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August 23, 2017

Ms. Kavita Kale
Executive Secretary
Michigan Public Service Commission
7109 W. Saginaw Highway
P.O. Box 30221
Lansing, Michigan 48909

Re: MPSC Case No. U-18239

Dear Ms. Kale:

Attached for electronic filing in the above-referenced matter, pursuant to the Cross-Exam on August 23, 2017, please find the Revised Direct Testimony of Rupert R. Jennings on behalf of Energy Michigan Inc., as well as the Proof of Service. Thank you for your assistance in this matter.

Sincerely yours,

VARNUM

Timothy J. Lundgren

TJL/kc
Enclosures
c. ALJ
All parties of record.

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)	
to open a docket to implement the provisions of)	
Section 6w of 2016 PA 341 for)	Case No. U-18239
CONSUMERS ENERGY COMPANY'S)	
service territory.)	
_____)	

REVISED DIRECT TESTIMONY OF
RUPERT R. ("ROB") JENNINGS
ON BEHALF OF
ENERGY MICHIGAN, INC.

**REVISED DIRECT TESTIMONY OF RUPERT R. JENNINGS
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RUPERT R. JENNINGS (ROB)
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I. INTRODUCTION

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Q. Please state your names and business address.

A. Rupert R. Jennings, 1901 N. Moore St. #1200, Arlington, Virginia 22209.

Q. What is your position?

A. I am a Senior Consultant focused on the electricity markets with Energy Ventures Analysis, Inc.

Q. Please describe Energy Ventures Analysis, Inc.

A. Energy Ventures Analysis, Inc. (“EVA”) is a consulting firm that engages in a variety of projects for clients in both the public and private sectors related to energy and environmental issues. Much of our energy-related work is related to analysis of the electricity and fuel markets. Our clients in those areas include electric utilities, independent power producers, fuel producers and transporters, large energy consumers, industry groups, regulators, and agencies of the Federal and State governments. EVA also represents interveners in utility rate proceedings, and has filed testimony in both state and federal courts as well as before the Federal Energy Regulatory Commission (“FERC”).

Q. Please summarize your education and professional backgrounds.

A. I joined EVA in 2013. I specialize in electric market modeling using AURORAxmp, an hourly dispatch model that EVA licenses from EPIS, Inc. I oversee the customization of modeling inputs to reflect greater granularity in the model assumptions and I am responsible for EVA’s short- and long-term power and capacity outlooks. I also participate in customized consulting projects related to power markets. Prior to joining EVA, I was a Power Analyst at Pace Global, a Siemens Business. I hold a B.S. in Integrated Science and Technology from James Madison University with a concentration in Energy.

Q. On whose behalf are you appearing?

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1 A. This testimony is filed on behalf of Energy Michigan, Inc. ("Energy Michigan").

2

3 **Q. What is the purpose of your testimony?**

4 A. EVA and Larkin & Associates, PLLC ("Larkin") were engaged by Varnum LLP, counsel
5 to Energy Michigan, to evaluate the capacity rate issues in Consumers Energy Case No.
6 U-18239 before the Michigan Public Service Commission (the "Commission"). The goal
7 of the engagement was to develop and file a capacity charge (\$ per MW-Day) consistent
8 with the provisions of MCL 460.6w(3). The statute provides in subsection (3)(a) that the
9 capacity charge may include the capacity-related generation costs included in the utility's
10 base rates, surcharges, and power supply cost recovery factors, less the non-capacity-
11 related electric generation costs from all of the following (i) all energy market sales; (ii)
12 off-system energy sales, (iii) ancillary service sales, and (iv) energy sales under unit-
13 specific bilateral contracts, as set forth in subsection (3)(b). EVA's specific scope was to
14 forecast all items included in Section 3(b) which would then be utilized by Larkin to
15 calculate a capacity charge.

16

17 **Q. For what period is the forecast made?**

18 A. For the period 2018 through 2021.

19

20 **Q. Please describe the documents reviewed for this engagement.**

21 A. EVA reviewed Consumers' filings, responses to discovery requests made by parties to
22 this proceeding including Larkin and EVA, Consumers' filings to the Securities and
23 Exchange Commission ("SEC"), Consumers' annual Form 1 filings to the FERC, and
24 documents produced by the Midcontinent Independent System Operator ("MISO").

