

CONTROL OF NO_x EMISSIONS FROM
GLASS MELTING FURNACES

25 Pa. Code Chapters 121 and 129

*38 Pa.B.*1831 (April 19, 2008)

Environmental Quality Board Regulation #7-420
(Independent Regulatory Review Commission #2683)

Comment/Response Document

Control of NO_x Emissions from Glass Melting Furnaces

On April 19, 2008, the Environmental Quality Board (Board, EQB) published a notice of public hearings and comment period on a proposed rulemaking concerning revisions to 25 Pa. Code Chapters 121 and 129 to control the emissions of nitrogen oxides (NO_x) from glass melting furnaces during the ozone season (38 Pa. B. 1831). The public comment period closed on June 23, 2008.

Three public hearings were held on the proposed rulemaking as follows:

May 19, 2008
2:00 p.m. Department of Environmental Protection
Rachel Carson State Office Building
Room 105
400 Market Street
Harrisburg, PA 17105

May 21, 2008
2:00 p.m. Department of Environmental Protection
Northeast Regional Office
Susquehanna Room A, Second Floor
2 Public Square
Wilkes-Barre, PA 18711

May 23, 2008
2:00 p.m. Department of Environmental Protection
Southwest Regional Office
Waterfront A & B Conference Room
400 Waterfront Drive
Pittsburgh, PA 15222

This document summarizes the testimony received during the public hearings and the written comments received from the public during the public comment period. Each public comment is listed with an identifying number for each commentator that made the comment. A list of the commentators, including name, affiliation (if any), and location, can be found at the beginning of this document. The Board invited each commentator to prepare a one-page summary of the commentator's comments. One one-page summary was submitted to the Board for this rulemaking. If adopted by the Board, the final regulation will be submitted to the U.S. Environmental Protection Agency (EPA) as a revision to the State Implementation Plan (SIP).

Table of Commentators to the Environmental Quality Board
Control of NOx Emissions from Glass Melting Furnaces
Rulemaking # 7-420
(IRRC # 2683)

ID	Name/Address	One-Page Summary Submitted for Distribution to EQB	Provided Testimony	Requested Copy of Final Rulemaking after EQB Action
1.	James M. Rowlett, CSP Manager, Environmental, Safety, and Health World Kitchen, LLC Charleroi, PA		√	
2.	John W. Carroll Harrisburg, PA <<representing Saint-Gobain Containers>> Muncie, IN		√	
3.	Steven F. Faeth Senior Counsel EHS PPG Industries, Inc. Pittsburgh, PA	√		
4.	Andrew L. Harris, P.E. Corporate Environmental Manager Pittsburgh Corning Corporation Port Allegheny, PA			√
5.	Thomas J. McDonald Manager, Environmental, Health and Safety SCHOTT North America, Inc. Duryea, PA			
6.	Angus E. Crane Vice President, General Counsel NAIMA (North American Insulation Manufacturers Association) Alexandria, VA			
7.	Senator Mary Jo White Chairperson Senate Environmental Resources and Energy Committee Harrisburg, PA			

8.	Senator Raphael J. Musto Democratic Chairman Senate Environmental Resources and Energy Committee Harrisburg, PA			
9.	Independent Regulatory Review Commission Harrisburg, PA			
10.	Representative Scott E. Hutchinson Republican Chairman House Environmental Resources and Energy Committee Harrisburg, PA			

General Support

1. **Comment:** The commentator supports and strongly urges the adoption of the NO_x emission limits for fiberglass plants consistent with the 4.0 pounds of NO_x per ton of glass pulled (lbs NO_x/ton glass pulled) adopted by the Ozone Transport Commission (OTC). (6)

Response: The Department of Environmental Protection (Department) appreciates the commentator's support of the proposed rulemaking for fiberglass plants.

2. **Comment:** The commentator stated that the emission limit for fiberglass plants in the proposed rule can be achieved by currently available technologies, and the emission limit is a technologically feasible and pragmatic approach requiring implementation of low-NO_x combustion technology. (6)

Response: The Department agrees with the commentator that the emission limit for fiberglass furnaces can be achieved with technologies currently available.

3. **Comment:** The commentator stated that the OTC-recommended emission limit of 4.0 lbs NO_x/ton glass pulled for fiberglass plants achieves consistency and uniformity with the standard that the 13 members of the OTC effectively adopted in November 2006, and urges Pennsylvania to recognize the prudence and wisdom of a uniform standard throughout the various states because this provides the fiberglass industry with a predictable and manageable regulatory scheme. (6)

Response: The Department agrees with the commentator that proposing the OTC-recommended emission limit of 4.0 lbs NO_x/ton glass for fiberglass plants achieves consistency and uniformity among the 13 members (12 states and the District of Columbia) of the OTC.

Proposed NO_x Emission Limits

4. **Comment:** The commentator stated that it is arbitrary to base the proposed rule's allowable emission requirements on a California rule without an explanation as to why they are suitable to Pennsylvania. (4)

Response: The Department disagrees with the commentator that the rule's allowable NO_x emission limit requirements are arbitrary. The Department proposed the allowable NO_x emission requirements as a result of the research conducted by, and the recommendations of, the Northeast OTC. The Northeast OTC is a multi-state organization created under Section 184 of the Federal CAA. 42 U.S.C.A. § 7511c. The OTC is responsible for advising the EPA on ground-level ozone pollution transport issues and for developing and implementing regional solutions to the ground-level ozone problem in the Northeast and Mid-Atlantic regions. The members of the OTC (this Commonwealth, CT, DE, MA, MD, ME, NH, NJ, NY, RI, VA and VT, and the District of Columbia) are required to demonstrate attainment with the 1997 8-hour ozone standard of 80 ppb throughout the OTR. See 62 FR 38855 (July 18, 1997). Furthermore, on March 12, 2008, the EPA issued a more protective 8-hour ozone standard of 75 ppb that

would require additional reductions of ozone precursor emissions, including NO_x, that impact each OTR member's nonattainment status. See 73 FR 16436 (March 27, 2008). However, the EPA has reconsidered the 2008 ozone NAAQS and on January 19, 2010, published a proposed rulemaking to set a more protective 8-hour primary standard at a lower level within the range of 0.060-0.070 ppm; the final revised ozone standard is expected in August 2010. See 75 FR 2938. If, as is widely expected, the EPA tightens the ozone standard, the additional NO_x emissions from the final-form rulemaking for glass melting furnaces will be even more important than if the current 2008 ozone standard remains in place. In addition, the Northeast states are conducting attainment planning work to support development of PM_{2.5} and regional haze SIPs to satisfy obligations under the CAA and regulations issued under the CAA. See 74 FR 58688 (November 13, 2009) and 64 FR 35714 (July 1, 1999).

