April 20, 2018

Ms. Kavita Kale
Michigan Public Service Commission
7109 W. Saginaw Hwy.
P. O. Box 30221
Lansing, MI 48909

Via E-Filing

RE: MPSC Case No. U-18403

Dear Ms. Kale:

The following is attached for paperless electronic filing:

Direct Testimony of Avi Allison on behalf of Michigan Environmental Council and Sierra Club

Exhibits MEC-70 through MEC-84 and MEC-86 through MEC-89**

Proof of Service

****MEC-85, MEC-90 and MEC-91 are CONFIDENTIAL and will be filed Under Seal and only sent to those with an NDC on file****

Sincerely,

Digitally signed by Christopher M. Bzdok
DN: cn=Christopher M. Bzdok, o=Olson Bzdok & Howard, P.C., ou, email=chris@envlaw.com, c=US
Date: 2018.04.20 16:00:09 -04'00'

Christopher M. Bzdok
chris@envlaw.com

xc: Parties to Case No. U-18403
James Clift, MEC

State of Michigan
Before the Michigan Public Service Commission

In the matter of the Application of DTE ELECTRIC COMPANY for Authority to Implement a Power Supply Cost Recovery Plan in its Rate Schedules for 2018 Metered Jurisdictional Sales of Electricity	Case No. U-18403

Direct Testimony of Avi Allison

On Behalf of Michigan Environmental Council and Sierra Club

PUBLIC Version

April 20, 2018

Table of Contents

Table of Figures

1. INTRODUCTION AND PURPOSE OF TESTIMONY

Q Please state your name and occupation.

A My name is Avi Allison. I am a Senior Associate with Synapse Energy Economics, Inc.

Q Please describe Synapse Energy Economics.

A Synapse Energy Economics is a research and consulting firm specializing in electricity industry regulation, planning, and analysis. Synapse works for a variety of clients such as consumer advocates, regulatory commissions, state and federal agencies, and environmental advocates.

Q On whose behalf are you testifying in this case?

A I am testifying on behalf of Michigan Environmental Council and Sierra Club.

Q Have you testified before the Michigan Public Service Commission before?

Yes. I provided Direct Testimony in MPSC Case No. U-18419 regarding DTE's 2017 application for a Certificate of Necessity to construct a natural gas combined cycle facility.

Q Please summarize your work experience and educational background.

A At Synapse, I provide consulting and research services on a wide range of issues related to the electric industry. My areas of focus have included resource planning, economic impact analysis, rate design, and regional capacity markets. I have provided consulting services for a wide variety of public sector and public interest clients including the U.S. Environmental Protection Agency, the Michigan Public Service Commission, the Michigan Agency for Energy, the New York State Energy Research and Development Authority, the Rhode Island Office of Energy Resources, the Efficiency Maine Trust, Consumers Union, Sierra Club, Natural Resources Defense Council, and other organizations. I have reviewed and

commented on resource planning analyses as part of docketed proceedings in Michigan, Indiana, Arizona, Idaho, Oregon, Washington, and Wisconsin.

I hold a Master of Environmental Management from Yale University and a Bachelor of Arts in economics from Columbia University. My resume is included as Exhibit MEC-70.

Q What is the purpose of your testimony?

A The purpose of my testimony is to evaluate the economic status of the existing Tier 2 coal units owned by DTE Electric Company (DTE). These units include River Rouge Unit 3; St. Clair Units 1, 2, 3, 6, and 7; and Trenton Channel Unit 9. I assess both the recent historical performance of these units and their projected near-term performance based on DTE's latest modeling.

Q What documents do you rely upon in your analysis, and for your findings and observations?

A My analysis relies primarily upon the workpapers and discovery responses of DTE witnesses. In this proceeding, DTE refused to respond to certain discovery requests soliciting updated information regarding the historical and projected costs of the Tier 2 coal units. My analysis therefore relies in part on public discovery responses provided by DTE in MPSC Case No. U-18419.

Q Are you sponsoring any exhibits?

A Yes

- MEC-70 Avi Allison CV
- MEC-71 MECSCDE-3.4d
- MEC-72 MECSCDE-3.4f
- MEC-73 MECSCDE-3.4a
- MEC-74 MISO 2013-2014 PRA Results

- MEC-75 MISO 2014-2015 PRA Summary
- MEC-76 MISO 2016-2017 PRA Results
- MEC-77 MISO 2018-2019 PRA Results
- MEC-78 MECSCDE-3.4g
- MEC-79 U-18419-MECNRDCSCDE-2.5g-k attachment
- MEC-80 MECSCDE-3.4h-j
- MEC-81 U-18419-MECNRDCSCDE-2.5a,b Historical O&M by Plant
- MEC-82 U-18419-MECNRDCSCDE-2.5d Runrate Capital
- MEC-83 U-18419-MECNRDCSCDE-2.5e Capital Spend – Environmental (Non-Routine)
- MEC-84 MECSCDE-1.8 Annual Unit Profitability
- MEC-85 MECSCDE-1.5a Supplemental (CONFIDENTIAL)
- MEC-86 MECSCDE-1.13j-k
- MEC-87 U-18419 Workpaper KJC-397
- MEC-88 MECSCDE-3.10a-d
- MEC-89 STDE-1.15 Plant Stats-forecast
- MEC-90 MECSCDE-1 Supplemental 5 – River Rouge 3 Attachment Y (CONFIDENTIAL)
- MEC-91 MECSCDE-1 Supplemental 5 – St. Clair Attachment Y (CONFIDENTIAL)

2. FINDINGS AND RECOMMENDATIONS

Q Please summarize your findings.

A My primary findings include the following:

1) DTE's Tier 2 coal plants have each lost money relative to the market over the period from 2014 through 2016.

2) DTE's modeling indicates that the Tier 2 coal units are likely to continue to lose money relative to the market over the next five years.

3) With the exception of St. Clair Unit 7, each of DTE's Tier 2 coal units is likely to lose money in every year of its remaining service life.

4) There is surplus replacement capacity available in the MISO market.

I conclude that each of the Tier 2 coal units is likely uneconomic. The intent of this assessment is to aid the Commission in determining whether it is reasonable and prudent for DTE to incur projected Power Supply Cost Recovery (PSCR) costs through the continued operation of these units. Based on my findings, I recommend that the Commission require DTE to present data and calculations reflecting all fixed and variable operating costs incurred, and all revenues received, in 2018 for each of the Tier 2 units in its PSCR reconciliation case. I further recommend that the Commission warn the Company that excess costs associated with the uneconomic operation of the Tier 2 units in 2018 may be disallowed in the reconciliation, and that a similar evaluation will be made in the out years of the five-year PSCR forecast.

3. ALL DTE TIER 2 COAL PLANTS HAVE LOST MONEY RELATIVE TO THE MARKET IN RECENT YEARS

Q Please summarize your findings regarding the recent economic performance of DTE's Tier 2 coal plants.

A Using data provided by DTE, I calculated that each of DTE's Tier 2 coal plants incurred net losses relative to the market over the 2014–2016 period. Table 1 indicates that each of the Tier 2 coal plants lost more than $20 million relative to the market over this period.

Table 1. Historical Net Revenues of DTE Coal Plants, 2014–2016 (2017 $Million)

Plant	2014	2015	2016	*2014–2016 Total*
River Rouge	$14	($19)	($17)	*($22)*
St. Clair	($0)	($84)	($44)	*($129)*
Trenton Channel	($4)	($28)	($28)	*($60)*

Q Describe how you arrived at the values in Table 1.

A The net revenue values in Table 1 are based on DTE data related to each plant's energy revenues, ancillary revenues, capacity revenues, fuel costs, operations and maintenance (O&M) costs, ongoing capital costs, and environmental capital costs. DTE directly provided historical annual energy revenues and ancillary revenues for each Tier 2 unit that remains in operation.[1] To calculate each plant's capacity market revenues, I multiplied each plant's historical annual unforced capacity by the relevant MISO Planning Resource Auction (PRA) clearing price.[2] I calendarized capacity market revenues to account for the discrepancy between the MISO planning year, which runs from June through May, and the calendar year.

[1] Ex. MEC-71 DTE Response to Discovery Request No. MECSCDE-3.4d; Ex. MEC-72 DTE Response to Discovery Request No. MECSCDE-3.4f.

[2] Ex. MEC-73 DTE Response to Discovery Request No. MECSCDE-3.4a; Ex. MEC-74 MISO 2013/2014 Planning Resource Auction Results; Ex. MEC-75 MISO 2014/2015 Planning Resource Auction Results; Ex. MEC-76 MISO 2015/2016 Planning Resource Auction Results; Ex. MEC-77 MISO 2016/2017 Planning Resource Auction Results.

DTE directly provided historical fuel costs for each of its coal plants.[3] However, the historical fuel costs provided by DTE appear to include the cost of fuel burned at units that are no longer in operation. To account for this, I used unit-specific data on fuel burned at both existing and retired DTE units to pro-rate plant-level fuel costs down to a level where they only include costs incurred at existing units.[4]

In this proceeding, DTE has refused to provide responses to requests for data on historical O&M costs or historical capital costs.[5] However, DTE previously provided these historical costs in response to discovery requests issued in MPSC Case No. U-18419.[6] I used these previously provided costs for my analysis. Since O&M expenses were provided at the plant level, I pro-rated them down to the level of currently existing units using unit-specific data on historical generation.[7] Similarly, I pro-rated plant-level historical environmental capital costs using unit-specific capacity data.[8]

I subtracted fuel, O&M, and capital costs from each plant's energy, ancillary, and capacity revenues to arrive at annual net revenues. Since the costs provided in MPSC Case No. U-18419 only went through the end of 2016, I was not able to extend my analysis through 2017. Similarly, since DTE provided most cost

[3] Ex. MEC-78 DTE Response to Discovery Request No. MECSCDE-3.4g.

[4] Data on fuel consumption from retired units was obtained from Ex. MEC-79 MPSC Case No. U-18419, Attachment "MECNRDCSCDE 2.5 g-k.xlsx" to DTE Response to Discovery Request No MECNRDCSCDE 2.5i.

[5] Ex. MEC-80 DTE Response to Discovery Request No. MECSCDE-3.4h-j.

[6] Ex. MEC-81 MPSC Case No. U-18419, Attachment "U-18419 MECNRDCSCDE-2.5a,b Historical O&M by Plant.xlsx" to DTE Response to Discovery Request No. MECNRDCSCDE-2.5a; Ex. MEC-82 MPSC Case No. U-18419, Attachment "U-18419 MECNRDCSCDE-2.5d Runrate Capital.xlsx" to DTE Response to Discovery Request No. MECNRDCSCDE-2.5d; Ex. MEC-83 MPSC Case No. U-18419, Attachment "U-18419 MEC-2.5e Capital Spend - Environmental (Non-Routine).xlsx" to DTE Response to Discovery Request No. MECNRDCSCDE-2.5e.

[7] Data on generation from retired units was obtained from Ex. MEC-79 MPSC Case No. U-18419, Attachment "MECNRDCSCDE 2.5 g-k.xlsx" to DTE Response to Discovery Request No MECNRDCSCDE 2.5g.

[8] Ex. MEC-79 MPSC Case No. U-18419, Attachment "MECNRDCSCDE 2.5 g-k.xlsx" to DTE Response to Discovery Request No MECNRDCSCDE 2.5j.

categories at the plant level, I was not able to conduct this analysis at the more granular, unit-specific level for the St. Clair units.[9]

4. DTE'S TIER 2 COAL UNITS ARE LIKELY TO REMAIN UNECONOMIC THROUGH THE REMAINDER OF THEIR PLANNED SERVICE LIVES

Q Please summarize your findings regarding the forward-going economics of DTE's Tier 2 units.

A Based on DTE's latest modeling, I find that each of the Tier 2 coal units is likely to remain uneconomic. Table 2 indicates that these units are likely to incur net operational losses on a net present value (NPV) basis over the period from 2018 through 2022. Since DTE is planning to retire each of these units prior to the end of 2023, these results suggest that the units will remain uneconomic through the remainder of their lives. In addition, Table 2 shows that all Tier 2 units other than St. Clair Unit 7 are likely to be uneconomic in each full year of their remaining lives. In essence, these units will not be earning sufficient operational revenues to offset their fixed costs.

Table 2. Tier 2 Coal Unit Forecasted Net Revenues, 2018–2022

Unit(s)	NPV Net Revenues (2017 $Million)	# Years with Positive Net Revenues
River Rouge 3	($37)	0
St. Clair 1-3	($25)	0
St. Clair 6	($33)	0
St. Clair 7	($3)	2
Trenton Channel 9	($34)	0

Q Describe how you arrived at the values in Table 2.

A The net revenue values in Table 2 are based on DTE data related to each unit's projected operational profitability, capacity revenues, O&M costs, and capital

[9] Since the River Rouge plant and the Trenton Channel plant each have only one remaining unit, there is effectively no difference between a plant-specific and unit-specific analysis for these plants.

costs. Projected unit-specific operational profitability values were taken from the outputs of PROMOD modeling conducted by DTE for this case.[10] I calculated capacity revenues by multiplying DTE's unit-specific projections of unforced capacity by DTE's projected capacity prices.[11]

DTE refused to provide its latest projections of fixed O&M or capital costs in this case.[12] However, DTE previously provided its projections of fixed costs as part of its workpapers in MPSC Case No. U-18419.[13] I relied upon these projections of O&M costs, capital costs, insurance costs, and property tax costs in my analysis.[14] In DTE's U-18419 workpapers, forecasted fixed costs are provided at an aggregate level for St. Clair Units 1-4.[15] I pro-rated these costs down to represent just costs for St. Clair Units 1-3 based on the capacity provided by each St. Clair unit in 2016.[16] This approach likely under-states the costs incurred at the remaining St. Clair units, since there are likely to be some common plant costs that are unaffected by the retirement of Unit 4.

[10] Ex. MEC-84 Attachment "MECSCDE-1.8 Annual Unit Profitability.xlsx" to DTE Response to Discovery Request No. MECSCDE-1.8. DTE clarified that these profitability values incorporate energy revenues, fuel costs, emission allowances, and variable O&M costs. See DTE Response to Discovery Request No. MECSCDE-3.11d-e.

[11] Ex. MEC-85 CONFIDENTIAL DTE Response to Discovery Request No. MECSCDE-1.5a – Protected; Exhibit A-4 to Direct Testimony of Derek M. Arnold. I note that DTE's capacity price projections are consistently higher than recent MISO PRA clearing prices. For example, DTE assumes a Planning Year 2018/2019 clearing price of $23.66/kW-year. However, the 2018/2019 PRA clearing price for MISO Zone 7 was $10/MW-day, or $3.65/kW-year. See MISO 2018/2019 Planning Resource Auction Results.

[12] Ex. MEC-86 DTE Response to Discovery Request No. MECSCDE-1.13j-k.

[13] Ex. MEC-87 MPSC Case No. U-18419, DTE Workpaper KJC-397, tab "Modeling Inputs."

[14] To avoid double-counting variable O&M costs, which are incorporated within PROMOD's unit profitability calculation, I "added back" DTE's modeled variable O&M costs.

[15] Fixed costs are also provided in aggregate for River Rouge Units 2-3. However, by the time DTE conducted its retirement analysis in 2016, River Rouge Unit 2 had already ceased operation. In addition, DTE's assumed fixed costs for the River Rouge plant from 2018 onward appear to be consistent with Unit 3 being the sole operational unit. I therefore assume that the costs presented for River Rouge Units 2-3 in DTE's analysis are entirely attributable to Unit 3.

[16] Ex. MEC-79 MPSC Case No. U-18419, Attachment "MECNRDCSCDE 2.5 g-k.xlsx" to DTE Response to Discovery Request No MECNRDCSCDE 2.5j.

Q Did DTE provide a sound rationale for its refusal to provide updated information on fixed costs in this proceeding?

A No. DTE argued that projections of fixed costs are "not relevant" to this proceeding, and cited a 2014 Commission order stating, among other things, that "a PSCR plan proceeding is a narrow proceeding."[17] However, just last year the Commission issued an order directly stating that "it is both appropriate and necessary to consider whether an existing source of generation is uneconomic in a review of a PSCR plan."[18] An evaluation of whether an existing generation source is uneconomic requires consideration of *all* types of generator costs, not just variable costs.

Q Is your finding of negative net revenues contradicted by the "refreshed NPV analysis" referenced in the testimony of DTE witness Barry Marietta?

A No. Mr. Marietta's "refreshed NPV analysis" is in fact a stale analysis that makes use of the same assumptions regarding such critical parameters as gas prices, energy prices, and capacity prices as were used in DTE's initial analysis of the cost of complying with Mercury and Air Toxic Standards (MATS) emission limitations.[19] DTE developed these assumptions back in 2013-2014, at a time when its energy and capacity price forecasts were much higher, and therefore more favorable to the Tier 2 units, than they are today.[20] Thus, Mr. Marietta's "refreshed NPV analysis" is clearly not an updated NPV analysis of the forward-going status of the Tier 2 units. Instead, it represents a revised version of what DTE might have believed several years ago, at the time of its decision regarding MATS compliance investments.

[17] EX. MEC-80 DTE Response to Discovery Request No. MECSCDE-3.4h-j.

[18] MPSC Case No. U-18413. Order. December 20, 2017.

[19] Ex. MEC-88 DTE Response to Discovery Request No. MECSCDE-3.10a-d.

[20] Compare Exhibit A-4 to Direct Testimony of Derek M. Arnold with MPSC Case No. U-17319, Exhibit A-14 to the Direct Testimony of Angela P. Wojtowicz.

Q Is there additional evidence that the Tier 2 units are likely uneconomic, beyond your finding of negative net revenues?

A Yes. DTE's PROMOD modeling indicates that each of the Tier 2 units is likely to continue to struggle to dispatch competitively in the MISO market. According to DTE's modeling, each of the Tier 2 units is going to operate at a capacity factor below 50 percent in every year from 2018 through 2022.[21] These low capacity factors help explain why DTE is forecasting such minimal operational profitability for these units. Under DTE's modeling, several of the Tier 2 units are projected to earn less than $2 million in annual operating profits in 2019 and 2020, and St. Clair Units 2 and 3 are each projected to earn less than $1 million in annual operating profits in 2021 and 2022.[22] These projections exclude fixed costs. Such low net operating revenues are unlikely to be sufficient to cover the fixed costs associated with keeping a coal plant operational.

5. THE AVAILABLE EVIDENCE SHOWS THAT IT IS FEASIBLE TO RETIRE AT LEAST SOME OF THE TIER 2 UNITS PRIOR TO THEIR PLANNED RETIREMENT DATES

Q Is there additional evidence that supports a consideration of earlier retirement of at least some of the Tier 2 coal units?

A Yes. Two additional pieces of information are relevant.

First, the most recent MISO PRA just concluded, with initial results posted on April 12, 2018.[23] The clearing price was the same across MISO Zones 2 through 10, indicating no congestion for capacity purposes for Planning Year 2018/2019 across these zones. The clearing price for these zones was $10/MW-day ($3.65/kW-year), and the auction cleared with just 320 MW of imports into Zone 7, far below the

[21] Ex. MEC-89 Attachment "STDE1-15 Plant Stats - Forecast - FINAL.xlsx" to DTE Response to Discovery Request No. STDE-1.15, tab "CF."

[22] Ex. MEC-84 Attachment "MECSCDE-1.8 Annual Unit Profitability.xlsx" to DTE Response to Discovery Request No. MECSCDE-1.8.

