



STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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GOVERNOR

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COMMISSIONER

## Memorandum

**To:** Board of Environmental Protection

**From:** Jeffrey S. Crawford, Office of the Commissioner

**Date:** October 17, 2013

**Re:** Chapter 106 Low Sulfur Fuel (Amendments)

### BACKGROUND:

Sulfur emissions, which react in the atmosphere to form sulfates, are the predominant cause of visibility impairment in the Northeast and Mid-Atlantic states. In fact, sulfate alone accounts for one-half to two-thirds of total fine particle mass and visibility impairment on the haziest days at Class I<sup>1</sup> sites in Maine and throughout the eastern United States. These small particles cause poor visibility by scattering and absorbing light, thereby reducing the amount of visual information about distant objects that reaches an observer. Because of the dominant role played by sulfates, our regional haze planning efforts, including control strategies, are focused on reducing sulfur emissions, primarily in the form of sulfur dioxide (SO<sub>2</sub>).

In 2009, the Maine Legislature adopted LD 1662, "An Act To Improve Maine's Air Quality and Reduce Regional Haze at Acadia National Park and Other Federally Designated Class I Areas," which implements a low sulfur fuel strategy in Maine. 38 MRS Section 603-A was amended to establish a statewide sulfur limit for distillate fuels of 50 ppm in 2016, and 15 ppm in 2018. For residual (#4 and #6) fuel oil, the statewide sulfur limit will be reduced to 0.5% in 2018. The Department was also directed to adopt major substantive rules that provide an opportunity for a licensed air contamination source that held an air emission license on September 12, 2009 (the effective date of the legislation) to apply for an equivalent alternative sulfur reduction strategy to the residual fuel oil and distillate fuel requirements. The rules must provide for the achievement of equivalent sulfur emission reductions through other means, including, but not limited to, reductions in consumption of residual fuel oil and distillate fuel, early sulfur emission reductions from a baseline emissions inventory year of 2002 and conversions to alternative fuels.

<sup>1</sup> The State of Maine contains, or shares, three Class I areas: 1) Acadia National Park; 2) Moosehorn National Wildlife Refuge Wilderness Area; and 3) Roosevelt Campobello International Park.

This is a joint rulemaking with both routine technical and major substantive elements. The routine technical amendments will incorporate the updated statutory sulfur limits, and are being adopted under the Department's general rulemaking authority at 38 MRS Section 585-A. The major substantive amendments to this rule are being promulgated pursuant to 38 MRS Section 603-A(9).

### **PROPOSED RULE FRAMEWORK**

The routine technical portion of this rulemaking will update Chapter 106 to incorporate the following statutory restrictions on fuel sulfur content for distillate (#1 and #2) and residual (#4, #5, and #6) oil:

- Beginning January 1, 2016<sup>2</sup>, a person may not use distillate oil with a sulfur content greater than 0.005 % by weight;
- Beginning January 1, 2018, a person may not use distillate oil with a sulfur content greater than 0.0015 % by weight; and
- Beginning January 1, 2018; a person may not use residual oil with a sulfur content greater than 0.5% by weight.

The major substantive portion of the Department's proposal establishes a process (including application submission and compliance deadlines) for sources seeking to utilize an alternative emission reduction strategy, and provides the regulated community maximum flexibility in meeting the rule's sulfur reduction requirements. This approach is consistent with case-by-case determinations in other Department regulations, such as the Chapter 134 Reasonably Available Control technology for Volatile Organic Compounds (VOC) rule, and will require the alternative control plan to be submitted to EPA for incorporation in the Maine State Implementation Plan (SIP) as a single-source SIP revision.

### **REQUESTED ACTION:**

The Department is requesting the Board schedule the proposed rules to a public hearing on December 5, 2013.

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<sup>2</sup> This date was subsequently changed to July 1, 2016.

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**Chapter 106: LOW SULFUR FUEL**

**SUMMARY:** This section establishes the maximum sulfur content of fossil fuels allowed to be burned in various air quality control regions in the state unless the source is equipped with sulfur dioxide controls or subject to more stringent sulfur limitations by other requirements.