The OTC undertook a study to identify a suite of additional control measures that could be used by the members in attaining their goals. Workgroups of staff from within the OTC members were established to evaluate control measures for specific sectors or issues. Department staff actively participated in these workgroups. Based on a review of 1,000 candidate control measures, the workgroups developed a short list of measures to be considered for more detailed analysis. The technical information for this short list of measures is found in the OTC report: *Identification and Evaluation of Candidate Control Measures, Final Technical Support Document*, prepared by MACTEC Federal Programs, Inc., Herndon, VA, February 28, 2007. Control of NO_x emissions from glass melting furnaces in the six states within the OTR that have glass melting furnaces (this Commonwealth, MA, MD, NJ, NY and RI) was on the short list as a measure for further analysis by the workgroups. The workgroups reviewed information on current NO_x emissions from the furnaces, controls already in place on the furnaces, anticipated additional NO_x emission reductions from the control measures, preliminary cost and cost-effectiveness data, and other implementation issues. The workgroups discussed all the candidate control measures, including controlling NO_x emissions from glass melting furnaces, during a series of conference calls and workshops to further refine the emission reduction estimates, the cost data and implementation issues.

The workgroups also discussed comments from stakeholders, including glass melting furnace stakeholders (North American Insulation Manufacturers Association and Glass Association of North America). The OTC Commissioners summarized the glass melting furnace control measures and made a recommendation at the Commissioners' meetings in 2006 that the affected member states consider NO_x emission reductions from glass melting furnaces. The glass melting furnace stakeholders were provided multiple opportunities to review and comment on the glass melting furnace control measures summary. Public meetings were held as an opportunity for stakeholders to review and respond to the Commissioners' recommendations, stakeholders provided written comments, and the workgroups conducted conference calls with specific stakeholders to allow the stakeholders to vocalize their concerns directly to state regulatory staff and to discuss the control options. The OTC staff and state workgroups carefully considered the verbal and written comments received during this process.

The OTC's control measures summary document for the glass melting furnaces located in this Commonwealth, MA, MD, NJ, NY and RI recommends the states "develop control strategies that recommend 'oxyfiring' for each furnace at the next furnace rebuild." Alternatively, states

may allow manufacturers to propose compliance methods based on California's San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 4354 (relating to glass melting furnaces) which allows a "mix of control options to meet specified emission limits." The NO_x emission rates recommended in the OTC control measures summary document are the rates specified in the SJVAPCD Rule 4354. The Department reviewed, analyzed and concurred with the OTC's control measures summary document for glass melting furnaces with respect to the individual glass melting furnaces located in this Commonwealth. Further, the Department determined that proposing a glass melting furnaces regulation based on the SJVAPCD Rule 4354 that incorporates a mix of control options to meet specified emission limits was the appropriate implementation strategy for a rulemaking to control NO_x emissions from this Commonwealth's glass melting furnaces.

5. **Comment:** The Independent Regulatory Review Commission (IRRC) requests that the Board provide a detailed explanation on the basis for the emission limits in the emission requirements section. (9)

Response: Please see the response to comment number 4.

6. **Comment:** The IRRC questioned whether imposing the proposed emission requirements in the absence of a Federal deadline will place this Commonwealth's industry at a competitive disadvantage, and suggests the Board should review the situation carefully in conjunction with the OTC to take precautions to insure a level playing field in the industry. (9)

Response: The Department proposed the allowable emission requirements as a result of the research conducted by and the recommendations of the OTC. The OTC is a multi-state organization created under Section 184 of the Federal CAA. 42 U.S.C.A. § 7511c. The OTC is responsible for advising the EPA on ground-level ozone transport issues and for developing and implementing regional solutions to the ground-level ozone transport problem in the Northeast and Mid-Atlantic regions. The members of the OTC (this Commonwealth, CT, DE, MA, MD, ME, NH, NJ, NY, RI, VA and VT, and the District of Columbia) are required to demonstrate attainment with the 1997 8-hour ozone NAAQS. See 62 FR 38855 (July 18, 1997).

Furthermore, on March 12, 2008, the EPA issued a more protective 8-hour ozone standard of 75 ppb that would require additional reductions of ozone precursor emissions, including NO_x, that impact each OTR member's nonattainment status. See 73 FR 16436 (March 27, 2008). However, the EPA has reconsidered the 2008 ozone NAAQS and on January 19, 2010, published a proposed rulemaking to set a more protective 8-hour primary standard at a lower level within the range of 0.060-0.070 ppm; the final revised ozone standard is expected in August 2010. See 75 FR 2938. If, as is widely expected, the EPA tightens the ozone standard, the additional NO_x emissions from the final-form rulemaking for glass melting furnaces will be even more important than if the current 2008 ozone standard remains in place.

Control of NO_x emissions from glass melting furnaces in the six states within the OTR that have glass melting furnaces (this Commonwealth, MA, MD, NJ, NY and RI) was on the short list as a

control measure for further analysis by the OTC.¹ The OTC Commissioners summarized the glass melting furnaces control measures and made a recommendation at the Commissioners' meetings in 2006 that the members consider NOx emission reductions from glass melting furnaces. This Commonwealth, along with the other affected OTC member states, agreed to establish NOx emission limits and controls for glass melting furnaces that are based on the SJVAPCD Rule 4354 so that there would be a level playing field among the surrounding OTC states. The owners and operators of glass melting furnaces in this Commonwealth remain competitive with those states not in the OTC with the option of an alternative compliance schedule contained in the petition process that is provided in subsections 129.304(b) and (c) (relating to emission requirements) of the final-form rulemaking.

