



The State of New Hampshire
Department of Environmental Services



Robert R. Scott, Commissioner

FP 2018-68, Env-A 1300 NO_x RACT
Summary of Comments on Initial Proposal with DES Responses
June 29, 2018

Introduction

The existing rules, Env-A 1300, establish Reasonably Available Control Technology (RACT) requirements for stationary sources that emit nitrogen oxides (NO_x). The rules specify emission standards and requirements for NO_x RACT for specified boilers, combustion turbines, internal combustion engines, asphalt plant dryers, incinerators, wallboard dryers, calcining mills, calciners, gypsum rock dryers, emergency generators, load shaving units, and miscellaneous sources. The rules also specify the criteria and procedures by which a source can request alternative RACT emission limits which, if approved by the Department, are then incorporated into a RACT Order. The rules are scheduled to expire on October 31, 2018, but are subject to extension pursuant to RSA 541-A:14-a. The rules are proposed to be readopted with amendment in order to match federal requirements, lower NO_x emission standards, and to allow New Hampshire to update its state implementation plan (SIP), as described in the Rulemaking Notice published in the April 19, 2018 *NH Rulemaking Register*.

The Department received no comments at the public hearing held on Thursday, May 17, 2018. The Department received comments on the IP during the public comment period from stakeholders including Wheelabrator Technologies, GSP Merrimack (GSP), and the United States Environmental Protection Agency (EPA). These comments and the Department's responses thereto are summarized below in numerical order. Written comments also were received from the Office of Legislative Services, Administrative Rules (OLS); those comments and the Department's responses thereto begin on page 7. Section numbers refer to numbers in the IP unless otherwise noted.

Env-A 1300 generally re: SIP submittal

Comment: [EPA] "On February 3, 2017, EPA issued findings of failure to submit to a number of states, including New Hampshire, due to the lack of required submittals for SIP revisions necessitated by the 2008 ozone standard. See 82 FR 9158. New Hampshire is cited within Table 2 of that notice for a failure to submit various RACT related SIP revisions. Our understanding is that NH-DES will use these proposed updates to Env-A 1300 as part of its certification that up to date NO_x RACT requirements are in place in the state. In order to make this demonstration, New Hampshire needs to ensure that up to date NO_x RACT requirements exist for all major sources of NO_x. If NH-DES intends to accomplish this, in part, by issuing new or updating previously issued NO_x RACT orders, this should be done expeditiously in order to issue any needed revised orders and submit them to EPA as SIP revision requests in advance of the 18 month sanctions clock, which is set to expire on September 6, 2018."

Response: The Department is aware of this and will be submitting up to date NO_x RACT requirements as well as a RACT Certification SIP before September 6, 2018.

Env-A 1301.03 re: applicability of exemptions

Comment: "As written, the exemption in Env-A 1301.03(b) for temporary boilers proposed at Env-A 1301.03(b) would extend to temporary boilers with theoretical potential emissions of 50 tons/year or more. The Department should revise the rule so that the exemption is limited to temporary boilers with theoretical potential emissions of less than 50 tons/year, to be consistent with paragraph (a)."

Response: The Department has revised the rule as suggested.

Env-A 1303.05(a) re: emission standards for tangential or face-fired boilers

Comment: [EPA] “New Hampshire could take this opportunity to remove obsolete provisions...[such as] Env-A 1303.05(a) applies to electric utility coal-fired tangential or face-fired boilers. Are there any such emission units in the state that this applies to?”

Response: The Department has not revised the rules in response to this comment but will consider appropriate amendments in a future rulemaking.

