



Maryland  
Department of  
the Environment

## Facts About...

### *Amendments to COMAR 26.11.09.01 & .07 – Definitions and Control of Sulfur Oxides from Fuel Burning Equipment.*

October 2024

#### Purpose

---

The purpose of this action is to propose amendments to Regulation .01 and .07 under COMAR 26.11.09 - Control of Fuel-Burning Equipment, Stationary Internal Combustion Engines, and Certain Fuel-Burning Installations to update a grammatical error within the definition of “Residual fuel oil” and to lower the amount of sulfur allowed in petroleum-based fuel oils combusted at stationary sources. Lowering sulfur from fuel oils will reduce emissions of sulfur dioxide (SO<sub>2</sub>), which also leads to increased formation of fine particulate matter (PM<sub>2.5</sub>). This action will reduce visibility-impairing pollutants that contribute to regional haze, as required by the federal Clean Air Act, and to protect public health from the adverse health effects of SO<sub>2</sub> and PM<sub>2.5</sub> pollution.

#### Submission to EPA as Revision to Maryland’s State Implementation Plan (SIP)

---

This action will be submitted to the U.S. Environmental Protection Agency (EPA) for approval as part of Maryland's State Implementation Plan (SIP).

#### Background

---

Section 169A of the Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to address impaired visibility, also known as regional haze, in 156 national parks, forests and wilderness areas that have been federally designated as Class I areas. In 1999, EPA issued regulations, known as the Regional Haze Rule, which requires states to develop SIPs to reduce haze-causing pollution to improve visibility in Class I areas.<sup>1</sup>

EPA established five regional planning organizations across the nation to coordinate regional haze efforts. Maryland is a member of one of these regional organizations, the Mid-Atlantic Northeast Visibility Union (MANE-VU), comprised of Mid-Atlantic and Northeast states, tribes, and federal agencies.

In June 2007, the MANE-VU states agreed to pursue several regional strategies to reduce SO<sub>2</sub> emissions<sup>2</sup>, the main contributor to visibility impairment in the MANE-VU region, including lowering the allowable sulfur content in distillate and residual fuel oils to specified levels.

On August 25, 2017, MANE-VU signed a statement<sup>3</sup> containing six “Asks” concerning controls and analyses that the States with Class I Federal areas in MANE-VU wanted to be addressed in the long-term strategy of any MANE-VU member.

“Ask 3” of the 2017 MANE-VU statement pertains to Ultra Low-Sulfur Fuel Oil Regulations. Each MANE-VU State that has not yet fully adopted an ultra-low sulfur fuel oil standard as originally requested by MANE-VU in 2007 should pursue this standard as expeditiously as possible and before 2028, depending on supply availability, where the standards are as follows:

---

<sup>1</sup> <https://www.epa.gov/visibility/1999-regional-haze-rule-protection-visibility-national-parks-and-wilderness-areas>

<sup>2</sup> <https://www.nescaum.org/documents/summary-memo-mane-vu-asks-20130328-final.pdf>

<sup>3</sup> <https://otcair.org/MANEVU/Upload/Publication/Formal%20Actions/MANE-VU%20Intra-Regional%20Ask%20Final%208-25-2017.pdf>



## Facts About...

### *Amendments to COMAR 26.11.09.01 & .07– Definitions and Control of Sulfur Oxides from Fuel Burning Equipment.*

- Distillate oil to 0.0015% sulfur by weight (15 parts per million (ppm));
- No. 4 residual oil within a range of 0.25 to 0.5% sulfur by weight; and
- No. 6 residual oil within a range of 0.3 to 0.5% sulfur by weight.

Maryland adopted amendments to COMAR 03.03.05.04, Specifications for No. 1 and No. 2 Fuel Oil in 2014. The amendments lowered the maximum allowable amount of sulfur in several stages. The first stage reduced the maximum No. 1 and No. 2 fuel oil sulfur levels from 3,000 ppm to 2,000 ppm in 2014. The second stage reduced sulfur levels further to a level of 500 ppm in 2016. The third stage reduced sulfur levels further for No. 1 and No. 2 fuel oil to the MANE-VU “ASK” level of 15 ppm in 2019. This proposed action will align the sulfur levels for distillate fuel in COMAR 26.11.09.07 with the previously adopted requirements specified in COMAR 03.03.05.04.