7. **Comment:** The commentator stated that the proposed rule does not include emission requirements for specialty glass manufacturing, and therefore the proposed rule does not apply to their glass melting furnace since it does not meet the applicability criteria defined in the proposed rule. (5)

Response: The Department recognized that furnaces within this Commonwealth that produce a glass product other than the four types listed in the proposed rulemaking (flat, container, fiberglass or pressed and blown) were not adequately considered in the proposed rulemaking. As a result, the Department has added to § 129.304 in the final-form rulemaking an emission limit of 6.0 lbs NOx/ton glass pulled for any other glass melting furnace that does not produce flat, container, fiberglass or pressed or blown glass products. The Department, in researching and analyzing these types of furnaces in this Commonwealth, considered the limit of 6.0 lbs NOx/ton glass pulled to be a reasonable limit based on the low NOx burner technology that is available to reduce uncontrolled NOx emissions by 30-35%.

8. **Comment:** The proposed rule's compliance determination section should express NOx in the same units as in the emission requirements section of the proposed rule (lbs/hr vs. lb NOx/ton glass). (3)

Response: The Department disagrees with the commentator. The continuous emissions monitoring system (CEMS) equipment is not designed to sample and report a source's process-derived emissions data, for example, tons of glass pulled at a glass melting furnace. The CEMS equipment samples on the basis of a 'parts per million' emissions concentration, and then automatically calculates a 'pounds per hour' emissions concentration. When the monitoring data is submitted to the Department every quarter, as required under subsection 129.309(a) (relating to compliance demonstration), the submittal shall include the CEMS monitoring data in pounds per hour and the glass production data in tons of glass pulled per day for each furnace.

¹ *Identification and Evaluation of Candidate Control Measures, Final Technical Support Document*. Prepared for the Ozone Transport Commission, Washington DC, by MACTEC Federal Programs, Inc., Herndon, VA, February 28, 2007.

2009 Compliance Date

9. **Comment:** The commentator stated that the emission requirements compliance date of May 1, 2009, is unreasonable because there is less than a year until this deadline and the proposed rule is not yet final and may not be final before the end of 2008. (3)

Response: The Department acknowledges that the proposed rulemaking's compliance date of May 1, 2009, is no longer possible. The Department revised the final-form rulemaking to require compliance with the emission limits by January 1, 2012. The final-form rulemaking also provides a petition process to all glass melting furnace owners and operators under subsection 129.304(b) for an alternative compliance schedule, if they will be unable to meet the NOx emission limits beginning January 1, 2012.

10. **Comment:** The commentator stated that this regulation will likely require permitting of air pollution control equipment which reasonably cannot occur by May 1, 2009, and suggests that the regulation's compliance deadline become effective upon the next furnace rebuild but no sooner than May 1, 2012. (3)

Response: The Department revised the final-form rulemaking to require compliance with the emission limits by January 1, 2012. The final-form rulemaking also provides a petition process to all glass melting furnace owners and operators under subsection 129.304(b) for an alternative compliance schedule, if they will be unable to meet the emission limits beginning January 1, 2012.

11. **Comment:** The commentator stated that the NOx proposed rule creates an unreasonable timetable for compliance, and recommends postponing the compliance date until at least the 2010 ozone season. (2)

Response: Please see the response to comment number 10.

12. **Comment:** The IRRC commented that the Board should review the practicality of the 2009 compliance deadline, given the uncertainty of the future of the EPA Clean Air Interstate Rule (CAIR) allowance program, and questions if other compliance options will be available for providing flexibility to the affected industry. (9)

Response: The Department agrees with the commentator. Subsequent to the closing of the public comment period on June 23, 2008, for the proposed rulemaking (38 Pa.B. 1831, April 19, 2008), but prior to the vacatur of the EPA's CAIR, the Department held discussions with the EPA regarding the proposed rulemaking's option to demonstrate compliance with the emission limits through the purchase of CAIR NOx allowances under the EPA's CAIR regulation. During those discussions, the EPA indicated to the Department that a glass melting furnace regulation that would provide a compliance option to purchase CAIR NOx allowances would be problematic as far as approvability by the EPA for the Commonwealth's SIP, because glass melting furnaces are not specifically included in the EPA's CAIR program as a source category able to purchase CAIR NOx allowances to achieve compliance. The EPA did not intend CAIR to comprise the entire solution to control NOx emissions from all types of sources, but only to

address interstate transport of ozone and PM_{2.5} precursors from the electric generating unit (EGU) sector. Therefore, the Department deleted from the final-form regulation the compliance option to purchase CAIR NO_x allowances. Because of this change, the Department has revised the final-form rulemaking to require compliance with the emission limits by January 1, 2012.

13. **Comment:** The Senate and House Environmental Committees commented, during the Advance Notice of Final Rulemaking (ANFR) comment period (39 *Pa.B.* 5318, September 12, 2009), that it may assist the Department as well as the regulated industry to not base the compliance timeframe on a specific date. The Committees commented that glass melting furnaces could potentially be required by the regulation to be replaced or upgraded prior to the end of their normal life expectancy, which would greatly increase the compliance costs of the regulation, if the regulation contains a specific compliance date. The Committees further commented that they understand several other states permit furnaces to be upgraded after their normal and anticipated life expectancy is exhausted. (7,8,10)

Response: The final-form rulemaking provides a petition process to all glass melting furnace owners and operators under subsection 129.304(b) for an alternative compliance schedule, if they will be unable to meet the emission limits beginning January 1, 2012. The Department believes that a final compliance date specified in the regulation is necessary to ensure that the owners and operators of the glass melting furnaces in this Commonwealth limit the NO_x emissions from their furnaces by a date certain, either by January 1, 2012, or by the date specified on a case-by-case basis as determined through the petition process for an alternative compliance schedule under subsection 129.304(c). Additionally, the SJVAPCD Rule 4354, whose NO_x emission limits and compliance methods were recommended by the OTC control measures group, specifies a final compliance date.