25

26 **Q. Did Consumers provide all the information that you requested?**

27 A. No. Consumers did not provide some of the requested ~~historical~~ information as of the
28 date of this writing.

29

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1 **Q. Are you sponsoring any exhibits in this proceeding?**

2 A. Yes, I am sponsoring Exhibits EM-11 (RRJ-1) through EM-15 (RRJ-5) which provide
3 forecasts of the elements that EVA was engaged to provide as well as some model inputs.
4

5 **Q. Are these your final results?**

6 A. Yes. However, if the outstanding requested information is ultimately produced by
7 Consumers, or if additional information becomes available, EVA reserves the right to
8 update its forecasts.
9

10 **Q. How is the remainder of your testimony organized?**

11 A. The basis for each element of subsection 3(b) is discussed below.
12

II. ENERGY MARKET SALES

13
14
15 **Q. Please explain your methodology for developing the forecast of Energy Market
16 Sales.**

17 A. Energy Market Sales are Consumers' annual sales of power during the 2018 through
18 2021 period. As Consumers participates in MISO, the output from its power plants is
19 offered to MISO. The manner in which MISO dispatches the plants determines the
20 generation from Consumers' plants. MISO dispatches the plants economically, subject to
21 operating constraints. The Consumers plants are competing with other generation
22 resources in MISO, and the competitiveness of each of Consumers' assets relative to the
23 other MISO assets determines its level of operation.
24

25 The forecast of energy sales therefore requires an analysis that incorporates the dispatch
26 of Consumers units in the context of the entire MISO region and the regions which trade
27 power with MISO. EVA's methodology includes the modeling of the Consumers units in
28 the context of overall MISO operations.
29

30 The modeling is done through the AURORAxmp hourly dispatch model ("Aurora"),
31 which EVA licenses from EPIS, Inc. Aurora is an industry-standard dispatch model used

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1 by power producers, consultants, developers, analysts, and others to simulate utility
2 operations and (among other things) forecast generation by fuel type and costs. While
3 Aurora comes with default assumptions, EVA populates the majority of the model with
4 its own assumptions including load growth, plant-specific-delivered fuel prices and
5 operating parameters, overnight costs and operating parameters for new plants, power
6 plant additions and retirements, and regulatory assumptions. Aurora's outputs include
7 generation by plant and energy market pricing, among others.

8
9 **Q. In what other applications has EVA used the Aurora model?**

10 A. EVA regularly uses the Aurora model to develop its monthly, quarterly and annual
11 forecasts of generation by unit and plant type. These outputs are translated into unit
12 forecasts and comprise portions of EVA's coal and natural gas forecasts. EVA's plant-
13 specific delivered price assumptions are used by a number of EVA clients in their own
14 modeling efforts. EVA also uses Aurora for analysis of new and potential regulations
15 and customized market analyses.

16
17 **Q. Please describe your customized inputs into Aurora.**

18 A. The Aurora model is very data-intensive. As mentioned, there are default values for the
19 assumptions that EVA replaces with internally developed assumptions.

20
21 For this engagement, to be consistent with the analytics of other stakeholders, EVA used
22 neutral third-party assumptions for some of the variables including load forecasts, gas
23 prices and delivered coal prices.

24
25 **Q. What load growth assumption was used in the analysis?**

26 A. MISO's latest electricity demand outlook from the fall of 2016 was used. For Local
27 Resource Zone 7 ("LRZ 7"), which comprises the MISO portion of Lower Michigan, the
28 Compound Annual Growth Rate ("CAGR") between 2017 and 2021 was 1.1%. The
29 demand for MISO as a whole also grew at a CAGR of 1.1% during that same period.

30

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1 **Q. What natural gas price forecast was used?**

2 A. EVA used the NYMEX forward price curve dated June 29, 2017. This is provided below
3 in **Exhibit EM-11 (RRJ-1)**. The forward price curve represents what sellers and buyers
4 are willing to pay today over the forecast period. EVA purchases an inflation outlook
5 from Moody's Analytics which is updated quarterly.

6

7 **Q. What delivered coal price forecast was used?**

8 A. EVA used the actual price of consumed coal as reported by Consumers in its 2016 Form
9 1 filing to determine a base delivered coal price and then adjusted it by EVA's current
10 escalations for coal and transportation.

11

12 **Q. What other key assumptions were used?**

13 A. EVA assumed that Entergy's Palisades nuclear plant, with which Consumers currently
14 has a power purchase agreement ("PPA") for all of its output, would close in September
15 2018 based on recent announcements by Entergy. Consumers and Entergy in December
16 2016 announced that they had reached an agreement to terminate the existing PPA on
17 May 31, 2018, roughly four years ahead of schedule. Consumers also stated its intention
18 to enter into an "energy-only" PPA with Entergy for the Palisades output starting June 1,
19 2018 and continuing until the plant is retired on September 30, 2018. The PPA
20 termination is "subject to timely receipt of certain MPSC approvals."