Env-A 1303.05 (b) & (c) and generally, re: averaging times

Comment 1: [EPA] “NH-DES has proposed averaging times in many locations within Env-A 1300 that are based on a ‘24-hour calendar day average.’ Such an averaging time may not be appropriate in all situations. For example, units MK-1 and MK-2 located at Merrimack Station have operated sporadically in recent years, with many start-up and shut-down cycles. As a result, there are many days when these units run for only part of a calendar day due to a start-up or shut-down event. As noted [in our other comments]...we do not recommend NH-DES provide a daily emissions cap for units MK-1 or MK-2, or for any other emission unit that operates sporadically. Rather, start-up and shut-down caps should be linked to operational parameters that will serve as indicators of when a start-up or shut-down cycle has been completed.”

Comment 2: [GSP] “GSP does not support EPA’s recommendation[in Comment 1, above] to establish permit emission limits that apply on a 24-hour rolling basis instead of a 24-hour calendar day basis. This would be that much more restrictive, in that a new 24-hour average would be calculated at the end of each operating hour. For example, for a 24-hour limit on a calendar day basis, GSP would have the entire calendar day to manage emission rates, and would be “tested” against a permit limit at the end of each day for a maximum of 365 “tests” per year. For the 24-hour rolling average, however, there is no opportunity to manage emission rates throughout the day, as the 24-hour emission rate is a moving target subject to change each hour, with a maximum of 8,760 “tests” that the unit must pass per year. Additionally, EPA’s proposal to pair a 24-hour rolling average NOx emission rate with mass limits that apply to the specific hours that the boilers are in startup and shutdown would be difficult to manage in practice and would make compliance demonstrations unnecessarily complicated.”

Response: Under the current rules, permit emission limits for most types of units are established based on a 24-hour calendar day average. Revisions proposed to Env-A 1303.05 in the IP would have changed the rule to establish limits based upon a 7-boiler operating day rolling average for wet bottom utility boilers firing coal. The Department agrees that establishing limits based upon a rolling average would be impractical and needlessly complicated. Therefore, the Department has not revised the rules to incorporate a rolling average but has revised Env-A 1303.05 to make it consistent with the rest of the rules by requiring that emission limits be based on a 24-hour calendar day average. Because of this change, the definition of “boiler operating day” at Env-A 1302.06 is no longer necessary. The Department has revised the rule to delete this definition.

Env-A 1303.05(b) and (c) re: emission standards for cyclone-fired boilers

Comment 1: [EPA comment relative to periods of start-up and shut down] “If NH DES adopts a separate emission rate for [the affected units] for start-up events, it should not do so by means of a 24-hour cap, but rather, should structure the cap to be applicable until the earliest point in time at which the unit’s synthetic catalyst reduction (SCR) NOx control equipment can be activated, such as, for example, once the unit [a specified power output] of electricity, or when a certain temperature level has been reached. A similar analysis should be done to determine an appropriate cap for shut-down events, which appear to take far less time and cause fewer emissions than start-up events.” Such mass based emission caps for boiler startup and shutdown events should be based on the emissions profile that occurred during all such events in 2015-2017.

Comment 2: [EPA comment relative to steady state operations] “During times of steady state operation...we believe an emission rate lower than what New Hampshire is considering is appropriate. This is based on a review of past operating data for [the affected units]. Accordingly, NH DES should establish a steady state

emission rate...that reflects a level of control commensurate with what the [units have] been able to achieve in the past.”

Comment 3: [GSP] *“While GSP recognizes DES’ responsibility to ensure that up to date RACT limits apply to sources in the State, DES’ proposed limits for MK1 and MK2 exceed the requirements of RACT and are not technologically or economically feasible. ...DES’ proposed limits do not consider the unique boiler and equipment design or current dispatch of the units. In short, DES’ proposed limits are more stringent than the designed and proven capability of the units.*

For these reasons, GSP urges DES to consider GSP’s proposed alternative limits and averaging times outlined below. Specifically, GSP encourages DES to establish a RACT limit for MK1 of 0.22 lb/mmBtu NOx on a 7-boiler operating day average, excluding hours when the selective catalytic reduction (“SCR”) permissives are not met and a limit of 5.5 tons of NOx per day on a 24-calendar day average that applies at all times. For MK2, GSP encourages DES to establish a RACT limit of 0.25 lb/mmBtu NOx on a 7-boiler operating day average, excluding hours when the SCR permissives are not met and a limit of 15.4 tons of NOx per day on a 24-calendar day average that applies at all times. While such limits would still impose additional operational and cost burdens on GSP, they satisfy RACT and would achieve additional NOx reductions while providing the necessary operational flexibility for the units.”

