

Technical Support Document

Regulation Proposal

7 DE Admin. Code 1114

“Visible Emissions”



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List of Acronyms

CAA	Clean Air Act
CFR	Code of Federal Regulations
DNREC	Delaware Natural Resources and Environmental Control
EPA	Environmental Protection Agency
FR	Federal Register
GHG	Greenhouse Gas
MMBTU	Million British Thermal Units
MW	Megawatts
NAAQS	National Ambient Air Quality Standards
PM	Particulate Matter
SIP	State Implementation Plan
SSM	Startup, Shutdown, and Malfunction

1.0 Introduction

The Division of Air Quality of the Department of Natural Resources and Environmental Control (DNREC) is proposing to amend 7 **DE Admin. Code** 1114, *Visible Emissions*. The purpose of this regulation is to control the emissions of visible air contaminants, to protect public health, visibility and the environment.

2.0 Background

Under the Clean Air Act (CAA), states are required to implement plans for national primary and secondary ambient air quality standards, these plans are known as State Implementation Plans (SIP). Section 110(k)(5) of the CAA requires the Environmental Protection Agency (EPA) to determine the completeness of these plans.

A SIP is a federally enforceable plan that is developed by states to explain how they will comply with the CAA, in order to improve air quality. It is comprised of a collection of regulations and documents used by a state to demonstrate that they are protecting public health and the environment.

7 DE Admin. Code 1114 is part of Delaware's SIP. When regulations that are part of the SIP are amended, states are required to submit the proposed amendments to the EPA for approval. If the amendments are approved by EPA, they become part of the SIP and become federally enforceable through 40 Code of Federal Regulations (CFR) Part 52, Subpart I - Delaware.¹

¹ 40 CFR Part 52, Subpart I – Delaware. <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-52/subpart-I>

3.0 2015 Startup, Shutdown, & Malfunction State Implementation Call (SSM SIP CALL)

On June 30, 2011, the Sierra Club filed a petition with the EPA administrator, concerning emissions during periods of startup, shutdown or malfunction (SSM). A startup is the setting in operation of a source and a shutdown is the cessation of operation of a source. A malfunction is a sudden and unavoidable breakdown of process or control equipment. During periods of SSM, equipment is not running at peak efficiency, resulting in excess emissions during these times. Air pollution emitted during these periods may adversely impact the health of people nearby and contribute to smog and other problems in communities that are further downwind.

The Sierra Club petition included requests concerning the treatment of excess emissions during SSM; specifically, how those emissions are treated in SIP provisions that the EPA approved in the past. The CAA section 110(k)(5) provides a mechanism commonly called a “SIP Call” for correcting SIPs that the Administrator finds to be substantially inadequate to meet CAA requirements.

On June 12, 2015, EPA took final action on the Sierra Club petition; this final rule is commonly known as the 2015 SSM SIP Call (80 FR 33840).² In the SIP Call, EPA asked states to ensure they had plans in place that require industrial facilities to follow air pollution rules during periods of SSM; specifically, how these emissions are treated in SIPs. In issuing the SIP Call action, the EPA directed states to correct specific SSM provisions in their SIPs, giving a SIP submission deadline of November 22, 2016. 7 DE Admin. Code 1114 was one of the Delaware regulations included in this SIP Call.

In the SSM SIP Call, the EPA found 7 DE Admin. Code 1114, Subsection 1.3 deficient because it provided a potential exemption from the emission limit in Section 2.0 of the regulation, during SSM events:

“1.3 The provisions of this regulation shall not apply to the start-up and shutdown of equipment which operates continuously or in an extended steady state when emissions from such equipment during start-up and shutdown are governed by an operation permit issued pursuant to the provisions of 2.0 of 7 DE Admin. Code 1102.”

² State Implementation Plans: Response to Petition for Rulemaking; Restatement and Update of EPA’s SSM Policy Applicable to SIPs; Findings of Substantial Inadequacy; and SIP Calls to Amend Provisions Applying to Excess Emissions During Periods of Startup, Shutdown and Malfunction. EPA Final Rule. 80 FR 33840. June 12, 2015. <https://www.govinfo.gov/content/pkg/FR-2015-06-12/pdf/2015-12905.pdf>

2.0 Requirements

No person shall cause or allow the emission of visible air contaminants or smoke from a stationary or mobile source, the shade or appearance of which is greater than 20% opacity for an aggregate of more than three minutes in any one hour or more than 15 minutes in any 24 hour period. For guideline purposes only, Shade Number 1 of the Ringlemann Smoke Chart coincides with the regulatory limit of 20% opacity, when observing black smoke.”

3.1 Delaware’s SSM SIP Call Response

On November 22, 2016, Delaware submitted a SIP revision, in response to EPA’s SSM SIP Call. The SIP submittal proposed the removal of 7 DE Admin Code. 1114 from the SIP in its entirety, in order to remove the offending SSM exemption language from the SIP.

