

**STATE OF MICHIGAN**  
Rick Snyder, Governor



**DEPARTMENT OF ENVIRONMENTAL QUALITY**

**AIR QUALITY DIVISION**

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# **PUBLIC PARTICIPATION DOCUMENTS**

For  
DTE Energy  
Detroit Edison – Monroe Power Plant  
Monroe, Michigan

**PERMIT APPLICATION NUMBER**

**93-09B**

**December 19, 2011**

## **FACT SHEET**

December 19, 2011

### **Purpose and Summary**

The Michigan Department of Environmental Quality (MDEQ), Air Quality Division (AQD), is proposing to act on Permit to Install (PTI) application No. 93-09B from DTE Energy. The permit application is for a proposed modification to the stack height on the five (5) existing diesel generators located at the Detroit Edison - Monroe Power Plant. The proposed project is subject to permitting requirements of the Department's Rules for Air Pollution Control and state and federal Prevention of Significant Deterioration (PSD) regulations. Prior to acting on this application, the AQD is holding a public comment period and a public hearing, if requested in writing, to allow all interested parties the opportunity to comment on the proposed PTI. All relevant information received during the comment period and hearing if held, will be considered by the decision-maker prior to taking final action on the application.

### **Background Information**

The Detroit Edison – Monroe Power Plant consists of four (4) similar sized supercritical, pulverized coal-fired Babcock & Wilcox cell burner boilers with a total electric generating capacity of 3,280 MW (gross), associated coal and ash handling systems, two (2) auxiliary boilers, limestone and gypsum handling systems; diesel fuel-fired quench pumps, parts cleaners, and five (5) diesel fuel-fired generators. Detroit Edison – Monroe is currently operating under Renewable Operating Permit (ROP) No. MI-ROP-B2816-2009. The four pulverized coal-fired boilers were placed into service between 1971 and 1974 and are referred to as Units 1, 2, 3, and 4. All four boilers currently combust a blend of bituminous and subbituminous coals and use No. 2 fuel oil for start-up. Detroit Edison – Monroe Power Plant is an existing major stationary source with the potential to emit over 100 tons per year (tpy) of any single criteria air pollutant.

The construction of Units 1, 2, 3, and 4 began prior to August 17, 1971. Therefore, they are not subject to the New Source Performance Standard (NSPS) for Fossil Fuel Fired Steam Generators promulgated in Title 40 of the Code of Federal Regulations (40 CFR) Part 60, Subparts A and D. They are, however, subject to the federal Acid Rain program promulgated in 40 CFR Part 72; the Clean Air Interstate Rule NO<sub>x</sub> annual trading program pursuant to Rules 802a, 803, 821, and 830 through 834; the Clean Air Interstate Rule NO<sub>x</sub> ozone season trading program pursuant to Rules 802a, 803 and 821 through 826; and the Clean Air Interstate Rule SO<sub>2</sub> annual trading program pursuant to Rule 420. The diesel fuel-fired quench pumps are subject to 40 CFR 60, Subpart A and Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines and the National Emission Standards for Hazardous Air Pollutants (NESHAP), as specified in 40 CFR Part 63, Subpart A and Subpart ZZZZ, for Stationary Reciprocating Internal Combustion Engines (RICE). The diesel fuel-fired generators are subject to the NESHAP, Subpart A and ZZZZ for RICE. The generators were installed in 1969 and pre-date the NSPS.

### **Present Air Quality**

The Detroit Edison – Monroe Power Plant is located in Monroe County. The area in which this county is located is currently in attainment with the National Ambient Air Quality Standards (NAAQS) for sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), carbon monoxide (CO), particulate

matter that has an aerodynamic diameter less than or equal to a nominal 10 microns (PM10), ozone, and lead. This area is currently designated as nonattainment with the NAAQS for particulate matter that has an aerodynamic diameter less than or equal to a nominal 2.5 microns (PM2.5).

### **Key Permit Review Issues**

Staff evaluated the proposed project to identify all state rules and federal regulations which are, or may be, applicable. The tables in Appendix 1 summarize these rules and regulations.