CAIR

14. **Comment:** A commentator stated that the proposed rule limits the purchase of allowances to CAIR NO_x allowances, and should allow for the use of NO_x credits previously banked as a result of prior emission reductions. (3)

Response: The Department disagrees with the commentator. The use of NO_x credits previously banked due to prior emission reductions is clarified by the Department's NO_x Budget Trading Program under subsection 145.90(a) (relating to emission reduction credit provisions): "ERCs may not be used to satisfy NO_x allowance requirements." Additionally, as explained in the response to comment number 12, the Department removed from the final-form rulemaking the compliance option to purchase CAIR NO_x allowances.

15. **Comment:** A commentator stated that the Department did not adequately address, while drafting and promulgating the proposed regulation and in accordance with Commonwealth Executive Order 1996-1, that when there are existing Federal regulations covering the subject matter as does the EPA's CAIR regulation, that the State's regulations cannot be more stringent than the Federal standards. The commentator stated further that the EPA promulgated CAIR for the control of NO_x emissions at the Federal level, and the EPA focused the CAIR regulation on

EGUs. Glass melting furnaces are not EGUs, thus under the EPA's CAIR, specific regulation of glass manufacturing is notably absent. (4)

Response: The purpose of the Department's proposed glass melting furnaces rulemaking is to address reductions of NO_x from glass melting furnaces, while the EPA's CAIR addresses NO_x reductions from EGUs, certain boilers, stationary combustion turbines and stationary internal combustion engines. Therefore, these are two different regulatory strategies with the goal of reducing NO_x emissions from various source types within this Commonwealth. The EPA did not intend CAIR to comprise the entire solution to control NO_x emissions from all types of sources, but only to address interstate transport of ozone and PM_{2.5} precursors. In fact, the EPA explicitly recognized that additional state regulation may be necessary in some areas, in combination with reduction of interstate transport, to attain and maintain the ozone and PM_{2.5} NAAQS.

Commonwealth Executive Order 1996-1 applies to the final-form rulemaking since there is not a companion Federal rule that reduces NO_x emissions from glass melting furnaces. However, this proposed rulemaking is reasonably necessary to attain and maintain the 1997 8-hour ozone NAAQS. The criteria for adopting state regulations more stringent than Federal regulations (when Federal regulations exist) are in the Air Pollution Control Act (APCA), Section 4.2 (35 P.S. § 4004.2). Section 4.2 of the APCA authorizes the Board to adopt regulations more stringent than Federal requirements when the control measures are reasonably necessary to attain and maintain the ambient air quality standards.

Vacatur of the EPA's CAIR

16. **Comment:** The IRRC questioned the Board's statutory authority for the use of CAIR NO_x allowances and revised NO_x emission limits in the proposed regulation due to the fact that the EPA's CAIR was vacated on July 11, 2008, by the D.C. Circuit Court. The IRRC goes on to say that the Court in its ruling stated that the analysis done by the EPA was "fundamentally flawed" and that the agency (EPA) must start its analysis anew. (9)

Response: The decision by the D.C. Circuit Court in *North Carolina v. EPA* only addressed CAIR, and did not address NO_x emission limits for glass melting furnaces. Subsequent to the closing of the public comment period on June 23, 2008 for the proposed rulemaking (38 Pa.B. 1831, April 19, 2008), but prior to the vacatur of the EPA's CAIR, the Department held discussions with the EPA regarding the proposed rulemaking's option to demonstrate compliance with the emission limits through the purchase of CAIR NO_x allowances under the EPA's CAIR regulation. During those discussions, the EPA indicated to the Department that a final glass melting furnace regulation that would provide a compliance option to purchase CAIR NO_x allowances would be problematic as far as approvability by the EPA for the Commonwealth's SIP, because glass melting furnaces are not specifically included in the EPA's CAIR program as a source category able to purchase CAIR NO_x allowances to achieve compliance. The EPA did not intend CAIR to comprise the entire solution to control NO_x emissions from all types of sources, but only to address interstate transport of ozone and PM_{2.5} precursors from the EGU sector. The Court decided to remand, and not vacate, the EPA's CAIR in December 2008. The final Federal rule, expected in 2011, must be revised to be consistent

with the Court's July 11, 2008, decision in *State of North Carolina v. Environmental Protection Agency*, 531 F.3d 896 (D.C. Cir. 2008). The Department agrees that while the EPA's CAIR remains in place at this time, the EPA will propose and finalize in the next two years a replacement for CAIR that meets the criteria set forth by the Court. In light of the pre-vacatur discussions with the EPA and the uncertainty about what a CAIR replacement will include, the Department removed from the final-form glass melting furnaces rulemaking the compliance option to purchase CAIR NO_x allowances. Therefore, the provisions of the final-form rulemaking contain significant changes from the provisions of the proposed rulemaking.

Additionally, a replacement for the EPA's CAIR program could possibly include interstate trading. Because participating in both a trading program and the emissions averaging compliance option provided in the proposed rulemaking could potentially provide a loophole to the affected furnaces to avoid emissions reductions, glass melting furnaces for which the Department has granted approval to voluntarily participate in an interstate trading program will not be eligible for the emissions averaging option in the compliance demonstration under subsection 129.309(b) of the final-form rulemaking.

17. **Comment:** The Senate Committee commented on the ability of the Board to move forward with the regulation if the D.C. Court vacated the CAIR budget and allowance system for NO_x emissions in Pennsylvania and other states. Their concern is that on July 11, 2008, the U.S. Court of Appeals for the District of Columbia overturned CAIR, and specifically that the Court found that the state NO_x budgets as determined by the EPA were "arbitrary and capricious." (7,8)

Response: The decision by the D.C. Circuit Court in *North Carolina v. EPA* only addressed CAIR, and did not address NO_x emission limits for glass melting furnaces. Please see the response to comment # 16.

