

**General Conformity Applicability Analysis
Related to Issuance of a Combined License
for the Fermi 3 Nuclear Power Plant**

**U.S. Nuclear Regulatory Commission
Docket No. 52-033
February 2013**

1.0 Introduction

The U.S. Nuclear Regulatory Commission (NRC) has prepared this general conformity applicability analysis in accordance with U.S. Environmental Protection Agency (EPA) requirements at Title 40 of the Code of Federal Regulations (CFR) Part 93, Subpart B, "Determining Conformity of General Federal Actions to State or Federal Implementation Plans."

By letter dated September 18, 2008, the NRC received an application for a combined license (COL) from Detroit Edison Company (DTE) for an economic simplified boiling water reactor (ESBWR) in accordance with the requirements contained in 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." This proposed plant is to be designated as Fermi 3. The site for Fermi 3 is located in Monroe County, Michigan, approximately 28 miles south-southwest of downtown Detroit. Fermi 3 is to be located adjacent to two existing nuclear reactors at the Fermi site. Fermi 1 is a non-operational demonstration liquid metal fast breeder reactor that is currently undergoing decommissioning. It is expected that Fermi 1 will be fully decommissioned and removed by DTE prior to the start of building Fermi 3. Fermi 2 is an operating boiling water reactor. Fermi 3 will be located adjacent to and generally to the south of Fermi 2 and west of the Fermi 1. The proposed Fermi 3 unit would have an estimated gross electrical power output at rated power of approximately 1594 megawatts-electric.

According to the regulations implementing the general conformity requirements of the Clean Air Act (CAA), no department, agency or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve any activity in a nonattainment or maintenance area which does not conform to an applicable implementation plan. To this end, the NRC has determined that a conformity applicability analysis is required to determine if its proposed Federal action¹ to issue a COL authorizing the building² and operation of a new nuclear power plant in Monroe County, Michigan, must be supported by a conformity determination. General conformity is a process required by the CAA which establishes the framework for improving air quality to protect public health and the environment. The goal of general conformity is to ensure that actions conducted or sponsored by federal agencies are consistent with State air quality goals. These air quality goals are tied to states meeting the National Ambient Air Quality Standards (NAAQS) requirements that are

¹ For reference, a glossary of terms used in 40 CFR Part 93 is provided at the end of this document.

² For the purposes of this document, the process of "building" Fermi 3 consists of "preconstruction" and "construction" activities, both of which are defined in detail later in this document.

established by the U.S. Environmental Protection Agency (EPA) and are designed to protect human health and the environment. Subpart B of 40 CFR Part 93 establishes the requirements for general conformity. The federal agency must first conduct an applicability analysis to determine whether the federal action must be supported by a conformity determination. If necessary, a conformity determination is the subsequent evaluation that a Federal action conforms to the applicable implementation plan and meets the requirements of Subpart B.

In a case such as the one at hand, where multiple federal agencies may have jurisdiction over a project, each agency must make its own conformity evaluation. When doing so, each agency is only responsible for the portion of the project that it is permitting. Therefore, other Federal agencies from which permits or authorizations are required to build and operate Fermi 3, such as the U.S. Army Corps of Engineers, will address the conformity evaluation requirements of 40 CFR Part 93 relevant to their particular permits separately, and only those requirements relevant to NRC-authorized construction and operation will be discussed below.

The 1260-acre Fermi site is on the west shore of Lake Erie, about 20 miles north of the Michigan/Ohio border, approximately 26 miles northeast of Toledo, Ohio and 28 miles south-southwest of downtown Detroit, Michigan. The US/Canada international border runs through Lake Erie about 7 miles east of Fermi 3.

Monroe County is designated as a nonattainment area for particulate matter with aerodynamic diameters of less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$), as are six other contiguous southeastern Michigan counties, including the Detroit metropolitan area and its downwind areas. In July 2011, the Michigan Department of Environmental Quality (MDEQ) submitted a request asking the EPA to redesignate southeast Michigan as being in attainment with the $PM_{2.5}$ NAAQS. In July 2012, the EPA issued a proposed rule designating southeastern Michigan as having attained both the 1997 annual $PM_{2.5}$ NAAQS and the 2006 24-hour $PM_{2.5}$ NAAQS, based on 2009-2011 ambient air monitoring data (77 FR 39659, dated July 5, 2012) but the final determination has yet to be made. On June 29, 2009, Monroe County, with seven other southeastern counties including the Detroit metropolitan area, was redesignated from a nonattainment area to a maintenance area for the 8-hour ozone standard.

2.0 Regulatory Background and Requirements

Section 176(c) of the CAA of 1977, as amended (42 U.S.C. 7506), forbids any department, agency, or instrumentality of the Federal Government engaging in, supporting in any way or providing financial assistance for, licensing or permitting, or approving, any activity which does not conform to a State implementation plan (SIP) after the activity has been approved or promulgated. As defined in Section 176(c)(1) of the CAA, conformity to an implementation plan means conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards; and that such activities will not:

1. cause or contribute to any new violation of any NAAQS in any area;
2. increase the frequency or severity of any existing violation of any NAAQS in any area; or

3. delay timely attainment of any NAAQS or any required interim emission reductions or other milestones in any area.

The EPA established NAAQS for six principal "criteria" pollutants. They are carbon monoxide (CO), nitrogen dioxide³ (NO₂), ozone⁴ (O₃), lead (Pb), particulate matter (PM_{2.5} and PM₁₀⁵), and sulfur dioxide (SO₂). The NAAQS are maximum allowable pollutant concentration levels in the air based on different averaging schemes for each specific pollutant. Under Section 107 of the CAA, areas are designated as being in attainment or in nonattainment of these standards. A maintenance area is an area that was once designated as nonattainment but is currently meeting and maintaining the standard. These designations are subject to revision whenever sufficient data become available to warrant a change. States with nonattainment and maintenance areas are required to develop SIPs to demonstrate how the State intends to achieve and maintain attainment status.

The EPA has issued regulations to implement Section 176(c) of the CAA. The regulations regarding conformity are codified in 40 CFR Part 51, Subpart W, and 40 CFR Part 93, Subpart B. 40 CFR Part 51, Subpart W, applies when states have instituted their own conformity regulations. Michigan has not done this; therefore, the applicable regulations are found in 40 CFR Part 93, Subpart B. The transportation conformity regulations at Subpart A of 40 CFR Part 93 address Federal actions related to highway and mass transit funding and approval actions. The general conformity regulations, at Subpart B of 40 CFR Part 93, cover all other Federal actions (75 FR 17254). Only Federal actions taken in designated non-attainment areas and maintenance areas are subject to the general conformity regulation.

Before a Federal agency can take its action, it is to perform an applicability analysis to determine whether its Federal action must be supported by a conformity determination. The EPA included *de minimis* emission levels in 40 CFR 93.153(b) based on the type and severity of the nonattainment problem in an area. If the action is determined to create direct and indirect emissions at or above the *de minimis* level for any of the criteria pollutants or their precursors, then the Federal agency is to conduct a conformity determination for the pollutant, unless the action is presumed to conform under the regulation⁶ or the action is otherwise exempt.⁷ If the

³ The NAAQS for NO₂ is designated to protect against exposure to the entire group of nitrogen oxides (NO_x). NO₂ is the component of greatest concern and is sometimes used as the indicator for the larger group of NO_x.