Response to Comments 1 through 3: The NOx RACT emission limitations in Section Env-A 1303.05(b) and (c), apply to two electric steam generating units (EGUs) at Merrimack Station MK1 and MK2, respectively. NOx emissions from each EGU are controlled by selective catalytic reduction (SCR) systems. MK1 and MK2 SCR systems became operational in 1999 and 1995, respectively. Each SCR system has four layers of catalyst.

The SCR system(s) cannot be operated until the flue gas temperature at the SCR inlet is above the ammonia injection permissive temperature in the SCR (approximately 600°F). This means NOx emissions during the periods of startup and shutdown are higher than the steady-state operations. In their comment letter, GSP stated that they support EPA’s recommendation that a separate mass-based limit apply during the periods of startup and shutdown. GSP also noted that during intermittent low-load operations (not associated with a startup or shutdown), the SCRs cannot be operated because the flue gas temperature at the SCR inlet is below the operational temperature required for the injection of ammonia and requested that the Department take into account the limitations on the SCR during the low-load operating periods.

As noted by GSP in their comment letter, the SCRs on MK1 and MK2 are 19 and 23 years old, respectively. The four layers of catalyst in the SCR system(s) continuously degrade during their replacement cycle. Under the current catalyst management plan, GSP implements a staggered catalyst replacement cycle. The NOx emission levels cited in the EPA comment letter were achieved by MK1 and MK2 when the SCR systems were relatively new. Historically, Merrimack Station units MK1 and MK2 operated as “base-loaded” EGUs. Currently the facility operates at significantly lower annual capacity factors and has frequent startups and shutdowns. Additionally, GSP installed a flue gas desulfurization (FGD) system in September 2011 to meet the requirements of New Hampshire RSA 125-O:11 *Multipollutant Reduction Program - Mercury Emissions*, Env-A 2300 *Mitigation of Regional Haze* and 40 Code of Federal Regulations (CFR) 63 Subpart UUUU *National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units* (also known as [Mercury and Air Toxics Standards](#) or MATS). FGD controls the emissions of mercury and acid gases from MK1 and MK2. With the installation of FGD, GSP is required to operate the SCR systems such that it maintains operational balance with the FGD system. Specifically, GSP stated in their comment letter that “increased ammonia flow can cause reduced FGD efficiency because the excess ammonia takes up catalysts area that then becomes unavailable for other reactions to take place (e.g., oxidation of mercury or conversion of sulfur dioxide to sulfur trioxide)”. Subsequent to their comment letter and based on discussions with the Department, GSP proposed new NOx RACT limits for MK1 and MK2 along with the supporting information (submitted via e-mail dated June 14, 2018).

The Department has determined that the NOx emission rate of 0.22 lb/MMBtu (calendar day average) for steady state operations for each of MK1 and MK2 represent RACT for this category. Compliance with this rate-based emission limit during steady-state operations requires aggressive operation of SCR systems but also

considers GSP's need to properly balance the operations of air pollution control equipment (i.e., SCR and FGD) in order to maintain compliance with applicable state and federal regulations. The daily average emission limit (lb/MMBtu) for the steady-state operations proposed by GSP is approximately representative of the 95th percentile ranked peak performance data for MK1 and MK2. To be consistent with the 95th percentile ranking approach that was used to obtain the rate-based emission limit (i.e., lb/MMBtu), the Department calculated the mass-based emission limitations for MK1 and MK2 as 4.0 tons and 11.5 tons respectively (using the "adjusted" actual startup data from 2015-2017), to be applicable on days with startup, shutdown or low-load operations.