18. **Comment:** The IRRC stated that the Department should address the concerns raised by the Senate Committee on the CAIR vacatur, and suggested that if the regulation requires substantial changes, to consider submitting an Advance Notice of Final Rulemaking (ANFR) or publishing the changes as a new proposed regulation in the *Pennsylvania Bulletin*. (9)

Response: The Department agrees with the commentator. The provisions of the final-form rulemaking contain significant changes from the provisions of the proposed rulemaking. Most importantly, during discussions with the EPA following the close of the Board's public comment period for the proposed rulemaking, the EPA indicated to the Department that a final glass melting furnace regulation that provides a compliance option to purchase CAIR NO_x allowances would be problematic as far as approvability by the EPA for the Commonwealth's SIP, because glass melting furnaces are not specifically included in the EPA's CAIR program as a source category able to purchase allowances to achieve compliance. The EPA did not intend CAIR to comprise the entire solution to control NO_x emissions from all types of sources, but only to address interstate transport of ozone and PM_{2.5} precursors from the EGU sector. Therefore, the Department removed from the final-form rulemaking the compliance option to purchase CAIR NO_x allowances.

The Department further revised the final-form rulemaking to require compliance with the NOx emission limits year-round because NOx is not only a precursor to ozone formation, but is also a precursor to the formation of PM2.5, which is monitored year-round. In addition, the proposed rulemaking addressed control of NOx emissions from glass melting furnaces only during the period of May 1 to September 30 of each year, and it is anticipated that the EPA will extend the ozone monitoring season in this Commonwealth to go from March 1 to October 31, each year, requiring monitoring for the 8-hour ozone NAAQS for a longer period each year. See 74 FR 34525 at p. 34538 (July 16, 2009). The Department also added a NOx emission limit applicable to a glass melting furnace that produces a glass product that is other than flat, container, fiberglass or pressed and blown. These changes are sufficiently significant that the Department believed further discussion and an additional comment period served the public interest. An Advance Notice of Final Rulemaking (ANFR) to solicit comments from the public on the draft final-form regulation was published in the *Pennsylvania Bulletin* on September 12, 2009 (39 *Pa.B.* 5318).

System-Wide Averaging of NOx Emissions

19. **Comment:** The Senate Committee and the IRRC commented on the proposed provision to allow facilities under common ownership to trade NOx allowances for system-wide averaging of NOx emissions, while prohibiting the trading of NOx allowances to average NOx emissions between facilities not under common corporate ownership. The Senate Committee commented that they support the concept of NOx allowance trading, and would favor removing the requirement for being “under common control of the same owner or operator in this Commonwealth” from the system-wide averaging section of the rulemaking, and the IRRC commented that the Board should address this issue. (7,8,9)

Response: The Department disagrees with the Senate Committee’s suggestion to remove the requirement for being “under common control of the same owner or operator in this Commonwealth” from the system-wide averaging option under the compliance demonstration section of the rulemaking. The option to demonstrate compliance with the emission limits by averaging the NOx emissions of several glass melting furnaces under the common control of the same owner or operator in this Commonwealth provides added flexibility to the glass companies in this Commonwealth with more than one facility. Allowing multiple owners and operators of glass melting furnaces in this Commonwealth to average their emissions in concert with each other in order to demonstrate compliance would essentially provide them the larger framework of an emissions trading program, which is beyond the scope of the final-form rulemaking provision to provide them with an emissions averaging option.

Continuous Emissions Monitoring System (CEMS)

20. **Comment:** One commentator stated that the proposed rule’s requirement to install a NOx emissions monitoring system (CEMS or an alternate) does not impose a time requirement upon the Department for the review and approval of the monitoring system. (3)

Response: The Department disagrees with the commentator that the regulation should contain a time requirement. The owners or operators of glass melting furnaces who are planning to install, operate and maintain a CEMS or alternate monitoring system or method have been advised to

contact their Department regional and central office contacts for specific information and guidance regarding the installation, review and approval requirements for any and all monitoring equipment. The timeframe to review and approve a monitoring system is coordinated with each individual company during the certification process of the monitoring system, in accordance with the Department's Continuous Source Monitoring Manual (DEP 274-0300-001; 25 Pa. Code Chapter 139, Subchapter C (relating to requirements for source monitoring for stationary sources)). These monitoring-specific issues are not part of individual rulemakings.

21. **Comment:** Some commentators stated that the deadline of May 1, 2009, for the system to be installed and operational is unreasonable as there is less than a year until this deadline, and that it does not provide adequate time allowed for installation and operation of the CEMS. The commentators suggest that there should be a longer timeframe for the system to be installed and operational, and suggest that May 1, 2010, should be the earliest implementation date for the CEMS. (3,4)

Response: The Department agrees with the commentators. The deadline of May 1, 2009, to install, operate and maintain a CEMS or alternate monitoring system or method has been removed from the final-form rulemaking. A CEMS or alternate monitoring system or method to determine compliance with the emission limits specified in subsection 129.304(a) in the final-form rulemaking must be installed, operating and maintained no later than 14 days prior to the applicable date by which a glass melting furnace is required to meet the emission limits specified in subsection 129.304(b) or (c) in the final-form rulemaking.

22. **Comment:** A commentator stated that "to be consistent with the requirements of the CAIR, CEMS installation should be reserved for furnaces undergoing reconstruction or modification and not simple rebricking." (4)

Response: The Department disagrees with the commentator. The EPA's CAIR requirements are not applicable to this rulemaking. In addition, a CEMS or alternate monitoring system or method to determine compliance with the emission limits specified in subsection 129.304(a) in the final-form rulemaking must be installed, operating and maintained no later than 14 days prior to the date by which a glass melting furnace is required to meet the emission limits specified in subsection 129.304(b) or (c) in the final-form rulemaking.