- **Minor/Major Modification Determination for Attainment Pollutants** – The facility is an existing Prevention of Significant Deterioration (PSD) major stationary source that was recently modified. A modification at the facility where the emissions of any regulated pollutant will increase by more than the significant level for that pollutant results in the modification being subject to PSD requirements for that pollutant. A PSD review was completed with the issuance of PTI No. 93-09A for the Detroit Edison – Monroe Power Plant. In this permit, an increase in stack height for the existing diesel fuel-fired generators was required due to the criteria pollutants modeling analysis for the PSD project. After the permit review was completed, EPA modeling guidance was provided for regulated sources. DTE Energy has reassessed the stack height for the diesel fuel-fired generators and the impacts on the PSD project using methods allowed in the new EPA guidance.
- **Criteria Pollutants Modeling Analysis** – Computer dispersion modeling to predict the ambient air impacts was performed as required for PM10, SO<sub>2</sub>, and NO<sub>x</sub> using the existing vent stack heights on the diesel fuel-fired generators instead of a permitted stack height increase required in a previous modeling analysis. The maximum impacts are all below the applicable NAAQS. Modeling results are summarized in Appendix 2.

### **Key Aspects of Draft Permit Conditions**

- **Process/Operational Restrictions** - The diesel fuel-fired generators will be limited to less than 100 operating hours per year for each generator defining them as limited use stationary reciprocating internal combustion engines. The generators are used as peaking units and operate infrequently.
- **Federal Regulations** – The diesel fuel-fired generators are subject to the NESHAP, Subpart ZZZZ for RICE. The draft permit specifies them as limited use engines that constitute compliance with the NESHAP.
- **Other Requirements** – The draft permit includes the following requirements for the diesel fuel-fired generators:
  - A non-resettable hour meter to track the number of hours each engine operates.
  - Modified exhaust vent stack heights back to the existing vent stack height.

### **Conclusion**

Based on the analyses conducted to date, staff concludes that the proposed project would comply with all applicable state and federal air quality requirements. Staff also concludes that this project, as proposed, would not violate the federal National Ambient Air Quality Standards or the state and federal PSD increments.

Based on these conclusions, staff has developed draft permit terms and conditions which would ensure that the proposed facility design and operation are enforceable and that sufficient monitoring, recordkeeping, and reporting would be performed by the applicant to determine compliance with these terms and conditions. If the permit application is deemed approvable, the delegated decision maker may determine a need for additional or revised conditions to address issues raised during the public participation process.

If you would like additional information about this proposal, please contact Ms. Julie L. Brunner AQD, at 517-373-7088.

**APPENDIX 1  
STATE AIR REGULATIONS**

<b>State Rule</b>	<b>Description of State Air Regulations</b>
<b>R 336.1201</b>	Requires an Air Use Permit for new or modified equipment that emits, or could emit, an air pollutant or contaminant. However, there are other rules that allow smaller emission sources to be installed without a permit (see Rules 336.1279 through 336.1290 below). Rule 336.1201 also states that the Department can add conditions to a permit to assure the air laws are met.
<b>R 336.1205</b>	Outlines the permit conditions that are required by the federal Prevention of Significant Deterioration (PSD) Regulations and/or Section 112 of the Clean Air Act. Also, the same types of conditions are added to their permit when a plant is limiting their air emissions to legally avoid these federal requirements. (See the Federal Regulations table for more details on PSD.)
<b>R 336.1224</b>	New or modified equipment that emits toxic air contaminants must use the Best Available Control Technology for Toxics (T-BACT). The T-BACT review determines what control technology must be applied to the equipment. A T-BACT review considers energy needs, environmental and economic impacts, and other costs. T-BACT may include a change in the raw materials used, the design of the process, or add-on air pollution control equipment. This rule also includes a list of instances where other regulations apply and T-BACT is not required.
<b>R 336.1225 to R 336.1232</b>	The ambient air concentration of each toxic air contaminant emitted from the project must not exceed health-based screening levels. Initial Risk Screening Levels (IRSL) apply to cancer-causing effects of air contaminants and Initial Threshold Screening Levels (ITSL) apply to non-cancer effects of air contaminants. These screening levels, designed to protect public health and the environment, are developed by Air Quality Division toxicologists following methods in the rules and U.S. EPA risk assessment guidance.
<b>R 336.1279 to R 336.1290</b>	These rules list equipment to processes that have very low emissions and do not need to get an Air Use permit. However, these sources must meet all requirements identified in the specific rule and other rules that apply.
<b>R 336.1299(2)(b)</b>	Adopts by reference the provisions of 40 CFR 63.40 to 63.44 (2002) and 40 CFR 63.50 to 63.56 (2002), the federal hazardous air pollutant regulations governing constructed or reconstructed major sources.
<b>R 336.1301</b>	Limits how air emissions are allowed to look at the end of a stack. The color and intensity of the color of the emissions is called opacity.
<b>R 336.1331</b>	The particulate emission limits for certain sources are listed. These limits apply to both new and existing equipment.
<b>R 336.1370</b>	Material collected by air pollution control equipment, such as dust, must be disposed of in a manner, which does not cause more air emissions.
<b>R 336.1401 and R 336.1402</b>	Limit the sulfur dioxide emissions from power plants and other fuel burning equipment.
<b>R 336.1601 to R 336.1651</b>	Volatile organic compounds (VOCs) are a group of chemicals found in such things as paint solvents, degreasing materials, and gasoline. VOCs contribute to the formation of smog. The rules set VOC limits or work practice standards for existing equipment. The limits are based upon Reasonably Available Control Technology (RACT). RACT is required for all equipment listed in Rules 336.1601 through 336.1651.
<b>R 336.1702</b>	New equipment that emits VOCs is required to install the Best Available Control Technology (BACT). The technology is reviewed on a case-by-case basis. The VOC limits and/or work practice standards set for a particular piece of new equipment cannot be less restrictive than the Reasonably Available Control Technology limits for existing equipment outlined in Rules 336.1601 through 336.1651.
<b>R 336.1801</b>	Nitrogen oxide emission limits for larger boilers and stationary internal combustion engines are listed.
<b>R 336.1901</b>	Prohibits the emission of an air contaminant in quantities that cause injurious effects to human health and welfare, or prevent the comfortable enjoyment of life and property. As an example, a violation may be cited if excessive amounts of odor emissions were found to be preventing residents from enjoying outdoor activities.