Currently, the amount of No. 4 or No. 6 residual oil combusted in Maryland is comparatively low<sup>4</sup> (less than 0.2% of the national consumption total) and sources that utilize residual oil are relatively uncommon. Within Maryland, there are several electricity generating units (EGUs) and combustion turbines, along with oil-fired emergency generators that operate infrequently. Several asphalt plants also combust residual oil, whereas the majority solely combust distillate oil. Despite the infrequent and limited use of residual fuel-oil, regulating the amount of sulfur in fuel-oil is critically important in reducing a variety of different pollutants emitted into the atmosphere. SO<sub>2</sub> is the main pollutant emitted from burning fuel-oil incorporated with sulfur, with byproducts being emitted such as PM<sub>2.5</sub>. In addition to limiting these pollutants, ozone-formulating pollutants are released into the atmosphere with the burning of fuel-oil, specifically Nitrogen Oxides (NO<sub>x</sub>) and Volatile Organic Compounds (VOCs). The release of VOCs from the burning of fuel-oil is nearly nine times higher than the burning of coal (Babu Dhital et al., 2020), a fossil fuel critically damaging our atmosphere and impacting our climate. A Maryland Department of the Environment (MDE) analysis<sup>5</sup> conducted during the summer of 2021 demonstrated the direct impact resulting from the burning of fuel-oil at local EGUs and combustion turbines, causing ozone to quickly form in the atmosphere. A significant increase in VOCs and NO<sub>x</sub> were emitted into the atmosphere during the episodes due to fuel-oil being burned contributing to an exceedance of the National Ambient Air Quality Standards (NAAQS) at local air monitors.

In accordance with Maryland’s Regional Haze SIP<sup>6</sup> and ongoing efforts to reduce emissions of SO<sub>2</sub> and PM<sub>2.5</sub> in order to protect public health, MDE proposes to amend COMAR 26.11.09.07 to lower sulfur content limits for stationary sources beginning January 1, 2026 as follows:

- 0.0015 percent (15 ppm) sulfur by weight for distillate oil (No. 1 and No. 2 fuel oil); and
- 0.3 percent (3,000 ppm) sulfur by weight for residual oil (No. 4, No. 5, and No. 6 fuel oil).

### Sources Affected and Location

---

This regulation applies to the owner or operator of fuel-burning equipment combusting distillate or residual fuel oil, on or after January 1, 2026, within the state of Maryland. This regulation is applicable throughout the entire State.

---

<sup>4</sup>[https://www.eia.gov/state/seds/sep\\_sum/html/pdf/sum\\_use\\_tot.pdf](https://www.eia.gov/state/seds/sep_sum/html/pdf/sum_use_tot.pdf)

<sup>5</sup><https://mde.maryland.gov/programs/air/Documents/2022%20Peak%20Day%20Final.pdf>

<sup>6</sup><https://mde.maryland.gov/programs/air/AirQualityPlanning/Documents/RegionalHazeSIP/Regional%20Haze%20Second%20Implementation%20Period/2-Regional%20Haze%20SIP.pdf>



## Facts About...

### *Amendments to COMAR 26.11.09.01 & .07– Definitions and Control of Sulfur Oxides from Fuel Burning Equipment.*

#### Requirements

---

The proposed amendments to COMAR 26.11.09.07 establish lower sulfur limits for distillate and residual oil beginning January 1, 2026. Under these amendments a person may not burn, sell, or make available for sale any fuel with a sulfur content by weight in excess of or which otherwise exceeds the following limitations:

- 0.0015 percent (15 parts per million or ppm) sulfur by weight for distillate oil (No. 1 and No. 2 fuel oil); and
- 0.3 percent (3,000 ppm) sulfur by weight for residual oil (No. 4, No. 5, and No. 6 fuel oil).