[23] MISO 2018/2019 Planning Resource Auction Results. Available at https://cdn.misoenergy.org/2018-19%20PRA%20Results173180.pdf.

Capacity Import Limit of 3,785 MW. The total resources cleared or self-provided in Zone 7 amounted to 21,801 MW, or 1,173 MW above the Local Clearing Requirement (LCR) of 20,628 MW. The MISO region as a whole had more than 3,000 MW of excess capacity that would have taken a price below $25/MW-day. According to DTE, its Tier 2 units will collectively provide [redacted] MW of unforced capacity in Planning Year 2018/2019.[24] Together, St. Clair Units 1-3 and River Rouge Unit 3 are expected to provide [redacted] MW of unforced capacity in Planning Year 2018/2019. This indicates that a number of DTE's Tier 2 coal units could retire and be replaced by purchases of excess MISO capacity without violation of local reliability requirements.

Furthermore, the 2018/2019 Loss of Load Expectation Report for MISO indicates that both expected peak load and the related Local Reliability Requirement (LRR) for Zone 7 will be lower in Planning Year 2021/22 than in 2018/19.[25] This lower peak load and related lower LRR trajectory indicates that Zone 7 will retain capacity headroom through DTE's planned retirement years for the Tier 2 coal units. In addition, DTE recently indicated that it expects MISO Zone 7 to have at least 999 MW of capacity above and beyond its LCR in each planning year from 2018/2019 through 2021/2022, including excess capacity of 1,026 MW in 2021/2022, after River Rouge Unit 3's planned retirement date.[26]

Q What is the second piece of information that supports earlier retirement of at least some of the Tier 2 units?

A [redacted]

[24] Ex. MEC-85 CONFIDENTIAL DTE Response to Discovery Request No. MECSCDE-1.5a – Protected.

[25] MISO Planning Year 2018-2019 Loss of Load Expectation Study Report, p. 29. Available at https://cdn.misoenergy.org/2018%20LOLE%20Study%20Report89286.pdf. The peak load forecast for Zone 7 is 21,296 MW in 2018/19, and 21,209 in 2021/22. The forecasted LRR is 24,545 for 2018/19, and 24,472 MW for 2021/22.

[26] MPSC Case No. U-18419, Revised Rebuttal Testimony of Angela P. Wojtowicz, p. 17 Revised.

[redacted]

Q Does this complete your direct testimony?

A Yes, it does.

[27] Confidential Ex. MEC-90 Attachments "U-18403 MECSCDE-1 Supplemental 5 - River Rouge 3 Attachment Y Suspension Approval NDA.pdf" and Confidential Ex, MEC-91 "U-18403 MECSCDE-1 Supplemental 5 - St Clair Attachment Y Suspension Approval NDA.pdf" to DTE Discovery Response No. MECSCDE-1 Supplemental 5.

Avi Allison, Senior Associate

Synapse Energy Economics I 485 Massachusetts Avenue, Suite 2 I Cambridge, MA 02139 I 617-453-7039
aallison@synapse-energy.com

PROFESSIONAL EXPERIENCE

Synapse Energy Economics, Inc., Cambridge, MA. *Senior Associate,* April 2018–present, *Associate,* September 2015–April 2018.

Provides consulting and researching services and writes reports and testimony on a wide range of issues related to the electric industry.

- Analyzes and comments on electric utility integrated resource plans, distribution system plans, and rate case filings
- Evaluates impacts of alternative rate designs on rooftop solar economics and electric vehicle charging behavior
- Conducts economic impact and cost-benefit analyses of energy and environmental policies
- Assists New England energy efficiency program administrators with participation in regional capacity market

EMI Consulting, Seattle, WA. *Intern*, Summer 2014.

Conducted research in support of energy efficiency program evaluations and energy policy planning projects for utility and governmental clients.

- Processed and analyzed data on energy consumption, energy bills, and client experience using Python, R, and SPSS scripts
- Wrote memoranda assessing the justification for governmental clean energy programs

Yale Center for Environmental Law & Policy, New Haven, CT. *Research Assistant*, 2013–2015.

Gathered, analyzed, and cleaned data used to create an international, comparative Environmental Performance Index. Wrote section on the relationship between wastewater treatment and greenhouse gas emissions in the 2014 EPI report.

Earthjustice, New York, NY. *Litigation Assistant,* 2011–2013.

Conducted factual research and analysis support of public interest impact litigation focused on climate change mitigation and environmental health threat reduction. Areas of research included natural gas drilling developments, industrial agriculture runoff, and lead pollution.

Sightline Institute, Seattle, WA. *Research Intern,* Summer 2009.

Researched and analyzed the environmental effects of alternative types of zoning schemes.

EDUCATION

Yale University, New Haven, CT
Master of Environmental Management; Specialization in Energy, 2015

Columbia University, New York, NY
Bachelors of Arts in Economics; Concentrations in Sustainable Development and Latin American Studies, 2011, *Summa Cum Laude*

PUBLICATIONS

Allison, A. and M. Whited. 2018. "Electric Vehicles Still Not Crashing the Grid: Updates from California." Synapse Energy Economics for the Natural Resources Defense Council.

Allison, A., J. Hall, F. Ackerman. 2018. *Cleaner Cars and Job Creation: Macroeconomic Impacts of Federal and State Vehicle Standards.* Synapse Energy Economics for Union of Concerned Scientists, Natural Resources Defense Council, and American Council for an Energy-Efficient Economy.

Allison, A., S. Fields, A. Horowitz. 2018. *Comments on Puget Sound Energy's 2017 Integrated Resource Plan.* Synapse Energy Economics for the Sierra Club.

Allison, A., J. Fisher, T. Vitolo. 2017. *Comments on Idaho Power Company's 2017 Integrated Resource Plan.* Synapse Energy Economics for the Sierra Club.

Allison, A., J. Fisher. 2017*. Comments on Arizona Public Service Company's 2017 Integrated Resource Plan*. Synapse Energy Economics for the Sierra Club.

Fisher, J., A. Alllison. 2017*. Comments on Tucson Electric Power Company's 2017 Integrated Resource Plan*. Synapse Energy Economics for the Sierra Club.

Horowitz, A., A. Allison, N. Peluso, B. Fagan, M. Chang, D. Hurley, P. Peterson. 2017. *Comments on the United States Department of Energy's Proposed Grid Resiliency Pricing Rules (FERC Docket RM18-1-000)*. Prepared for Earthjustice.

Allison, A., T. Vitolo, J. Fisher. 2017. *The Shaky Economics of the J.K. Spruce Power Plant: Weighing the Costs of a Coal Plant Against Renewable Energy Options*. Prepared for Sierra Club.

Takahashi, K., A. Allison, D. White. 2017. *Renewable Heating and Cooling Policy Framework: Options to Advance Industry Growth and Markets in New York*. Prepared for the New York State Energy Research and Development Authority.

Knight, P., P. Luckow, B. Biewald, A. Horowitz, A. Allison, F. Ackerman. 2017. *New England's Shrinking Need for Natural Gas: An analysis of policy impacts on natural gas use in New England's electric sector*. Synapse Energy Economics for the Connecticut Fund for the Environment, Consumers for Sensible Energy, Mass Energy Consumers Alliance, Pipe Line Awareness Network for the Northeast, Sierra Club Connecticut, and Sierra Club Massachusetts.

Comings, T., A. Allison. 2017. *More Mileage for Your Money: Fuel Economy Increases While Vehicle Prices Remain Stable*. Synapse Energy Economics for Consumers Union.

Cook, R., J. Koo, N. Veilleux, K. Takahashi, E. Malone, T. Comings, A. Allison, F. Barclay, L. Beer. 2017. *Rhode Island Renewable Thermal Market Development Strategy*. Meister Consultants Group and Synapse Energy Economics for Rhode Island Office of Energy Resources.

Allison, A., M. Whited, T. Woolf. 2017. *Comments on Supplemental Distributed System Implementation Plans of New York's Investor-Owned Utilities.* Synapse Energy Economics for Natural Resources Defense Council, Pace Energy & Climate Center, Solar Energy Industries Association, and Vote Solar.

Allison, A., M. Whited, T. Woolf. 2016. *Comments on Initial Distributed System Implementation Plans of New York's Investor-Owned Utilities.* Synapse Energy Economics for Natural Resources Defense Council, Pace Energy & Climate Center, Solar Energy Industries Association, and Vote Solar.

Fisher, J., P. Luckow, A. Horowitz, T. Comings, A. Allison, E.A. Stanton, S. Jackson, K. Takahashi. 2016. *Michigan Compliance Assessment for the Clean Power Plan: MPSC/MDEQ EPA 111(d) Impact Analysis*. Prepared for Michigan Public Service Commission, Michigan Department of Environmental Quality, and Michigan Agency for Energy.

Comings, T., Allison, A., Ackerman, F. 2016. *Consumer Savings from 2025 Corporate Average Fuel Economy Standards (CAFE)*. Synapse Energy Economics for Consumers Union.

Stanton, E. A., P. Knight, A. Allison, T. Comings, A. Horowitz, W. Ong, N. R. Santen, K. Takahashi. 2016. *The RGGI Opportunity 2.0: RGGI as the Electric Sector Compliance Tool to Achieve 2030 State Climate Targets.* Synapse Energy Economics for Sierra Club, Pace Energy and Climate Center, and Chesapeake Climate Action Network.

Stanton, E. A., P. Knight, A. Allison, T. Comings, A. Horowitz, W. Ong, N. R. Santen, K. Takahashi. 2016. *The RGGI Opportunity: RGGI as the Electric Sector Compliance Tool to Achieve 2030 State Climate Targets.* Synapse Energy Economics for Sierra Club, Pace Energy and Climate Center, and Chesapeake Climate Action Network.

Horowitz, A., S. Jackson, A. Allison, E. A. Stanton. 2015. *Environmental Justice and the Clean Power Plan.* Synapse Energy Economics for The Energy Foundation.

Vitolo, T., M. Chang, T. Comings, A. Allison. 2015. *Economic Benefits of the Proposed Coolidge Solar I Solar Project*. Synapse Energy Economics for Coolidge Solar I, LLC.

Knight, P., A. Allison, E.A. Stanton. 2015. Preliminary Clean Power Plan Analysis for Kentucky. Synapse Energy Economics for Kentuckians for the Commonwealth.

Knight, P., A. Allison, W. Ong, N. R. Santen, E. A. Stanton. 2015. *Cutting Electric Bills with the Clean Power Plan.* Synapse Energy Economics.

TESTIMONY

Michigan Public Service Commission (Docket No. U-18419). Direct testimony of Avi Allison regarding DTE Electric Company's application for a Certificate of Necessity to construct a 1,100 MW natural gas combined cycle facility. On behalf of Michigan Environmental Council, Natural Resources Defense Council, and Sierra Club. January 12, 2018.

TESTIMONY ASSISTANCE

Wisconsin Public Service Commission (Docket 3270-CE-127): Direct testimony of Dr. Ariel Horowitz regarding Madison Gas & Electric Company's application to construct and operate a 66 MW wind generation facility in Howard County, Iowa. September 15, 2017.

California Public Utilities Commission (Application 17-01-020, 17-01-021, and 17-01-022): Joint opening testimony of Melissa Whited, Max Baumhefner, and Katherine Stainken on fast-charging infrastructure and rates; joint opening testimony of Melissa Whited, Max Baumhefner, and Joel Espino on medium- and heavy-duty and fleet charging infrastructure and commercial EV rates; joint opening testimony of Melissa Whited, Max Baumhefner, and Chris King on residential charging infrastructure and rates. Rebuttal testimony of Melissa Whited on public fast-charging rate design, commercial EV rate design, and residential EV rate design. On behalf of Natural Resources Defense Council, the Greenlining Institute, Plug In America, the Coalition of California Utility Employees, Sierra Club, and the Environmental Defense Fund. July 25, August 1, August 7, and September 5, 2017.

Utah Public Service Commission (Docket No. 14-035-114): Direct testimony of Melissa Whited regarding Pacificorp's proposed rates for customers with distributed generation. On behalf of Utah Clean Energy. June 8, 2017.

Texas Public Utilities Commission (SOAH Docket No. 473-17-1764, PUC Docket No. 46449): Direct testimony of Rachel Wilson evaluating Southwestern Electric Power Company's application for authority to change rates to recover the costs of investments in pollution control equipment. On behalf of Sierra Club and Dr. Lawrence Brough. April 25, 2017.

Indiana Utility Regulatory Commission (Cause No. 44872): Direct testimony of Dr. Jeremy Fisher regarding Northern Indiana Public Service Company's application for a Certificate of Public Convenience and Necessity for environmental compliance projects at Schahfer units 14 & 15 and Michigan City unit 12. On behalf of Sierra Club. April 3, 2017.

Indiana Utility Regulatory Commission (Cause No. 44871): Direct testimony of Dr. Jeremy Fisher regarding Indiana Michigan Company's application for a Certificate of Public Convenience and Necessity to install Selective Catalytic Reduction at Rockport Power Plant Unit 2. On behalf of Citizens Action Coalition of Indiana, Sierra Club, and Valley Watch. February 3, 2017.

MPSC Case No.: U-18403
Requestor: MEC and SC
Question No.: MECSCDE-3.4d
Respondent: D. M. Arnold/Legal
Page: 1 of 1

Question: For each of the Company's coal-fired generating units, provide the following actual information by unit for each of the years 2011 through 2017. If a unit breakdown is not available, then please provide the next most detailed breakdown that is available. If 2017 actual information has not been finalized, provide it in preliminary form.

d. Energy revenues ($)

Answer: DTE Electric objects for the reason that the information requested is for previous years that are not within the timeframe covered in this case, and is not relevant to the reasonableness and prudence of DTE Electric power supply costs and expenses for the 2018 PSCR Plan Year or the subsequent 5-year forecast, which is the proper subject of this PSCR plan proceeding under Act 304 pursuant to MCL 460.6j(3) and (4), nor is it reasonably calculated to lead to the discovery of admissible evidence. Subject to such objection, and without waiver thereof, DTE Electric would answer as follows:

The table below contains data from MISO Electric Quarterly Reports (EQRs). The revenues for Monroe include Ludington GFA transactions and are understated.

ENERGY REVENUE ($)

RESOURCE	2011	2012	2013	2014	2015	2016	2017
DECO.BLR1.DEMO	$92,777,834	$96,365,129	$86,576,833	$138,123,208	$94,732,661	$72,117,416	$96,521,640
DECO.BLR2.DEMO	$122,584,126	$85,333,709	$113,129,289	$137,949,845	$76,569,281	$83,603,994	$71,081,842
DECO.MONROE1	$140,100,417	$108,111,541	$98,949,140	$158,677,538	$118,214,677	$72,924,464	$110,228,493
DECO.MONROE2	$146,849,094	$90,039,551	$124,616,431	$120,498,404	$106,627,776	$78,991,153	$79,639,112
DECO.MONROE3	$127,299,933	$132,923,266	$116,417,204	$199,365,246	$88,474,264	$124,991,973	$119,238,553
DECO.MONROE4	$139,691,619	$95,893,562	$134,216,582	$138,838,194	$133,879,891	$83,485,883	$115,765,651
DECO.RVRRGE3	$43,758,987	$45,000,949	$35,621,619	$70,115,357	$35,699,318	$31,097,080	$27,501,350
DECO.STCLAIR1	$18,535,381	$20,453,550	$20,429,891	$30,412,606	$18,957,824	$17,849,778	$22,796,594
DECO.STCLAIR2	$24,922,702	$18,791,217	$19,708,058	$31,684,396	$18,598,499	$13,262,629	$20,748,563
DECO.STCLAIR3	$24,246,153	$18,777,166	$21,478,959	$26,621,646	$16,421,693	$12,819,299	$22,694,404
DECO.STCLAIR6	$57,388,505	$30,872,781	$52,303,358	$63,009,856	$31,990,346	$17,045,672	$31,745,640
DECO.STCLAIR7	$69,627,962	$64,668,097	$69,779,204	$67,975,415	$51,940,440	$29,452,598	$9,403,801
DECO.TRNCNL9	$98,863,232	$86,494,499	$88,872,294	$102,246,097	$59,934,786	$54,913,603	$53,155,784

MPSC Case No.: U-18403
Requestor: MEC and SC
Question No.: MECSCDE-3.4f
Respondent: D. M. Arnold/Legal
Page: 1 of 1

Question: For each of the Company's coal-fired generating units, provide the following actual information by unit for each of the years 2011 through 2017. If a unit breakdown is not available, then please provide the next most detailed breakdown that is available. If 2017 actual information has not been finalized, provide it in preliminary form.

f. Ancillary revenues ($)

Answer: DTE Electric objects for the reason that the information requested is for previous years that are not within the timeframe covered in this case, and is not relevant to the reasonableness and prudence of DTE Electric power supply costs and expenses for the 2018 PSCR Plan Year or the subsequent 5-year forecast, which is the proper subject of this PSCR plan proceeding under Act 304 pursuant to MCL 460.6j(3) and (4), nor is it reasonably calculated to lead to the discovery of admissible evidence. Subject to such objection, and without waiver thereof, DTE Electric would answer as follows:

The table below contains data from MISO Electric Quarterly Reports (EQRs).

ASM ($)

RESOURCE	2011	2012	2013	2014	2015	2016	2017
DECO.BLR1.DEMO	$22,125	$13,883	$16,092	$85,888	$49,911	$117,366	$185,676
DECO.BLR2.DEMO	$23,436	$6,471	$130,404	$78,241	$23,172	$181,128	$159,227
DECO.MONROE1	$55,019	$80,944	$45,796	$146,289	$15,739	$9,358	$40,631
DECO.MONROE2	$134,606	$74,533	$116,592	$63,929	$5,535	$6,407	$25,380
DECO.MONROE3	$26,959	$64,875	$34,434	$52,127	$5,610	$13,410	$50,762
DECO.MONROE4	$107,262	$83,226	$113,357	$138,734	$12,323	$8,932	$39,867
DECO.RVRRGE3	$147,746	$14,461	$42,899	$22,084	$10,852	$4,970	$5,555
DECO.STCLAIR1	$30,543	$2,819	$10,469	$9,434	$2,474	$2,102	$5,479
DECO.STCLAIR2	$41,987	$3,283	$4,040	$5,952	$2,169	$2,103	$5,276
DECO.STCLAIR3	$21,128	$2,227	$2,525	$61	-$141	$2,161	$325
DECO.STCLAIR6	$33,099	$1,760	$12,733	$8,265	$2,010	$4,232	$79
DECO.STCLAIR7	$18,091	$11,329	$14,364	$15,682	$626	$5,473	$855
DECO.TRNCNL9	$184,567	$61,044	$91,453	$48,755	$6,655	$21,044	$39,394

MPSC Case No.: U-18403
Requestor: MEC and SC
Question No.: MECSCDE-3.4a
Respondent: D. M. Arnold/Legal
Page: 1 of 1

Question: For each of the Company's coal-fired generating units, provide the following actual information by unit for each of the years 2011 through 2017. If a unit breakdown is not available, then please provide the next most detailed breakdown that is available. If 2017 actual information has not been finalized, provide it in preliminary form.

a. Unforced capacity (MW)

Answer: DTE Electric objects for the reason that the information requested is for previous years that are not within the timeframe covered in this case, and is not relevant to the reasonableness and prudence of DTE Electric power supply costs and expenses for the 2018 PSCR Plan Year or the subsequent 5-year forecast, which is the proper subject of this PSCR plan proceeding under Act 304 pursuant to MCL 460.6j(3) and (4), nor is it reasonably calculated to lead to the discovery of admissible evidence. Subject to such objection, and without waiver thereof, DTE Electric would answer as follows:

MISO's UCAP methodology started in Planning Year 2013/14. Therefore, only 2013-2017 values are provided below. This table includes current operational coal-fired units.

