
O L S O N , B Z D O K & H O W A R D



March 15, 2023

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

Via E-Filing

RE: MPSC Case No. U-21193

Dear Ms. Felice:

The following is attached for paperless electronic filing:

REVISED Public Version of the Direct Testimony and Exhibits of Tyler Comings on behalf of Michigan Environmental Council, Natural Resources Defense Council, Sierra Club, and Citizens Utility Board of Michigan (Exhibits MEC-15 through MEC-19); and

Proof of Service.

Please note that the only changes to Mr. Comings public testimony is removing the redaction of Figures 1, 4, and 5 by agreement with DTE Electric Company. There are no changes to Mr. Comings exhibits.

Sincerely,

Christopher M. Bzdok
chris@envlaw.com

xc: Parties to Case No. U-21193

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of **DTE
ELECTRIC COMPANY** for approval of its U-21193
Integrated Resource Plan pursuant to MCL
460.6t, and for other relief.

REVISED DIRECT TESTIMONY OF TYLER COMINGS

ON BEHALF OF

**MICHIGAN ENVIRONMENTAL COUNCIL,
NATURAL RESOURCES DEFENSE COUNCIL,
SIERRA CLUB, AND CITIZENS UTILITY BOARD OF MICHIGAN**

PUBLIC VERSION

March 15, 2023

~~**March 9, 2023**~~

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1 **I. INTRODUCTION AND QUALIFICATIONS**

2 **Q. Please state your name, business address, and position.**

3 A. My name is Tyler Comings. I am a Senior Researcher at Applied Economics Clinic, located
4 at 1012 Massachusetts Avenue, Arlington, Massachusetts.

5 **Q. Please describe Applied Economics Clinic.**

6 A. The Applied Economics Clinic is a 501(c)(3) non-profit consulting group formerly housed
7 at Tufts University’s Global Development and Environment Institute. Founded in February
8 2017, the Clinic provides expert testimony, analysis, modeling, policy briefs, and reports
9 for public interest groups on the topics of energy, environment, consumer protection, and
10 equity, while providing on-the-job training to a new generation of technical experts.

11 **Q. On whose behalf are you testifying in this case?**

12 A. I am testifying on behalf of Michigan Environmental Council (MEC), Natural Resources
13 Defense Council (NRDC), Sierra Club (SC), and Citizens Utility Board (CUB),
14 collectively referred to as “MNSC.”

15 **Q. Please summarize your work experience and educational background.**

16 A. I have 16 years of experience in economic research and consulting. At Applied Economics
17 Clinic, I focus on energy system planning, costs of regulatory compliance, wholesale
18 electricity markets, utility finance, and economic impact analyses. I have provided
19 testimony on these topics in Arizona, Colorado, the District of Columbia, Hawaii, Indiana,
20 Kentucky, Maryland, Michigan, Missouri, New Jersey, New Mexico, Ohio, Oklahoma,
21 West Virginia, and Nova Scotia (Canada). I am also a Certified Rate of Return Analyst
22 (CRRA) and member of the Society of Utility and Regulatory Financial Analysts
23 (SURFA).

1 I have provided expertise for many public-interest clients including: American Association
2 of Retired Persons (AARP), Appalachian Regional Commission, Citizens Action Coalition
3 of Indiana, City of Atlanta, Consumers Union, District of Columbia Office of the People's
4 Counsel, District of Columbia Government, Earthjustice, Energy Future Coalition, Hawaii
5 Division of Consumer Advocacy, Illinois Attorney General, Maryland Office of the
6 People's Counsel, Massachusetts Energy Efficiency Advisory Council, Massachusetts
7 Division of Insurance, Michigan Agency for Energy, Montana Consumer Counsel,
8 Mountain Association for Community Economic Development, Nevada State Office of
9 Energy, New Jersey Division of Rate Counsel, New York State Energy Research and
10 Development, Nova Scotia Utility and Review Board Counsel, Rhode Island Office of
11 Energy Resources, Sierra Club, Southern Environmental Law Center, U.S. Department of
12 Justice, Vermont Department of Public Service, West Virginia Consumer Advocate
13 Division, and Wisconsin Department of Administration.

14 I was previously employed at Synapse Energy Economics, where I provided expert
15 testimony and reports on coal plant economics and utility system planning. Prior to that, I
16 performed research on consumer finance and behavioral economics at Ideas42 and
17 conducted economic impact and benefit-cost analysis of energy and transportation
18 investments at EDR Group (now EBP).

19 I hold a B.A. in Mathematics and Economics from Boston University and an M.A. in
20 Economics from Tufts University.

21 My full resume is attached as Exhibit MEC-15.

22 **Q. Have you previously testified before the Michigan Public Service Commission?**

23 **A.** Yes, on many occasions. I have testified in the following cases:

- 1 • Indiana Michigan Power (I&M) Integrated Resource Plan (IRP) (No. U-21189)
- 2 • DTE Electric Company (DTE) 2022 rate case (No. U-20836)
- 3 • Consumers Energy Company (Consumers) 2021 IRP (No. U-21090)
- 4 • Consumers 2021 rate case (No. U-20963)
- 5 • Consumers 2020 rate case (No. U-20697)
- 6 • I&M 2018-19 IRP (Case No. U-20591)
- 7 • Consumers 2018 IRP (No. U-20165)
- 8 • Consumers 2018 rate case (No. U-20134)

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

10 A. My testimony examines DTE Electric Company’s (“DTE” or “the Company”) selection of
11 its proposed course of action (PCA), with a focus on the chosen retirement dates for the
12 Monroe Power Plant, a 3,066 MW coal-fired plant.¹ Under the Company’s PCA, two of
13 the Monroe coal units would retire in 2028, and two of the units would retire in 2035. I
14 discuss concerns with the Company’s modeling and decision-making process that led to
15 the choice to continue operating the final two Monroe units until 2035. After discussing
16 these concerns, I present a new portfolio in which the last two Monroe units retire by 2032
17 and has lower costs than the Company’s PCA. Finally, I discuss the Company’s peaking
18 unit retirement decision-making.

19 **Q. What information did you review in preparing your testimony in this case?**

20 A. I reviewed the Company’s testimony, exhibits, workpapers, discovery responses, and
21 modeling inputs and outputs. I also worked with MNSC witness George Evans on

¹ Direct Testimony of Justin L. Morren, p. 7.

1 developing the alternative portfolio, which he modeled in Encompass (the same model
2 used by DTE).

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

4 A. Yes, I sponsor Exhibits MEC-15 to MEC-17:

5 MEC-15: Resume of Tyler Comings

6 MEC-16: Response to MNSCDE-9.3c

7 MEC-17: Response to MNSCDE-9.4a-c

8 MEC-18: Response to MNSCDE-3.6 and MNSCDE-3.7

9 MEC-19: NPDES Permit – Final – DTE Monroe Plt

10 **Q. Please summarize your findings and recommendations.**

11 A. Based on my review and analysis, I conclude that:

- 12 **1. DTE’s modeling clearly shows that retiring the last two units at Monroe in**
13 **2032 is preferable to 2035.** Once the Company factored in tax credits created by
14 the recently passed Inflation Reduction Act (IRA), the portfolio with Monroe Units
15 1 and 2 retiring by 2032 had significantly lower costs than DTE’s chosen PCA
16 where the two units 2 retire in 2035. The earlier retirement portfolio was shown to
17 have lower risks than the PCA under the Company’s stochastic risk assessment,
18 was tied with the PCA for the DTE’s best reliability ranking, and had the lowest
19 carbon dioxide (CO₂) emissions of any portfolio.² The Company’s reasons for
20 delaying the retirement of Monroe Units 1 and 2 until 2035 rest on speculation
21 about the feasibility of replacing it 12 years from now; but taken at face value there

² Exhibit: A-3.1, p. 121.

1 is enough justification from the Company's own analysis to plan to retire those
2 units no later than 2032.

3 **2. Operating Monroe until 2035 carries additional environmental costs risks**
4 **compared to 2032.** The Company took a short-sighted view on environmental
5 compliance by only looking at current requirements, despite modeling a 20-year
6 period. DTE may need to install cooling towers at the Monroe units, but the
7 Company assumes it will not and has not estimated what the costs of doing so would
8 be. Similarly, there are proposed rules, such as a proposed update to the National
9 Ambient Air Quality Standards (NAAQS) for particulate matter (PM), that could
10 lead to additional costs at Monroe which DTE has failed to consider.

11 **3. The Company should pursue a resource portfolio that is lower cost and cleaner**
12 **than the PCA.** We present an MNSC plan that retires Monroe by 2032, replaces it
13 with renewable and storage resources, and would have a lower cost than the
14 Company's PCA. Our plan also has a similar level of capacity surplus to the PCA
15 but has lower carbon emissions.

16 **4. The Company should consider environmental justice impacts in determining**
17 **retirement of its peaking units.** DTE's economic analysis of its peaking units has
18 shown that several could be retired.³ In addition, the Company has studied the
19 environmental impact of the River Rouge peakers on the local environmental
20 justice community, and used that result as a contributing factor in proposing the
21 retirement of those units. However, the Company needs to consistently evaluate the
22 other peakers through that lens as well.

³ Ex A-4.5.

1 **II. SUMMARY OF THE COMPANY’S ANALYSIS THAT LED TO ITS PROPOSED**
2 **COURSE OF ACTION**

3 **Q. Please summarize this section of your testimony.**

4 A. In this section, I summarize the Company’s decision-making regarding the Proposed
5 Course of Action (PCA). First, I briefly describe the PCA including the Company’s
6 proposed retirements and resource additions. Second, I summarize the general modeling
7 approach that the Company took in developing this IRP. Third, I discuss why the
8 Company’s REFRESH modeling is the most relevant scenario due to the incorporation of
9 tax credits included in the 2022 Inflation Reduction Act (IRA).

10 **Q. Please briefly summarize DTE’s Proposed Course of Action (PCA).**

11 A. The Company’s PCA converts Belle River (1,270 MW of coal-fired generation) to a gas-
12 fired peaking resource in 2025 (Unit 1) and 2026 (Unit 2) with an anticipated retirement
13 by 2040.⁴ As a peaker plant, the Belle River conversion will run infrequently, operating
14 only during times of the highest customer demand.⁵ The PCA also proposes the phased
15 retirement of Monroe (3,066 MW coal-fired generation) with Units 3 (773 MW) and 4 (762
16 MW) retiring in 2028 and Units 1 (758 MW) and 2 (773 MW) retiring in 2035.⁶ The PCA
17 would therefore have the Company cease burning coal by 2035.

18 The Company’s PCA also includes solar photovoltaic (PV), wind, battery storage, solar-
19 battery hybrids, and a new natural gas combined cycle (NGCC) plant, as shown in Figure
20 1 below in terms of installed capacity (ICAP) (UCAP additions are provided by MNSC

⁴ Direct Testimony of Joyce E. Leslie, pp. 13-14.

⁵ *Id.*, p. 14 n. 4. (“Belle River will operate as a peaking resource, ‘generating equipment normally operated only during the hours of highest daily, weekly, or seasonal loads.’”).

⁶ *Id.*, pp. 14-15.

1 Witness George Evans)⁷ The Company starts adding both standalone and hybrid solar PV
2 and battery storage in the 2020s and 2030s, finally reaching 6,500 MW of solar and 1,810
3 MW of battery storage by 2042.⁸ Wind additions start in 2028 and are added in every
4 subsequent year of the period – totaling 8,900 MW of wind by 2042.⁹ (MNSC Witness
5 Douglas Jester discusses the Company’s buildout and timing in more detail.) In 2035, the
6 Company selected a combined cycle gas plant with carbon capture and sequestration (CCS)
7 as a proxy for “some future dispatchable resource that the Company will identify in future
8 IRPs” when the final two Monroe coal units are retired.¹⁰

⁷ Installed capacity refers to the nameplate amount or maximum power that a resource can produce at a given time. This is different from UCAP or unforced capacity which refers to the amount of capacity that is assumed to be available during peak hours. The UCAP measure is also referred to as a “zonal resource credit” or ZRC by MISO and is used to accredit resources’ contributions to the planning reserve margin requirement (PRMR).

⁸ *Id.*, p. 16.

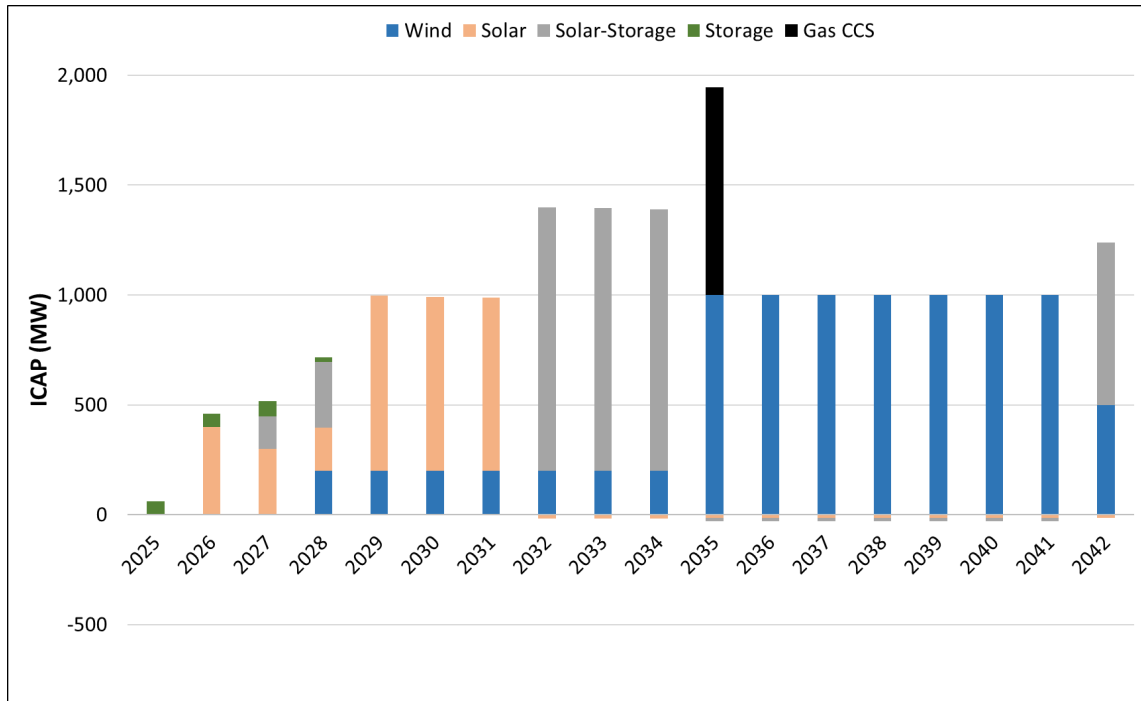
⁹ *Id.*

¹⁰ Direct Testimony of Shayla D. Manning, p. 50.

1
2

Figure 1: DTE PCA Incremental Capacity (MW ICAP)¹¹

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3

4 **Q. Please summarize the modeling process the Company employed in this IRP.**

5 A. The Company employed a three-phased modeling approach in this IRP, which includes (1)
6 IRP Modeling, (2) Resource Adequacy, and (3) Grid Reliability.¹² The Company
7 conducted its IRP modeling using the EnCompass tool, a capacity expansion and
8 production cost model, to conduct optimization of new builds and calculate the net present
9 value (NPV) of customer costs.¹³ The capacity expansion part of the model selects the
10 optimal or least-cost resource subject to the constraints and costs imposed by the modeler.
11 DTE’s Resource Adequacy modeling was conducted by Astrapé for MISO Local Resource

¹¹ The source of the data used to create this chart is a DTE workpaper titled 115 NDA WP SDM 115-REFRESH_PCA_OPT, “REFRESH_PCA_OPT -Resource Annual”.

¹² Leslie Direct, pp. 56-59.

¹³ *Id.*, p. 58.

1 Zone 7 to determine the reliability contribution of solar, wind, and battery storage
2 resources.¹⁴ DTE is a member of MISO Local Resource Zone 7, as is most of the lower
3 peninsula of Michigan. Each year, the Company must prove that it has sufficient capacity
4 to meet its required Planning Reserve Margin Requirement (PRMR), which is set by MISO.
5 DTE's Grid Reliability modeling was conducted by International Transmission Company
6 (ITC) to analyze the transmission system impacts, which was used to develop DTE's IRP
7 scenarios.¹⁵ My testimony focuses on the IRP modeling step. MNSC Witness Matthew
8 Richwine addresses the Company's transmission modeling and Witness Douglas Jester
9 discusses resource adequacy issues.

10 The Company modeled the following scenarios and sensitivities: (1) a business-as-usual
11 (BAU) scenario with the Company's base case assumptions; (2) an Emerging Technologies
12 (ET) scenario which assumes lower costs for renewable, storage, and demand-side
13 management options; (3) an Environmental Policy (EP) scenario which assumes a 30
14 percent reduction in carbon emissions from 2005 levels by 2030; (4) a Carbon Reduction
15 (CR) scenario that uses the EP scenario but assumes a high load growth forecast and
16 considers two distinct carbon reduction goals as required by the Commission's order in
17 Case No. U-20633; (5) a Reference (REF) scenario which uses Company-developed
18 assumptions; (6) a High Electrification (HE) scenario which includes electric vehicle
19 adoption assumptions consistent with the MI Healthy Climate Plan; (7) an updated
20 reference scenario (REFRESH) that includes certain new and revised tax credits under the
21 IRA as well as updated natural gas and wholesale electricity prices; and (8) a Stakeholder

¹⁴ *Id.*, pp. 58-59; Direct Testimony of Kevin Carden, p. 9.

¹⁵ Leslie Direct, p. 59.

1 (STAKE) scenario (and associated sensitivities) which was developed using the
2 assumptions and inputs provided and agreed upon collaboratively by stakeholders that
3 participated in the Company’s stakeholder workshops.¹⁶ In its modeling, the Company
4 used multiple natural gas price forecasts, including its own forecast (“DTE gas”) and the
5 Energy Information Administration (EIA) 2021 Annual Energy Outlook (“AEO gas”).¹⁷

6 Using the EnCompass software, the Company performed both capacity expansion and
7 production cost modeling but later made manual adjustments. Capacity expansion
8 modeling involves the optimization of the buildout of resources, which can include both
9 selection of new resources and/or retirement of existing resources. This type of modeling
10 chooses the most economic resource additions given the set of assumptions included in the
11 model. Production cost modeling holds the resource buildout as fixed and estimates the
12 total costs of owning and operating those resources as well as purchases and sales in the
13 wholesale market. These modeling runs are used as the basis for calculating the net present
14 value (“NPV”) of a portfolio’s projected cost to customers (i.e. revenue requirements).

15 **Q. Please describe the Company’s retirement analysis of Belle River and Monroe.**

16 A. The Company performed a retirement analysis on its remaining coal-fired resources, Belle
17 River and Monroe. For Belle River, the Company modeled a staggered retirement of Units
18 1 and 2, respectively, in 2024/2025 and 2025/2026, respectively, and a full plant retirement
19 in 2027 and 2028.¹⁸ For Monroe, the Company modeled a staggered retirement of Units 3
20 and 4 and Units 1 and 2, respectively, in 2028/2032, 2028/2035, 2028/2039, 2030/2035,

¹⁶ *Id.*, pp. 80-81.

¹⁷ *Id.*, pp. 30-31.

¹⁸ Manning Direct, p. 48.

1 2032/2035, 2032/2039 and 2035/2039, or a four-unit retirement in 2032, 2035, and
2 2039.^{19,20}

3 **Q. Please summarize the Company’s REFRESH modeling scenario and the**
4 **incorporation of IRA tax credits and other updated assumptions.**

5 A. The Company’s initial IRP modeling assumptions were developed in late 2021 and later
6 refined through a stakeholder process in early 2022. Due to some major changes to industry
7 and legislation, the Company decided to develop the REFRESH scenario to account for the
8 impacts associated with these changes. The REFRESH scenario was modeled in August
9 and September of 2022 and took into consideration changes introduced by the Inflation
10 Reduction Act of 2022 (IRA) as well as changes to natural gas price forecasts.

11 The REFRESH scenario uses a natural gas price forecast that is based on market forwards
12 for 2023 through 2027 and then uses EIA’s 2022 Annual Energy Outlook natural gas price
13 forecast for the remainder of the modeling period (i.e., 2028 through 2042).²¹ DTE was
14 only able to incorporate certain aspects of the IRA that were relevant to the IRP. With that,
15 the Company’s REFRESH scenario includes the IRA’s new tax credit provisions impacting
16 new solar, wind, storage, and carbon capture and sequestration technologies.²² More
17 specifically, DTE applied the following tax credit assumptions:²³

¹⁹ *Id.*

²⁰ Note that DTE’s retirement analysis only considers Monroe Units 1 and 2 to be retired in the same year and does not evaluate the staggered retirement of these units. DTE did not evaluate those units separately even though it has not identified any separation costs that would need to be incurred if those units retired in different years. Source: MNSCDE-9.2c.

²¹ Manning Direct, p. 77.

²² *Id.*, p. 78.

²³ Direct Testimony of Rodrigo Cejas Goyanes, pp. 13-14.

- 1 • **Wind and Solar PV:** Production Tax Credit (PTC) of \$26/MWh from 2023
2 (adjusted for inflation thereafter) for 10 years after installation—available
3 throughout the modeling period.
- 4 • **Battery Storage:** Investment Tax Credit (ITC) of 30 percent of capital costs—
5 available throughout the modeling period;
- 6 • **Hybrid Solar and Battery:** PTC for the solar component and ITC for the
7 battery component (both described above);
- 8 • **CCGT with CCS:** Tax credit of \$85 per ton of CO₂ removed in the 2023-2026
9 period and adjusted for inflation thereafter—for projects placed installed by
10 2035 with credits available for 12 years after installation.

11 The law also allows the PTC and ITC to be stackable with other credits if the clean
12 resources are located: 1) at a brownfield (such as a retired industrial site); 2) in a region
13 that has a certain level of reliance on fossil fuel extraction and has higher than the national
14 unemployment rate; or 3) in the same area as a closed coal mine or closed coal unit(s).²⁴
15 At these locations, the ITC is increased by 10 percentage points to 40 percent, while the
16 PTC is increased by 10 percent of the dollars per MWh. Therefore, there is a significant
17 incentive for locating new clean resources in an “energy community.” The Company could
18 take advantage of the energy community bonus, especially given the recent and planned
19 fossil retirements. An additional bonus of 10 percent is also available for projects that

²⁴ IRA. Sections 13101(g) (creating new Section 45(b)(11) of the Internal Revenue Code); 13102(o) (creating new Section 48(a)(14) of the Internal Revenue Code); 13701 (creating new Section 45Y(g)(7) of the Internal Revenue Code); 13702 (creating new Section 45E(a)(3)(A) of the Internal Revenue Code).

1 certify that manufactured products were domestically produced.²⁵ Collectively, this means
2 that an ITC-eligible resource could receive a 50 percent capital cost reduction and a PTC-
3 eligible resource could receive 20 percent above the full credit per MWh. However, DTE
4 did not apply adders associated with the domestic content bonus credit nor the “energy
5 community” bonus credit—each would add 10 percent to the ITC or increase the PTC by
6 10 percent of the dollars per MWh.²⁶

7 **III. THE COMPANY HAS NOT JUSTIFIED RETIRING THE LAST TWO MONROE**
8 **UNITS BY 2035 RATHER THAN 2032**

9 **Q. Please summarize this section of your testimony.**

10 A. In this section, I focus on the Company’s decision to continue operating the last two
11 Monroe units until 2035 as part of its PCA. I find that the Company should have decided
12 to fully retire the plant by 2032 based on two main factors: 1) the Company’s own modeling
13 showed that 2032 retirement was substantially cheaper than the PCA, was deemed lower-
14 risk, had fewer carbon dioxide (CO₂) emissions, and scored the same per DTE on
15 reliability; and 2) delaying retirement of the plant could lead to more environmental
16 compliance costs, particularly from particulate matter (PM) regulation.

²⁵ IRA. Sections 13101(g) (creating new Section 45(b)(9) of the Internal Revenue Code), 13102(l) (creating new Section 48(a)(12) of the Internal Revenue Code); 13701 (creating new Section 45Y(g)(11) of the Internal Revenue Code); 13702 (creating new Section 45E(a)(3)(B) of the Internal Revenue Code).

²⁶ Cejas Goyanes Direct, p. 15.

1 **A. DTE’s Own Modeling Justifies Fully Retiring Monroe Units 1 and 2 in 2032**

2 **Q. Did the Company’s modeling show that 2032 retirement of the last two Monroe units**
3 **was lower-cost than 2035 retirement?**

4 **A.** Yes. Under the updated Refresh scenario modeling, which included the IRA tax credits,
5 the Company’s modeling showed that retirement of Monroe Units 1 and 2 in 2032 led to
6 more than \$300 million in savings relative to 2035 retirement.²⁷ This savings can be
7 gleaned from comparing two portfolios where the resource retirements or conversions are
8 identical but for the Monroe retirement date in 2032 or 2035. For instance, both the PCA
9 and the Company’s “Case 6B” portfolio assume that the Belle River plant is converted to
10 gas in 2025 and 2026, and both portfolios assume that Monroe units 3 and 4 retire in 2028;
11 but the PCA retires Monroe units in 1 and 2 in 2035 and “6B Phase” retires the units in
12 2032. The latter portfolio is \$309 million cheaper than the PCA.²⁸ Notably, these savings
13 do not include any tax credit adders available through the IRA for solar, wind, and battery
14 storage through either the “energy community” location or use of domestic parts as DTE
15 did not consider those credits.

16 **Q. Did DTE change its retirement plans for Monroe after the IRA was signed into law**
17 **and it developed the Refresh scenario?**

18 **A.** No. My review of DTE’s modeling and development of an alternative portfolio (presented
19 later in testimony) use the Refresh scenario as a basis. As I stated previously, the Refresh

²⁷ WP SDM 158 - REFRESH Sensitivity Analysis Results. The PCA is labeled as “REFRESH_2022_PRELIMINARY_PCA_OPT.”

²⁸ *Id.* Similarly: 1) comparing DTE’s cases 6A and 7A shows a savings of \$321 million with 2032 retirement versus 2035; and 2) comparing DTE’s cases 6B and 7B shows a savings of \$312 million with 2032 retirement versus 2035.

1 scenario is the most relevant run because it is the only one that incorporates the substantial
2 increase and extension of federal tax credits from the IRA. But despite the massive changes
3 from the IRA and substantial savings from early retirement shown in its updated modeling,
4 DTE did not change its retirement and conversion plans. The Company was already
5 planning retirement of Monroe Units 1 and 2 in 2035 in its preliminary PCA before the
6 IRA was signed into law and later incorporated into DTE’s modeling under the Refresh
7 scenario. The final PCA developed with the IRA included more renewable and storage
8 resources but did not change the retirement plans for Monroe despite showing substantial
9 savings from 2032 versus 2035 retirement of Units 1 and 2.²⁹ DTE was correct to update
10 its modeling to reflect the IRA; but its modeling results show that the Company should
11 have also changed its retirement plans as a result of this game-changing legislation.

12 **Q. Did the Company’s economic risk analysis that incorporated the IRA show that 2032**
13 **retirement was lower risk than 2035?**

14 A. Yes. After accounting for the IRA, the portfolio with a 2032 retirement of Monroe 1 and 2
15 (“portfolio 8” or “Refresh 6B phase”) also had a lower economic risk than the PCA
16 (“portfolio 9”) per the Company’s risk analysis—separate from the Encompass modeling
17 discussed above.³⁰ Siemens was hired by DTE to use the AURORA model to conduct a
18 stochastic analysis to assess the economic risks of its portfolios by allowing uncertain
19 factors such as load, fuel prices, and carbon prices to fluctuate based on corresponding
20 probability distributions.³¹ This analysis produced 200 iterations of each portfolio where

²⁹ Exhibit: A-3.1, p. 117.

³⁰ *Id.*, p. 116.

³¹ *Id.*, p. 115.

1 these uncertain factors could vary and influence the portfolios costs. DTE focused on the
2 average portfolio cost from these iterations and the 95th percentile cost result, which
3 represented the high-end of cost risk.

4 Without the IRA tax credits, the portfolio with a 2032 retirement of Monroe 1 and 2 had
5 higher average costs and 95th percentile costs than the PCA³²; but when the risk analysis
6 was updated to include the tax credits, 2032 retirement had a \$691 million lower average
7 cost and a 95th percentile result (i.e. high-end iteration) that was \$766 million cheaper than
8 the PCA.³³ Thus the Company's assessment showed that retirement of Monroe Units 1 and
9 2 in 2032 carried much lower economic risk than 2035 retirement.

10 **Q. Did the Company's reliability assessment score the two portfolios the same?**

11 A. Yes. Both portfolios were ranked the highest in the Company's analysis of capacity surplus
12 available because they each had only 7 years with less than 500 MW UCAP surplus, i.e.,
13 above the MISO capacity requirement.³⁴ Thus retirement of Monroe Units 1 and 2 in either
14 2032 or 2035 were treated as equivalent by the Company's reliability scoring.

15 **Q. Did the portfolio with 2032 retirement have lower emissions than the PCA?**

16 A. Yes. DTE also showed that earlier retirement of Monroe avoided substantial CO₂
17 emissions compared to the PCA. When looking at DTE's CO₂ emissions over the modeling
18 period, the portfolio with 2032 retirement emitted 17 million fewer tons fleetwide than the
19 PCA or 19 million fewer tons after accounting for market purchases and sales.³⁵

³² *Id.*, p. 116; WP LKM 10 Stochastic NPV Compare Final.

³³ *Id.*

³⁴ *Id.*, p. 118.

³⁵ *Id.*, p. 120.

1 **Q. Did the portfolio with 2032 retirement have lower resource diversity than the PCA?**

2 A. Only slightly according to the scoring used by DTE (where higher scores are more diverse).
3 However, as the Company notes, the top six portfolios were quite close on this metric. The
4 PCA scored a 2.451 and the 2032 retirement portfolio scored a 2.44; also, five other
5 portfolios scored between 2.42 and 2.45. Unlike the other rankings for capacity surplus,
6 carbon emissions, and cost—the ranking for the diversity of the portfolios reveals less
7 information, especially for those portfolios that all scored within a small band of one
8 another.