**STATE AIR REGULATIONS**

State Rule	Description of State Air Regulations
<b>R 336.1910</b>	Air pollution control equipment must be installed, maintained, and operated properly.
<b>R 336.1911</b>	When requested by the Department, a facility must develop and submit a malfunction abatement plan (MAP). This plan is to prevent, detect, and correct malfunctions and equipment failures.
<b>R 336.1912</b>	A facility is required to notify the Department if a condition arises which causes emissions that exceed the allowable emission rate in a rule and/or permit.
<b>R 336.2001 to R 336.2060</b>	Allow the Department to request that a facility test its emissions and to approve the protocol used for these tests.
<b>R 336.2501 to R 336.2514</b>	Regulates mercury emissions from any stationary coal-fired electric generating unit (EGU) serving a generator with a nameplate capacity of more than 25 megawatts producing electricity for sale. The program begins January 1, 2015 and contains provisions for existing and new EGUs. Mercury program eligibility provisions and prohibitions, demonstration plans, testing, monitoring, record keeping, and reporting are all part of the rule.
<b>R 336.2801 to R 336.2804 Prevention of Significant Deterioration (PSD) Regulations  Best Available Control Technology (BACT)</b>	<p>The PSD rules allow the installation and operation of large, new sources and the modification of existing large sources in areas that are meeting the National Ambient Air Quality Standards (NAAQS). The regulations define what is considered a large or significant source, or modification.</p> <p>In order to assure that the area will continue to meet the NAAQS, the permit applicant must demonstrate that it is installing the BACT. By law, BACT must consider the economic, environmental, and energy impacts of each installation on a case-by-case basis. As a result, BACT can be different for similar facilities.</p> <p>In its permit application, the applicant identifies all air pollution control options available, the feasibility of these options, the effectiveness of each option, and why the option proposed represents BACT. As part of its evaluation, the Air Quality Division verifies the applicant's determination and reviews BACT determinations made for similar facilities in Michigan and throughout the nation.</p>
<b>R 336.2901 to R 336.2903 and R 336.2908</b>	<p>Applies to new "major stationary sources" and "major modifications" as defined in R 336.2901. These rules contain the permitting requirements for sources located in nonattainment areas that have the potential to emit large amounts of air pollutants. To help the area meet the NAAQS, the applicant must install equipment that achieves the Lowest Achievable Emission Rate (LAER). LAER is the lowest emission rate required by a federal rule, state rule, or by a previously issued construction permit. The applicant must also provide emission offsets, which means the applicant must remove more pollutants from the air than the proposed equipment will emit. This can be done by reducing emissions at other existing facilities.</p> <p>As part of its evaluation, the AQD verifies that no other similar equipment throughout the nation is required to meet a lower emission rate and verifies that proposed emission offsets are permanent and enforceable.</p>

