
DETROIT EDISON - MONROE

RESPONSE TO COMMENTS DOCUMENT

August 2, 2010

PERMIT No. 93-09



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I. PUBLIC PARTICIPATION PROCESS

Permit to Install Application No. 93-09 for Detroit Edison - Monroe is for a proposed modification of an existing 823 megawatt (MW) gross pulverized coal-fired boiler (Unit 3) and an existing 817 MW gross pulverized coal-fired boiler (Unit 4) to increase the utilization of subbituminous coal and to add the combustion of petroleum coke; upgrades to coal handling systems; installation of petroleum coke handling systems, and limestone and gypsum handling systems; and operation of associated process equipment all located at 3500 Front Street, Monroe, Michigan. The public participation process involved providing information for public review including an enhanced fact sheet, proposed permit terms and conditions, a public comment period, an informational meeting, a public hearing, and the receipt of written and verbal public comments on staff's analysis of the application and the proposed permit.

On April 13, 2010, copies of the Notice of Air Pollution Comment Period and Public Hearing, the Public Participation Documents, and the draft permit conditions were placed on the Internet at the Department of Natural Resources and Environment (DNRE), Air Quality Division's (AQD) Home Page (<http://www.michigan.gov/air>). In addition, a notice announcing the Public Comment Period, Public Informational Meeting, and Public Hearing was placed in the Monroe Evening News. The notice provided pertinent information regarding the proposed action; the locations of available information; a telephone number to request additional information; the date, time, and location of the Public Informational Meeting and Public Hearing; the closing date of the Public Comment Period; and the address where written comments were being received.

The Informational Meeting and Public Hearing were held on May 13, 2010 at the Monroe County Community College in the dining Hall, 1555 Raisinville Road, A Building, Monroe, Michigan. This location was selected due to its proximity to the facility and the size of the room. Approximately seven people attended the Informational Meeting and Public Hearing. A panel of representatives from the AQD was available to answer questions regarding the proposed project. No questions were asked of the panel representatives. The hearing began at 7:00 PM with Mr. Jon Russell as the hearings officer and Mr. Vinson Hellwig as the decision-maker. Only comments on the proposed permit action were received. In addition, AQD staff was available outside the room to answer any questions. Only one commenter provided oral comments at the hearing. The Public Hearing concluded at 7:22 PM, but the Public Comment Period did not close at the conclusion of the Public Hearing. The Public Comment Period was extended by two weeks until June 1, 2010 per a written request previously received.

A total of seven written comments and one written request to extend the Public Comment Period were received during the Public Comment Period.

The remainder of this document is a listing of the significant comments received during the public comment period and hearing regarding the proposed permit and the Department's response. The first section discusses the comments received that resulted in changes to the final permit terms and conditions and the basis for each change. The last section discusses the Department's response to all other significant comments that did not result in changes to the final permit.

II. SUMMARY OF COMMENTS RESULTING IN CHANGES TO THE PERMIT

Comment

Auxiliary Boiler Operations -

DTE Energy's original modeling runs to demonstrate compliance with the short-term sulfur dioxide (SO₂) National Ambient Air Quality Standards (NAAQS) were run with SO₂ emissions from only one auxiliary boiler. The assumed maximum oil sulfur content that formed the basis for the SO₂ emission rate was 0.5 percent. Therefore, the short-term SO₂ NAAQS compliance demonstration was rerun with both auxiliary boilers operating. The total impact from all sources including background rose from 56 to 58 (or 59) percent of the respective 3- and 24-hour NAAQS. Since the total SO₂ impact had already been listed in the documents made available to the public, DTE Energy supports the following proposed changes to the draft permit conditions for the two auxiliary boilers at Monroe Power plant. In the Material Limits Section (Condition II.1), change the sulfur limit from 0.5 percent to 0.25 percent. Subsequently, there is no need to restrict the plant to only operate one auxiliary boiler at a time. Therefore, Condition III.2 can be deleted since the fuel sulfur limit will restrict the emission rate to the figure included in the original short-term SO₂ NAAQS modeling submittal.

AQD Response

The AQD concurs with the proposed changes to the special conditions for the two auxiliary boilers as the change represents no increased impact to air quality. Also, this change to the auxiliary boilers is not due to a Prevention of Significant Deterioration (PSD) major modification of the auxiliary boilers.

