Technical Support Document
for
EPA's Notice of Proposed Rulemaking

on revisions to the
California State Implementation Plan

as submitted by the State of California,
for the South Coast Air Quality Management District

EPA's Analysis of
South Coast Air Quality Management District's
Rule 1156 - Further Reductions of Particulate Emissions from Cement Manufacturing Facilities

United States Environmental Protection Agency, Region IX
Air Division

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South Coast Air Quality Management District (SCAQMD),
Rule 1156 - Further Reductions of Particulate Emissions from Cement Manufacturing Facilities

Chronology of SCAQMD Adoption, California Submittal, and EPA Actions

- The SCAQMD Governing Board adopted Rule 1156 on November 4, 2005.

- The State of California submitted Rule 1156 to EPA on December 29, 2006 as a revision to the California State Implementation Plan (SIP).

- On February 14, 2007, EPA found complete California's submittal of Rule 1156.

California has not submitted a prior version of the rule for incorporation into the SIP.

Rule Summary & Background

SCAQMD Rule 1156 is a rule designed to limit particulate emissions from cement manufacturing facilities. Rule 1156 establishes requirements and control measures for (1) visible emissions; (2) material loading, unloading, and transferring; (3) material crushing, screening, grinding, blending, drying, mixing, packaging, and other related operations; (4) kilns and clinker coolers; (4) material storage; (5) air pollution control device performance standards; (6) internal roadways and vehicle use area; and, (7) material track-out. Rule 1156 is a part of the SCAQMD serious area PM-10 attainment plan control strategy and is intended to implement Air Quality Management Plan proposed control measure, BCM-08.

PM-10 Nonattainment History of South Coast Air Basin

Upon enactment of the Clean Air Act Amendments of 1990, the SCAB and Coachella Valley were designated nonattainment for PM-10 and classified as moderate under CAA §§ 107(d)(4)(B) and 188(a). Under subsections 188(a) and (c)(1) of the CAA, all moderate PM-10 nonattainment areas were required to reach attainment of the PM-10 standard by December 31, 1994. States containing initial moderate PM-10 nonattainment areas were required to develop and submit to EPA by November 15, 1991, a SIP revision providing for, among other things, implementation of reasonably available control measures (RACM), including reasonably available control technology (RACT).

On January 8, 1993, EPA determined SCAB and Coachella Valley could not practically attain the annual and 24-hour PM-10 standards by the statutory deadline of December 31, 1994 and reclassified the area as "serious". See 58 Federal Register (FR) 3334. Being reclassified as serious under CAA § 188(b)(2), SCAQMD had to submit a serious PM-10 nonattainment plan within 18 months of reclassification. A serious PM-10 nonattainment plan must provide for implementation of best available

control measures (BACM), including best available control technology (BACT). The attainment deadline for serious PM nonattainment areas was December 31, 2001 (see Section 188(c)(2).)

Consequently, SCAQMD has submitted to EPA several PM-10 plans and regulations designed to implement BACM. For a detailed discussion and summary of the PM planning history of the SCAB and Coachella Valley, please consult our proposed and final actions on the 2003 South Coast Air Quality Management Plan in 70 FR 43663 (July 28, 2005) and 70 FR 69081, (November 14, 2005), respectively. In sum, because the SCAB and Coachella Valley could not practically attain the PM standard by the December 31, 2001 deadline, in 2003 EPA granted an extension of this deadline to December 31, 2006 under Section 188(e).

As a result of this attainment date extension, the SCAB and Coachella Valley must review the "most stringent control measures" (MSM) included in a SIP that can be feasibly implemented in the area, per section 188(e). SCAQMD defined the significant source categories requiring MSM and BACM level controls in their 2002 South Coast AQMP. Initially, EPA approved these 2002 findings and overall plan (see 67 FR 77212 and 67 FR 77204 (December 17, 2002) for our proposal and 68 FR 19316 and 68 FR 19318 for our final approval (April 18, 2003)). Since then, SCAQMD confirmed and updated these findings in the 2003 South Coast AQMP and EPA approved these findings in November, 2005 (see FR citation in previous paragraph for our proposed and approved actions).

SCAQMD studies indicate that approximately 20 to 40 percent of ambient PM10 concentrations are a result of soil dust entrainment or fugitive dust. Higher soil dust contribution to ambient PM10 levels have been documented in the inland portions of the SCAQMD. Paved road dust, unpaved road dust, construction and demolition, and motor vehicles were clearly significant contributors with respect to both of the PM NAAQS. The SCAQMD noted that three other categories are slightly above the de minimis levels but may not be significant given emission uncertainties; these are non-farm equipment, non-utility internal combustion engines, and refinery boilers and heaters. These three source categories and most of the source categories that are below the de minimis levels were subject to stringent SCAQMD or CARB regulations, which helped keep PM-10 impact levels from these categories low, despite the large population and activity levels in the basin.