23. **Comment:** One commentator stated that the 'alternate NOx emissions monitoring system or method' referenced in the proposed rule should be further clarified to explain what is an allowable alternate system. (1)

Response: The Department disagrees with the commentator. An alternate NOx emissions system or method is not designed to be a prescribed method or system. The owners or operators of glass melting furnaces who are planning to install, operate and maintain an alternate monitoring system or method are advised to contact their Department regional and central office contacts for specific information and guidance regarding the installation, review and approval requirements for any and all monitoring equipment. The timeframe to review and approve an alternate monitoring system or method is coordinated with each individual company during the certification process of the monitoring system.

24. **Comment:** The IRRC questioned the lack of criteria, process and timetable the Department will use to decide on an approvable ‘alternate NOx emissions monitoring system or method’ in the compliance determination section. (9)

Response: Please see the response to comment number 23.

Start-Up Exemption

25. **Comment:** The commentator states that the start-up exemption time of 104 days for a flat glass furnace is too short, and suggests that 208 days be allowed for a flat glass furnace that uses a NOx control not readily available from a commercial supplier, not in common use, or that is innovative. (3)

Response: The Department agrees with the commentator with respect to the start-up exemption time of 104 days for a flat glass furnace. To be consistent with the SJVAPCD Rule 4354, on whose NOx emission limits the OTC based its recommendations to its member states with glass melting furnaces, the final-form rulemaking revised the length of the start-up exemption in subsection 129.305(d) (relating to start-up requirements) for all types of glass furnaces. For flat glass furnaces, the maximum start-up exemption time is 208 days if the NOx control system is not in common use or is not readily available from a commercial supplier.

26. **Comment:** The ‘not to exceed 5% excess oxygen’ restriction during a furnace combustion start-up should be eliminated, as it does not appear to have a relationship or a benefit to NOx emissions. (3)

Response: The Department retains in the final-form rulemaking the furnace start-up restriction in subsection 129.305(f) of ‘not to exceed 5% excess oxygen,’ which is consistent with the furnace start-up requirements in the SJVAPCD Rule 4354.

27. **Comment:** IRRC questioned the clarity of the start-up exemption procedure section. (9)

Response: The Department believes that the start-up requirements found under § 129.305 of the final-form rulemaking are clear and precise.

28. **Comment:** The Senate and House Environmental Committees commented to the Board on behalf of PPG Industries during the ANFR comment period that the start-up exemption unnecessarily restricts the exemption to a new furnace or furnace rebuild and does not account for an idled existing furnace, and implies that a plan approval would be required in connection with a furnace start-up, which is not necessarily the case. (7,8,10)

Response: The Department has revised this section of the final-form rulemaking. Subsection 129.305(b) specifies that a plan approval application for a furnace start-up exemption request shall be submitted ‘if required,’ in recognition that some furnace start-ups may not require a plan approval.

Definitions

29. **Comment:** The NO_x proposal should adopt the 2007 National Emissions Standards for Hazardous Air Pollutants (NESHAP) definition of “glass melting furnace” instead of using the outdated 1980 New Source Performance Standards (NSPS) definition. The NSPS definition includes a list of extraneous non-furnace equipment that goes against the intent of the proposed rule that requires monitoring NO_x emissions from only the furnace. (2)

Response: The Department agrees with the commentator. Section 121.1 (relating to definitions) has been revised in the final-form rulemaking to include the 2007 NESHAP definition of the term ‘glass melting furnace’ that was published in the *Federal Register* on December 26, 2007 (72 FR 73183).

30. **Comment:** A commentator stated that the definition of ‘furnace rebuild’ is unclear and appears to broaden the scope of repair activities that currently require permitting, and that the definition should exclude rebricking activities as defined in 40 CFR Subpart CC and likewise exclude those activities from permitting. The term “complete reconstruction” in the furnace rebuild definition should be stated as “reconstruction” and have the same meaning as the Federal definition of “reconstruction” provided in 40 CFR Part 60.15. (3)

Response: The Department agrees with the commentator. The definition of the term “complete reconstruction” proposed under § 121.1 in the proposed rulemaking has been deleted in the final-form rulemaking and a definition for “cold shutdown” added. The final-form rulemaking includes the term “scheduled” whenever the term “cold shutdown” is used within the final-form rulemaking to distinguish between furnace repair activities and a scheduled “cold shutdown” when the furnace is cold and does not contain molten glass.

31. **Comment:** The Senate and House Committees commented to the Board on behalf of PPG Industries during the ANFR comment period that the definition of the term “start-up” should be revised to be consistent with the San Joaquin rule to include necessary language on furnace stabilization, that is, the phrase “and systems and instrumentation are brought to stabilization.” (7,8,10)

Response: The Department agrees with the commentator. The definition of the term “start-up” proposed under § 121.1 has been revised in the final-form rulemaking to include the furnace stabilization phrase suggested by the commentator, and to be consistent with the SJVAPCD Rule 4354.

Miscellaneous

32. **Comment:** The IRRC commented on the phrase ‘in this Commonwealth’ in the compliance demonstration section, and questions if it means an owner or operator must be located in this Commonwealth, and what about when facilities are located in Pennsylvania but the owner is not. (9)

Response: The phrase “in this Commonwealth” in paragraph 129.309(b)(3) means that NO_x emissions from glass melting furnaces operating at more than one location within this Commonwealth, and under the same ownership or operator, may be averaged. The owner or operator does not have to be located in this Commonwealth.

33. **Comment:** The proposed regulation should not expand the scope of what currently triggers permitting or plan approvals specified in the *Pennsylvania Code* and existing Federal regulations, and exemptions should be included for furnace rebricking and repairs or replacements that do not constitute a modification. (3)

Response: The final-form rulemaking will require compliance with the NO_x emission limits by January 1, 2012. The plan approval issued for the construction of a new glass melting furnace or furnace modification shall include terms and conditions consistent with the requirements of 25 *Pa. Code*, Chapter 127, Subchapter B (relating to plan approval requirements). The Department has added in the final-form rulemaking under § 121.1 a definition for the term “cold shutdown,” and the rulemaking includes the term “scheduled” whenever the term “cold shutdown” is used within the final-form rulemaking to distinguish between furnace repair activities and a scheduled “cold shutdown” when the furnace is cold and does not contain molten glass. The Department believes this will alleviate the concerns about routine repairs to a furnace.