	UCAP by Planning Year				
RESOURCE	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**
BELLE RIVER 1 - DTEEC ONLY	479	479	503	495	495
BELLE RIVER 2 - DTEEC ONLY	478	494	497	503	511
MONROE 1	669	672	689	709	701
MONROE 2	659	676	684	705	656
MONROE 3	688	672	721	701	724
MONROE 4	699	709	729	720	711
RIVER ROUGE 3	261	253	250	234	237
ST CLAIR 1	140	139	140	140	139
ST CLAIR 2	145	150	148	147	138
ST CLAIR 3	156	158	158	122	145
ST CLAIR 6	280	282	254	273	248
ST CLAIR 7	367	362	364	378	362
TRENTON 9	482	455	443	430	415

2013/2014 MISO Planning Resource Auction Results:

Local Resource Zone (LRZ)	Z1 (MN, ND, Western WI)	Z2 (Eastern WI, Upper MI)	Z3 (IA)	Z4 (IL)	Z5 (MO)	Z6 (IN, KY)	Z7 (MI)	System
Planning Reserve Margin Requirements (PRMR)	17,693.4	13,362.9	9,343.1	10,733.9	9,000.2	19,320.3	22,702.3	102,156.1
Netted DR/EER*	1197.1	728.7	528.8	112.3	0	1191.7	781.6	4,540.2
Adjusted PRMR	16,387.3	12,573.2	8,767.6	10,612.1	9,000.2	18,023.3	21,850.3	97,214.0
Offer								70,412.1
FRAP[1]								34,959.3
Offer + FRAP[1]								105,371.4
Offer Cleared + FRAP[1]								97,214.0
Local Clearing Requirement (LCR)	15,707.7	10,326.2	6,796.4	5,231.9	5,490.7	14,283.5	21,055.0	N/A
Capacity Import Limit (CIL)	4,085.0	4,144.0	3,717.0	6,614.0	5,035.0	6,838.0	4,576.0	N/A
Capacity Export Limit (CEL)	1,416.0	1,766.0	1,612.0	2,230.0	1,616.0	3,432.0	4,306.0	N/A
Auction Clearing Price ($/MW-Day)	1.05	1.05	1.05	1.05	1.05	1.05	1.05	

* Planning Reserve Margin and Transmission losses are not applied to Netted Demand Response (DR) and Energy Efficiency Resources (EERs) in the PRMR calculation.

[1] FRAP = Fixed Resource Adequacy Plan

2014/2015 Planning Resource Auction (PRA)

MISO completed its Annual Planning Resource Auction for Planning Year 2014-2015 based on Market Participant Offers submitted between March 27 and 31, and posted final results on April 14, 2014

- **This was the second full-year PRA under the Module E-1 Tariff. MISO completed a partial year, Transitional PRA prior to MISO South entities integrating in December 2013.**
- **The Auction produced three clearing prices:**
  1. **Local Resource Zone (LRZ) 1 cleared at $3.29 per MW-Day as its Zonal Capacity Export Limit bound**
  2. **LRZs 2-7 cleared at $16.75 per MW-Day**
  3. **LRZs 8-9 cleared at $16.44 per MW-Day as constraints related to intra-RTO dispatch ranges bound between the MISO South and the MISO Central/North Regions**
- **A total of 136,912 MW of Planning Resources were cleared to meet the MISO's resource adequacy requirements. This includes 124,556 MW of Generation Resources, 3,743 MW of Behind-the-Meter Generation (BTMG), 5,457 MW of Demand Response (DR), and 3,156 MW of External Resources (ER).**
- **The MISO Planning Reserve Margin Requirement (PRMR) increased by 2,475 MW to 136,912 MW from 2013-14 PRA due to; an increase in Coincident Peak Forecast, an increase in Planning Reserve Margin (PRM) from 6.2% to 7.3%, and, an increase in Zone 8's PRMR as the Zonal Local Clearing Requirement was greater than the Zonal PRMR.**
- **Excess Zonal Resource Credits of 12,201 MW remained after meeting the PRMR, up from 8,659 MW in 2013-14 PRA, but down slightly from the MISO South Transitional PRA, 12,615 MW.**

2014/2015 MISO Planning Resource Auction Results

LRZ	Z1 (MN,ND, Western WI)	Z2 (Eastern WI, Upper MI)	Z3 (IA)	Z4 (IL)	Z5 (MO)	Z6 (IN, KY)	Z7 (MI)	Z8 (AR)	Z9 (LA, MS, TX)	System
Demand Forecast	16,540	12,347	8,757	9,680	8,106	17,629	20,791	7,363	22,999	124,212
PRMR (based on CPF)	18,236	13,504	9,628	10,616	8,884	19,404	22,998	8,043	25,224	136,537
LCR	15,070	11,739	8,971	8,879	5,002	15,457	21,293	8,417	24,080	N/A
Effective PRMR	18,236	13,504	9,628	10,616	8,884	19,404	22,998	8,417	25,224	136,912
Total Offer Submitted	7,045	2,879	9,520	11,370	387	17,985	15,190	9,406	25,966	99,747
Total FRAP applied	12,620	12,352	391	874	7,722	1,846	8,449	397	2,372	47,022
Offer Cleared + FRAP	18,522	14,358	9,787	9,316	8,109	19,551	22,627	8,582	26,059	136,912
Import Limit	4,347	3,083	1,591	3,025	5,273	4,834	3,884	1,602	3,585	N/A
Export Limit	286	1,924	1,875	1,961	1,350	2,246	4,517	3,080	3,616	N/A
ACP ($/MW-Day)	3.29	16.75	16.75	16.75	16.75	16.75	16.75	16.44	16.44	N/A

Participation by Resource Type (System-wide)

Planning Resource Type	UCAP	Unconverted	Fixed Resource Plans	OFFER	Cleared	ZRC Balance
Generation	138,668	3,480	42,394	90,645	82,162	10,632
Behind the Meter Generation	4,071	59	2,141	1,693	1,602	270
Demand Response	5,750	3	1,449	4,298	4,008	290
External Resources	4,238	73	1,038	3,111	2,117	1,009
Energy Efficiency	0	0	0	0	0	0
Total	152,727	3,615	47,022	99,747	89,890	12,201
%UCAP	100%	2%	31%	65%	59%	8%

Appendix - Acronyms

ACP - Auction Clearing Price ($/MW-Day)
CEL - Capacity Export Limit (MWs)
CIL - Capacity Import Limit (MWs)
CPF – Coincident Peak Forecast (MW)
FRAP - Fixed Resource Adequacy Plan (MWs)
LCR - Local Clearing Requirement (MWs)
LRZ - Local Resource Zone
MP - Market Participant
PRA - Planning Resource Auction
PRM - Planning Reserve Margin
PRMR - Planning Reserve Margin Requirement (MWs)
SFT – Simultaneous Feasibility Test
TPRA – Transitional Planning Resource Auction
UCAP - Unforced Capacity (MWs)
ZRC - Zonal Resource Credit (MWs)

2016/2017 Planning Resource Auction Results

April 15, 2016

Revised 4/15/2016 to Include Total Offer Submitted by Zone on Slide 8

Executive Summary

- MISO Region has adequate resources to meet its Planning Reserve Margin Requirement of 135,483 MW
  - Zone 1 cleared at $19.72/MW-day
  - Zones 2-7 cleared at $72.00/MW-day
  - Zones 8-10 cleared at $2.99/MW-day

- Implemented FERC's Order in Docket ER16-833-000 that modified Reference Levels, Capacity Import Limits (CILs) and Local Clearing Requirements (LCRs)

- Regional generation supply is consistent with the 2015 MISO OMS Survey

Auction Inputs and Considerations

- MISO's Resource Adequacy construct combines regional and local criteria to achieve a least-cost solution for the region subject to the following:
  - MISO-wide reserve margin requirements
  - Zonal capacity requirements (Local Clearing Requirement)
  - Zonal transmission limitations (Capacity Import/Export Limits)
  - Sub-Regional contractual limitations such as between MISO's South and Central/North Regions

- The MISO-wide reserve margin requirement is shared among the zones, and zones may import capacity to meet this requirement

- Multiple options exist for Load Serving Entities to demonstrate Resource Adequacy:
  - Submit a Fixed Resource Adequacy Plan
  - Utilize bilateral contracts with another resource owner
  - Participate in the Planning Resource Auction

- The Independent Market Monitor reviews the auction results for physical and economic withholding

Changes since PRA 2015/2016

- Tariff revisions approved in FERC Docket No. ER16-833-000 implemented, including increased CILs, decreased LCRs, and reduced Initial Reference Level to $0/MW-day

- Sub-Regional Export Constraint in the South to Midwest direction modified to reflect the Settlement Agreement

- LRZ 10 for the State of Mississippi established – No impact

- Other minor changes:
  - EPA RICE-NESHAP* regulations, which likely led to some additional retirements incremental to our OMS survey results
  - Allocation of Zonal Deliverability Benefit revised – pending FERC decision
  - Suspended units required to participate in the PRA – No impact

*Reciprocating Internal Combustion Engine National Emission Standard for Hazardous Air Pollutants

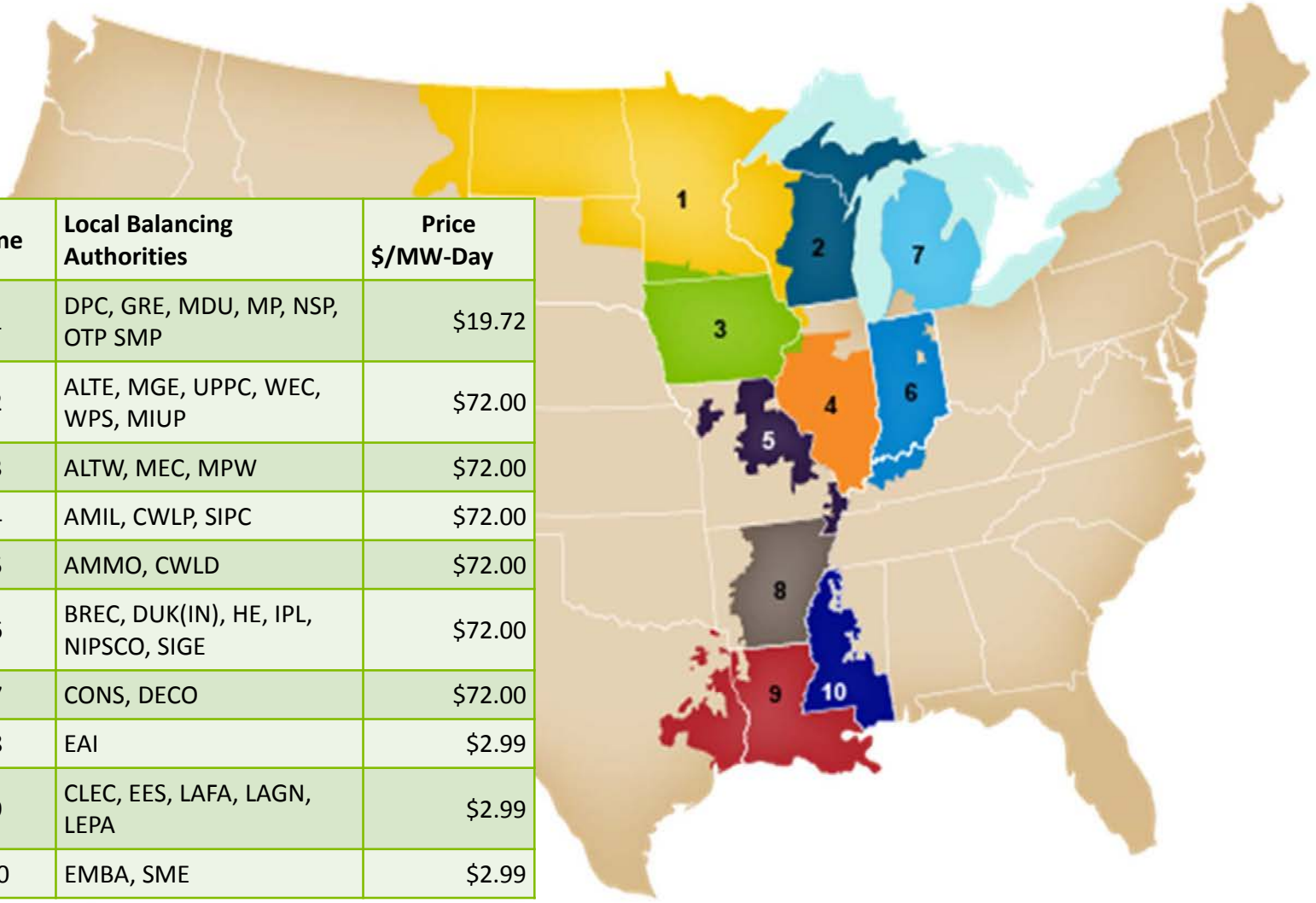
Auction Output and Settlements

- Key outputs from the auction are:
  - A commitment of capacity to the MISO region, including performance obligations and
  - The capacity price (Auction Clearing Price) for each Zone

- This price drives the settlements process
  - Load pays the Auction Clearing Price for the Zone in which it is physically located
  - Cleared capacity is paid the Auction Clearing Price for the Zone where it is physically located
    - External Resources are paid the price of the Zone where their firm transmission service crosses into MISO

2016/2017 Auction Clearing Price Overview

Zone	Local Balancing Authorities	Price $/MW-Day
1	DPC, GRE, MDU, MP, NSP, OTP SMP	$19.72
2	ALTE, MGE, UPPC, WEC, WPS, MIUP	$72.00
3	ALTW, MEC, MPW	$72.00
4	AMIL, CWLP, SIPC	$72.00
5	AMMO, CWLD	$72.00
6	BREC, DUK(IN), HE, IPL, NIPSCO, SIGE	$72.00
7	CONS, DECO	$72.00
8	EAI	$2.99
9	CLEC, EES, LAFA, LAGN, LEPA	$2.99
10	EMBA, SME	$2.99



Auction Clearing Prices

$/MW-day

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10
2014-2015 ACP*	$3.29	$16.75	$16.75	$16.75	$16.75	$16.75	$16.75	$16.44	$16.44	N/A
2015-2016 ACP*	$3.48	$3.48	$3.48	$150.00	$3.48	$3.48	$3.48	$3.29	$3.29	N/A
2016-2017 ACP*	**$19.72**	**$72.00**	**$72.00**	**$72.00**	**$72.00**	**$72.00**	**$72.00**	**$2.99**	**$2.99**	**$2.99**
Conduct Threshold	*$25.80*	*$26.06*	*$25.52*	*$25.93*	*$26.42*	*$25.85*	*$25.98*	*$24.76*	*$25.12*	*$24.60*
Cost of New Entry	*$258.00*	*$260.58*	*$255.15*	*$259.26*	*$264.19*	*$258.47*	*$259.81*	*$247.56*	*$251.21*	*$246.05*

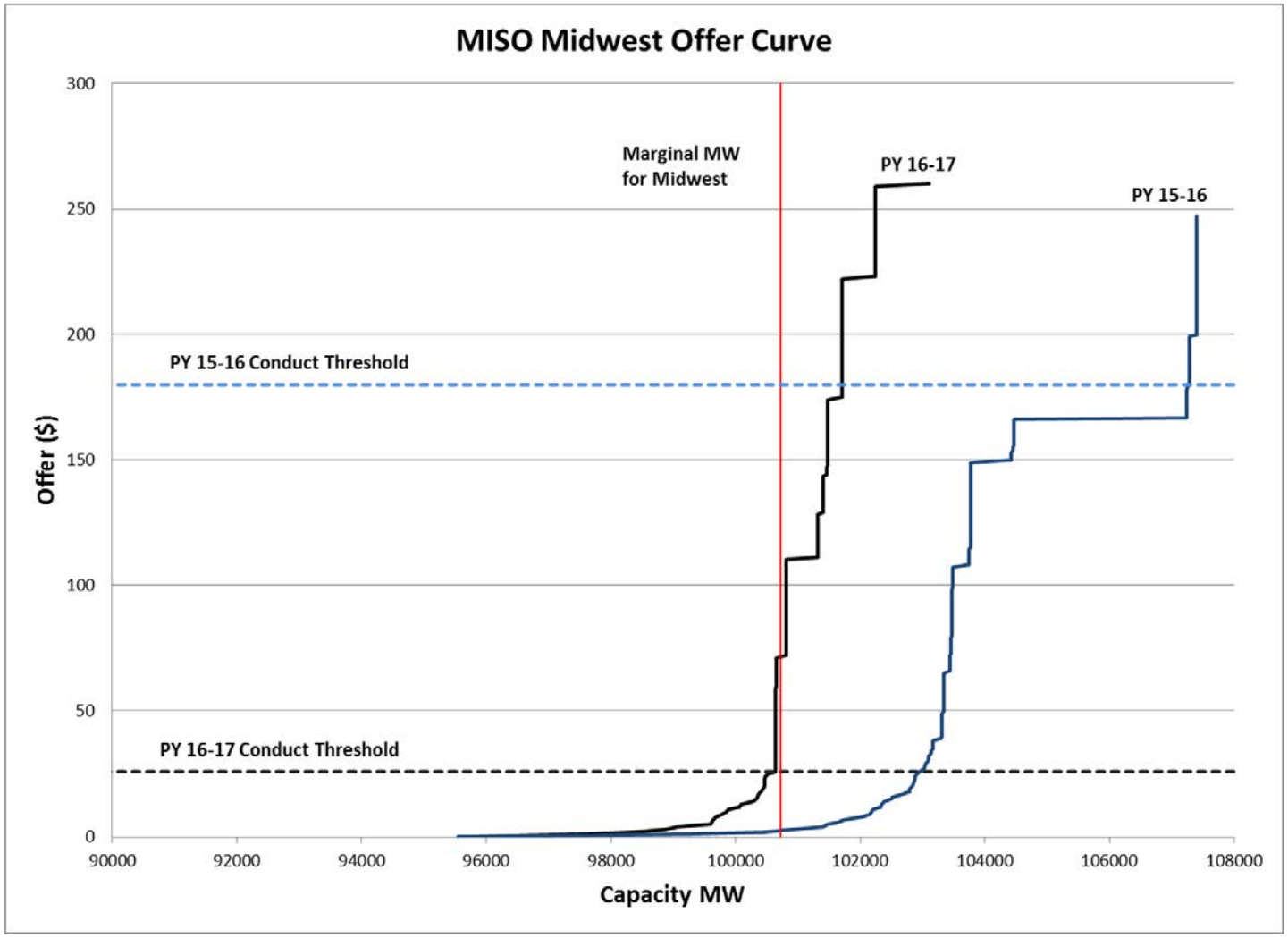
- Conduct Threshold is 10% of Cost of New Entry (CONE) for each Zone
- Conduct Threshold is $0 for a Generation Resource with a Facility Specific Reference Level