Condition Changes

For flexible group FGAUXBOILERS-S1, the following additions, changes, and deletions were made to the special conditions (SC):

SC I.2 was added with an emission limit for SO₂ of 53.3 pound per hour for each auxiliary boiler to reflect the emissions modeled to demonstrate compliance with PSD increment and the NAAQS.

SC II.1 was changed from 0.5% to 0.25% sulfur by weight for the No.2 fuel oil to reflect the emissions modeled to demonstrate compliance with PSD increment and the NAAQS.

SC III.2 was removed because restricting operations to only one auxiliary boiler at a time was not needed with this action.

Comment

The modeling analysis includes an examination of 1-hr nitrogen dioxide (NO₂) impacts as required by the new standard. The 1-hr NO₂ analysis includes operating restrictions on the five diesel generators. The generators are limited to seven calendar days of operation, either individually or in combination. Due to this limit, the diesel generators were excluded from the NO₂ modeling. The NO₂ modeling with all other NO₂ sources results in an 8th high value of 97.7 ug/m³, which is then combined with a background value and compared to the National Ambient Air Quality Standards (NAAQS). The peak modeled value from all other sources is 227 ug/m³. It

is not clear that seven calendar day limit on the diesel generators, and their exclusion from the modeling, is an appropriate approach to calculating the 1-hr NO₂ design value. However, it does seem clear that excluding the diesel generators and then comparing the 8th high value from all other sources to the NAAQS is inappropriate. Comparing the peak 1-hr value from all other sources to the NAAQS may be an acceptable approach but currently shows a violation.

AQD Response

New modeling evaluated the impact from the facility including the diesel generators with an increased stack height. The modeling used the 8th highest daily maximum impact, and added hour specific NO₂ background concentrations temporally matched with the 1-hr NO₂ impacts predicted by the AMS/EPA Regulatory Model (AERMOD) for the 2003 through 2007 five year meteorological data period. The NO₂ background values were obtained from the South Bend, Indiana monitor which was deemed representative of a non-urban area since all of Michigan's NO₂ monitors are located near Detroit and Grand Rapids. The sum of the modeled 1-hr NO₂ impact plus the hour specific background was averaged over the five year meteorological data period on a receptor-by-receptor basis according to the procedure contained in the EPA document titled "Notice Regarding Modeling for New Hourly NO₂ NAAQS," Updated 02/25/10.

The total maximum impact based on the 5 year average of the 8th high value at any receptor was 148.4 ug/m³. The modeling demonstrated that the 1-hr NO₂ NAAQS of 188 ug/m³ could be met including the diesel generators using taller stacks, thus the seven calendar day operating restriction can be removed from the permit.

Condition Changes

For flexible group FGPEAKERS-S2, the following additions, changes, and deletions were made to the special conditions:

SC III.1 was removed which eliminates the restriction that FGPEAKERS-S2 can not operate for more than seven (7) calendar days per calendar year.

SCs VIII.1, 2, 3, 4, and 5 were modified. The minimum stack height above ground was increased to be 230 feet.

SC IX.1 was added as follows:

IX. OTHER REQUIREMENTS

1. Within 365 days of permit issuance, the permittee shall operate FGPEAKERS-S2 with stacks as specified in SCs VIII.1, VIII.2, VIII.3, VIII.4, and VIII.5. Within seven days of completing the installation, the permittee shall notify the AQD District Supervisor, in writing, as to the date the stack modifications were completed.
(R 336.2804, 40 CFR 52.21(d))

Comment

The 0.0036 lb/MMBtu volatile organic compound (VOC) BACT limit is higher than the BACT limits at other sources. The RACT/BACT/LAER Clearinghouse (RBLC) has a handful of similar sources (in terms of size, controls and fuel blend) with a limit lower than DTE's proposed limit - for example, Omaha Public Power District, Permit # 58343c01 has 0.0034 pounds per million British thermal units (lb/MMBtu), on a 3-hour averaging period. Please provide the rationale why a lower BACT limit should not be applied after analyzing the energy, environmental, and economic feasibility of available control technologies.