**FEDERAL AIR REGULATIONS**

Citation	Description of Federal Air Regulations or Requirements
<b>Section 109 of the Clean Air Act – National Ambient Air Quality Standards (NAAQS)</b>	The United States Environmental Protection Agency has set maximum permissible levels for seven pollutants. These NAAQS are designed to protect the public health of everyone, including the most susceptible individuals, children, the elderly, and those with chronic respiratory ailments. The seven pollutants, called the criteria pollutants, are carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter less than 10 microns (PM10), particulate matter less than 2.5 microns (PM2.5), and sulfur dioxide. Portions of Michigan are currently non-attainment for either ozone or PM2.5. Further, in Michigan, State Rules 336.1225 to 336.1232 are used to ensure the public health is protected from other compounds.

**FEDERAL AIR REGULATIONS**

Citation	Description of Federal Air Regulations or Requirements
<b>40 CFR 51 Appendix S Emission Offset Interpretive Ruling</b>	Appendix S applies during the interim period between nonattainment designation and EPA approval of a SIP that satisfies nonattainment requirements specified in Part D of the Clean Air Act. Appendix S would apply in nonattainment areas where either no nonattainment permit rules apply or where the existing state rules are less stringent than Appendix S.
<b>40 CFR 52.21 – Prevention of Significant Deterioration (PSD) Regulations  Best Available Control Technology (BACT)</b>	The PSD regulations allow the installation and operation of large, new sources and the modification of existing large sources in areas that are meeting the NAAQS. The regulations define what is considered a large or significant source, or modification.  In order to assure that the area will continue to meet the NAAQS, the permit applicant must demonstrate that it is installing BACT. By law, BACT must consider the economic, environmental, and energy impacts of each installation on a case-by-case basis. As a result, BACT can be different for similar facilities.  In its permit application, the applicant identifies all air pollution control options available, the feasibility of these options, the effectiveness of each option, and why the option proposed represents BACT. As part of its evaluation, the Air Quality Division verifies the applicant's determination and reviews BACT determinations made for similar facilities in Michigan and throughout the nation.
<b>40 CFR 60 – New Source Performance Standards (NSPS)</b>	The United States Environmental Protection Agency has set national standards for specific sources of pollutants. These New Source Performance Standards (NSPS) apply to new or modified equipment in a particular industrial category. These NSPS set emission limits or work practice standards for over 60 categories of sources.
<b>40 CFR 63— National Emissions Standards for Hazardous Air Pollutants (NESHAP)</b>	The United States Environmental Protection Agency has set national standards for specific sources of pollutants. The National Emissions Standards for Hazardous Air Pollutants (NESHAP) (a.k.a. Maximum Achievable Control Technology (MACT) standards) apply to new or modified equipment in a particular industrial category. These NESHAPs set emission limits or work practice standards for over 100 categories of sources.
<b>Section 112 of the Clean Air Act  Maximum Achievable Control Technology (MACT)  Section 112g</b>	In the Clean Air Act, Congress listed 189 compounds as Hazardous Air Pollutants (HAPS). For facilities which emit, or could emit, HAPS above a certain level, one of the following two requirements must be met:  1. The United States Environmental Protection Agency has established standards for specific types of sources. These Maximum Achievable Control Technology (MACT) standards are based upon the best-demonstrated control technology or practices found in similar sources.  2. For sources where a MACT standard has not been established, the level of control technology required is determined on a case-by-case basis.

**Notes:** An "Air Use Permit," sometimes called a "Permit to Install," provides permission to emit air contaminants up to certain specified levels. These levels are set by state and federal law, and are set to protect health and welfare. By staying within the levels set by the permit, a facility is operating lawfully, and public health and air quality are protected.

**The Air Quality Division does not have the authority to regulate noise, local zoning, property values, off-site truck traffic, or lighting.**

These tables list the most frequently applied state and federal regulations. Not all regulations listed may be applicable in each case. Please refer to the draft permit conditions provided to determine which regulations apply.

**APPENDIX 2 - Air Quality Impact Analysis  
 (R 336.2803, R 336.2804, 40 CFR 52.21(c) and (d))**

**MODELING METEOROLOGICAL DATA**

The meteorological data used for the criteria pollutant modeling was the Monroe Custer Airport surface data set (Station TTF No. 15553 with an anemometer height of 33 feet), combined with coincident upper air observations measured at the White Lake upper air site (Station No. 72632). The meteorological database for the years 2003 through 2007 was used for the modeling. Five years of meteorological data (2003-2007) was used in the impact modeling for the toxic air contaminant (TAC) analysis.