The method of visual opacity measurement is specified in Reference Method 9, as set forth in 40 CFR Part 60, Appendix A-4.³ It was Delaware’s position that Regulation 1114 could be removed from the SIP, as there is no discernable relationship between visibility measurements (opacity) and the amount of PM emitted. This position is based on EPA’s publication, *Current Knowledge of Particulate Matter (PM) Continuous Emission Monitoring*,⁴ which stated that specific PM emissions cannot be determined from a given level of opacity or from an increase in opacity. Therefore, Delaware believed that the revision comported with the EPA’s interpretation of the CAA and was consistent with the EPA’s approach for attainment and maintenance of all NAAQS.

3.2 Retention of a “State Only” Regulation

It should be noted, that Delaware did not agree with EPA’s position that the SSM components of Delaware’s SIP were deficient, in relation to the 2015 SSM SIP Call. Delaware’s approach has been to require a permit for facilities that limits emissions during start-up and shutdown, and to subject the conditions of the permit to upfront environmental review, ample public scrutiny and demonstration that no National Ambient Air Quality Standards (NAAQS) would be violated if the permit conditions are met. Therefore, Delaware believed that the SSM components of its SIP were protective of the NAAQS and not deficient.

Despite this disagreement, in order to avoid the imposition of CAA sanctions (CAA 110(m) and 179(b)),⁵ Delaware proposed to: 1) remove Regulation 1114 from the SIP as referenced above in Section 3.1 and 2) maintain Regulation 1114 as a “state only” regulation.

³ Appendix A-4 to Part 60—Test Methods 6 through 10B. <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-60/appendix-Appendix%20A-4%20to%20Part%2060>

⁴ Current Knowledge of Particulate Matter (PM) Continuous Emission Monitoring. EPA Final Report. September 2000. <https://www3.epa.gov/ttnemc01/cem/pmcmknowfinalrep.pdf>

⁵The two types of sanctions are: 1) highway funding sanctions, which impose a funding moratorium for all but exempt projects (safety, mass transit) and 2) offsets, which require a ratio of at least 2:1 emissions reductions within a nonattainment area for new or modified major facilities undergoing New Source Review permitting.

3.3 Disapproval of Delaware's SSM SIP Call Submittal for 1114

On October 23, 2023, EPA issued a final rule disapproving Delaware's November 22, 2016, SSM SIP Call submittal for Regulation 1114 (88 FR 72688).⁶ EPA did not agree that a proper quantifiable assessment had been done between the relationship between visible emissions and fine PM emissions. EPA found Delaware's explanation to address the anti-backsliding provisions of CAA section 110(l), regarding the removal of Regulation 1114 from the SIP, as insufficient.

Therefore, Delaware is proposing to amend Regulation 1114 in response to EPA's disapproval, to comply with 2015 SSM SIP Call. These amendments are described in more detail in Section 4.0, below.

⁶ Air Plan Disapproval; Delaware; Removal of Excess Emissions Provisions. EPA Final Action. 88 FR72688. October 23, 2023.
<https://www.govinfo.gov/content/pkg/FR-2023-10-23/pdf/2023-23242.pdf>

4.0 Current Proposed Amendments to DE Admin. Code 1114

The current proposed amendments address Section 1.0 “General Provisions” and Section 2.0 “Requirements”. To remove emissions exemptions during periods of SSM and set a new SSM emission limit for opacity, as shown below in the proposed regulation language:

~~“1.3 The provisions of this regulation shall not apply to the start-up and shutdown of equipment which operates continuously or in an extended steady state when emissions from such equipment during start-up and shutdown are governed by an operation permit issued pursuant to the provisions of 2.0 of 7 DE Admin. Code 1102.”~~

2.0 Requirements

2.1 ~~No~~ Except as outlined in 2.2 , no person shall cause or allow the emission of visible air contaminants or smoke from a stationary or mobile source, the shade or appearance of which is greater than 20% opacity for an aggregate of more than three minutes in any one hour or more than 15 minutes in any 24 hour period. For guideline purposes only, Shade Number 1 of the Ringlemann Smoke Chart coincides with the regulatory limit of 20% opacity, when observing black smoke.

2.2 During the startup and shutdown of equipment, no person shall cause or allow the emission of visible air contaminants or smoke from a stationary or mobile source, the shade or appearance of which is greater than 40% opacity for more than 6 consecutive minutes in any 1 hour period.”

Delaware chose the SSM opacity limit of “40% opacity for more than 6 consecutive minutes in any 1 hour period”, as this is the SSM opacity limit that the State of Maryland currently has in its SIP.⁷

This action eliminates EPA’s backsliding concerns, as the current proposed amendments set a limit to the amount of visible emission emitted during periods of SSM, where no opacity limit previously existed in Regulation 1114 for SSM events.