Based on the comments received from EPA and GSP and subsequent discussions with both, the Department has revised Env-A 1303.05 and added definitions of "startup", "shutdown", and "low-load operation".

Env-A 1309.01(b) re: applicability to sewage sludge incinerators

Comment: "[Subpart LLL applies only to] existing sources meeting the definition of a sewage sludge incineration unit which are located at a wastewater treatment plant. It is possible for other incineration units to combust sewage sludge and not be subject to Subpart LLL, e.g. a commercial incinerator combusting sewage sludge located on a property not associated with wastewater treatment. ... EPA recommends amending Env-A 1309.01(b) to apply Subpart LLL to only sources subject to the Subpart and apply the requirements of Env-A 1314 to all other units that combust sewage sludge, but would not otherwise be subject to Subpart LLL."

Response: The Department agrees that the rule cannot bring incinerators not associated with wastewater treatment into the scope of Subpart LLL. The Department has revised the rule to eliminate paragraph (b).

Env-A 1309.02 [FP 1309.03] re: emission standards for incinerators

Comment 1: "We understand the proposed NO_x RACT limit of 150 ppmv at 7% O₂ (ppm7%)/24 hour calendar day reflects the NO_x RACT limits adopted for MWCs in Connecticut(CT) and Massachusetts (MA). However, the 150 ppm NO_x RACT limit in these states was incorporated into the 111(d) state plan regulations implementing the USEPA 40 CFR 60 Subpart Eb/Cb large MWC MACT requirements and provided for exclusion of up to 3 hours of data during startups/shutdowns and malfunction (SSM) periods consistent with Subpart Eb/Cb compliance requirements. Given that the NHDES proposed 150 ppm7%O₂ NO_x RACT limit is significantly more restrictive than the current 205 7%O₂/24 hour calendar day limit for Large MWCs under Env-A-3303 (included in NH 111(d) state plan implementing Subpart Eb/Cb), the same Env-A 3300 SSM provisions should be provided in the proposed NO_x RACT limit."

Response to Comment 1: The federal New Source Performance Standards (NSPS) at 40 Code of Federal Regulations (CFR) Part 60 Subpart Cb and Subpart Eb both of which were promulgated by EPA on May 10, 2006, include exemptions from the NO_x RACT emission limit during periods of startup, shutdown and malfunction (SSM). Subparts Cb and Eb SSM provisions are incorporated into Env-A 3300 *Municipal Waste Combustion* by reference. These SSM provisions provide for exclusion of up to three hours of emission data during the periods of startup, shutdown and malfunction. However, in 2008, the United States Court of Appeals for the District of Columbia Circuit, in *Sierra Club v. EPA*, ruled that blanket exemptions from the applicable emission limits during SSM periods violate the Clean Air Act (CAA). As a result of that decision, EPA issued a final rule *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* (May 22, 2015)¹. The 2015 EPA SSM guidance states: "The EPA's longstanding interpretation of the CAA is that state implementation plan (SIP) provisions cannot include exemptions from emission limitations for emissions during SSM events. In order to be permissible in a SIP, an emission limitation must be applicable to the source continuously, i.e., cannot include periods during which emissions from the source are legally or

¹ <https://www.epa.gov/air-quality-implementation-plans/startup-shutdown-malfunction-ssm-emissions-industrial-facilities>

functionally exempt from regulation”. The 2015 EPA SSM guidance further states: “Because SIP provisions must apply continuously, including during SSM events, the EPA can no longer approve SIP submissions that include any emission limitations with such exemptions, even if those emission limitations are NSPS or NESHAP regulations that the EPA has not yet revised to make consistent with CAA requirements”.

Therefore, the SSM exemption provisions in the federal regulations cited above and incorporated into Env-A 3300 are unenforceable and cannot be included in SIP submissions. Once EPA makes appropriate revisions to the NSPS and NESHAP regulations the Department can update Env-A 3300 in a future rulemaking.