9 **Q. In sum, how did 2032 retirement fare against the PCA on DTE’s own metrics?**

10 A. DTE’s analysis shows that 2032 retirement is lower-cost, lower-risk, and cleaner than the
11 Company’s chosen plan. When Monroe Units 1 and 2 retire in 2032 in portfolio Refresh
12 6B Phase, that portfolio compared to the PCA was: 1) more than \$300 million cheaper in
13 the Encompass modeling; 2) almost \$700 million cheaper in average portfolio costs in
14 Siemens’ modeling in AURORA with 200 cost iterations; 3) \$766 million cheaper in the
15 high-cost risk (i.e. 95th percentile) iteration of that modeling; 4) had similar levels of
16 capacity surplus; 5) had between 17 and 19 million fewer CO2 emissions; and 6) had a
17 similar level of resource diversity.

18 **Q. Given that DTE’s analysis makes a compelling case for retiring the last two Monroe**
19 **units by 2032, did the Company adequately justify opting to delay by three years in**
20 **the PCA?**

21 A. No. Despite the evidence that 2032 retirement was clearly preferable, DTE’s explanation
22 for choosing 2035 was that there was more “execution risk” to replace the capacity and

1 required grid upgrades.³⁶ The Company also claimed that delaying the retirement would
2 allow for more time for “emerging technology advancement.”³⁷ Even if grid upgrades were
3 required, DTE does not clearly explain why implementing such upgrades would only be
4 feasible 12 years from now but not 9 years from now. As for execution risk, there have
5 been supply chain issues recently in part due to the COVID-19 pandemic but I am not
6 aware of any evidence that these are expected to persist for another decade. The Inflation
7 Reduction Act (IRA) has spurred demand for solar, wind, and battery resource
8 development, but the law also incentivizes domestic manufacturing by offering the higher
9 ITC and PTC for use of parts made in the U.S. and a new manufacturing production credit
10 for certain wind, solar, and battery components.³⁸ As a result, there has been a surge in
11 domestic solar PV component manufacturing that will provide more supply options for
12 developers and utilities.³⁹ (Witness Jester discusses renewable energy siting and feasibility
13 issues in detail in his testimony.)

14 Finally, DTE also claimed that the later Monroe Units 1 and 2 retirement in the PCA
15 “balances decarbonization with affordability.” But this is not the case because, as I have
16 described above, the portfolio with 2032 retirement had substantially lower carbon

³⁶ *Id.*, p. 121.

³⁷ *Id.*

³⁸ IRA, Sections 13501, 13502.

³⁹ See: DiGangi, Diana, “First Solar brings US manufacturing investment to \$4B after selling out of panels through 2025,” Utility Dive, February 1, 2023, available at: <https://www.utilitydive.com/news/first-solar-billion-domestic-manufacturing-ira-ohio/641692/>; Enel North America, “Enel announces intentions to build solar PV cell & panel manufacturing facility in U.S.,” Press release, November 17, 2022, available at: <https://www.enelgreenpower.com/media/press/2022/11/solar-pv-cell-panel-manufacturing-facility-us>

1 emissions *and* was found to be lower-cost than the PCA—there is no trade-off between the
2 two in DTE’s results if taken at face value.⁴⁰

3 **B. Delaying Monroe retirement to 2035 carries environmental compliance risks**

4 **Q. Did DTE model any environmental compliance costs other than what is currently**
5 **required at Monroe?**

6 A. Apparently, it did not. There is the potential for additional compliance costs associated
7 with the Monroe plant, and the risks of such costs being incurred increase with the
8 operating life of the plant. As I will describe below, DTE did not account for the possibility
9 of a cooling tower, additional particulate matter controls, or other controls needed to
10 maintain compliance with national ambient air quality standards (NAAQS), ozone
11 transport or Regional Haze updates. When asked about potential regulatory costs, DTE
12 responded by claiming it only considered current regulations, despite modeling a 20-year
13 period.⁴¹

14 **Q. Is there the possibility of a cooling tower being needed at Monroe?**

15 A. Yes. In order to comply with the Clean Water Act section 316(b), a new cooling tower
16 could be required at Monroe.⁴² Although DTE has thus far avoided this capital investment,
17 that is in large part because state permitting authorities have not yet required Monroe to
18 meet the requirements set forth in EPA’s 2014 Cooling Water Intake Rule.⁴³ DTE is

⁴⁰ *Id.*

⁴¹ Ex MEC-16 and MEC-17, Company responses to MNSC 9.3c, 9.4a, 9.4b.

⁴² Ex MEC-17, Company responses to MNSC 9.4a, b, and c.

⁴³ Michigan Department of the Environment, Great Lakes, and Energy (“EGLE”), National Pollution Discharge Elimination System (NPDES) Permit No. MI0001848 (hereinafter “DTE NPDES Permit”), Part I.A.20 (noting that because DTE had applied for its permit before the effective date of EPA’s 2014 cooling

1 required to apply for a new wastewater permit in 2025, and the Michigan Department of
2 the Environment, Great Lakes, and Energy (“EGLE”) has made clear that at that time it
3 will apply the new, more stringent, rule in evaluating whether DTE must invest in a cooling
4 tower.⁴⁴ Given the time it takes for EGLE to evaluate and renew wastewater permits, and
5 several years provided for construction, it is possible that a cooling water tower
6 requirement could be imposed as of 2032, allowing DTE to avoid that investment if
7 Monroe retires by that date. However, the Company appears to simply assume it will
8 continue to evade scrutiny of its cooling intake system indefinitely, without recognition of
9 the legal realities. In any event, DTE does not have an estimate for the costs of this project,
10 should it be required.⁴⁵

11 **Q. Is there a risk of particulate matter controls being needed at Monroe by 2032?**

12 A. Yes. In January of this year, EPA proposed to lower the primary annual NAAQS for fine
13 particulate matter (PM_{2.5}) standard by lowering the level from 12.0 µg/m³ to within the
14 range of 9.0 to 10.0 µg/m³, which could require large sources of particulate matter like

water intake rule, it would not apply the “best technology available (BTA) standards for impingement mortality and entrainment as defined in the rules.”). The permit is available at <https://mienviro.michigan.gov/nsite/map/results/detail/-9181143139346842118/documents>. Ex MEC-19, (“NPDES Permit - Final_DTE-Monroe Plt.pdf”). See also EGLE, Responsiveness Summary NPDES Permit No. MI0001848 at 10 (“[DTE’s] existing permit does not address the requirements in the 316(b) Existing Facilities Rule for cooling water intake structures”).

⁴⁴ Ex MEC-19, DTE NPDES Permit at Part I.A.20 (“On or before April 4, 2025, with the application for reissuance, the permittee shall submit the appropriate information specified in 40 CFR 122.21(r) [incorporating new requirements from the 2014 rule] for the cooling water intake structure at this facility.”); EGLE Responsiveness Summary NPDES Permit No. MI0001848 at 10 (“We view this permit as a necessary step for Monroe because it will set in motion difficult but key changes at the facility that will require time to design/build/fund/implement but that will eventually result in measurable progress being made towards greater environmental protections.”)

⁴⁵ Ex MEC-17, Company responses to MNSC 9.4a, b, and c.

1 Monroe to reduce emissions. Specifically, based on current and projected monitoring data
2 from EPA, Monroe’s neighboring Wayne County could be designated as failing to comply
3 with the proposed standard,⁴⁶ which could require PM controls by 2032, depending on the
4 implementation and timing of the final rule. Again, DTE only looked at current regulations
5 and did not have an estimate for these potential costs.⁴⁷

6 **Q. Is there a risk of further compliance costs from the current ozone NAAQs?**

7 A. Yes. Monroe County, where the Monroe plant is located, is part of an area that EPA has
8 designated as out of attainment with the 2015 ozone NAAQS.⁴⁸ Because the area failed to
9 achieve attainment within three years of its designation, EPA recently moved the area from
10 “marginal” nonattainment to “moderate” nonattainment, effective March 1, 2023.⁴⁹ This
11 regulatory action creates an additional risk that Monroe will need to invest in reducing
12 ozone precursors such as nitrogen oxides and volatile organic compounds by 2032 because
13 a state’s nonattainment plan must include “reasonably available control technologies” for
14 all major sources of these pollutants.⁵⁰ While EPA has also recently proposed to halt the

⁴⁶ U.S. EPA, *Proposed Decision for the Reconsideration of the National Ambient Air Quality Standards for Particulate Matter (PM)*, available at: <https://www.epa.gov/system/files/documents/2023-01/Fine%20Particle%20Concentrations%20for%20Counties%20with%20Monitors.pdf>; <https://www.epa.gov/system/files/documents/2023-01/PM%20Maps%20-%202022%20proposal%20%282%29.pdf>.

⁴⁷ Ex MEC-17, Company responses to MNSC 9.4ai, aii.

⁴⁸ See: <https://www.michigan.gov/egle/about/organization/air-quality/state-implementation-plan/ozone-nonattainment>.

⁴⁹ *Finding of Failure to Attain and Reclassification of the Detroit Area as Moderate for the 2015 Ozone National Ambient Air Quality Standards*, 88 Fed. Reg. 6,633 (Feb. 1, 2023).

⁵⁰ 42 U.S.C. §§ 7502(c), 7514-7514a.

1 state’s nonattainment planning requirements,⁵¹ that action is not final. Even if ultimately
2 finalized, the reasonable available control technology (RACT) requirements could come
3 back into play should ozone monitoring show levels above the NAAQS in the future.⁵² In
4 short, Monroe’s location in an ozone nonattainment area increases the risk of
5 environmental compliance costs not considered by DTE in its planning.

6 **Q. Are there on-going air quality regulations that are typically updated by EPA?**

7 **A.** Yes, there are many that undergo updates and can be expected to become more stringent
8 in the future. The various NAAQS are updated by EPA periodically based on research on
9 the impacts of pollutants on human health. For instance, the ozone NAAQS limit has
10 decreased multiple times: it was 80 ppb (parts per billion) in 1997, 75 ppb in 2008, then 70
11 ppb in 2015;⁵³ and EPA must reconsider that standard in 2025 and decrease it if
12 warranted.⁵⁴ Also tied to this ozone NAAQS is the regulation of ozone transport over state
13 lines. Currently, for instance, there is a proposed Good Neighbor Plan rule that is based on
14 the 2015 ozone NAAQS limit of 70 ppb.⁵⁵ If a new NAAQS is developed, then a new
15 transport rule will replace the Good Neighbor Plan, as it replaced CSAPR (Cross-State Air
16 Pollution Rule) which replaced the CAIR (Clean Air Interstate Rule), and so forth. Another
17 regulation, the Regional Haze Rule, requires large sources of visibility-impairing pollution,
18 to reduce NO_x and SO₂ emissions to ensure “reasonable progress” towards natural

⁵¹ Proposed Rule: *Clean Data Determination for the Detroit Area for the 2015 Ozone Standard*, 88 Fed. Reg. 7,382 (Feb. 3, 2023).

⁵² *Id.* at 7,384 (suspension of requirements would remain in place “as long as the area continues to attain the 2015 ozone NAAQS.”).

⁵³ See: <https://www.epa.gov/ground-level-ozone-pollution/ozone-implementation-regulatory-actions>.

⁵⁴ See: 42 U.S.C. § 7409(d)(1).

⁵⁵ See: <https://www.epa.gov/csapr/good-neighbor-plan-2015-ozone-naaqs>.

1 visibility in national parks and wilderness areas by 2064.⁵⁶ Compliance with this rule is
2 monitored every ten years and further reductions could be required. Again, DTE did not
3 consider any further compliance costs associated these rules.⁵⁷

4 **Q. Is there risk of carbon dioxide emission regulations that would apply to power plants?**

5 A. Yes. Clean Air Act Section 111(d) authorizes the U.S. EPA to establish carbon dioxide
6 limits for existing power plants based on the “best system of emission reduction.” While
7 the previous two Presidential administrations established Section 111(d) standards for
8 existing power plants that were later withdrawn or rejected in court, the Biden
9 administration has yet to release its proposal in the wake of the U.S. Supreme Court’s 2022
10 ruling in *West Virginia v. EPA*. My understanding is that a proposed 111(d) rule will be
11 released in the coming months. While I do not have any knowledge of the stringency or
12 costs of this proposal, the additional regulation of these emissions is an on-going risk to
13 coal generation.

14 **Q. Is there additional risk of environmental compliance costs at Monroe from delaying
15 its retirement?**

16 A. Yes. The longer the plant operates, the more it is at-risk for incurring more environmental
17 compliance costs. There are proposed rules, such as particulate matter (PM 2.5) NAAQS,
18 that could lead to additional costs at Monroe which DTE has failed to consider. The
19 Company may claim that these potential costs are unknown; but the costs are unlikely to
20 be zero if Monroe operates for the next 12 years.

⁵⁶ 42 U.S.C. § 7491(b)(2).

⁵⁷ Ex MEC-17, Company responses to MNSC 9.4b, c.

1 **IV. MNSC MODELING SHOWS THAT MONROE 1&2 COULD BE REPLACED IN**
2 **2032 WITH RENEWABLES AND STORAGE AT A LOWER COST THAN THE**
3 **PCA**

4 **Q. Did you help develop alternative portfolios in this case?**

5 A. Yes, along with my co-witness George Evans, we developed an alternative portfolio that
6 we then compared to the costs of the Company's proposed PCA. Our MNSC plan, follows
7 most of the PCA coal decisions except that we retired Monroe Units 1 and 2 in 2032 rather
8 than 2035. We also have a higher buildout of solar and storage than the PCA and no CCS
9 natural gas plant. The MNSC plan has a lower NPV revenue requirement than the PCA by
10 \$147 million.

11 **Q. Please summarize the similarities and differences between your and DTE's modeling.**

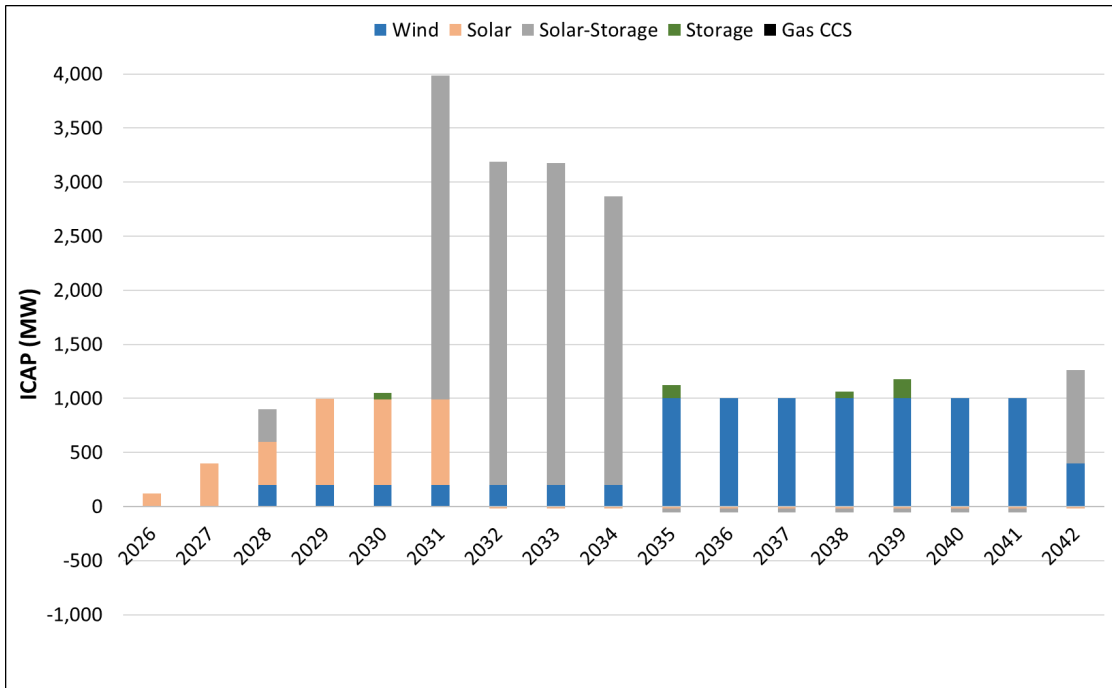
12 A. Our modeling follows DTE's approach in many aspects. Mr. Evans used the same
13 Encompass model as DTE for capacity expansion and production cost analyses. He applied
14 the same capacity credits as DTE did to its resources when measuring the contribution to
15 the unforced capacity (UCAP) required to meet the MISO planning reserve margin
16 requirement (PRMR). He used the same capital and operating cost assumptions as DTE for
17 all resources. He also imposed the same constraint on wind additions as DTE, resulting in
18 the same wind builds as the PCA: 200 MW per year from 2028-2034, and 1 GW per year
19 from 2035-2041, 400 MW in 2042. Finally, the portfolio we developed was designed to
20 have a similar level of average capacity surplus to the PCA.

21 The main difference in our approach was to focus on clean replacement options if Monroe
22 Units 1 and 2 were retired in 2032. We did not allow for new wind development, over and
23 above DTE's PCA, but we did allow for more standalone and hybrid solar and battery
24 storage resources to be built. Given that DTE itself deems the gas combined cycle plant

1 with CCS to be an “emerging technology” that the Company included only as a
2 “placeholder,” we did not allow the model to select that option.

3 To do this, Mr. Evans first ran an optimization whereby the model economically-selected
4 resource builds. This first run was performed without constraints on solar and battery builds
5 to see how much would be added. The resulting builds included massive additions of 12
6 GW of solar and storage between 2031 and 2034—or roughly 3 GW averaged annually
7 over a four-year period (See Ex. MEC-12 and George Evan’s Workpaper MNSC Case
8 1.xlsx).

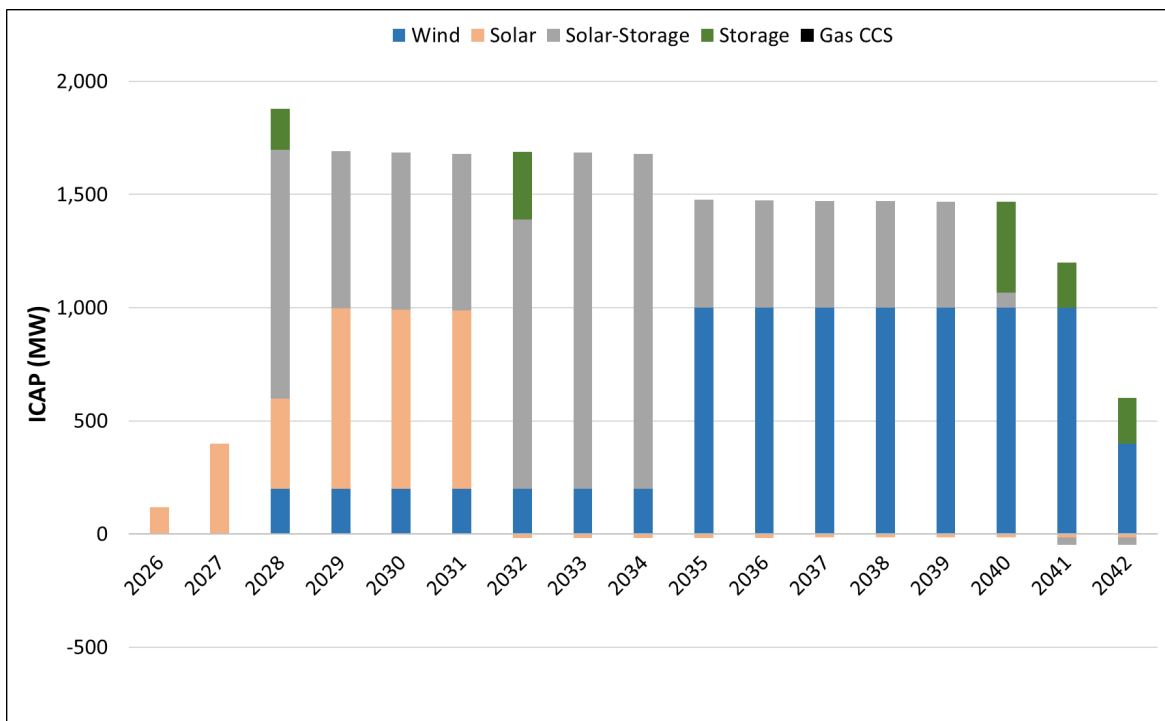
9 **Figure 2: MNSC Preliminary Optimization Run New Builds (MW ICAP)**



10
11 Using this optimization run as a basis, for our final plan, we spread new builds to a more
12 reasonable level of 1.5 GW per year for solar and storage additions from 2028 through
13 2034. (MNSC Witness Douglas Jester addresses the build constraints used in our
14 modeling.) The only exception is that our plan has 1.7 GW of solar and storage in 2028 but

1 this includes 180 MW of ancillary services batteries that DTE builds throughout 2025
 2 through 2027 in its PCA. Therefore, it is possible to mimic the Company’s PCA by building
 3 60 MW in those three preceding years and build 1.5 GW of new solar and battery per year
 4 subsequently. The optimization run was selecting new standalone battery storage and solar-
 5 battery hybrids in the mid to late 2030’s in our optimization; therefore, we added these to
 6 fulfill the capacity need and then some to achieve a similar capacity surplus to DTE’s PCA
 7 over the analysis period. (For further description of the modeling process, please see Mr.
 8 Evans’ testimony.)

9 **Figure 3: MNSC Final Plan New Builds (MW ICAP)**



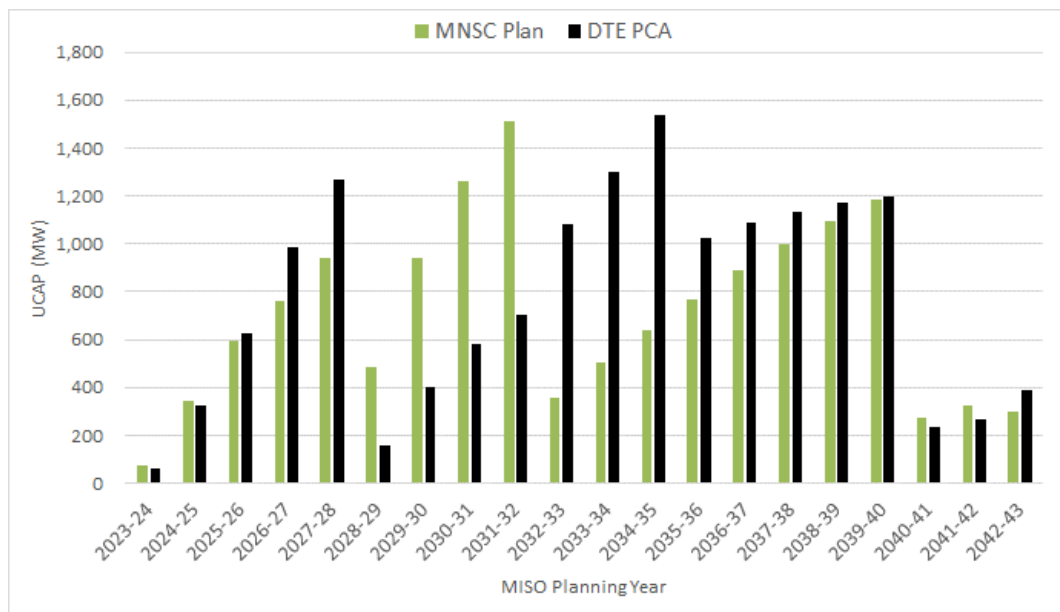
10
 11 **Q. How much capacity surplus (in terms of UCAP) is there in the MNSC plan versus the**
 12 **PCA?**

13 **A.** The builds above are shown in terms of installed capacity (ICAP) but the Company’s
 14 planning reserve margin requirement (PRMR) is in terms of unforced capacity (UCAP)

1 which is a measurement of how much capacity is available at peak times (also referred to
 2 in MISO as “zonal resource credits” or ZRCs.) As mentioned above, our plan keeps the
 3 same capacity credit calculation used by DTE to translate ICAP into UCAP for each
 4 resource type. Figure 4 below shows the annual surplus capacity in terms of UCAP, or
 5 what is over and above DTE’s MISO-required capacity in each year. While there are annual
 6 differences between our plan and the PCA, on average our plan has a surplus of [REDACTED]
 7 MW UCAP while the PCA has an average surplus of [REDACTED] MW UCAP.⁵⁸

8 **Figure 4: Annual Capacity Surplus (UCAP MW)**

9 **CONFIDENTIAL**⁵⁹



10
 11 **Q. Is the MNSC portfolio above cheaper than the PCA?**

12 **A.** Yes. Our plan had an NPV savings of \$147 million compared to the PCA. Thus, it
 13 provides a path for fully retiring Monroe by 2032 with clean replacement that is better for

⁵⁸ NDA WP SDM 161 - DTE and Zone 7 Capacity Outlook Tool - 2022 IRP PCA FINAL.

⁵⁹ *Id.*

1 customers than the PCA. Moreover, MNSC witnesses Evans and Neme discuss additional
2 demand-side measures that could decrease costs of this plan further.

3 **Q. Could there be fewer new builds starting in 2028 if Monroe retires in 2032 than what**
4 **is shown in the MNSC plan?**

5 A. Yes, there are several reasons why the amount of new builds shown above may not be
6 needed starting in 2028. First, as shown above, the MNSC plan has significant capacity
7 surplus in some years but maintained a surplus level to be comparable to DTE's planning
8 approach. Second, the MNSC plan builds fewer MW than DTE's PCA through 2027. If
9 the Company could procure more renewables and/or storage prior to 2028 than some of the
10 subsequent additions could be avoided. (This point is also discussed by MNSC Witness
11 Jester.) Third, the Company did not consider capacity purchases in the PCA (nor did our
12 MNSC plan), but in reality it could supplement new builds with capacity purchases as a
13 stop gap if there is a short-term capacity need that cannot be met.⁶⁰ Finally, there is
14 potential for long-duration storage to meet some of the capacity needs, especially in the
15 medium to long-term if it becomes more cost-competitive. Because this type of storage

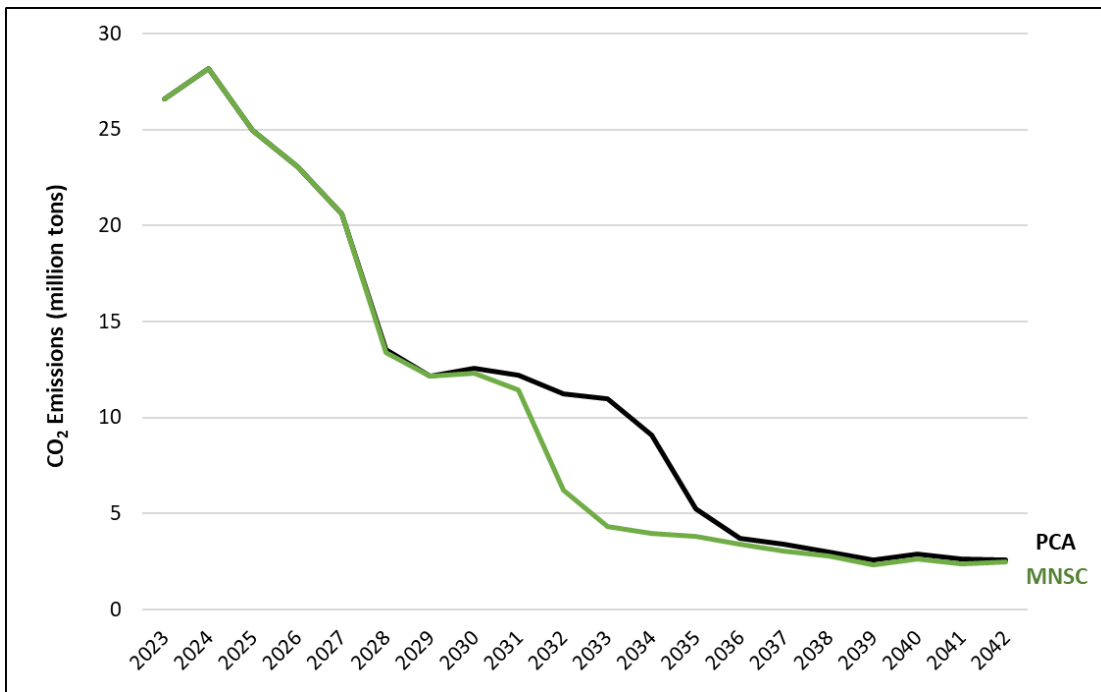
⁶⁰ Exhibit: A-3.1, p. 109. The Company excluded capacity purchases in almost every modeling run but when it did run one sensitivity testing the option, the costs were lower and the amount of new builds decreased.

1 would likely have a higher capacity credit than four-hour storage, the Company would need
2 to add fewer ICAP MWs to achieve the same UCAP value.⁶¹

3 **Q. Does the MNSC portfolio have fewer carbon emissions than the PCA?**

4 A. Yes, our plan results in fewer carbon emissions. Figure 5 shows the annual CO₂ emissions
5 of both plans. Most notably, the greatest divergence between plans starts in 2032 when
6 Monroe retires in our plan but is still operating in the PCA. Over the course of the 20-year
7 period, the MNSC plan results in 21.2 million fewer tons emitted than the PCA.

8 **Figure 5: Carbon Dioxide Emissions in PCA and MNSC Plans (mil tons)**
9 **CONFIDENTIAL**⁶²



10

⁶¹ Company response to MIACDE-2.3. DTE modeled long duration storage but used the same capacity credit as they did for four-hour storage. But longer-duration storage is typically accredited more highly than four-hour storage because it has a higher effective load carrying capability (ELCC), see: <https://www.pjm.com/-/media/planning/res-adeq/elcc/elcc-class-ratings-for-2024-2025.ashx>.

⁶² 115 NDA WP SDM 115-REFRESH_PCA_OPT, "REFRESH_PCA_OPT -Resource Annual Emissions".

1 **Q. Is the MNSC plan a better alternative to the PCA?**

2 A. Yes. The MNSC plan is lower-cost, has similar levels of capacity surplus, has lower
3 emissions than the PCA, and presents less environmental compliance risk than keeping the
4 two Monroe units on-line for three additional years.