⁴ Attainment of the O₃ NAAQS is implemented by controlling emissions of either or both of the two O₃ precursors, nitrogen oxides (NO_x) and volatile organic compounds (VOC).

⁵ Particulate matter with aerodynamic diameters of less than or equal to a nominal 10 micrometers are designated as PM₁₀.

⁶ Individual Federal agencies are permitted to develop their own list of activities that are presumed to conform; if the list is approved, these activities are exempt from the need to perform a conformity determination. To date, the Federal Aviation Administration is the only agency to establish a presumed to conform list and NRC has not identified any actions which are presumed to conform.

⁷ The General Conformity Rule applies to all Federal actions, except programs and projects that require funds or approval from the U.S. Department of Transportation, the Federal Highway Administration, the Federal Transit Administration, or the Metropolitan Planning Organization.

emissions are below all of the *de minimis* levels, then the Federal agency does not have to conduct a conformity determination.

If the Federal action is not presumed to conform under the regulation, the Federal action is not otherwise exempt, and if the results of an applicability analysis indicate that the emission rates in 40 CFR 93.153(b) will be met or exceeded by the Federal action, a Federal agency is to conduct a conformity determination to show that the Federal action will conform to the applicable SIP. According to 40 CFR 93.158(a), there is conformity to the applicable SIP if two conformity determination requirements are met: (1) the total of direct and indirect emissions from the action is in compliance or consistent with all relevant requirements and milestones contained in the applicable SIP, such as elements identified as part of the reasonable further progress schedules, assumptions specified in the attainment or maintenance demonstration, prohibitions, numerical emission limits, and work practice requirements; and (2), for each pollutant that exceeds the emission rates in Section 93.153(b), any of the following are met:

1. the total of direct and indirect emissions from the action are specifically identified and accounted for in the applicable SIP's attainment or maintenance demonstration or reasonable further progress milestone or in a facility-wide emission budget included in a SIP in accordance with Section 93.161;
2. the total of direct and indirect emissions from the Federal action, based on local air quality modeling analysis meeting the requirements in Section 93.159, is determined and documented by the State agency primarily responsible for the applicable SIP to result in a level of emissions which, together with all other emissions in the nonattainment (or maintenance) area, would not exceed the emissions budgets specified in the applicable SIP;
3. the total of direct and indirect emissions from the Federal action, based on local air quality modeling analysis meeting the requirements in Section 93.159 is determined by the State agency responsible for the applicable SIP to result in a level of emissions which, together with all other emissions in the nonattainment (or maintenance) area, would exceed an emissions budget specified in the applicable SIP and the State Governor or the Governor's designee for SIP actions makes a written commitment to the EPA to revise the SIP to include the emissions from the action;
4. the action (or portion thereof), as determined by the Metropolitan Planning Organization (MPO), is specifically included in a current transportation plan and transportation improvement program which have been found to conform to the applicable SIP under 40 CFR Part 51, Subpart T, or 40 CFR Part 93, Subpart A;
5. the total of direct and indirect emissions from the action are fully offset within the same nonattainment or maintenance area (or nearby area of equal or higher classification provided the emissions from that area contribute to the violations, or have contributed to violations in the past, in the area with the Federal action) through a revision to the applicable SIP or a similarly enforceable measure that effects emissions reductions so that there is no net increase in emissions of that pollutant; or

6. the total of direct and indirect emissions from the Federal action, based on area-wide air quality modeling analysis and local air quality modeling analysis meeting the requirements in Section 93.159, does not cause or contribute to any new violation of any standard in any area; or increase the frequency or severity of any existing violation of any standard in any area.

3.0 Process

The conformity evaluation for a Federal action in a nonattainment or maintenance area involves two steps. First, a threshold applicability analysis is performed to determine whether a conformity determination is required. If this threshold is met, then a conformity determination is performed. Only the criteria pollutants for which the area is in nonattainment or maintenance are so analyzed.

An applicability analysis is the process of determining whether a Federal action must be supported by a conformity determination. As described in 40 CFR 93.153, the applicability analysis may find that a conformity determination is not required if, among other things, the Federal action:

1. is part of a continuing response to an emergency or disaster;
2. is covered by an existing transportation conformity determination;
3. would result in no emissions increase or an increase in emissions that is clearly *de minimis*;
4. is presumed to conform; or
5. results in total direct and indirect emissions of the criteria pollutants or precursors that is less than the *de minimis* rates contained in 40 CFR 93.153(b).

Regarding its Federal action of potentially issuing a COL to authorize the building and operation of Fermi 3, the NRC determined that conditions 1 through 3, above, are not met for PM_{2.5} (for which Monroe County is in nonattainment) and O₃ (for which Monroe County is a maintenance area). In lieu of complying with Condition 4, the NRC chose to use condition 5 to show that a conformity determination is not required for its Federal action of potentially issuing a COL to authorize the building and operation of Fermi 3. For condition 5, the NRC analyzed whether the total of direct and indirect emissions of the precursors of ozone, volatile organic compounds (VOC) and nitrogen oxides (NO_x), and PM_{2.5} and its applicable precursors, SO₂ and NO_x, created by this potential Federal action would equal or exceed the *de minimis* levels in 40 CFR 93.153(b)(1).

Ozone is considered a secondary pollutant in that it is not emitted directly into the atmosphere. The precursors of ozone, NO_x and VOC, are emitted and through photochemical reactions are transformed into O₃. The general conformity regulations recognize the importance of NO_x and VOC in the formation of O₃ and established *de minimis* emission levels of 100 tons per year of NO_x for all ozone maintenance areas and 100 tons per year of VOC for ozone maintenance

areas that are outside an ozone transport region.⁸ In addition, there is a *de minimis* emission level of 100 tons per year for SO₂ in all ozone maintenance areas.

The *de minimis* emission level for direct emissions of PM_{2.5} in a nonattainment area is 100 tons per year. *De minimis* emission levels are also applicable to the PM_{2.5} precursors, SO₂, NO_x, and VOC (or ammonia), at 100 tons per year for each precursor. However, because VOC and ammonia were not considered in MDEQ's SIP attainment strategy for PM_{2.5}, the applicability analysis does not need to consider these two pollutants in regards to PM_{2.5}.

Per 40 CFR 93.152, when conducting such an analysis in support of issuing a federal permit for some aspect of a non-Federal undertaking, the relevant activity is the part, portion, or phase of the non-Federal undertaking that requires the Federal permit. The NRC identified the "part, portion, or phase" of the non-Federal undertaking of building Fermi 3 that requires the Federal permit of a COL as being the "construction" and "operation" of Fermi 3. As described below, the NRC has defined "construction" specifically to mean certain specified activities that have a reasonable nexus to radiological health and safety and/or common defense and security.