34. **Comment:** The selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR) add-on control technologies for glass furnaces are not technically feasible control technologies for the intermittent NO_x emissions from nitrate decomposition, and therefore are not feasible add-on controls for this commentator’s glass melting furnace facility. This commentator requests the EQB to explicitly exclude its facility from the proposed rule. (5)

Response: The Department disagrees with the commentator. The Department recognized that furnaces within this Commonwealth that produce a glass product other than the four types listed in the proposed rulemaking (flat, container, fiberglass or pressed and blown) were not adequately considered in the proposed rulemaking. As a result, the Department has added under § 129.304 in the final-form rulemaking an emission limit of 6.0 lbs NO_x/ton of glass pulled for any other glass melting furnace that does not produce flat, container, fiberglass or pressed and blown glass products. The Department, in researching and analyzing these types of furnaces within this Commonwealth, considered the limit of 6.0 lbs NO_x/ton of glass pulled to be a reasonable limit based on the low NO_x burner technology that is available to reduce uncontrolled NO_x emissions by 30-35%.

35. **Comment:** The proposed rule is directed at combustion sources of NO_x, and the rule’s intent is to limit emissions of thermal NO_x. Since 95% of this commentator’s NO_x emissions are from decomposition of nitrogen-containing raw materials and not from thermal NO_x combustion processes, the EQB should clarify that it is inappropriate to apply the proposed rule to them. (5)

Response: The Department disagrees with the commentator. The purpose of the proposed rulemaking is to control NO_x emissions from glass melting furnaces. Section 129.302 (relating to applicability) of the final-form rulemaking clearly states that the provisions of the rulemaking

apply to an owner or operator of a glass melting furnace that emits or has the potential to emit NO_x at a rate greater than 50 tons per year. If a glass melting furnace in this Commonwealth meets the applicability criteria, the final-form rulemaking provisions apply.

36. Comment: The Senate and House Environmental Committees and another commentator questioned the legal authority of the Department and the EQB to require glass melting facilities to significantly reduce NO_x emissions under the authority of the Pennsylvania Air Pollution Control Act, 35 P.S. §§ 4001-4015. The commentators also stated that there is no legal basis to require significant reductions in NO_x emissions when it can be demonstrated that their facility does not contribute to the failure of any nonattainment area to comply with the air quality standards for ozone. (3,7,8,10)

Response: The Department disagrees with the commentators. The Department has the legal authority to require the owners and operators of glass melting furnaces to limit their emissions of NO_x. The law in this Commonwealth is well-settled regarding whether a regulation is valid and binding. A court must evaluate if the regulation is 1) within the agency's granted power, 2) issued pursuant to proper procedures and 3) reasonable. See for example, *Rohrbaugh v. PUC*, 556 Pa. 199, 727 A.2d 1080 (1999); and *Housing Authority v. Pa. Civil Service Com'n*, 556 Pa. 621, 730 A.2d 935 (1999). Section 5 of the APCA provides that the Board shall adopt rules and regulations for the prevention, control, reduction and abatement of air pollution, applicable throughout the Commonwealth. Clearly the intent of the glass melting furnaces regulation is to reduce air pollution, and so therefore the Board has the requisite legal authority. The Board is proceeding with this rulemaking through the proper rulemaking procedures, as identified under the APCA, the Regulatory Review Act and the Commonwealth Documents Law. An environmental regulation is reasonable if it prevents the possibility of pollution (see *Department of Environmental Resources v. Metzger*, 347 A.2d 743 (Pa. Cmwlth. 1975)), protects the public health and safety (see *Chambers Development Company, Inc. v. Department of Environmental Resources*, 545 A.2d 404 (Pa. Cmwlth. 1988)), or reduces pollution (see *Rochez Bros., Inc. v. Department of Environmental Resources*, 334 A.2d 790 (Pa. Cmwlth. 1975)). Since this rulemaking reduces pollution it is reasonable.

A demonstration using air dispersion modeling (point-source or regional scale) to show that a single facility “does not contribute to the failure of any nonattainment area to comply with the air quality standards for ozone” is not the determination of whether a facility is subject to a proposed rulemaking. Air dispersion models are not designed to simulate source-specific contributions to ozone nonattainment areas. A finding that emission reductions at one source of NO_x does not contribute to the failure of any nonattainment area to comply with the air quality standards for ozone is not surprising. Sensitivity analyses have often shown that the Community Multiscale Air Quality (CMAQ) model used by states for attainment demonstrations is relatively "stiff" considering even large emission changes; that is, the model may not predict large changes in ozone concentrations even when large emission reductions are made. Therefore, a variance relying on modeling would be inappropriate.

The OTC undertook a study to identify a suite of control measures that could be used by the members as part of a regional effort to attain and maintain the 1997 NAAQS for ozone.² The additional NO_x emission reductions from glass melting furnaces are a necessary component in this regional strategy.

37. Comment: The Senate and House Environmental Committees and another commentator stated that the proposed rule should provide for a variance if it could be demonstrated that it is economically unreasonable for the glass melting furnace facility to comply with the requirements of the rule, that the public interest is best served by granting the variance, and that the current operations at the glass melting furnace facility have no significant adverse impact on atmospheric NO_x concentrations and do not affect the Commonwealth's 8-hour ozone demonstration. (3,7,8,10)