Rule Evaluation

1. Statutory Requirements & EPA Guidance

In section 189 of the Clean Air Act Amendments of 1990 (CAA), Congress required that serious PM-10 nonattainment areas, like the SCAB, must implement in a stepwise manner first all reasonably available control measures (RACM) then all best available control measures (BACM) for PM. The 2003 SCAQMD AQMP identified fugitive dust from paved road dust, unpaved road dust, construction and demolition, and motor vehicles as significant contributors of PM emissions. Consequently, the SCAQMD is required to implement all BACM for these sources of PM-10 emissions.

a. BACM Requirements

As a serious PM-10 nonattainment area, under CAA § 188(b)(2) SCAQMD was required to submit within 18 months of the area's reclassification a SIP revision providing for the implementation of BACM no later than four years from the date of reclassification (see CAA § 189(b).)

The CAA does not define what level of control constitutes a BACM-level of control. In our guidance for serious PM-10 nonattainment area plans, EPA defined BACM to be, among other things, the maximum degree of emission reduction achievable from a source or source category which is determined on a case-by-case basis, considering energy, economic and environmental impacts. See 59 Fed. Reg. 41998, 42010 (August 16, 1994, "Serious Area Guidance"). According to the Serious Area Guidance, a BACM analysis should involve the following steps: (1) preparation of an inventory of PM-10 sources; (2) evaluation of the source category impact; (3) evaluation of the technological feasibility of alternative control techniques (citing EPA guidance document, "Further Reductions of Particulate Emissions from Cement Manufacturing Facilities Background Document and Technical Information Document for Best Available Control Measures," September 1992), including energy and environmental considerations; and (4) evaluation of the costs of control – capital costs, annual costs, and cost effectiveness (see Serious Area Guidance at 42012-42013.)

Also, because of their attainment date extension, the SCAB and Coachella Valley must review and adopt as needed the "most stringent control measures" included in a SIP that can be feasibly implemented in the area, per section 188(e). SCAQMD defined the significant source categories requiring MSM and BACM level controls in their 2002 South Coast AQMP.

b. RACM Requirements

When a moderate area is reclassified to serious, the requirement to implement RACM in CAA § 189(a)(1)(C) remains. Thus, a serious area PM-10 plan must provide for the implementation of RACM as expeditiously as practicable where the RACM requirement has not been satisfied in the area's moderate area plan. However, EPA does not ordinarily conduct a separate evaluation to determine whether a serious area plan's measures also meet the RACM requirements as described in EPA's General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990. See 57 Fed. Reg. 13498, 13540 (April 16, 1992, "General Preamble"). In our Serious Area Guidance, we interpreted the BACM requirement as generally subsuming the RACM requirement. If we determine that the measures are indeed the "best available," we have necessarily concluded that they are "reasonably available". See 59 FR 42010. Therefore, our approval of Rule 1156 provisions relating to the implementation of BACM is also a finding that the rule implements RACM; below, references to BACM are intended to include RACM.

c. Enforceability and Legal Sufficiency Requirements (CAA §§ 110(a)(2), 172(c)(6))

Section 110(a)(2)(A) of the CAA states that implementation plans must include "enforceable emission limitations and other control measures, means, or techniques... as may be necessary or appropriate to meet the applicable requirements of [the CAA]." CAA Section 110(a)(2)(A); see also CAA § 172(c)(6), General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990, 57 Fed. Reg. 13498 (April 16, 1992). Accordingly, regulations submitted to EPA for approval into a SIP must be legally enforceable.

d. Anti-Backsliding Requirements and Findings (CAA § 110(l)) and (CAA § 193).

Section 110(l) of the CAA states that "[t]he Administrator shall not approve a revision of a plan if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress (as defined in [CAA Section 171]), or any other applicable requirement of this chapter." For example, EPA cannot approve a rescission, delayed implementation of a SIP-approved rule, or adoption of emission limits less stringent than the SIP-approved rule that would interfere with reasonable further progress (RFP) toward or attainment of the NAAQS.

Section 193 of the Act (the "Savings Clause") states that "[n]o control requirement in effect, or required to be adopted by an order, settlement agreement, or plan in effect before November 15, 1990, in any area which is a nonattainment area for any air pollutant may be modified after November 15, 1990, in any manner unless the modification insures equivalent or greater emission reductions of such air pollutant."

2. Evaluation of Rule

Rule 1156 contains the following provisions:
(1) a statement of purpose;
(2) a description of facilities subject to the rule;
(3) definitions of terms used within the rule;
(4) emission control requirements;
(5) monitoring and source testing requirements for determining compliance;
(6) reporting and record keeping requirements;
(7) test methods for determining compliance; and
(8) exemptions from the rule's requirements.

Rule 1156 establishes emission control standards, performance standards and control measures concerning (1) visible emissions; (2) material loading, unloading, and transferring; (3) material crushing, screening, grinding, blending, drying, mixing, packaging, and other related operations; (4) kilns and clinker coolers; (5) material storage; (6) air pollution control device performance standards; (7) internal roadways and vehicle use area; and, (8) material track-out.

PM10 emissions reductions from Rule 1156 are estimated to be 2 tons per day when the rule is fully implemented.