AQD Response

The emission limit of 0.0034 lb/MMBtu should be BACT for Detroit Edison – Monroe. VOC emissions from combustion sources are related to the organic content of the fuels combusted and good combustion practices. VOC emissions are controlled through good combustion practices but can fluctuate with load shifts and fuel switching during the combustion process making it difficult to assess an emission limit. Typically, the organic content of subbituminous coal is higher than bituminous coal, and petroleum coke has a lower organic content than coal. Omaha Public Power District, Permit # 58343c01 combusts subbituminous coal and uses good combustion practices. The emission limit of 0.0034 lb/MMBtu should be BACT for Detroit Edison – Monroe since it is based on a similar fuel and control technology.

Condition Changes

For emission units EU-UNIT3-S1 and EU-UNIT4-S1, the following changes were made to the special conditions:

SC I.11 was changed to a VOC emission limit of 0.0034 lb/MMBtu and SC I.12 was changed to 25.9 pound per hour to reflect the decreased VOC BACT limit.

Comment

Reconsideration of the mercury limit of 0.020 lb/GW-hr - We (DTE Energy) have some new information on mercury emissions, and they are higher than anticipated. Furthermore, we do not understand why, but are actively investigating the emissions. Our activities include ash sampling, coal sampling and discussions with Babcock & Wilcox, who provided the flue gas desulfurization system. This impacts I. EMISSION LIMITS for EU-UNIT3-S1 and EU-UNIT4-S1 on pages 8 and 16 of 69 of the draft permit.

AQD Response

The mercury limit was revised to 0.02 lb/GW-hr to provide more flexibility. A mercury mass emission limit was added to limit potential to emit which is representative of the mercury deposition modeling and the risk assessment for the permit.

Condition Changes

For emission units EU-UNIT3-S1 and EU-UNIT4-S1, the following changes were made to the special conditions:

SC I.18 was changed to a mercury emission limit of 0.02 lb/GW-hr.

SC I.19 was added with a mass emission limit for mercury of 144.2 pound per year for EU-UNIT3-S1 and 143.1 pound per year for EU-UNIT4-S1 based on a 12-month rolling time period to reflect the emissions modeled to demonstrate compliance with state toxics rules.

SC VI.11 was modified to include record keeping for the mercury mass emission limit in SC I.19.

III. SUMMARY OF SIGNIFICANT COMMENTS

A. Public Health and Environment Concerns

Comment

The permit should not be approved because the Detroit Edison Monroe power plant currently contributes significant adverse and cumulative emissions to Lake Erie and downwind communities. The Toxics Release Inventory report indicates large amounts of toxics disposed or released from the facility. A study by Pollution Watch reports that the Monroe power plant had the highest air releases in the Lake Erie and Great Lakes basins. The pollutants emitted can have significant health and environmental impacts. Carcinogenicity, endocrine disruption, and reproductive and developmental effects are a few of the health effects associated with many of these toxic chemicals. Transboundary air pollution causes significant levels of premature deaths, hospitalizations, and other illnesses in Ontario. The emissions from the Monroe power plant should be considered adverse.

AQD Response

The regulatory requirements of the permitting process ensure public health protection. Analyses are performed to consider the ambient impacts of criteria pollutants (i.e., ozone, sulfur dioxide, carbon monoxide, nitrogen oxides, particulate matter less than or equal to 10 microns (PM10), particulate matter less than or equal to 2.5 microns (PM2.5), and lead) as well as facility impacts from other pollutants, known as toxic air contaminants (TACs). Emissions from permitted facilities must meet the federal National Ambient Air Quality Standards (NAAQS); are limited for criteria air pollutants, and must satisfy the DNRE air toxics rules for TACs. These requirements are designed to safeguard the public health. The commenter noted the quantities of recent facility emissions and listed some of the potential hazards posed by air contaminants. The DNRE permit review process accounts for the types and quantities of air contaminant emissions, the modeled ambient air impacts, and the acceptability of those impacts.

To determine the acceptability of the impacts of toxic air pollutants, the DNRE utilized health-based screening levels for air toxics, NAAQS for criteria pollutants, and deposition modeling for mercury. Emissions of all TACs were analyzed to ensure that they would comply with risk based screening levels which have been developed by AQD toxicologists. In developing screening levels for health protection, toxicologists take into account the potential for compounds to cause cancer, reproductive or developmental effects, endocrine disruption as

mentioned by the commenter, and any other adverse health impacts. Screening levels are set at levels below which any significant adverse health impacts would be expected to occur. Any impact of emissions beyond the edge of the facility property were modeled and found to be well below screening levels.