- 1. Scope.** This regulation shall apply to those persons who distribute, import or blend fossil fuels in Maine and to fuel burning sources in the State of Maine which are not required to achieve the lower emission rates of New Source Performance Standards or as required to satisfy the case-by-case requirements of Best Available Control Technology or other requirements that may impose more stringent sulfur limitations.

**2. Definitions**

- A. Baseline emissions.** "Baseline emissions" for the purpose of this Chapter, means the actual emissions, in tons per year, which were emitted during 2002. The baseline emissions shall be adjusted downward to exclude any non-compliant emissions that occurred while the source was operating above any emission limitation that was legally enforceable during 2002.
- B. Distillate fuels.** "Distillate fuels" means any fuel meeting the requirements of the following grades of fuel oil as prescribed in ASTM D396: No. 1 Low Sulfur; No. 1; No. 2 Low Sulfur; and No. 2.
- C. Early sulfur emission reductions.** "Early sulfur emission reductions" means reductions in sulfur emissions occurring at a licensed source between January 1, 2002 and September 12, 2009, inclusive.
- D. Manufacturing.** "Manufacturing", for the purpose of this Chapter, means the non-combustion related mechanical, physical, chemical, or electronic use or transformation of distillate fuel into new products.
- E. Residual fuels.** "Residual fuels" means any fuel meeting the requirements of the following grades of fuel oil as prescribed in ASTM D396: No. 4 (light); No. 4; No.5 (Light); No. 5 (Heavy); and No. 6.
- 32. Prohibitions.** Except as provided in Sections 4, 5, 6, 8 and 95, no person shall use any liquid fossil fuel with a sulfur content exceeding the limits in Subsection A or any solid fossil fuel with a sulfur content to heat content ratio exceeding the limits of Subsection B.

**A. Liquid Fossil Fuels**

- (1) Residual Fuels.

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(a) After November 1, 1991, no person shall use any residual fuel containing over 2.0 percent sulfur by weight as fired, except that in the Portland Peninsula Air Quality Control Region, no person shall use any residual fuel with a sulfur content greater than 1.5% by weight.

(b) Beginning January 1, 2018, no person shall use any residual fuel with a sulfur content greater than 0.5% by weight statewide.

~~(1) No person shall burn fuel containing over 2.5 percent sulfur by weight as fired.~~

~~(2) After November 1, 1991, no person shall burn fuel containing over 2.0 percent sulfur by weight as fired.~~

~~(3) In the Portland Peninsula Air Quality Region, no person shall burn fuel containing over 1.5 percent sulfur by weight as fired.~~

(2) Distillate Fuel.

(a) Beginning July 1, 2016, no person shall use any distillate fuel with a sulfur content greater than 0.005% by weight statewide.

(b) Beginning January 1, 2018, no person shall use any distillate fuel with a sulfur content greater than 0.0015% by weight statewide.

The sulfur content requirements in this subsection do not apply to the use of distillate fuel for manufacturing purposes.

**B. Solid Fossil Fuels**

(1) After November 1, 1991, no person shall use fuel containing over ninety-six hundredths (0.96) pounds sulfur per million British Thermal Units, calculated as a calendar quarter average for sources in the Central Maine, Downeast, Aroostook County, Northwest Maine Air Quality Control Regions and that portion of the Metropolitan Portland Air Quality Region outside the Portland Peninsula Air Quality Region. A calendar quarter is composed of the months as follows: January, February, March (quarter 1); April, May, June (quarter 2); July, August, September (quarter 3); and October, November, December (quarter 4). No person shall burn fuel containing over 1.2 pounds sulfur per million British Thermal Units (BTU), calculated as a calendar quarter average.

(2) No person shall use fuel containing over seventy-two hundredths (0.72) pounds sulfur per million British Thermal Units calculated as a calendar quarter average for sources in the Portland Peninsula Air Quality Region. A calendar quarter is composed of the months as follows: January, February, March (quarter 1); April, May, June (quarter 2); July, August, September (quarter 3); and October, November, December (quarter 4). After November 1, 1991, no person shall burn fuel containing over 0.96 pounds sulfur per million BTU, calculated as a calendar quarter average.