The emissions from building and operating Fermi 3 are analyzed separately in the applicability analysis to determine if 40 CFR 93, Subpart B is triggered and a general conformity determination is required for either phase.

a. Emissions Related to Building Fermi 3

NRC-Authorized Construction Activities

In a final rule dated October 9, 2007 (72 FR 57416), the NRC defined "construction" (10 CFR 50.10(a) and 51.4) as those activities that fall within its regulatory authority. Construction includes, among other things, the driving of piles, subsurface preparation, placement of backfill, concrete, or permanent retaining walls within an excavation, installation of foundations, or in-place assembly, erection, fabrication, or testing, which are for safety-related structures, systems, or components (SSCs) and other SSCs as specified in the rule. These construction activities, along with operating activities, are considered by the NRC to have a reasonable nexus to its authority under the Atomic Energy Act of 1954 (AEA) to regulate radiological health and safety and/or common defense and security, and thus cannot occur without NRC authorization. As discussed in Section 1.0 above, a federal agency is responsible for the conformity evaluation for only those parts of the project that it has the authority to control. Therefore, the NRC is responsible for only the conformity evaluation for the nuclear power plant construction activities that require NRC authorization.

While undertaking the conformity applicability analysis, the agency must account for both the direct and indirect emissions resulting from a federal action over which the agency has authority. "Direct emissions" means those emissions of a criteria pollutant or its precursors that are caused or initiated by the Federal action and originate in a nonattainment or maintenance area and occur at the same time and place as the action and are reasonably foreseeable.

⁸ Currently the EPA has approved only one ozone transport region which encompasses the northeast portion of the United States, from Northern Virginia to New England.

“Caused by,” as used in the terms “direct emissions” and “indirect emissions,” means emissions that would not otherwise occur in the absence of the Federal action. “Reasonably foreseeable” emissions are projected future direct and indirect emissions that (1) are identified at the time the conformity determination is made, (2) are known where they will occur, and (3) are quantifiable as described and documented by the Federal agency based on its own information and after reviewing any information presented to the Federal agency. Therefore, the reasonably foreseeable emissions caused by the activities necessary for building Fermi 3 that require NRC approval and that occur at the Fermi site are considered direct emissions and must be accounted for.

“Indirect emissions” means those emissions of a criteria pollutant or its precursors:

1. that are caused or initiated by the Federal action and originate in the same nonattainment or maintenance area but occur at a different time or place as the action;
2. that are reasonably foreseeable;
3. that the agency can practically control; and
4. for which the agency has continuing program responsibility.

Here, as in the definition of direct emissions, “caused by” means emissions that would not otherwise occur in the absence of the Federal action and “reasonably foreseeable” means emissions that are identifiable and quantifiable. The differences between direct and indirect emissions are that indirect emissions occur at a different time or place than the action and are expressly limited to just those indirect emissions that the agency can practically control and for which the agency has continuing program responsibility. Even if a Federal licensing, rulemaking or other approving action is a required initial step for a subsequent activity that causes emissions, as is the issuance of a COL in this case, such initial steps do not mean that a Federal agency can practically control any resulting emissions.

“Continuing program responsibility” means a Federal agency has responsibility for emissions caused by (1) actions it takes itself; or (2) actions of non-Federal entities that the Federal agency, in exercising its normal programs and authorities, approves, funds, licenses or permits, provided the agency can impose conditions on any portion of the action that could affect the emissions. Therefore, emissions that may be reasonably foreseeable but that do not occur at the Fermi site are not considered to be indirect emissions for the purposes of this analysis. These emissions are not considered to be indirect emissions because the NRC does not have continuing program responsibility for or practical control of these emissions. For example, the NRC does not have any authority to control on-road emissions resulting from transportation of construction workers and construction materials to and from the prospective license holder’s site. Thus, no offsite activities are considered to meet the CAA definition of “indirect emissions” such that they would be attributed to NRC’s Federal action in this analysis along with the onsite direct emissions of NRC-authorized construction activities.

Preconstruction Activities

Many of the activities involved in building a nuclear power plant are not part of the NRC's Federal action of issuing a COL. NRC regulations at 10 CFR 50.10(a)(2) and 10 CFR 51.4 define the activities that are not NRC regulated construction. Those activities associated with building the plant that are not within the purview of the NRC's Federal action are considered to be activities that "construction does not include" or "preconstruction" as the term is used in 10 CFR 51.45(c). Such preconstruction activities include clearing and grading, excavating, erecting support buildings and transmission lines, and other associated activities. These preconstruction activities may take place before the application for a COL is submitted, during the NRC staff's review of a COL application, or after a COL is issued, all without NRC authorization. This is in accordance with the AEA, which grants the NRC authority over only those activities that have a reasonable nexus to radiological health and safety and/or common defense and security.

Before a COL is issued, emissions from preconstruction activities are neither direct emissions nor indirect emissions for purposes of compliance with the CAA because they are not caused or initiated by any NRC action as no NRC action has been taken.

After a COL is issued, emissions from preconstruction activities are still not considered to be direct or indirect emissions (regardless of whether they occur at the same time and place as the action) for purposes of compliance with the CAA, because preconstruction activities are not legally caused or initiated by the NRC action of issuing a COL. Per 40 CFR 93.152, the Federal action relevant to a conformity determination is the part, portion, or phase of the non-Federal undertaking that requires a Federal permit. Per 10 CFR 50.10(a) and 50.10(c), the part, portion, or phase of the non-Federal undertaking of building a nuclear power plant that requires a Federal permit from the NRC includes those activities constituting "construction," and not those activities expressly listed as not included in the definition of "construction" (discussed herein as "preconstruction" activities). Consequently, emissions from preconstruction activities cannot be considered as part of NRC's Federal action whether they occur before or after the issuance of a COL. The portion of the entire project's emissions attributable to the NRC's Federal action will therefore be the total of direct and indirect emissions of PM_{2.5} and the precursors for ozone and PM_{2.5} caused by NRC-authorized construction.

Therefore, for the purpose of the NRC Fermi 3 conformity applicability analysis, the total of direct and indirect emissions of PM_{2.5} and the VOC, NO_x, and SO₂ precursors to the criteria pollutants ozone and PM_{2.5} resulting from the building of Fermi 3 is limited to direct emissions caused by NRC authorized construction activity.

b. Emissions Related to Operating Fermi 3

Reasonably foreseeable emissions from operational activities following the NRC's issuance of a COL that occur at the Fermi 3 site are considered to be direct emissions.

Reasonably foreseeable emissions from operational activities that do not occur at the Fermi 3 site (such as the delivery of materials and fuel and disposal of waste) are not considered to be either direct or indirect emissions. These emissions are not considered to be direct emissions

because they occur at a different place; they are also not considered to be indirect emissions because the NRC does not have continuing program responsibility or practical control for emissions that occur offsite. The NRC does not have any authority to control on-road emissions resulting from transportation of workers and materials to and from the prospective license holder's site.⁹

4.0 Applicability Analysis

a. Building Fermi 3

By letter dated June 21, 2012 (ML12179A185), DTE provided the NRC with an applicability analysis based on monthly PM_{2.5}, NO_x, SO₂ and VOC emission estimates compiled by calendar year. The DTE emission inventory assumed a 62-month building schedule which began in April 2011. The 62-month building schedule assumes 18 months of site preparation activities followed by 44 months of site erection activities. The 62-month building schedule is the schedule that DTE originally assumed in its ER Revision 2 (ML110600498). However, as of February 2013, no preconstruction activities related to development of Fermi 3 or associated facilities have occurred on the Fermi site, and a schedule for preconstruction and construction activities is not known at this time. Depending on the actual schedule, peak annual emission rates might vary.

