

REGIONAL HAZE SOURCE CONTROL ASSESSMENT CONSIDERATIONS

Introduction

Following implementation of the Regional Haze Planning Readiness Assessment Project,¹ a collaborative effort led by the Western Regional Air Partnership (WRAP) with Ramboll US Corporation (Ramboll) to evaluate the readiness of WRAP members towards preparing their regional haze (“RH”) state implementation plans (SIPs) due in 2021, Ramboll was asked to assist WRAP with further tasks related to RH planning. The Assessment Project included a survey for WRAP members, the results of which were analyzed and further discussed during WRAP meetings. One insight was that many states are planning to utilize WRAP subcommittee work products for determining which emission sources (i.e., emissions units at facilities) might potentially require Reasonable Progress (“RP”) controls. The United States Environmental Protection Agency (USEPA) *Draft Guidance on Progress Tracking Metrics, Long-term Strategies, Reasonable Progress Goals and Other Requirements for Regional Haze State Implementation Plans for the Second Implementation Period* (“Draft Guidance”) explains that states are expected to evaluate sources of RH-causing pollutants to determine which should have RP controls implemented to limit emissions. The methodology typically used for this is known as the Four-Factor analysis, which evaluates sources based on 1) cost of compliance, 2) time necessary for compliance, 3) energy and non-air quality environmental impacts of compliance, and 4) remaining useful life of any potentially affected sources.² Evaluation based on these factors assesses the feasibility of implementing RP controls on the sources analyzed. As described below, this memorandum provides criteria for existing source controls such that a four-factor analysis would not be necessary.

Performing a Four-Factor analysis on every emission source could be burdensome, so the RH Guidance describes how states are permitted to screen out sources with existing controls that are already significantly reducing pollutants contributing to RH. The guidance describes a process for screening sources with existing control requirements, stating that “A source subject to a federally enforceable emission limit that effectively requires it to apply the most effective control technology for a given PM [particulate matter] species or precursor may be screened out of further analysis for that pollutant.” For these sources, a four-factor analysis is unnecessary because the most effective control technology is already in place, and hence no additional measures for further emission reduction are available for inclusion in the long-term strategy (LTS).³ In additional cases, certain electrical generating units (EGUs)

¹ WRAP. 2018. *2018 Western States Planning Readiness Survey for Regional Haze State Implementation Plans for the Second Implementation Period*. Available at:

<http://www.wrapair2.org/pdf/WRAP%202018%20RH%20Planning%20Readiness%20Survey%20-%20Introduction.pdf>.

Accessed: April 2019.

² USEPA. 2016. *Draft Guidance on Progress Tracking Metrics, Long-term Strategies, Reasonable Progress Goals and Other Requirements for Regional Haze State Implementation Plans for the Second Implementation Period*. Available at:

https://www.epa.gov/sites/production/files/2016-07/documents/draft_regional_haze_guidance_july_2016.pdf. Accessed: April 2019.

³ Ibid.

may be screened from further consideration even without determining that the control technology employed is the most effective, so long as the EGU is new or modified with highly effective control technology within the five years leading up to SIP submission. The Guidance provides further details on the applicability of this provision and the documentation requirements.⁴

Understanding this provision in the RH regulations, Ramboll prepared a memorandum for states to refer to when screening sources for RP controls. This memorandum provides a list of criteria for states to consider when evaluating permitted stationary sources with existing controls, in order to approximate if the controls are stringent enough to screen out the source from consideration for further RP controls.

Ramboll reviewed the following federal emissions control programs with regulatory basis in the Clean Air Act:

- National Ambient Air Quality Standards (NAAQS)
 - Nonattainment New Source Review (NSR)
 - Attainment NSR (Prevention of Significant Deterioration [PSD])
- Best Available Retrofit Technology (BART)
- New Source Performance Standards (NSPS)
- Mercury and Air Toxics Standards (MATS)

These programs were evaluated to determine if the control technology they require for stationary sources is at a level of stringency comparable to that referred to in the RH Guidance as “most effective control technology” or “highly effective control technology” (for EGUs) and thus allows the sources to be screened out. The following sections provide considerations to states based on this evaluation.