* Auction Clearing Price

2016/2017 Planning Resource Auction Results

Local Resource Zone	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	Z10	System
PRMR	18,185	13,589	9,879	10,375	8,518	18,750	22,406	8,178	20,713	4,891	135,483
Total Offer Submitted (Including FRAP)	19,430	14,903	10,138	11,371	7,926	18,398	21,615	10,587	20,257	6,899	141,524
FRAP	14,252	12,063	501	910	0	4,338	1,393	318	577	1,641	35,995
ZRC Offer Cleared	4,522	2,840	9,636	8,242	7,927	14,060	20,141	9,676	17,934	4,511	99,488
Total Committed (Offer Cleared + FRAP)	18,775	14,903	10,138	9,152	7,927	18,398	21,534	9,995	18,511	6,151	135,483
LCR	15,918	12,986	8,715	5,476	5,026	13,698	20,851	6,270	17,477	3,978	N/A
CIL	3,436	1,609	1,886	6,323	4,837	5,610	3,521	3,527	4,490	2,653	N/A
Import	0	0	0	1,224	592	352	872	0	2,202	0	5,240
CEL	590	2,996	1,598	7,379	896	2,544	4,541	2,074	1,261	1,857	N/A
Export	590	1,315	258	0	0	0	0	1,817	0	1,260	5,240
ACP ($/MW-Day)	$19.72	$72.00	$72.00	$72.00	$72.00	$72.00	$72.00	$2.99	$2.99	$2.99	N/A

Midwest Offer Curve 2015/2016 vs. 2016/2017



Next Steps

- Detailed results review at May 5 RASC
- Posting of PRA offer data 30 days after PRA conclusion – May 13

Acronyms

- ACP - Auction Clearing Price ($/MW-Day)
- CEL - Capacity Export Limit (MW)
- CIL - Capacity Import Limit (MW)
- FRAP - Fixed Resource Adequacy Plan (MW)
- LCR - Local Clearing Requirement (MW)
- LRZ - Local Resource Zone
- PRA - Planning Resource Auction
- PRM - Planning Reserve Margin (%)
- PRMR - Planning Reserve Margin Requirement (MW)
- SREC – Sub-Regional Export Constraint
- SRIC – Sub-Regional Import Constraint

References

- Sub-Regional Export and Import Constraints discussed at the Supply Adequacy Working Group (SAWG)
  - October 29, 2015
  - December 3, 2015
  - February 4, 2016

2018/2019 Planning Resource Auction Results

April 13, 2018

Executive Summary

- MISO Region has adequate resources to meet its Planning Reserve Margin Requirement of 135,179 MW
  - Zone 1 cleared at $1.00/MW-day
  - Remainder of footprint cleared at $10.00/MW-day
  - Marginal resources located in multiple Zones
  - Increased demand and lower supply largely responsible for higher Auction Clearing Prices relative to last year
  - ZDB rate of $0.04 will be credited to load in Zones 2 through 10
- Regional generation supply is consistent with the 2017 OMS-MISO Survey
- No mitigation for physical or economic withholding by the IMM

Auction Inputs and Considerations

- MISO's Resource Adequacy construct combines regional and local criteria to achieve a least-cost solution for the region subject to the following:
  - MISO-wide reserve margin requirements
  - Zonal capacity requirements (Local Clearing Requirement)
  - Zonal transmission limitations (Capacity Import/Export Limits)
  - Sub-Regional contractual limitations such as between MISO's South and Central/North Regions

- The MISO-wide reserve margin requirement is shared among the Zones, and Zones may import capacity to meet this requirement

- Multiple options exist for Load-Serving Entities to demonstrate Resource Adequacy:
  - Submit a Fixed Resource Adequacy Plan
  - Utilize bilateral contracts with another resource owner
  - Participate in the Planning Resource Auction

- The Independent Market Monitor reviews the auction results for physical and economic withholding

Auction Output and Settlements

- Key outputs from the Auction
  - A commitment of capacity to the MISO region, including performance obligations and
  - The capacity price (Auction Clearing Price) for each Zone

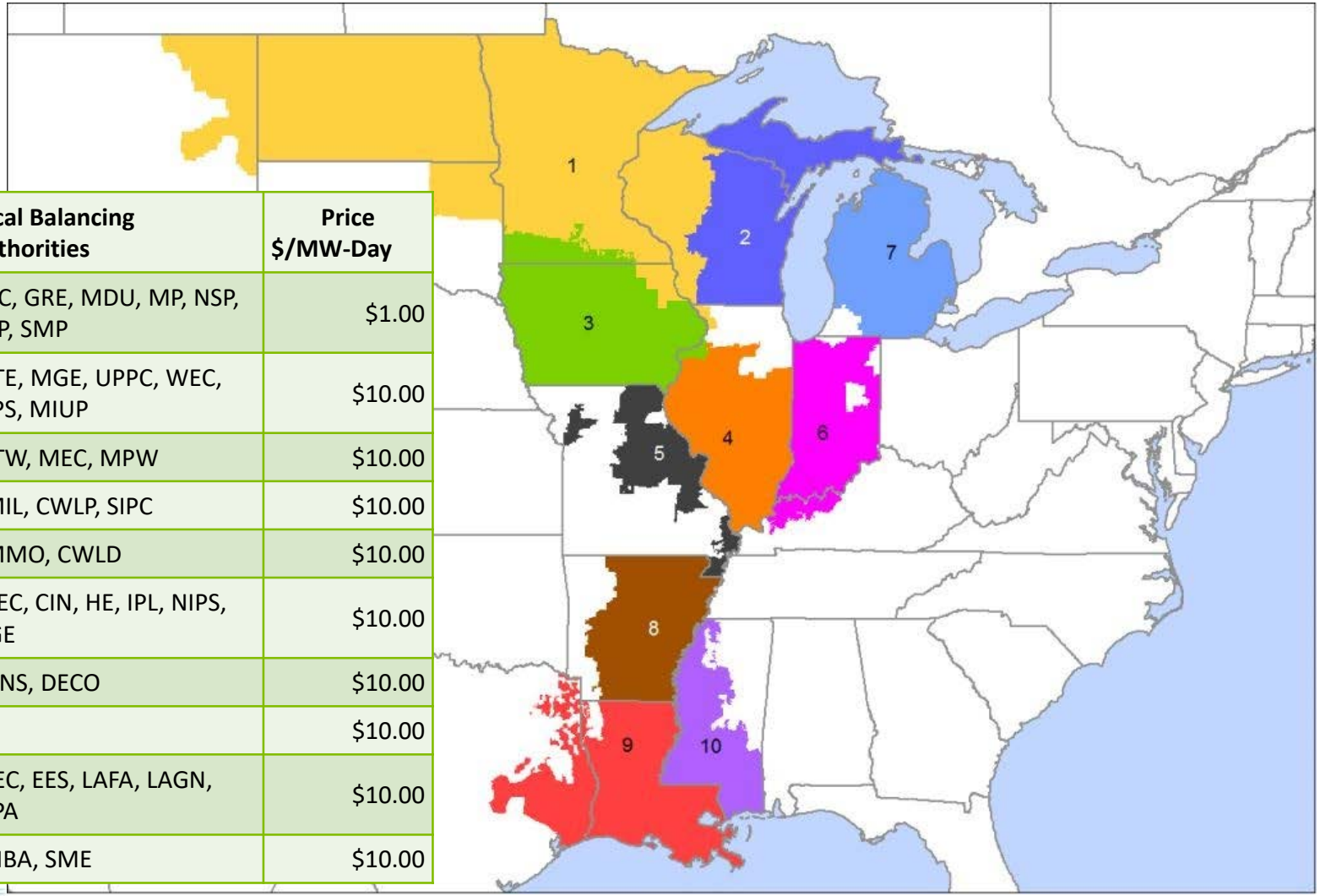
- This price drives the settlements process
  - Load pays the Auction Clearing Price for the Zone in which it is physically located
  - Cleared capacity is paid the Auction Clearing Price for the Zone where it is physically located
    - External Resources are paid the price of the Zone where their firm transmission service crosses into MISO

Approved Tariff filings since the 2017/2018 PRA

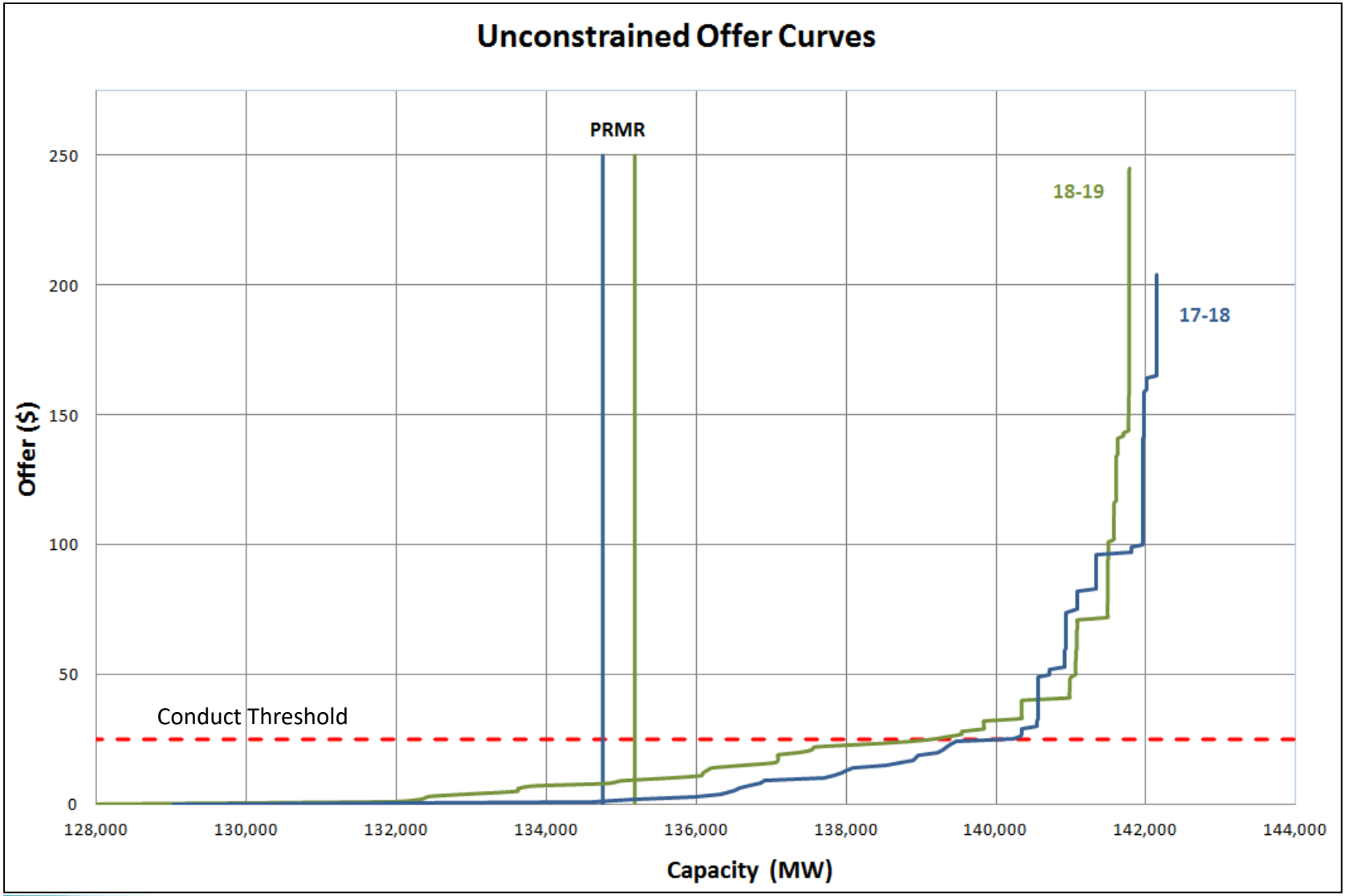
- Tariff revisions approved in FERC Docket ER17-892-000 and -001 documenting the calculation of Sub-Regional Import and Export Constraints and the Independent Market Monitor's calculation of going-forward costs for Reference Levels.
- Tariff revisions approved in FERC Docket ER17-2112 to authorize the extension or reopening of the Planning Resource Auction ("PRA") offer window when necessitated by unanticipated events.
- Tariff revisions approved in FERC Docket ER18-75-000 to allow Market Participants greater flexibility in the qualification of certain resource types for the Planning Resource Auction, allowing for additional components of Installed Capacity to be deferred in addition to the Generation Verification Test Capacity (GVTC).
- Re-filed Tariff provisions (no changes) regarding Planning Resource Auction re-approved in FERC Docket ER18-462-000.

2018/2019 Auction Clearing Price Overview

Zone	Local Balancing Authorities	Price $/MW-Day
1	DPC, GRE, MDU, MP, NSP, OTP, SMP	$1.00
2	ALTE, MGE, UPPC, WEC, WPS, MIUP	$10.00
3	ALTW, MEC, MPW	$10.00
4	AMIL, CWLP, SIPC	$10.00
5	AMMO, CWLD	$10.00
6	BREC, CIN, HE, IPL, NIPS, SIGE	$10.00
7	CONS, DECO	$10.00
8	EAI	$10.00
9	CLEC, EES, LAFA, LAGN, LEPA	$10.00
10	EMBA, SME	$10.00



MISO Offer Curve, 2017/2018 vs. 2018/2019



Auction Clearing Prices Since 2014-15 PRA

$/MW-day

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10
2014-2015 ACP*	$3.29	$16.75						$16.44		N/A
2015-2016 ACP*	$3.48			$150.00	$3.48			$3.29		N/A
2016-2017 ACP*	$19.72	$72.00						$2.99		
2017-2018 ACP*	$1.50									
2018-2019 ACP*	***$1.00***	***$10.00***								
Conduct Threshold	*$24.76*	*$24.25*	*$24.35*	*$24.62*	*$25.07*	*$24.45*	*$24.86*	*$23.63*	*$22.81*	*$23.63*
Cost of New Entry	*$247.59*	*$242.47*	*$243.48*	*$246.22*	*$250.66*	*$244.52*	*$248.60*	*$236.30*	*$228.11*	*$236.30*

- Conduct Threshold is 10% of Cost of New Entry (CONE) for each Zone
- Conduct Threshold is $0 for a generator with a facility specific Reference Level

Additional Details Regarding Supply

Planning Resource Type	2018-2019 Offered	2017-2018 Offered	2018-2019 Cleared	2017-2018 Cleared
Generation	126,159	127,637	120,855	121,807
External Resources	3,903	4,029	3,089	3,378
Behind the Meter Generation	4,176	3,678	4,098	3,456
Demand Resources	7,370	6,704	6,964	6,014
Energy Efficiency	173	98	173	98
Total	141,781	142,146	135,179	134,753

- Demand Resource quantities include Aggregators of Retail Customers (ARCs) that registered for the 2018-19 PRA

2018/2019 Planning Resource Auction Results

Local Resource Zone	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	Z10	System
PRMR	18,414	13,463	9,805	10,060	8,549	18,741	22,121	8,088	20,976	4,963	135,179
Total Offer Submitted (Including FRAP)	19,560	13,954	10,884	11,002	7,944	19,221	22,036	10,939	21,196	5,046	141,781
FRAP	14,431	11,196	4,170	1,136	0	1,803	12,255	440	172	1,428	47,030
Self Scheduled (SS)	4,046	1,930	5,979	6,636	7,934	16,105	9,193	9,706	16,509	2,858	80,896
Non-SS Offer Cleared	453	215	308	1,155	10	1,179	352	241	2,782	558	7,253
Total Committed (Offer Cleared + FRAP)	18,930	13,342	10,456	8,927	7,944	19,087	21,801	10,387	19,463	4,844	135,179
LCR	15,832	12,373	7,374	4,960	5,693	12,090	20,628	4,744	19,319	4,463	N/A
CIL	4,415	2,595	3,369	6,411	4,332	7,941	3,785	4,834	3,622	2,688	N/A
Import	0	121	0	1,133	606	0	320	0	1,513	120	3,812
CEL	516	2,017	5,430	4,280	2,122	3,249	2,578	2,424	2,149	1,824	N/A
Export	516	0	651	0	0	346	0	2,299	0	0	3,812
ACP ($/MW-Day)	$1.00	$10.00	$10.00	$10.00	$10.00	$10.00	$10.00	$10.00	$10.00	$10.00	N/A

* Values displayed in MW UCAP

Next Steps

- Detailed results review at May 9 Resource Adequacy Subcommittee (RASC)
- Posting of PRA offer data 30 days after PRA conclusion – May 18
- Results from previous Planning Resource Auctions can be found on the MISO website at: Planning-> Resource Adequacy -> PRA Document

Acronyms

- ACP - Auction Clearing Price ($/MW-Day)
- ARC - Aggregator of Retail Customers
- BTMG – Behind the Meter Generator
- CEL - Capacity Export Limit (MW)
- CIL - Capacity Import Limit (MW)
- CONE – Cost of New Entry
- FRAP - Fixed Resource Adequacy Plan (MW)
- FSRL – Facility Specific Reference Level ($/MW-Day)
- LCR - Local Clearing Requirement (MW)
- LMR – Load Modifying Resource
- LRZ - Local Resource Zone
- PRM - Planning Reserve Margin (%)
- PRMR - Planning Reserve Margin Requirement (MW)
- SREC – Sub-Regional Export Constraint
- SRIC – Sub-Regional Import Constraint
- ZDB – Zonal Deliverability Benefit
- ZRC – Zonal Resource Credit

MPSC Case No.: U-18403
Requestor: MEC and SC
Question No.: MECSCDE-3.4g
Respondent: C. A. Bence/Legal
Page: 1 of 1

Question: For each of the Company's coal-fired generating units, provide the following actual information by unit for each of the years 2011 through 2017. If a unit breakdown is not available, then please provide the next most detailed breakdown that is available. If 2017 actual information has not been finalized, provide it in preliminary form.

g. Fuel costs ($)

Answer: DTE Electric objects for the reason that the information requested is for previous years that are not within the timeframe covered in this case, and is not relevant to the reasonableness and prudence of DTE Electric power supply costs and expenses for the 2018 PSCR Plan Year or the subsequent 5-year forecast, which is the proper subject of this PSCR plan proceeding under Act 304 pursuant to MCL 460.6j(3) and (4), nor is it reasonably calculated to lead to the discovery of admissible evidence. Subject to such objection, and without waiver thereof, DTE Electric would answer as follows:

The fuel costs are available on a site by site basis, and the data is summarized by site and by year in the following table.