DTE's emissions estimates were developed based on the types of equipment that are expected to be used to perform site preparation and erection activities. Monthly percentages for NRC-authorized construction activities were developed for site preparation and erection activities that could produce fugitive dust emissions and air emissions from combustion engines. These monthly percentages were developed based on preliminary construction planning for major structures, the equipment list described above, and the total amount of concrete estimated to be used to build Fermi 3. The schedule of construction for major structures was based on the U.S. Department of Energy's project and construction schedule for the ESBWR as outlined in "DOE NP2010 Construction Schedule Evaluation" (Revision 2, dated September 24, 2004) and preliminary project planning by DTE.

The emissions of the pollutants of concern (PM_{2.5}, NO_x, SO₂ and VOC) are generally the result of (1) combustion of fuels in engines which propel or operate equipment and (2) fugitive dust activities which entrain particles into the air through the disturbance or movement of materials. Table 1 provides monthly percentages of site preparation and erection activities that DTE assumed were within NRC's jurisdictional authority. DTE used these percentages to estimate the annual emissions from combustion source equipment and fugitive dust activities that were

⁹ The NRC shares regulatory authority with the Department of Transportation (DOT) regarding certain aspects of spent fuel shipment. Under 10 CFR Part 71, the NRC has regulatory authority over the design of spent fuel packages and issues general licenses that authorize the delivery of spent fuel in NRC-approved packages to carriers for transport. Spent fuel in transit is regulated by DOT as a Class 7 hazardous material, including routing, hazard communication, and modal requirements. Spent fuel shipments are also subjected to NRC security requirements, which could potentially affect routing, but shipments typically use routes that comply with DOT routing rules. Nonetheless, licensees control if and when spent fuel shipments are made.

within NRC’s jurisdictional authority. These percentages were developed by DTE based on preliminary planning for building major structures, including the equipment and amount of concrete to be used to erect Fermi 3. During the initial 18 months of site preparation, Table 1 shows most activities are considered to be pre-construction and not within NRC jurisdictional authority. The subsequent 44 months of activities include construction that is within NRC’s jurisdiction and pre-construction that is not within NRC jurisdictional authority.

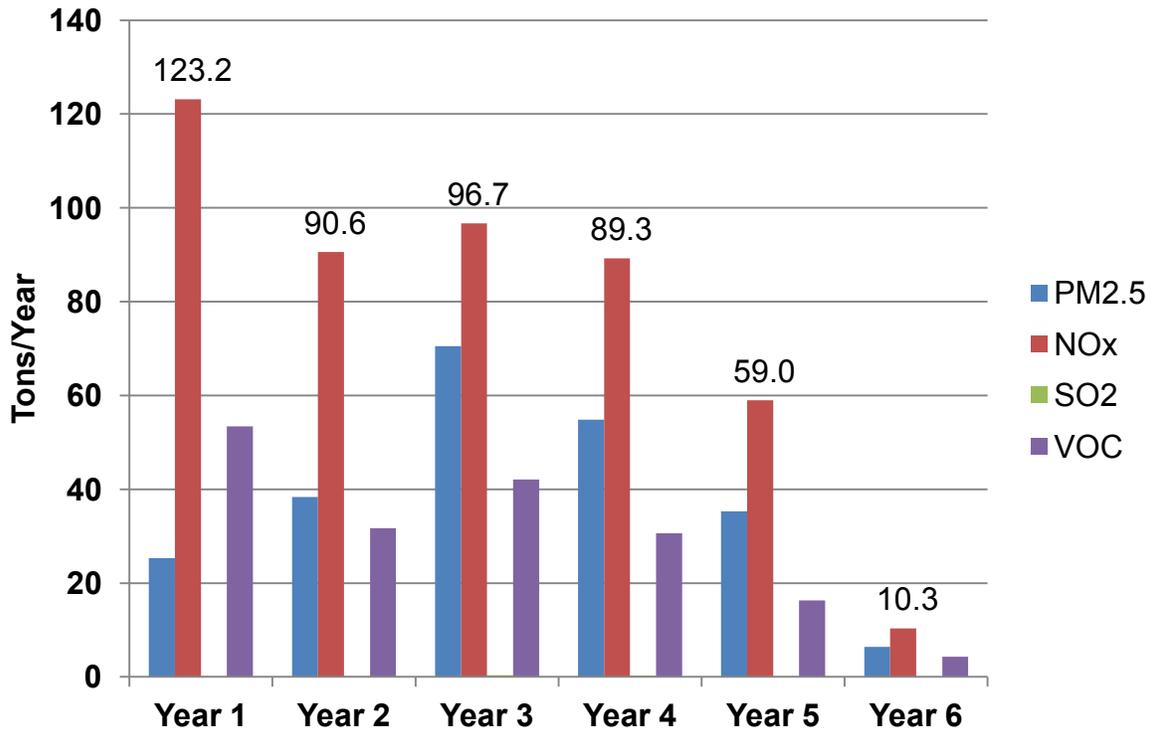
Table 1. Percentages of Combustion and Fugitive Source Emissions that Are Within NRC Jurisdictional Authority

Site Preparation Activities (Initial 18 Months)				
Source	Apr 11	May 11 - Dec 11	Jan 12 - Mar 12	Apr 12 - Sep 12
Combustion Sources				
On-Road Vehicles	0%	30%	15%	0%
Worker Vehicles and Non-Road Engines	0%	10%	10%	0%
Locomotive and Marine Engines	0%	0%	0%	0%
Fugitive Sources	0%	30%	15%	0%
Site Erection Activities (Subsequent 44 Months)				
Source	Oct 12 - May 13	Jun 13 - Nov 14	Dec 14 - Jun 15	Jul 15 - May 16
Combustion Sources				
On-Road Vehicles	100%	75%	70%	100%
Worker Vehicles and Non-Road Engines	100%	75%	70%	100%
Locomotive and Marine Engines	100%	75%	70%	100%
Fugitive Sources	100%	75%	70%	100%

Figure 1 shows the estimated annual PM_{2.5}, NO_x, SO₂ and VOC emissions from building Fermi 3 based on DTE’s monthly emissions inventory.¹⁰ The estimated annual emissions shown in Figure 1 include emissions from both preconstruction activities and NRC-authorized construction activities. Figure 1 shows that only NO_x emissions have the potential to exceed the *de minimis* emission levels of 100 tons per year. Consequently, the following discussion is limited to reviewing the NO_x emissions that will result from building Fermi 3.