The proposed amendments to COMAR 26.11.09.07 provide carry over provisions so that a person may burn fuel containing sulfur limits in excess of the amounts specified above that were purchased prior to January 1, 2026. After January 1, 2026, a person combusting or storing distillate or residual fuels containing sulfur in excess of the amounts specified above must submit documentation, as specified under the new recordkeeping and reporting requirements, to the Department including the amount, type, and sulfur content the of distillate, residual, or blended fuel on-site no later than March 31, 2026. After January 1, 2026, a person must purchase fuel oil containing the sulfur weight limitations as stated above.

New recordkeeping and reporting requirements are added to the regulation that apply to a person offering to sell or deliver fuel, or a person responsible for the equipment in which the fuel or process gas is burned. This section requires affected sources to maintain records of information for the Department to be able to determine compliance with the regulation. All records required must be made available to the Department upon request and maintained for five years from the date of creation.

The Department is removing sections of the regulation that provided exemptions for specific facilities that are no longer in operation and have permanently closed down. These sections of the regulation will be repealed as there are no facilities in Maryland that meet the criteria as detailed in the exemptions.

The requirements of the regulation will no longer be delineated by areas of the state. All regulatory requirements will now be applicable state-wide.

#### Projected Emission Reductions

---

According to an analysis conducted by Massachusetts Department of Environmental Protection, MDE believes that the proposed amendments to COMAR 26.11.09.07 will reduce SO<sub>2</sub> emissions from current limits over 80% by reducing the sulfur content in No. 6 oil and 99.5% by reducing the sulfur content in No. 2 oil.<sup>7</sup> The Department believes that similar reductions will be gained for No. 4 and No. 5 oil as compared to No. 6 oil reductions. Lowering sulfur emissions will help to allow Maryland to continue to meet the 1-hour SO<sub>2</sub> National Ambient Air Quality Standards (NAAQS). Reducing the sulfur content in fuel oil will benefit Class I areas (designated under the Regional Haze rules) by continuing to improve visibility, reduce the negative impacts on public health, and reduce the chances of the creation of sulfuric acid, which can cause acidification of lakes and trees, damage trees and soils, and accelerates the decay of building materials and paints.<sup>8</sup>

---

<sup>7</sup> <https://www.mass.gov/doc/310-cmr-700-705-low-sulfur-fuel-technical-support-document-february-2012/download>

<sup>8</sup> [https://dec.vermont.gov/sites/dec/files/documents/2014-05-02%20SulfurContent%20Fact\\_EOG\\_BRM\\_042514%20R.pdf](https://dec.vermont.gov/sites/dec/files/documents/2014-05-02%20SulfurContent%20Fact_EOG_BRM_042514%20R.pdf)



## Facts About...

### *Amendments to COMAR 26.11.09.01 & .07– Definitions and Control of Sulfur Oxides from Fuel Burning Equipment.*

#### **Economic Impact on Affected Sources, the Department, other State Agencies, Local Government, other Industries or Trade Groups, the Public**

---

In 2018, Maryland's Comptroller of the Treasury adopted regulations which starting July 1, 2019, required the maximum allowed sulfur content in No. 1 and No. 2 home heating oil sold in Maryland to be limited 15 ppm. The Comptroller's Office noted that the regulations will have minimal cost impacts on the fuel oil industry and consumers based on the experience of other states that had already required reduced sulfur content in fuel oils. The industry is already producing compliant fuel oil and Maryland will benefit from economies of scale.

As a result of state actions to implement the MANE-VU low sulfur fuel strategy, refiners have made upgrades to produce low sulfur fuel oils. For residual oil, sufficient supplies of lower sulfur oils (e.g., 0.3% sulfur content for No. 4, No. 5, and No. 6 oil) are readily available and already are being used by many states throughout the Mid-Atlantic and Northeast.<sup>7</sup> Any potential increase in fuel costs for affected sources will likely be offset by lower maintenance costs and higher fuel efficiency. Higher sulfur contents in fuels contributes to corrosiveness of combustion byproducts, so the use of low sulfur fuel can extend the life of boilers and other equipment while potentially reducing the cost of new oil-burning equipment.<sup>9</sup>

The amount of uncontrolled SO<sub>2</sub> emitted from equipment is almost entirely dependent on the sulfur content of fuel and is essentially independent of burner design.<sup>8</sup> Domestic oil refiners have made the capital investments required to produce lower sulfur distillate fuels to comply with EPA's national ultra-low sulfur transportation diesel fuel requirements. For residual oil, sufficient supplies of lower sulfur oils are readily available and already are being used as required by several MANE-VU states for fuel burning facilities.