5 **Q. Is DTE’s portfolio that retires Monroe units 1 and 2 by 2032 cheaper than the MNSC
6 plan?**

7 A. Yes. The MNSC plan is \$147 million cheaper than the PCA; but DTE’s other plan (DTE
8 2032) that has the same retirements for the Monroe units is \$163 million cheaper than the
9 MNSC plan.⁶³ However, it is notable that the savings in DTE’s 2032 run relies in large part
10 on the substantial amounts of federal tax subsidies the Company surmises would be
11 generated by carbon capture at the Company’s assumed placeholder replacement resource
12 for the last two Monroe units. In particular, DTE included a 946 MW natural gas combined
13 cycle turbine (CCGT) with carbon capture and sequestration (CCS) to represent a generic
14 low or zero carbon dispatchable resource.⁶⁴

15 **Q. Please describe how this resource influences the relative costs of the portfolios.**

16 A. For carbon-emitting power plants, the IRA provides a tax credit of \$85 per ton (adjusted
17 for inflation) of CO₂ removed from CCS, but only provided that the project is *designed* to
18 capture at least 75 percent of the plant’s baseline CO₂ emissions.⁶⁵ The credit also lasts for
19 12 years after the installation of the CCS. The CCS resource is not a set resource in DTE’s

⁶³ The NPV of the MNSC plan is \$17,722 million compared to \$17,559 mil NPV for DTE’s “REFRESH_CASE_6B_PHASE” plan.

⁶⁴ Manning Direct, p. 50, lines 15-19.

⁶⁵ 26 U.S.C. § 45Q(d)(2)(B)(ii).

1 plan but, instead, “merely a placeholder for some future dispatchable resource that the
2 Company will identify in future IRPs.”⁶⁶

3 In its modeling of both the PCA and the scenario in which Monroe 1 and 2 retire in 2032,
4 DTE assumes that the CCS would remove 98.5 percent of baseline carbon emissions from
5 the placeholder gas plant. As a result, more than [[REDACTED]] of CCS tax credit
6 revenues are reflected in DTE’s 2032 Monroe 1 and 2 retirement portfolio.⁶⁷ The savings
7 from retiring the last two Monroe units in 2032, relative to the MNSC plan, are largely
8 driven by a revenue estimate that is highly uncertain.

9 The Company has acknowledged that a CCGT with CCS is generally designed to capture
10 between 50 and 98.5 percent of the carbon that it would emit.⁶⁸ Given the magnitude of the
11 assumed tax credits, however, any plan that includes the CCS is highly sensitive to any
12 underperformance of carbon removal. For instance, the NPV of DTE’s 2032 plan would
13 increase by [[REDACTED]] if the same CCS plant only removed 75 percent instead of 98.5
14 percent of the baseline carbon emissions. If the same project only removed 50 percent, the
15 cost of the plan would increase by [[REDACTED]]. Either one of those cost increases
16 would easily trump the current savings of DTE 2032 plan over the MNSC plan. Put
17 differently, if the CCS plant removed only a slightly lower amount than currently assumed
18 [[REDACTED]] instead of 98.5 percent, it would still be more costly than the MNSC plan
19 because the costs of the DTE 2032 plan would increase by [[REDACTED]].

⁶⁶ Manning Direct, p. 50, lines 17-19.

⁶⁷ 108 NDA WP SDM 108-REFRESH_CASE_6B_BLR25_26GAS_MNR28_32, "REFRESH_CASE_6B_BLR25_26GAS_MNR28_32 -Resource Annual Emissions," credits discounted at DTE’s 6.79% rate annually to 2023.

⁶⁸ Direct Testimony of Laura K. Mikulan, p. 23, lines 7-8.

1 **Q. Would a natural gas combined cycle plant with CCS have other environmental**
2 **impacts not addressed by the CCS?**

3 A. Yes. While the Company refers to its natural gas combined cycle w/CCS plant as a
4 “placeholder” for a “low or zero carbon” resource, there would be significant upstream
5 emissions of methane, a potent greenhouse gas, from the extraction, production, and
6 transport of gas to feed such plant. In addition, CCS does not reduce the nitrogen oxides,
7 particulate matter, or other conventional pollutants that are released by the combustion of
8 natural gas in power plants.

9 **Q. Does the MNSC plan include the natural gas w/CCS plant assumed in DTE’s 2032**
10 **Monroe 1 and 2 retirement scenario?**

11 A. No. Given that the natural gas w/CCS plant is a mere “placeholder” that DTE considers to
12 be still emerging, the potential for significantly lower tax revenues than DTE assumed, and
13 the other climate and environmental impacts such a plant would have, the MNSC plan does
14 not incorporate the natural gas w/CCS technology. Instead, the MNSC plan relies on well-
15 established solar and storage technology that, as discussed above, could replace Monroe
16 Units 1 and 2 in 2032, save ratepayers money, and lead to lower climate impacts than
17 DTE’s PCA.

18 **V. DTE SHOULD PERFORM A SUPPLEMENTAL PEAKER ANALYSIS FOR**
19 **THOSE PEAKERS LOCATED IN ENVIRONMENTAL JUSTICE**
20 **COMMUNITIES**

21 **Q. Please briefly describe DTE’s Peaker Analysis.**

22 A. DTE owns and operates 82 peaking units, which include 46 diesel units, 10 oil units, 10
23 small gas turbines, and 16 large gas turbines that collectively provide 1,998 MW of

1 capacity.⁶⁹ Per the Commission’s February 20, 2020 Order in Case No. U-20471, the
2 Company was required to conduct a peaker analysis that looks at “increased capital and
3 O&M costs” and includes “an analysis of a solar plus storage alternative for replacing the
4 oldest and least reliable units.”⁷⁰ As Company witness Morren explained, this peaker
5 analysis “evaluated whether to continue operations or retire the peaking units,” and
6 considered three main factors: economics, resource adequacy, and grid reliability.⁷¹ For
7 the economic portion of this analysis, the Company looked at the Levelized Cost of
8 Capacity to retire versus retain.⁷² The Company also looked at O&M and capital
9 expenditures of the selected plants.⁷³ The Company’s consideration of reliability issues
10 included a review of transmission and distribution system impacts.⁷⁴

11 **Q. What is DTE recommending as a result of its Peaker Analysis?**

12 A. The Company is recommending further studies for the peakers that it has identified for
13 potential retirement in 2024. These include peakers at the River Rouge, St. Clair, and Fermi

⁶⁹ Morren Direct, p. 30.

⁷⁰ Case No. U-20471, Feb. 20, 2020 Order, p. 40 (citing Proposal for Decision, p. 121).

⁷¹ Morren Direct, p. 31.

⁷² Goyanes Direct, p. 22.

⁷³ Morren Direct, p. 31.

⁷⁴ Morren Direct, p. 31.

1 sites.⁷⁵ These proposed retirements were not included as part of the Company's PCA⁷⁶ and
2 are non-binding. Below, I discuss several considerations that the Company should take for
3 both its current and future peaker analyses.

4 **Q. Did DTE evaluate each of its peaker units for potential retirement?**

5 A. No. The Company declined to look at its newer, larger gas turbine peaking units as a part
6 of its analysis.⁷⁷ This includes the Belle River, Dean, Delray, Greenwood, and Renaissance
7 peakers.⁷⁸

8 **Q. Did the Peaker Analysis consider health or other environmental justice impacts of**
9 **DTE's peakers?**

10 A. No. Separately, DTE ran an environmental justice screen ("EJ SCREEN") of its fossil-
11 fueled generating units. That screening, which is described by DTE witness Marietta,
12 identified peaking facilities near vulnerable communities. But the peaker analysis did not
13 consider potential environmental impacts. As I stated above, and as the Company states

⁷⁵ Company Response to Staff 2.10d ("The Company plans to retire Northeast 11-1 peaker on May 31, 2023, and River Rouge 11, St Clair 12, Fermi 11-3, and Fermi 11-4 peakers on May 31, 2024, pending the confirmation that the retirements do not cause issues. Retirement dates for the peakers retiring with upgrades have not been identified and will depend on further evaluations and time required to implement solutions."); Morren Direct, p. 32. The Northeast 11-1 peaker is something of a special case: that unit suffered a major failure in 2019 and is being retired this year. Morren Direct Testimony at p. 34; Exhibit A-3.1, p. 60.

⁷⁶ Mikulan Direct, p. 119 ("Several peakers are being evaluated by MISO for potential future retirement but the Company did not include them in the PCA since the evaluation is on-going at the time of this filing.").

⁷⁷ Morren Direct, p. 31 ("The Company's large gas turbine peakers are newer, have lower energy and fuel costs, and are expected to continue to run through the study period. For these reasons, they were not included in this analysis.").

⁷⁸ *Id.*, fn 4.

1 throughout its testimony, the main factors they looked at for retirement were economics,
2 resource adequacy, and grid reliability.⁷⁹

3 **Q. What were the results of DTE’s EJ SCREEN?**

4 A. The Company identified four different peaking facilities that were located within a three-
5 mile radius of vulnerable communities within or surpassing the 80th percentile of the
6 environmental justice categories shown below in Table 1:⁸⁰

7 **Table 1: DTE’s Environmental Index Analysis**

Environmental Index	Delray Peakers	Northeast Peakers	River Rouge Power Plant	Superior Peakers
PM2.5	95	89	94	81
Ozone	94	89	93	81
2017 Diesel PM	96	91	95	82
2017 Air Toxics Cancer Risk	95	90	95	81
2017 Air Toxics Respiratory HI	95	89	94	81
Traffic Proximity	96	91	94	82
Lead Paint	96	92	95	78
Superfund Proximity	91	89	92	78
RMP Facility Proximity	98	97	99	77
Hazardous Waste Proximity	98	93	97	89
Underground Storage Tanks	97	94	96	85
Wastewater Discharge	96	71	96	94

8

⁷⁹ Morren Direct, p. 31.

⁸⁰ Direct Testimony of Barry J. Marietta, p. 31; Workpaper BJM-2.

1 As shown above, and as the Company acknowledges, the Superior, Northeast, Delray, and
2 River Rouge units met these criteria.

3 **Q. Are all the peakers identified as being located near vulnerable communities included**
4 **in DTE’s peaker retirement analysis?**

5 A. No. Delray is one of the peaking facilities the Company has identified as being located
6 within a three-mile radius of vulnerable communities, but was not included in the
7 Company’s peaker study as it is one of the newer, larger gas turbines. The Company also
8 confirmed that it is not planning on assessing Delray as one of its 2023 studies.⁸¹

9 **Q. Is DTE guaranteeing retirement of the peakers identified in its recommendations for**
10 **potential retirement?**

11 A. No. While the Company has identified River Rouge, St. Clair, and Fermi units for potential
12 retirement, and has filed a preliminary non-binding reliability study (Attachment Y-2)
13 request with MISO to study potential impacts of retirement, a formal Attachment Y request
14 for retirement has not been filed yet.⁸² In addition, the Company did not include any of
15 these potential retirements in its PCA, and has not committed to retiring these identified
16 units given pending results from the MISO studies.⁸³

⁸¹ Company Response to MNSCDE-6.4ai.

⁸² Company Response to STDE-2.10c and Attachment U-21193 STDE 2-10c Final DTE Peaker Units Att Y-2 Study Report – Confidential CEII Redacted.

⁸³ Mikulan Direct, p. 119 (“Several peakers are being evaluated by MISO for potential future retirement but the Company did not include them in the PCA since the evaluation is on-going at the time of this filing.”).

1 **Q. Did DTE mention its EJ SCREEN anywhere in its peaker retirement**
2 **recommendations?**

3 A. The Company has failed to show that it factored its EJ SCREEN in its decision not to
4 evaluate the Delray peakers. The Company also did not show how the EJ SCREEN was
5 considered in its proposal to retain Superior and all but one of the Northeast peaker units.
6 Indeed, when DTE was asked in discovery if the results of its environmental justice
7 analysis factored into the Company’s decisions regarding Delray, Northeast, and Superior,
8 the Company acknowledged that those results did not influence its decisions.⁸⁴

9 In identifying the River Rouge peakers for further evaluation and possible 2024 retirement,
10 Witness Morren claims the decision was made “based on the results of the economic
11 analysis, impact to the distribution system, and results of the environmental justice analysis
12 as described by Witness Marietta.”⁸⁵ However, this is the *only* mention of the peaker
13 analysis being influenced by environmental justice concerns, and the Company did not
14 include any evidence or description of how exactly the factors were weighed together. The
15 Company’s inconsistency in describing the factors used in its peaker analysis highlights
16 that DTE is picking where to use its EJ SCREEN, and not using it as a consideration for
17 all of its peaker facilities.

18 **Q. What is your recommendation regarding the River Rouge peakers?**

19 A. Given the Company’s own economic and environmental analyses, I recommend that the
20 Commission urge DTE to retire its River Rouge peaking units.

⁸⁴ Ex MEC-18, Company Responses to MNSCDE-3.6a to -3.7cii.

⁸⁵ Morren Direct, p. 33.

1 **Q. Do you have a recommendation regarding the other peakers located in vulnerable**
2 **communities?**

3 A. Yes. Given that the Company did not use the results of its EJ SCREEN as one of its factors
4 for determining peaker retirement recommendations, the Commission should require DTE
5 to conduct a supplemental analysis that reassesses whether to retire its identified
6 Environmental Justice peakers in part due to their impacts on vulnerable communities. The
7 Company has already identified these peakers. They should go a step further and use the
8 results of its EJ SCREEN as an additional consideration for retirement. This supplemental
9 analysis could include a section that analyzes the magnitude of environmental harms on
10 vulnerable communities, looking at how often the peakers run, the types and amount of
11 pollution emitted, etc. And once the Company has assessed these impacts and developed
12 initial findings, the Company should be encouraged to share those findings with the
13 affected communities for their input and engagement.

14 Additionally, because DTE has acknowledged that Northeast, Delray, and Superior are
15 potentially impacting vulnerable communities, this supplemental analysis could also
16 consider mitigation measures that may reduce the impacts of peakers that cannot yet be
17 retired. This suggested supplemental analysis could ultimately be filed in a future rate case
18 or DTE's next IRP.

1 **VI. CONCLUSION AND RECOMMENDATIONS**

2 **Q. What do you recommend to the Commission?**

3 A. For the reasons explained above I recommend that the Commission

- 4 • Recommend that the Company alter the PCA by including the retirement of
5 Monroe units 1 and 2 to 2032 instead of 2035, and (b) building or procuring
6 renewable and storage replacement resources in anticipation of that retirement.
- 7 • Recommend that the Company retire the River Rouge peakers based on the
8 evidence put forth by DTE on their economics and impact on local community;
9 and that the Company study the environmental impact of other peakers and use
10 those results as a factor in determining retirement.

11 **Q. Does this conclude your testimony?**

12 A. Yes.

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Applied Economics Clinic, Arlington, MA. Senior Researcher, June 2017 – Present.

Provides technical expertise on electric utility regulation, energy markets, and energy policy. Clients are primarily public service organizations working on topics related to the environment, consumer rights, the energy sector, and community equity.

Synapse Energy Economics Inc., Cambridge, MA. Senior Associate, July 2014 – June 2017, Associate, July 2011 – July 2014.

Provided expert testimony and reports on energy system planning, coal plant economics and economic impacts. Performed benefit-cost analyses and research on energy and environmental issues.

Ideas42, Boston, MA. Senior Associate, 2010 – 2011.

Organized studies analyzing behavior of consumers regarding finances, working with top researchers in behavioral economics. Managed studies of mortgage default mitigation and case studies of financial innovations in developing countries.

Economic Development Research Group Inc., Boston, MA. Research Analyst, Economic Consultant, 2005 – 2010.

Performed economic impact modeling and benefit-cost analyses using IMPLAN and REMI for transportation and renewable energy projects, including support for Federal stimulus applications. Developed a unique web-tool for the National Academy of Sciences on linkages between economic development and transportation.

Harmon Law Offices, LLC., Newton, MA. Billing Coordinator, Accounting Liaison, 2002 – 2005.

Allocated IOLTA and Escrow funds, performed bank reconciliation and accounts receivable. Projected legal fees and costs.

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EDUCATION

Tufts University, Medford, MA

Master of Arts in Economics, 2007

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PAPERS AND REPORTS

Castigliero, J.R., T. Comings, S. Alisalad, and E.A. Stanton. 2021. *Background Report: Benefits of Coal Ash Cleanup and Remediation*. Applied Economics Clinic. Prepared for Earthjustice. [\[Online\]](#)

Woods, B., E. A. Stanton, T. Comings, and E. Tavares. 2019. *Emission Reduction Synergies for Massachusetts Community Choice Energy Programs, Heat Pumps and Electric Vehicles*. Applied Economics Clinic. Prepared for Green Energy Consumers Alliance. [\[Online\]](#)

Lopez, R., T. Comings, E.A. Stanton, and E. Tavares. 2019. *Home Heat Pumps in Massachusetts*. Applied Economics Clinic. Prepared for Green Energy Consumers Alliance. [\[Online\]](#)

Comings, T., B. Woods, and M. Majumder. 2019. *Updated Costs of Community Choice Energy Aggregation in Boston*. Applied Economics Clinic. Prepared for Barr Foundation. [\[Online\]](#)

Comings, T., R. Lopez, and B. Woods. 2018. *A Critique of an Industry Analysis on Claimed Economic Benefits of Offshore Drilling in the Atlantic*. Applied Economics Clinic. Prepared for the Southern Environmental Law Center. [\[Online\]](#)

Stanton, E.A., and T. Comings. 2018. *Massachusetts Clean Energy Bill Provisions Boost Jobs and Strengthen the State's Economy*. Applied Economics Clinic. Prepared for Barr Foundation. [\[Online\]](#)

Stanton, E.A., T. Comings, R. Wilson, S. Alisalad, E.N Marzan, C. Schlegel, B. Woods, J. Gifford, E. Snook, and P. Yuen. 2018. *An Analysis of the Massachusetts 2018 'Act to Promote a Clean Energy Future' Report*. Applied Economics Clinic. Prepared for Barr Foundation. [\[Online\]](#)

Comings, T., E.A. Stanton, and B. Woods. 2018. *The ABCs of Boston CCE*. Applied Economics Clinic. Prepared for Barr Foundation. [\[Online\]](#)

Stanton, E.A., T. Comings, and A. Sommer. 2018. *The Husker Energy Plan: A New Energy Plan for Nebraska*. Applied Economics Clinic. Prepared for the Nebraska Wildlife Foundation. [\[Online\]](#)

- Comings, T. and B. Woods. 2017. *The Future of the Martin Drake Power Plant*. Applied Economics Clinic. Prepared for Green Cities Coalition and Southeastern Colorado Renewable Energy Society. [\[Online\]](#)
- Wilson, R., T. Comings, and E.A. Stanton. 2017. *Ratepayer Impacts of ConEd's 20-Year Shipping Agreement on the Mountain Valley Pipeline*. Applied Economics Clinic. Prepared for the Environmental Defense Fund. [\[Online\]](#)
- Knight, P., A. Horowitz, P. Luckow, T. Comings, J. Gifford, P. Yuen, E. Snook, and J. Shoesmith. 2017. *An Analysis of the Massachusetts Renewable Portfolio Standard*. Synapse Energy Economics and Sustainable Energy Advantage. Prepared for NECEC in Partnership with Mass Energy. [\[Online\]](#)
- Knight, P., S. Fields, F. Ackerman, T. Comings, and A. Allison. 2017. *Empowering Kentucky*. Synapse Energy Economics. Prepared for Kentuckians for the Commonwealth. [\[Online\]](#)
- Comings, T. and A. Allison. 2017. *More Mileage for Your Money: Fuel Economy Increases While Vehicle Prices Remain Stable*. Synapse Energy Economics. Prepared for Consumers Union. [\[Online\]](#)
- Cook, R., J. Koo, N. Veilleux, K. Takahashi, E. Malone, T. Comings, A. Allison, F. Barclay, and L. Beer. 2017. *Rhode Island Renewable Thermal Market Development Strategy*. Meister Consultants Group and Synapse Energy Economics. Prepared for Rhode Island Office of Energy Resources. [\[Online\]](#)
- Fisher, J., P. Luckow, A. Horowitz, T. Comings, A. Allison, E.A. Stanton, S. Jackson, and 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. [\[Online\]](#)
- White, D., P. Peterson, T. Comings, and S. Jackson. 2016. *Preliminary Valuation of TransCanada's Hydroelectric Assets*. Prepared for the State of Vermont. [\[Online\]](#)
- Comings, T., S. Jackson, and J. Fisher. 2016. *The Economic Case for Retiring North Valmy Generating Station*. Synapse Energy Economics. Prepared for Sierra Club. [\[Online\]](#)
- Comings, T., A. Allison, and F. Ackerman. 2016. *Higher Fuel Economy Standards Result in Big Savings for Consumers*. Synapse Energy Economics. Prepared for Consumers Union. [\[Online\]](#)
- Jackson, S., P. Luckow, E.A. Stanton, A. Horowitz, P. Peterson, T. Comings, J. Daniel, and T. Vitolo. 2016. *Reimagining Brayton Point: A Guide to Assessing Reuse Options for the Somerset Community*. Synapse Energy Economics. Prepared for Coalition for Clean Air South Coast, Clean Water Action, and Toxics Action Center. [\[Online\]](#)
- Stanton, E.A., P. Knight, A. Allison, T. Comings, A. Horowitz, W. Ong, N. R. Santen, and K. Takahashi. 2016. *The RGGI Opportunity 2.0: RGGI as the Electric Sector Compliance Tool to Achieve 2030 State Climate Targets*. Synapse Energy Economics. Prepared for Sierra Club, Pace Energy and Climate Center, and Chesapeake Climate Action Network. [\[Online\]](#)

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

Ackerman, F. and T. Comings. 2015. *Employment after Coal: Creating New Jobs in Eastern Kentucky*. Synapse Energy Economics. Prepared for the Mountain Association for Community Economic Development. [\[Online\]](#)

Vitolo, T., M. Chang, T. Comings, and A. Allison. 2015. *Economic Benefits of the Proposed Coolidge Solar I Solar Project*. Synapse Energy Economics. Prepared for Coolidge Solar I, LLC. [\[Online\]](#)

Wilson, R., T. Comings, and E.A. Stanton. 2015. *Analysis of the Tongue River Railroad Draft Environmental Impact Statement*. Synapse Energy Economics. Prepared for Sierra Club and Earthjustice. [\[Online\]](#)

Synapse Energy Economics, Labor Network for Sustainability, and 350.org. 2015. *The Clean Energy Future: Protecting the Climate, Creating Jobs, and Saving Money*. [\[Online\]](#)

Fisher, J., T. Comings, F. Ackerman, and S. Jackson. 2015. *Clearing Up the Smog: Debunking Industry Claims that We Can't Afford Healthy Air*. Synapse Energy Economics. Prepared for Earthjustice. [\[Online\]](#)

Stanton, E. A., T. Comings, S. Jackson, and E. Karaca. 2015. *Atlantic Coast Pipeline Benefits Review*. Synapse Energy Economics. Prepared for Southern Environmental Law Center. [\[Online\]](#)

Takahashi, K., T. Comings, and A. Napoleon. 2014. *Maximizing Public Benefit through Energy Efficiency Investments*. Synapse Energy Economics. Prepared for Sierra Club. [\[Online\]](#)

Comings, T., S. Fields, K. Takahashi, and G. Keith. 2014. *Employment Effects of Clean Energy Investments in Montana*. Synapse Energy Economics. Prepared for Montana Environmental Information Center and Sierra Club. [\[Online\]](#)

Comings, T., J. Daniel, P. Knight, and T. Vitolo. 2014. *Air Emission and Economic Impacts of Retiring the Shawnee Fossil Plant*. Synapse Energy Economics. Prepared for the Kentucky Environmental Foundation. [\[Online\]](#)

Comings, T., K. Takahashi, and G. Keith. 2013. *Employment Effects of Investing in Select Electricity Resources in Washington State*. Synapse Energy Economics. Prepared for Sierra Club. [\[Online\]](#)

Stanton, E. A., T. Comings, K. Takahashi, P. Knight, T. Vitolo, and E. Hausman. 2013. *Economic Impacts of the NRDC Carbon Standard*. Synapse Energy Economics. Prepared for Natural Resources Defense Council (NRDC). [\[Online\]](#)

Ackerman, F., T. Comings, and P. Luckow. 2013. *A Review of Consumer Benefits from a Corporate Average Fuel Economy (CAFE) Standards*. Synapse Energy Economics. Prepared for Consumer Union. [\[Online\]](#)

Comings, T., P. Knight, and E. Hausman. 2013. *Midwest Generation's Illinois Coal Plants: Too Expensive to Compete? (Report Update)*. Synapse Energy Economics. Prepared for Sierra Club. [\[Online\]](#)

- Stanton, E. A., F. Ackerman, T. Comings, P. Knight, T. Vitolo, and E. Hausman. 2013. *Will LNG Exports Benefit the United States Economy?* Synapse Energy Economics. Prepared for Sierra Club. [\[Online\]](#)
- Keith, G., S. Jackson, A. Napoleon, T. Comings, and J. Ramey. 2012. *The Hidden Costs of Electricity: Comparing the Hidden Costs of Power Generation Fuels*. Synapse Energy Economics. Prepared for Civil Society Institute. [\[Online\]](#)
- Vitolo, T., G. Keith, B. Biewald, T. Comings, E. Hausman, and P. Knight. 2013. *Meeting Load with a Resource Mix Beyond Business as Usual: A regional examination of the hourly system operations and reliability implications for the United States electric power system with coal phased out and high penetrations of efficiency and renewable generating resources*. Synapse Energy Economics. Prepared for Civil Society Institute. [\[Online\]](#)
- Fagan, R., M. Chang, P. Knight, M. Schultz, T. Comings, E. Hausman, and R. Wilson. 2012. *The Potential Rate Effects of Wind Energy and Transmission in the Midwest ISO Region*. Synapse Energy Economics. Prepared for Energy Future Coalition. [\[Online\]](#)
- Bower, S., S. Huntington, T. Comings, and W. Poor. 2012. *Economic Impacts of Efficiency Spending in Vermont: Creating an Efficient Economy and Jobs for the Future*. Optimal Energy, Synapse Energy Economics, and Vermont Department of Public Service. Prepared for American Council for an Energy-Efficient Economy (ACEEE). [\[Online\]](#)
- Comings, T. and E. Hausman. 2012. *Midwest Generation's Illinois Coal Plants: Too Expensive to Compete?*. Synapse Energy Economics. Prepared for Sierra Club. [\[Online\]](#)
- Wolf, T., J. Kallay, E. Malone, T. Comings, M. Schultz, and J. Conyers. 2012. *Commercial & Industrial Customer Perspectives on Massachusetts Energy Efficiency Programs*. Synapse Energy Economics. Prepared for Massachusetts Energy Efficiency Advisory Council. [\[Online\]](#)
- Hornby, R., D. White, T. Vitolo, T. Comings, and K. Takahashi. 2012. *Potential Impacts of a Renewable and Energy Efficiency Portfolio Standard in Kentucky*. Synapse Energy Economics. Prepared for Mountain Association for Community Economic Development and the Kentucky Sustainable Energy Alliance. [\[Online\]](#)
- Hausman, E., T. Comings, and G. Keith. 2012. *Maximizing Benefits: Recommendations for Meeting Long-Term Demand for Standard Offer Service in Maryland*. Synapse Energy Economics. Prepared for Sierra Club. [\[Online\]](#)
- Tantia, P., M. Dimova, T. Comings, and K. Davis. 2012. *Budget Finance Company: A Loan Modification Case Study*. [\[Online\]](#)
- Keith, G., B. Biewald, E. Hausman, K. Takahashi, T. Vitolo, T. Comings, and P. Knight. 2011. *Toward a Sustainable Future for the U.S. Power Sector: Beyond Business as Usual 2011*. Synapse Energy Economics. Prepared for Civil Society Institute. [\[Online\]](#)
- Hausman, E., T. Comings, K. Takahashi, R. Wilson, W. Steinhurst, N. Hughes, and G. Keith. 2011. *Electricity Scenario Analysis for the Vermont Comprehensive Energy Plan 2011*. Synapse Energy Economics. Prepared for the Vermont Department of Public Service. [\[Online\]](#)
- Steinhurst, W. and T. Comings. 2011. *Economic Impacts of Energy Efficiency Investments in Vermont*. Synapse Energy Economics. Prepared for the Vermont Department of Public Service. [\[Online\]](#)

- Datta, S., P. Tantia, and T. Comings. 2011. *WING Mobile Payments: A Product Design Case Study*. Ideas42. Prepared for International Finance Corporation. [\[Online\]](#)
- Tantia, P. and T. Comings. 2011. *Kilimo Salama – Index-based Agriculture Insurance: A Product Design Case Study*. Ideas42. Prepared for International Finance Corporation. [\[Online\]](#)
- Tantia, P. and T. Comings. 2011. *Emergency Hand Loan: A Product Design Case Study*. Ideas42. Prepared for International Finance Corporation. [\[Online\]](#)
- Tantia, P. and T. Comings. 2011. *Commitment Savings Accounts in Malawi: A Product Design Case Study*. Ideas42. Prepared for International Finance Corporation. [\[Online\]](#)
- Petraglia, L. and T. Comings, and G. Weisbrod. 2010. *Economic Development Impacts of Energy Efficiency and Renewable Energy in Wisconsin*. Economic Development Research Group and PA Consulting Group. Prepared for Wisconsin Department of Administration. [\[Online\]](#)
- Economic Development Research Group. 2010. *The Economic Impact of Atlanta Hartsfield-Jackson International Airport*. Prepared for City of Atlanta. [\[Online\]](#)
- Economic Development Research Group. 2009. *Economic Assessment of Proposed Brockton Power Facility*. Prepared for Brockton Power Company. [\[Online\]](#)
- Economic Development Research Group and KEMA NV. 2009. *Economic Benefits of Connecticut's Clean Energy Program*. Prepared for the Connecticut Clean Energy Fund. [\[Online\]](#)
- Howland, J., D. Murrow, L. Petraglia, and T. Comings. 2009. *Energy Efficiency: Engine of Economic Growth in Eastern Canada*. Economic Development Research Group and Environment Northeast. [\[Online\]](#)
- Economic Development Research Group and KEMA NV. 2008. *New York Renewable Portfolio Standard: Economic Benefits Report*. Prepared for New York State Energy Research and Development (NYSERDA). [\[Online\]](#)
- Colledge Transportation Consulting and Economic Development Research Group. 2008. *Northwest Corridor Trade and Manufacturing Strategy*. Prepared for Northern Development Initiative Trust and Canadian Manufacturers & Exporters. [\[Online\]](#)
- Weisbrod, G. and T. Comings. 2008. *The Economic Role of the Gateway Transportation System in the Greater Vancouver Region*. Prepared for Greater Vancouver Gateway Council. [\[Online\]](#)
- Cambridge Systematics and Economic Development Research Group. 2008. *Economic Impact Study of Completing the Appalachian Development Highway System*. Prepared for Appalachian Regional Commission. [\[Online\]](#)
- Lynch, T., T. Comings, and G. Weisbrod. 2007. *Spatial Geography: Effects of Population Base and Airport Access*. Prepared for Appalachian Regional Commission. [\[Online\]](#)
- BizMiner and Economic Development Research Group. 2007. *Program Evaluation of the Appalachian Regional Commission's Infrastructure and Public Works Projects*. Prepared for Appalachian Regional Commission. [\[Online\]](#)
- Mead & Hunt and Economic Development Research Group. 2007. *Oregon Aviation Plan 2007*. Prepared for Oregon Department of Aviation. [\[Online\]](#)

Economic Development Research Group. 2007. *The Economic Impact of Philadelphia Convention Center*. Prepared for Pew Charitable Trusts. [\[Online\]](#)

Economic Development Research Group. 2006. *Environmental Impacts of Massachusetts Turnpike and Central Artery/Tunnel Projects*. Prepared for the Massachusetts Turnpike Authority. [\[Online\]](#)

TESTIMONY AND EXPERT COMMENTS

Comings, T. 2023. *Testimony on Ameren Missouri Rate Case*. Testimony to Missouri Public Service Commission on behalf of Sierra Club. File No. ER-2022-0337. [\[Online\]](#)

Comings, T. 2022. *Testimony on Indiana Michigan Power IRP*. Testimony to Michigan Public Service Commission on behalf of Sierra Club. Docket No. U-21189. [\[Online\]](#)

Comings, T., and Castigliego, J.R. (with Sierra Club). 2022. *Evergy Kansas IRP Comments*. Comments to State Corporate Commission for the State of Kansas on behalf of the Sierra Club, Docket No. 19-KCPE-096-CPL. [\[Online\]](#)

Comings, T. 2022. *Entergy Louisiana IRP Comments*. Comments to the Louisiana Public Service Commission on behalf of Sierra Club, Docket No. I-36181. [\[Online\]](#)

Comings, T. 2022. *Testimony on Consumers IRP in Michigan*. Testimony to the Michigan Public Service Commission on behalf of Michigan Environmental Council, Natural Resources Defense Council, and Sierra Club, MPSC Case No. U-21090. [\[Online\]](#)

Comings, T., and J.R. Castigliego. 2022. *Minnesota Power IRP Comments*. Comments on Minnesota Power's IRP on behalf of Fresh Energy, Clean Grid Alliance, Minnesota Center for Environmental Advocacy, and Sierra Club. [\[Online\]](#)

Comings, T. 2022. *Testimony on Detroit Edison 2022 Rate Case in Michigan*. Testimony to Michigan Public Service Commission on behalf of Michigan Environmental Council, Natural Resources Defense Council, Sierra Club and Citizens Utility Board of Michigan, Case No. U-20836. [\[Online\]](#)

Comings, T. (with Sierra Club). 2022. *Comments on Entergy Louisiana's Integrated Resource Plan*. Comments to the Louisiana Public Service Commission on behalf of Sierra Club, Docket No. I-36181. [\[Online\]](#)

Comings, T., and J.R. Castigliego. 2022. *Comments on Evergy Missouri's Integrated Resource Plan*. Applied Economics Clinic. Comments to Missouri Public Service Commission on behalf of Sierra Club, File Nos. EO-2022-0201 and EO-2022-0202. [\[Online\]](#)

Comings, T. 2022. *Cost of Capital and Asset Return for Workers' Compensation Insurance in Massachusetts*. Applied Economics Clinic. Advisory Filing prepared for the State Review Board (SRB) of the Massachusetts Division of Insurance, Docket No. R2021-02.