The Department has not revised the rules in response to this comment.

Comment 2: *“If USEPA will not allow for SSM provisions in NOx RACT limits that are not incorporated into Subpart Eb/Cb 111(d) state plan implementing regulations, then we agree that an alternative limit should apply during startup/shutdowns and malfunction periods- not just during startup period as proposed.” [underlining in original]*

Response to Comment 2: As noted above, the SSM exemption provisions in NSPS Subparts Cb/Eb cannot be included in the NOx RACT limits. The 2015 SSM guidance specifically allows alternative emission limits for startup and shutdown. It includes no such allowance for period of malfunction. Therefore, the Department has established an alternative emission limit applicable for the periods of startup and shutdown only. Please see the Department’s Response to Comment 3 below.

Comment 3: *“The proposed alternative limit of 205 ppm 7% O₂/24 hour calendar day average inclusive of startup periods cannot be achieved given the inherent limitations associated with SNCR NOx control system operation and CEM data issues during startup periods...Suggested language...as follows: ‘Beginning one year after the effective date of this rule, a municipal waste combustor (MWC) shall not exceed a 24 hour calendar day average NOx RACT emission limit of 150 ppmvd at 7% O₂, except during days with periods of startup. During calendar days with periods of startup, the MWC shall not exceed a mass emission rate limit equivalent to 205 ppmvd at 7% O₂ based on a calendar day average and the 150 ppmvd at 7% O₂ limit shall not apply. The mass emission rate equivalent limit shall be based on the maximum hourly heat input rate and 205 ppmvd 7% O₂ Lbs./MMBtu equivalent emission factor (0.352 Obs./MMBtu).’”*

Response to Comment 3: The Department agrees that during the periods of startup or shutdown, it is impractical to meet the NOx RACT emission limitation of 150 ppmvd at 7% O₂ for the following reasons:

1. The selective non-catalytic reduction (SNCR) NOx control system cannot be operated until the minimum SNCR operating temperature is achieved; and
2. Presence of excess air/O₂ in the boiler during the periods of startup and the requirement to apply the 7% O₂ correction factor inflates the NOx ppm.

As explained in Section XI. B of the 2015 SSM guidance, SIPs may include alternative numerical limitations for startup and shutdown events. As per the EPA guidance, “States may elect to adopt an existing NSPS or NESHAP as a SIP provision, so long as the SIP provision excludes the exemption or affirmative defense applicable to SSM events. States may also wish to replace the SSM exemption in NSPS or NESHAP regulations with appropriately developed alternative emission limitations that apply during startup and shutdown in lieu of the SSM exemption”.

Therefore, in accordance with the 2015 SSM guidance, the Department revised the rules to include an alternative emission limitation for startup and shutdown events as follows. Specifically, the Department has revised the rules to accommodate higher NOx emissions during the periods of startup or shutdown by using a “mass-based” NOx emission limitation (pounds per hour calculated as the equivalent of 205 ppmvd at 7% oxygen and the maximum heat input rate for the device (MMBtu per hour)), which is applicable on days with startup or shutdown. This is consistent with Env-A 3300, which includes a NOx emission limitation of 205 ppmvd at 7% O₂ (24-hr calendar day average) for existing large municipal waste combustors, which is based on NSPS Subpart Cb. The NSPS emission limit applies at all times, except during the periods of startup, shutdown and malfunction.

Comment 4: “A definition of ‘startup periods’ should be incorporated into Env-a 1309.02 consistent with the startup definition in 40 CFR 60.58(b)(a)(1)(i)...”

Response to Comment 4: The Department has revised the rule to incorporate the federal definition of “startup period” found in 40 CFR Subpart BBBB, §60.1940, which is referenced in 40 CFR 60.58b (a)(1)(i), and to add a definition of “shutdown” applicable to municipal solid waste combustors.