¹⁰ The DTE emission inventory assumed a 62-month building schedule which began in April 2011. However, as of February 2013, no preconstruction activities related to development of Fermi 3 or associated facilities have occurred on the Fermi site, and a schedule for preconstruction and construction activities is not known at this time. For this reason, “Year 1” means the calendar year April 2011 through December 2011, “Year 2” means the calendar year January 2012 through December 2012, etc., in Figures 1 through 5.

Figure 1. Annual Pollutant Emissions from Building Fermi 3 (as determined by DTE)



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
PM_{2.5}	25.3	38.3	70.5	54.8	35.3	6.4
NO_x	123.2	90.6	96.7	89.3	59.0	10.3
SO₂	0.1	0.1	0.4	0.3	0.2	<0.1
VOC	53.4	31.7	42.1	30.7	16.3	4.3

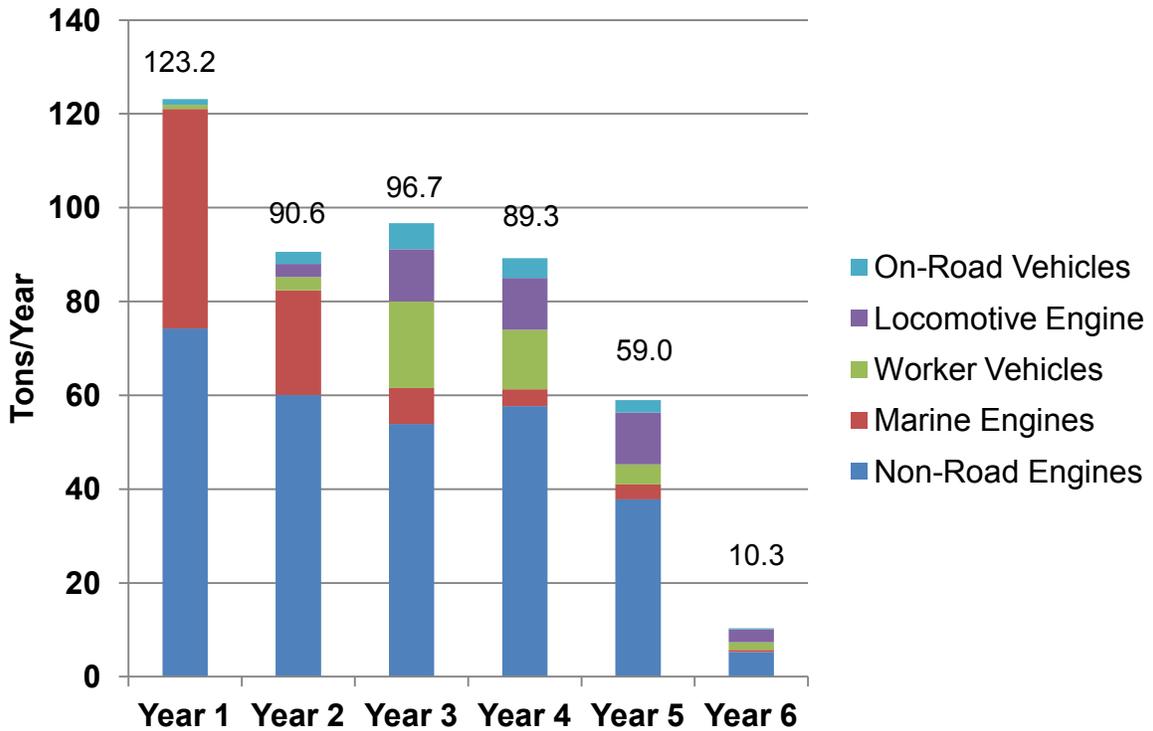
The NO_x emissions from building Fermi 3 that are shown in Figure 1 are the result of fuel combustion in the following engines:

- on-road vehicles (such as dump trucks, fuel/maintenance trucks, flatbed trucks, pickup trucks, water trucks, concrete trucks, dump trucks, and yard trucks) that deliver materials to, as well as around, the Fermi site
- a locomotive engine that delivers materials such as plant components to the Fermi site
- worker vehicles (passenger cars and light-duty gasoline trucks) that carry construction workers traveling through the non-attainment/maintenance areas to the Fermi site

- marine engines that perform dredging activities (such as dredgers, mudcat, dredge tenders, and push boats for dredging barge) and propel the barge containing aggregate materials for the concrete batch plant
- non-road engines (such as front-end loaders, bulldozers, scrapers, compactors, cranes, graders, forklifts, generators, sump pumps, and compressors) that are necessary for the building of Fermi 3

The breakdown of the NO_x emissions among these various fuel combustion sources is shown in Figure 2. The largest total sources of NO_x emissions throughout the 62-month building schedule are non-road engines and the marine engines.

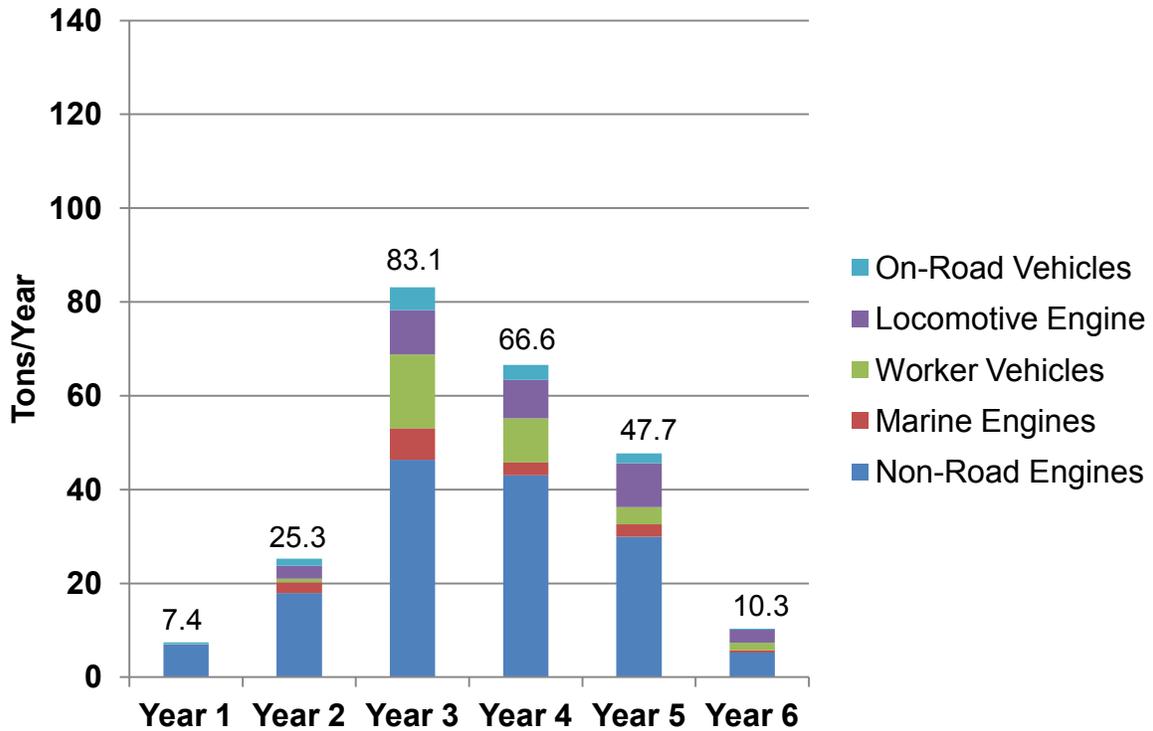
Figure 2. Annual NO_x Emission Sources from Building Fermi 3 (as determined by DTE)