Comings, T. 2021. *Testimony on Consumers Energy 2021 Integrated Resource Plan in Michigan*. Testimony to Michigan Public Service Commission on behalf of Michigan Environmental Council, Natural Resources Defense Council, and Sierra Club, Case No. U-21090. [\[Online\]](#)

- Comings, T. 2021. *Testimony on Xcel Colorado's Energy Resource Plan*. Applied Economics Clinic. Prepared for Sierra Club and NRDC, Proceeding No. 21A-0141E. [\[Online\]](#)
- Comings, T., and J.R. Castigliero. 2021. *Comments on Evergy Missouri's Integrated Resource Plan*. Applied Economics Clinic. Comments to Missouri Public Service Commission on behalf of Sierra Club, File Nos. EO-2021-0035 and EO-2021-0036. [\[Online\]](#)
- Comings, T. 2021. *Testimony on Consumers Energy 2021 rate case in Michigan*. Testimony to Michigan Public Service Commission on behalf of Michigan Environmental Council, Natural Resources Defense Council, Sierra Club, and Citizens Utility Board of Michigan, Case No. U-20963. [\[Online\]](#)
- Comings, T., J.R. Castigliero, S. Alisalad, E. Tavares (with Sierra Club). 2021. *Comments on Ameren Missouri's 2020 Integrated Resource Plan*. Comments to the Missouri Public Service Commission on behalf of Sierra Club, File No. EO-2021-0021. [\[Online\]](#)
- Comings, T, R. Wilson, M. Goggin, and Sierra Club. 2021. *Comments on Xcel Energy IRP in Minnesota*. Comments to the Minnesota Public Utilities Commission on behalf of Sierra Club, Docket No. E002/RP-19-368. [\[Online\]](#)
- Comings, T. 2020. *Testimony on Harrison and Fort Martin Coal Units in West Virginia*. Testimony to West Virginia Public Service Commission on behalf of Earthjustice, Case No. 20-0665-E-ENEC. [\[Online\]](#)
- Comings, T. 2020. *Testimony on Four Corners Coal Units in Arizona*. Testimony to Arizona Corporation Commission on behalf of Sierra Club, File No. E-01345A-19-0236. [\[Online\]](#)
- Comings, T. 2020. *Testimony on the Prudence of Fuel Costs of the Evergy Missouri Coal Fleet*. Testimony to Public Service Commission of the State of Missouri on behalf of Sierra Club, File Nos. EO-2020-0262 and EO-2020-0263. [\[Online\]](#)
- Comings, T. 2020. *Testimony on Consumers Energy's 2020 Rate Case*. Testimony to the Michigan Public Service Commission on behalf of Michigan Environmental Council, Natural Resources Defense Council, Sierra Club and Citizens Utility Board of Michigan, Case No. U-20697. [\[Online\]](#)
- Comings, T. 2020. *Comments on Evergy's 2020 Integrated Resource Plan*. Comments to the Public Service Commission of the State of Missouri, File No. EO-2020-0280 EO-2020-0281. [\[Online\]](#)
- Comings, T. 2020. *Cost of Capital and Asset Return for Workers' Compensation Insurance in Massachusetts*. Applied Economics Clinic. Advisory Filing prepared for the State Review Board (SRB) of the Massachusetts Division of Insurance, Docket No. R2019-01.
- Comings, T. 2020. *Comments on Ameren Missouri Integrated Resource Plan*. Comments to Ameren Missouri on behalf of Sierra Club. [\[Online\]](#)
- Comings, T. 2020. *Testimony on Indiana Michigan Power Company's Integrated Resource Plan*. Testimony to the Michigan Public Service Commission on behalf of Sierra Club, Case No. U-20591. [\[Online\]](#)
- Comings, T. 2019. *Testimony on the Public Service Company of New Mexico's (PNM) Plan for Replacing the San Juan Coal Units*. Testimony to the New Mexico Public Regulation Commission on behalf of Coalition for Clean Affordable Energy (CCAЕ). Case No. 19-00195-UT. [\[Online\]](#)

- Comings, T. 2019. *Testimony on Duke Energy Indiana's Coal Fleet*. Testimony to the Indiana Utility Regulatory Commission on behalf of Sierra Club, Cause No. 45253. [\[Online\]](#)
- Comings, T. 2019. *Testimony on Sooner Coal Plant Scrubbers*. Testimony to the Oklahoma Corporation Commission on behalf of Sierra Club, Cause No. PUD 201800140. [\[Online\]](#)
- Sierra Club, assisted by Comings, T., B. Woods, R. Lopez, and E. Tavares. 2019. *Comments on Southwestern Electric Power Company's Draft 2019 Integrated Resource Plan*. Comments to the Louisiana Public Service Commission on behalf of Sierra Club, Docket No. I-34715. [\[Online\]](#)
- Sierra Club, assisted by Comings, T., B. Woods, R. Lopez, and E. Tavares. 2019. *Comments on Cleco Power's Draft 2019 Integrated Resource Plan*. Comments to the Louisiana Public Service Commission on behalf of Sierra Club, Docket No. I-34693. [\[Online\]](#)
- Sierra Club, assisted by Comings, T., E.A. Stanton, and E. Tavares. 2019. *Comments on Xcel Energy Minnesota's 2018 Mankato Proposal*. [\[Online\]](#)
- Comings, T., B. Woods, E.A. Stanton, and E. Tavares. 2019. *Review of Duke Energy's North Carolina Coal Fleet in the 2018 Integrated Resource Plans*. Applied Economics Clinic. Prepared for Southern Environmental Law Center. [\[Online\]](#)
- Comings, T. 2018. *Testimony on Consumers Energy Integrated Resource Plan (IRP)*. Testimony to Michigan Public Service Commission, Case No. U-20165. [\[Online\]](#)
- Comings, T. 2018. *Testimony on the Economics of Karn Coal Units in Michigan*. Testimony to Michigan Public Service Commission, Case No. U-20134. [\[Online\]](#)
- Comings, T. 2018. *Testimony on Vectren's Proposed Natural Gas Plant and Coal Retrofits*. Testimony to the Indiana Utility Regulatory Commission, Cause No. 45052. [\[Online\]](#)
- Comings, T. 2018. *Testimony on Stranded Costs of Public Service Company of Colorado's Comanche 1 & 2 Coal Units*. Testimony to the Public Utilities Commission of Colorado, Proceeding No. 17A-0797E. [\[Online\]](#)
- Comings, T. 2017. *Testimony on the economic impact analysis of the proposed merger between AltaGas and WGL Holdings*. Testimony to the District of Columbia Public Service Commission, Formal Case No. 1142. [\[Online\]](#)
- Comings, T. 2017. *Testimony on the economics of the proposed acquisition of the Pleasants plant*. Testimony to the West Virginia Public Service Commission, Case No. 17-0296-E-PC. [\[Online\]](#)
- Fagan, B. and T. Comings. 2017. *Joint testimony regarding the economic analysis of the Maritime Link Project*. Testimony to the Nova Scotia Utility and Review Board, Matter No. 07718. [\[Online\]](#)
- Comings, T., A. Horowitz, and K. Takahashi. 2017. *Comments on Portland General Electric's 2016 Integrated Resource Plan*. Comments filed with the Oregon Public Utility Commission, Docket LC 66. [\[Online\]](#)

- Comings, T. 2016. *Testimony regarding Dayton Power & Light's proposed Distribution Modernization Rider and the value of the Company's coal fleet*. Testimony to the Ohio Public Utilities Commission, Cases No. 16-0395-EL-SSO, 16-396-EL-ATA, and 16-397-EL-AAM. [\[Online\]](#)
- Comings, T. 2016. *Testimony evaluating the economics of Oklahoma Gas & Electric's application to install dry scrubbers at the Sooner generating facility*. Testimony to the Oklahoma Corporation Commission, Cause No. PUD 201600059. [\[Online\]](#)
- Comings, T. and A. Horowitz. 2016. *Comments on Portland General Electric's Draft 2016 Integrated Resource Plan*. Comments filed with the Oregon Public Utility Commission, Docket LC 66. [\[Online\]](#)
- Comings, T. 2015. *Testimony on the economic impacts of the proposed merger of NextEra Corporation and Hawaiian Electric Companies (HECO)*. Testimony to the Hawaii Public Utilities Commission, Docket No. 2015-0022. [\[Online\]](#)
- Daniel, J., A. Napoleon, T. Comings, and S. Fields. 2015. *Comments on Entergy Louisiana's 2015 Integrated Resource Plan*. Synapse Energy Economics. Prepared for Sierra Club. [\[Online\]](#)
- Comings, T., S. Jackson, and K. Takahashi. 2015. *Comments on Indianapolis Power & Light Company's 2014 Integrated Resource Plan*. Synapse Energy Economics. Prepared for Sierra Club. [\[Online\]](#)
- Comings, T. 2014. *Testimony evaluating the assumptions and analysis used by FirstEnergy Ohio in support of its application for approval of an electric security plan and related Retail Rate Stability Rider*. Testimony to the Ohio Public Utilities Commission, Case No. 14-1297-EL-SSO. [\[Online\]](#)
- Comings, T. 2014. *Testimony evaluating the assumptions in the analysis supporting Oklahoma Gas & Electric's request for authorization and cost recovery of a Clean Air Act compliance plan and Mustang modernization*. Testimony to the Oklahoma Corporation Commission, Cause No. PUD 201400229. [\[Online\]](#)
- Comings, T. 2014. *Testimony on the economic impact analysis filed by Exelon Corporation and Pepco Holdings, Inc. in their joint petition for the merger of the two entities*. Testimony to the Maryland Public Service Commission, Case No. 9361. [\[Online\]](#)
- Comings, T. 2014. *Testimony on the economic impact analysis filed by Exelon Corporation and Pepco Holdings, Inc. in their joint petition for the merger of the two entities*. Testimony to the State of New Jersey Board of Public Utilities, Docket No. EM14060581. [\[Online\]](#)
- Comings, T. 2014. *Testimony on the economic impact analysis filed by Exelon Corporation and Pepco Holdings, Inc. in their joint petition for the merger of the two entities*. Testimony to the District of Columbia Public Service Commission, Formal Case No. 1119. [\[Online\]](#)
- Daniel, J., T. Comings, and J. Fisher. 2014. *Comments on Preliminary Assumptions for Cleco's 2014/2015 Integrated Resource Plan*. Synapse Energy Economics. Prepared for Sierra Club. [\[Online\]](#)
- Fisher, J., T. Comings, and D. Schlissel. 2014. *Comments on Duke Energy Indiana's 2013 Integrated Resource Plan*. Synapse Energy Economics and Schlissel Consulting. Prepared for Mullet & Associates, Citizens Action Coalition of Indiana, Earthjustice and Sierra Club. [\[Online\]](#)



Comings, T. 2013. *Testimony regarding East Kentucky Power Cooperative's Application for Cooper Station Retrofit and Environmental Surcharge Cost Recovery*. Testimony to the Kentucky Public Service Commission, Case No. 2013-00259. November 27, 2013 and December 27, 2013. [\[Online\]](#)

Comings, T. 2013. *Testimony in the Matter of Indianapolis Power & Light Company's Application for a Certificate of Public Convenience and Necessity for the Construction of a Combined Cycle Gas Turbine Generation Facility*. Testimony to the Indiana Utility Regulatory Commission, Cause No. 44339. [\[Online\]](#)

Hornby, R. and T. Comings. 2012. *Comments on Draft 2012 Integrated Resource Plan for Connecticut*. Synapse Energy Economics. Prepared for AARP. [\[Online\]](#)

Resume dated January 2023

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-9.3a

Respondent: J. Morren

Page: 1 of 1

- Question:** 3. Refer to the “Summary” tab of Morren workpaper “WP JLM 04 - Monroe O&M and Capital Forecast for 2022 IRP,” which projects an environmental capital spend of: \$667 million if Monroe 1&2 retire in 2030, \$669 million if those units retire in 2032, and \$672 million if those units retire in 2035.
- a. Please provide a detailed explanation for DTE’s belief that the environmental capital costs for these three retirement dates would vary by only \$5 million.

Answer: The same work would be completed in all cases. The cost difference is associated with inflation due to the timing of the closure work. The \$5 million increase in projected expenditures associated with a 2035 retirement versus a 2030 retirement is due to the varied closure dates of Sibley Quarry and the Monroe vertical extension landfill.

Attachment: None.

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-9.4a

Respondent: B Marietta

Page: 1 of 1

Question: 4. Refer to the “Summary” tab of Morren workpaper “WP JLM 04 - Monroe O&M and Capital Forecast for 2022 IRP.”

- a. Has the Company done an assessment of the potential for emission controls for PM that could be needed at Monroe, such as fabric filters?

Answer: Based on current environmental regulations and the existing emissions controls installed at Monroe Power Plant, no additional emissions controls are expected to be required.

Attachment: None

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-9.4ai

Respondent: B. Marietta

Page: 1 of 1

- Question:** 4. Refer to the “Summary” tab of Morren workpaper “WP JLM 04 - Monroe O&M and Capital Forecast for 2022 IRP.”
- a. Has the Company done an assessment of the potential for emission controls for PM that could be needed at Monroe, such as fabric filters?
 - i. If so, please produce any studies, reports, workpapers, or other documents related to such evaluation.

Answer: See response to MNSCDE-9.4a.

Attachment: None

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-9.4a

Respondent: B. Marietta

Page: 1 of 1

- Question:** 4. Refer to the “Summary” tab of Morren workpaper “WP JLM 04 - Monroe O&M and Capital Forecast for 2022 IRP.”
- a. Has the Company done an assessment of the potential for emission controls for PM that could be needed at Monroe, such as fabric filters?
 - ii. If so, please provide the most recent estimates of PM control costs at Monroe units, including costs for each retirement scenario, and the assumed compliance date.

Answer: See response to MNSCDE-9.4a.

Attachment: None

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-9.4aiii

Respondent: B. Marietta

Page: 1 of 1

Question: 4. Refer to the “Summary” tab of Morren workpaper “WP JLM 04 - Monroe O&M and Capital Forecast for 2022 IRP.”

a. Has the Company done an assessment of the potential for emission controls for PM that could be needed at Monroe, such as fabric filters?

iii. If not, please explain why the Company has not evaluated this.

Answer: See response to MNSCDE-9.4a.

Attachment: None

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-9.4b

Respondent: B. Marietta

Page: 1 of 1

Question: 4. Refer to the “Summary” tab of Morren workpaper “WP JLM 04 - Monroe O&M and Capital Forecast for 2022 IRP.”

b. Has the Company done an assessment of the potential for emission controls related to future updates to Regional Haze compliance?

Answer: Based on current environmental regulations and the existing emissions controls installed at Monroe Power Plant, no additional emissions controls are expected to be required. The impact of future environmental regulations will be assessed should regulations be promulgated.

Attachment: None

Co-Respondent(s): J. Morren

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-9.4bi

Respondent: B. Marietta

Page: 1 of 1

Question: 4. Refer to the “Summary” tab of Morren workpaper “WP JLM 04 - Monroe O&M and Capital Forecast for 2022 IRP.”

b. Has the Company done an assessment of the potential for emission controls related to future updates to Regional Haze compliance?

i. If so, please produce any studies, reports, workpapers, or other documents related to such evaluation.

Answer: See MNSCDE-9.4b.

Attachment: None

Co-Respondent(s): J. Morren

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-9.4bii

Respondent: B. Marietta

Page: 1 of 1

Question: 4. Refer to the “Summary” tab of Morren workpaper “WP JLM 04 - Monroe O&M and Capital Forecast for 2022 IRP.”

b. Has the Company done an assessment of the potential for emission controls related to future updates to Regional Haze compliance?

ii. If so, please provide the most recent estimates of these control costs at Monroe units, including costs for each retirement scenario, and the assumed compliance date.

Answer: See response to MNSCDE-9.4b.

Attachment: None

Co-Respondent(s): J. Morren

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-9.4biii

Respondent: B. Marietta

Page: 1 of 1

Question: 4. Refer to the “Summary” tab of Morren workpaper “WP JLM 04 - Monroe O&M and Capital Forecast for 2022 IRP.”

b. Has the Company done an assessment of the potential for emission controls related to future updates to Regional Haze compliance?

iii. If not, please explain why the Company has not evaluated this.
ny has not evaluated this.

Answer: See response to MNSCDE-9.4b.

Attachment: None

Co-Respondent(s): J. Morren

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-9.4c

Respondent: B. Marietta

Page: 1 of 1

Question: 4. Refer to the “Summary” tab of Morren workpaper “WP JLM 04 - Monroe O&M and Capital Forecast for 2022 IRP.”

c. Has the Company done an assessment of the potential for emission controls related to future updates to ozone national ambient air quality standards (NAAQS)?

Answer: See response to MNSCDE-9.4b.

Attachment: None

Co-Respondent(s): J. Morren

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-9.4ci

Respondent: B. Marietta

Page: 1 of 1

Question: 4. Refer to the “Summary” tab of Morren workpaper “WP JLM 04 - Monroe O&M and Capital Forecast for 2022 IRP.”

- c. Has the Company done an assessment of the potential for emission controls related to future updates to ozone national ambient air quality standards (NAAQS)?
- i. If so, please produce any studies, reports, workpapers, or other documents related to such evaluation.

Answer: See response to MNSCDE-9.4c.

Attachment: None

Co-Respondent(s): J. Morren

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-9.4cii

Respondent: B. Marietta

Page: 1 of 1

Question: 4. Refer to the “Summary” tab of Morren workpaper “WP JLM 04 - Monroe O&M and Capital Forecast for 2022 IRP.”

- c. Has the Company done an assessment of the potential for emission controls related to future updates to ozone national ambient air quality standards (NAAQS)?
- ii. If so, please provide the most recent estimates of these control costs at Monroe units, including costs for each retirement scenario, and the assumed compliance date.

Answer: See response to MNSCDE-9.4c.

Attachment: None

Co-Respondent(s): J. Morren

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-9.4ciii

Respondent: B. Marietta

Page: 1 of 1

Question: 4. Refer to the “Summary” tab of Morren workpaper “WP JLM 04 - Monroe O&M and Capital Forecast for 2022 IRP.”

c. Has the Company done an assessment of the potential for emission controls related to future updates to ozone national ambient air quality standards (NAAQS)?

iii. If not, please explain why the Company has not evaluated this.

Answer: See response to MNSCDE-9.4c.

Attachment: None

Co-Respondent(s): J. Morren

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-3.6a

Respondent: J. Morren

Page: 1 of 1

Question: Refer to page 31, lines 4-5 of Mr. Morren's testimony, which indicates that the Delray peaker was not included in the Company's peaker analysis. Were the results of the environmental justice analysis factored into the Company's decision to exclude Delray from the peaker analysis?

a. If so, please describe in detail how the environmental justice results were considered in this decision, and produce any documents reflecting such consideration.

Answer: While the Delray peakers were identified as having at least one environmental index at or above the 80th percentile within a 3-mile radius of the facility based on the environmental justice analysis performed by Witness Marietta using the EPA Environmental Justice Screening and Mapping Tool version 2.0, within a 3-mile radius of the facility, the decision to exclude Delray from the peaker retirement analysis was based on the Delray peakers being large gas-fired turbine peakers that are newer, have low energy and fuel costs, and are expected to continue to run through the study period to continue to support reliability and resource adequacy.

Attachment: None.

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-3.6b

Respondent: J. Morren

Page: 1 of 1

Question: Refer to page 31, lines 4-5 of Mr. Morren's testimony, which indicates that the Delray peaker was not included in the Company's peaker analysis. Were the results of the environmental justice analysis factored into the Company's decision to exclude Delray from the peaker analysis?

b. If not, please explain why these results were not considered.

Answer: Please see discovery response MNSCDE-3.6a.

Attachment: None.

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-3.7a

Respondent: J. Morren

Page: 1 of 1

Question: Refer to page 29, line 12 through page 35, line 9 of Witness Morren’s direct testimony, which discusses the Company’s peaker analysis, and further refer to Witness Cejas Goyanes Exhibit A-4.5.

a. Did the Company use the results of its environmental justice analysis in deciding to retain the Northeast 12 and 13 peakers?

Answer: The environmental justice analysis was performed by Witness Marietta using the EPA Environmental Justice Screening and Mapping Tool version 2.0. While the Company recognizes that the Northeast peakers were identified as having at least one environmental index at or above the 80th percentile within a 3-mile radius of the facility, please see Q&A 55 in my direct testimony. The recommendation to retain Northeast 12 and 13 peakers was based on the economic analysis provided by Witness Cejas Goyanes and grid reliability analysis provided by Witness Musonera.

Attachment: None.

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-3.7ai

Respondent: J. Morren

Page: 1 of 1

Question: Refer to page 29, line 12 through page 35, line 9 of Witness Morren’s direct testimony, which discusses the Company’s peaker analysis, and further refer to Witness Cejas Goyanes Exhibit A-4.5.

a. Did the Company use the results of its environmental justice analysis in deciding to retain the Northeast 12 and 13 peakers?

i. If the environmental justice results were used, please explain how, and produce any documents reflecting the Company’s incorporation of the environmental justice results in its decision regarding Northeast 12 and 13.

Answer: Please see discovery response MNSCDE-3.7a.

Attachment: None.

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-3.7a ii

Respondent: J. Morren

Page: 1 of 1

Question: Refer to page 29, line 12 through page 35, line 9 of Witness Morren's direct testimony, which discusses the Company's peaker analysis, and further refer to Witness Cejas Goyanes Exhibit A-4.5.

- a. Did the Company use the results of its environmental justice analysis in deciding to retain the Northeast 12 and 13 peakers?
- ii. If the environmental justice results were not considered in this retention decision, please explain why not

Answer: Please see discovery response MNSCDE-3.7a.

Attachment: None.

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-3.7b

Respondent: J. Morren

Page: 1 of 1

Question: Refer to page 29, line 12 through page 35, line 9 of Witness Morren’s direct testimony, which discusses the Company’s peaker analysis, and further refer to Witness Cejas Goyanes Exhibit A-4.5.

b. Did the Company use the results of its environmental justice analysis in deciding to retain the Northeast 11-2, 11-3, and 11-4 peakers?

Answer: The environmental justice analysis was performed by Witness Marietta using the EPA Environmental Justice Screening and Mapping Tool version 2.0. While the Company recognizes that the Northeast peakers were identified as having at least one environmental index at or above the 80th percentile within a 3-mile radius of the facility, please see Q&A 55 in my direct testimony. The decision to retain Northeast 11-2, 11-3, and 11-4 was based on the economic analysis provided by Witness Cejas Goyanes and grid reliability analysis provided by Witness Musonera.

Attachment: None.

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-3.7bi

Respondent: J. Morren

Page: 1 of 1

Question: Refer to page 29, line 12 through page 35, line 9 of Witness Morren’s direct testimony, which discusses the Company’s peaker analysis, and further refer to Witness Cejas Goyanes Exhibit A-4.5.

b. Did the Company use the results of its environmental justice analysis in deciding to retain the Northeast 11-2, 11-3, and 11-4 peakers?

i. If those results were used, please explain how, and produce any documents reflecting the Company’s incorporation of the environmental justice results into its decision regarding Northeast 11-2, 11-3, and 11-4.

Answer: Please refer to the discovery response in MNSCDE-3.7b.

Attachment: None.

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-3.7bii

Respondent: J. Morren

Page: 1 of 1

Question: Refer to page 29, line 12 through page 35, line 9 of Witness Morren’s direct testimony, which discusses the Company’s peaker analysis, and further refer to Witness Cejas Goyanes Exhibit A-4.5.

b. Did the Company use the results of its environmental justice analysis in deciding to retain the Northeast 11-2, 11-3, and 11-4 peakers?

ii. If the environmental justice results were not considered in this retention decision, please explain why not.

Answer: Please refer to the discovery response in MNSCDE-3.7b.

Attachment: None.

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-3.7c

Respondent: J. Morren

Page: 1 of 1

Question: Refer to page 29, line 12 through page 35, line 9 of Witness Morren's direct testimony, which discusses the Company's peaker analysis, and further refer to Witness Cejas Goyanes Exhibit A-4.5.

c. Did the Company use the results of its environmental justice analysis in deciding to retain the Superior 11 peakers?

Answer: The environmental justice analysis was performed by Witness Marietta using the EPA Environmental Justice Screening and Mapping Tool version 2.0. While the Company recognizes that the Superior peakers were identified as having at least one environmental index at or above the 80th percentile within a 3-mile radius of the facility, please see Q&A 55 in my direct testimony. The decision to retain Superior 11 peakers was based on the economic analysis provided by Witness Cejas Goyanes and grid reliability analysis provided by Witness Musonera.

Attachment: None.

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-3.7ci

Respondent: J. Morren

Page: 1 of 1

Question: Refer to page 29, line 12 through page 35, line 9 of Witness Morren's direct testimony, which discusses the Company's peaker analysis, and further refer to Witness Cejas Goyanes Exhibit A-4.5.

c. Did the Company use the results of its environmental justice analysis in deciding to retain the Superior 11 peakers?

i. If those results were used, please explain how, and produce any documents reflecting the Company's incorporation of the environmental justice results into its decision regarding Superior 11.

Answer: Please see discovery response MNSCDE-3.7c.

Attachment: None.

MPSC Case No: U-21193

Requester: MNSC

Question No.: MNSCDE-3.7cii

Respondent: J. Morren

Page: 1 of 1

Question: Refer to page 29, line 12 through page 35, line 9 of Witness Morren's direct testimony, which discusses the Company's peaker analysis, and further refer to Witness Cejas Goyanes Exhibit A-4.5.

c. Did the Company use the results of its environmental justice analysis in deciding to retain the Superior 11 peakers?

ii. If the environmental justice results were not considered in this retention decision, please explain why not.

Answer: Please refer to the discovery response in MNSCDE-3.7c.

Attachment: None.

PERMIT NO. MI0001848



STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

**AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM**

In compliance with the provisions of the Federal Water Pollution Control Act (33 U.S.C. 1251 *et seq.*, as amended; the "Federal Act"); Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); Part 41, Sewerage Systems, of the NREPA; and Michigan Executive Order 2019-06,

DTE Electric Company

One Energy Plaza
Room 655 G.O.
Detroit, Michigan 48226

is authorized to discharge from the **Monroe Power Plant** located at

3500 East Front Street
Monroe, Michigan 48161

designated as **DTE-Monroe Pit**

to the receiving water named Lake Erie in accordance with effluent limitations, monitoring requirements, and other conditions set forth in this permit.