**SIGNIFICANT IMPACT ANALYSIS**

For criteria pollutants, the ambient impact modeling followed the guidance and methodology required for prevention of significant deterioration (PSD) air use permit applications. PSD air quality impact evaluations are required for major sources or major modifications of criteria pollutants in an attainment or unclassified area, and involve PSD increment modeling for NO<sub>2</sub>, SO<sub>2</sub>, and PM<sub>10</sub> along with modeling to meet National Ambient Air Quality Standards (NAAQS) for NO<sub>2</sub>, SO<sub>2</sub>, and PM<sub>10</sub>. The analysis involves two phases: (1) a preliminary analysis, and (2) a full impact analysis. The preliminary analysis models only the significant increase in potential emissions from a proposed new source, or the significant “net” increase from a proposed modification. If it can be demonstrated that these emissions would not increase ambient concentrations by more than the prescribed Significant Impact Levels (SILs) shown below in Table 1, based on the first high impact, no further modeling would be required.

**TABLE 1  
 SIGNIFICANT IMPACT LEVELS**

<b>Pollutant</b>	<b>Averaging Time</b>	<b>Significant Impact Level (µg/m<sup>3</sup>)</b>
SO <sub>2</sub>	1-hr	7.9
SO <sub>2</sub>	Annual	1
SO <sub>2</sub>	3-hr	25
SO <sub>2</sub>	24-hr	5
PM <sub>10</sub>	24-hr	5
PM <sub>10</sub>	Annual	1
NO <sub>2</sub>	1-hr	7.6
NO <sub>2</sub>	Annual	1

Preliminary modeling for the project indicated that ambient impacts from the project would be below the SILs for all parameters except 1-hour NO<sub>2</sub> and 24-hour/annual PM<sub>10</sub>. Regardless, a full impact analysis was performed for NO<sub>2</sub>, SO<sub>2</sub>, and PM<sub>10</sub> to assess compliance with all applicable NAAQS thresholds.

### PSD INCREMENT ANALYSIS

PSD regulations require that facilities perform an increment analysis for all post-baseline pollutant emissions for which the impact from the proposed project exceeds the SIL. However, the diesel generators were not part of the change in operation from baseline operations, and therefore, do not consume PSD increment.

### NAAQS ANALYSIS

The PSD regulations require projects with impacts above the SILs to be modeled for compliance with the NAAQS. The project emission units, other existing Monroe Power Plant emission units, and other nearby facilities were modeled for the cumulative 1-hr NO<sub>2</sub>, the cumulative 1-hr/3-hr/24-hr/annual SO<sub>2</sub>, and cumulative 24-hr/annual PM10 analysis. The cumulative NAAQS analysis was performed according to EPA guidance. The results of the cumulative NAAQS analysis are summarized in Table 2. The NAAQS modeling results demonstrate that the project would not cause or contribute to ambient impacts that exceed the NAAQS.

**TABLE 2  
CUMULATIVE NAAQS ANALYSIS**

Pollutant	Averaging Time	Maximum Cumulative Impact (µg/m <sup>3</sup> )	Background (µg/m <sup>3</sup> )	Total (µg/m <sup>3</sup> )	NAAQS (µg/m <sup>3</sup> )
SO <sub>2</sub>	1-hr	254.7 <sup>2</sup>	-- <sup>1</sup>	254.7 <sup>2</sup>	199
SO <sub>2</sub>	3-hr	216.7	84.7	301.4	1300
SO <sub>2</sub>	24-hr	80.4	38.0	118.4	365
PM10	24-hr	95.2	43.0	138.2	150
PM10	Annual	17.6	21.0	38.6	50
NO <sub>2</sub>	1-hr	106.2	63.5	169.7	188
NO <sub>2</sub>	Annual	4.0	21.0	25.0	100

<sup>1</sup> Background incorporated within the model run by adding 72-hour span maximum hourly centered around each modeled day.

<sup>2</sup> Modeled violation resulted from emissions at a nearby offsite facility. Culpability study demonstrated Monroe was not culpable for any modeled violations. Maximum NAAQS impact, without the nearby violation offsite source, would be 149.5 ug/m<sup>3</sup>