21

22 EVA also assumed that neither the Clean Power Plan ("CPP") nor the Effluent Limitation
23 Guidelines ("ELG") would go into effect or have an impact during the period 2018
24 through 2021.

25

26 **Q. What is the basis of your regulatory assumptions?**

27 A. Prior to the November 2016 election, the Supreme Court had stayed implementation of
28 the Clean Power Plan. A stay is a relatively rare event and requires at least two findings.
29 The first is that the appeal is *likely* to prevail based upon its merits. The second is that
30 absent a stay there is likely to be irreparable harm. Given the stay and a 2022
31 implementation date in the Final Rule, there does not seem to be any scenario in which a

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1 2022 implementation would occur. The election of President Donald Trump changed the
2 outlook for this rule further. On March 28, 2017, President Trump signed an Executive
3 Order which, among other things, directs the EPA specifically to revisit the CPP and
4 determine what actions should be taken to reduce the burden on development or use of
5 domestically produced energy resources, including coal. The Department of Justice filed
6 motions with the U.S. Court of Appeals for the District of Columbia Circuit advising the
7 Court of these actions and requesting the Court hold in abeyance the cases challenging
8 the CPP. The likely outcome is that there will be no implementation of the CPP as
9 currently written. Given the time necessary to develop alternatives to the CPP, it is
10 unlikely for a carbon regime to be put in place in the relevant time period.

11
12 The ELG situation has some similarities. A final rule was published in the Federal
13 Register on November 3, 2015, which established the date that appeals could first be
14 filed. A number of timely appeals were filed. The appeals were consolidated at the U.S.
15 Court of Appeals for the Fifth Circuit. The initial arguments were filed with the Fifth
16 Circuit in December 2016. Oral arguments were expected in 2017. Following the
17 election, the Court agreed to suspend its review pending an internal EPA review and EPA
18 issued an administrative stay delaying the compliance dates. Like the CPP, the ELG rule
19 is unlikely to be in effect during the relevant time-period.

20
21 **Q. Did you develop a generation forecast for Consumers for this engagement?**

22 A. Yes. EVA ran its Aurora model to develop a generation forecast through 2021, the
23 results of which are provided in **Exhibit EM-12 (RRJ-2)**.

24
25 **Q. What sources of generation are included in your forecast of Consumers’**
26 **generation?**

27 A. Two types of sources are included. The first is forecasted generation from the
28 Consumers-owned power plants, which are listed in **Exhibit EM-13 (RRJ-3)**. The
29 second is generation related to purchase power agreements.

30

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1 **Q. What information did Consumers provide related to their power purchase**
2 **agreements?**

3 A. EVA primarily used information from three sources:

4 1) Consumers' recent Power Supply Cost Recovery Plan dated September 2016
5 (Case No. U-18142, <https://efile.mpsc.state.mi.us/efile/docs/18142/0001.pdf>).

6 This included testimony from witness Sara T. Walz, who listed the companies
7 with which Consumers has existing power purchase agreements in Exhibit A-24
8 (STW-3).

9 2) The list of "Long-Term Electric Purchase Contracts" that Consumers provided in
10 discovery in this case. EVA crosschecked its data against this list.

11 3) The data provided in Consumers' recent Application for Financing Order (Case
12 No. U-18250, <https://efile.mpsc.state.mi.us/efile/docs/18250/0001.pdf>), filed in
13 February 2017). In Exhibit A-8 (TPC-1), Thomas P. Clark provides a forecast of
14 non-utility generation capacity of 2,486 MW in 2017 in the "Business as Usual"
15 scenario.

16
17 EVA reviewed the available information and extracted from the Aurora model the
18 relevant plants so that sales from PPAs could be determined. EVA benchmarked the
19 operations of the contracted plants against the amount of energy Consumers purchased
20 from them based on FERC Form 1 data. In some cases, the share of the plant's output
21 that Consumers was entitled to under the PPA could not be determined and had to be
22 estimated.

23
24 It should also be noted that Consumers has stated its intention to procure replacement
25 gas-fired capacity in 2019 after its PPA with the Palisades nuclear plant expires. Because
26 no further information regarding the new capacity was available, EVA did not include
27 any new Consumers-owned plants in its forecast.

28
29 Consumers signed a PPA for 100 MW of output at the Geronimo Apple Blossom Wind
30 Farm, which is set to start on November 1, 2017. EVA did not include sales from this

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1 PPA in its forecast because its costs are not included in the Approved Cost of Service
2 Study from Case No. U-17990.