Actual Fuel Costs ($000) by Year (2011-2017)

Resource	2011	2012	2013	2014	2015	2016	2017
Monroe	453,869	471,232	466,417	427,791	422,887	331,564	339,329
Belle River*	122,707	143,366	141,716	134,367	131,196	109,927	122,718
St Clair	145,488	149,666	162,903	140,644	136,042	90,617	87,022
Trenton	102,085	102,515	98,771	78,996	68,061	50,524	43,713
River Rouge	76,637	68,698	71,412	73,445	54,204	28,362	22,772
Total	**900,786**	**935,476**	**941,220**	**855,244**	**812,390**	**610,994**	**615,554**

* - Excludes MPPA's portion of Belle River

MECNRDCSCDE-2.5g-k.xlsxData

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	2011								2012								2013				
2	Plant	Unit	Gross Gen (MWhr)	Net Gen (MWhr)	Fuel Consumption (MMBtu)	Available Capacity (MW)	EFOR		Plant	Unit	Gross Gen (MWhr)	Net Gen (MWhr)	Fuel Consumption (MMBtu)	Available Capacity (MW)	EFOR		Plant	Unit	Gross Gen (MWhr)	Net Gen (MWhr)	Fuel Consumption (MMBtu)
3	BRVPP	1	2,856,874	2,676,177	27,162	517	12.93		BRVPP	1	3,443,764	3,233,351	33,094	517	6.46		BRVPP	1	2,921,289	2,739,727	28,447
4		2	4,000,097	3,771,289	38,683	517	4.43			2	3,021,213	2,843,063	28,750	517	7.79			2	3,677,597	3,455,342	35,335
5	STCPP	1	688,425	616,701	6,946	158	6.75		STCPP	1	700,591	622,647	7,269	158	10.12		STCPP	1	682,453	610,085	7,039
6		2	735,876	658,914	7,578	162	5.26			2	676,797	600,721	6,980	162	5.24			2	651,172	584,540	6,928
7		3	724,505	649,352	7,570	168	0.92			3	654,532	582,424	6,857	168	6.73			3	724,570	645,558	7,848
8		4	747,933	671,881	7,729	158	4.22			4	743,509	664,427	7,680	158	8.36			4	816,672	730,610	8,509
9		6	1,772,293	1,588,319	17,301	320	6.73			6	1,057,560	934,541	10,255	320	22.06			6	1,770,260	1,580,079	17,194
10		7	2,057,670	1,951,958	20,610	450	21.67			7	2,143,395	2,023,831	21,581	450	11.53			7	2,216,345	2,091,941	22,049
11	RRGPP	2	1,369,761	1,241,257	13,441	260	4.87		RRGPP	2	955,474	852,689	9,369	260	3.62		RRGPP	2	1,452,455	1,319,421	13,670
12		3	1,453,083	1,306,974	13,865	280	8.89			3	1,550,570	1,400,059	14,908	280	9.76			3	1,182,235	1,081,221	10,658
13	TCHPP	7	658,606	602,264	9,130	110	36.28		TCHPP	7	658,644	609,192	8,738	110	19.18		TCHPP	7	725,971	668,194	9,814
14		8	49,572	27,766	1,214	100				8	50,937	29,506	1,067	100				8	7,104	-8,758	359
15		9	2,924,769	2,811,912	26,530	520	10.13			9	2,934,969	2,818,892	26,712	520	3.7			9	2,872,212	2,756,522	26,045
16	MONPP	1	4,576,030	4,309,896	44,623	770	13.84		MONPP	1	4,288,225	4,017,056	41,958	770	4.93		MONPP	1	3,568,044	3,339,311	34,932
17		2	4,543,917	4,285,083	43,247	795	13.15			2	3,811,771	3,563,477	36,286	795	12.49			2	4,506,098	4,247,319	42,147
18		3	4,077,361	3,839,416	37,063	783	13.23			3	5,106,889	4,779,578	46,974	783	8.24			3	4,247,467	3,961,154	39,417
19		4	4,780,146	4,439,982	45,719	762	9.71			4	3,434,721	3,175,316	33,160	762	3.4			4	4,990,223	4,639,899	48,426
20	HBHPP	1	186,193	164,040	2,135	103	5		HBHPP	1	88,043	74,024	1,047	103	10.8		HBHPP	1	46,972	37,543	560
21																					
22																					
23		*Note: TCHPP7 EFOR is for units 7&8 combined until unit 8 retired																			
24		*Note: Belle River DTE ownership numbers reported																			

MECNRDCSCDE-2.5g-k.xlsxData

	V	W	X	Y	Z	AA	AB	AC	AD	AE	A	AG	AH	AI	AJ	AK	AL	AM	A	AO	AP
1				2014								2015									
2	Available Capacity (MW)	EFOR		Plant	Unit	Gross Gen (MWhr)	Net Gen (MWhr)	Fuel Consumption (MMBtu)	Available Capacity (MW)	EFOR		Plant	Unit	Gross Gen (MWhr)	Net Gen (MWhr)	Fuel Consumption (MMBtu)	Available Capacity (MW)	EFOR		Plant	Unit
3	517	5.34		BRVPP	1	3,224,997	3,013,551	31,148	517	6.13		BRVPP	1	3,481,981	3,265,847	33,155	517	6.14		BRVPP	1
4	517	4.33			2	3,362,419	3,159,745	32,225	517	4.54			2	2,978,467	2,805,962	28,067	517	2.29			2
5	158	7.39		STCPP	1	669,009	602,066	6,806	158	1.18		STCPP	1	727,100	649,178	7,323	158	6.76		STCPP	1
6	162	4.76			2	717,299	644,226	7,424	162	10.15			2	661,601	601,640	6,826	162	16.23			2
7	168	1.24			3	612,101	545,421	6,537	168	4.65			3	670,291	598,007	6,832	168	8.31			3
8	158	1.9			4	731,082	650,583	7,528	158	3.08			4	825,936	736,339	8,241	158	5.57			4
9	320	12.32			6	1,461,664	1,300,490	14,043	320	22.85			6	1,177,319	1,041,166	11,415	320	17.11			6
10	450	15			7	1,651,860	1,553,490	16,177	450	19.86			7	1,932,944	1,821,294	19,110	450	20.35			7
11	260	12.18		RRGPP	2	996,956	902,606	9,558	260	17.6		RRGPP	2	751,687	672,613	7,654	260	57.09		RRGPP	2
12	280	21.6			3	1,528,783	1,393,183	14,631	280	14.5			3	1,252,413	1,133,542	12,676	280	14.52			3
13	110	7.53		TCHPP	7	484,786	439,308	6,808	110	18.4		TCHPP	7	289,674	256,660	4,765	110	19.26		TCHPP	7
14	100				8	17,326	1,007	596	100				8	0	-12,842	0	0				8
15	520	12.88			9	2,200,354	2,109,674	20,320	520	7.73			9	2,195,813	2,101,351	20,950	520	17.04			9
16	770	7.35		MONPP	1	4,521,199	4,191,414	42,759	758	11.06		MONPP	1	4,647,083	4,311,947	44,365	758	7.26		MONPP	1
17	795	13.04			2	3,031,859	2,816,646	28,242	783	9.08			2	4,164,662	3,856,961	39,019	783	9.58			2
18	783	13.32			3	4,939,955	4,599,941	45,723	783	4.14			3	3,301,136	3,070,214	30,913	783	17.17			3
19	762	2.83			4	3,972,594	3,686,819	37,189	762	8.02			4	5,252,651	4,910,420	49,474	762	7.3			4
20	103	13.0		HBHPP	1	0	0	0	0			HBHPP	1	0	0	0	0			HBHPP	1
21																					
22																					
23																					
24																					

MECNRDCSCDE-2.5g-k.xlsxData

	AQ	AR	AS	AT	AU
1	2016				
2	Gross Gen (MWhr)	Net Gen (MWhr)	Fuel Consumption (MMBtu)	Available Capacity (MW)	EFOR
3	2,534,162	2,372,619	24,399	517	5.16
4	3,120,672	2,919,815	29,910	517	3.62
5	714,441	632,008	7,285	158	19.82
6	528,326	465,829	5,611	162	31.75
7	530,946	477,428	5,383	168	31.81
8	437,551	387,911	4,409	158	33.97
9	709,650	625,784	7,047	320	60.38
10	1,160,010	1,089,843	11,458	450	52.35
11	0	-10,567	0	260	49.37
12	1,143,950	1,011,182	12,106	280	19.8
13	53,125	44,831	950	110	4.6
14	0	-3,471	0	0	
15	2,022,724	1,928,503	19,465	520	19.3
16	2,985,583	2,773,689	28,156	758	12.02
17	3,398,109	3,099,286	33,251	783	42.54
18	5,181,392	4,823,670	47,921	783	5.96
19	3,597,600	3,328,068	34,725	762	11.53
20	0	0	0	0	
21					
22					
23					
24					

MPSC Case No.: U-18403
Requestor: MEC and SC
Question No.: MECSCDE-3.4h
Respondent: D. M. Arnold/Legal
Page: 1 of 1

Question: For each of the Company's coal-fired generating units, provide the following actual information by unit for each of the years 2011 through 2017. If a unit breakdown is not available, then please provide the next most detailed breakdown that is available. If 2017 actual information has not been finalized, provide it in preliminary form.

h. Variable O&M costs ($)

Answer: DTE Electric objects for the reason that the information requested is for previous years that are not within the timeframe covered in this case, and is not relevant to the reasonableness and prudence of DTE Electric power supply costs and expenses for the 2018 PSCR Plan Year or the subsequent 5-year forecast, which is the proper subject of this PSCR plan proceeding under Act 304 pursuant to MCL 460.6j(3) and (4), nor is it reasonably calculated to lead to the discovery of admissible evidence. Subject to such objection, and without waiver thereof, DTE Electric would answer as follows:

The requested information does not exist. Company records do not distinguish actual O&M expenses as fixed or variable.

MPSC Case No.: U-18403
Requestor: MEC and SC
Question No.: MECSCDE-3.4i
Respondent: Legal
Page: 1 of 1

Question: For each of the Company's coal-fired generating units, provide the following actual information by unit for each of the years 2011 through 2017. If a unit breakdown is not available, then please provide the next most detailed breakdown that is available. If 2017 actual information has not been finalized, provide it in preliminary form.

i. Fixed O&M costs ($)

Answer: DTE Electric objects for the reason that the information requested is not relevant to the reasonableness and prudence of power supply costs and expenses that are the proper subject of PSCR proceedings under Act 304, nor is it reasonably calculated to lead to the discovery of admissible evidence. Fixed O&M costs are not PSCR expenses and are not reviewed and approved by the Commission in a PSCR case.

MPSC Case No.: U-18403
Requestor: MEC and SC
Question No.: MECSCDE-3.4j
Respondent: Legal
Page: 1 of 1

Question: For each of the Company's coal-fired generating units, provide the following actual information by unit for each of the years 2011 through 2017. If a unit breakdown is not available, then please provide the next most detailed breakdown that is available. If 2017 actual information has not been finalized, provide it in preliminary form.

j. Capital costs ($)

Answer: DTE Electric objects for the reason that the information requested is not relevant to the reasonableness and prudence of power supply costs and expenses that are the proper subject of PSCR proceedings under Act 304, nor is it reasonably calculated to lead to the discovery of admissible evidence. Capital costs are not PSCR expenses and are not reviewed and approved by the Commission in a PSCR case.

Michigan Public Service Commission
DTE Electric Company
Historical O&M by Plant
($000)

U-18419 MECNRDCSCDE-2.5a,b Historical O&M by Plant 18419-MECNRDCSCDE 2.5a,b

Case No.
Respondent: M. E. Banks
Requestor: MEC-2
Question No. MEC-2.5a,b
Page: 1 of 1

Line	Description	2011	2012	2013	2014	2015	2016
1	**St. Clair**						
2	500 Operations Supervision and Engineering	$ 2,364	$ 2,240	$ 2,222	$ 1,745	$ 1,766	$ 1,317
3	501. Fuel Handling	-	-	-	-	-	-
4	502 Steam expenses (Major only) Steam Power Gen.	3,078	3,264	3,594	3,392	3,379	2,737
5	505 Electric expenses (Major only) Steam Power Gen.	2,068	2,199	2,436	2,321	2,309	1,883
6	506 Miscellaneous steam power expenses (Major only).	10,484	10,167	11,046	11,347	11,345	30,351
7	507 Rents	-	-	-	-	-	-
8	509 Allowances.	-	-	15,712	-	-	-
9	510 Maint supervision and engineering	157	157	208	146	350	142
10	511 Maintenance of structures (Major only).	3,768	2,243	2,762	2,205	1,933	1,841
11	512 Maintenance of boiler plant (Major only).	17,971	19,511	15,175	14,581	15,839	11,547
12	513 Maintenance of electric plant (Major only).	4,094	4,792	5,071	5,209	8,203	3,814
13	514 Maint of miscellaneous steam plant	5,387	4,514	5,297	4,847	10,318	9,159
14	St. Clair Total	$ 49,370	$ 49,086	$ 63,524	$ 45,792	$ 55,442	$ 62,791
15	**River Rouge**						
16	500 Operations Supervision and Engineering	$ (117)	$ 875	$ 870	$ 1,331	$ 1,478	$ 1,222
17	501. Fuel Handling	-	-	-	-	-	-
18	502 Steam expenses (Major only) Steam Power Gen.	4	1	2	5	7	1
19	505 Electric expenses (Major only) Steam Power Gen.	5,565	1	1	3	5	1
20	506 Miscellaneous steam power expenses (Major only).	-	2,776	5,231	5,153	5,845	5,548
21	507 Rents	-	-	-	-	-	-
22	509 Allowances.	-	-	-	-	-	-
23	510 Maint supervision and engineering	-	-	2	-	-	-
24	511 Maintenance of structures (Major only).	2,561	1,820	2,006	1,650	1,192	1,280
25	512 Maintenance of boiler plant (Major only).	11,281	9,659	9,867	8,225	8,978	5,913
26	513 Maintenance of electric plant (Major only).	2,173	2,771	2,532	2,134	2,614	648
27	514 Maint of miscellaneous steam plant	4,198	4,554	3,783	2,562	2,859	2,863
28	River Rouge Total	$ 25,665	$ 22,456	$ 24,296	$ 21,062	$ 22,978	$ 17,475
29	**Trenton Channel**						
30	500 Operations Supervision and Engineering	$ (312)	$ 1,272	$ 1,281	$ 1,187	$ 984	$ 1,131
31	501. Fuel Handling	-	-	-	-	-	-
32	502 Steam expenses (Major only) Steam Power Gen.	2,063	2,115	1,985	1,443	982	424
33	505 Electric expenses (Major only) Steam Power Gen.	1,379	1,424	1,350	969	667	291
34	506 Miscellaneous steam power expenses (Major only).	7,935	6,766	6,594	8,557	7,533	10,369
35	507 Rents	-	-	-	-	-	-
36	509 Allowances.	-	-	-	-	-	-
37	510 Maint supervision and engineering	-	-	-	-	-	-
38	511 Maintenance of structures (Major only).	2,221	1,969	3,013	2,377	2,552	3,034
39	512 Maintenance of boiler plant (Major only).	8,124	7,880	6,749	8,885	4,696	5,125
40	513 Maintenance of electric plant (Major only).	683	1,063	547	3,588	819	785
41	514 Maint of miscellaneous steam plant	3,701	3,678	3,331	3,423	2,199	2,064
42	Trenton Channel Total	$ 25,793	$ 26,167	$ 24,849	$ 30,429	$ 20,432	$ 23,225
43	**Greenwood**						
44	500 Operations Supervision and Engineering	$ 669	$ 834	$ 869	$ 574	$ 531	$ 495
45	501. Fuel Handling	-	-	-	-	-	-
46	502 Steam expenses (Major only) Steam Power Gen.	1,327	1,330	1,272	0	1	1
47	505 Electric expenses (Major only) Steam Power Gen.	887	892	861	0	1	0
48	506 Miscellaneous steam power expenses (Major only).	1,316	1,404	1,373	3,097	2,978	3,546
49	507 Rents	-	-	-	-	-	-
50	509 Allowances.	-	-	-	-	-	-
51	510 Maint supervision and engineering	-	0	-	-	-	-
52	511 Maintenance of structures (Major only).	491	700	902	316	393	452
53	512 Maintenance of boiler plant (Major only).	1,884	2,855	1,462	2,154	1,505	2,418
54	513 Maintenance of electric plant (Major only).	1,301	727	902	2,854	268	707
55	514 Maint of miscellaneous steam plant	1,680	1,778	1,783	2,126	1,293	1,090
56	Greenwood Total	$ 9,554	$ 10,520	$ 9,426	$ 11,122	$ 6,970	$ 8,711
57	**Monroe**						
58	500 Operations Supervision and Engineering	$ 2,775	$ 3,222	$ 3,192	$ 2,559	$ 2,476	$ 2,558
59	501. Fuel Handling	-	-	-	-	-	-
60	502 Steam expenses (Major only) Steam Power Gen.	13,161	13,807	14,893	16,397	15,915	12,430
61	505 Electric expenses (Major only) Steam Power Gen.	35	48	46	31	26	23
62	506 Miscellaneous steam power expenses (Major only).	16,356	20,325	18,053	16,579	14,773	16,128
63	507 Rents	-	-	-	-	-	-
64	509 Allowances.	-	-	-	-	-	-
65	510 Maint supervision and engineering	-	-	-	-	-	-
66	511 Maintenance of structures (Major only).	2,864	2,754	4,096	5,593	3,910	3,960
67	512 Maintenance of boiler plant (Major only).	40,836	39,347	42,977	39,108	40,377	63,642
68	513 Maintenance of electric plant (Major only).	5,246	7,450	11,302	6,475	8,629	12,975
69	514 Maint of miscellaneous steam plant	9,441	8,655	9,602	7,555	6,595	8,501
70	Monroe Power Plant Total	$ 90,715	$ 95,607	$104,160	$ 94,297	$ 92,701	$ 120,216
71	**Belle River**						
72	500 Operations Supervision and Engineering	$ 1,854	$ 1,955	$ 2,249	$ 2,184	$ 1,998	$ 2,033
73	501. Fuel Handling	-	-	-	-	-	-
74	502 Steam expenses (Major only) Steam Power Gen.	2,759	2,263	2,470	2,618	3,101	2,142
75	505 Electric expenses (Major only) Steam Power Gen.	1,844	1,514	1,648	1,746	2,068	1,431
76	506 Miscellaneous steam power expenses (Major only).	3,388	2,990	3,361	3,189	1,788	3,557
77	507 Rents	-	-	-	-	-	-
78	509 Allowances.	-	-	-	-	-	-
79	510 Maint supervision and engineering	-	-	-	-	-	-
80	511 Maintenance of structures (Major only).	3,031	2,760	3,408	2,703	1,572	2,751
81	512 Maintenance of boiler plant (Major only).	14,479	15,117	14,546	9,634	12,296	12,549
82	513 Maintenance of electric plant (Major only).	2,298	5,148	3,473	1,194	3,656	2,304
83	514 Maint of miscellaneous steam plant	3,648	3,738	3,197	3,120	3,314	4,171
84	Belle River Total	$ 33,301	$ 35,485	$ 34,352	$ 26,389	$ 29,794	$ 30,938

U-18419 MECNRDCSCDE-2.5d Runrate Capital.xlsxCapital Date by Unit

Plant	Unit	2011	2012	2013	2014	2015	2016
Belle River Power Plant	**1**	$ 12,836,594	$ 6,608,244	$ 29,040,677	$ 5,599,429	$ 5,659,236	$ 22,958,294
	2	$ 5,574,181	$ 24,112,910	$ 2,181,818	$ 10,432,664	$ 20,010,318	$ 6,336,835
Greenwood Power Plant	**1**	$ 4,717,506	$ 6,026,640	$ 5,844,653	$ 5,472,274	$ 1,157,494	$ 2,246,832
Harbor Beach Power Plant	**1**	$ 832,781	$ (323,025)	$ 154,746	$ -	$ -	$ -
Monroe Power Plant	**1**	$ 13,773,277	$ 7,423,787	$ 36,512,582	$ 1,256,354	$ 9,373,291	$ 38,812,082
	2	$ 798,196	$ 15,670,088	$ 7,278,978	$ 39,043,312	$ 2,700,654	$ 11,903,018
	3	$ 41,609,091	$ 4,079,960	$ 16,999,642	$ 4,930,170	$ 53,507,763	$ 3,423,865
	4	$ 13,346,689	$ 32,715,880	$ 5,090,433	$ 14,160,311	$ 2,368,932	$ 42,582,409
River Rouge Power Plant	**2**	$ 1,759,516	$ 2,379,343	$ 337,319	$ 3,035,379	$ 966,431	$ -
	3	$ 2,762,863	$ 1,826,053	$ 6,786,632	$ 54,106	$ 3,193,637	$ 1,320,298
St. Clair Power Plant	**1**	$ 521,074	$ 315,873	$ 1,717,919	$ 899,671	$ 1,140,248	$ 123,629
	2	$ 211,540	$ 260,150	$ 1,581,765	$ 409,863	$ 3,226,554	$ 1,278,477
	3	$ 1,223,937	$ 235,942	$ 109	$ 1,023,446	$ 515,661	$ (2,127,971)
	4	$ 12,042	$ 665,467	$ 316,451	$ 892,526	$ 16,722	$ 221,433
	6	$ 1,961,528	$ 7,375,480	$ 1,472,770	$ 2,728,051	$ 8,849,657	$ 1,520,769
	7	$ 6,692,923	$ 1,842,334	$ 4,310,692	$ 20,888,890	$ 770,832	$ 762,654
Trenton Channel Power Plant	**7**	$ 260,462	$ 371,345	$ -	$ 468,581	$ -	$ -
	9	$ 879,274	$ 908,783	$ 2,789,689	$ 21,141,097	$ 3,164,499	$ 5,847,479