The DNRE determined that the emissions of TACs will not pose an unacceptable risk to human health. The commenter has not provided any specific information to indicate that the risk assessment underestimated the potential harm from the project emissions. Because there would not be any significant health impacts the commenter mentioned (i.e., premature deaths, hospitalizations or other illnesses) beyond the property boundary, the project would not cause or significantly contribute to health impacts in Ontario.

The DNRE analyzed the public health impacts of criteria pollutant emissions from the proposed facility alone and in combination with the existing air contaminants in the atmosphere and determined that the facility's emissions meet all applicable federal and state requirements, including those designed to protect the public health. Monroe County is currently in attainment with the NAAQS for ozone, sulfur dioxide, carbon monoxide, nitrogen oxides, PM10, and lead. Although Monroe County is currently designated nonattainment for PM2.5, the most recent monitoring data is showing levels below the standards. The project would not cause or contribute to any exceedances of the NAAQS. Lead impacts were determined to be acceptable as compliance with the recently revised (2008) NAAQS will be achieved by the project. The NAAQS are designed to protect the public health, including susceptible individuals.

An analysis of atmospheric deposition impacts from mercury emissions was performed. The reduction in maximum deposition impact from units 3 and 4 results from the decrease in mercury emissions from an estimated 422 pounds per year (past actual emissions) to a future allowable emission rate of 287 pounds per year. The DNRE conducted full mercury deposition modeling to evaluate the extent and area of any mercury deposition increase expected near the plant. The mercury emissions from this project will have low local deposition impacts and do not pose an unacceptable risk. The mercury emission control strategy satisfies the applicable requirements for electric generating units (EGUs).

In summary, the DNRE has confidence that the extensive regulatory requirements of the permitting process ensure sufficient public health protection. These requirements include the NAAQS for criteria pollutants and the DNRE air toxics rules for the TACs, both of which are designed to provide sufficient public health safeguards. The risk assessments that have been performed for the project's emissions do not suggest a public health threat.

B. Dispersion Modeling

Comment

The NO₂ modeling incorporated the use of the Plume Volume Molar Ratio Method (PVMRM). The information used to execute PVMRM needs to be justified and supported in the record. While a 10% in-stack NO₂/NO_x ratio is listed as a default in the AERMOD User's Guide, its use for 1-hour NO₂ should not be considered a default and it, or another value, should be justified. Additionally, the equilibrium value of 75% should be justified and supported as to why it is more appropriate than the model default value of 90%. Also, it is unclear what ozone monitor was used for input into PVMRM. Additionally, the 40 parts per billion (ppb) OZONEVAL

background/substitute value seems low. This value should be justified or a higher value or different methodology for determining missing values should be used to reflect hourly ozone values during more ozone-conducive conditions.

AQD Response

A report titled "Evaluation of Bias in AERMOD-PVMRM" prepared by Roger W. Brode of MACTEC Federal Programs, Inc., Research Triangle Park, NC for the Alaskan Department of Environmental Conservation (ADEC) concluded that the AERMOD-PVMRM algorithm provides unbiased estimates of the NO₂/NO_x ratio. This report was based on data collected from two aircraft studies of power plant plumes, and two long-term field studies. Additionally, the report recommended using a more representative in-stack NO₂/NO_x ratio of 0.05 or 5% and a more representative value of 0.75 or 75% for the equilibrium NO₂/NO_x ratio. The modeling used the 75% default value for the equilibrium NO₂/NO_x ratio as supported by this report and the AERMOD default value of 10% for the in-stack NO₂/NO_x ratio in lieu of the 5% value which is conservative.

The ozone data used for the PVMRM processing was based on the DNRE Wayne County Allen Park monitor (AQS Site 261630001-2). This site only operated for the summer ozone season (April 1 through September 1) therefore, a second data set from the Environmental Canada Windsor West ozone monitor was used for the remaining months. The DNRE Wayne County Allen Park monitor is located in a suburban/urban area where ozone concentrations may be higher than those in the Monroe area which would conservatively overestimate the available ozone for PVMRM.

Missing ozone data was replaced in the hourly ozone file before AERMOD was run. Gaps of four hours or less were filled using linear interpolation and gaps of more than four hours were filled using the highest 1-hr ozone concentration that occurred in the given month. Since all missing values were filled, the 40 ppb OZONEVAL background/substitute value was never used.