National Ambient Air Quality Standards (NAAQS) and New Source Review (NSR)

The National Ambient Air Quality Standards (NAAQS) are a set of ambient air pollutant standards set by the USEPA for Criteria Air Pollutants (CAPs).⁵ Each air district in the United States is required to maintain ambient levels of CAPs below the NAAQS in order to be considered “in attainment” of the standards. Increasing above the NAAQS can lead to a region being deemed as “nonattainment”, triggering various regulatory requirements designed to bring pollution levels back down below the NAAQS. One program to control large stationary sources is called New Source Review (NSR). As the name implies, NSR applies to new or modified sources and requires them to implement control technology to limit CAP emissions. The level of stringency for control technology required by NSR is dependent on a few factors, one of which is the attainment status of the area in which the source is located. This leads to two main types of NSR: Nonattainment NSR and Attainment NSR, also known as Prevention of Significant Deterioration (PSD).

⁴ Ibid.

⁵ USEPA. 2016. NAAQS Table. Available at: <https://www.epa.gov/criteria-air-pollutants/naaqs-table>. Accessed: April 2019.

Nonattainment NSR

Areas with ambient levels of one or more CAPs exceeding the respective NAAQS are deemed “nonattainment areas” for those CAP(s). Requirements for NSR are more stringent in these areas, as the air quality burden is already elevated for the given pollutants. This results in requirements for higher levels of control technology compared to NSR for sources in attainment areas. The level of control required for sources subject to nonattainment NSR is known as the Lowest Achievable Emission Rate (LAER). LAER is defined as the most stringent emission limitation derived from either the most stringent limitation contained in any SIP for the given class/category of source or the most stringent emission limitation achieved in practice for the class/category of source.⁶ LAER is considered the lowest possible emissions threshold for new/modified major sources in nonattainment areas and as such, economic and technical feasibility are not taken into account.⁷

States should evaluate their major permitted stationary sources in order to determine which new or modified sources have already implemented LAER controls for nonattainment NSR compliance. Items to consider include:

- Attainment status of the area where the source is located: Only sources located in nonattainment areas are subject to nonattainment NSR for the specified pollutant(s) exceeding both the NAAQS and major source threshold(s).
- “Major” status of source: Only sources with emissions greater than a specified threshold are subject to nonattainment NSR.⁸ The emissions threshold varies by pollutant and attainment status of the area and ranges from 10 tons per year (tpy) for Extreme nonattainment areas to 100 tpy for Marginal and Moderate nonattainment areas (see Table 1 below).⁹

Nonattainment Area Designation	VOC or NO_x	CO	PM₁₀
Marginal	100 tpy		
Moderate	100 tpy	100 tpy	100 tpy
Serious	50 tpy	50 tpy	70 tpy
Ozone Transport Region (other than severe or extreme)	50 tpy (VOC only)		
Severe	25 tpy		
Extreme	10 tpy		

⁶ USEPA. 2019. Nonattainment NSR Basic Information. Available at: <https://www.epa.gov/nsr/nonattainment-nsr-basic-information>. Accessed: April 2019.

⁷ Arizona Department of Environmental Quality. 2016. SIP Program - Control Analyses. Available at: <https://azdeq.gov/control-analyses>. Accessed: April 2019.

⁸ Minor sources can also be subject to NSR; however, minor NSR programs vary from state to state.

⁹ USEPA. 2017. Who Has to Obtain a Title V Permit? Available at: <https://www.epa.gov/title-v-operating-permits/who-has-obtain-title-v-permit>. Accessed: April 2019.

- Date of construction/modification of major source: Sources built/modified after 1977, the year in which the NSR permitting program was established 1977, are subject to NSR.¹⁰
- Date of LAER control implementation: As technology improves, the “lowest achievable” emissions rate can get lower. Sources with LAER controls more recently implemented are more likely to remain the most effective available today. States should review LAER-controlled sources to confirm they can still be considered the most effective control technology.