Response: The Department disagrees with the commentator. A demonstration using air dispersion (point-source or regional scale) to show that a single facility "does not contribute to the failure of any nonattainment area to comply with the air quality standards for ozone" is not the determination of whether a facility is subject to a proposed rulemaking. A finding that emission reductions at one source of NO_x does not contribute to the failure of any nonattainment area to comply with the air quality standards for ozone is not surprising. Sensitivity analyses have often shown that the Community Multiscale Air Quality (CMAQ) model used by states for attainment demonstrations is relatively "stiff" considering even large emission changes; that is, the model may not predict large changes in ozone concentrations even when large emission reductions are made. Therefore, a variance relying on modeling would be inappropriate. Certain areas of this Commonwealth continue to exceed the health-based 1997 8-hour NAAQS for ozone. See 62 FR 38855 (July 18, 1997). The final-form rulemaking to control NO_x emissions from glass melting furnaces will result in additional NO_x emission reductions that are necessary to support attaining and maintaining the health-based 1997 8-hour ozone NAAQS in this Commonwealth and downwind areas. Furthermore, on March 12, 2008, the EPA issued a more protective 8-hour ozone standard of 75 ppb that would require additional reductions of ozone precursor emissions, including NO_x, that impact ozone attainment in this Commonwealth and throughout the OTR. See 73 FR 16436 (March 27, 2008). However, the EPA has reconsidered the 2008 ozone NAAQS and on January 19, 2010, published a proposed rulemaking to set a more protective 8-hour primary standard at a lower level within the range of 0.060-0.070 ppm; the final revised ozone standard is expected in August 2010. See 75 FR 2938. If, as is widely expected, the EPA tightens the ozone standard, the additional NO_x emissions from the final-form rulemaking for glass melting furnaces will be even more important than if the current ozone standard remains in place.

This final-form rulemaking will also contribute to reduced formation of PM_{2.5} and regional haze. The EPA, in its "Clean Air Fine Particle Implementation Rule," determined that NO_x emissions are also precursors to the formation of PM_{2.5}. See 72 FR 20586 (April 25, 2007). In

² *Identification and Evaluation of Candidate Control Measures, Final Technical Support Document*. Prepared for the Ozone Transport Commission, Washington DC, by MACTEC Federal Programs, Inc., Herndon, VA, February 28, 2007.

November 2009, the EPA designated 6 areas (all or part of 22 counties) in this Commonwealth as not attaining the 2006 24-hour PM_{2.5} NAAQS. See 74 FR 58688 (November 13, 2009). Regional haze is visibility impairment that is produced by a multitude of sources and activities which emit fine particles and their precursors, including NO_x, and which are located across a broad geographic area. See 64 FR 35713 at p.35715 (July 1, 1999). Therefore, the adoption of the final-form rulemaking for glass melting furnaces will help to reduce formation of ozone, PM_{2.5} and regional haze in this Commonwealth and downwind. As a result, this rulemaking is reasonably necessary to achieve and maintain the ozone and PM_{2.5} NAAQS.

38. **Comment:** A commentator stated that the Department did not adequately address, while drafting and promulgating the proposed regulation and in accordance with Executive Order 1996-1, whether the costs of the regulation exceed its benefits or not, and also stated that the proposed rulemaking does not support a conclusion that its costs will not exceed the benefits, and therefore the cost/benefit analysis should be more thoroughly addressed. (4)

Response: The Department disagrees with the commentator. The Department addressed the benefits and the costs associated with the proposed rulemaking in the preamble to the proposed rulemaking's public notice published in the *Pennsylvania Bulletin* on April 19, 2008 (38 *Pa.B.* 1831). Additionally, as part of the Commonwealth's comprehensive rulemaking process, the Department is required to evaluate all costs associated with the rulemaking on the affected industry as part of a detailed regulatory analysis form. This form is required to be submitted for review to the Governor's Office of General Counsel, the Senate and House Environmental Committees and the Attorney General as part of the rulemaking package.

39. **Comment:** The Senate and House Environmental Committees commented to the Board on behalf of PPG Industries during the ANFR comment period that an exemption from the emission limits should be included for glass melting furnaces during "periods of upset or malfunction" that affect an emission control device. The Senate and House Committees also commented that the routine maintenance exemption of 144 hours in total for add-on emission controls is not long enough to account for the complexities of the control techniques likely to be employed, and that each major component of the control system be exempted from the emission limits for 144 hours each calendar year for routine maintenance. (7,8,10)

Response: The Department believes that an exemption for a furnace malfunction or upset period is not required. The Department does not routinely provide exemptions from emission limits for periods of upset or malfunction in regulations to control emissions from sources. The Department believes that the SJVAPCD Rule 4354 addresses the issue of exemption from emission limits during maintenance appropriately, by allowing a total of 144 hours each calendar year for routine maintenance on all add-on controls. The SJVAPCD Rule 4354 does not provide an exemption from the emission limits for periods of upset or malfunction. The Department considered that the furnace itself should be included within the framework of routine maintenance, and has added subsection 129.304(d) to the final-form rulemaking to address exemptions from emission limits for maintenance or repair measures on the furnace components.

40. **Comment:** The Senate and House Environmental Committees commented to the Board on behalf of PPG Industries during the ANFR comment period that the petition process described in

subsections 129.304(b) and (c) of the ANFR final-form rulemaking should specify what factors the Department will consider in order for a glass melting furnace to qualify for an alternative compliance deadline. The Committees commented that specifying such factors will avoid confusion and misunderstanding regarding what a glass melting furnace must demonstrate and submit for the Department's approval by January 1, 2011. Those factors should consist of whether the furnace in question meets its existing emission limitations, the anticipated date of the next furnace rebricking, and whether the furnace will continue to meet its existing emission limitations. (7,8,10)

Response: The Department believes the petition process contained in subsections 129.304(b) and (c) of the final-form rulemaking is comprehensive but not overly prescriptive and includes all the factors suggested by the Committee. In addition, the Department revised this section in the final-form rulemaking to require submittal, and not approval, of a petition request to the Department by January 1, 2012, and not by January 1, 2011. The Department maintains that the concern expressed by the Committees on behalf of PPG Industries regarding the petition process will be alleviated by the change to the final-form regulation that requires submittal of the petition by January 1, 2012, and does not require approval of the petition by January 1, 2011. This timeframe will provide the owners and operators of glass melting furnaces the flexibility to coordinate with the Department on a case-by-case basis the exact information the Department requires in order to determine the approval of a petition submittal.