This permit is based on an application received on April 9, 2014, completed on January 20, 2015, and amended through October 13, 2021.

This permit takes effect on December 1, 2022. The provisions of this permit are severable. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term in accordance with applicable laws and rules. On its effective date this permit shall supersede NPDES Permit No. MI0001848, expiring October 1, 2014.

This permit and the authorization to discharge shall expire at midnight on **October 1, 2025**. In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit an application which contains such information, forms, and fees as are required by the Department of Environment, Great Lakes, and Energy (Department) by **April 4, 2025**.

Issued: November 30, 2022.

Original signed by Christine Alexander
Christine Alexander, Manager
Permits Section
Water Resources Division

PERMIT NO. MI0001848

Page 2 of 56

PERMIT FEE REQUIREMENTS

In accordance with Section 324.3120 of the NREPA, the permittee shall make payment of an annual permit fee to the Department for each October 1 the permit is in effect regardless of occurrence of discharge. The permittee shall submit the fee in response to the Department's annual notice. Payment may be made electronically via the Department's MiWaters system. The MiWaters website is located at <https://miwaters.deq.state.mi.us>. Payment shall be submitted or postmarked by January 15 for notices mailed by December 1. Payment shall be submitted or postmarked no later than 45 days after receiving the notice for notices mailed after December 1.

Annual Permit Fee Classification: Industrial-Commercial Major

In accordance with Section 324.3118 of the NREPA, the permittee shall make payment of an annual storm water fee to the Department for each January 1 the permit is in effect regardless of occurrence of discharge. The permittee shall submit the fee in response to the Department's annual notice. Payment may be made electronically via the Department's MiWaters system. The MiWaters website is located at <https://miwaters.deq.state.mi.us>. Payment shall be submitted or postmarked by March 15 for notices mailed by February 1. Payment shall be submitted or postmarked no later than 45 days after receiving the notice for notices mailed after February 1.

CONTACT INFORMATION

Unless specified otherwise, all contact with the Department required by this permit shall be made to the Jackson District Supervisor of the Water Resources Division. The Jackson District Office is located at 301 East Louis Glick Highway, Jackson, Michigan 49201-1556, Telephone: 517-780-7690, Fax: 517-780-7855.

CONTESTED CASE INFORMATION

Any person who is aggrieved by this permit may file a sworn petition with the Michigan Administrative Hearing System within the Michigan Department of Licensing and Regulatory Affairs, c/o the Michigan Department of Environment, Great Lakes, and Energy, setting forth the conditions of the permit which are being challenged and specifying the grounds for the challenge. The Department of Licensing and Regulatory Affairs may reject any petition filed more than 60 days after issuance as being untimely.

PART I

Section A. Limitations and Monitoring Requirements

1. Final Effluent Limitations, Monitoring Point 001A

During the period beginning on the effective date of this permit and lasting until December 31, 2023 (see Part I.A.17.), the permittee is authorized to discharge a maximum of 1,978 MGD of noncontact cooling water, treated bottom ash transport water, treated fly ash transport water, treated coal pile runoff, treated chemical and nonchemical metal cleaning wastes, low volume wastewater, treated flue gas desulfurization wastewater, treated flue gas desulfurization pre-treatment system backwash, and dredging dewatering water, and an unspecified amount of storm water from Monitoring Point 001A through Outfall 001.

During the period beginning on January 1, 2024 (see Part I.A.17.), and lasting until the expiration date of this permit, the permittee is authorized to discharge a maximum of 1,978 MGD of noncontact cooling water, treated bottom ash transport water, treated previously generated fly ash transport water, treated coal pile runoff, treated chemical and nonchemical metal cleaning wastes, low volume wastewater, treated flue gas desulfurization wastewater, treated flue gas desulfurization pre-treatment system backwash, and dredging dewatering water, and an unspecified amount of storm water from Monitoring Point 001A through Outfall 001.

Outfall 001 discharges to Lake Erie at Latitude 41.87500, Longitude -83.35000. Such discharge shall be limited and monitored by the permittee as specified below.

<u>Parameter</u>	<u>Maximum Limits for Quantity or Loading</u>			<u>Maximum Limits for Quality or Concentration</u>			<u>Monitoring Frequency</u>	<u>Sample Type</u>
	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>		
Flow	(report)	(report)	MGD	---	---	---	Daily	Report Total Daily Flow
Outfall Observation	(report)	---	---	---	---	---	Daily	Visual
Total Copper	---	---	---	---	(report)	ug/l	Quarterly	Grab
Total Mercury								
Corrected	(report)	(report)	lbs/day	(report)	(report)	ng/l	Monthly	Calculation
Uncorrected	---	---	---	---	(report)	ng/l	Monthly	Grab
Field Duplicate	---	---	---	---	(report)	ng/l	Monthly	Grab
Field Blank	---	---	---	---	(report)	ng/l	Monthly	Preparation
Laboratory Method Blank	---	---	---	---	(report)	ng/l	Monthly	Preparation
	<u>12-Month Rolling Average</u>			<u>12-Month Rolling Average</u>				
Total Mercury	0.099	---	lbs/day	6.0	---	ng/l	Monthly	Calculation
				<u>Daily Average</u>				
Temperature								
Intake	---	---	---	(report)	(report)	°F	Daily	Continuous
Discharge	---	---	---	(report)	(report)	°F	Daily	Continuous
Outlet to Lake Erie								
Through November 30, 2027	---	---	---	---	(report)	°F	See h. below	Reading
Beginning December 1, 2027	---	---	---	---	94	°F	See h. below	Reading

PART I

Section A. Limitations and Monitoring Requirements

<u>Parameter</u>	<u>Maximum Limits for Quantity or Loading</u>			<u>Maximum Limits for Quality or Concentration</u>			<u>Monitoring Frequency</u>	<u>Sample Type</u>
	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>		
Thermal Discharge	---	15,500	MBTU/Hr	---	---	---	Daily	Calculation
				Minimum Daily				
pH	---	---	---	6.5	9.0	S.U.	Weekly	Grab
Dechlorination Reagent	---	(report)	lbs/day	---	---	---	Daily	Calculation
Total Residual Chlorine (TRC)	---	---	---	---	38	ug/l	5x Weekly	Grab

- a. **Narrative Standard**
 The receiving water shall contain no turbidity, color, oil films, floating solids, foams, settleable solids, suspended solids, or deposits as a result of this discharge in unnatural quantities which are or may become injurious to any designated use.
- b. **Monitoring Location**
 Samples, measurements, and observations taken in compliance with the effluent monitoring requirements above shall be taken at the head of the of the power plant's canal system where the discharge enters the canal, except for pH and total mercury. The samples for pH and total mercury shall be taken prior to discharge to Lake Erie. The sample for intake temperature shall be taken before the intake water enters the power plant.
- c. **Outfall Observation**
 Outfall observation shall be reported as "yes" or "no." The permittee shall report "yes" if this requirement was completed and "no" if this requirement was not completed. Any unusual characteristics of the discharge (i.e., unnatural turbidity, color, oil film, floating solids, foams, settleable solids, suspended solids, or deposits) shall be reported within 24 hours to the Department followed with a written report within five (5) days detailing the findings of the investigation and the steps taken to correct the condition.
- d. **Quarterly Monitoring**
 Quarterly samples shall be taken during the months of January, April, July, and October. If the facility does not discharge during these months, the permittee shall sample the next discharge occurring during that quarter. If the facility does not discharge during a quarter, a sample is not required for that quarter. For any month in which a sample is not taken, the permittee shall enter "*G" on the Discharge Monitoring Report.
- e. **Total Residual Chlorine Requirements**
 Total Residual Chlorine (TRC) shall be analyzed in accordance with Part II.B.2. of this permit. TRC monitoring is only required during periods of chlorine use and subsequent discharge. Upon written approval from the Department, the permittee may use a dechlorinating reagent as a water treatment additive, including but not limited to sodium thiosulfate, sodium bisulfite, and sodium sulfite, to achieve applicable TRC limitations. Requests for such approval shall be submitted in accordance with Part I.A.13. of this permit. The quantity of the reagent(s) used shall be limited to 0.6 times the stoichiometric amount of TRC for sodium thiosulfate, 1.5 times the stoichiometric amount of TRC for sodium bisulfite, and 1.8 times the stoichiometric amount of TRC for sodium sulfite. TRC samples taken to determine the amount of each reagent to add shall be taken upstream of dechlorination. For purposes of compliance with TRC monitoring requirements, a week shall be defined as Monday through Sunday.

PART I

Section A. Limitations and Monitoring Requirements

f. Final Effluent Limitation for Total Mercury

The final limit for total mercury is the Discharge Specific Level Currently Achievable (LCA) based on a multiple discharger variance from the WQBEL of 1.3 ng/l, pursuant to Rule 1103(9) of the Water Quality Standards. Compliance with the LCA shall be determined as a 12-month rolling average, the calculation of which may be done using blank-corrected sample results. The 12-month rolling average shall be determined by adding the present monthly average result to the preceding 11 monthly average results then dividing the sum by 12. For facilities with quarterly monitoring requirements for total mercury, quarterly monitoring shall be equivalent to three (3) months of monitoring in calculating the 12-month rolling average. Facilities that monitor more frequently than monthly for total mercury must determine the monthly average result, which is the sum of the results of all data obtained in a given month divided by the total number of samples taken, in order to calculate the 12-month rolling average. If the 12-month rolling average for any quarter is less than or equal to the LCA, the permittee will be considered to be in compliance for total mercury for that quarter, provided the permittee is also in full compliance with the Pollutant Minimization Program for Total Mercury, set forth in Part I.A.14. of this permit.

After a minimum of 10 quarterly data points have been collected, the permittee may request a reduction in the monitoring frequency for total mercury. This request shall contain an explanation as to why the reduced monitoring is appropriate and shall be submitted to the Department. Upon receipt of written approval and consistent with such approval, the permittee may reduce the monitoring frequency for total mercury indicated in Part I.A.1. of this permit. The monitoring frequency shall not be reduced to less than annually. The Department may revoke the approval for reduced monitoring at any time upon notification to the permittee.

g. Total Mercury Testing and Additional Reporting Requirements

The analytical protocol for total mercury shall be in accordance with EPA Method 1631, Revision E, "Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry," EPA-821-R-02-019, August 2002. The quantification level for total mercury shall be 0.5 ng/l, unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination.

The use of clean technique sampling procedures is required unless the permittee can demonstrate to the Department that an alternative sampling procedure is representative of the discharge. Guidance for clean technique sampling is contained in EPA Method 1669, "Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels," EPA-821-R96-001, July 1996. Information and data documenting the permittee's sampling and analytical protocols and data acceptability shall be submitted to the Department upon request.

In order to demonstrate compliance with EPA Method 1631E and EPA Method 1669, the permittee shall report, on the daily sheet, the analytical results of all field blanks and field duplicates collected in conjunction with each sampling event, as well as laboratory method blanks when used for blank correction. The permittee shall collect at least one (1) field blank and at least one (1) field duplicate per sampling event. If more than ten (10) samples are collected during a sampling event, the permittee shall collect at least one (1) additional field blank AND field duplicate for every ten (10) samples collected. Only field blanks or laboratory method blanks may be used to calculate a concentration lower than the actual sample analytical results (i.e. a blank correction). Only one (1) blank (field OR laboratory method) may be used for blank correction of a given sample result, and only if the blank meets the quality control acceptance criteria. If blank correction is not performed on a given sample analytical result, the permittee shall report under 'Total Mercury – Corrected' the same value reported under 'Total Mercury – Uncorrected.' The field duplicate is for quality control purposes only; its analytical result shall not be averaged with the sample result.

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Section A. Limitations and Monitoring Requirements

- h. **Temperature Monitoring at Outlet to Lake Erie**
When the daily maximum effluent temperature monitored as required under Part I.A.1. of this permit exceeds 94 °F, the permittee shall monitor the temperature of water, on a daily basis Mondays through Fridays during normal business hours, at the outlet to Lake Erie before it enters Lake Erie (at the same monitoring location as that used for monitoring pH). When this condition does not apply, the permittee shall enter “*G” on the Discharge Monitoring Report. If the permittee submits a 316(a) thermal demonstration update in accordance with Part I.A.19. of this permit, then following review of that submittal, the Department may modify the facility’s temperature requirements in accordance with applicable laws and rules.
- i. **Thermal Discharge Calculation**
Thermal discharge shall be determined using the following calculation: (flow rate in MGD) **multiplied by** (conversion factor of 8.34) **multiplied by** (daily average discharge temperature in °F **minus** daily average intake temperature in °F), **divided by** 24. The resulting value is the amount of thermal discharge in MBTU/hr.
- j. **Monitoring Frequency Reduction for Total Copper**
After the submittal of 12 months of data, the permittee may request, in writing, Department approval for a reduction in monitoring frequency for total copper. This request shall contain an explanation as to why the reduced monitoring is appropriate. Upon receipt of written approval and consistent with such approval, the permittee may reduce the monitoring frequency indicated in Part I.A.1. of this permit. The monitoring frequency for total copper shall not be reduced to less than 2x annually. The Department may revoke the approval for reduced monitoring at any time upon notification to the permittee.
- k. **Storm Water Pollution Prevention**
In addition to the requirements set forth in Part I.A.1. above, the storm water drainage area associated with monitoring point 001A shall be managed in accordance with Part I.B. – Storm Water Pollution Prevention, with the exception that the outfall observation requirement shall take the place of the visual assessment requirement.

PART I

Section A. Limitations and Monitoring Requirements

2. Final Effluent Limitations, Monitoring Point 001B

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge an unspecified amount of storm water impacted by residual process wastewater within an inactive coal combustion residual basin from Monitoring Point 001B through Monitoring Point 001A and Outfall 001. Outfall 001 discharges to Lake Erie. Such discharge shall be limited and monitored by the permittee as specified below.

<u>Parameter</u>	<u>Maximum Limits for Quantity or Loading</u>			<u>Maximum Limits for Quality or Concentration</u>			<u>Monitoring Frequency</u>	<u>Sample Type</u>
	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>		
Flow	(report)	(report)	MGD	---	---	---	Weekly	Report Total Daily Flow
Total Suspended Solids	---	---	---	30	100	mg/l	Weekly	Grab
Oil & Grease	---	---	---	15	20	mg/l	2x Monthly	Grab

- a. Monitoring Location
 Samples, measurements, and observations taken in compliance with the monitoring requirements above shall be taken at Monitoring Point 001B prior to discharge through Monitoring Point 001A.

3. Final Effluent Limitations, Monitoring Point 001D

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge a maximum of 1.5 MGD of low volume wastewater from Monitoring Point 001D through Monitoring Point 001A and Outfall 001. Outfall 001 discharges to Lake Erie. Such discharge shall be limited and monitored by the permittee as specified below.

<u>Parameter</u>	<u>Maximum Limits for Quantity or Loading</u>			<u>Maximum Limits for Quality or Concentration</u>			<u>Monitoring Frequency</u>	<u>Sample Type</u>
	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>		
Flow	(report)	(report)	MGD	---	---	---	Weekly	Report Total Daily Flow
Total Suspended Solids	---	---	---	30	100	mg/l	Weekly	Grab
Oil & Grease	---	---	---	15	20	mg/l	Monthly	Grab

- a. Monitoring Location
 Samples, measurements, and observations taken in compliance with the monitoring requirements above shall be taken at Monitoring Point 001D prior to discharge through Monitoring Point 001A.

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Section A. Limitations and Monitoring Requirements

4. Final Effluent Limitations, Monitoring Point 001F

During the period beginning on the effective date of this permit and lasting until December 31, 2023 (see Part I.A.17.), the permittee is authorized to discharge a maximum of 19.4 MGD of fly ash transport water and an unspecified amount of storm water from Monitoring Point 001F through Monitoring Point 001A and Outfall 001.

During the period beginning on January 1, 2024 (see Part I.A.17.), and lasting until the expiration date of this permit, the permittee is authorized to discharge 19.4 MGD of previously generated fly ash transport water and an unspecified amount of storm water from Monitoring point 001F through Monitoring Point 001A and Outfall 001.

Outfall 001 discharges to Lake Erie. Such discharge shall be limited and monitored by the permittee as specified below.

<u>Parameter</u>	<u>Maximum Limits for Quantity or Loading</u>			<u>Maximum Limits for Quality or Concentration</u>			<u>Monitoring Frequency</u>	<u>Sample Type</u>
	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>		
Flow	(report)	(report)	MGD	---	---	---	Weekly	Report Total Daily Flow
Total Suspended Solids	---	---	---	30	100	mg/l	Weekly	Grab
Oil & Grease	---	---	---	15	20	mg/l	2x Monthly	Grab

- a. **Monitoring Location**
 Samples, measurements, and observations taken in compliance with the monitoring requirements above shall be taken at Monitoring Point 001F prior to discharge through Monitoring Point 001A.

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Section A. Limitations and Monitoring Requirements

5. Final Effluent Limitations, Monitoring Point 001G

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge a maximum of 1 MGD of bottom ash transport water (BATW) and nonchemical metal cleaning wastewater from Monitoring Point 001G through Monitoring Point 001A and Outfall 001. Outfall 001 discharges to Lake Erie. Such discharge shall be limited and monitored by the permittee as specified below.

<u>Parameter</u>	<u>Maximum Limits for Quantity or Loading</u>			<u>Maximum Limits for Quality or Concentration</u>			<u>Monitoring Frequency</u>	<u>Sample Type</u>
	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>		
Flow	(report)	(report)	MGD	---	---	---	Weekly	Report Total Daily Flow
Total Suspended Solids	---	---	---	30	100	mg/l	Weekly	Grab
Oil & Grease	---	---	---	15	20	mg/l	2x Monthly	Grab
<u>Additional requirements that may take effect December 31, 2025</u>								
BATW Discharge (See b. below)								
BATW Volume	---	(report)	Million Gallons	---	---	---	Daily	Report Total Daily Volume
<u>30-Day Rolling Average</u>								
BATW Flow	---	(report)	MGD	---	---	---	Daily	Report Total Daily Flow
	TBD	(report)	Percent	---	---	---	Daily	Calculation

- a. **Monitoring Location**
 For all parameters except BATW flow, samples, measurements, and observations taken in compliance with the monitoring requirements above shall be taken at Monitoring Point 001G prior to discharge to Monitoring Point 001A. BATW flow measurements shall be taken of the BATW before it combines with any other waste stream.

- b. **Bottom Ash Transport Water Discharge Requirements**
 Unless the permittee will cease the combustion of coal in accordance with 40 CFR 423.19(f), beginning December 31, 2025, the discharge of pollutants in newly generated BATW from a properly installed, operated, and maintained bottom ash system will be authorized only in accordance with 40 CFR 423.13(k)(2). The total volume of newly generated BATW that may be discharged for the activities defined in 423.13(k)(2)(i)(A) shall be reduced or eliminated to the extent achievable using control measures (including best management practices) that are technologically available and economically achievable in light of best industry practice. The total volume of the discharge authorized shall be determined on a case-by-case basis by the Department and in no event shall such discharge exceed a 30-day rolling average of 10 percent of the primary active wetted bottom ash system volume. Prior to December 31, 2025, the Department will establish a 30-day rolling average effluent limitation for the percentage of the total volume of the primary active wetted bottom ash system wastewater permitted to be discharged from both Monitoring Point 001G and 001H. The Department will incorporate the effluent limitation, equipment observation requirements, additional flow monitoring, and best management practices requirements in this permit through either permit modification or reissuance prior to the December 31, 2025 compliance date.

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Section A. Limitations and Monitoring Requirements

If the permittee opts to cease the combustion of coal in accordance with 40 CFR 423.19(f), the BATW discharge requirements will not take effect on December 31, 2025, and the discharge of newly generated BATW can continue until the facility ceases coal burning activities on or before December 31, 2028, as specified in Part I.A.18., Schedule of Compliance for Cessation of Coal Burning Activities. The discharge of previously-generated BATW, generated prior to December 31, 2025 or December 31, 2028 depending on the compliance pathway selected, will continue to be authorized until the expiration date of this permit, which may be administratively extended through permit reapplication.

The permittee is prohibited from discharging BATW simultaneously from both Monitoring Point 001G and 001H.

c. 30-Day Rolling Average BATW Flow Calculations

If the 30-day rolling average effluent limitation for the percentage of the total volume of the primary active wetted BATW permitted to be discharged (to be determined at a later date following Department approval of site-specific requirements) is in effect beginning December 31, 2025, the permittee shall calculate the 30-day rolling average at this monitoring point by measuring the daily BATW discharge flow rate and the BATW system volume, calculating the daily percentage of discharge by dividing the BATW discharge flow rate by the BATW system volume, and adding the resulting present daily discharge percentage of BATW from this monitoring point to the sum of the preceding 29 such daily flow percentages, and dividing by 30.

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Section A. Limitations and Monitoring Requirements

6. Final Effluent Limitations, Monitoring Point 001H

During the period beginning on the effective date of this permit and lasting until December 31, 2023 (see Part I.A.17.), the permittee is authorized to discharge a maximum of 38.4 MGD of bottom ash transport water (BATW), fly ash transport water, coal pile runoff, chemical and nonchemical metal cleaning wastewater, low volume wastewater, treated flue gas desulfurization wastewater, flue gas desulfurization pre-treatment system backwash, dredging dewatering water, and storm water from Monitoring Point 001H through Monitoring Point 001A and Outfall 001.

During the period beginning on January 1, 2024 (see Part I.A.17.), and lasting until the expiration date of this permit, the permittee is authorized to discharge a maximum of 38.4 MGD of BATW, previously generated fly ash transport water, coal pile runoff, chemical and nonchemical metal cleaning wastewater, low volume wastewater, treated flue gas desulfurization wastewater, flue gas desulfurization pre-treatment system backwash, dredging dewatering water, and storm water from Monitoring Point 001H through Monitoring Point 001A and Outfall 001.

Outfall 001 discharges to Lake Erie. Such discharge shall be limited and monitored by the permittee as specified below.

<u>Parameter</u>	<u>Maximum Limits for Quantity or Loading</u>			<u>Maximum Limits for Quality or Concentration</u>			<u>Monitoring Frequency</u>	<u>Sample Type</u>
	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>		
Flow	(report)	(report)	MGD	---	---	---	Weekly	Report Total Daily Flow
Total Suspended Solids	---	---	---	30	100	mg/l	Weekly	Grab
Oil & Grease	---	---	---	15	20	mg/l	2x Monthly	Grab
Total Copper	---	---	---	---	1.0	mg/l	Daily Per Occurrence	Grab
Total Iron	---	---	---	---	1.0	mg/l	Daily Per Occurrence	Grab
Total Residual Chlorine (TRC)	---	---	---	---	(report)	ug/l	See c. below	Grab

Tier 1 Limits: If Part I.A.16.e.2) of this permit applies, then by December 31, 2025, the following additional limits apply:

Total Arsenic	---	---	---	8	18	ug/l	Weekly	Grab
Total Selenium	---	---	---	29	70	ug/l	Weekly	Grab
Nitrate/Nitrite as N	---	---	---	3	4	mg/l	Weekly	Grab
Total Mercury								
Corrected	---	---	---	34	103	ng/l	Monthly	Calculation
Uncorrected	---	---	---	---	(report)	ng/l	Monthly	Grab
Field Duplicate	---	---	---	---	(report)	ng/l	Monthly	Grab
Field Blank	---	---	---	---	(report)	ng/l	Monthly	Preparation
Laboratory Method Blank	---	---	---	---	(report)	ng/l	Monthly	Preparation

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Section A. Limitations and Monitoring Requirements

<u>Parameter</u>	<u>Maximum Limits for Quantity or Loading</u>			<u>Maximum Limits for Quality or Concentration</u>			<u>Monitoring Frequency</u>	<u>Sample Type</u>
	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>		
<u>Tier 2 Limits: If Part I.A.16.f.3) of this permit applies, then by December 31, 2028, the following additional limits apply:</u>								
Total Arsenic	---	---	---	---	5	ug/l	Weekly	Grab
Total Selenium	---	---	---	---	10	ug/l	Weekly	Grab
Nitrate/Nitrite as N	---	---	---	1.2	2.0	mg/l	Weekly	Grab
Bromide	---	---	---	---	0.2	mg/l	Weekly	Grab
Total Dissolved Solids	---	---	---	149	306	mg/l	Weekly	Grab
Total Mercury								
Corrected	---	---	---	10	23	ng/l	Monthly	Calculation
Uncorrected	---	---	---	---	(report)	ng/l	Monthly	Grab
Field Duplicate	---	---	---	---	(report)	ng/l	Monthly	Grab
Field Blank	---	---	---	---	(report)	ng/l	Monthly	Preparation
Laboratory Method Blank	---	---	---	---	(report)	ng/l	Monthly	Preparation

Additional requirements that may take effect December 31, 2025

BATW Discharge (See d. below)								
BATW Volume	---	(report)	Million Gallons	---	---	---	Daily	Report Total Daily Volume
	<u>30-Day Rolling Average</u>							
BATW Flow	---	(report)	MGD	---	---	---	Daily	Report Total Daily Flow
	TBD	(report)	Percent	---	---	---	Daily	Calculation

- a. **Monitoring Location**
 For all parameters except total copper, total iron, and BATW flow, samples, measurements, and observations taken in compliance with the monitoring requirements above shall be taken at Monitoring Point 001H prior to discharge to Monitoring Point 001A. Samples taken in compliance with the total copper and total iron monitoring requirements above shall be taken of the chemical metal cleaning wastewater before it combines with any other waste stream. BATW flow measurements shall be taken of the BATW before it combines with any other waste stream.
- b. **Monitoring for Total Copper and Total Iron**
 The effluent limitations and monitoring requirements for total copper and total iron apply only to the discharge of chemical metal cleaning wastewater. The permittee shall enter "G" on the Discharge Monitoring Report for total copper and total iron when chemical metal cleaning wastewater is not present.
- c. **Monitoring for Total Residual Chlorine (TRC)**
 Monitoring for TRC shall be conducted three (3) times weekly during periods of chlorine use within the low-pressure general service water system (see Part I.A.11. of this permit). TRC shall be analyzed in accordance with Part II.B.2. of this permit. For purposes of compliance with TRC monitoring requirements, a week shall be defined as Monday through Sunday.

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Section A. Limitations and Monitoring Requirements

d. Bottom Ash Transport Water Discharge Requirements

Unless the permittee will cease the combustion of coal in accordance with 40 CFR 423.19(f), beginning December 31, 2025, the discharge of pollutants in newly generated BATW from a properly installed, operated, and maintained bottom ash system will be authorized only in accordance with 40 CFR 423.13(k)(2). The total volume of newly generated BATW that may be discharged for the activities defined in 423.13(k)(2)(i)(A) shall be reduced or eliminated to the extent achievable using control measures (including best management practices) that are technologically available and economically achievable in light of best industry practice. The total volume of the discharge authorized shall be determined on a case-by-case basis by the Department and in no event shall such discharge exceed a 30-day rolling average of ten percent of the primary active wetted bottom ash system volume. Prior to December 31, 2025, the Department will establish a 30-day rolling average effluent limitation for the percentage of the total volume of the primary active wetted bottom ash system wastewater permitted to be discharged from both Monitoring Point 001G and 001H. The Department will incorporate the effluent limitation, equipment observation requirements, additional flow monitoring, and best management practices requirements in this permit through either permit modification or reissuance prior to the December 31, 2025 compliance date.

If the permittee opts to cease the combustion of coal in accordance with 40 CFR 423.19(f), the BATW discharge requirements will not take effect on December 31, 2025, and the discharge of newly generated BATW can continue until the facility ceases coal burning activities on or before December 31, 2028, as specified in Part I.A.18., Schedule of Compliance for Cessation of Coal Burning Activities. The discharge of previously-generated BATW, generated prior to December 31, 2025 or December 31, 2028 depending on the compliance pathway selected, will continue to be authorized until the expiration date of this permit, which may be administratively extended through permit reapplication.

The permittee is prohibited from discharging BATW simultaneously from both Monitoring Point 001G and 001H.

e. 30-Day Rolling Average BATW Flow Calculations

If the 30-day rolling average effluent limitation for the percentage of the total volume of the primary active wetted BATW permitted to be discharged (to be determined at a later date following Department approval of site-specific requirements) is in effect beginning December 31, 2025, the permittee shall calculate the 30-day rolling average at this monitoring point by measuring the daily BATW discharge flow rate and the BATW system volume, calculating the daily percentage of discharge by dividing the BATW discharge flow rate by the BATW system volume, and adding the resulting present daily discharge percentage of BATW from this monitoring point to the sum of the preceding 29 such daily flow percentages, and dividing by 30.

f. Total Mercury Testing and Additional Reporting Requirements

The analytical protocol for total mercury shall be in accordance with EPA Method 1631, Revision E, "Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry," EPA-821-R-02-019, August 2002. The quantification level for total mercury shall be 0.5 ng/l, unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination.

The use of clean technique sampling procedures is required unless the permittee can demonstrate to the Department that an alternative sampling procedure is representative of the discharge. Guidance for clean technique sampling is contained in EPA Method 1669, "Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels," EPA-821-R96-001, July 1996. Information and data documenting the permittee's sampling and analytical protocols and data acceptability shall be submitted to the Department upon request.

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Section A. Limitations and Monitoring Requirements

7. Final Effluent Limitations, Monitoring Point 001J

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge a maximum of 4.6 MGD of flue gas desulfurization wastewater and chemical and nonchemical metal cleaning wastewater from Monitoring Point 001J through Monitoring Point 001A and Outfall 001. Outfall 001 discharges to Lake Erie. Such discharge shall be limited and monitored by the permittee as specified below.