If states consider each of these points and determine that a source subject to nonattainment NSR is being controlled by LAER technology that is still the most effective control technology for a given particulate matter species or precursor, then the source may be screened out of further consideration for RP controls for that pollutant. It is important to note that LAER is determined on a case-by-case basis. For examples on what types of control technologies have been determined as achieving LAER, states can refer to the RACT/BACT/LAER Clearinghouse (RBLC).¹¹

Attainment NSR (Prevention of Significant Deterioration [PSD])

New or modified major sources in areas attaining all NAAQS are still subject to the same NSR permitting process as those located in nonattainment areas, but with different control requirements and thresholds for determining what is considered “major”. Since the regulatory burden is lesser in these areas compared to nonattainment areas, control requirements are generally not as strict. Instead, they aim for the Prevention of Significant Deterioration (PSD) of the local air quality by requiring the installation of the Best Available Control Technology (BACT). BACT is an emissions limitation based on the maximum degree of control that can be achieved when considering energy, environmental, and economic impact.¹² Because these factors are considered and can impact which control technology is selected, BACT is not always as effective as LAER controls in reducing emissions. That said, states may still be able to screen out sources controlled by BACT if the control technology utilized qualifies as the most effective for the particulate matter species or precursor(s) of concern. Items to consider include:

- Attainment status of the area where the source is located: Only sources located in attainment areas are subject to PSD for the specified pollutant(s) exceeding the major source threshold(s).
- “Major” status of source: Only sources with emissions greater than 100 tpy for a given pollutant are considered major and subject to PSD.¹³
- Date of construction/modification of major source: Sources built/modified after 1977, the year in which the NSR permitting program was established 1977, are subject to NSR.¹⁴

¹⁰ USEPA. 2018. New Source Review (NSR) Permitting. Available at: <https://www.epa.gov/nsr>. Accessed: April 2019.

¹¹ USEPA. 2017. RACT/BACT/LAER Clearinghouse (RBLC). Available at: <https://cfpub.epa.gov/RBLC/index.cfm?action=Home.Home&lang=en>. Accessed: April 2019.

¹² USEPA. 2019. New Source Review – Prevention of Significant Deterioration Basic Information. Available at: <https://www.epa.gov/nsr/prevention-significant-deterioration-basic-information>. Accessed: April 2019.

¹³ USEPA. 2017. Who Has to Obtain a Title V Permit? Available at: <https://www.epa.gov/title-v-operating-permits/who-has-obtain-title-v-permit>. Accessed: April 2019.

¹⁴ USEPA. 2018. New Source Review (NSR) Permitting. Available at: <https://www.epa.gov/nsr>. Accessed: April 2019.

- Date of BACT control implementation: As technology improves, the “best available” technology can achieve lower emissions. Sources with BACT controls more recently implemented are more likely to qualify as the most effective available today. States should review BACT-controlled sources to confirm they can still be considered as implementing the most effective control technology.

If states consider each of these points and determine that a source subject to PSD is being controlled by BACT technology that is also the most effective control technology for the particulate matter species or precursor(s) of concern, then the source may be screened out of further consideration for RP controls. It is important to note that BACT is determined on a case-by-case basis. For examples on what types of control technologies have been determined as BACT, states can refer to the RBLC.¹⁵

Best Available Retrofit Technology (BART)

During the first round of RH planning, states were required to implement the Best Available Retrofit Technology (BART) on certain sources of pollutants contributing to RH (i.e., PM_{2.5} [particulate matter smaller than 2.5 microns in diameter], and its precursors). Deemed “BART-eligible” sources, these were existing major stationary sources used in a specified set of industries, such as power plants, petroleum refineries, and chemical process plants. The goal of this program was to identify those sources contributing significantly to visibility impairment and apply controls on the pollutants causing it. BART is defined as “an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction” for the given pollutant emitted by the BART-eligible source.¹⁶ In order to be BART-eligible, sources had to meet the following requirements:

- Source type: Only certain industries/source types were BART-eligible. There are 26 in total and a list is provided in the RH Guidance.¹⁷
- Date of source construction: Sources must have begun operation between August 7, 1962 and August 7, 1977 to be BART-eligible.¹⁸
- Emissions threshold: The emissions from the group of emission units at a single stationary source must collectively exceed a potential to emit of 250 tons per year for any visibility-impairing pollutant in order for that collection of emissions units to be a BART-eligible source.