The Department's research indicates that the majority of fuel oil being combusted within facilities that are required to follow this regulation, such as electric generating boilers and turbines and stationary emergency generators, is primarily distillate oil and has been meeting the limit previously required under COMAR 03.03.05.04. The Department's research further indicates that the residual oil being combusted at asphalt plants currently meets the proposed limit in this action (0.3 percent). Facilities in Maryland are already purchasing residual fuel with a sulfur content percentage as low as 0.1% and up to 0.19%. For the reasons stated above, MDE believes that the proposed amendments to COMAR 26.11.09.07 are cost-effective and will not result in economic hardship to facilities that use distillate or residual fuel oil.

This action will not have an economic impact on State agencies or local governments.

#### **Economic Impact on Small Businesses**

---

The proposed action has minimal or no economic impact on small businesses.

---

<sup>9</sup> <https://portal.ct.gov/-/media/DEEP/air/SIPRAC/2013/Fuelsulfurfactsheetpdf.pdf>



Maryland  
Department of  
the Environment

## Facts About...

### *Amendments to COMAR 26.11.09.01 & .07– Definitions and Control of Sulfur Oxides from Fuel Burning Equipment.*

#### Is there an Equivalent Federal Standard to this Proposed Regulatory Action?

---

No. However, under the Regional Haze Rule, states are required to develop a series of SIPs to address visibility impairment in Class I Federal areas and make reasonable progress toward achieving natural visibility conditions. 40 CFR § 51.308 requires best available retrofit technology (BART) to improve visibility. The state of Maryland is following MANE-VU's six "asks" when preparing a SIP and developing BART requirements. One of MANE-VU's "asks" specifies percent by weight standards for No. 2 distillate oil, No. 4 residual oil, and No. 6 residual oil. The State of Maryland has already finalized standards for No. 2 distillate oil and this action will align COMAR 26.11.09.07 with the requirements specified under COMAR 03.03.05.04. The amendments to COMAR 26.11.09.07 will fulfill MANE-VU's "Ask 3" of the 2017 MANE-VU statement of lowering sulfur content in No. 4 and No. 6 residual oil before 2028.

# Title 26 DEPARTMENT OF THE ENVIRONMENT

## Subtitle 11 AIR QUALITY

### Chapter 09 Control of Fuel-Burning Equipment, Stationary Internal Combustion Engines, and Certain Fuel-Burning Installations

Authority: Environment Article, §§1-101, 1-404, 2-101—2-103, 2-301—2-303, 10-102, and 10-103, Annotated Code of Maryland

#### .01 Definitions.

A. (text unchanged)

B. Terms Defined.

(1) — (11) (text unchanged)

(12) “Residual fuel oil” means [that] fuel oil that meets the specifications of the American Society for Testing and Materials for Numbers 4, 5, or 6 (bunker C) oils or crude oils when used as a fuel.

(13) — (18) (text unchanged)

#### .02—.06 (text unchanged)

#### .07 Control of Sulfur Oxides [From] *from* Fuel Burning Equipment.

A. Sulfur Content Limitations for Fuel. [A person may not burn, sell, or make available for sale fuel with a sulfur content by weight in excess of, or which otherwise exceeds, the following limitations:]

(1) [In Areas I, II, V, and VI:] *Except as provided in §A(2) and B of this regulation, beginning January 1, 2026, a person may not burn, sell, or make available for sale in the state of Maryland any fuel with a sulfur content by weight in excess of, or which otherwise exceeds, the following limitations:*

[(a) The combustion of all solid fuels on a premises where the sum total maximum rated heat input of all fuel burning equipment located on the premises is 100 million Btu (106 gigajoules) per hour or greater may not result in a total emission of oxides of sulfur in excess of 3.5 pounds per million Btu (1.50 kilograms per gigajoule) actual heat input per hour;

(b) Residual fuel oils, 2.0 percent;

(c) Distillate fuel oils, 0.3 percent;

(d) Process gas used as fuel, 0.3 percent;

(2) In Areas III and IV:

(a) All solid fuels, 1.0 percent;

(b) Distillate fuel oils, 0.3 percent;

(c) Residual fuel oils, 1.0 percent.]