<u>Parameter</u>	<u>Maximum Limits for Quantity or Loading</u>			<u>Maximum Limits for Quality or Concentration</u>			<u>Monitoring Frequency</u>	<u>Sample Type</u>
	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>		
Flow	(report)	(report)	MGD	---	---	---	Weekly	Report Total Daily Flow
Total Suspended Solids	---	---	---	30	100	mg/l	Weekly	Grab
Oil & Grease	---	---	---	15	20	mg/l	2x Monthly	Grab
Total Copper	---	---	---	---	1.0	mg/l	Daily Per Occurrence	Grab
Total Iron	---	---	---	---	1.0	mg/l	Daily Per Occurrence	Grab

Tier 1: If Part I.A.16.e.2) of this permit applies, then by December 31, 2025, the following additional limits apply:

Total Arsenic	---	---	---	8	18	ug/l	Weekly	Grab
Total Selenium	---	---	---	29	70	ug/l	Weekly	Grab
Nitrate/Nitrite as N	---	---	---	3	4	mg/l	Weekly	Grab
Total Mercury								
Corrected	---	---	---	34	103	ng/l	Monthly	Calculation
Uncorrected	---	---	---	---	(report)	ng/l	Monthly	Grab
Field Duplicate	---	---	---	---	(report)	ng/l	Monthly	Grab
Field Blank	---	---	---	---	(report)	ng/l	Monthly	Preparation
Laboratory Method Blank	---	---	---	---	(report)	ng/l	Monthly	Preparation

Tier 2: If Part I.A.16.f.3) of this permit applies, then by December 31, 2028, the following additional limits apply:

Total Arsenic	---	---	---	---	5	ug/l	Weekly	Grab
Total Selenium	---	---	---	---	10	ug/l	Weekly	Grab
Nitrate/Nitrite as N	---	---	---	1.2	2.0	mg/l	Weekly	Grab
Bromide	---	---	---	---	0.2	mg/l	Weekly	Grab
Total Dissolved Solids	---	---	---	149	306	mg/l	Weekly	Grab
Total Mercury								
Corrected	---	---	---	10	23	ng/l	Monthly	Calculation
Uncorrected	---	---	---	---	(report)	ng/l	Monthly	Grab
Field Duplicate	---	---	---	---	(report)	ng/l	Monthly	Grab
Field Blank	---	---	---	---	(report)	ng/l	Monthly	Preparation
Laboratory Method Blank	---	---	---	---	(report)	ng/l	Monthly	Preparation

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- a. **Monitoring Location**
For all parameters except total copper and total iron, all samples, measurements, and observations taken in compliance with the monitoring requirements above shall be taken at Monitoring Point 001J prior to discharge to Monitoring Point 001A. Samples taken in compliance with the total copper and total iron monitoring requirements above shall be taken of the chemical metal cleaning wastewater before it combines with any other waste stream.
- b. **Monitoring for Total Copper and Total Iron**
The effluent limitations and monitoring requirements for total copper and total iron apply only to the discharge of chemical metal cleaning wastewater. The permittee shall enter "*G" on the Discharge Monitoring Report for total copper and total iron when chemical metal cleaning wastewater is not present.
- c. **Total Mercury Testing and Additional Reporting Requirements**
The analytical protocol for total mercury shall be in accordance with EPA Method 1631, Revision E, "Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry," EPA-821-R-02-019, August 2002. The quantification level for total mercury shall be 0.5 ng/l, unless a higher level is appropriate because of sample matrix interference. Justification for higher quantification levels shall be submitted to the Department within 30 days of such determination.

The use of clean technique sampling procedures is required unless the permittee can demonstrate to the Department that an alternative sampling procedure is representative of the discharge. Guidance for clean technique sampling is contained in EPA Method 1669, "Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels," EPA-821-R96-001, July 1996. Information and data documenting the permittee's sampling and analytical protocols and data acceptability shall be submitted to the Department upon request.

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8. Final Effluent Limitations, Monitoring Point 001K

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge a maximum of 2.4 MGD of nonchemical metal cleaning wastewater from Monitoring Point 001K through Monitoring Point 001A and Outfall 001. Outfall 001 discharges to Lake Erie. Such discharge shall be limited and monitored by the permittee as specified below.

<u>Parameter</u>	<u>Maximum Limits for Quantity or Loading</u>			<u>Maximum Limits for Quality or Concentration</u>			<u>Monitoring Frequency</u>	<u>Sample Type</u>
	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>	<u>Monthly</u>	<u>Daily</u>	<u>Units</u>		
Flow	(report)	(report)	MGD	---	---	---	Weekly	Report Total Daily Flow
Total Suspended Solids	---	---	---	30	100	mg/l	Weekly	Grab
Oil & Grease	---	---	---	15	20	mg/l	2x Monthly	Grab

- a. **Monitoring Location**
 Samples, measurements, and observations taken in compliance with the monitoring requirements above shall be taken at Monitoring Point 001K prior to discharge through Monitoring Point 001A.

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9. Cold Shock Prevention

Cessation of thermal inputs to the receiving water by this facility resulting from non-emergency shutdowns shall occur gradually so as to avoid fish mortality due to cold shock during the winter months (November through March). The basis for this requirement is to allow fish associated with the discharge-heated mixing zone for Outfall 001 to acclimate to the decreasing temperature.

10. Fish Passing Facility – Outfall 002

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, the permittee is authorized to discharge fish and a portion of the intake canal water from Outfall 002 to Lake Erie via a pipeline. This system is currently inactive.

11. Zebra Mussel Control Program

The permittee is authorized to treat the plant's low pressure service water system for the control of zebra mussels in accordance with the "Zebra Mussel Control Program" submitted to the Department on September 13, 2019. If the permittee desires to make any changes to the program, such changes shall be submitted to and approved by the Department.

12. Monroe Metropolitan Area Pollution Control Facility Discharge

The permittee is not liable or responsible for discharges from, or affects caused by, discharges from the Monroe Metropolitan Area Pollution Control Facility.

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13. Request for Approval to Use Water Treatment Additives

This permit does not authorize the use of any water treatment additive without prior written approval from the Department. Such approval is authorized under separate correspondence. Water treatment additives include any materials that are added to water used at the facility, or to wastewater generated by the facility, to condition or treat the water. Permittees proposing to use water treatment additives, including a proposed increased concentration of a previously approved water treatment additive, shall submit a request for approval via the Department's MiWaters system. The MiWaters website is located at <https://miwaters.deq.state.mi.us>. Instructions for submitting such a request may be obtained at <http://www.michigan.gov/eglenpdes> (near the center of that page, click on one or both links). Additional monitoring and reporting may be required as a condition of approval to use the water treatment additive.

A request for approval to use water treatment additives shall include all of the following usage and discharge information for each water treatment additive proposed to be used:

- a. The Safety Data Sheet (SDS);
- b. Ingredient information, including the name of each ingredient, CAS number for each ingredient, and fractional content by weight for each ingredient;
- c. The proposed water treatment additive discharge concentration with supporting calculations;
- d. The discharge frequency (i.e., number of hours per day and number of days per year);
- e. The outfall(s) and monitoring point(s) from which the water treatment additive is to be discharged;
- f. The type of removal treatment, if any, that the water treatment additive receives prior to discharge;
- g. The water treatment additive's function (i.e., microbiocide, flocculant, etc.);
- h. The SDS shall include a 48-hour LC50 or EC50 for a North American freshwater planktonic crustacean (either *Ceriodaphnia sp.*, *Daphnia sp.*, or *Simocephalus sp.*). The results shall be based on the whole water treatment additive, shall not be results based on a similar product, and shall not be estimated; and
- i. The SDS shall include the results of a toxicity test for one (1) other North American freshwater aquatic species (other than a planktonic crustacean) that meets a minimum requirement of R 323.1057(2) of the Water Quality Standards. The results shall be based on the whole water treatment additive, shall not be results based on a similar product, and shall not be estimated. Examples of tests that would meet this requirement include a 96-hour LC50 for rainbow trout, bluegill, or fathead minnow.

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14. Pollutant Minimization Program for Total Mercury

The goal of the Pollutant Minimization Program is to maintain the effluent concentration of total mercury at or below 1.3 ng/l. The permittee shall continue to implement the Pollutant Minimization Program approved on October 30, 2014, and modifications thereto, to proceed toward the goal. The Pollutant Minimization Program includes the following:

- a. an annual review and semi-annual monitoring of potential sources of mercury entering the wastewater collection system;
- b. a program for quarterly monitoring of influent; and
- c. implementation of reasonable, cost-effective control measures when sources of mercury are discovered. Factors to be considered include significance of sources, economic considerations, and technical and treatability considerations.

On or before March 31 of each year, the permittee shall submit a status report for the previous calendar year to the Department that includes 1) the monitoring results for the previous year, 2) an updated list of potential mercury sources, and 3) a summary of all actions taken to reduce or eliminate identified sources of mercury.

Any information generated as a result of the Pollutant Minimization Program set forth in this permit may be used to support a request to modify the approved program or to demonstrate that the Pollutant Minimization Program requirement has been completed satisfactorily.

A request for modification of the approved program and supporting documentation shall be submitted in writing to the Department for review and approval. The Department may approve modifications to the approved program (approval of a program modification does not require a permit modification), including a reduction in the frequency of the requirements specified under a. and b. above.

This permit may be modified in accordance with applicable laws and rules to include additional mercury conditions and/or limitations as necessary.

15. Schedule of Compliance for Bottom Ash Transport Water Discharge

The permittee shall manage the discharge of bottom ash transport water (BATW) to surface waters of the state in accordance with EPA's Final Steam Electric Reconsideration Rule (Final Rule), effective October 13, 2020. The permittee shall attain compliance with the Final Rule by completing the following:

- a. On or before December 31, 2022, the permittee shall submit a status report describing the ELG-compliant technology selected and the progress made on the engineering and design process for its implementation.
- b. On or before December 31, 2023, the permittee shall commence construction of the selected ELG-compliant technology and submit a construction status report that includes a description of any impediments to final implementation by December 31, 2025.
- c. On or before December 31, 2024, the permittee shall submit a construction status report that includes a description of any impediments to final implementation by December 31, 2025.

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- d. On or before December 31, 2025, the permittee shall submit an Initial Certification Statement in accordance with 40 CFR §423.19(c). Beginning December 31, 2025, the permittee is prohibited from discharging newly generated BATW from any outfall in accordance with 40 CFR §423.13(k)(1), except for those discharges to which paragraph (k)(2) applies. After December 31, 2025, any discharge volume of BATW shall be reduced or eliminated to the extent achievable using control measures that are technologically available and economically achievable. The total volume of BATW allowed to be discharged under (k)(2) shall be determined by the Department on a case-by-case basis and in no event shall such discharge exceed a 30-day rolling average of 10 percent of the primary active wetted bottom ash system volume. At least 180 days prior to the discharge of any newly generated BATW, the permittee shall submit to the Department all information required under 40 CFR 423.19(c) for reviews required under (k)(2).

The Department may modify or reissue this permit in accordance with applicable rules in order to establish the permit requirements set forth in the rules for 40 CFR Part 423, Steam Electric Power Generating Point Source Category.

16. Schedule of Compliance for Flue Gas Desulfurization Wastewater Discharge

The permittee shall manage the discharge of flue gas desulfurization wastewater (FGD WW) to surface waters of the state in accordance with EPA's Final Rule effective, October 13, 2020. This schedule of compliance (SOC) is based on two separate compliance pathways established by the Final Rule for FGD WW: the Voluntary Incentive Program (VIP), and the installation of a technology according to Best Available Technology (BAT) standards.

The permittee shall attain compliance with the Final Rule by completing the following:

- a. Initial submittal(s):
- 1) On or before October 13, 2021 [Submitted on October 13, 2021], the permittee shall submit a Notice of Planned Participation (NOPP) in the VIP subcategory in accordance with 40 CFR §423.19, and/or
 - 2) On or before December 1, 2022, the permittee shall commence the feasibility evaluation to select an ELG-compliant technology achieving BAT standards and submit an update on the evaluation.
- b. On or before December 31, 2022, the permittee shall:
- 1) submit an annual progress report in accordance with 40 CFR §423.19 to ensure compliance under the VIP subcategory, and/or
 - 2) submit a status report describing the ELG-compliant technology selected and the progress made on the engineering and design process for its implementation.
- c. On or before December 31, 2023, the permittee shall select a final compliance pathway. The permittee shall submit a report detailing compliance under the VIP subcategory (including the annual progress report in accordance with 40 CFR §423.19) OR the implementation of an ELG-compliant technology achieving BAT standards.

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- d. On or before December 31, 2024, the permittee shall:
- 1) submit an annual progress report for the VIP subcategory in accordance with 40 CFR §423.19, or
 - 2) commence the construction needed for final implementation of the selected ELG-compliant technology and submit a status report on this construction that describes any impediments to final implementation by December 31, 2025.
- e. On or before December 31, 2025, the permittee shall:
- 1) submit an annual progress report for the VIP subcategory in accordance with 40 CFR §423.19, or
 - 2) submit written certification that the facility is limited to discharging newly generated FGD WW from any outfall in accordance with the Tier 1 final effluent limitations set forth in Part I.A.6. and Part I.A.7. of this permit.
- f. If the permittee selected the VIP subcategory as the final compliance pathway, then the permittee shall submit the following:
- 1) On or before December 31, 2026, the permittee shall submit an annual progress report for the VIP subcategory in accordance with 40 CFR §423.19.
 - 2) On or before December 31, 2027, the permittee shall submit an annual progress report for the VIP subcategory in accordance with 40 CFR §423.19.
 - 3) On or before December 31, 2028, the permittee shall submit written certification that the facility has ceased discharging FGD WW, or is limited to discharging newly generated FGD WW from any outfall in accordance with the Tier 2 final effluent limitations set forth in Part I.A.6. and Part I.A.7. of this permit.

The Department may modify or reissue this permit in accordance with applicable rules in order to establish the permit requirements set forth in the rules for 40 CFR Part 423, Steam Electric Power Generating Point Source Category.

17. Schedule of Compliance for Fly Ash Transport Water Discharge

The permittee shall manage the discharge of treated fly ash transport water (FATW) to surface waters of the state in accordance with EPA's Steam Electric Rule (2015 Rule) effective September 30, 2015. The 2015 ELG Rule for FATW requires the permittee to achieve no discharge of pollutants in newly generated FATW.

The permittee shall attain compliance with the 2015 Rule by completing the following:

- a. On or before December 31, 2022, the permittee shall commence and submit a status report on the engineering and design process and implementation of the requirements of the 2015 ELG Rule for FATW.
- b. On or before December 31, 2023, the permittee shall submit written certification that there shall be no discharge of pollutants in newly generated FATW from any outfall.

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18. Schedule of Compliance for Cessation of Coal Burning Activities

Cessation of Coal Burning Activities is a compliance subcategory within the Final Rule that allows the permittee to attain compliance with the ELG Rules for BATW and FGD WW by ceasing coal burning activities, which can be achieved by retiring coal-fired unit(s) or converting them to other fuels. As allowed for under the Final Rule, a permittee submitting certification that unit(s) will retire the use of coal or refuel is permitted to continue to operate those units until their specified coal retirement date, which under the Final Rule is required to be before December 31, 2028.

- a. If the permittee chooses to establish compliance with the Final Rule under this subcategory, then on or before October 13, 2021 (a NOPP was not submitted), the permittee shall submit to the Department a Notice of Planned Participation (NOPP).
- b. Within 120 days after submittal of the NOPP, the permittee shall submit to the Department an application for a permit modification to include attainment of compliance with the Final Rule by Cessation of Coal Burning Activities.

19. 316(a) Thermal Demonstration Update

The permittee may submit a demonstration for an alternative thermal effluent limitation conducted under section 316(a) of the Clean Water Act for the discharge from Outfall 001 to Lake Erie. This demonstration shall include, at a minimum, an assessment of the aquatic community and habitat within the thermal plume in Plum Creek, Plum Creek Bay, and Lake Erie conducted in accordance with R 323.1082(7) of the State of Michigan Part 4 Rules, Water Quality Standards, and 40 CFR Part 125, Subpart H-Criteria for Determining Alternative Effluent Limitation Under Section 316(a) of the Act. The goal of the 316(a) demonstration is to determine that the otherwise applicable thermal discharge effluent limitation is more stringent than necessary to ensure the protection and propagation of the waterbody's balanced, indigenous population of shellfish, fish, and wildlife. This demonstration may be conducted in association with the requirements of 40 CFR Parts 122 and 125 establishing the requirements for Existing Facilities under section 316(b) of the Clean Water Act.

If the permittee intends to submit a demonstration, the plan for conducting the demonstration shall be submitted to the Department for approval on or before April 1, 2024. The plan shall specify, at a minimum, the techniques and methods that will be used for collecting temperature data and conducting biological assessments. If conducted, then on or before April 4, 2025, with the application for reissuance, the permittee shall submit the demonstration. The Department may approve modifications to this schedule or these conditions. The schedule may also be modified if conditions present a safety concern. Following receipt and review of the demonstration, the Department may modify the requirements of Part I.A.1. of this permit in accordance with applicable laws and rules to include revised temperature conditions and/or limitations. If an alternative thermal effluent limitation is granted, it shall not be continued in future permit proceedings unless an updated 316(a) thermal demonstration is submitted with each application for permit reissuance.

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Section A. Limitations and Monitoring Requirements

20. Cooling Water Intake Structures – Interim Approval

The federal rules promulgated by the United States Environmental Protection Agency in 40 CFR Parts 122 and 125 establishing the requirements of section 316(b) of the Clean Water Act for Existing Facilities took effect October 14, 2014. Beginning October 14, 2014, any facility covered by the rules requesting permit reissuance shall submit an application in accordance with the rules and shall be subject to the best technology available (BTA) standards for impingement mortality and entrainment as defined in the rules. Since the application for permit reissuance was submitted prior to the effective date of the rules, for this reissuance, the permittee is subject to site-specific requirements as determined on a case-by-case Best Professional Judgment (BPJ) Basis, as specified in 40 CFR 125.98(b)(6).

When conducting this site-specific BPJ review, the Department may consider common impingement and entrainment mortality standards and/or required mitigation for fish losses resulting from the operation of a facility's cooling water intake structure. For this facility, the Department has an Administrative Consent Order (ACO) entered on December 20, 2016, with the Department of Natural Resources (DNR) and the permittee to resolve fish mortality at this facility through 2022. The cooling water intake structure operated by the permittee has been evaluated using all available information relating to its location, design, construction, and capacity. At this time, the Department has made an **interim** determination, based on BPJ consistent with 40 CFR 125.98(b)(6), that the cooling water intake structure represents BTA to minimize adverse environmental impact in accordance with section 316(b) of the federal Clean Water Act (33 U.S.C. section 1326). To compensate for fish mortality through 2022, the permittee was required to pay the state dedicated funds to enhance the fishery and grant increased accessibility of the public to fish on piers owned by the permittee.

The permittee shall at all times properly operate and maintain the cooling water intake structure and associated equipment to minimize adverse environmental impact. The permittee shall give advance notice to the Department of any planned changes in the location, design, operation, or capacity of the intake structure. If the Department determines that additional technologies or control measures are necessary to reduce the impact of impingement or entrainment, the Department may revise the requirements of this condition. Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for previous or future fish losses. Nothing in this permit authorizes take for the purposes of a facility's compliance with the Endangered Species Act in accordance with 40 CFR § 125.98(b)(1).

On or before April 4, 2025, with the application for reissuance, the permittee shall submit the appropriate information specified in 40 CFR 122.21(r) for the cooling water intake structure at this facility.

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21. Facility Contact

The "Facility Contact" was specified in the application. The permittee may replace the facility contact at any time, and shall notify the Department in writing within 10 days after replacement (including the name, address and telephone number of the new facility contact).

- a. The facility contact shall be (or a duly authorized representative of this person):
 - for a corporation, a principal executive officer of at least the level of vice president; or a designated representative if the representative is responsible for the overall operation of the facility from which the discharge originates, as described in the permit application or other NPDES form,
 - for a partnership, a general partner,
 - for a sole proprietorship, the proprietor, or
 - for a municipal, state, or other public facility, either a principal executive officer, the mayor, village president, city or village manager or other duly authorized employee.
- b. A person is a duly authorized representative only if:
 - the authorization is made in writing to the Department by a person described in paragraph a. of this section; and
 - the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the facility (a duly authorized representative may thus be either a named individual or any individual occupying a named position).

Nothing in this section obviates the permittee from properly submitting reports and forms as required by law.

22. Discharge Monitoring Report – Quality Assurance Study Program

The permittee shall participate in the Discharge Monitoring Report – Quality Assurance (DMR-QA) Study Program. The purpose of the DMR-QA Study Program is to annually evaluate the proficiency of all in-house and/or contract laboratory(ies) that perform, on behalf of the facility authorized to discharge under this permit, the analytical testing required under this permit. In accordance with Section 308 of the Clean Water Act (33 U.S.C. §1318); and R 323.2138 and R 323.2154 of Part 21, Wastewater Discharge Permits, promulgated under Part 31 of the NREPA, participation in the DMR-QA Study Program is required for all major facilities, and for minor facilities selected for participation by the Department.

Annually and in accordance with DMR-QA Study Program requirements and submittal due dates, the permittee shall submit to the Michigan DMR-QA Study Program state coordinator all documentation required by the DMR-QA Study. DMR-QA Study Program participation is required only for the analytes required under this permit and only when those analytes are also identified in the DMR-QA Study.

If the permitted facility's status as a major facility should change, participation in the DMR-QA Study Program may be reevaluated. Questions concerning participation in the DMR-QA Study Program should be directed to the Michigan DMR-QA Study Program state coordinator.

All forms and instructions required for participation in the DMR-QA Study Program, including submittal due dates and state coordinator contact information, can be found at <https://www.epa.gov/compliance/discharge-monitoring-report-quality-assurance-study-program>.

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23. Quantification Levels and Analytical Methods for Selected Parameters

Maximum acceptable quantification levels (QLs) are specified for selected parameters in the table below. These QLs shall be considered the maximum acceptable unless a higher QL is appropriate because of sample matrix interference. Justification for higher QLs shall be submitted to the Department within 30 days of such determination. Where necessary to help ensure that the QLs specified herein can be achieved, analytical methods may also be specified in the table below. The sampling procedures, preservation and handling, and analytical protocol for all monitoring conducted in compliance with this permit, including monitoring conducted to meet the requirements of the application for permit reissuance, shall be in accordance with the methods specified herein, or in accordance with Part II.B.2. of this permit if no method is specified herein, unless an alternate method is approved by the Department. The Department will consider only alternate methods that meet the requirements of Part II.B.2. and whose QLs are at least as sensitive (i.e., low) as those specified herein. **Not all QLs are expressed in the same units in the table below.** The table is continued on the following page:

Parameter	QL	Units	Analytical Method
1,2-Diphenylhydrazine (as Azobenzene)	3.0	ug/l	
2,4,6-Trichlorophenol	5.0	ug/l	
2,4-Dinitrophenol	19	ug/l	
3,3'-Dichlorobenzidine	1.5	ug/l	
4-Chloro-3-Methylphenol	7.0	ug/l	
4,4'-DDD	0.01	ug/l	
4,4'-DDE	0.01	ug/l	
4,4'-DDT	0.01	ug/l	
Acrylonitrile	1.0	ug/l	
Aldrin	0.01	ug/l	
Alpha-Endosulfan	0.01	ug/l	
Alpha-Hexachlorocyclohexane	0.01	ug/l	
Antimony, Total	1	ug/l	
Arsenic, Total	1	ug/l	
Barium, Total	5	ug/l	
Benzidine	0.1	ug/l	
Beryllium, Total	1	ug/l	
Beta-Endosulfan	0.01	ug/l	
Beta-Hexachlorocyclohexane	0.01	ug/l	
Bis (2-Chloroethyl) Ether	1.0	ug/l	
Bis (2-Ethylhexyl) Phthalate	5.0	ug/l	
Boron, Total	20	ug/l	
Cadmium, Total	0.2	ug/l	
Chlordane	0.01	ug/l	
Chloride	1.0	mg/l	
Chromium, Hexavalent	5	ug/l	
Chromium, Total	10	ug/l	
Copper, Total	1	ug/l	
Cyanide, Available	2	ug/l	EPA Method OIA 1677
Cyanide, Total	5	ug/l	
Delta-Hexachlorocyclohexane	0.01	ug/l	
Dieldrin	0.01	ug/l	
Di-N-Butyl Phthalate	9.0	ug/l	

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Parameter	QL	Units	Analytical Method
Endosulfan Sulfate	0.01	ug/l	
Endrin	0.01	ug/l	
Endrin Aldehyde	0.01	ug/l	
Fluoranthene	1.0	ug/l	
Heptachlor	0.01	ug/l	
Heptachlor Epoxide	0.01	ug/l	
Hexachlorobenzene	0.01	ug/l	
Hexachlorobutadiene	0.01	ug/l	
Hexachlorocyclopentadiene	0.01	ug/l	
Hexachloroethane	5.0	ug/l	
Lead, Total	1	ug/l	
Lindane	0.01	ug/l	
Lithium, Total	10	ug/l	
Mercury, Total	0.5	ng/l	EPA Method 1631E
Nickel, Total	5	ug/l	
PCB-1016	0.1	ug/l	
PCB-1221	0.1	ug/l	
PCB-1232	0.1	ug/l	
PCB-1242	0.1	ug/l	
PCB-1248	0.1	ug/l	
PCB-1254	0.1	ug/l	
PCB-1260	0.1	ug/l	
Pentachlorophenol	1.8	ug/l	
Perfluorooctane sulfonate (PFOS)	2.0	ng/l	ASTM D7979 or an isotope dilution method (sometimes referred to as Method 537 modified)
Perfluorooctanoic acid (PFOA)	2.0	ng/l	ASTM D7979 or an isotope dilution method (sometimes referred to as Method 537 modified)
Phenanthrene	1.0	ug/l	
Phosphorus (as P), Total	10	ug/l	
Selenium, Total	1.0	ug/l	
Silver, Total	0.5	ug/l	
Strontium, Total	1000	ug/l	
Sulfate	2.0	mg/l	
Sulfides, Dissolved	20	ug/l	
Thallium, Total	1	ug/l	
Toxaphene	0.1	ug/l	
Vinyl Chloride	1.0	ug/l	
Zinc, Total	10	ug/l	

24. Power Plants – PCB Prohibition

The permittee shall not discharge any polychlorinated biphenyls (PCBs) to surface waters of the state as a result of plant operations.

On or before April 4, 2025, with the application for reissuance, the permittee shall submit written confirmation that no PCB compounds have been or will be discharged to surface waters of the state as a result of plant operations.

PART I

Section B. Storm Water Pollution Prevention

1. Final Effluent Limitations and Monitoring Requirements

The permittee is authorized to discharge an unspecified amount of storm water associated with industrial activity as defined under 40 CFR 122.26(b)(14)(i-ix) to Lake Erie, for which the Department has determined additional monitoring is needed from special-use areas including secondary containment structures required by state or federal law; from lands on Michigan's List of Sites of Environmental Contamination, pursuant to Part 201, Environmental Remediation, of the NREPA; or from areas with other activities that may contribute pollutants to the storm water. Such discharge shall be limited and monitored by the permittee as specified below.

- a. **Narrative Standard**
In accordance with R 323.1050 of the Part 4 Rules promulgated pursuant to Part 31 of the NREPA, the surface waters of the state shall not, as a result of this discharge, have any of the following physical properties in unnatural quantities which are or may become injurious to any designated use: turbidity, color, oil films, floating solids, foams, settleable solids, suspended solids, or deposits.
- b. **Unusual Discharge Characteristics**
Storm water discharges shall be monitored as required by this permit to ensure there are no unusual characteristics (i.e., unnatural turbidity, color, oil film, floating solids, foams, settleable solids, suspended solids, or deposits) that would cause a violation of the narrative standard or other water quality standards.
- c. **Industrial Storm Water Certified Operator**
Storm water treatment and/or control measures associated with this discharge shall be under direct supervision of an industrial storm water operator certified by the Department, as required by Section 3110 of the NREPA.
- d. **Implementation of Storm Water Pollution Prevention Plan**
The permittee shall implement a Storm Water Pollution Prevention Plan (SWPPP) that meets the requirements of this permit.
- e. **Implementation of Short-Term Storm Water Characterization Study Plan**
The permittee shall implement an approved Short-Term Storm Water Characterization Study (STSWCS) Plan that meets the requirements of this permit.
- f. **Storm Water Discharges from Special-Use Areas**
In addition to the requirements set forth in a. through e. above, storm water may not be discharged from special-use areas if:
 - 1) the storm water contains unnatural turbidity, color, oil film, floating solids, foams, settleable solids, or suspended solids;
 - 2) the permittee knows, or has reason to believe, the storm water is contaminated by or has come into contact with materials present within the special-use area(s), unless the Department approves the discharge; and/or
 - 3) the permittee knows, or has reason to believe, the storm water is contaminated by or has come into contact with materials that may cause a violation of water quality standards, unless the Department approves the discharge.

PART I

Section B. Storm Water Pollution Prevention

2. Storm Water Pollution Prevention Plan (SWPPP)

On or before May 1, 2023, the permittee shall develop a SWPPP that meets the requirements of this permit. The SWPPP is a written plan that identifies sources of significant materials associated with industrial activity and includes procedures intended to reduce the exposure of significant materials to storm water. The SWPPP template and other guidance materials are available on the Industrial Storm Water Program webpage at www.michigan.gov/industrialstormwater.

An acceptable SWPPP shall identify the facility name, address, and permit number, and meet the requirements specified in Part I.B.3. through Part I.B.9. below:

3. Source Identification

To identify potential sources of significant materials that have reasonable potential to pollute storm water and subsequently be discharged to surface waters of the state, the SWPPP shall, at a minimum, include the following:

a. Site Map

The site map shall identify and label the following:

- 1) buildings and other permanent structures;
- 2) all areas of industrial activity, industrial equipment, and/or industrial material storage;
- 3) storage, disposal, and/or recycling areas for significant materials;
- 4) the location of all storm water discharge points and monitoring points (numbered or otherwise uniquely labeled for reference);
- 5) the location of all storm water inlets (e.g., catch basins, roof drains, etc.) contributing to each storm water discharge point (numbered or otherwise labeled for reference);
- 6) the location of non-storm water NPDES-permitted discharges;
- 7) the location of all storm water conveyances (e.g., pipe, ditch, channel, etc.) and outlines of the drainage areas contributing to each storm water discharge point;
- 8) all structural controls (e.g., secondary containment, inlet filters, etc.) and/or storm water treatment equipment/devices;
- 9) area(s) of vegetation (with appropriate labelling such as lawn, old field, marsh, wooded, etc.);
- 10) area(s) that have the potential for soil erosion and sediment discharges (e.g., gravel lots, access roads, material stockpiles, outfalls, etc.);
- 11) impervious surfaces (e.g., roofs, asphalt, concrete, etc.);
- 12) name and location of receiving water(s); and
- 13) contaminated areas of the site regulated under Part 201 (Environmental Remediation) of the NREPA.