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
On-Road Vehicles	1.2	2.5	5.6	4.2	2.6	0.2
Locomotive Engine	-	2.8	11.1	11.1	11.1	2.8
Worker Vehicles	0.9	2.9	18.5	12.6	4.3	1.7
Marine Engines	-	22.3	7.7	3.6	3.2	0.5
Non-Road Engines	74.2	60.1	53.9	57.7	37.8	5.3
Total Annual Emissions	123.2	90.6	96.7	89.3	59.0	10.3

Using the total annual NO_x emissions from building Fermi 3 shown in Figure 2 and the percentages of combustion emissions that are within NRC jurisdictional authority shown in Table 1, DTE calculated the estimated annual NO_x emissions related to NRC-authorized activities as shown in Figure 3.

Figure 3. Annual NO_x Emission Sources Related to NRC-Authorized Activities (as determined by DTE)



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
On-Road Vehicles	0.4	1.5	4.8	3.2	2.1	0.2
Locomotive Engine	-	2.8	9.4	8.3	9.4	2.8
Worker Vehicles	0.1	0.8	15.8	9.4	3.6	1.7
Marine Engines	-	2.3	6.7	2.7	2.6	0.5
Non-Road Engines	7.0	18.0	46.3	43.0	29.9	5.3
Total Annual Emissions	7.4	25.3	83.1	66.6	47.7	10.3

The DTE applicability analysis concluded that the annual emissions of PM_{2.5}, NO_x, SO₂, and VOC would not exceed the 100 tons per year conformity determination *de minimis* emission levels in 40 CFR 93.153(b)(1) for ozone and PM_{2.5} and their precursors. Therefore, DTE concluded that a general conformity determination would not be required for building Fermi 3.

The NRC staff reviewed the DTE's emissions estimate, including the types of equipment that are expected to be used, the building schedule, the assumptions about the operation of the equipment, and the breakdown between preconstruction activities and NRC-authorized construction activities and concluded that DTE's emission estimates are reasonable. The NRC

staff used the results from DTE's monthly emissions inventory to further refine the applicability analysis provided by DTE.

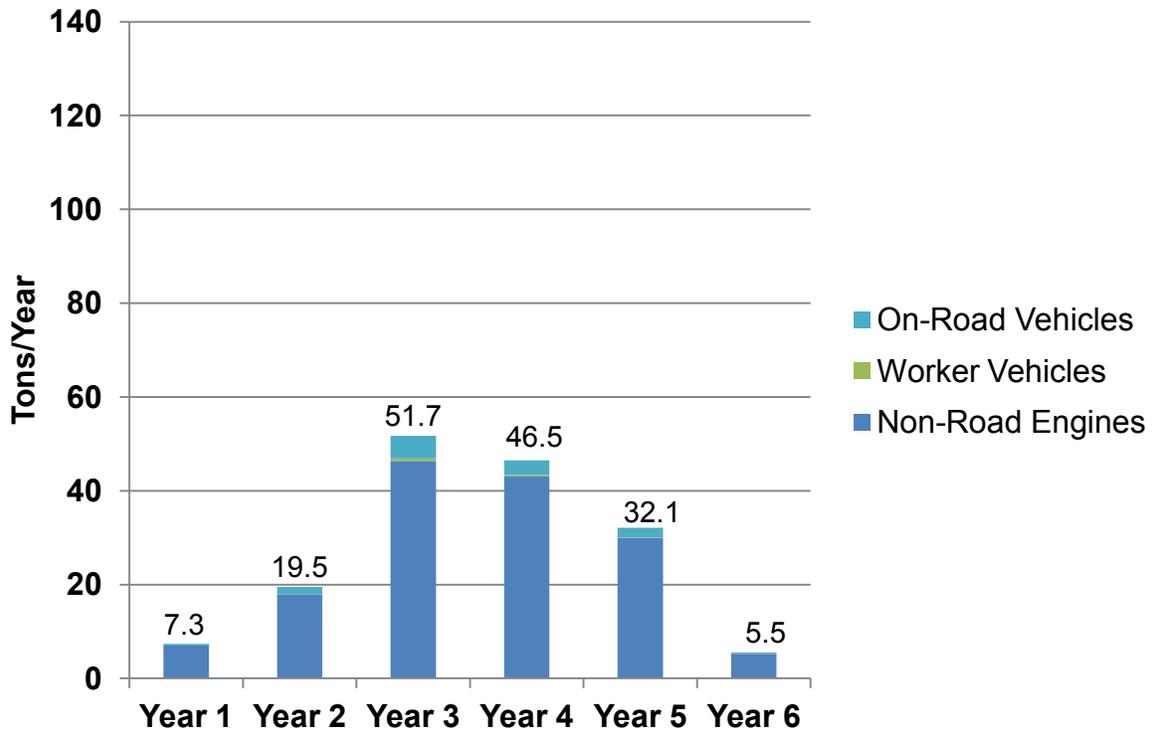
As described previously, emissions resulting from preconstruction activities are not considered to be part of the NRC's Federal action. On the other hand, reasonably foreseeable emissions from NRC-authorized construction-related activities that occur at the Fermi 3 site are considered direct emissions, and foreseeable emissions from NRC-authorized construction-related activities that do not occur at the Fermi 3 site are not considered to be either direct or indirect emissions. Consequently, the annual NO_x emission rates shown in Figure 3 were modified by the NRC as described below to derive a refined estimate of the total direct and indirect NO_x emissions expected from the proposed Federal action to issue a COL authorizing the building of Fermi 3:

- NO_x emissions from the locomotive engine and the marine engines used for aggregated barge deliveries were eliminated because these emissions do not occur onsite; and
- NO_x emissions from the worker vehicles were reduced by 96.5 percent (i.e., the roundtrip commuting distance was reduced from 57.22 miles to 2.0 miles [round trip distance from plant entry to worker parking area]) to estimate the amount of commuting emissions that occurred onsite.

The on-road vehicle NO_x emissions are related to the delivery of materials to the Fermi site as well as the transportation of materials around the site. Because the NRC could not discern the portion of the NO_x emissions associated with only the delivery of materials to the site, the NRC conservatively assumed all the NO_x emissions associated with on-road vehicles were related to the movement of materials around the site.

NRC's resulting refined estimate of annual total direct and indirect NO_x emissions from its proposed Federal action is shown in Figure 4. The highest annual NO_x emissions related to NRC-authorized activities are 51.7 tons per year, which is well below the *de minimis* emission level of 100 tons per year.