Michigan Public Service Commission
DTE Electric Company
Capital Spend - Environmental (Non-Routine)
(Unit Specific Spend Excluding Removal/Retirement)
($000)

Case No.: U-18419
Respondent: M. E. Banks
Requestor: MECNRDCSC
Question No. MECNRDCSCDE-2.5e
Page: 1 of 1

Line No.	(a) Description	(b) Capital Expenditures Historical 12 mos. ended 12/31/2011	(c) Historical 12 mos. ended 12/31/2012	(d) Historical 12 mos. ended 12/31/2013	(e) Historical 12 mos. ended 12/31/2014	(f) Historical 12 mos. ended 12/15/2015	(g) Historical 12 mos. ended 12/31/2016
1	**Environmental - Non-Routine:**						
2	Monroe Air Quality						
3	Flue Gas Desulfurization (FGD) Units 3 & 4	4,465	1,970	929	-	-	-
4	Flue Gas Desulfurization (FGD) Units 1 & 2	159,806	91,005	73,632	28,590	2,964	-
5	Selective Catalytic Reduction (SCR) Unit 2	16,059	64,551	66,834	67,239	1,893	-
6	Sub-Total Monroe Air Quality	180,330	157,526	141,395	95,829	4,857	-
7	Dry Sorbent Injection/Activated Carbon Injection (DSI/ACI) Fleet:						
8	Belle River Units 1 & 2	2	2,016	5,642	17,863	19,832	11,021
9	St. Clair Units 1 - 4	1,947	(415)	7,376	16,927	26,265	4,772
10	St. Clair Units 6 & 7	-	1,608	6,453	24,249	23,421	6,328
11	River Rouge Units 2 & 3	-	1,174	2,383	724	7,517	8,861
12	Trenton Channel Unit 9	-	985	1,368	6,283	14,452	15,041
13	Sub-Total DSI/ACI	1,949	5,369	23,221	66,046	91,487	46,023
14	Other Environmental						
15	Belle River DCS Conversion Upgrade Units 1 & 2, and Simulat	2,302	4,660	908	-	-	-
16	Total Environmental - Non-Routine	184,581	167,555	165,524	161,875	96,344	46,023

Case No: U-18403
Attachment: MECSCDE-1.8
Respondent: D. M. Arnold
Page 1 of 5

Unit Profit ($)

Year	Belle River 1	Belle River 2	BR Pkrs	CC Overfire	CC	Dean Pkrs	Delray Pkrs	Fermi 2
2018	22,336,712	29,682,244	586,601			823,235	126,507	212,220,559
2019	18,939,712	20,215,457	619,158			800,056	138,832	220,691,689
2020	17,227,498	14,214,149	648,712			861,822	157,819	193,800,622
2021	11,333,580	15,305,216	520,069			674,844	106,041	195,026,737
2022	11,778,168	11,578,855	451,251	1,501,687	40,072,970	588,927	87,446	218,923,807

Case No: U-18403
Attachment: MECSCDE-1.8
Respondent: D. M. Arnold
Page 2 of 5

Unit Profit ($)

Year	Greenwood 1	GW Pkrs	Ludington 1	Ludington 2	Ludington 3	Ludington 4	Ludington 5	Ludington 6
2018	3,835,936	340,147	2,107,311	2,678,570	162,179	3,104,958	3,484,346	2,668,563
2019	4,095,556	333,473	43,978	2,584,279	2,702,149	3,189,454	3,452,320	3,446,582
2020	4,046,573	367,820	2,619,949	2,648,509	2,975,790	2,975,790	2,798,365	2,996,973
2021	3,649,285	261,065	3,129,354	2,548,769	3,088,009	3,071,354	3,092,973	2,874,180
2022	3,519,569	234,608	3,165,041	2,775,515	2,965,824	2,922,278	3,128,172	3,128,172

Case No: U-18403
Attachment: MECSCDE-1.8
Respondent: D. M. Arnold
Page 3 of 5

Unit Profit ($)

Year	Monroe 1	Monroe 2	Monroe 3	Monroe 4	Han Pkrs 1	Han Pkrs 2	NE Pkrs 1	NE Pkrs 2
2018	31,003,468	35,819,080	39,965,425	44,056,624	(6,142)	(10,924)	(18,976)	(92,606)
2019	26,628,984	27,352,806	31,958,631	35,184,143	(19,539)	(18,982)	(20,871)	(106,380)
2020	22,683,891	25,689,419	30,511,948	27,822,676	(8,770)	(8,309)	(13,894)	(98,008)
2021	21,399,291	20,166,188	28,858,724	26,469,287	(15,465)	(22,119)	(22,629)	(100,686)
2022	15,746,011	16,580,296	24,146,663	23,939,901	(21,246)	(28,285)	(27,149)	(109,492)

Case No: U-18403
Attachment: MECSCDE-1.8
Respondent: D. M. Arnold
Page 4 of 5

Unit Profit ($)

Year	North Pkrs	Other Pkrs 1	Other Pkrs 2	SC Pkrs 1	Ren Pkrs 1	Ren Pkrs 2	Ren Pkrs 3	Ren Pkrs 4	RR3 Overfire
2018	(87,109)	(87,669)	(91,349)	(22,908)	662,849	660,423	688,104	611,988	61,242
2019	(100,863)	(101,098)	(105,186)	(27,982)	711,292	640,737	634,081	709,165	66,345
2020	(93,899)	(94,656)	(96,602)	(22,065)	696,225	688,359	687,747	669,563	6,087
2021	(97,033)	(97,042)	(99,201)	(26,583)	509,887	519,359	540,652	530,802	
2022	(106,805)	(106,437)	(109,311)	(30,541)	460,765	476,138	466,851	469,569	

Case No: U-18403
Attachment: MECSCDE-1.8
Respondent: D. M. Arnold
Page 5 of 5

Unit Profit ($)

Year	River Rouge 3	St. Clair 1	St. Clair 2	St. Clair 3	St. Clair 6	St. Clair 7	Trenton Channel 9
2018	3,696,309	3,322,169	2,896,312	3,571,356	6,392,574	15,167,959	11,023,627
2019	1,618,592	1,883,025	1,994,010	1,502,065	5,086,071	11,448,153	6,737,576
2020	798,693	2,030,517	1,318,389	1,517,163	4,046,963	9,276,997	5,884,825
2021		1,431,626	965,018	869,897	2,752,544	8,760,033	4,014,838
2022		1,063,519	779,476	791,868	1,176,820	8,106,149	2,913,513

MEC-85

MECSCDE-1.5a Supplemental

CONFIDENTIAL EXHIBIT

MPSC Case No.: U-18403
Requestor: MECSC-1
Question No.: MECSCDE-1.13j
Respondent: S. P. Dugan/Legal
Page: 1 of 2

Question: For each of the Company's coal-fired generating units, provide the following projected information by unit for each of the years 2018 through 2021. If a unit breakdown is not available, then please provide the next most detailed breakdown that is available.

j. fixed O&M cost;

Answer: DTE Electric objects for the reason that the information requested is not relevant to the reasonableness and prudence of DTE Electric's power supply costs and expenses for the 2018 PSCR Plan Year or the subsequent 5-year forecast, which is the subject matter of this PSCR plan proceeding under Act 304 pursuant to MCL 460.6j(3) and (4).

Further, the Commission in its order dated March 6, 2014 in Case No. U-17319 stated:

> "The Commission emphasizes, however, that a PSCR plan proceeding is a narrow proceeding, limited to the issues prescribed in MCL 460.6j. These issues include the projected sources and costs of anticipated power supply (fuel) during the plan period, the duration of and costs associated with major power supply contracts and arrangements for that period, computation of the PSCR factor, and the reasonableness and prudence of the power supply plan in light of the utility's existing sources of generation. MCL 460.6j(3). In evaluating the PSCR plan, the Commission shall consider the cost and availability of generation available to the utility, the cost of short-term purchases, whether the utility has taken all appropriate actions to minimize the cost of fuel, and the availability of interruptible service, among other relevant factors. MCL 460.6j(6). The Commission expects PSCR plan proceedings to be handled in an expeditious manner to allow for timely recovery of fuel and purchased power expenses. This scope as outlined in the statute and interpreted by the Commission in prior orders and the fact that the plan is limited to the current year make the proceeding an inappropriate vehicle for holistic long-term resource planning.

MPSC Case No.: U-18403
Requestor: MECSC-1
Question No.: MECSCDE-1.13j
Respondent: S. P. Dugan/Legal
Page: 2 of 2

While the review of the five-year forecast filed contemporaneously with the PSCR plan can provide insights into load, fuel, and power supply trends and options in a more forward-looking manner, the Commission cautions against protracted litigation of policy and technical matters that would delay the PSCR proceeding and would be better handled in a traditional rate case, certificate of need proceeding, or a collaborative planning effort among the Commission and stakeholders." (pp 11-12)

MPSC Case No.: U-18403
Requestor: MECSC-1
Question No.: MECSCDE-1.13k
Respondent: S. P. Dugan/Legal
Page: 1 of 2

Question: For each of the Company's coal-fired generating units, provide the following projected information by unit for each of the years 2018 through 2021. If a unit breakdown is not available, then please provide the next most detailed breakdown that is available.

k. capital cost.

Answer: DTE Electric objects for the reason that the information requested is not relevant to the reasonableness and prudence of DTE Electric's power supply costs and expenses for the 2018 PSCR Plan Year or the subsequent 5-year forecast, which is the subject matter of this PSCR plan proceeding under Act 304 pursuant to MCL 460.6j(3) and (4).

Further, the Commission in its order dated March 6, 2014 in Case No. U-17319 stated:

> "The Commission emphasizes, however, that a PSCR plan proceeding is a narrow proceeding, limited to the issues prescribed in MCL 460.6j. These issues include the projected sources and costs of anticipated power supply (fuel) during the plan period, the duration of and costs associated with major power supply contracts and arrangements for that period, computation of the PSCR factor, and the reasonableness and prudence of the power supply plan in light of the utility's existing sources of generation. MCL 460.6j(3). In evaluating the PSCR plan, the Commission shall consider the cost and availability of generation available to the utility, the cost of short-term purchases, whether the utility has taken all appropriate actions to minimize the cost of fuel, and the availability of interruptible service, among other relevant factors. MCL 460.6j(6). The Commission expects PSCR plan proceedings to be handled in an expeditious manner to allow for timely recovery of fuel and purchased power expenses. This scope as outlined in the statute and interpreted by the Commission in prior orders and the fact that the plan is limited to the current year make the proceeding an inappropriate vehicle for holistic long-term resource planning.

MPSC Case No.: U-18403
Requestor: MECSC-1
Question No.: MECSCDE-1.13k
Respondent: S. P. Dugan/Legal
Page: 2 of 2

While the review of the five-year forecast filed contemporaneously with the PSCR plan can provide insights into load, fuel, and power supply trends and options in a more forward-looking manner, the Commission cautions against protracted litigation of policy and technical matters that would delay the PSCR proceeding and would be better handled in a traditional rate case, certificate of need proceeding, or a collaborative planning effort among the Commission and stakeholders." (pp 11-12)

(1.0)

Modeling Inputs Tab - Promod RA Output and other Asset Information

Case #1 - 2016 2n10 Retirement Base C

Key Scenario Assumptions:	select below
Capacity Price	2016 Pace Reference
Load Forecasting	2016 2+10
Choice Return	No

Existing Plant Assumptions:			select below		
Plant	Coal Conversion	Retire/Convers. Yr	Plant	Retire/Convers. Yr	Retirement Year
Belle River 1-2	No	2029	St. Clair 1-4	No	2022
Greenwood	No	n/a	St. Clair 6	No	2022
Monroe 1-4	No	n/a	St. Clair 7	No	2023
Peakers	No	varies	Trenton 7	No	2016
River Rouge 2-3	No	2020	Trenton 9	No	2023

Additional Resources Selector:	select below
Renewable	10%
Energy Efficiency	1.15%
Demand Response	Reference
Distributed Generation	Reference

Input data
Formula driven
Not copied into Rev Req Model, display

		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Key Assumptions																
Capacity Prices ($/kW-Year)	2016 Pace Referenc	-	4.6	4.8	5.0	31.2	46.0	35.9	55.8	58.1	65.2	62.9	67.2	71.6	72.7	75.5
Bundled Load Forecast (MWh)	2016 2+10	0	45,524,300	45,148,410	45,401,580	45,552,930	45,605,770	45,349,650	45,232,320	45,164,830	45,256,810	45,111,800	45,110,030	45,087,660	45,167,030	45,029,810
Capacity Purchases (MW)			(98)	79	123	212	94	181	854	50	70	88	102	125	149	658
# of New Assets Analyzed																
New CC Build		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
New CT Build		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Purchase CC		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Purchase CT		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Wind Block		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Solar Block		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Placeholder 1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Placeholder 2		-	-	-	-	-	-	-	1.0	-	-	-	-	-	-	-
Fermi 3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generation and Energy (MWh)																
New CC Build		0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,234,335
New CT Build		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Purchase CC		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Purchase CT		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Wind Block		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Solar Block		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Placeholder 1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Placeholder 2		0	0	0	0	0	0	0	4,206,616	9,609,260	9,547,073	9,129,089	8,927,170	8,901,977	8,549,501	8,294,580
Fermi 3		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Belle River 1-2		0	5,107,859	5,739,055	5,728,489	6,382,641	5,749,840	5,671,384	6,582,632	6,644,796	5,542,034	6,756,007	6,743,657	6,120,197	6,245,055	5,161,466
East China		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greenwood		0	553,387	532,214	678,187	612,231	673,123	611,344	334,111	471,320	216,845	506,894	351,220	395,364	428,778	342,473
Monroe 1-4		0	16,776,749	17,623,322	16,671,286	16,681,539	17,677,001	16,648,476	16,060,828	16,120,197	16,655,487	16,207,855	16,171,814	16,180,913	16,565,590	16,151,700
Peakers		0	362,396	308,866	337,383	333,374	339,048	316,796	235,580	368,068	415,422	379,889	394,180	397,678	360,616	296,661
Renaissance		0	636,500	637,675	678,444	597,722	592,396	457,952	265,079	390,296	436,420	413,538	472,645	577,035	520,127	501,665
River Rouge 2-3		0	1,264,271	1,304,170	1,138,244	1,407,299	535,682	0	0	0	0	0	0	0	0	0
St. Clair 1-4		0	2,610,672	2,228,596	2,393,336	2,403,629	2,421,481	2,533,002	902,853	0	0	0	0	0	0	0
St. Clair 6		0	1,502,596	1,442,053	1,102,874	1,441,554	1,431,497	1,046,201	188,686	0	0	0	0	0	0	0
St. Clair 7		0	2,033,759	1,794,749	2,086,025	2,096,782	1,595,389	1,422,143	1,495,808	328,982	0	0	0	0	0	0
Trenton 7		0	95,522	0	0	0	0	0	0	0	0	0	0	0	0	0
Trenton 9		0	2,092,693	2,264,117	1,922,549	2,258,664	1,987,403	2,295,183	2,006,203	806,251	0	0	0	0	0	0
PA2		0	566,867	565,238	565,238	565,238	566,867	565,238	565,238	565,238	566,867	565,238	565,238	565,238	566,867	565,238
Renewables	10%	0	2,999,640	3,274,583	3,273,755	3,634,683	3,643,592	3,631,943	3,631,943	3,632,977	3,643,007	3,632,977	3,632,977	3,632,977	3,643,007	3,632,977
Fermi 2		0	9,548,607	8,472,053	8,476,109	9,525,226	8,499,326	8,472,894	9,523,139	8,469,382	8,507,015	9,523,106	8,469,822	8,472,166	9,549,610	8,465,284
Ludington		0	(403,944)	(470,651)	(507,206)	(521,935)	(580,382)	(586,212)	(417,050)	(482,248)	(421,278)	(440,173)	(524,439)	(441,990)	(467,613)	(515,223)
Total Generation		0	45,747,574	45,716,040	44,544,712	47,418,648	45,132,265	43,086,344	45,581,666	46,924,520	45,108,891	46,674,423	45,204,287	44,801,555	45,961,538	46,131,156
Energy Efficiency Savings		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Energy Purchase (+) (MWh)		0	2,463,349	2,728,367	3,672,609	2,011,910	3,505,469	4,475,529	2,840,972	2,757,172	3,590,957	2,765,234	3,598,873	3,620,256	3,468,496	4,014,272
Energy Sale (-) (MWh)		0	(3,853,807)	(4,607,404)	(4,124,733)	(5,336,108)	(4,345,836)	(3,508,167)	(4,694,490)	(6,035,244)	(4,709,463)	(5,871,673)	(5,234,119)	(4,732,667)	(5,690,059)	(6,295,066)
Belle River Adjustments		0	1,167,185	1,311,407	1,308,993	1,458,479	1,313,872	1,295,944	1,504,172	1,518,382	1,266,424	1,543,816	1,540,989	1,398,516	1,427,054	1,179,448
Adjusted Energy Purchase (+)		0	3,046,941	3,384,071	4,327,105	2,741,150	4,162,405	5,123,501	3,593,058	3,516,363	4,224,169	3,537,143	4,369,368	4,319,514	4,182,023	4,603,996
Adjusted Energy Sale (-)		0	(3,270,215)	(3,951,701)	(3,470,237)	(4,606,868)	(3,688,900)	(2,860,195)	(3,942,404)	(5,276,053)	(4,076,251)	(5,099,765)	(4,463,624)	(4,033,409)	(4,976,531)	(5,705,342)
Adjusted Net Energy Purchase		0	(223,274)	(567,630)	856,868	(1,865,718)	473,505	2,263,306	(349,346)	(1,759,690)	147,919	(1,562,623)	(94,257)	286,105	(794,508)	(1,101,346)
Total Energy Provided		**0**	**45,524,300**	**45,148,410**	**45,401,580**	**45,552,930**	**45,605,770**	**45,349,650**	**45,232,320**	**45,164,830**	**45,256,810**	**45,111,800**	**45,110,030**	**45,087,660**	**45,167,030**	**45,029,810**
Fleet Costs M$																
Existing Plant CAPEX (Environmental or Coal Conversion Capital Investment)																
Belle River 1-2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monroe 1-4		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peakers		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
River Rouge 2-3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. Clair 1-4		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. Clair 6		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. Clair 7		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trenton 7		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trenton 9		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Existing Plant CAPEX		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Existing Plant Annual CAPEX (Ongoing Capital)																
Belle River 1-2	(DTE)		53.85	55.69	38.66	11.27	48.36	41.82	40.54	35.34	14.94	43.75	41.36	40.36	29.01	11.24
East China			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greenwood			2.40	8.01	2.97	11.38	1.94	12.81	1.66	1.62	4.46	13.70	2.30	4.69	14.32	2.40
Monroe 1-4			113.50	90.23	103.70	100.66	73.15	90.02	70.55	103.22	104.67	67.21	104.36	82.10	89.58	92.13
Peakers			9.10	8.56	12.02	14.69	21.90	12.58	21.16	12.54	20.01	13.45	13.65	19.74	14.06	14.27
Renaissance			-	-	-	-	-	-	-	-	-	-	-	-	-	-
River Rouge 2-3			1.80	1.99	2.32	1.99	-	-	-	-	-	-	-	-	-	-
St. Clair 1-4			5.58	18.43	16.63	6.05	5.88	2.67	-	-	-	-	-	-	-	-
St. Clair 6			4.87	9.32	16.75	7.37	4.74	5.97	-	-	-	-	-	-	-	-
St. Clair 7			4.37	16.61	3.26	5.28	7.17	5.19	4.50	-	-	-	-	-	-	-
Trenton 7			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trenton 9			17.10	8.95	4.32	4.82	4.35	4.54	-	-	-	-	-	-	-	-
Total Existing Plant Ongoing Capital		0.0	212.6	217.8	200.6	163.5	167.5	175.6	138.4	152.7	144.1	138.1	161.7	146.9	147.0	120.0
Existing Plant Trona and PAC, SCR O&M (variable + fixed)																
Belle River 1-2	(DTE)	-	-	-	-	-	-	5.09	6.06	6.27	5.36	6.70	6.85	6.37	6.67	5.64
Monroe 1-4 (SCR)																
River Rouge 2-3		-	-	-	-	-	-									
St. Clair 1-4		-	-	-	-	-	-	4.80	1.75	-	-	-	-	-	-	-
St. Clair 6		-	-	-	-	-	-	3.03	0.56	-	-	-	-	-	-	-
St. Clair 7		-	-	-	-	-	-	3.55	3.83	0.86	-	-	-	-	-	-
Trenton 7		-	-	-	-	-	-									
Trenton 9		-	-	-	-	-	-	4.23	3.79	1.56	-	-	-	-	-	-
Total Trona and PAC O&M		0.0	0.0	0.0	0.0	0.0	0.0	20.7	16.0	8.7	5.4	6.7	6.9	6.4	6.7	5.6
Existing Plant Non-environmental O&M (variable + fixed)																
Belle River 1-2	(DTE)		43.98	44.73	43.80	39.13	47.15	46.43	50.05	53.87	48.80	55.15	55.81	56.65	57.50	45.85
East China			1.80	1.77	1.63	1.67	1.71	1.75	1.76	1.80	1.82	1.78	1.78	1.80	1.83	1.86
Greenwood			7.74	9.52	7.61	9.99	7.97	9.78	8.22	10.07	8.50	10.12	8.40	10.30	8.65	10.61
Monroe 1-4			103.23	94.47	98.29	104.68	96.46	106.30	99.43	111.58	113.15	103.19	115.20	105.83	118.68	120.46
Peakers			5.15	5.50	5.07	5.24	5.51	5.52	5.54	5.68	5.73	5.59	5.55	5.63	5.72	5.80
Renaissance			5.13	5.13	6.21	4.63	6.43	6.39	8.62	9.44	4.97	4.78	5.85	6.32	6.33	6.33
River Rouge 2-3			19.06	14.27	15.12	13.44	8.78	2.64	1.04	1.05	1.07	1.08	-	-	-	-
St. Clair 1-4			21.22	28.63	25.38	26.12	23.62	24.01	15.82	4.40	0.89	0.91	0.92	0.93	-	-
St. Clair 6			9.56	9.56	11.47	9.00	9.23	11.93	7.29	2.04	0.41	0.42	0.43	0.43	-	-
St. Clair 7			12.63	17.32	11.60	11.88	19.39	12.41	12.56	9.81	2.71	0.55	0.56	0.57	0.43	-
Trenton 7			6.36	0.25	0.25	0.25	0.25	0.25	0.26	0.26	0.27	0.27	0.27	0.28	0.28	-
Trenton 9			16.03	22.22	17.40	21.92	17.13	17.43	20.16	13.74	3.85	0.78	0.79	0.81	0.61	-
Total Trona and PAC O&M		0.0	251.9	253.4	243.8	247.9	243.6	244.8	230.8	223.7	192.2	184.6	195.6	189.6	200.0	190.9