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- b. **List of Significant Materials Associated with Industrial Activity**
This list shall identify all significant materials that have a reasonable potential to pollute storm water, and identify the activity or area in which the significant materials are handled or stored. For each activity or area identified, the inlet(s) and discharge point(s) impacted in the event of a spill or leak shall be included on the list. The following industrial activities and/or areas shall be evaluated for the potential to expose significant materials to storm water, as applicable:
- 1) loading, unloading, and other industrial material handling activities;
 - 2) outdoor industrial material storage areas, including secondary containment structures;
 - 3) outdoor manufacturing or processing activities;
 - 4) dust or particulate generating processes/activities;
 - 5) discharges associated with vents, stacks, and air emission controls;
 - 6) industrial waste or recyclable material storage or disposal areas;
 - 7) activities associated with the maintenance and cleaning of vehicles, machines, and equipment;
 - 8) area(s) that have the potential for soil erosion and sediment discharges (e.g., gravel lots, access roads, material stockpiles, outfalls, etc.);
 - 9) areas of contamination regulated under Part 201 (Environmental Remediation) of the NREPA;
 - 10) areas of significant material residues;
 - 11) areas where animals (wild or domestic) congregate and deposit wastes; and
 - 12) other areas where storm water may come into contact with significant materials.
- c. **List of Significant Spills and Leaks**
This list shall identify the date, volume, and location of each significant spill/leak as defined under Part II.A. of this permit, and the cleanup actions undertaken. Significant spills/leaks shall be controlled in accordance with the SWPPP and are cause for the SWPPP to be updated as specified in Part I.B.7. of this permit. The permittee shall notify the Department of significant spills/leaks as specified in Part II.C.6. and/or Part II.C.7. of this permit. Written reports regarding significant spills/leaks shall be retained with the SWPPP records in accordance with Part I.B.10. of this permit.
- d. **Summary of Storm Water Discharge Sampling Data**
If data have been collected, the SWPPP shall include a list of the pollutants detected, sources identified, and the control measures implemented to reduce the discharge of the detected pollutants. Storm water discharge sampling data shall be retained in accordance with Part I.B.10. of this permit.
- e. **Illicit Connection Investigation and Elimination**
The permittee shall implement an illicit connection investigation and elimination program. The SWPPP shall include a written description of the actions taken to identify, investigate, and eliminate illicit connections to Municipal Separate Storm Sewer System (MS4) or surface waters of the state. Any discharge from an illicit connection to an MS4 or surface water of the state is a violation of this permit.
- f. **Description of Dust Suppression Material Used Onsite**
The SWPPP shall include a description of the dust suppression material used onsite, the areas where the material is used, and the actions implemented to prevent an unauthorized discharge of the material. If the permittee does not use dust suppression material onsite, the SWPPP shall indicate this.

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Section B. Storm Water Pollution Prevention

4. Total Maximum Daily Loads (TMDLs) [RESERVED]

5. Nonstructural Controls

To manage and address sources of significant materials that have reasonable potential to pollute storm water and subsequently be discharged to surface waters of the state, the SWPPP shall, at a minimum, include the following nonstructural controls:

- a. **Preventative Maintenance**
Preventive maintenance procedures shall list the storm water management and control devices, treatment systems, industrial equipment, etc. that will be routinely serviced and maintained to prevent significant material exposure to storm water. The written procedures shall include a maintenance schedule for each item listed.
- b. **Good Housekeeping Inspections**
Good housekeeping procedures shall list the areas that will be routinely inspected and cleaned to prevent significant material exposure to storm water. The areas associated with the items listed in the preventative maintenance procedures shall also be included. The written procedures shall include an inspection and cleaning schedule for each area listed. A written report documenting the implementation of the inspection and cleaning schedule shall be retained in accordance with Part I.B.10. of this permit.
- c. **Comprehensive Site Inspections**
Comprehensive site inspection procedures shall include all items identified in 3) below that will be inspected by an Industrial Storm Water Certified Operator to ensure compliance with this permit. At a minimum, one inspection shall be performed during normal facility operating hours within each of the following quarters unless the Department has approved an alternate schedule in accordance with Part I.B.12. of this permit: January – March, April – June, July – September, and October – December. A written report documenting the comprehensive site inspection shall be retained in accordance with Part I.B.10. of this permit, and shall include the following information:
 - 1) the date of the inspection;
 - 2) the Industrial Storm Water Certified Operator's name(s) and certification number(s);
 - 3) all observations regarding significant material exposure and any necessary corrective actions related to the inspection of the following:
 - a) areas identified in Part I.B.3.a. and Part I.B.3.b. of this permit,
 - b) areas identified in Part I.B.3.c. of this permit where significant spills or leaks have occurred in the past three years,
 - c) all storm water inlets, conveyances (not including subsurface piping), and discharge points, and
 - d) all structural controls and/or storm water treatment equipment/devices;
 - 4) a review of the good housekeeping reports, and any other paperwork associated with the SWPPP; and
 - 5) a written statement, based on the results of the comprehensive site inspection, certifying compliance with the terms of this permit and with the permittee's SWPPP.

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d. Visual Assessments

At a minimum, one (1) storm water sample shall be collected for visual assessment during normal facility operating hours at each discharge point within each of the following quarters unless the Department has approved an alternate schedule in accordance with Part I.B.12. of this permit: January – March, April – June, July – September, and October – December. Visual assessment guidance is available on the Industrial Storm Water Program webpage at www.michigan.gov/industrialstormwater.

The following are the requirements of the visual assessments and shall be included in the written procedures:

- 1) The **storm water** sample(s) shall be **collected** during normal hours of operation by an **Industrial Storm Water Certified Operator**, Qualified Personnel as defined in Part II.A. of this permit, or automatic sampling device.
- 2) The storm water sample(s) shall be collected:
 - a) with clean equipment and containers, and
 - b) within the first 30 minutes of the start of a discharge resulting from a qualifying storm event as defined in Part II.A. of this permit. If it is not possible to collect the sample within the first 30 minutes of discharge, the sample shall be collected as soon thereafter as practicable. In the case of snowmelt, samples shall be collected during a period with measurable discharge from the site.
- 3) The visual assessment of the storm water sample(s) shall be performed and documented by an Industrial Storm Water Certified Operator. Documentation shall be retained in accordance with Part I.B.10. of this permit, and shall include the following information:
 - a) Sample location(s).
 - b) Storm water sample collection date(s), time(s), and if applicable, an explanation as to why sample(s) were not collected within the first 30 minutes of discharge.
 - c) Visual assessment date and time.
 - d) Name and certification number of the Industrial Storm Water Certified Operator.
 - e) Storm event information, including the length of event expressed in hours, approximate size of event expressed in inches of precipitation, duration of time since previous event that caused a discharge, date and time the discharge began, and nature of event (i.e., rainfall or snowmelt).
 - f) Name(s) of personnel who obtained the storm water sample(s) or document that an automatic sampling device was used.
 - g) Any notable observations of the discharge while the storm water samples were collected. This requirement is waived if an automatic sampling device was used to collect the storm water samples.
 - h) Sample(s) shall be observed in a colorless glass or plastic container for the following characteristics: color, oil sheen, turbidity, floating solids, suspended solids, settleable solids, foam, and any other unusual characteristics.

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- i) Unaltered, full-color photograph of the storm water sample(s) against a white background.
- j) A description of corrective actions taken if any unusual characteristics are identified during the visual assessment.

4) When a visual assessment cannot be completed for any reason (e.g., adverse weather conditions, no discharge, qualifying event occurred outside the normal facility operating hours, etc.) during any quarter, written documentation explaining the reason for not completing the visual assessment shall be included with the SWPPP records. Adverse weather conditions are those that are dangerous or create inaccessibility for personnel, such as local flooding, high winds, electrical storms, or situations that otherwise make sampling impractical such as drought or extended frozen conditions.

5) If the facility has two (2) or more storm water discharge points that are believed to discharge substantially identical storm water effluents, the facility may conduct visual assessments of the discharge at one (1) of the storm water discharge points and report that the results also apply to the other substantially identical storm water discharge point(s). The determination of substantially identical storm water discharge points is to be based on the significant material evaluation conducted as set forth under Part I.B.3.b. of this permit and shall be clearly documented in the SWPPP. Visual assessments shall be conducted on a rotating basis of each substantially identical storm water discharge point throughout the period of coverage under this permit.

- e. **Material Handling and Spill Prevention / Response Procedures**
Significant material handling and storage procedures shall be developed to minimize the potential for leaks and spills that may be exposed to storm water. For each potential spill or leak area, the procedures shall identify the significant material handling and storage requirements, spill/leak response actions, and locations of spill/leak kits. The SWPPP shall include language describing what a reportable spill or leak is, and the appropriate reporting requirements in accordance with Part II.C.6. and Part II.C.7. of this permit.

For Polluting Materials as defined under Part II.A. of this permit, the SWPPP may reference any of the following plans:

- Pollution Incident Prevention Plan (PIPP) prepared in accordance with the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code)
- Hazardous Waste Contingency Plan prepared in accordance with 40 CFR 264 and 265 Subpart D, as required by Part 111 of the NREPA
- Spill Prevention Control and Countermeasure (SPCC) plan prepared in accordance with 40 CFR 112

- f. **Annual Employee Training Program**
The SWPPP shall include a written description of the employee training program that will be implemented on an annual basis to inform appropriate personnel of the components of the SWPPP and requirements of this permit. Records of the annual employee training program shall be retained in accordance with Part I.B.10. of this permit.

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6. Structural Controls

Structural controls shall be used to reduce significant material exposure and/or the concentration of significant materials in the discharge to ensure compliance with Part I.B.1.a. and Part I.B.1.b. of this permit. The SWPPP shall provide a list of all structural controls utilized onsite and the significant material(s) intended to be managed by the structural controls. The location of the structural controls shall be identified on the site map. Where applicable, structural controls shall, at a minimum, be utilized to achieve the following:

- a. prevent unauthorized discharges from industrial waste and recyclable material containers,
- b. prevent the discharge of sediment and other particulates that can be mobilized by storm water, and
- c. minimize channel/streambank erosion and scour in the immediate vicinity of outfalls.

7. Keeping SWPPPs Current

- a. The permittee and/or an Industrial Storm Water Certified Operator shall review the SWPPP annually after it is developed and maintain a written report of the review. Based on the review, the permittee or an Industrial Storm Water Certified Operator shall amend the SWPPP as needed to ensure continued compliance with the terms and conditions of this permit. A SWPPP Annual Review Report form is available on the Industrial Storm Water Program webpage at www.michigan.gov/industrialstormwater. The written report of the SWPPP Annual Review shall be retained in accordance with Part I.B.10. of this permit.
- b. The SWPPP developed under the conditions of a previous permit shall be amended as necessary to ensure compliance with this permit.
- c. The SWPPP shall be updated or amended whenever changes at the facility have the potential to increase the exposure of significant materials to storm water, significant spills/leaks occur at the facility, or when the SWPPP is determined by the permittee or the Department to be ineffective in achieving the general objectives of controlling pollutants in storm water discharges associated with industrial activity. SWPPP updates necessitated by increased activity or significant spills at the facility shall include a description of how the permittee intends to control any new sources of significant materials or respond to and prevent spills in accordance with the requirements of this permit.
- d. The Department may notify the permittee at any time that the SWPPP does not meet minimum requirements of this permit. Such notification shall identify why the SWPPP does not meet minimum requirements of this permit. The permittee shall make the required changes to the SWPPP within 30 days after such notification from the Department and shall submit to the Department a written certification that the requested changes have been made.
- e. Amendments to the SWPPP shall be signed and retained on-site with the SWPPP pursuant to Part I.B.9. of this permit.

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Section B. Storm Water Pollution Prevention

8. Contact Information and Industrial Storm Water Certified Operator Update

- a. The SWPPP shall include contact information (i.e., name, mailing address, phone number, and email address) for the Facility Contact, Industrial Storm Water Certified Operator(s), environmental consultant, and/or any other appropriate individuals who manage the storm water program at the facility. The SWPPP shall be updated, as necessary, to ensure the contact information is current.
- b. If the primary Industrial Storm Water Certified Operator is replaced, the permittee shall provide the name and certification number of the new Industrial Storm Water Certified Operator to the Department by updating the facility's MiWaters site. If a facility has multiple Industrial Storm Water Certified Operators, the names and certification numbers of all shall be included in the SWPPP.

9. Signature and SWPPP Certification

- a. The SWPPP shall be reviewed and signed by an Industrial Storm Water Certified Operator and by either the permittee or an authorized representative in accordance with 40 CFR 122.22. The SWPPP and associated records shall be retained on-site at the facility that generates the storm water discharge.
- b. The permittee shall make the SWPPP and items required by Part I.B.10. of this permit available upon request to the Department. The Department makes the non-confidential business portions of the SWPPP available to the public.

10. Record Keeping

The permittee shall maintain records of all SWPPP-related activities. All such records shall be retained for three (3) years. The following records are required by this permit:

- a. good housekeeping inspection reports
- b. comprehensive site inspection reports
- c. visual assessment reports
- d. employee training records
- e. SWPPP annual review reports
- f. significant spill/leak reports, and
- g. storm water discharge sampling data.

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11. Non-Storm Water Discharges

Storm water is defined in Part II.A. of this permit to encompass non-storm water discharges included under the conditions of this permit. Any discharge of wastewater other than storm water as defined under the conditions of this permit shall be in compliance with an NPDES permit issued for the discharge. The non-storm water discharges included under the conditions of this permit are authorized under this permit, provided pollution prevention controls for the non-storm water component are identified in the permittee's SWPPP. The non-storm water discharges included under the conditions of this permit are as follows:

- a. discharges from fire hydrant flushing
- b. potable water sources, including water line flushing
- c. water from fire system testing and fire-fighting training without burned materials or chemical fire suppressants
- d. irrigation drainage
- e. lawn watering
- f. routine building wash-down that does not use detergents or other compounds
- g. pavement wash waters where contamination by toxic or hazardous materials has not occurred (unless all contamination by toxic or hazardous materials has been removed) and where detergents are not used
- h. uncontaminated condensate from air conditioners, coolers, and other compressors and from the outside storage of refrigerated gases or liquids
- i. springs
- j. uncontaminated groundwater
- k. foundation or footing drains where flows are not contaminated with process materials such as solvents, and
- l. discharges from fire-fighting activities. Discharges from fire-fighting activities are exempted from the requirement to be identified in the SWPPP.

12. Alternate Schedule Request for Comprehensive Site Inspections and/or Visual Assessment

The permittee may request Department approval of an alternate schedule for comprehensive site inspections and/or visual assessments. Such a request may be made if the permittee meets the following criteria: the permittee is in full compliance with this permit, the permittee has an acceptable SWPPP, the permittee has installed and/or implemented adequate structural controls at the facility, the permittee has all required inspection reports available at the facility, and the permittee has an Industrial Storm Water Certified Operator at the facility. The Department may revoke the approval of an alternate schedule at any time upon notification to the permittee if these criteria are not being met.

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13. Tracer Dye Discharges

This permit does not authorize the discharge of tracer dyes without approval from the Department. Requests to discharge tracer dyes shall be submitted to the Department in accordance with Rule 1097 (R 323.1097 of the Michigan Administrative Code).

14. Short-Term Storm Water Characterization Study (STSWCS)

The purpose of a STSWCS is to determine the quality of the storm water being discharged from special-use areas. On or before May 1, 2023 of this permit, the permittee shall submit to the Department an administratively complete STSWCS Plan developed in accordance with the requirements set forth in Part I.B.15. of this permit. For a facility with more than one category of special-use area, (e.g., a secondary containment structure and a Site of Environmental Contamination), the STSWCS Plan shall address each area individually. Upon receipt of Department approval of the STSWCS Plan, the permittee shall begin monitoring the authorized discharge as specified in the plan. The permittee shall notify the Department of any modifications made to the approved STSWCS Plan within 30 days. If the Department does not take action to approve or comment on the STSWCS Plan within 90 days after its submittal, the permittee shall begin storm water monitoring in accordance with the STSWCS Plan submitted.

15. STSWCS Plan Requirements

A STSWCS Plan template and additional guidance for developing an administratively complete STSWCS Plan are available on the Industrial Storm Water Program webpage at www.michigan.gov/industrialstormwater. Nothing in this permit shall prevent the permittee from conducting additional sampling beyond that specified in the STSWCS Plan. An administratively complete STSWCS Plan shall include the following requirements, at a minimum:

- a. **General Information**
The STSWCS Plan shall identify the facility name, address, and permit number.
- b. **Description of Special-Use Area(s)**
The STSWCS Plan shall include a description of the special-use area(s). This description shall identify:
 - 1) the type of special-use area(s) as defined in Part II.A. of this permit,
 - 2) how storm water is discharged from the special-use area(s) and identification of impacted discharge points, and
 - 3) the potential contaminants of concern (e.g., diesel fuel).
- c. **Sample Collection and Handling**
Samples shall be collected during normal facility operating hours from discharges resulting from qualifying storm events occurring within three (3) consecutive quarters, unless otherwise stated in the approved STSWCS Plan. Quarters are defined as January – March, April – June, July – September, and October – December. The STSWCS Plan shall include information regarding sample collection and handling, as follows:
 - 1) a description of the location(s) at which samples will be collected,
 - 2) a site map detailing the sample location(s),

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- 3) the type of samples that will be collected (i.e., grab or composite),
 - 4) a description of how samples will be collected (i.e., manually or by automated sampler)
 - 5) if the samples will be collected manually, the name(s) of the Industrial Storm Water Certified Operator or Qualified Personnel (as defined in Part II.A. of this permit) who will collect the samples, and
 - 6) the timing of sample collection (e.g., within the first 30 minutes of a discharge from each qualifying storm event, or whenever discharge from the containment areas becomes necessary).
- d. Sample Analysis
The STSWCS Plan shall identify:
- 1) a list of pollutants to be monitored and their respective EPA-approved test procedures. The list shall include all pollutants that the permittee knows, or has reason to believe, are present in the special-use area, as well as any additional parameters (e.g., hardness, pH, etc.) that may be necessary to adequately evaluate pollutant concentrations in the discharge. All pollutants shall be analyzed in accordance with Part II.B.2. of this permit;
 - 2) the quantification level for each analysis. Acceptable quantification levels for selected parameters are available in the NPDES Permit Application Appendix located at www.michigan.gov/eglenpdes. In the center of the page, under the 'Information' heading, click on 'How to Apply for an NPDES permit.' The Permit Application Appendix is under the 'Downloadable Information' header; and
 - 3) the laboratory performing the analysis.

16. STSWCS Final Report Requirements

Within 90 days of the final sampling event conducted as part of the STSWCS, a final report summarizing the results of the STSWCS shall be submitted to the Department. The final report shall, at a minimum, provide:

- a. dates and times the samples were collected and the name of the person(s) who collected each sample;
- b. dates the samples were analyzed and all analytical results including copies of the lab sheets provided by the laboratory;
- c. the following information for each qualifying storm event included in the STSWCS:
 - 1) the qualifying storm event's date and duration,
 - 2) a measurement or estimate of the rainfall, and
 - 3) the time (in days) elapsed between the qualifying storm event sampled and the end-date of the previous qualifying storm event; and
- d. an explanation for any pollutants detected during the STSWCS and corrective actions that have been or will be taken to address issues identified during the STSWCS.

PART II

Part II may include terms and /or conditions not applicable to discharges covered under this permit.

Section A. Definitions

Acute toxic unit (TU_A) means 100/LC₅₀ where the LC₅₀ is determined from a whole effluent toxicity (WET) test which produces a result that is statistically or graphically estimated to be lethal to 50% of the test organisms.

Annual monitoring frequency refers to a calendar year beginning on January 1 and ending on December 31. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Authorized public agency means a state, local, or county agency that is designated pursuant to the provisions of Section 9110 of Part 91, Soil and Sedimentation Control, of the NREPA, to implement soil erosion and sedimentation control requirements with regard to construction activities undertaken by that agency.

Best management practices (BMPs) means structural devices or nonstructural practices that are designed to prevent pollutants from entering into storm water, to direct the flow of storm water, or to treat polluted storm water.

Bioaccumulative chemical of concern (BCC) means a chemical which, upon entering the surface waters, by itself or as its toxic transformation product, accumulates in aquatic organisms by a human health bioaccumulation factor of more than 1000 after considering metabolism and other physiochemical properties that might enhance or inhibit bioaccumulation. The human health bioaccumulation factor shall be derived according to R 323.1057(5). Chemicals with half-lives of less than 8 weeks in the water column, sediment, and biota are not BCCs. The minimum bioaccumulation concentration factor (BAF) information needed to define an organic chemical as a BCC is either a field-measured BAF or a BAF derived using the biota-sediment accumulation factor (BSAF) methodology. The minimum BAF information needed to define an inorganic chemical as a BCC, including an organometal, is either a field-measured BAF or a laboratory-measured bioconcentration factor (BCF). The BCCs to which these rules apply are identified in Table 5 of R 323.1057 of the Water Quality Standards.

Biosolids are the solid, semisolid, or liquid residues generated during the treatment of sanitary sewage or domestic sewage in a treatment works. This includes, but is not limited to, scum or solids removed in primary, secondary, or advanced wastewater treatment processes and a derivative of the removed scum or solids.

Bulk biosolids means biosolids that are not sold or given away in a bag or other container for application to a lawn or home garden.

CAFO means concentrated animal feeding operation.

Certificate of Coverage (COC) is a document, issued by the Department, which authorizes a discharge under a general permit.

Chronic toxic unit (TU_C) means 100/MATC or 100/IC₂₅, where the maximum acceptable toxicant concentration (MATC) and IC₂₅ are expressed as a percent effluent in the test medium.

Class B biosolids refers to material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PSRP) in accordance with the Part 24 Rules, Land Application of Biosolids, promulgated under Part 31 of the NREPA. Processes include aerobic digestion, composting, anaerobic digestion, lime stabilization and air drying.

Combined sewer system is a sewer system in which storm water runoff is combined with sanitary wastes.

Composite sample is a sample collected over time, either by continuous sampling or by mixing discrete samples. A composite sample represents the average wastewater characteristics during the compositing period. Various methods for compositing are available and are based on either time or flow-proportioning, the choice of which will depend on the permit requirements.

PART II

Section A. Definitions

Continuous monitoring refers to sampling/readings that occur at regular and consistent intervals throughout a 24-hour period and at a frequency sufficient to capture data that are representative of the discharge. The maximum acceptable interval between samples/readings shall be one (1) hour.

Daily concentration

FOR PARAMETERS OTHER THAN pH, DISSOLVED OXYGEN, TEMPERATURE, AND CONDUCTIVITY – Daily concentration is the sum of the concentrations of the individual samples of a parameter taken within a calendar day divided by the number of samples taken within that calendar day. The daily concentration will be used to determine compliance with any maximum and minimum daily concentration limitations. For guidance and examples showing how to perform calculations using results below quantification levels, see the document entitled “Reporting Results Below Quantification,” available at https://www.michigan.gov/documents/deq/wrd-npdes-results-quantification_620791_7.pdf.

FOR pH, DISSOLVED OXYGEN, TEMPERATURE, AND CONDUCTIVITY – The daily concentration used to determine compliance with maximum daily pH, temperature, and conductivity limitations is the highest pH, temperature, and conductivity readings obtained within a calendar day. The daily concentration used to determine compliance with minimum daily pH and dissolved oxygen limitations is the lowest pH and dissolved oxygen readings obtained within a calendar day.

Daily loading is the total discharge by weight of a parameter discharged during any calendar day. This value is calculated by multiplying the daily concentration by the total daily flow and by the appropriate conversion factor. The daily loading will be used to determine compliance with any maximum daily loading limitations. When required by the permit, report the maximum calculated daily loading for the month in the “MAXIMUM” column under “QUANTITY OR LOADING” on the DMRs.

Daily monitoring frequency refers to a 24-hour day. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Department means the Michigan Department of Environment, Great Lakes, and Energy.

Detection level means the lowest concentration or amount of the target analyte that can be determined to be different from zero by a single measurement at a stated level of probability.

Discharge means the addition of any waste, waste effluent, wastewater, pollutant, or any combination thereof to any surface water of the state.

EC₅₀ means a statistically or graphically estimated concentration that is expected to cause 1 or more specified effects in 50% of a group of organisms under specified conditions.

Fecal coliform bacteria monthly

FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a discharge event. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the “AVERAGE” column under “QUALITY OR CONCENTRATION” on the DMR. If the period in which the discharge event occurred was partially in each of two months, the calculated monthly value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria monthly is the geometric mean of all daily concentrations determined during a reporting month. Days on which no daily concentration is determined shall not be used to determine the calculated monthly value. The calculated monthly value will be used to determine compliance with the maximum monthly fecal coliform bacteria limitations. When required by the permit, report the calculated monthly value in the “AVERAGE” column under “QUALITY OR CONCENTRATION” on the DMR.

PART II

Section A. Definitions

Fecal coliform bacteria 7-day

FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days of discharge during a discharge event. If the number of daily concentrations determined during the discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean value for the month in the “MAXIMUM” column under “QUALITY OR CONCENTRATION” on the DMRs. If the 7-day period was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – Fecal coliform bacteria 7-day is the geometric mean of the daily concentrations determined during any 7 consecutive days in a reporting month. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. Days on which no daily concentration is determined shall not be used to determine the value. The calculated 7-day value will be used to determine compliance with the maximum 7-day fecal coliform bacteria limitations. When required by the permit, report the maximum calculated 7-day geometric mean for the month in the “MAXIMUM” column under “QUALITY OR CONCENTRATION” on the DMRs. The first calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

Flow-proportioned composite sample is a composite sample in which either a) the volume of each portion of the composite is proportional to the effluent flow rate at the time that portion is obtained, or b) a constant sample volume is obtained at varying time intervals proportional to the effluent flow rate.

General permit means an NPDES permit authorizing a category of similar discharges.

Geometric mean is the average of the logarithmic values of a base 10 data set, converted back to a base 10 number.

Grab sample is a single sample taken at neither a set time nor flow.

IC₂₅ means the toxicant concentration that would cause a 25% reduction in a nonquantal biological measurement for the test population.

Illicit connection means a physical connection to a municipal separate storm sewer system that primarily conveys non-storm water discharges other than uncontaminated groundwater into the storm sewer; or a physical connection not authorized or permitted by the local authority, where a local authority requires authorization or a permit for physical connections.

Illicit discharge means any discharge to, or seepage into, a municipal separate storm sewer system that is not composed entirely of storm water or uncontaminated groundwater. Illicit discharges include non-storm water discharges through pipes or other physical connections; dumping of motor vehicle fluids, household hazardous wastes, domestic animal wastes, or litter; collection and intentional dumping of grass clippings or leaf litter; or unauthorized discharges of sewage, industrial waste, restaurant wastes, or any other non-storm water waste directly into a separate storm sewer.

Individual permit means a site-specific NPDES permit.

Inlet means a catch basin, roof drain, conduit, drain tile, retention pond riser pipe, sump pump, or other point where storm water or wastewater enters into a closed conveyance system prior to discharge off site or into waters of the state.

PART II

Section A. Definitions

Interference is a discharge which, alone or in conjunction with a discharge or discharges from other sources, both: 1) inhibits or disrupts a POTW, its treatment processes or operations, or its sludge processes, use or disposal; and 2) therefore, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or, of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to Subtitle D of the SWDA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act. [This definition does not apply to sample matrix interference].

Land application means spraying or spreading biosolids or a biosolids derivative onto the land surface, injecting below the land surface, or incorporating into the soil so that the biosolids or biosolids derivative can either condition the soil or fertilize crops or vegetation grown in the soil.

LC₅₀ means a statistically or graphically estimated concentration that is expected to be lethal to 50% of a group of organisms under specified conditions.

Maximum acceptable toxicant concentration (MATC) means the concentration obtained by calculating the geometric mean of the lower and upper chronic limits from a chronic test. A lower chronic limit is the highest tested concentration that did not cause the occurrence of a specific adverse effect. An upper chronic limit is the lowest tested concentration which did cause the occurrence of a specific adverse effect and above which all tested concentrations caused such an occurrence.

Maximum extent practicable means implementation of best management practices by a public body to comply with an approved storm water management program as required by a national permit for a municipal separate storm sewer system, in a manner that is environmentally beneficial, technically feasible, and within the public body's legal authority.

MBTU/hr means million British Thermal Units per hour.

MGD means million gallons per day.

Monthly concentration is the sum of the daily concentrations determined during a reporting period divided by the number of daily concentrations determined. The calculated monthly concentration will be used to determine compliance with any maximum monthly concentration limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly concentration in the "AVERAGE" column under "QUALITY OR CONCENTRATION" on the DMR.

For minimum percent removal requirements, the monthly influent concentration and the monthly effluent concentration shall be determined. The calculated monthly percent removal, which is equal to 100 times the quantity [1 minus the quantity (monthly effluent concentration divided by the monthly influent concentration)], shall be reported in the "MINIMUM" column under "QUALITY OR CONCENTRATION" on the DMRs.

Monthly loading is the sum of the daily loadings of a parameter divided by the number of daily loadings determined during a reporting period. The calculated monthly loading will be used to determine compliance with any maximum monthly loading limitations. Days with no discharge shall not be used to determine the value. When required by the permit, report the calculated monthly loading in the "AVERAGE" column under "QUANTITY OR LOADING" on the DMR.

Monthly monitoring frequency refers to a calendar month. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Municipal separate storm sewer means a conveyance or system of conveyances designed or used for collecting or conveying storm water which is not a combined sewer and which is not part of a POTW as defined in the Code of Federal Regulations at 40 CFR 122.2.

PART II

Section A. Definitions

Municipal separate storm sewer system (MS4) means all separate storm sewers that are owned or operated by the United States, a state, city, village, township, county, district, association, or other public body created by or pursuant to state law, having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under state law, such as a sewer district, flood control district, or drainage district, or similar entity, or a designated or approved management agency under Section 208 of the Clean Water Act that discharges to the waters of the state. This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

National Pretreatment Standards are the regulations promulgated by or to be promulgated by the Federal Environmental Protection Agency pursuant to Section 307(b) and (c) of the Clean Water Act. The standards establish nationwide limits for specific industrial categories for discharge to a POTW.