Figure 4. Annual NOx Emission Sources Related to NRC-Authorized Activities (as determined by NRC)



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
On-Road Vehicles	0.4	1.5	4.8	3.2	2.1	0.2
Locomotive Engine	-	-	-	-	-	-
Worker Vehicles	<0.1	<0.1	0.6	0.3	0.1	0.1
Marine Engines	-	-	-	-	-	-
Non-Road Engines	7.0	18.0	46.3	43.0	29.9	5.3
Total Annual Emissions	7.3	19.5	51.7	46.5	32.1	5.5

The NRC applicability analysis therefore concludes that the annual emissions of PM_{2.5}, NO_x, SO₂, and VOC would not exceed the 100 tons per year conformity determination *de minimis* emission levels in 40 CFR 93.153(b)(1) for ozone and PM_{2.5} and their precursors. As such, the NRC concludes that a general conformity determination is not required for building Fermi 3.

On June 13, 2012, the MDEQ sent a letter to DTE (ML12178A156) which stated that the total direct and indirect emissions from both construction and preconstruction activities of Fermi 3 would have little effect on maintenance of the O₃ and PM_{2.5} NAAQS in southeastern Michigan. The MDEQ further stated that the Fermi 3 construction project emissions projections are

minimal in comparison to the most recent MDEQ emissions inventory for the area, and that the projected emissions would not result in any exceedance of the emissions budget in the SIP. The MDEQ indicated that it would include the temporary emissions increase from building Fermi 3 in any future O₃ and PM_{2.5} SIPs for the affected area.

b. Emissions Related to Operating Fermi 3

By letter dated June 21, 2012 (ML12179A185), DTE also provided the NRC with an applicability analysis based on stationary and mobile sources proposed for the operation of Fermi 3 that will emit PM_{2.5}, NO_x, SO₂ and VOC.

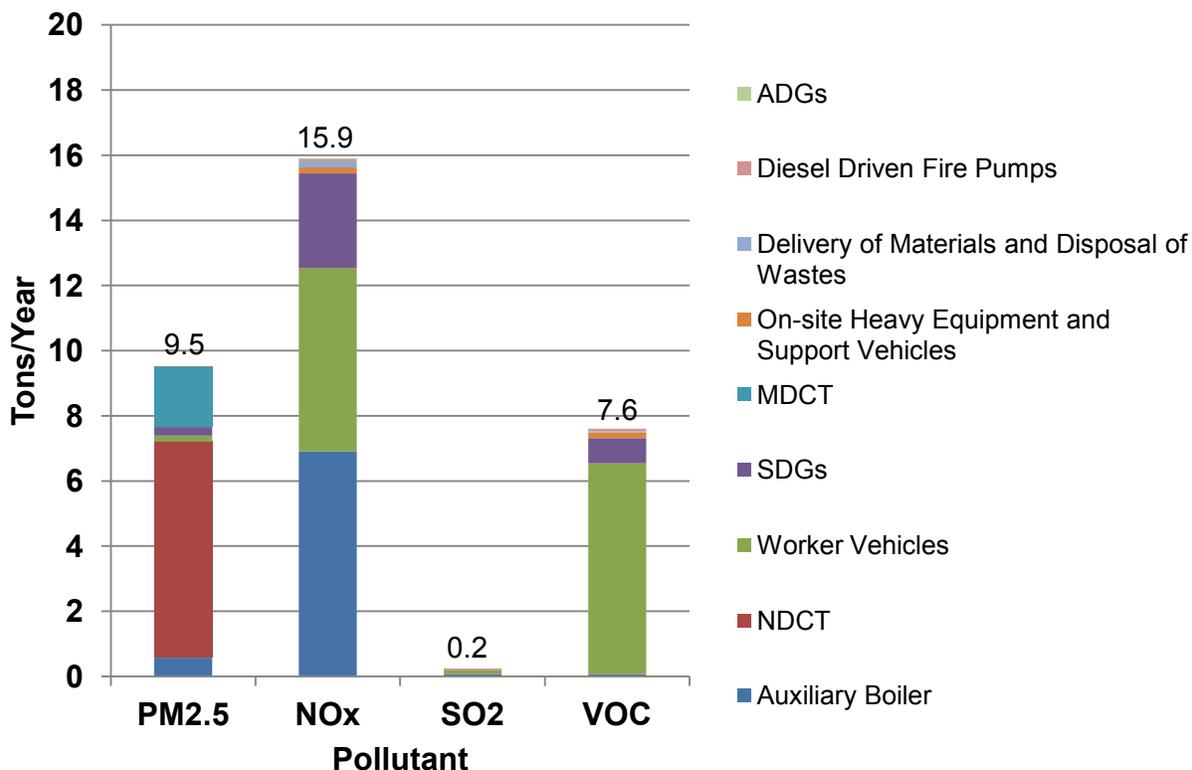
During the operation of Fermi 3, stationary sources will include an auxiliary boiler, two standby diesel generators (SDGs), two ancillary diesel generators (ADGs), two diesel-driven fire pumps, a natural draft cooling tower (NDCT), and a 4-cell mechanical draft cooling tower (MDCT). The DTE applicability analysis also included an emission inventory of mobile sources such as:

- onsite heavy equipment and support vehicles (light duty gasoline and diesel trucks and heavy duty diesel vehicles);
- heavy duty diesel vehicles used in the delivery of materials and disposal of wastes; and
- worker vehicles (passenger cars and light-duty gasoline trucks) carrying normal operations and outage workers traveling through the nonattainment/maintenance area to the Fermi 3 site.

Figure 5 shows the estimated PM_{2.5}, NO_x, SO₂ and VOC emissions from operating Fermi 3 as provided by DTE. The DTE applicability analysis concludes that the annual emissions of the pollutants of concern would not exceed the 100 tons per year conformity determination *de minimis* emission levels in 40 CFR 93.153(b)(1) for O₃ and PM_{2.5} and their precursors. The highest predicted annual emission rate is 15.9 tons per year for NO_x.

The NRC finds the DTE applicability analysis to be conservative because it includes emissions from the delivery of materials and disposal of wastes as well as emissions from plant worker commutes, emissions which the NRC considers to be neither direct nor indirect emissions because they do not occur onsite and because the NRC has no continuing program responsibility or practical control over them. Therefore, the NRC concludes that a general conformity determination is not required for operating Fermi 3.

Figure 5. Annual Pollutant Emissions from Operating Fermi 3 (as determined by DTE)



	PM _{2.5}	NOx	SO ₂	VOC
ADGs	<0.1	<0.1	<0.1	<0.1
Diesel Driven Fire Pumps	<0.1	0.1	<0.1	0.1
Delivery of Materials and Disposal of Wastes	<0.1	0.2	<0.1	<0.1
On-site Heavy Equipment and Support Vehicles	<0.1	0.2	<0.1	0.2
MDCT	1.8	-	-	-
SDGs	0.3	2.9	<0.1	0.8
Worker Vehicles	0.2	5.6	0.1	6.5
NDCT	6.6	-	-	-
Auxiliary Boiler	0.6	6.9	0.1	0.1
Total Annual Emissions	9.5	15.9	0.2	7.6

Glossary

Applicability analysis is the process of determining if your Federal action must be supported by a conformity determination.