2.a. BACM & RACM Evaluation

The SCAQMD serious area PM-10 attainment plan identified reductions of PM from cement manufacturing facilities as part of a proposed control measure within the 2003 AQMP, BCM-08. Cement manufacturing is a significant source of PM as defined within plan and the emission reductions from the rule are used to meet the PM-10 NAAQS. The two cement manufacturing plants subject to the rule, California Portland Cement Company (CPCC) and Riverside Cement Company (TXI) were among the top thirty PM emission sources within the South Coast air basin in 2001, ranking 11th and 28th. A detailed analysis of the PM collected at the Rubidoux monitoring site showed a high relative concentration of calcium, 8% of total concentrations at the monitor (see Staff Report at page 74). SCAQMD has determined that this calcium is from limestone at the cement manufacturing plants and transported downwind to the monitor. Consequently, Rule 1156 must meet BACM and because the SCAQMD has received an attainment date extension, the rule must meet a "most stringent measures" review.

Much of the discussion in the Staff Report concerns the stringency of the rule's requirements and whether or not they have been achieved in practice. The Staff Report in Table 2-2, Potential Additional Emission Reductions, shows the incremental increase in PM emission control efficiency between existing control technologies and those adopted within Rule 1156. Incremental control efficiencies are estimated to increase 60-98% under the rule. Also, the Staff report lists several existing cement plants in Indiana, South Dakota, Maryland, Iowa, and Texas as meeting the 0.01 grain per dry standard cubic feet PM standard and 10% visibility standard as early as March 1999 and as recently as December 2003 (see staff pages 19-20 and 144-145.) The rule's BACT standard of 0.005 grain PM standard has been met in source tests used to develop EPA AP-42 emission factors and is endorsed by the Bay Area AQMD's BACT Performance Standards Manual (staff report page 145). EPA's Testing Verification Program has demonstrated that under controlled conditions a 0.0003-0.004 grain PM standard can be met (page 147).

Finally, source tests for CPCC and TXI showed that the 0.01 grain/dscf standard was achieved in practice as early as 1991 in some best case source test results using what was conventional baghouse technology at the time of the test. Early 2005 SCAQMD-run source tests at these facilities again demonstrated that the 0.01 grain PM/sdcf standard was achievable in practice (staff report pages 15-16).

Because the rule's control requirements and performance standards reflect the maximum degree of emission reductions to date, we find that Rule 1156 meets BACM and RACM for the SCAB significant source categories. Also, Rule 1156 control requirements meet the "most stringent measures" test at this time.

2.b. Evaluation for Enforceability and Legal Sufficiency.

EPA has determined that the Rule 1156 contains specific, well-defined requirements that are legally enforceable. For example, the rule does not contain any provisions that could change upon redesignation or reclassification and, therefore, remain in effect absent a specific revision to the rule; it specifies the time period over which compliance is to be determined, for each standard that contains a temporal component; it identifies the specific test methods to be used for compliance determinations; it specifies the kinds of activities that are exempt from the rules requirements; and, it does not allow for variations from the rule other than those specified in the exemptions.

2.c. Anti-Backsliding Requirements and Findings (CAA § 110(l)) and (CAA § 193).

Rule 1156 is a new rule that strengthens the SIP by requiring additional BACM and MSMs for cement manufacturing facilities. As such, it will not interfere with any applicable requirements concerning attainment and reasonable further progress, or any other applicable requirements of the Act. Our approval of this rule is consistent with CAA 110(l). Because this rule does not modify any control requirements in effect prior to November 15, 1990, section 193 of the Act does not apply to this action.

3. Recommendations for Future Revisions

We have no recommendations.

4. Rule Deficiencies

There are no deficiencies in Rule 1156 providing cause for EPA to propose either a limited approval/disapproval, or full disapproval of the rule.

Recommendation

Section 110(k) of the CAA contains provisions governing EPA's review of plans and regulations submitted by State of California and localities for inclusion in the California State Implementation Plan. EPA can propose one of four actions on Rule 1156: full approval, conditional approval, limited approval/disapproval, or a full disapproval.

Rule 1156 contains no deficiencies and fulfils the RACM and BACM requirements of CAA section 189 and is enforceable. The November 4, 2005 regulation jeopardizes neither reasonable further progress, nor attainment of the PM-10 NAAQS. To conclude, EPA proposes full approval of the November 4, 2005 adopted version of SCAQMD Rule 1156 - Further Reductions of Particulate Emissions from Cement Manufacturing Facilities and inclusion into the California State Implementation Plan.

Attachments

SCAQMD Rule 1156 - Further Reductions of Particulate Emissions from Cement Manufacturing Facilities, adopted November 4, 2005.

"Issues Relating to VOC Regulation Cutpoints, Deficiencies, and Deviations," USEPA, May 28, 1988, cover piece only.

“Final Staff Report for Proposed Amendments to Rule 1156 – Further Reductions of Particulate Emissions from Cement Manufacturing Facilities,” South Coast Air Quality Management District, November 4, 2005. Chapters 1-6 are included. Chapter 7, Response to Comments is omitted.