Total Existing Plant O&M															
Belle River 1-2		44.0	44.7	43.8	39.1	47.1	51.5	56.1	60.1	54.2	61.8	62.7	63.0	64.2	51.5
East China		1.8	1.8	1.6	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9
Greenwood		7.7	9.5	7.6	10.0	8.0	9.8	8.2	10.1	8.5	10.1	8.4	10.3	8.7	10.6
Monroe 1-4		103.2	94.5	98.3	104.7	96.5	106.3	99.4	111.6	113.2	103.2	115.2	105.8	118.7	120.5
Peakers		5.2	5.5	5.1	5.2	5.5	5.5	5.5	5.7	5.7	5.6	5.5	5.6	5.7	5.8
Renaissance		5.1	5.1	6.2	4.6	6.4	6.4	8.6	9.4	5.0	4.8	5.9	6.3	6.3	6.3
River Rouge 2-3		19.1	14.3	15.1	13.4	8.8	2.6	1.0	1.1	1.1	1.1	0.0	0.0	0.0	0.0
St. Clair 1-4		21.2	28.6	25.4	26.1	23.6	28.8	17.6	4.4	0.9	0.9	0.9	0.9	0.0	0.0
St. Clair 6		9.6	9.6	11.5	9.0	9.2	15.0	7.8	2.0	0.4	0.4	0.4	0.4	0.0	0.0
St. Clair 7		12.6	17.3	11.6	11.9	19.4	16.0	16.4	10.7	2.7	0.6	0.6	0.6	0.4	0.0
Trenton 7		6.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0
Trenton 9		16.0	22.2	17.4	21.9	17.1	21.7	23.9	15.3	3.9	0.8	0.8	0.8	0.6	0.0
Total Existing Plant O&M	0.0	251.9	253.4	243.8	247.9	243.6	265.5	246.7	232.4	197.5	191.3	202.4	195.9	206.7	196.5
Fuel Purchases															
New CC Build	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	132.6
New CT Build	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Purchase CC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Purchase CT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Placeholder 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Placeholder 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	125.3	283.9	293.0	294.2	307.8	325.6	327.7	334.8
Fermi 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Belle River 1-2	0.0	97.9	114.5	119.3	139.1	129.8	131.7	157.8	164.5	141.4	177.8	182.3	170.0	178.6	150.4
East China	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fermi 2	0.0	57.6	51.1	51.1	59.4	54.8	54.6	63.0	57.4	59.1	67.7	61.6	63.0	72.5	65.7
Greenwood	0.0	18.5	19.7	25.6	23.5	26.2	24.3	17.5	25.2	12.4	29.4	22.1	26.1	29.8	25.0
Monroe 1-4	0.0	332.3	360.3	351.5	368.5	402.7	389.5	414.7	436.2	465.6	462.1	472.4	483.5	509.2	505.3
Peakers	0.0	11.7	11.0	12.1	12.3	12.6	12.2	12.9	20.4	24.0	22.9	25.6	26.8	25.8	22.3
Renaissance	0.0	16.1	18.2	20.2	18.0	18.8	15.3	11.5	17.3	20.3	19.9	24.4	31.5	29.9	30.2
River Rouge 2-3	0.0	28.5	31.5	28.9	37.2	14.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Clair 1-4	0.0	57.2	51.0	57.3	60.1	62.6	67.4	24.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Clair 6	0.0	30.8	30.9	24.8	33.7	34.6	25.8	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
St. Clair 7	0.0	40.3	37.2	45.1	47.3	37.3	34.1	37.4	8.5	0.0	0.0	0.0	0.0	0.0	0.0
Trenton 7	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trenton 9	0.0	47.1	53.8	47.4	58.1	52.7	62.6	57.2	23.6	0.0	0.0	0.0	0.0	0.0	0.0
Total Fuel Purchases	0.0	740.7	779.1	783.2	857.2	846.5	817.3	927.0	1037.1	1015.8	1074.1	1096.2	1126.5	1173.5	1266.3
Gas Pipeline Reservation															
Belle River 1-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. Clair 6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. Clair 7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trenton 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emission Allowances															
New CC Build	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04
New CT Build	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RFP CC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RFP CT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Placeholder 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Placeholder 2	-	-	-	-	-	-	-	0.10	0.17	0.15	0.14	0.12	0.11	0.09	0.08
Belle River 1-2	-	16.12	18.76	19.07	20.88	18.75	18.61	23.50	24.43	20.81	25.37	25.71	23.78	24.35	20.12
East China	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greenwood	-	0.10	0.09	0.11	0.12	0.13	0.12	0.07	0.09	0.04	0.08	0.05	0.05	0.05	0.04
Monroe 1-4	-	0.80	0.82	0.84	0.87	0.90	0.89	0.96	0.87	0.80	0.74	0.64	0.61	0.53	0.49
Peakers	-	0.04	0.03	0.04	0.04	0.04	0.04	0.03	0.04	0.04	0.04	0.03	0.04	0.03	0.02
Renaissance	-	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01
River Rouge 2-3	-	0.36	0.35	0.39	0.43	0.11	-	-	-	-	-	-	-	-	-
St. Clair 1-4	-	0.80	0.74	0.82	0.82	0.85	0.88	0.37	-	-	-	-	-	-	-
St. Clair 6	-	0.20	0.20	0.19	0.22	0.21	0.21	0.05	-	-	-	-	-	-	-
St. Clair 7	-	0.32	0.33	0.35	0.36	0.33	0.31	0.51	0.07	-	-	-	-	-	-

Trenton 7	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-
Trenton 9	-	0.32	0.35	0.31	0.38	0.29	0.41	0.68	0.20	-	-	-	-	-	-
Total Emission Allowances	-	19.11	21.69	22.15	24.13	21.64	21.49	26.27	25.88	21.86	26.39	26.57	24.60	25.07	20.79
Market Purchases															
Energy Purchase (+) (M$)	-	62.52	73.45	96.70	53.04	96.66	125.77	85.81	84.71	117.80	89.11	121.15	130.70	124.68	144.90
Energy Sale (-) (M$)	-	(119.41)	(153.23)	(151.24)	(189.94)	(163.68)	(136.14)	(197.46)	(271.79)	(225.38)	(291.59)	(282.97)	(275.79)	(338.18)	(400.51)
Adjusted Energy Purchase (+)		77.33	91.11	113.94	72.27	114.77	143.98	108.52	108.03	138.57	113.99	147.08	155.94	150.33	166.18
Adjusted Energy Sale (-)		(101.32)	(131.42)	(127.24)	(163.98)	(138.94)	(111.00)	(165.82)	(237.60)	(195.08)	(253.25)	(241.32)	(235.04)	(295.77)	(362.99)
Adjusted Net Energy Purchase	-	(23.99)	(40.32)	(13.30)	(91.72)	(24.17)	32.98	(57.30)	(129.57)	(56.51)	(139.26)	(94.24)	(79.10)	(145.44)	(196.81)
Capacity Purchases		0.45	(0.38)	(0.61)	(6.63)	(4.32)	(6.49)	(47.70)	(2.92)	(4.56)	(5.53)	(6.88)	(8.92)	(10.83)	(49.71)
Total Market Purchases	**-**	**(23.54)**	**(40.70)**	**(13.91)**	**(98.34)**	**(28.49)**	**26.50**	**(105.00)**	**(132.49)**	**(61.07)**	**(144.79)**	**(101.11)**	**(88.02)**	**(156.27)**	**(246.51)**
Total Existing Plant Property Tax (M$)															
Belle River 1-2		14.07	14.07	14.07	14.07	14.07	14.07	14.07	14.07	14.07	14.07	14.07	14.07	14.07	14.07
Greenwood		3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21
Monroe 1-4		25.23	25.23	25.23	25.23	25.23	25.23	25.23	25.23	25.23	25.23	25.23	25.23	25.23	25.23
Peakers															
Renaissance															
River Rouge 2-3		7.51	7.51	7.51	7.51	7.51	4.50	2.70	0.68	0.17	0.03	-	-	-	-
St. Clair 1-4		3.65	3.65	3.65	3.65	3.65	3.65	3.65	3.65	2.19	1.31	0.33	0.08	0.01	-
St. Clair 6		2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	1.24	0.74	0.19	0.05	0.01	-
St. Clair 7		2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	1.24	0.74	0.19	0.05	0.01	-
Trenton 7															
Trenton 9		6.55	6.55	6.55	6.55	6.55	6.55	6.55	6.55	3.93	2.36	0.59	0.15	0.02	-
Total Existing Plant Property Tax	0.0	64.3	64.3	64.3	64.3	64.3	61.3	59.5	57.5	51.3	47.7	43.8	42.8	42.6	42.5
Total Existing Plant Insurance (M$)															
Belle River 1-2		0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Greenwood		0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Monroe 1-4		1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
Peakers		0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
River Rouge 2-3		0.12	0.12	0.12	0.12	0.12	0.07	0.04	0.01	0.00	0.00	-	-	-	-
St. Clair 1-4		0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.05	0.03	0.01	0.00	0.00	-
St. Clair 6		0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.04	0.02	0.01	0.00	0.00	-
St. Clair 7		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.09	0.05	0.01	0.00	0.00	-
Trenton 7		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.00	0.00	0.00	-
Trenton 9		0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.05	0.03	0.01	0.00	0.00	-
Total Existing Plant Insurance	0.0	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.4	2.3	2.2	2.1	2.1	2.1
Total Reactive Revenue (M$)															
Belle River 1-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
East China	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fermi 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greenwood	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monroe 1-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Renaissance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
River Rouge 2-3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. Clair 1-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. Clair 6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. Clair 7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trenton 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Existing Plant Insurance	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PASTE DATA FROM REVREQ IRP INPUT TEMPLATE BELOW															
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
# of New Assets Analysized															
New CC Build	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
New CT Build	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Purchase New CC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Purchase New CT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Wind Block	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Solar Block	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Placeholder 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Placeholder 2	-	-	-	-	-	-	-	1.0	-	-	-	-	-	-	-
Fermi 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Technology Generation (MWh)															
New CC Build	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,234,334.5
New CT Build	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Purchase CC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Purchase CT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Wind Block	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Solar Block	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Placeholder 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Placeholder 2	-	-	-	-	-	-	-	4,206,616.3	9,609,260.4	9,547,073.2	9,129,089.2	8,927,170.3	8,901,977.0	8,549,500.8	8,294,579.9
Fermi 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Existing Plant Environmental/Coal Conversion Capital Sp	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Existing Plant Ongoing Capital	-	212.6	217.8	200.6	163.5	167.5	175.6	138.4	152.7	144.1	138.1	161.7	146.9	147.0	120.0
Total Existing Plant O&M	-	251.9	253.4	243.8	247.9	243.6	265.5	246.7	232.4	197.5	191.3	202.4	195.9	206.7	196.5
Total Existing Plant Fuel Purchases	-	740.70	779.11	783.21	857.25	846.48	817.35	926.99	1,037.08	1,015.82	1,074.10	1,096.17	1,126.54	1,173.51	1,266.34
Total Existing Plant Gas Pipeline Reservation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Existing Plant Emission Allowances	-	19.1	21.7	22.1	24.1	21.6	21.5	26.3	25.9	21.9	26.4	26.6	24.6	25.1	20.8
Adjusted Net Energy Purchase (+) / Sale (-)	-	(24.0)	(40.3)	(13.3)	(91.7)	(24.2)	33.0	(57.3)	(129.6)	(56.5)	(139.3)	(94.2)	(79.1)	(145.4)	(196.8)
Capacity Purchases	-	0.5	(0.4)	(0.6)	(6.6)	(4.3)	(6.5)	(47.7)	(2.9)	(4.6)	(5.5)	(6.9)	(8.9)	(10.8)	(49.7)
Total Existing Plant Property Tax	-	64.3	64.3	64.3	64.3	64.3	61.3	59.5	57.5	51.3	47.7	43.8	42.8	42.6	42.5
Total Existing Plant Insurance	-	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.4	2.3	2.2	2.1	2.1	2.1
Total Existing Plant Reactive Power Revenue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

ed for embedded test

2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
78.5	62.5	84.0	85.9	80.0	92.7	94.8	96.8	99.0	101.1	103.4
44,995,080	44,964,860	45,013,100	44,866,550	44,889,440	44,913,740	45,038,630	44,887,380	44,853,320	44,843,250	44,956,450
171	198	229	256	271	289	311	334	361	354	343
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
6,045,701	5,821,980	6,047,713	5,942,370	5,883,396	6,036,135	6,118,951	5,902,846	6,026,551	5,946,781	5,930,603
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
8,339,141	8,147,042	8,250,220	8,215,355	8,213,423	8,366,279	8,462,170	8,267,081	8,310,235	8,271,621	8,262,883
0	0	0	0	0	0	0	0	0	0	0
1,526,313	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
308,517	239,100	296,357	220,178	219,487	211,598	236,486	205,639	213,207	217,871	216,624
16,523,689	16,173,149	16,583,153	16,748,097	16,529,208	16,152,676	16,542,673	16,562,882	16,500,165	16,313,022	16,467,706
399,920	433,003	385,350	435,105	452,587	478,125	465,367	475,274	466,428	513,024	491,451
533,786	536,615	520,198	553,862	572,034	602,629	589,197	618,895	608,965	643,946	617,330
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
565,238	565,238	566,867	565,238	565,238	565,238	566,867	565,238	565,238	565,238	566,867
3,632,977	3,632,977	3,643,007	3,632,977	3,632,977	3,632,977	3,643,007	3,632,977	3,632,977	3,632,977	3,643,007
8,475,739	9,523,147	8,496,048	8,474,418	9,523,146	8,466,127	8,474,403	9,523,145	8,471,257	8,474,432	9,523,144
(432,170)	(470,819)	(523,856)	(451,762)	(483,051)	(546,690)	(445,288)	(498,207)	(551,714)	(458,000)	(494,067)
45,918,851	44,601,431	44,265,058	44,335,838	45,108,445	43,965,095	44,653,833	45,255,770	44,243,309	44,120,913	45,225,550
0	0	0	0	0	0	0	0	0	0	0