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~~(3) In the Portland Peninsula Air Quality Region, no person shall burn fuel containing over 0.72 pounds sulfur per million BTU, calculated as a calendar quarter average.~~

**43. Records**

- A. Any person who imports or receives for wholesale distribution residual oil or bituminous coal in the State of Maine must submit to the Commissioner quarterly reports itemizing the quantity, sulfur content, ash content and heat content for each shipment of such fuel. It is the responsibility of the person importing or receiving such fuel to maintain a record of the certified fuel analyses upon which the quarterly reports are based and provide the user a copy of the certification.

Any person who uses residual oil or bituminous coal shall maintain certification records of the fuel analysis provided by the supplier.

- B. Any person achieving compliance by means of blending fuels shall file with the Commissioner quarterly reports indicating the respective fuel volumes, sulfur contents and heat contents.
- C. Any person achieving compliance by means of flue gas desulfurization or other sulfur removal processes shall file with the Commissioner quarterly reports indicating delivered fuel sulfur contents, a summary of sulfur dioxide concentrations from a continuous in-stack monitor, and identifying any period of ~~equipment~~ malfunction or other outage of the flue gas desulfurization or other sulfur removal processes.

- D. Where this rule requires the filing of quarterly reports with the Commissioner, the deadlines for filing such reports shall be as follows:

- (1) The report for the calendar quarter of January, February and March shall be filed by April 30;
- (2) The report for the calendar quarter of April, May and June shall be filed by July 30;
- (3) The report for the calendar quarter of July, August and September shall be filed by October 30; and
- (4) The report for the calendar quarter of October, November and December shall be filed by January 30 of the following year.

- ~~E. Any person that uses the exemption for electrical generating facilities in Section 8, must keep records of annual fuel capacity, as defined in 40 CFR 60.41b, calculated on a rolling monthly basis for the most recent four year period.~~

- E.F.** After November 1, 1991, any person who receives residual fuel oil greater than 2.0 percent sulfur content, or greater than 1.5 percent content in the Portland Peninsula Air Quality Control Region, must:

- (1) notify each subsequent user or purchaser of such residual fuel that the fuel is not a compliance fuel, and

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- (2) notify the Commissioner of the receipt of a non-compliance fuel, its quantity, sulfur content, ash content, heat content, and, if applicable, the name and location of subsequent users or purchasers for each shipment of such fuel. This notification must be submitted within 5 days of receipt of a non-compliance fuel oil.

**F.G.** Copies of all records and reports required by this regulation must be kept at the source for a minimum period of three years. These records shall be available during normal business hours and copies provided to the Commissioner or his representative upon request.

**54. Flue Gas Desulfurization.** Any source that installs any approved flue gas desulfurization system or other prescribed sulfur removal device shall be permitted to use fuel with a sulfur content in excess of the limitations of Section ~~32~~ such that after control, total sulfur dioxide emissions do not exceed:

- A. ~~2.4 lbs. of sulfur dioxide per million BTU in any 24 hour period;~~
- B. ~~After November 1, 1991, 1.92 lbs. of sulfur dioxide per million BTU in any 24 hour period; or~~ emission rates corresponding to the fuel sulfur limitations required for sources in the Portland Peninsula Air Quality Control Region.
- C. ~~In the Portland Peninsula Air Quality Control Region, 1.57 lbs. sulfur dioxide per million BTU in any 24 hour period.~~

**65. Fuel Blending.** Any source may achieve compliance with the fuel sulfur limitations of Section ~~32~~ by means of blending low sulfur fuel with a higher sulfur fuel, proportioned on the basis of relative heat content of each fuel.

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NOTE: Fuel blending is considered to be mixing of fuels by mechanical devices.

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**76. Test Method and Procedures**

- A. Any source achieving compliance using flue gas desulfurization or other sulfur removal processes shall demonstrate compliance through the installation and operation of an approved continuous in-stack sulfur dioxide monitor.
- B. Any source achieving compliance using fuel blending involving one or more noncompliance grade fuels shall demonstrate compliance in accordance with the provisions of 40 CFR Part 75 (revised July 1, 1998).
- C. Whenever compliance is demonstrated by the analysis of bulk residual oil, EPA Method 19 as published at 40 CFR Part 60, Appendix A shall be used. Method 19 includes the following procedures:
- (1) ASTM D270-65 and D4177 for Sample Collection, and
  - (2) ASTM D129 and 1552 for Sample Analysis.