Comment

The surface meteorological data includes about 20% calm hours per year. This is a significant number of hours that are not being considered in the AERMOD modeling. This bias can result in much lower impacts when compared to modeling conducted with a lower percent of calm hours, depending on the source characteristics. It can be particularly important when evaluated short-term standards. The impact of the meteorological data on this source should be evaluated in terms of compliance with the NAAQS and increments, or another representative meteorological data set could be examined.

AQD Response

The meteorological data set for the years 2003 through 2007 from the Monroe Custer Airport (Station TTF No. 15553) was used for the modeling. This station is located approximately five miles west-northwest of the Monroe Power Plant which is located on the eastern shore of Lake

Erie. This data was compiled using the same procedures as all the other metrological stations in the state available for use with AERMOD, and would be used by any facility seeking a New Source Review (NSR) permit and locating in the greater Monroe area. Due to the station's proximity to the eastern shore of Lake Erie, the on-shore breeze created by the daily temperature differences of the land and the water can have the effect of cancelling out the prevailing winds which tend to be from the southwest. Thus, a higher percentage of calm hours would be expected in comparison to an inland metrological station. An EPA draft document titled "Regional Meteorological Data Processing Protocol, EPA Region 5 and States" dated July 1, 2008, states "If calm hours, plus variable wind hours - which are classified as missing in recent ASOS data sets - total 25% of the year or more, that year of met data should generally not be considered representative. If the number of missing and variable hours total between 10% and 25%, the impact should be examined, considering the source types being modeled." Since this data has routinely been used for all modeling conducted by facilities applying for an air use permit in that area, and the percentage of calm hours are below 25% for all the years, the AQD believes that it would be consistent to continue to use metrological data obtained from this station for all modeling performed to support NSR permit applications provided that the percentage of calm hours remains below 25%.

Comment

It was unclear from the documentation provided how the background values for use in the NAAQS analysis were determined. Information related to the background values should be provided for review.

AQD Response

DNRE identified ambient SO₂ data collected at the monitor located at 11600 East Seven Mile Road, Detroit, Michigan and PM₁₀ data collected at the Flint, Michigan monitor as conservatively representative. The 3-hr and 24-hr SO₂ background values were based on the highest 2nd high monitored value, and the 24-hr PM₁₀ background value was determined using the 4th highest value from the set of 1st through 4th high monitored values over the 3-year period from the years 2005 through 2007 which follows the standard established in PSD/NSR guidance. The data was collected using State and Local Air Monitoring (SLAMS) operational procedures, which insures the data is of high quality. The 1-hr NO₂ backgrounds values were obtained from the South Bend, Indiana monitor and were used as described in the above comment regarding the 1-hr NO₂ design value.

Comment

There was some discussion of fugitive emission sources in the Public Participation Document. However, it was unclear from the documentation if, and how, fugitive emissions were characterized in the dispersion modeling. That information should be provided for review.

AQD Response

Fugitive emissions from several different sources and operations were included in the modeling analysis and were characterized as volume sources. The overall height and lateral dimensions and the associated volume source release height, lateral dimension, and vertical dimension for each source is listed in the application, TABLE B-6. Volume Source Parameters of Appendix H,

December 22, 2009 submittal titled "Revised Air Quality Modeling Impact Analysis" as shown below.

TABLE B-6. Volume Source Parameters.

Source ID	Source Description	Source Ht (ft)	Side Dim. (ft)	Release Ht (ft)	Release Ht (m)	Hor. Dim. (m)	Vert. Dim. (m)
EG21	Limestone ship unloading drop emissions	90	1.5	73	22.1	0.35	12.76
EG22	Limestone ship unloading to storage pile	120	1.8	120	36.6	0.43	17.01
EG23B	Limestone Pile maint	40	90.0	39	12.0	20.93	5.7
EG24A	Limestone conveyors from pile to silos (TT#1)	8	0.8	25	7.6	0.18	1.2
EG24B	Limestone conveyors from pile to silos (TT#2)	5	0.8	28	8.6	0.18	0.74
EG25A	Limestone emergency conveyor	9	0.7	25	7.6	0.17	1.3
EG31	Gypsum Conveyor Operation	62	7.6	62	18.9	1.77	8.78
EG32	Gypsum Storage and Shipping	62	7.6	62	18.9	1.77	8.78
EG51	Coal Ship Unloading	72	1.5	72	22.0	0.35	10.2
EG52	Coal Belt Tripper Drop	115	1.8	115	35.0	0.43	16.3
EG53	Coal Pile Maintenance	33	387.0	33	10.0	90	4.7
EG24	Coal Conveyor C4	20	215.0	20	6.0	50	2.8
25B 0001	EmerLimestoneHaulRoad	9	20.0	3	1.0	9.3	1.3
33 0001	GypsumHaul	9	20.0	3	1.0	9.3	1.3
EG41and43ab	Combined Pet Coke Drop/reclaim/maintenance	20	238	20	6.1	16.9	5.7
EG42	PetCokeHaulTrucks	9	65.6	3	1.0	9.3	1.3