4,508,314	4,976,878	5,778,508	5,306,764	4,956,358	5,467,870	5,565,952	4,992,540	5,681,080	5,384,275	5,468,070	
(5,780,934)	(4,613,539)	(5,030,565)	(4,776,140)	(5,175,444)	(4,519,330)	(5,181,219)	(5,361,000)	(5,071,161)	(4,662,034)	(5,737,234)	
348,849	91	99	88	81	105	64	71	92	97	65	
4,682,738	4,976,923	5,778,558	5,306,808	4,956,399	5,467,922	5,565,984	4,992,575	5,681,126	5,384,323	5,468,102	
(5,606,510)	(4,613,494)	(5,030,516)	(4,776,096)	(5,175,404)	(4,519,277)	(5,181,187)	(5,360,965)	(5,071,115)	(4,661,986)	(5,737,202)	
(923,771)	363,429	748,042	530,712	(219,005)	948,645	384,797	(368,390)	610,011	722,337	(269,100)	
44,995,080	**44,964,860**	**45,013,100**	**44,866,550**	**44,889,440**	**44,913,740**	**45,038,630**	**44,887,380**	**44,853,320**	**44,843,250**	**44,956,450**	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
11.41	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
2.44	-	-	-	-	-	-	-	-	-	-	
57.79	-	-	-	-	-	-	-	-	-	-	
14.49	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
86.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1.70	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
32.31	13.45	8.93	9.06	2.42	8.11	6.98	7.08	7.19	-	7.41	791.8
1.92	1.99	2.02	2.05	2.08	2.11	2.14	2.18	2.21	2.24	2.27	48.0
9.03	11.20	9.45	11.54	9.74	11.88	10.03	12.24	10.34	12.61	10.65	246.2
111.13	125.12	115.04	128.91	130.84	120.30	134.79	123.94	138.87	140.95	129.60	2890.5
6.01	6.24	6.34	6.43	6.53	6.63	6.73	6.83	6.93	7.03	7.14	150.1
10.97	5.99	8.58	6.18	6.66	9.20	5.74	5.82	5.91	6.00	6.09	163.7
-	-	-	-	-	-	-	-	-	-	-	77.6
-	-	-	-	-	-	-	-	-	-	-	172.8
-	-	-	-	-	-	-	-	-	-	-	71.8
-	-	-	-	-	-	-	-	-	-	-	112.4
-	-	-	-	-	-	-	-	-	-	-	9.5
-	-	-	-	-	-	-	-	-	-	-	152.9
171.4	164.0	150.4	164.2	158.3	158.2	166.4	158.1	171.4	168.8	163.2	

34.0	13.4	8.9	9.1	2.4	8.1	7.0	7.1	7.2	0.0	7.4
1.9	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.2	2.3
9.0	11.2	9.5	11.5	9.7	11.9	10.0	12.2	10.3	12.6	10.6
111.1	125.1	115.0	128.9	130.8	120.3	134.8	123.9	138.9	141.0	129.6
6.0	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.0	7.1
11.0	6.0	8.6	6.2	6.7	9.2	5.7	5.8	5.9	6.0	6.1
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
173.1	164.0	150.4	164.2	158.3	158.2	166.4	158.1	171.4	168.8	163.2
248.2	248.1	262.4	263.8	263.5	273.7	283.8	279.4	291.8	295.3	300.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
348.6	353.5	364.9	371.7	374.9	386.8	399.8	398.6	410.2	418.3	425.8
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67.3	77.2	70.4	71.8	82.4	74.9	76.6	88.0	80.0	81.8	93.9
23.3	18.7	23.8	18.0	18.2	17.8	20.3	18.1	19.2	20.0	20.3
528.3	528.5	558.4	571.8	579.2	579.4	611.2	620.9	633.4	639.4	665.9
30.7	34.4	31.6	36.3	38.2	40.8	40.7	42.3	42.6	47.5	46.7
33.3	34.7	34.5	37.4	39.0	41.6	41.6	44.5	44.8	48.5	47.5
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1325.0	1295.2	1346.1	1370.8	1395.5	1414.9	1474.0	1491.9	1522.1	1550.8	1600.2
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
0.07	0.06	0.06	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06
5.70	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
0.03	0.02	0.02	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02
0.43	0.39	0.36	0.33	0.33	0.33	0.34	0.36	0.36	0.36	0.37
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-

-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
6.32	0.54	0.50	0.46	0.46	0.46	0.48	0.49	0.50	0.51	0.52
171.86	195.81	227.10	217.64	199.22	228.30	236.36	209.17	246.29	241.78	242.91
(378.52)	(312.27)	(355.31)	(345.11)	(379.83)	(345.52)	(399.40)	(421.46)	(413.72)	(387.10)	(479.15)
178.51	195.81	227.11	217.65	199.22	228.30	236.36	209.17	246.29	241.78	242.91
(367.10)	(312.26)	(355.31)	(345.10)	(379.82)	(345.52)	(399.40)	(421.46)	(413.72)	(387.10)	(479.15)
(188.59)	(116.46)	(128.20)	(127.46)	(180.60)	(117.22)	(163.04)	(212.29)	(167.43)	(145.32)	(236.23)
(13.42)	(12.36)	(19.22)	(21.95)	(21.71)	(26.82)	(29.46)	(32.34)	(35.78)	(35.85)	(35.44)
(202.01)	**(128.82)**	**(147.43)**	**(149.40)**	**(202.31)**	**(144.04)**	**(192.51)**	**(244.63)**	**(203.20)**	**(181.17)**	**(271.67)**
14.07	8.44	5.06	1.27	0.32	0.05	-	-	-	-	-
3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21
25.23	25.23	25.23	25.23	25.23	25.23	25.23	25.23	25.23	25.23	25.23
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
42.5	36.9	33.5	29.7	28.8	28.5	28.4	28.4	28.4	28.4	28.4
0.61	0.36	0.22	0.05	0.01	0.00	-	-	-	-	-
0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
2.1	1.9	1.7	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
0	0	0	0	0	0	0	0	0	0	0

2030	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-

-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
6,045,700.8	5,821,979.9	6,047,713.3	5,942,369.7	5,883,395.6	6,036,134.9	6,118,950.5	5,902,845.6	6,026,550.6	5,946,780.9	5,930,603.3
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
8,339,141.3	8,147,041.5	8,250,220.2	8,215,355.1	8,213,423.4	8,366,279.1	8,462,170.2	8,267,080.8	8,310,234.9	8,271,620.9	8,262,883.1
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
86.1	-	-	-	-	-	-	-	-	-	-
173.1	164.0	150.4	164.2	158.3	158.2	166.4	158.1	171.4	168.8	163.2
1,325.04	1,295.23	1,346.15	1,370.83	1,395.48	1,414.87	1,474.00	1,491.87	1,522.07	1,550.81	1,600.17
-	-	-	-	-	-	-	-	-	-	-
6.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
(188.6)	(116.5)	(128.2)	(127.5)	(180.6)	(117.2)	(163.0)	(212.3)	(167.4)	(145.3)	(236.2)
(13.4)	(12.4)	(19.2)	(21.9)	(21.7)	(26.8)	(29.5)	(32.3)	(35.8)	(35.9)	(35.4)
42.5	36.9	33.5	29.7	28.8	28.5	28.4	28.4	28.4	28.4	28.4
2.1	1.9	1.7	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5
-	-	-	-	-	-	-	-	-	-	-

MPSC Case No.: U-18403
Requestor: MEC and SC
Question No.: MECSCDE-3.10a
Respondent: B. J. Marietta
Page: 1 of 1

Question: Refer to page 7 of the Direct Testimony of Barry Marietta and the "refreshed NPV analysis" produced in Attachment MECSCDE-1.10a(A).

a. Confirm that the refreshed NPV analysis assumed the same energy price forecast as was used in the original justification analysis. If not confirmed, produce the energy price forecasts used in each analysis.

Answer: Confirmed.

MPSC Case No.: U-18403
Requestor: MEC and SC
Question No.: MECSCDE-3.10b
Respondent: B. J. Marietta
Page: 1 of 1

Question: Refer to page 7 of the Direct Testimony of Barry Marietta and the "refreshed NPV analysis" produced in Attachment MECSCDE-1.10a(A).

b. Confirm that the refreshed NPV analysis assumed the same capacity price forecast as was used in the original justification analysis. If not confirmed, produce the capacity price forecasts used in each analysis.

Answer: Confirmed.

MPSC Case No.: U-18403
Requestor: MEC and SC
Question No.: MECSCDE-3.10c
Respondent: B. J. Marietta
Page: 1 of 1

Question: Refer to page 7 of the Direct Testimony of Barry Marietta and the "refreshed NPV analysis" produced in Attachment MECSCDE-1.10a(A).

c. Confirm that the refreshed NPV analysis assumed the same gas price forecast as was used in the original justification analysis. If not confirmed, produce the gas price forecasts used in each analysis.

Answer: Confirmed.

MPSC Case No.: U-18403
Requestor: MEC and SC
Question No.: MECSCDE-3.10d
Respondent: B. J. Marietta
Page: 1 of 1

Question: Refer to page 7 of the Direct Testimony of Barry Marietta and the "refreshed NPV analysis" produced in Attachment MECSCDE-1.10a(A).

d. Confirm that the refreshed NPV analysis assumed that River Rouge Unit 2 would generate the same amount of energy per year as was projected in the original justification analysis. If not confirmed, identify what level of generation from River Rouge Unit 2 was assumed in the refreshed NPV analysis.

Answer: Confirmed.

Case No: U-18403
Attachment ST/DE-1.15
Page 1 of 7

Unit Capacity Factor (%)

	2018	2019	2020	2021	2022
BELLE RIVER 1	51.5%	62.6%	61.4%	48.5%	59.5%
BELLE RIVER 2	69.3%	65.4%	53.0%	63.9%	47.7%
COMBINED CYCLE 1					51.7%
FERMI 2	83.3%	93.6%	83.3%	83.3%	93.6%
GREENWOOD	5.1%	5.0%	5.0%	5.2%	4.6%
MONROE 1	49.1%	60.4%	59.5%	62.4%	47.9%
MONROE 2	58.6%	57.4%	59.5%	46.5%	57.5%
MONROE 3	58.8%	50.5%	62.0%	61.0%	62.8%
MONROE 4	64.8%	66.6%	52.0%	64.6%	66.1%
RIVER ROUGE 3	41.0%	46.7%	21.2%		
ST CLAIR 1	35.0%	41.3%	42.5%	44.3%	21.1%
ST CLAIR 2	41.5%	43.0%	39.2%	42.2%	19.6%
ST CLAIR 3	44.7%	37.5%	41.7%	37.7%	19.2%
ST CLAIR 6	34.7%	40.1%	39.4%	36.6%	10.8%
ST CLAIR 7	44.5%	42.6%	39.1%	40.8%	40.0%
TRENTON 9	42.2%	36.9%	40.6%	44.9%	44.4%

XGEN Report

Case No: U-18403
Attachment ST/DE-1.15
Page 2 of 7

Equivalent Availability Factor (%)

	2018	2019	2020	2021	2022
BELLE RIVER 1	66%	85%	84%	69%	85%
BELLE RIVER 2	88%	87%	72%	88%	66%
COMBINED CYCLE 1					94%
FERMI 2	84%	95%	84%	84%	95%
GREENWOOD	85%	82%	85%	75%	85%
MONROE 1	65%	81%	80%	84%	65%
MONROE 2	80%	80%	83%	64%	81%
MONROE 3	80%	65%	81%	80%	84%
MONROE 4	80%	83%	65%	81%	84%
RIVER ROUGE 3	61%	73%	79%		
ST CLAIR 1	60%	76%	78%	84%	89%
ST CLAIR 2	72%	78%	72%	79%	83%
ST CLAIR 3	81%	73%	81%	75%	86%
ST CLAIR 6	55%	69%	69%	65%	45%
ST CLAIR 7	74%	74%	70%	74%	74%
TRENTON 9	64%	59%	66%	75%	75%

XGEN Report

Case No: U-18403
Attachment ST/DE-1.15
Page 3 of 7

Periodic Outage Factor (%)

	2018	2019	2020	2021	2022
BELLE RIVER 1	28%	8%	9%	26%	8%
BELLE RIVER 2	6%	7%	23%	7%	30%
COMBINED CYCLE 1					0%
FERMI 2	11%	0%	11%	11%	0%
GREENWOOD	2%	6%	2%	14%	2%
MONROE 1	27%	9%	10%	5%	27%
MONROE 2	10%	10%	7%	27%	9%
MONROE 3	10%	27%	9%	10%	5%
MONROE 4	10%	7%	27%	9%	5%
RIVER ROUGE 3	23%	8%	0%		
ST CLAIR 1	32%	14%	12%	5%	0%
ST CLAIR 2	13%	5%	12%	4%	0%
ST CLAIR 3	5%	14%	5%	12%	0%
ST CLAIR 6	28%	10%	10%	15%	12%
ST CLAIR 7	10%	10%	15%	10%	10%
TRENTON 9	22%	28%	20%	9%	9%

XGEN Report

Case No: U-18403
Attachment ST/DE-1.15
Page 4 of 7

Random (Forced) Outage Rate (%)

	2018	2019	2020	2021	2022
BELLE RIVER 1	7.7%	7.7%	7.7%	7.7%	7.7%
BELLE RIVER 2	6.1%	6.1%	6.0%	6.1%	6.1%
COMBINED CYCLE 1					5.8%
FERMI 2	5.0%	5.0%	5.0%	5.0%	5.0%
GREENWOOD	12.7%	12.7%	12.7%	12.7%	12.7%
MONROE 1	11.4%	11.4%	11.4%	11.4%	11.4%
MONROE 2	11.4%	11.4%	11.4%	11.4%	11.4%
MONROE 3	11.4%	11.4%	11.4%	11.4%	11.4%
MONROE 4	11.4%	11.4%	11.3%	11.4%	11.4%
RIVER ROUGE 3	20.9%	20.8%	20.9%		
ST CLAIR 1	11.6%	11.6%	11.6%	11.6%	11.5%
ST CLAIR 2	17.5%	17.5%	17.4%	17.5%	17.5%
ST CLAIR 3	14.6%	14.6%	14.5%	14.6%	14.5%
ST CLAIR 6	23.5%	23.5%	23.4%	23.5%	48.6%
ST CLAIR 7	17.8%	17.8%	17.7%	17.8%	17.8%
TRENTON 9	17.9%	17.9%	17.8%	17.9%	17.8%

XGEN Report

Case No: U-18403
Attachment ST/DE-1.15
Page 5 of 7

Heat Rate (BTU/KWh)

	2018	2019	2020	2021	2022
BELLE RIVER 1	10,370	10,428	10,435	10,467	10,479
BELLE RIVER 2	10,217	10,275	10,304	10,316	10,317
COMBINED CYCLE 1					6,366
FERMI 2	10,300	10,300	10,300	10,300	10,300
GREENWOOD	10,975	10,975	10,975	10,975	10,975
MONROE 1	10,209	10,241	10,242	10,246	10,252
MONROE 2	10,108	10,132	10,131	10,127	10,150
MONROE 3	10,048	9,954	9,986	9,986	10,021
MONROE 4	10,090	10,110	10,112	10,122	10,147
RIVER ROUGE 3	11,076	11,150	11,130		
ST CLAIR 1	11,281	11,434	11,406	11,482	11,299
ST CLAIR 2	11,592	11,712	11,761	11,797	11,593
ST CLAIR 3	11,592	11,797	11,772	11,843	11,634
ST CLAIR 6	10,924	11,082	11,118	11,159	11,087
ST CLAIR 7	10,572	10,641	10,681	10,705	10,728
TRENTON 9	10,584	10,687	10,738	10,807	10,838

Unit Detail

Case No: U-18403
Attachment ST/DE-1.15
Page 6 of 7

Heat Consumed (kMBTU)

	2018	2019	2020	2021	2022
BELLE RIVER 1 - DTEEC ONLY	24,199	29,557	29,111	22,988	28,220
BELLE RIVER 2 - DTEEC ONLY	32,087	30,417	24,793	29,846	22,293
COMBINED CYCLE 1					32,071
FERMI 2	87,303	98,088	87,508	87,290	98,088
GREENWOOD	3,814	3,806	3,785	3,888	3,464
MONROE 1	33,278	41,069	40,566	42,452	32,639
MONROE 2	40,649	39,874	41,475	32,317	40,066
MONROE 3	40,500	34,447	42,557	41,774	43,155
MONROE 4	43,618	44,927	35,170	43,653	44,740
RIVER ROUGE 3	11,144	12,774	5,807		
ST CLAIR 1	5,467	6,535	6,729	7,038	3,294
ST CLAIR 2	6,821	7,142	6,566	7,068	3,225
ST CLAIR 3	7,620	6,509	7,249	6,571	3,293
ST CLAIR 6	10,639	12,455	12,325	11,461	3,349
ST CLAIR 7	18,549	17,871	16,503	17,199	16,924
TRENTON 9	18,979	16,748	18,588	20,611	20,439

XGEN Report

Case No: U-18403
Attachment ST/DE-1.15
Page 7 of 7

Generation - GWh

	2018	2019	2020	2021	2022
BELLE RIVER 1 - DTEEC ONLY	2,334	2,835	2,790	2,196	2,693
BELLE RIVER 2 - DTEEC ONLY	3,141	2,960	2,406	2,893	2,161
COMBINED CYCLE 1					5,038
FERMI 2	8,476	9,523	8,496	8,475	9,523
GREENWOOD	347	347	345	354	316
MONROE 1	3,260	4,010	3,961	4,143	3,184
MONROE 2	4,021	3,936	4,094	3,191	3,947
MONROE 3	4,031	3,461	4,262	4,183	4,306
MONROE 4	4,323	4,444	3,478	4,313	4,409
RIVER ROUGE 3	1,006	1,146	522		
ST CLAIR 1	485	572	590	613	292
ST CLAIR 2	588	610	558	599	278
ST CLAIR 3	657	552	616	555	283
ST CLAIR 6	974	1,124	1,109	1,027	302
ST CLAIR 7	1,755	1,679	1,545	1,607	1,578
TRENTON 9	1,793	1,567	1,731	1,907	1,886

MEC-90

MECSCDE-1 Supplemental 5

CONFIDENTIAL EXHIBIT

MEC-91

MECSCDE-1 Supplemental 5 – St. Clair

CONFIDENTIAL EXHIBIT

STATE OF MICHIGAN

MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the Application of DTE ELECTRIC COMPANY for Authority to Implement a Power Supply Recovery Plan on its Rate Schedules for 2018 Metered Jurisdictional Sales of Electricity	Case No. U-18403 ALJ Suzanne D. Sonneborn

---

PROOF OF SERVICE

On the date below, an electronic copy of the **PUBLIC Direct Testimony of Avi Allison on behalf of Michigan Environmental Council and Sierra Club along with Exhibits MEC-70 thru MEC-84 and MEC-86 thru MEC-89 (MEC-85, MEC-90 and MEC-91 are CONFIDENTIAL and will be filed under seal)** was served on the following:

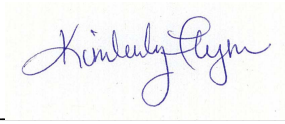
Name/Party	E-mail Address
Administrative Law Judge Suzanne D. Sonneborn	sonneborns@michigan.gov
Counsel for DTE Electric Company Jon P. Christinidis David S. Maquera	mpscfilings@dteenergy.com christinidisj@dteenergy.com david.maquera@dteenergy.com
Counsel for Staff Heather M.S. Durian Monica M. Stephens	durainh@michigan.gov stephensm11@michigan.gov
Counsel for Great Lakes Renewable Energy and Residential Customer Group Brian W. Coyer Don L. Keskey	bwcoyer@publiclawresourcecenter.com donkeskey@publiclawresourcecenter.com
Counsel for Wayne Energy Recovery, Inc. Jennifer Utter Heston	jheston@fraserlawfirm.com
Counsel for ABATE Bryan A. Brandenburg Michael J. Pattwell Stephen A. Campbell Sean P. Gallagher	bbrandenburg@clarkhill.com mpattwell@clarkhill.com scampbell@clarkhill.com sgallagher@clarkhill.com

Counsel for Attorney General John A. Janiszewski	Janiszewskij2@michigan.gov

The statements above are true to the best of my knowledge, information and belief.

OLSON, BZDOK & HOWARD, P.C.
Counsel for MEC-SC

Date: April 20, 2018

By: 

Marcia Randazzo, Legal Assistant
Kimberly Flynn, Legal Assistant
Karla Gerds, Legal Assistant
420 E. Front St., Traverse City, MI 49686
Phone: 231/946-0044
Email: marcia@envlaw.com
kimberly@envlaw.com and
karla@envlaw.com