*(a) The combustion of all solid fuels on a premises where the sum total maximum rated heat input of all fuel burning equipment located on the premises is 100 million Btu (106 gigajoules) per hour or greater may not result in a total emission of oxides of sulfur in excess of 3.5 pounds per million Btu (1.50 kilograms per gigajoule) actual heat input per hour;*

*(b) Distillate fuel oils, 0.0015 percent;*

*(c) Residual fuel oils, 0.3 percent;*

*(d) Process gas used as fuel, 0.3 percent; and*

*(e) All solid fuels, 1.0 percent.*

(2) Carry Over Provisions.

*(a) A person may burn distillate or residual fuel oil containing sulfur in excess of the amounts specified in §A(1)(b) or (c) of this regulation that was purchased prior to January 1, 2026.*

*(b) After January 1, 2026, a person combusting or storing distillate or residual fuel oil per §A(2)(a) of this regulation shall submit documentation as specified under §C(5)(b) of this regulation to the Department including the amount, type, and sulfur content of distillate, residual, or blended fuel oil remaining on-site by March 31, 2026.*

B. Exceptions.

(1) (text unchanged).

(2) Fuel burning installations on ships. *The provisions of this regulation do not apply to the following:* [and the sale of fuel for these installations are exempt from the provisions of this regulation pertaining to the burning of fuel of specified sulfur content.]

*(a) The burning of fuel on ships; and*

*(b) The offering for sale and sale of fuel intended to be burned on a ship.*

[(3) For any premises located in Area I, for which the Department determines that compliance with this regulation will cause or exacerbate a violation of the National Ambient Air Quality Standards or federal Prevention of Significant Deterioration of Air Quality increments, the applicable emission standard is as follows:

(a) For solid fuel, 1.8 pounds oxides of sulfur per million Btu (0.75 kilogram per gigajoule) actual heat input per hour;

(b) For residual oil, 1.0 percent sulfur content by weight.]

[(4) In Areas III and IV, for any existing fuel-burning equipment of the cyclone type, in excess of 1000 million Btu (1055 gigajoules) actual heat input per hour, the emission standard for solid fuel is 3.5 pounds oxides of sulfur per million Btu (1.6 kilograms per gigajoule) actual heat input.]

[(5)] (3) The provisions of [§§A(1)(a) and A(2)(a)] *§A(1)(a) and (e)* of this regulation shall not apply to fuel-burning equipment installed after May 1, 2014 that burns only biomass fuels.

[C. Request for Analyses. Any person offering to sell or deliver fuel or any person responsible for equipment in which fuel or process gas is burned, upon request, shall submit to the Department or control officer such analyses of fuel or process gas as may be required to determine compliance with this regulation.]

*C. Recordkeeping and Reporting*

*(1) A person offering to sell or deliver fuel shall maintain records of information necessary for the Department to determine compliance with the requirements of §§A and B of this regulation.*

*(2) A person responsible for the equipment in which fuel or process gas is burned shall maintain records of information necessary for the Department to determine compliance with the requirements of §§A and B of this regulation.*

*(3) A person responsible for the equipment in which fuel or process gas is burned shall maintain records of the amount, type, and sulfur content of the fuel purchased and combusted.*

*(4) A person offering to sell or deliver fuel shall maintain records of the heating value, amount, type, and sulfur content of the fuels sold.*

*(5) All records made to demonstrate compliance with the requirements of this section shall be:*

*(a) Made available to the Department upon request;*

*(b) Made available via electronic format; and*

*(c) Maintained for five years from the date the record is created.*

**.08—.12 (text unchanged)**