C. Applicability Determination

Comment

In the Fact Sheet (Appendix 2), the baseline actual emissions of the new emission units are the same as the baseline of the existing units, without any explanation. The baseline actual emissions for a new unit that is under construction/start-up (still in the shakedown period) should be zero. However, we question why the apparent modifications are characterized as new. Such characterization impacts the conclusions drawn in your analysis. Please clarify this discussion and modify any conclusions as appropriate.

AQD Response

The baseline actual emissions only include emissions from existing equipment that is affected by the project. This includes existing boilers 3 and 4, and the existing coal handling systems. New emission units (which includes two diesel-fired quench pumps, and petroleum coke, limestone, gypsum, and hydrated lime material handling systems) would not be included in baseline actual emissions because they did not exist and operate during the baseline period. The "apparent modifications" are not characterized as new.

Comment

In the permit application (Appendix E, revised 9/21/2009), in the calculations of the projected actual emissions for the nonattainment area pollutants, some of the exclusions ("excluded heat input", and "excluded utilization") are related to the increased utilization due to the product demand growth or factors unrelated to the project. Please explain how you arrived to these exclusions.

AQD Response

Per the application, Appendix E, Table 3-4a (Revised 1/7/2010):

"PROJECTED ANNUAL HEAT INPUT" is from the PROMOD runs for the Monroe Units 3 and 4 for the 5-year period from 2009 to 2013 submitted to the MPSC in the 2009 Power Supply Cost Recovery (PSCR) report, September 18, 2008.

"EXCLUDED UTILIZATION" is any projected utilization which exceeds the utilization in the baseline period. When projecting actual emissions, R 336.2901(dd)(i)(C) allows the permittee to exclude, in calculating any increase in emissions that results from the particular project, that portion of the unit's emissions following the project that an existing unit could have accommodated during the consecutive 24-month period used to establish the baseline actual emissions of this rule and that are also unrelated to the particular project, including any increased utilization due to product demand growth. Any change in actual utilization will be due to changes in electric energy demand or other factors which are unrelated to the project.

Please note, the correct rule citation in determining projected actual emissions is actually R 336.2901(dd)(ii)(C).

The "excluded heat input" is the utilization which exceeds the actual utilization in the baseline period. Any increase in utilization above the baseline is unrelated to the particular project, and includes increased utilization due to product demand growth.

The excludable portion of the actual-to-projected-actual applicability test were based on exclusions that could have been accommodated without the change occurring. The PROMOD run that was submitted to the MPSC indicated that electric energy demand would increase in the future, therefore, utilization of Units 3 and 4 would have increased even without the change occurring. Therefore, those emissions could have been accommodated and are deemed excludable.

D. Best Available Control Technology (BACT) Review

Comment

With the recent introduction of Flue Gas Desulfurization as well as selective catalytic reduction, the Monroe Power Plant has substantially reduced its emissions of sulfur dioxide and nitrogen

oxides as well as mercury. However, these emissions have not been eliminated. An increase in the use of subbituminous coal and the introduction of petroleum coke as fuel will place additional strain on these control systems in a manner that could reduce their effectiveness, resulting in higher emissions of criteria pollutants and persistent toxic substances. The very significant emissions of carbon dioxide from this plant also remain a concern. Given the recent escalation in estimates of available reserves of natural gas, it is unclear to us if use of this cleaner alternative fuel at the Monroe facility had been considered in any detail.

AQD Response

The Monroe Power Plant is an existing coal-fired generating station. The new installations of flue gas desulfurization (FGD) for control of SO₂ and selective catalytic reduction (SCR) for control of NO_x can handle the increased utilization of subbituminous coal and petroleum coke. Additional strain will not be placed on this control equipment nor will effectiveness be reduced because this is what the control systems are designed to handle.