Comment 5: “...We believe an alternative NOx RACT limit of 180 ppmvd 7% O2 would be appropriate in lieu of the proposed 150 ppmvd limit...”

Response to Comment 5: New Hampshire’s proposed NOx RACT limit for MWCs of 150 ppmvd, is consistent with limits in other jurisdictions. While New Hampshire is currently in attainment with both the 2008 and 2015 Ozone National Ambient Air Quality Standard (NAAQS), in accordance with Section 184 of the CAA, New Hampshire is considered part of the Ozone Transport Region (OTR) which also includes the following states, Connecticut, Delaware, Maine, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, parts of Virginia and Washington D.C. As such, Section 184 requires that, “any stationary source that emits or has the potential to emit at least 50 tons per year of volatile organic compounds (VOCs) shall be considered a major stationary source and subject to the requirements which would be applicable to major stationary sources if the area were classified as a Moderate nonattainment area.” In accordance with Section 182(f) of the CAA, plan requirements for major stationary sources of VOCs shall also apply to major stationary sources of oxides of nitrogen (NOx) emissions.

Further, 40 CFR 51.1116 requires that states within the OTR must submit a SIP revision that meets the RACT requirements of Section 182(b)(2) of the CAA for all portions of the state located in an ozone transport region (all areas of New Hampshire are within the OTR). 40 CFR 51.1116 also required OTR states to submit a RACT SIP revision within 24 months after designation of the 2008 Ozone NAAQS that required the implementation of RACT as expeditiously as practicable but no later than January 1 of the 5th year after designation for the 2008 Ozone NAAQS.

Because New Hampshire is an OTR state it must comply with the federal RACT SIP requirements as stated above. Therefore, the Department has not revised the rules in response to this comment.

Env-A 1311.03 re: control requirements, drafting consistency

Comment: “Env-A 1303.02 [FP 1303.03] was amended in the initial proposal to clarify certain tune-up and inspection requirements. The control requirements in Env-A 1311.03 are similar but are now inconsistent with those revised in Env-A 1303.02 [FP 1303.03]. Env-A 1311.03 should be revised so that both sections align.”

Response: The Department has revised the rule as suggested.

From OLS:

Env-1302.08 re: incorporation by reference

Comment: “**Edit:** “ASTM D 388-18, 2018, available as noted in Appendix C.” [Bold in original.]

Response: The Department does not intend to enforce any requirements in the cited document. The cited standard is used for purposes of defining a term and is not being incorporated by reference. The Department has not made the suggested edit.

Env-A 1302.26 [FP 1302.25] re: incorporation by reference

Comment: “**Unclear:** This should be incorporated by reference properly. Add it to Appendix C and edit this section to read “the ASTM Standard Specification for Liquid Petroleum Gases, D 1835-97, 1997, available as noted in Appendix C.” Further, there is a 2016 version of this document. The Department should determine which version it wishes to incorporate by reference and incorporate that version” [Bold in original.]

Response: The Department does not intend to enforce any requirements in the cited document. The cited standard is used for purposes of defining a term and is not being incorporated by reference. The Department has not made the suggested revisions.

Edits made to: Part 1301 heading; 1301.01, 1301.02(b); 1302.02 through 1302.05; 1302.21 through 1302.23; 1302.35; 1302.41; 1302.44 & 1302.45; 1302.51; 1302.53; 1302.59; 1303.02 intro., (a) & (b); 1303.03(a)(7) & (b); 1303.04; 1303.07(a)(3) & (b); 1304.02; 1305.02 through 1305.14; 1306.02; 1306.03 intro. & (b)(3); 1307.02; 1307.03; 1310.02(b)(2); 1310.04; 1311.05(d); 1314.01; 1314.03(b); 1314.04(a); 1314.05 heading & (d); 1314.06(f)(4) & (7)c.; 1315.03(c)(6); 1315.04(d)(1) & (d)(2); 1315.06(b); and Appendix A.