⁷ Title 26, Subtitle 11, Chapter 6.02 Visible Emissions. Code of Maryland Regulations.
<https://dsd.maryland.gov/regulations/Pages/26.11.06.02.aspx>

5.0 Impact of Proposed Amendments

Regulation 1114 was promulgated to control the visible emissions from all stationary sources. The paragraphs below describe the general impact of the proposed amendments.

5.1 Impact on Facilities

7 DE Admin. Code 1114, *Visible Emissions*, is not substantially likely to impose additional cost or burdens upon sources. With proper maintenance of equipment and the use of good air pollution control practices, sources should currently be able to meet the proposed opacity limits during start-up, shutdown of equipment.

The following, more stringent, Federal regulations already exist for many sources covered by this regulation. Therefore, it is not expected that those sources will need to expend any additional resources to comply with the proposed amendments to Regulation 1114.

5.1.1 Federal Regulations

5.1.1.1 Standards of Performance for Fossil-Fuel-Fired Steam Generators - 40 CFR Part 60 Subpart D - (Boilers)

40 CFR Part 60, Subpart D — *Standards of Performance for Fossil-Fuel-Fired Steam Generators* applies to fossil-fuel-fired steam generating units, specifically, as stated in Section 60.40 of Subpart D:

“(a) The affected facilities to which the provisions of this subpart apply are:

(1) Each fossil-fuel-fired steam generating unit of more than 73 megawatts (MW) heat input rate (250 million British thermal units per hour (MMBtu/hr)).

(2) Each fossil-fuel and wood-residue-fired steam generating unit capable of firing fossil fuel at a heat input rate of more than 73 MW (250 MMBtu/hr).”

The opacity limit in 40 CFR Subpart D, Section 60.38(a)(2)⁸ is no greater than 20 percent opacity except for one six-minute period per hour of not more than 27 percent opacity, which is lower than the proposed SSM opacity limit in Regulation 1114. Therefore, applicable sources already meet the 0.30 lb/MMBTU, maximum two-hour average, PM emission limit in Regulation 1114.

Therefore, applicable sources already meet the opacity emission limit in Regulation 1114, through compliance with Subpart D. Consequently, new controls will not be needed or additional resources expended for these sources to comply with proposed amendments to Regulation 1114.

⁸ 40 CFR Part 60, Subpart D. Section 60.38. <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-60/subpart-D/section-60.42>

5.1.1.2 Standards of Performance for Sulfuric Acid Plants - 40 CFR Subpart H

40 CFR Part 60, Subpart H - *Standards of Performance for Sulfuric Acid Plants* applies to sulfuric acid production units which have commenced construction or modification after August 17, 1971.

The opacity standard for acid mist in Subpart H, Section 60.83(a)(2)⁹, is 10 percent, which is lower than the proposed SSM opacity limit in Regulation 1114. Therefore, applicable sources already meet the proposed emission limit and new controls will not be needed or additional resources expended for this facility to comply with proposed amendments to Regulation 1114.

5.1.1.3 Standards of Performance for Hot Mix Asphalt Facilities - 40 CFR Part 60 Subpart I

40 CFR Part 60, Subpart I — *Standards of Performance for Hot Mix Asphalt Facilities*, applies to facilities used to manufacture hot mix asphalt by heating and drying aggregate and mixing with asphalt cements. The opacity emission limit in Subpart I is 20 percent,¹⁰ which is lower than the proposed SSM opacity limit in Regulation 1114. Therefore, applicable sources already meet the proposed opacity SSM emission limit in Regulation 1114, through compliance with Subpart I. Consequently, new controls will not be needed or additional resources expended for these sources to comply with proposed amendments to Regulation 1114.

5.1.1.4 Standards of Performance for Petroleum Refineries - 40 CFR Subpart J

40 CFR Part 60, Subpart J - *Standards of Performance for Petroleum Refineries* applies to the following types of units in petroleum refineries: fluid catalytic cracking unit catalyst regenerators, fuel gas combustion devices, and all Claus sulfur recovery plants except Claus plants with a design capacity for sulfur feed of 20 long tons per day (LTD) or less.

The opacity limit in Subpart J, is 30 percent opacity except for one six-minute period per hour,¹¹ which is more stringent than the proposed SSM opacity limit in Regulation 1114. Therefore, applicable sources already meet the proposed emission limit and new controls will not be needed or additional resources expended for this facility to comply with proposed amendments to Regulation 1114.