As for natural gas, this was not reviewed in any detail for this project. The boilers at Monroe Power Plant could in theory combust natural gas with additional modifications, but because they are designed to combust solid fuels such as coal, the combustion of natural gas would not be an efficient way to generate electricity.

For emissions of carbon dioxide, there are no current applicable requirements concerning greenhouse gases that affect this project. Emissions of carbon dioxide were not reviewed for this permitting action at Monroe.

Comment

Best Available Control Technology (BACT) is an emission limitation based on the maximum degree of emission reduction. Both the draft permit and the Fact Sheet lack any information on the control efficiency. Please add to the permit.

AQD Response

In the Public Participation Documents, Appendix 2, the control efficiency for all emission control systems reviewed as BACT is discussed. Each BACT emission limitation listed in the permit is based on the maximum degree of emission reduction (i.e., control efficiency). The control efficiencies are part of the emission limitations, and therefore, are not necessary as separate design/equipment parameters in the permit.

Comment

In order to achieve the maximum degree of reduction in sulfur dioxide (SO₂) across the range of fuels that may be burned, the permit should set separate SO₂ limits for each type of fuel used, since SO₂ is a function of the fuel (1990 Draft New Source Review Workshop Manual, page B56). Either a percent reduction or separate SO₂ limits for each fuel would show the maximum degree of SO₂ reduction. The fact sheet states that bituminous coal, subbituminous coal, and petroleum coke will be used. The control efficiencies are not stated in the permit. EPA has provided comment on many similar permits that BACT cannot assume worst-case (one example is the November 9, 2006 letter from EPA Region 7, to Clark Duffy, Kansas Department of Health & Environment, Re: Holcomb Units 2-4). As proposed, the facility could use a blend with lower sulfur and operate their SO₂ controls at lower control efficiencies than established as BACT, consequently contravening the definition of BACT.

AQD Response

Site-specific and process-specific variables such as the sulfur content of the fuels were taken into account in order to achieve the maximum degree of reduction in sulfur dioxide (SO₂) across the range of fuels that will be burned. When the concentration of SO₂ in the flue gases entering the wet FGD is high (from burning fuel with a higher sulfur content), the control efficiency of the wet FGD is higher than when the SO₂ concentration is lower. The SO₂ emission limit is dependent on both the sulfur content of the fuel and the control efficiency of the wet FGD not only for the worst-case conditions. Because three fuel types will be blended for combustion in the boilers, one SO₂ emission limit was set for all operating scenarios with a 30-day rolling average. This provides operating flexibility. Setting separate SO₂ emission limits for each fuel type to show the maximum degree of SO₂ reduction would not provide an environmental benefit since fuels can and will be combusted in the boilers in any combination.

Comment

Please add the averaging time for the VOC BACT limit.

AQD Response

The averaging time is defined by the test protocol as required by R 336.2003(2) of Michigan's Air Pollution Control Rules which states, "(2) A performance test shall consist of a minimum of 3 separate samples of a specific air contaminant conducted within a 36-hour period, unless otherwise authorized by the department. Each of the 3 separate samples shall be obtained while the source is operating at a similar production level. For the purpose of determining compliance with an applicable emission limit, rule, or permit condition, the arithmetic mean of results of the 3 samples shall apply. If a sample is accidentally lost or conditions occur in which 1 of the 3 samples must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sampling train, extreme meteorological conditions, or other circumstances beyond the owner's or operator's control, then compliance may, upon the approval of the department, be determined using the arithmetic mean of the results of 2 samples." Compliance with the VOC emission limits shall be based on stack testing of which average timing is part of the method, and is therefore, part of the permit conditions.

Comment

The 0.15 lb/MMBtu (30-day rolling average) carbon monoxide (CO) BACT limit is higher than BACT limits at other similar sources - for example Louisville Gas and Electric, Permit # V-02-043 (Rev.2), has a limit of 0.1 lb/MMBtu (30-day averaging period). Please provide the rationale why a lower BACT limit should not be applied, after analyzing the energy, environmental, and economic feasibility of available control technologies.