Sources determined to be BART-eligible next went through the BART Determination process, in which each source was evaluated on a case-by-case basis to determine the suitable emission limits. This BART Determination took into account several factors, including cost, the control technology available, non-air quality environmental impacts, the control equipment already present at the source, the remaining

¹⁵ USEPA. 2017. RACT/BACT/LAER Clearinghouse (RBLC) Available at: <https://cfpub.epa.gov/RBLC/index.cfm?action=Home.Home&lang=en>. Accessed: April 2019.

¹⁶ USEPA. 2016. *Draft Guidance on Progress Tracking Metrics, Long-term Strategies, Reasonable Progress Goals and Other Requirements for Regional Haze State Implementation Plans for the Second Implementation Period*. Available at: https://www.epa.gov/sites/production/files/2016-07/documents/draft_regional_haze_guidance_july_2016.pdf. Accessed: April 2019.

¹⁷ Ibid.

¹⁸ Ibid.

useful life of the source, and the anticipated improvement in visibility that would result from use of the technology.¹⁹ Because these factors were considered, the specific limits/technology chosen may not have qualified as the “most effective control technology” for reducing emissions. That said, states may still be able to screen out some sources controlled by BART if the control technology utilized is the most effective or highly effective (for EGUs). Items to consider include:

- BART-eligible sources with the most stringent controls in place: States should review their records from the first implementation period to determine which of their BART-eligible sources did not go through the full BART Determination process because, at the time, one option was to forego the bulk of the BART analysis if it was found that a BART-eligible source already had controls in place which were the most stringent available (i.e., all possible improvements to control devices had been made). If states can determine which of their sources followed this path and demonstrate that the type of control technology in place that was most stringent at the time remains the most stringent today, then these sources can be screened from further consideration for RP controls.
- Electrical generating units: Per the Draft Guidance, EGUs can be screened from further consideration for RP controls if they were constructed or modified with highly effective control technology within the five years leading up to SIP submission in 2021. States should review their records of BART-controlled sources from the first implementation period, review the controls/emission limits selected in the BART Determination for their EGUs, and determine whether they qualify as highly effective control technology. The Draft Guidance offers examples of what constitutes as highly effective control technology, such as, “year-round operation of flue gas desulfurization (FGD) with an effectiveness of at least 90 percent or year-round operation of selective catalytic reduction with an effectiveness of at least 90 percent (in both cases calculating the effectiveness as the total for the system, including any bypassed flue gas)”.²⁰

Apart from these considerations, if the states can determine that a source subject to BART is being controlled by technology that is also the most effective control technology, then the source may be screened out of further consideration for RP controls.

New Source Performance Standards (NSPS)

The New Source Performance Standards (NSPs) are a set of regulatory standards designed to control CAP emissions from new, modified, and reconstructed stationary sources. Sources subject to NSPS are required to implement what is known as Best Demonstrated Technology (BDT). BDT refers to the “best system of emission reduction which (taking into account the cost of achieving such reduction and any non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.” Hence, determining the BDT for a given NSPS is up to the discretion of the USEPA. BDT for a given source can be a specified emission limit, a design or

¹⁹ Ibid.