Applicable implementation plan or applicable State Implementation Plan (SIP) means the portion (or portions) of the SIP or most recent revision thereof, which has been approved under Section 110(k) of the CAA, a Federal implementation plan promulgated under Section 110(c) of the CAA, or a plan promulgated or approved pursuant to Section 301 (d) of the CAA (Tribal implementation plan or TIP) and which implements the relevant requirements of the CAA.

Cause or contribute to a new violation means a Federal action that:

- 1) Causes a new violation of a NAAQS at a location in a nonattainment or maintenance area which would otherwise not be in violation of the standard during the future period in question if the Federal action were not taken; or
- 2) Contributes, in conjunction with other reasonably foreseeable actions, to a new violation of a NAAQS at a location in a nonattainment or maintenance area in a manner that would increase the frequency or severity of the new violation.

Caused by, as used in the terms “direct emissions” and “indirect emissions,” means emissions that would not otherwise occur in the absence of the Federal action.

Conformity determination is the evaluation (made after an applicability analysis is completed) that a Federal action conforms to the applicable implementation plan and meets the requirements of 40 CFR 93, Subpart B.

Conformity evaluation is the entire process from the applicability analysis through the conformity determination that is used to demonstrate that the Federal action conforms to the requirements of 40 CFR 93, Subpart B.

Continuing program responsibility means a Federal agency has responsibility for emissions caused by:

- 1) Actions it takes itself; or
- 2) Actions of non-Federal entities that the Federal agency, in exercising its normal programs and authorities, approves, funds, licenses or permits, provided the agency can impose conditions on any portion of the action that could affect the emissions.

Continuous program to implement means that the Federal agency has started the action identified in the plan and does not stop the actions for more than an 18-month period, unless it can demonstrate that such a stoppage was included in the original plan.

Criteria pollutant or standard means any pollutant for which there is established a NAAQS at 40 CFR part 50.

Direct emissions mean those emissions of a criteria pollutant or its precursors that are caused or initiated by the Federal action and originate in a nonattainment or maintenance area and occur at the same time and place as the action and are reasonably foreseeable.

Emergency means a situation where extremely quick action on the part of the Federal agencies involved is needed and where the timing of such Federal activities makes it impractical to meet the requirements of this subpart, such as natural disasters like hurricanes or earthquakes, civil disturbances such as terrorist acts and military mobilizations.

Emission inventory means a listing of information on the location, type of source, type and quantity of pollutant emitted as well as other parameters of the emissions.

Emissions budgets are those portions of the applicable SIP's projected emission inventories that describe the levels of emissions (mobile, stationary, area, etc.) that provide for meeting reasonable further progress milestones, attainment, and/or maintenance for any criteria pollutant or its precursors.

Emissions offsets, for purposes of 40 CFR 93.158, are emissions reductions which are quantifiable, consistent with the applicable SIP attainment and reasonable further progress demonstrations, surplus to reductions required by, and credited to, other applicable SIP provisions, enforceable at both the State and Federal levels, and permanent within the timeframe specified by the program.

Federal action means any activity engaged in by a department, agency, or instrumentality of the Federal government, or any activity that a department, agency or instrumentality of the Federal government supports in any way, provides financial assistance for, licenses, permits, or approves, other than activities related to transportation plans, programs, and projects developed, funded, or approved under title 23 U.S.C. or the Federal Transit Act (49 U.S.C. 1601 *et seq.*). Where the Federal action is a permit, license, or other approval for some aspect of a non-Federal undertaking, the relevant activity is the part, portion, or phase of the non-Federal undertaking that requires the Federal permit, license, or approval.

Federal agency means, for purposes of this subpart, a Federal department, agency, or instrumentality of the Federal government.

Increase the frequency or severity of any existing violation of any standard in any area means to cause a nonattainment area to exceed a standard more often or to cause a violation at a greater concentration than previously existed and/or would otherwise exist during the future period in question, if the project were not implemented.

Indirect emissions mean those emissions of a criteria pollutant or its precursors:

- 1) That are caused or initiated by the Federal action and originate in the same nonattainment or maintenance area but occur at a different time or place as the action;
- 2) That are reasonably foreseeable;
- 3) That the agency can practically control; and
- 4) For which the agency has continuing program responsibility.

For the purposes of this definition, even if a Federal licensing, rulemaking or other approving action is a required initial step for a subsequent activity that causes emissions, such initial steps do not mean that a Federal agency can practically control any resulting emissions.

Maintenance area means an area that was designated as nonattainment and has been re-designated in 40 CFR part 81 to attainment, meeting the provisions of Section 107(d)(3)(E) of the CAA and has a maintenance plan approved under Section 175A of the CAA.

Maintenance plan means a revision to the applicable SIP, meeting the requirements of Section 175A of the CAA.

Metropolitan Planning Organization (MPO) means the policy board of an organization created as a result of the designation process in 23 U.S.C. 134(d).

Mitigation measure means any *method* of reducing emissions of the pollutant or its precursor taken at the location of the Federal action and used to reduce the impact of the emissions of that pollutant caused by the action.

National Ambient Air Quality Standards (NAAQS) are those standards established pursuant to Section 109 of the CAA and include standards for carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), and sulfur dioxide (SO₂).

Nonattainment area means an area designated as nonattainment under Section 107 of the CA and described in 40 CFR Part 81.

Precursors of a criteria pollutant are:

- 1) For ozone, nitrogen oxides (NO_x), unless an area is exempted from NO_x requirements under Section 182(f) of the CAA, and volatile organic compounds (VOC).
- 2) For PM₁₀, those pollutants described in the PM₁₀ nonattainment area applicable SIP as significant contributors to the PM₁₀ levels.
- 3) For PM_{2.5}:
 - (i) Sulfur dioxide (SO₂) in all PM_{2.5} nonattainment and maintenance areas,
 - (ii) Nitrogen oxides in all PM_{2.5} nonattainment and maintenance areas unless both the State and EPA determine that it is not a significant precursor, and
 - (iii) Volatile organic compounds (VOC) and ammonia (NH₃) only in PM_{2.5} nonattainment or maintenance areas where either the State or EPA determines that they are significant precursors.

Reasonably foreseeable emissions are projected future direct and indirect emissions that are identified at the time the conformity determination is made; the location of such emissions is known and the emissions are quantifiable as described and documented by the Federal agency based on its own information and after reviewing any information presented to the Federal agency.

Take or start the Federal action means the date that the Federal agency signs or approves the permit, license, grant or contract or otherwise physically begins the Federal action that requires a conformity evaluation under this subpart.

Total of direct and indirect emissions means the sum of direct and indirect emissions increases and decreases caused by the Federal action; i.e., the “net” emissions considering all direct and indirect emissions. The portion of emissions which are exempt or presumed to conform under Section 93.153 (c), (d), (e), or (f) are not included in the “total of direct and indirect emissions.” The “total of direct and indirect emissions” includes emissions of criteria pollutants and emissions of precursors of criteria pollutants.