AQD Response

The CO emission limit is based on good combustion practices, a review of CO emission performance from Monroe Units 3 and 4, and information in the RBLC. Louisville Gas and Electric is a new boiler permitted in 2006. Monroe units 3 and 4 were put into service in 1973 and 1974, respectively, with a 1970 boiler design. CO emission limits for both are based on good combustion practices, but CO emissions from Monroe units 3 and 4 are expected to fluctuate more widely due to boiler design and the retrofits of low-NOx burners. For this reason, the CO BACT limit for Monroe units 3 and 4 are not as low as the new unit at Louisville Gas and Electric.

Comment

CO emission limit is required to show compliance on a 30-day rolling average basis. However, several permits (even RBLC permits used for comparison in the permit application) use the 3-hour average basis or 24-hour rolling average. Please explain why the source shouldn't show compliance on a 3-hour average basis.

AQD Response

Compliance based on averaging time periods are determined based on a number of considerations. If the monitoring method to show compliance is stack testing, then averaging periods should be short-term such as a 3-hour average which would be a typical testing timeframe. If monitoring to show compliance will be via a CEMS, averaging periods can range from short-term to long-term because emissions will be measured continuously. In the case of CO, emissions of CO from combustion sources can fluctuate for various operating scenarios. A longer term averaging period will allow periods of higher emission rates to be averaged with periods of lower emission rates. A lower CO emission limit can be assessed with a longer averaging period for an overall lower potential to emit than a shorter averaging period would achieve. Having a lower emission limit means less CO emissions, and a short-term averaging time period does not appear to provide a benefit nor provide additional protection of the CO standard.

Comment

As you are aware, BACT requirements must be met at all times. Please explain the purpose for, and proposed use of, the factor of safety (0.01 lb/MMBtu) for the nitrogen oxides (NOx) BACT limit as described in the draft permit.

AQD Response

The BACT limits in the permit apply at all times. There is no 0.01 lb/MMBtu factor of safety in the draft permit. The NO_x BACT emission limit of 0.08 lb/MMBtu provides a margin of compliance that can be met on a continuous basis using staged combustion, low-NO_x burners, over-fire air, and SCR for air pollution control.

E. Permit Requirements

Comment

Adoption of reasonable operating scenarios for the peakers - As you know, we (DTE Energy) have been working closely with MDNRE modeling staff to accurately model impacts from the peakers. Because they could be needed in the event of an emergency, we need to adopt realistic operating limits. Changing the proposed seven calendar day limit to 168 hours would achieve this result. This impacts SC III.1 located on page 65 of 69 for FG-PEAKERS-S2.

AQD Response

A limit of 168 hours per year would be inconsistent with the new form of the standard which is based on the statistical distribution of the maximum 1-hour daily impact. The seven calendar day limit can not be changed in the manner proposed.

F. Nonattainment Issues

Comment

There was no analysis in the permit for the particulate matter less than 2.5 micrometers in diameter (PM_{2.5}). A March 23, 2010 memorandum entitled "Modeling Procedures for Demonstrating Compliance with PM_{2.5} NAAQS", issued from EPA's Office of Air Quality Planning and Standards details the history of the particulate matter less than 10 micrometers in diameter (PM₁₀) surrogate policy and the recent actions to repeal it. The memo describes the requirements for State Implementation Plan - approved States who wish to continue using the PM₁₀ surrogate policy in the interim. As stated in the memo, the PM₁₀ surrogate may continue to be relied upon as long as "(1) the appropriateness of the PM₁₀-based assessment for determining PM_{2.5} compliance has been adequately demonstrated based on the specifics of the project; and (2) the applicant can show that a PM_{2.5} analysis is not technically feasible." Absent such demonstrations, applicants would need to submit a PM_{2.5}-based assessment.

AQD Response

There is an analysis for PM_{2.5} in the permit. Monroe Power Plant is located in a nonattainment area for PM_{2.5} and it is a major stationary source of PM_{2.5}. The PM₁₀ surrogacy policy does not apply. As summarized in the Public Participation Documents, Appendix 2, 1. Applicability Determination, the project will be a minor modification at an existing major stationary source using the hybrid applicability test. Also, modeling to demonstrate compliance with the PM_{2.5} NAAQS is not performed for sources located in nonattainment areas because the background is already above the standard.

IV. SUMMARY OF COMMENTS RECEIVED IN SUPPORT

Detroit Edison – Monroe
Response to Comments Document
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August 2, 2010

One commenter gave verbal testimony and two letters were received in support of the project.

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