	1x8
MISO	Cayuga 1 Cayuga 2 Edwardsport SG Edwardsport NG Gallagher 2 Gallagher 4 Gibson 1 Gibson 2 Gibson 3 Gibson 4 Gibson 5 Noblesville (3CT) Benton County														
PJM	East Bend 2 Gibson 5 Wvpa														
PJM	Cfty	($1.00)	($0.50)	($1.00)	($0.50)	($0.50)	($0.25)	($0.50)	($0.25)	($1.00)	($0.50)	($1.00)	($0.50)	($1.00)	($0.50)
PJM	Kyge	($1.00)	($0.50)	($1.00)	($0.50)	($0.50)	($0.25)	($0.50)	($0.25)	($1.00)	($0.50)	($1.00)	($0.50)	($1.00)	($0.50)

High-Price Market Scenario

		Thursday 6/20/2019	Friday 6/21/2019	Saturday 6/22/2019	Sunday 6/23/2019	Monday 6/24/2019	Tuesday 6/25/2019	Wednesday 6/26/2019		Hot Startup Cost	Warm Startup Cost	Cold Startup Cost
Indiana Hub - High Bias	5%	$31.50	$33.07	$31.50	$30.45	$33.60	$33.60	$33.60				
	5%	$20.47	$20.48	$19.95	$18.90	$21.00	$21.00	$21.00	Week			
MISO	CAYU_UN01	[redacted]										
	CAYU_UN02											
	EDWA_CC01											
	EDWA_CC01_NGAS											
	GALL_UN02											
	GALL_UN04											
	GIBS_UN01											
	GIBS_UN02											
	GIBS_UN03											
	GIBS_UN04											
	GIBS_UN05											
	NOBL_CC01											
	BENT_UN01											
PJM	EABD_UN02											
	GIBS_UN05_WVPA											
	CFTY	$708	$70	$593	$341	$1,785	$1,788	$1,788	$7,072	($591)	($591)	($1,308)
	KYGE	$1,308	$655	$1,180	$876	$2,452	$2,423	$2,418	$11,311	($703)	($703)	($1,448)
AD Hub - High Bias	5%	$28.88	$26.77	$27.83	$26.77	$32.55	$32.55	$32.55				
	5%	$18.90	$17.85	$18.90	$17.85	$19.95	$19.95	$19.95				
		6/20/2019 Thursday	6/21/2019 Friday	6/22/2019 Saturday	6/23/2019 Sunday	6/24/2019 Monday	6/25/2019 Tuesday	6/26/2019 Wednesday				

Low-Price Market Scenario

		Thursday 6/20/2019	Friday 6/21/2019	Saturday 6/22/2019	Sunday 6/23/2019	Monday 6/24/2019	Tuesday 6/25/2019	Wednesday 6/26/2019		Hot Startup Cost	Warm Startup Cost	Cold Startup Cost
Indiana Hub - Low Bias	5%	$28.50	$29.92	$28.50	$27.55	$30.40	$30.40	$30.40				
	5%	$18.52	$18.53	$18.05	$17.10	$19.00	$19.00	$19.00	Week			
MISO	CAYU_UN01	[redacted]										
	Cayuga 2											
	Edwardsport IGCC Coal											
	Edwardsport IGCC Gas											
	Gallagher 2											
	Gallagher 4											
	Gibson 1											
	Gibson 2											
	Gibson 3											
	Gibson 4											
	Gibson 5											
	Noblesville											
	Benton County											
PJM	EABD_UN02											
	GIBS_UN05_WVPA											
	CFTY	($143)	($653)	($170)	($391)	$831	$834	$838	$1,147	($591)	($591)	($1,308)
	KYGE	$428	($167)	$335	$81	$1,420	$1,416	$1,407	$4,919	($703)	($703)	($1,448)
AD Hub - Low Bias	5%	$26.13	$24.22	$25.18	$24.22	$29.45	$29.45	$29.45				
	5%	$17.10	$16.15	$17.10	$16.15	$18.05	$18.05	$18.05				
		6/20/2019 Thursday	6/21/2019 Friday	6/22/2019 Saturday	6/23/2019 Sunday	6/24/2019 Monday	6/25/2019 Tuesday	6/26/2019 Wednesday				

Attachment JDS-3 is being filed under seal.