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Equivalent procedures may be approved by the Commissioner and the U.S. Environmental Protection Agency.

- D.** Whenever compliance is demonstrated by the analysis of bulk coal, EPA Method 19 as published at 40 CFR Part 60, Appendix A shall be used. Method 19 includes the following procedures:
- (1) ASTM D2234 for sample collection,
  - (2) ASTM D2013 for sample preparation,
  - (3) ASTM D3177 for sulfur analysis,
  - (4) ASTM D 3173 for moisture analysis, and
  - (5) ASTM D3176 for gross calorific value determination.

Equivalent procedures may be approved by the Commissioner and the U.S. Environmental Protection Agency.

**87. Emergency Variance.** If, during periods of energy crisis or equipment outage or natural disasters, an oil supplier is unable to supply conforming fuel, that supplier may apply for a temporary variance to the Commissioner of the Department of Environmental Protection for a temporary variance. The Commissioner may, without hearing, issue that variance for the supplier and his regular users for a period not to exceed 60 days if the application, in his judgment, meets the criteria of the applicable statutory variance requirements and that such emergency action is necessary to avoid an immediate threat to public health, safety or general welfare. Such temporary variance cannot be renewed.

~~**8. Exemption: Electrical Generating Facilities.** Any electrical generating facility owned or operated by a regulated electric utility may use liquid fossil fuel with a sulfur content of up to 2.5% by weight provided that the facility has operated at an average of not more than 20 percent of its annual capacity factor, as defined in 40 CFR 60.41b, over the most recent 4 calendar year period, unless otherwise required to implement additional sulfur air pollution controls pursuant to BACT, BART or other state or federal requirements.~~

**9. Equivalent Alternative Sulfur Reduction.** Notwithstanding section 5 of this Chapter, any licensed air emission source that held an air emission license on September 12, 2009 may submit an application to amend the facility's existing air emission license to achieve equivalent sulfur emission reductions through other means, including but not limited to reductions in the consumption of residual and distillate fuel, early sulfur emission reductions from the 2002 baseline emissions inventory year, and conversion to alternative fuels.

**A.** Any source choosing to apply for an equivalent alternative sulfur reduction plan must submit an application for Department and EPA approval no later than one (1) year after the effective date of this Chapter.

**B.** Approved alternative sulfur reduction strategies must be in effect no later than January 1, 2018.

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NOTE: In all cases, ambient air quality standards and increment standards must be met.

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AUTHORITY: 38 M.R.S.A. Sections 585 and 585A

EFFECTIVE DATE: January 31, 1972  
 Amended: February 8, 1978  
 Amended: January 24, 1983  
 Amended: September 23, 1991  
 Amended: July 4, 1999

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**BASIS STATEMENT**

Sulfur in fossil fuels is converted to sulfur dioxide during the combustion process. Regulating the sulfur content of fossil fuels represents an emission standard for sulfur dioxide from fuel-burning sources to protect the ambient air quality standard for sulfur dioxide. The 1982 amendment addresses the applicability of this section to coal considering its inherent sulfur variability by allowing compliance to be demonstrated over an averaging time.

**BASIS STATEMENT FOR AMENDMENT OF AUGUST 14, 1991**

This amendment corrected certain minor deficiencies identified by the U.S. Environmental Agency in the State Implementation Plan and for consistency with State statute. Included is the adoption of more lenient 1.5 sulfur in fuel standard for the Portland Peninsula, based on monitoring studies and inventory results that had shown the original 1.0 percent sulfur standard was unnecessarily stringent. The amendments also imposes a more stringent 2.0 percent sulfur in fuel standard statewide and create an exemption for certain electrical generating facilities. In addition, the amendments require sources which use noncompliance fuels to report such use to the Department.

In addition to the above Basis Statement, the Department has filed with the Secretary of State the response to representative comments received during the comment period.

**BASIS STATEMENT FOR AMENDMENT OF JUNE 9, 1999**

This amendment allows any source achieving compliance using fuel blending involving one noncompliance grade fuel to demonstrate compliance through either oil sampling and analysis or continuous emission monitoring.

In addition to this Basis Statement, the Department has filed a supplemental Basis Statement with the Secretary of State that summarizes its responses to comments received during the comment period.