3
4 **Q. How did EVA translate the generation forecast into Energy Market Sales revenue?**

5 A. Energy Market Sales revenue is the product of hourly generation and the hourly
6 Locational Market Price (“LMP”). Generation and energy market prices are outputs of
7 the Aurora modeling. EVA calculated the LMPs by adding the Aurora-produced energy
8 market prices to the forecasted transmission congestion costs and the cost of marginal
9 losses. EVA performed an hourly regression on historical LMP data to determine the
10 correlation between congestion and losses and the energy component.

11
12 The Energy Market Sales revenues by year are shown in **Exhibit EM-14 (RRJ-4)**.

13
14 **Q. Are there any other Aurora outputs that are included in the capacity rate
15 calculation?**

16 A. Yes. The total fuel cost forecasts, which are produced by the Aurora model, are included.
17 Total fuel costs are the product of price per MMBTU of fuel and total MMBTUs
18 consumed. EVA assumes that the fuel cost for wind and solar plants is zero.
19 The forecast for Consumers’ total fuel cost is provided in **Exhibit EM-15 (RRJ-5)**.

20
21 **III. OFF-SYSTEM POWER SALES**

22
23 **Q. What are off-system power sales?**

24 A. Off-system power sales are sale to parties that are outside of the service territory.

25
26 **Q. Did you request and receive information on Off-System Power Sales?**

27 A. I received some of the information requested regarding Off-System Power Sales.

28
29 **Q. Please explain your methodology for forecasting Off-System Power Sales using the
30 information available.**

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1 A. According to the Direct Testimony of witness David F. Ronk, Consumers’ only off-
2 system sales are to the Alpena Power Company. EVA calculated the five-year historical
3 average of Off-System Power Sales to Alpena Power as reported on the Consumers Form
4 1 filed with FERC. This is the basis for the forecast absent other information. The
5 forecast is provided in **Exhibit EM-15 (RRJ-5)**.

6

7

IV. ANCILLARY SERVICES

8

9 **Q. What are Ancillary Services?**

10 A. Ancillary services includes services necessary to balance the transmission system as it
11 moves electricity from generating sources to ultimate consumers as well as several other
12 non-markets for ancillary services such as Black Start Service and Reactive Service.
13 Generators may receive compensation from the grid operator for providing these services.

14

15 **Q. Did you request and receive information on Ancillary Services from Consumers?**

16 A. I received some of the information requested regarding Ancillary Service Sales.

17

18 **Q. Did you see an explanation?**

19 A. The Direct Testimony of Consumers witness David F. Ronk, Jr. states, “Consumers
20 Energy is a net buyer of ancillary services from the market on an annual basis.
21 Therefore, Consumers Energy’s net ancillary service sales that must be subtracted from
22 the capacity charge are equal to zero.”

23

24 **Q. Is this your understanding?**

25 A. The word “net” does not appear in the statute. Therefore, EVA believes it is its mandate
26 to quantify Ancillary Services regardless of profitability.

27

28 **Q. Please explain your methodology for doing so given the lack of responses from**
29 **Consumers.**

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1 A. EVA calculated the five-year historical average of Ancillary Service Sales as reported on
2 the Consumers Form 1 filed with FERC. This is the basis for the forecast absent other
3 information. This forecast is presented in **Exhibit EM-14 (RRJ-4)**.

4

5

V. BILATERAL ENERGY SALES

6

7 **Q. What are bilateral energy sales?**

8 A. Bilateral sales are direct sales of power to a third party.

9

10 **Q. Is there any recent history of bi-lateral sales for Consumers?**

11 A. No.

12

13 **Q. Are you forecasting bi-lateral sales during the relevant period?**

14 A. No.

15

16 **Q. Does this conclude your Direct Testimony?**

17 A. Yes, it does.

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STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter, on the Commission's own motion,)
to open a docket to implement the provisions of)
Section 6w of 2016 PA 341 for) **Case No. U-18239**
CONSUMERS ENERGY COMPANY'S)
service territory.)
_____)

PROOF OF SERVICE

STATE OF MICHIGAN)
) ss.
COUNTY OF INGHAM)

Kimberly Champagne, the undersigned, being first duly sworn, deposes and says that she is a Legal Secretary at Varnum LLP and that on the 23rd day of August, 2017, she served a copy of the Revised Direct Testimony of Rupert R. Jennings on behalf of Energy Michigan Inc. upon those individuals listed on the attached Service List via email at their last known addresses.

Kimberly Champagne

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MPSC CASE NO. U-18239

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