²⁰ Ibid.

equipment standard, a work practice, or any combination of these.²¹ In selecting BDT, USEPA reviews the available technology, identifies potential emission limits based on the reductions possible, and then evaluates the alternatives based on factors like costs, secondary air benefits/drawbacks, and non-air quality impacts. Because these factors are considered and can impact how BDT is set for the NSPSs by USEPA, BDT may not always qualify as the “most effective control technology” for reducing emissions. That said, states may still be able to screen out sources controlled by BDT if the control technology utilized is the most effective. Items to consider include:

- Source type: Only certain industries/source types are subject to NSPS. States should refer to 40 CFR Part 60 to see what sources are included on the list.²²
- Date of construction/modification of source: Only new sources that are built, modified, or reconstructed after promulgation of the applicable NSPS are subject to it. States should refer to USEPA web page for NSPS for information on the timing of applicability for each one.²³
- Electrical generating units: There are two NSPSs for EGUs which limit pollutants contributing to visibility impairment: *Electric Utility Steam Generating Units (Boilers)*²⁴ and *Industrial/Commercial/Institutional Steam Generating Units (Boilers)*²⁵. States should refer to these standards if they have utility or industrial boiler sources constructed or modified within the five years leading up to SIP submission in 2021. There are several control requirements based on specific equipment parameters which may qualify as highly effective control technology as described in the Draft Guidance. If such technology is in place at these sources, they can be screened out of further consideration for RP controls.

Mercury and Air Toxics Standards (MATS)

The MATS program is designed to reduce public exposure to mercury and other toxic air pollutants by limiting emissions from fossil-fuel power plants. While the program targets these pollutants, the control technology utilized to limit them has the secondary benefit of limiting other pollutants that can contribute to RH, including PM_{2.5} and some of its precursors. However, the program only has stringent emissions limitation requirements (Maximum Achievable Control Technology [MACT]) for toxic pollutants, and not for CAPs like PM_{2.5}, which can contribute to RH. In fact, in a co-benefits analysis

²¹ Texas Commission on Environmental Quality. 2011. Air Pollution Control: How to Conduct a Pollution Control Evaluation. Available at: https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/airpoll_guidance.pdf. Accessed: April 2019.

²² A list of sources subject to NSPS is also available at: <https://www.epa.gov/stationary-sources-air-pollution/new-source-performance-standards>. Accessed: April 2019.

²³ USEPA. 2018. New Source Performance Standards. Available at: <https://www.epa.gov/stationary-sources-air-pollution/new-source-performance-standards>. Accessed: April 2019.

²⁴ USEPA. 2015. Electric Utility Steam Generating Units (Boilers): New Source Performance Standards. Available at: <https://www.epa.gov/stationary-sources-air-pollution/electric-utility-steam-generating-units-boilers-new-source>. Accessed: April 2019.

²⁵ USEPA. 2014. Industrial-Commercial-Institutional Steam Generating Units: New Source Standards of Performance (NSPS). Available at: <https://www.epa.gov/stationary-sources-air-pollution/industrial-commercial-institutional-steam-generating-units-new>. Accessed: April 2019.

conducted by the USEPA about the overall MATS program, it was found that, “Reductions in directly emitted crustal and carbonaceous PM_{2.5} (elemental carbon and organic carbon) were fairly modest. Carbonaceous PM_{2.5} decreased slightly in the eastern US but did not significantly change in the western US.”²⁶ For these types of visibility-impairing pollutants, the MATS program does not require the most effective control technology. Hence, states should focus their efforts on considering sources subject to the other programs discussed in this memorandum.

Consent Decrees

Lastly, states may want to consider any consent decrees issued by the USEPA in response to civil cases and settlements concerning sources within their states. These consent decrees vary on a case by case basis, but some may impose source controls on specific sources in response to the legal cases impacting them. States can refer to the USEPA’s Enforcement web page for a database of the consent decrees issued.²⁷

²⁶ USEPA. 2011. Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards. Available at: <https://www.epa.gov/sites/production/files/2015-11/documents/matsriafinal.pdf>. Accessed: April 2019.

²⁷ USEPA. 2018. Civil Cases and Settlements. Available at: <https://cfpub.epa.gov/enforcement/cases/>. Accessed: April 2019.