No observed adverse effect level (NOAEL) means the highest tested dose or concentration of a substance which results in no observed adverse effect in exposed test organisms where higher doses or concentrations result in an adverse effect.

Noncontact cooling water is water used for cooling which does not come into direct contact with any raw material, intermediate product, by-product, waste product or finished product.

Nondomestic user is any discharger to a POTW that discharges wastes other than or in addition to water-carried wastes from toilet, kitchen, laundry, bathing or other facilities used for household purposes.

Nonstructural controls are practices or procedures implemented by employees at a facility to manage storm water or to prevent contamination of storm water.

NPDES means National Pollutant Discharge Elimination System.

Outfall is the location at which a point source discharge first enters a surface water of the state.

Part 91 agency means an agency that is designated by a county board of commissioners pursuant to the provisions of Section 9105 of Part 91 of the NREPA; an agency that is designated by a city, village, or township in accordance with the provisions of Section 9106 of Part 91 of the NREPA; or the Department for soil erosion and sedimentation control activities under Part 615, Supervisor of Wells; Part 631, Reclamation of Mining Lands; or Part 632, Nonferrous Metallic Mineral Mining, of the NREPA, pursuant to the provisions of Section 9115 of Part 91 of the NREPA.

Part 91 permit means a soil erosion and sedimentation control permit issued by a Part 91 agency pursuant to the provisions of Part 91 of the NREPA.

Partially treated sewage is any sewage, sewage and storm water, or sewage and wastewater, from domestic or industrial sources that is treated to a level less than that required by the permittee's NPDES permit, or that is not treated to national secondary treatment standards for wastewater, including discharges to surface waters from retention treatment facilities.

Point of discharge is the location of a point source discharge where storm water is discharged directly into a separate storm sewer system.

Point source discharge means a discharge from any discernible, confined, discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, or rolling stock. Changing the surface of land or establishing grading patterns on land will result in a point source discharge where the runoff from the site is ultimately discharged to waters of the state.

Polluting material means any material, in solid or liquid form, identified as a polluting material under the Part 5 Rules, Spillage of Oil and Polluting Materials, promulgated under Part 31 of the NREPA (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

PART II

Section A. Definitions

POTW is a publicly owned treatment work.

Predevelopment is the last land use prior to the planned new development or redevelopment.

Pretreatment is reducing the amount of pollutants, eliminating pollutants, or altering the nature of pollutant properties to a less harmful state prior to discharge into a public sewer. The reduction or alteration can be by physical, chemical, or biological processes, process changes, or by other means. Dilution is not considered pretreatment unless expressly authorized by an applicable National Pretreatment Standard for a particular industrial category.

Public (as used in the MS4 individual permit) means all persons who potentially could affect the authorized storm water discharges, including, but not limited to, residents, visitors to the area, public employees, businesses, industries, and construction contractors and developers.

Public body means the United States; the state of Michigan; a city, village, township, county, school district, public college or university, or single-purpose governmental agency; or any other body which is created by federal or state statute or law.

Qualified Personnel means an individual who meets qualifications acceptable to the Department and who is authorized by an Industrial Storm Water Certified Operator to collect the storm water sample.

Qualifying storm event means a storm event causing greater than 0.1 inch of rainfall and occurring at least 72 hours after the previous measurable storm event that also caused greater than 0.1 inch of rainfall. Upon request, the Department may approve an alternate definition meeting the condition of a qualifying storm event.

Quantification level means the measurement of the concentration of a contaminant obtained by using a specified laboratory procedure calculated at a specified concentration above the detection level. It is considered the lowest concentration at which a particular contaminant can be quantitatively measured using a specified laboratory procedure for monitoring of the contaminant.

Quarterly monitoring frequency refers to a three month period, defined as January through March, April through June, July through September, and October through December. When required by this permit, an analytical result, reading, value or observation shall be reported for that period if a discharge occurs during that period.

Regional Administrator is the Region 5 Administrator, U.S. EPA, located at R-19J, 77 W. Jackson Blvd., Chicago, Illinois 60604.

Regulated area means the permittee's urbanized area, where urbanized area is defined as a place and its adjacent densely-populated territory that together have a minimum population of 50,000 people as defined by the United States Bureau of the Census and as determined by the latest available decennial census.

Secondary containment structure means a unit, other than the primary container, in which significant materials are packaged or held, which is required by state or federal law to prevent the escape of significant materials by gravity into sewers, drains, or otherwise directly or indirectly into any sewer system or to the surface waters or groundwaters of the state.

Separate storm sewer system means a system of drainage, including, but not limited to, roads, catch basins, curbs, gutters, parking lots, ditches, conduits, pumping devices, or man-made channels, which is not a combined sewer where storm water mixes with sanitary wastes, and is not part of a POTW.

PART II

Section A. Definitions

Significant industrial user is a nondomestic user that: 1) is subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; or 2) discharges an average of 25,000 gallons per day or more of process wastewater to a POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process waste stream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the permittee as defined in 40 CFR 403.12(a) on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's treatment plant operation or violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Significant materials means any material which could degrade or impair water quality, including but not limited to: raw materials; fuels; solvents, detergents, and plastic pellets; finished materials such as metallic products; hazardous substances designated under Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (see 40 CFR 372.65); any chemical the facility is required to report pursuant to Section 313 of Emergency Planning and Community Right-to-Know Act (EPCRA); polluting materials as identified under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code); Hazardous Wastes as defined in Part 111, Hazardous Waste Management, of the NREPA; fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

Significant spills and significant leaks means any release of a polluting material reportable under the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code).

Special-use area means storm water discharges for which the Department has determined that additional monitoring is needed from: secondary containment structures required by state or federal law; lands on Michigan's List of Sites of Environmental Contamination pursuant to Part 201, Environmental Remediation, of the NREPA; and/or areas with other activities that may contribute pollutants to the storm water.

Stoichiometric means the quantity of a reagent calculated to be necessary and sufficient for a given chemical reaction.

Storm water means storm water runoff, snow melt runoff, surface runoff and drainage, and non-storm water included under the conditions of this permit.

Storm water discharge point is the location where the point source discharge of storm water is directed to surface waters of the state or to a separate storm sewer. It includes the location of all point source discharges where storm water exits the facility, including *outfalls* which discharge directly to surface waters of the state, and *points of discharge* which discharge directly into separate storm sewer systems.

Structural controls are physical features or structures used at a facility to manage or treat storm water.

SWPPP means the Storm Water Pollution Prevention Plan prepared in accordance with this permit.

Tier I value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier I toxicity database.

Tier II value means a value for aquatic life, human health or wildlife calculated under R 323.1057 of the Water Quality Standards using a tier II toxicity database.

Total maximum daily loads (TMDLs) are required by the Clean Water Act for waterbodies that do not meet water quality standards. TMDLs represent the maximum daily load of a pollutant that a waterbody can assimilate and meet water quality standards, and an allocation of that load among point sources, nonpoint sources, and a margin of safety.

Toxicity reduction evaluation (TRE) means a site-specific study conducted in a stepwise process designed to identify the causative agents of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in effluent toxicity.

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PART II

Section A. Definitions

Water Quality Standards means the Part 4 Water Quality Standards promulgated pursuant to Part 31 of the NREPA, being R 323.1041 through R 323.1117 of the Michigan Administrative Code.

Weekly monitoring frequency refers to a calendar week which begins on Sunday and ends on Saturday. When required by this permit, an analytical result, reading, value, or observation shall be reported for that period if a discharge occurs during that period. If the calendar week begins in one month and ends in the following month, the analytical result, reading, value, or observation shall be reported in the month in which monitoring was conducted.

WWSL is a wastewater stabilization lagoon.

WWSL discharge event is a discrete occurrence during which effluent is discharged to the surface water up to 10 days of a consecutive 14-day period.

3-portion composite sample is a sample consisting of three equal-volume grab samples collected at equal intervals over an 8-hour period.

7-day concentration

FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily concentrations determined. If the number of daily concentrations determined during the WWSL discharge event is less than 7 days, the number of actual daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations. When required by the permit, report the maximum calculated 7-day concentration for the WWSL discharge event in the “MAXIMUM” column under “QUALITY OR CONCENTRATION” on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – The 7-day concentration is the sum of the daily concentrations determined during any 7 consecutive days in a reporting month divided by the number of daily concentrations determined. If the number of daily concentrations determined is less than 7, the actual number of daily concentrations determined shall be used for the calculation. The calculated 7-day concentration will be used to determine compliance with any maximum 7-day concentration limitations in the reporting month. When required by the permit, report the maximum calculated 7-day concentration for the month in the “MAXIMUM” column under “QUALITY OR CONCENTRATION” on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

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PART II

Section A. Definitions

7-day loading

FOR WWSLs THAT COLLECT AND STORE WASTEWATER AND ARE AUTHORIZED TO DISCHARGE ONLY IN THE SPRING AND/OR FALL ON AN INTERMITTENT BASIS – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days of discharge during a WWSL discharge event divided by the number of daily loadings determined. If the number of daily loadings determined during the WWSL discharge event is less than 7 days, the number of actual daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations. When required by the permit, report the maximum calculated 7-day loading for the WWSL discharge event in the “MAXIMUM” column under “QUANTITY OR LOADING” on the DMR. If the WWSL discharge event was partially in each of two months, the value shall be reported on the DMR of the month in which the last day of discharge occurred.

FOR ALL OTHER DISCHARGES – The 7-day loading is the sum of the daily loadings determined during any 7 consecutive days in a reporting month divided by the number of daily loadings determined. If the number of daily loadings determined is less than 7, the actual number of daily loadings determined shall be used for the calculation. The calculated 7-day loading will be used to determine compliance with any maximum 7-day loading limitations in the reporting month. When required by the permit, report the maximum calculated 7-day loading for the month in the “MAXIMUM” column under “QUANTITY OR LOADING” on the DMR. The first 7-day calculation shall be made on day 7 of the reporting month, and the last calculation shall be made on the last day of the reporting month.

24-hour composite sample is a flow-proportioned composite sample consisting of hourly or more frequent portions that are taken over a 24-hour period and in which the volume of each portion is proportional to the discharge flow rate at the time that portion is taken. A time-proportioned composite sample may be used upon approval from the Department if the permittee demonstrates it is representative of the discharge.

PART II

Section B. Monitoring Procedures

1. Representative Samples

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations promulgated pursuant to Section 304(h) of the Clean Water Act (40 CFR Part 136 – Guidelines Establishing Test Procedures for the Analysis of Pollutants), unless specified otherwise in this permit. **Test procedures used shall be sufficiently sensitive to determine compliance with applicable effluent limitations.** For lists of approved test methods, go to <https://www.epa.gov/cwa-methods>. Requests to use test procedures not promulgated under 40 CFR Part 136 for pollutant monitoring required by this permit shall be made in accordance with the Alternate Test Procedures regulations specified in 40 CFR 136.4. These requests shall be submitted to the Manager of the Permits Section, Water Resources Division, Michigan Department of Environment, Great Lakes, and Energy, P.O. Box 30458, Lansing, Michigan, 48909-7958. The permittee may use such procedures upon approval.

The permittee shall periodically calibrate and perform maintenance procedures on all analytical instrumentation at intervals to ensure accuracy of measurements. The calibration and maintenance shall be performed as part of the permittee's laboratory Quality Assurance/Quality Control program.

3. Instrumentation

The permittee shall periodically calibrate and perform maintenance procedures on all monitoring instrumentation at intervals to ensure accuracy of measurements.

4. Recording Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information: 1) the exact place, date, and time of measurement or sampling; 2) the person(s) who performed the measurement or sample collection; 3) the dates the analyses were performed; 4) the person(s) who performed the analyses; 5) the analytical techniques or methods used; 6) the date of and person responsible for equipment calibration; and 7) the results of all required analyses.

5. Records Retention

All records and information resulting from the monitoring activities required by this permit, including all records of analyses performed, calibration and maintenance of instrumentation, and recordings from continuous monitoring instrumentation, shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the Department.

PART II

Section C. Reporting Requirements

1. Start-up Notification

If the permittee will not discharge during the first 60 days following the effective date of this permit, the permittee shall notify the Department within 14 days following the effective date of this permit, and then 60 days prior to the commencement of the discharge.

2. Submittal Requirements for Self-Monitoring Data

Part 31 of the NREPA (specifically Section 324.3110(7)); and R 323.2155(2) of Part 21, Wastewater Discharge Permits, promulgated under Part 31 of the NREPA, allow the Department to specify the forms to be utilized for reporting the required self-monitoring data. Unless instructed on the effluent limitations page to conduct "Retained Self-Monitoring," the permittee shall submit self-monitoring data via the Department's MiWaters system.

The permittee shall utilize the information provided on the MiWaters website, located at <https://miwaters.deq.state.mi.us>, to access and submit the electronic forms. Both monthly summary and daily data shall be submitted to the Department no later than the 20th day of the month following each month of the authorized discharge period(s). The permittee may be allowed to submit the electronic forms after this date if the Department has granted an extension to the submittal date.

3. Retained Self-Monitoring Requirements

If instructed on the effluent limits page (or otherwise authorized by the Department in accordance with the provisions of this permit) to conduct retained self-monitoring, the permittee shall maintain a year-to-date log of retained self-monitoring results and, upon request, provide such log for inspection to the staff of the Department. Retained self-monitoring results are public information and shall be promptly provided to the public upon request.

The permittee shall certify, in writing, to the Department, on or before January 10th (April 1st for animal feeding operation facilities) of each year, that: 1) all retained self-monitoring requirements have been complied with and a year-to-date log has been maintained; and 2) the application on which this permit is based still accurately describes the discharge. With this annual certification, the permittee shall submit a summary of the previous year's monitoring data. The summary shall include maximum values for samples to be reported as daily maximums and/or monthly maximums and minimum values for any daily minimum samples.

Retained self-monitoring may be denied to a permittee by notification in writing from the Department. In such cases, the permittee shall submit self-monitoring data in accordance with Part II.C.2., above. Such a denial may be rescinded by the Department upon written notification to the permittee. Reissuance or modification of this permit or reissuance or modification of an individual permittee's authorization to discharge shall not affect previous approval or denial for retained self-monitoring unless the Department provides notification in writing to the permittee.

4. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report. Such increased frequency shall also be indicated.

Monitoring required pursuant to Part 41 of the NREPA or Rule 35 of the Mobile Home Park Commission Act (Act 96 of the Public Acts of 1987) for assurance of proper facility operation shall be submitted as required by the Department.

PART II

Section C. Reporting Requirements

5. Compliance Dates Notification

Within 14 days of every compliance date specified in this permit, the permittee shall submit a written notification to the Department via MiWaters (<https://miwaters.deq.state.mi.us>) indicating whether or not the particular requirement was accomplished. If the requirement was not accomplished, the notification shall include an explanation of the failure to accomplish the requirement, actions taken or planned by the permittee to correct the situation, and an estimate of when the requirement will be accomplished. If a written report is required to be submitted by a specified date and the permittee accomplishes this, a separate written notification is not required.

6. Noncompliance Notification

Compliance with all applicable requirements set forth in the Clean Water Act, Parts 31 and 41 of the NREPA, and related regulations and rules is required. All instances of noncompliance shall be reported as follows:

- a. **24-Hour Reporting**
Any noncompliance which may endanger health or the environment (including maximum and/or minimum daily concentration discharge limitation exceedances) shall be reported, verbally, within 24 hours from the time the permittee becomes aware of the noncompliance by calling the Department at the number indicated on the second page of this permit (or, if this is a general permit, on the COC). A written submission shall also be provided via MiWaters (<https://miwaters.deq.state.mi.us>) within five (5) days.
- b. **Other Reporting**
The permittee shall report, in writing via MiWaters (<https://miwaters.deq.state.mi.us>), all other instances of noncompliance not described in a. above at the time monitoring reports are submitted; or, in the case of retained self-monitoring, within five (5) days from the time the permittee becomes aware of the noncompliance.

Reporting shall include: 1) a description of the discharge and cause of noncompliance; 2) the period of noncompliance, including exact dates and times, or, if not yet corrected, the anticipated time the noncompliance is expected to continue; and 3) the steps taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

7. Spill Notification

The permittee shall immediately report any release of any polluting material which occurs to the surface waters or groundwaters of the state, unless the permittee has determined that the release is not in excess of the threshold reporting quantities specified in the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code), by calling the Department at the number indicated on the second page of this permit (or, if this is a general permit, on the COC); or, if the notice is provided after regular working hours, by calling the Department's 24-hour Pollution Emergency Alerting System telephone number, 1-800-292-4706.

Within 10 days of the release, the permittee shall submit to the Department via MiWaters (<https://miwaters.deq.state.mi.us>) a full written explanation as to the cause of the release, the discovery of the release, response measures (clean-up and/or recovery) taken, and preventive measures taken or a schedule for completion of measures to be taken to prevent reoccurrence of similar releases.

PART II

Section C. Reporting Requirements

8. Upset Noncompliance Notification

If a process "upset" (defined as an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee) has occurred, the permittee who wishes to establish the affirmative defense of upset shall notify the Department by telephone within 24 hours of becoming aware of such conditions; and within five (5) days, provide in writing, the following information:

- a. that an upset occurred and that the permittee can identify the specific cause(s) of the upset;
- b. that the permitted wastewater treatment facility was, at the time, being properly operated and maintained (note that an upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation); and
- c. that the permittee has specified and taken action on all responsible steps to minimize or correct any adverse impact in the environment resulting from noncompliance with this permit.

No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

In any enforcement proceedings, the permittee, seeking to establish the occurrence of an upset, has the burden of proof.

9. Bypass Prohibition and Notification

- a. Bypass Prohibition
Bypass is prohibited, and the Department may take an enforcement action, unless:
 - 1) bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - 2) there were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass; and
 - 3) the permittee submitted notices as required under b. or c. below.
- b. Notice of Anticipated Bypass
If the permittee knows in advance of the need for a bypass, the permittee shall submit written notification to the Department before the anticipated date of the bypass. This notification shall be submitted at least 10 days before the date of the bypass; however, the Department will accept fewer than 10 days advance notice if adequate explanation for this is provided. The notification shall provide information about the anticipated bypass as required by the Department. The Department may approve an anticipated bypass, after considering its adverse effects, if it will meet the three (3) conditions specified in a. above.
- c. Notice of Unanticipated Bypass
As soon as possible but no later than 24 hours from the time the permittee becomes aware of the unanticipated bypass, the permittee shall notify the Department by calling the number indicated on the second page of this permit (or, if this is a general permit, on the COC); or, if notification is provided after regular working hours, call the Department's 24-hour Pollution Emergency Alerting System telephone number, 1-800-292-4706.
- d. Written Report of Bypass
A written submission shall be provided within five (5) working days of commencing any bypass to the Department, and at additional times as directed by the Department. The written submission shall

PART II

Section C. Reporting Requirements

contain a description of the bypass and its cause; the period of bypass, including exact dates and times, and if the bypass has not been corrected, the anticipated time it is expected to continue; steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass; and other information as required by the Department.

e. Bypass Not Exceeding Limitations

The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to ensure efficient operation. These bypasses are not subject to the provisions of a., b., c., and d., above. This provision does not relieve the permittee of any notification responsibilities under Part II.C.11. of this permit.

f. Definitions

1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

10. Bioaccumulative Chemicals of Concern (BCC)

Consistent with the requirements of R 323.1098 and R 323.1215 of the Michigan Administrative Code, the permittee is prohibited from undertaking any action that would result in a lowering of water quality from an increased loading of a BCC unless an increased use request and antidegradation demonstration have been submitted and approved by the Department.

11. Notification of Changes in Discharge

The permittee shall notify the Department, via MiWaters (<https://miwaters.deq.state.mi.us>), as soon as possible but within no more than 10 days of knowing, or having reason to believe, that any activity or change has occurred or will occur which would result in the discharge of: 1) detectable levels of chemicals on the current Michigan Critical Materials Register, priority pollutants or hazardous substances set forth in 40 CFR 122.21, Appendix D, or the Pollutants of Initial Focus in the Great Lakes Water Quality Initiative specified in 40 CFR 132.6, Table 6, which were not acknowledged in the application or listed in the application at less than detectable levels; 2) detectable levels of any other chemical not listed in the application or listed at less than detection, for which the application specifically requested information; or 3) any chemical at levels greater than five times the average level reported in the complete application (see the first page of this permit, for the date(s) the complete application was submitted). Any other monitoring results obtained as a requirement of this permit shall be reported in accordance with the compliance schedules.

PART II

Section C. Reporting Requirements

12. Changes in Facility Operations

Any anticipated action or activity, including but not limited to facility expansion, production increases, or process modification, which will result in new or increased loadings of pollutants to the receiving waters must be reported to the Department by a) submission of an increased use request (application) and all information required under R 323.1098 (Antidegradation) of the Water Quality Standards or b) by written notice if the following conditions are met: 1) the action or activity will not result in a change in the types of wastewater discharged or result in a greater quantity of wastewater than currently authorized by this permit; 2) the action or activity will not result in violations of the effluent limitations specified in this permit; 3) the action or activity is not prohibited by the requirements of Part II.C.10.; and 4) the action or activity will not require notification pursuant to Part II.C.11. Following such written notice, the permit or, if applicable, the facility's COC, may be modified according to applicable laws and rules to specify and limit any pollutant not previously limited.

13. Transfer of Ownership or Control

In the event of any change in ownership or control of facilities from which the authorized discharge emanates, the following requirements apply: Not less than 30 days prior to the actual transfer of ownership or control – for non-CAFOs, or within 30 days of the actual transfer of ownership or control – for CAFOs, the permittee shall submit to the Department via MiWaters (<https://miwaters.deq.state.mi.us>) a written agreement between the current permittee and the new permittee containing: 1) the legal name and address of the new owner; 2) a specific date for the effective transfer of permit responsibility, coverage and liability; and 3) a certification of the continuity of or any changes in operations, wastewater discharge, or wastewater treatment.

If the new permittee is proposing changes in operations, wastewater discharge, or wastewater treatment, the Department may propose modification of this permit in accordance with applicable laws and rules.

14. Operations and Maintenance Manual

For wastewater treatment facilities that serve the public (and are thus subject to Part 41 of the NREPA), Section 4104 of Part 41 and associated Rule 2957 of the Michigan Administrative Code allow the Department to require an Operations and Maintenance (O&M) Manual from the facility. An up-to-date copy of the O&M Manual shall be kept at the facility and shall be provided to the Department upon request. The Department may review the O&M Manual in whole or in part at its discretion and require modifications to it if portions are determined to be inadequate.

At a minimum, the O&M Manual shall include the following information: permit standards; descriptions and operation information for all equipment; staffing information; laboratory requirements; record keeping requirements; a maintenance plan for equipment; an emergency operating plan; safety program information; and copies of all pertinent forms, as-built plans, and manufacturer's manuals.

Certification of the existence and accuracy of the O&M Manual shall be submitted to the Department at least sixty days prior to start-up of a new wastewater treatment facility. Recertification shall be submitted sixty days prior to start-up of any substantial improvements or modifications made to an existing wastewater treatment facility.

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PART II

Section C. Reporting Requirements

15. Signatory Requirements

All applications, reports, or information submitted to the Department in accordance with the conditions of this permit and that require a signature shall be signed and certified as described in the Clean Water Act and the NREPA.

The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

The NREPA (Section 3115(2)) provides that a person who at the time of the violation knew or should have known that he or she discharged a substance contrary to this part, or contrary to a permit, COC, or order issued or rule promulgated under this part, or who intentionally makes a false statement, representation, or certification in an application for or form pertaining to a permit or COC or in a notice or report required by the terms and conditions of an issued permit or COC, or who intentionally renders inaccurate a monitoring device or record required to be maintained by the Department, is guilty of a felony and shall be fined not less than \$2,500.00 or more than \$25,000.00 for each violation. The court may impose an additional fine of not more than \$25,000.00 for each day during which the unlawful discharge occurred. If the conviction is for a violation committed after a first conviction of the person under this subsection, the court shall impose a fine of not less than \$25,000.00 per day and not more than \$50,000.00 per day of violation. Upon conviction, in addition to a fine, the court in its discretion may sentence the defendant to imprisonment for not more than 2 years or impose probation upon a person for a violation of this part. With the exception of the issuance of criminal complaints, issuance of warrants, and the holding of an arraignment, the circuit court for the county in which the violation occurred has exclusive jurisdiction. However, the person shall not be subject to the penalties of this subsection if the discharge of the effluent is in conformance with and obedient to a rule, order, permit, or COC of the Department. In addition to a fine, the attorney general may file a civil suit in a court of competent jurisdiction to recover the full value of the injuries done to the natural resources of the state and the costs of surveillance and enforcement by the state resulting from the violation.

16. Electronic Reporting

Upon notice by the Department that electronic reporting tools are available for specific reports or notifications, the permittee shall submit electronically via MiWaters (<https://miwaters.deq.state.mi.us>) all such reports or notifications as required by this permit, on forms provided by the Department.

PART II

Section D. Management Responsibilities

1. Duty to Comply

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit, more frequently than, or at a level in excess of, that authorized, shall constitute a violation of the permit.

It is the duty of the permittee to comply with all the terms and conditions of this permit. Any noncompliance with the Effluent Limitations, Special Conditions, or terms of this permit constitutes a violation of the NREPA and/or the Clean Water Act and constitutes grounds for enforcement action; for permit or COC termination, revocation and reissuance, or modification; or denial of an application for permit or COC renewal.

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

2. Operator Certification

The permittee shall have the waste treatment facilities under direct supervision of an operator certified at the appropriate level for the facility certification by the Department, as required by Sections 3110 and 4104 of the NREPA. Permittees authorized to discharge storm water shall have the storm water treatment and/or control measures under direct supervision of a storm water operator certified by the Department, as required by Section 3110 of the NREPA.

3. Facilities Operation

The permittee shall, at all times, properly operate and maintain all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures.

4. Power Failures

In order to maintain compliance with the effluent limitations of this permit and prevent unauthorized discharges, the permittee shall either:

- a. provide an alternative power source sufficient to operate facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit; or
- b. upon the reduction, loss, or failure of one or more of the primary sources of power to facilities utilized by the permittee to maintain compliance with the effluent limitations and conditions of this permit, the permittee shall halt, reduce or otherwise control production and/or all discharge in order to maintain compliance with the effluent limitations and conditions of this permit.

5. Adverse Impact

The permittee shall take all reasonable steps to minimize or prevent any adverse impact to the surface waters or groundwaters of the state resulting from noncompliance with any effluent limitation specified in this permit including, but not limited to, such accelerated or additional monitoring as necessary to determine the nature and impact of the discharge in noncompliance.

PART II

Section D. Management Responsibilities

6. Containment Facilities

The permittee shall provide facilities for containment of any accidental losses of polluting materials in accordance with the requirements of the Part 5 Rules (R 324.2001 through R 324.2009 of the Michigan Administrative Code). For a POTW, these facilities shall be approved under Part 41 of the NREPA.

7. Waste Treatment Residues

Residuals (i.e. solids, sludges, biosolids, filter backwash, scrubber water, ash, grit, or other pollutants or wastes) removed from or resulting from treatment or control of wastewaters, including those that are generated during treatment or left over after treatment or control has ceased, shall be disposed of in an environmentally compatible manner and according to applicable laws and rules. These laws may include, but are not limited to, the NREPA, Part 31 for protection of water resources, Part 55 for air pollution control, Part 111 for hazardous waste management, Part 115 for solid waste management, Part 121 for liquid industrial wastes, Part 301 for protection of inland lakes and streams, and Part 303 for wetlands protection. Such disposal shall not result in any unlawful pollution of the air, surface waters or groundwaters of the state.

8. Right of Entry

The permittee shall allow the Department, any agent appointed by the Department, or the Regional Administrator, upon the presentation of credentials and, for animal feeding operation facilities, following appropriate biosecurity protocols:

- a. to enter upon the permittee's premises where an effluent source is located or any place in which records are required to be kept under the terms and conditions of this permit; and
- b. at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect process facilities, treatment works, monitoring methods and equipment regulated or required under this permit; and to sample any discharge of pollutants.

9. Availability of Reports

Except for data determined to be confidential under Section 308 of the Clean Water Act and Rule 2128 (R 323.2128 of the Michigan Administrative Code), all reports prepared in accordance with the terms of this permit and required to be submitted to the Department shall be available for public inspection via MiWaters (<https://miwaters.deq.state.mi.us>). As required by the Clean Water Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Clean Water Act and Sections 3112, 3115, 4106 and 4110 of the NREPA.

10. Duty to Provide Information

The permittee shall furnish to the Department via MiWaters (<https://miwaters.deq.state.mi.us>), within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or the facility's COC, or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

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PART II

Section E. Activities Not Authorized by This Permit

1. Discharge to the Groundwaters

This permit does not authorize any discharge to the groundwaters. Such discharge may be authorized by a groundwater discharge permit issued pursuant to the NREPA.

2. POTW Construction

This permit does not authorize or approve the construction or modification of any physical structures or facilities at a POTW. Approval for the construction or modification of any physical structures or facilities at a POTW shall be by permit issued under Part 41 of the NREPA.

3. Civil and Criminal Liability

Except as provided in permit conditions on "Bypass" (Part II.C.9. pursuant to 40 CFR 122.41(m)), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance, whether or not such noncompliance is due to factors beyond the permittee's control, such as accidents, equipment breakdowns, or labor disputes.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee may be subject under Section 311 of the Clean Water Act except as are exempted by federal regulations.

5. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Clean Water Act.

6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize violation of any federal, state or local laws or regulations, nor does it obviate the necessity of obtaining such permits, including any other Department of Environment, Great Lakes, and Energy permits, or approvals from other units of government as may be required by law.

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of
DTE ELECTRIC COMPANY for
approval of its Integrated Resource Plan
pursuant to MCL 460.6t, and for other
relief.

U-21193

PROOF OF SERVICE

On the date below, an electronic copy of the **REVISED Public Version of the Direct Testimony and Exhibits of Tyler Comings on behalf of Michigan Environmental Council, Natural Resources Defense Council, Sierra Club, and Citizens Utility Board of Michigan (Exhibits MEC-15 through MEC-19)** was served on the following:

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

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

Date: March 15, 2023

By: _____
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