5.1.1.5 Standards of Performance for Grain Elevators - 40 CFR Part 60 Subpart DD

40 CFR Part 60, Subpart DD — *Standards of Performance for Grain Elevators*, applies to grain terminal elevators or grain storage elevators. The opacity limit in Subpart DD is 0 percent, which is more stringent than the proposed SSM opacity limit in Regulation 1114. Therefore, applicable sources already meet the proposed opacity emission SSM limit in Regulation 1114, through compliance with Subpart DD. Consequently, new controls will not be needed or additional resources expended for these sources to comply with proposed amendments to Regulation 1114.

⁹ 40 CFR Part 60, Subpart H, Section 60.83 <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-60/subpart-H/section-60.83>

¹⁰ 40 CFR Part 60, Subpart I, Section 60.92. <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-60/subpart-I>

¹¹ 40 CFR Part 60, Subpart J, Section 60.102. <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-60/subpart-J/section-60.102>

5.1.1.6 EPA Subpart OOO Nonmetallic Processing Plant Standards

40 CFR Part 60, Subpart OOO — *Standards of Performance for Nonmetallic Mineral Processing Plants*, applies to the following fixed or portable nonmetallic mineral processing plants, include but are not limited to: crushers, grinding mills, screening operations, bucket elevators, and belt conveyors.

Emission limits in Subpart OOO are based on construction, modification, or reconstruction dates.¹² The highest, least stringent, opacity limit in Subpart OOO is 15 percent, which is more stringent than the proposed SSM opacity limit in Regulation 1114. Therefore, applicable sources already meet the proposed opacity emission limit in Regulation 1114, through compliance with Subpart OOO. Consequently, new controls will not be needed or additional resources expended for these sources to comply with proposed amendments to Regulation 1114.

5.1.2 Permitted Facilities

The Federal regulations above (Sections 5.1.1) may not apply to all of the units that are covered under 1114. However, these “uncovered” sources may have Delaware permits, because their emission rates meet the permitting threshold in 7 **DE Admin. Code** 1102, Permits.¹³

These permits contain may contain opacity standards that are more stringent than the proposed SSM opacity limit in 1114. In addition, standard language regarding the minimization of emissions during startup and shutdown of the units is included in the permits:

“At all times, including periods of startup, shutdown, and malfunction, the owner or operator shall, to the extent practicable, maintain and operate the facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating procedures are being used will be based on information available to the Department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.”

¹² Standards of Performance for Nonmetallic Miner Processing Plants, Subpart OOO. <https://www.ecfr.gov/current/title-40/chapter-1/subchapter-C/part-60/subpart-OOO>

¹³ 7 **DE Admin. Code** 1102 – Permits. <https://regulations.delaware.gov/AdminCode/title7/1000/1100/1102.pdf>

5.1.3 Conclusion

To summarize, the following, more stringent, Federal regulations and/or Delaware permits already exist for many sources covered by this regulation:

- 40 CFR Part 60, Subpart D – *Standards of Performance for Fossil-Fuel-Fired Steam Generators (Boilers)*
- 40 CFR Part 60, Subpart H – *Standards of Performance for Sulfuric Acid Plants*
- 40 CFR Part 60 Subpart I – *Standards of Performance for Hot Mix Asphalt Facilities*
- 40 CFR Part 60, Subpart J – *Standards of Performance for Petroleum Refineries*
- 40 CFR Part 60 Subpart DD – *Standards of Performance for Grain Elevators*
- 40 CFR Part 60 Subpart OOO – *Standards of Performance for Nonmetallic Mineral Processing Plants*

Therefore, it is expected that a large number of sources will not need to install new controls or expend additional resources to comply with the proposed amendments to Regulation 1114. In addition, since a large number of sources are already required to meet the proposed emission limits in 1114, substantial emission reductions are not expected to result from the promulgation of the amendments.

5.2 Impact on Delaware’s Greenhouse Gas Emissions Reduction Targets

It is not possible to measure the anticipated impact of the amendments on greenhouse gas (GHG) emissions, because there is no direct relationship between visual opacity measurements and GHG emissions (See Section 3.1).

DNREC is required to review the impacts that proposed regulatory promulgation has on the State of Delaware’s GHG emission reduction targets, in accordance with 7 Del.C. §10003¹⁴ and 29 Del.C. §10118(b)(3).¹⁵ An assessment of the impacts of the proposed amendments, as specified in 7 Del.C. §10003, is not practical for these regulatory amendments; given that it is not possible to measure the anticipated impact of the amendments on greenhouse gas emissions.

5.3 Impact on Communities

In addition, the proposed amendments are not expected to impact overburdened or underserved communities located in Delaware, as the amendments are not expected to result in any substantial emissions reductions or increases, as detailed in Section 5.1.

¹⁴ Greenhouse gas emissions reductions. 7 Del.C. §10003. <https://delcode.delaware.gov/title7/c100/index.html>

¹⁵ Agency findings; form of regulations. 29 Del.C. §10118(b)(3). <https://delcode.delaware.gov/title29/c101/sc02/index.html>